

**November 2004**

# **Analysis of the Medicare CAHPS<sup>®</sup> 2002 Disenrollment Reasons Survey**

Prepared for

**Amy Heller, Ph.D.**  
Centers for Medicare & Medicaid Services  
7500 Security Blvd.  
Mail Stop S1-13-05  
Baltimore, MD 21244-1850

Prepared by

Lee R. Mobley, Ph.D.  
Bridget Booske, Ph.D.  
Jiantong Wang, M.S.  
Gordon Brown, Ph.D.  
Lauren McCormack, Ph.D.  
Judith Lynch, B.A.  
Nathan West, M.P.A.  
Anne Kenyon, M.B.A.  
Scott Scheffler, M. of Applied Statistics

RTI International  
and  
Center for Health Systems Research & Analysis  
University of Wisconsin at Madison

CMS Contract No. 500-900-0061-TO#5  
University of Wisconsin Project No. 500-95-0061/005  
RTI Project No. 07659.005



ANALYSIS OF THE MEDICARE CAHPS® 2002  
DISENROLLMENT REASONS SURVEY

by Lee R. Mobley, Ph.D., Bridget Booske, Ph.D.,  
Jiantong Wang, M.S., Gordon Brown, Ph.D.,  
Lauren McCormack, Ph.D., Judith Lynch, B.A.,  
Nathan West, M.P.A., Anne Kenyon, M.B.A.,  
and Scott Scheffler, M. of Applied Statistics

Federal Project Officer: Amy Heller, Ph.D.

Centers for Health Systems Research and Analysis, University of Wisconsin at Madison

and

RTI International\*

CMS Contract No. 500-900-0061-TO#5

November 2004

This project was funded by the Centers for Medicare & Medicaid Services under contract no. 500-900-0061-TO#5. The statements contained in this report are solely those of the authors and do not necessarily reflect the views or policies of the Centers for Medicare & Medicaid Services. RTI assumes responsibility for the accuracy and completeness of the information contained in this report.

---

\*RTI International is a trade name of Research Triangle Institute.



## **ACKNOWLEDGMENTS**

The project team acknowledges the contributions of our current and former project officers: Amy Heller and Chris Smith Ritter. We would also like to thank Sharon Barrell for editing the report, and Roxanne Snaauw and Loraine Monroe for their assistance in document preparation.



# CONTENTS

Executive Summary .....	1
1. Introduction and Background .....	11
1.1 Two Ways to Look at Reasons for Voluntary Disenrollment.....	15
1.2 Conceptual Model.....	16
1.3 Analyses to be Conducted/Research Questions to be Answered with the 2001– 2002 Surveys and Comparisons Across Time .....	17
2. Survey Methods and Results.....	19
2.1 Survey Methods .....	19
2.2 Sample Design and Selection.....	21
2.3 Nonresponse Analysis and Weighting.....	25
2.3.1 Nonresponse Analysis.....	25
2.3.2 Disenrollee Design Weights .....	26
3. Variable Creation and Selection, and Sample Statistics .....	27
3.1 Variable Creation for the Beneficiary-Level Analysis .....	27
3.1.1 Outcome Variable Creation .....	27
3.1.2 Subgroup Variable Creation .....	27
3.1.3 Other Variables .....	35
3.1.4 Sample Size.....	36
3.1.5 Address Matching for Market Data .....	36
3.2 Variable Creation for the Plan-Level Analysis.....	39
3.2.1 Variables from the Medicare CAHPS® Disenrollment Reasons Survey .....	40
3.2.2 Other Variables.....	41
4. Beneficiary-Level Analysis and Results.....	43
4.1 Descriptive Subgroup Analysis.....	43
4.1.1 Top Six Reasons among 33 Preprinted Reasons.....	43
4.2 Multivariate Statistical Methods and Results .....	49
4.2.1 Model Description and Empirical Estimates From the AR Binary Logistic Model.....	50
Summary of Binary Logit Results: Reason by Reason.....	55
4.2.2 Model Description and Empirical Estimates from the Generalized Logit Estimation of the MIR.....	59
5. Plan-Level Results .....	69
5.1 Descriptive Analysis .....	69
5.2 Multivariate Analysis.....	76

6.	Conclusions.....	85
6.1	Summary of Findings.....	85
6.1.1	Summary of Findings from Beneficiary-Level Analysis.....	85
6.1.2	Findings from Multivariate Plan-Level Analysis .....	88
6.2	Limitations of the Analyses .....	88
7.	References.....	91

## Appendices

A1.	2000 Medicare CAHPS Disenrollment Reasons Questionnaire.....	A1-1
A2.	2000 Medicare CAHPS Disenrollment Reasons Grouping Methodology .....	A2-1
A3.	Robustness checks for Generalized Logit Model Specification .....	A3-1

## List of Figures

1	MMC voluntary disenrollees to FFS compared with those to another MMC .....	14
2	Conceptual model of the context for plan disenrollment.....	17
3a	Top six reasons cited from among all 33 preprinted reasons, 2000–2002.....	45
3b	Top six reasons given by disabled disenrollees under age 65, 2000–2002 .....	46
3c	Top six reasons for disenrollment given by the disabled (under age 65) versus disenrollees aged 65 and older, 2001 and 2002 .....	47
4	National-level percentage of MIRs cited: 2000–2002 .....	48
5	Proportion of disenrollees with multiple switches in 2000–2002.....	49
6a	2001 voluntary disenrollment rates.....	70
6b	2002 voluntary disenrollment rates.....	71
7	2002 vs. 2001 adjusted voluntary disenrollment rates.....	72

## List of Tables

1	Percentage of plan members who left their Medicare managed care plan and the general reasons why in 2002.....	12
2	Sampling window/data collection schedule for the 2002 Reasons Survey.....	20
3	Reasons Survey sample size by quarter .....	20
4	Sample distribution and response rate by quarter: 2000 through 2002 Reasons Surveys.....	22
5	Final disposition of the 2000 through 2002 Reasons Survey samples.....	24
6a	Assignment of 33 preprinted reasons for leaving a plan to eight groupings of reasons, 2002 and 2001, with top six reasons in each year bolded.....	28
6b	Assignment of MIR for leaving a plan to eight groupings of reasons, 2002 and 2001, with top six reasons in each year bolded .....	30
7	Description of categorical subgroup variables, n = 21,687 (2002) and 24,495 (2001) .....	32
8	Variables used in beneficiary-level logistic regression of eight groupings for the 33 preprinted reasons, disenrollment-weighted sample statistics (n = 21,687 in 2002; n= 23,985 in 2001, superscript ‘1’ denotes the reference category).....	37
9	Other variables used in the MCO-level analysis of disenrollment rates (2001: n = 163; 2002: n = 153).....	42
10	Reasons for disenrollment, and associated drivers .....	44

11	Empirical results (odds ratios) from the individual logistic regression estimation of each of the eight AR groups: n = 23,958 for 2001; n = 20157 for 2002; Overall significance >99 percent; shaded rows are reference group .....	52
12	Results (odds ratios) from GLM estimation of the MIR for disenrollment: n = 22,470 in 2001; n = 18,345 in 2002; Overall significance >99.9 percent; shading indicates reference group .....	61
13	Disenrollee characteristics by MCO, 2001 and 2002 .....	72
14	Disenrollment reasons cited by MCO, 2001 and 2002 .....	73
15a	Were higher rates associated with different types of reasons for leaving in 2001? .....	73
15b	Were higher rates associated with different types of reasons for leaving in 2002? .....	74
16a	Correlation between MCO-level reason groups, 2001 .....	74
16b	Correlation between MCO-level reason groups, 2002 .....	75
17	Correlation between MCO-level reason groups in 2001 and 2002 .....	75
18a	What plan and market characteristics were associated with disenrollment rates in 2001 (n = 163)? .....	76
18b	What plan and market characteristics were associated with disenrollment rates in 2002 (n = 153)? .....	77
19	Were disenrollment rates associated with particular disenrollee characteristics in 2001 and 2002? .....	78
20	Are disenrollment rates associated with reasons for leaving? .....	79
21	Are disenrollment rates associated with disenrollee characteristics and reasons for leaving in 2001 and 2002? .....	80
22	Are disenrollment rates associated with disenrollee characteristics and reasons for leaving, 2001 and 2002 combined? .....	81
23	Are disenrollment rates associated with plan and market characteristics in 2001 and 2002? .....	82
24	Are disenrollment rates associated with plan and market characteristics in 2001 and 2002 combined? .....	83
25	Results for final full regression model of MMC disenrollment rates in 2001 and 2002 combined .....	84

---

Symbols Used in Tables

- Category not applicable
  - \*\* Significant at the 99% level of confidence.
  - \* Significant at the 95% level of confidence.
  - (\*) Significant at the 90% level of confidence.
-



## EXECUTIVE SUMMARY

### Introduction

The Centers for Medicare & Medicaid Services (CMS) funds the implementation of an annual national survey to identify the reasons beneficiaries voluntarily leave their Medicare Advantage (MA) health plans. The Medicare CAHPS<sup>®</sup> Disenrollment Reasons Survey (hereafter called the Reasons Survey) data are intended for several uses:

- To provide information to help beneficiaries make better informed health plan choices.
- To assist Medicare managed care (MMC) plans in identifying areas where they might focus their quality improvement activities.
- To enable CMS to monitor MMC plan performance at different geographic levels and for individual plans.

The Reasons Survey fulfills the obligation that all Medicare plans with contracts with physicians or physician groups that are at high risk of referral to specialists to conduct an annual disenrollment survey. In addition, the Reasons Survey provides information to support the public reporting of disenrollment rates on all MMC organizations (required by the Balanced Budget Act of 1997) that began in 2000. In 2002, CMS began reporting reasons for disenrollment to help make these disenrollment rates more meaningful to beneficiaries making health plan choices.

Unlike the privately insured, who can usually only switch plans once per year, Medicare beneficiaries who choose to enroll in a private MA plan need only stay in that plan for a minimum of one month. “Voluntary” disenrollment is an important outcome because it may reflect member satisfaction or plan quality (U.S. GAO, 1996; U.S. GAO, 1997; U.S. GAO, 1998; Buchmueller, 2000). Alternatively, voluntary disenrollment may reflect the availability of other plans with preferred characteristics such as lower premiums or better benefits or greater choice of providers. With the continued emphasis in the MMA on providing private health plan options for Medicare beneficiaries, understanding the determinants of consumers’ choices among competing health plans remains an important topic.

Analysis of data from the first year of the Reasons Survey focused on providing primarily descriptive results. Analyses of the 2001 Reasons Survey data was more comprehensive and addressed several research questions. Building on this analysis of voluntary disenrollment during 2000 and 2001, this report provides a more comprehensive set of analyses to help the reader better understand the determinants of voluntary disenrollment during 2002 (i.e., why Medicare beneficiaries choose to leave their MMC plans).

### Two Ways to Look at Reasons for Voluntary Disenrollment

This report includes two different ways to measure beneficiaries’ reasons for disenrollment: all reasons (AR) each survey respondent gave for leaving and each survey respondent’s most important reason (MIR) for leaving. Results of AR are derived from

responses to 33 preprinted reason items on the Reasons Survey (e.g., Did you leave health plan X for reason Z...?) and one two-part “other reasons” fill-in item (e.g., Were there other reasons... if so please describe them.)<sup>1</sup> Respondents could choose as many of the 33 preprinted reasons as desired. By contrast, the MIR is derived from a single survey response item—a fill-in survey question: “What was the one most important reason you left health plan X?” Responses to this MIR question were coded in a manner similar to the preprinted reason items.

For purposes of analysis and reporting, individual survey responses to both the AR and MIR survey questions were assigned to a set of eight more general categories of reasons for leaving. These eight categories, or “reason groupings” (and the abbreviated labels we use to refer to these groupings), are as follows:

1. Problems with information from the plan (Plan Information).
2. Problems getting doctors you want (Doctor Access).
3. Problems getting care (Care Access).
4. Problems getting particular needs met (Specific Needs).
5. Other problems with care or service (Other Care or Service).
6. Premiums or co-payments too high (Premium/Costs).
7. Co-payments increased and/or another plan offered better coverage (Co-payments/Coverage).
8. Problems getting or paying for prescription medicines (Drug Coverage).

Respondents could be assigned to multiple AR groupings depending on how many of the 33 individual items they cited and the distribution of those items across the eight reason groupings. In contrast, respondents were assigned to only one MIR grouping based on their response to this single item. For consumer reporting and some of the analysis, these eight groups were collapsed further into five MIR groups: Care Access, Specific Needs, and Other Care or Service were combined into a general Care-related issues category, and Premium/Costs and Co-payments/coverage were collapsed into a general Premium and Co-pays category.

## Methods

The target population for the 2002 Reasons Survey consisted of Medicare beneficiaries who *voluntarily* left one of 170 MMC organizations and continuing cost contracts during calendar year 2002. Although data are analyzed and reported on an annual basis, the Reasons Survey is conducted on a quarterly basis to determine the *reasons* Medicare beneficiaries leave their MMC plans. A sample of Medicare beneficiaries who disenroll during one quarter is selected at the beginning of the next quarter, with data collection taking place over the next 4 months. The Reasons Survey is administered as a mail survey with telephone follow-up of

---

<sup>1</sup>A copy of the entire 2002 Medicare CAHPS Disenrollment Reasons Survey is provided in Appendix A-1.

nonrespondents. The final response rate for 2002 was 66.3 percent. The data were weighted and adjusted for nonresponse. After removing responses from individuals whose employers no longer offered the health plan in question, and those who disenrolled to join the TriCare for Life program, the nationally representative analytic sample included 21,687 Medicare beneficiary respondents who *voluntarily* disenrolled from 170 MMC organizations during 2002.

To model the complex environment that influenced beneficiary reasons for disenrollment, we considered beneficiary-level variables, variables that may be important in their neighborhood or healthcare market, and variables describing the plan from which they disenrolled. We selected subgroup variables from items available on the Reasons Survey and/or available from CMS administrative records. In addition to variables that identify the subgroups of Medicare beneficiaries traditionally considered to be particularly vulnerable, we also examined specific types of disenrollees (e.g., those disenrolling to another managed care plan versus those disenrolling to fee-for-service [FFS] coverage). The beneficiary subgroup variables chosen for this analysis fall into four main categories: health status, health insurance characteristics, other disenrollee characteristics, and sociodemographic variables. We used data from a number of other sources (other than the Reasons Survey) to compile plan-specific variables and market-level variables.

We conducted two broad types of analyses—beneficiary-level and plan-level. Examining both types allowed us to answer important research questions, shedding light on different perspectives of the complex beneficiary choice decisions. The objective of the beneficiary-level subgroup analysis was to determine whether beneficiaries with different health status, health insurance, health care utilization, and sociodemographic characteristics chose to leave MMC plans for different reasons. The objective of the plan-level analysis was to investigate the assertion that reports of plan disenrollment rates can suggest beneficiaries' relative satisfaction with various attributes of their plans, including quality of care.

At the beneficiary level, we conducted both descriptive and multivariate analyses of the two different types of reasons (AR and the MIR). The descriptive analysis examined whether differences in subgroups in the propensity to cite each reason. The multivariate analysis allowed us to control for confounding and other factors when examining differences for disenrollment among subgroups. Since the two types of reasons have different properties, we used different empirical models for the AR and the MIR multivariate analyses. For the AR data, we used binary logistic models to estimate the probability of a beneficiary citing at least one reason in that grouping, with a separate model for each separate reason grouping. For analysis of the MIR, since beneficiaries could only state one reason as their most important, we were able to use a multinomial approach that allowed us to assess the importance of each reason group relative to a reference group, with Premium and Co-pays as the reference group.

The outcome variable for the plan-level analysis was the 2002 adjusted voluntary disenrollment rate for MMC organizations. We calculated these rates based on MMC enrollment data and adjusted them using survey results reflecting those who left when their employer dropped the plan, those who left to join TRICARE, and those who moved out of the plan service area.

After conducting preliminary descriptive and bivariate analyses to examine potential explanatory variables, we ran a series of multivariate regression models to investigate relationships between MMC disenrollment rates and groups of potential covariates, due to the small number of MMC plans available for analysis. In our first model, we examined the relationship between disenrollment rates and the characteristics of disenrollees in each MMC plan. In the next model, we examined relationships between disenrollment rates and disenrollees' reasons for leaving. A third model included significant disenrollee characteristics and reasons for leaving. We followed a similar process when introducing other types of variables that were measured at the plan- or market-level. Using this approach, we attempted to identify the best possible model for explaining plan-level disenrollment rates based on disenrollee characteristics, disenrollee's reasons for leaving, other plan characteristics, and market characteristics.

## **Findings**

### **Beneficiary-Level Results**

The factors that motivated a Medicare beneficiary to enroll or disenroll from a given health plan were multifaceted. A variety of complicated and interrelated issues played roles in this decision, including costs, provider availability, patient provider communication, benefit packages, and issues related to accessing care. The top six of the 33 possible reasons beneficiaries cited (and the corresponding percentage of beneficiaries) for disenrolling from their health plan were:

- Another plan offered better benefits or coverage for some types of care or services (47 percent).
- Another plan would cost you less (44 percent).
- The plan started charging you a monthly premium, or increased the monthly premium that you paid (38 percent).
- The plan increased the co-payment that you paid for prescription medicines (32 percent).
- The plan increased the co-payment for office visits to your doctor and for other services (31 percent).
- The plan did not include the doctors or other health care providers you wanted to see (29 percent).

The premium/costs and co-payment categories were the two AR groups that contained the most commonly cited individual reasons noted above. The premium/costs category was also the most commonly cited group for the MIR analysis, suggesting consistency in terms of the reasons cited across the two types of categorizations.

A particular question we sought to answer with the multivariate analysis was, "Are beneficiaries in some subgroups of MMC plan voluntary disenrollees more likely to cite specific

reasons for disenrollment, once confounding contextual factors are held constant statistically?” We found that, even controlling for confounding by plan-level, market-level, and other subgroup characteristics, there were significant differences among the subgroups in the reasons cited for disenrollment. In fact, once these sources of confounding were controlled for statistically, we found significant differences across subgroups that were not always apparent in the descriptive (bivariate) analysis, especially for the MIR.

A summary of key findings about specific subgroups that were consistent for both AR and MIR in 2001 and 2002 follows (see Exhibits E-1 and E-2):

- The **nonelderly disabled** were more likely to cite Premium/Costs reasons than the youngest elderly (aged 65–69) as a reason for leaving
- The **oldest elderly** (aged 75 and over) were less likely than the youngest elderly to cite concerns about Premiums, Co-pays, and Drug Coverage as reasons for leaving. Furthermore, they were less likely to cite Drug Coverage than Premiums and Co-pays as their most important reason for leaving.
- **African Americans** were less likely than non-Hispanic Caucasians to state Doctor Access as a reason for leaving and, specifically, versus Premium and Co-pays, as their most important reason for leaving.
- Disenrollees with less than a high school **education** were less likely to cite problems with Doctor Access than Premium and Co-pays as their most important reason for disenrolling.
- Individuals with worse **self-assessed health status** were significantly more likely (than those reporting better health) to cite problems with Care Access or Specific Needs as reasons for leaving. Furthermore, they were more likely to indicate that all Care-related issues (Care Access, Specific Needs, and Other Care or Services ) were their most important reasons for leaving versus Premium and Co-pays.
- Individuals who left to go to another MMC plan were less likely to report problems with Plan Information and Care Access, and more likely to report concerns about Drug Coverage than those who joined FFS Medicare.

Another question we addressed was, “What plan and market characteristics are associated with beneficiaries citing specific reasons for disenrollment, and how do these contextual factors interact in their influences on beneficiary decisions?” We found that various plan- and market-level effects, such as the level of managed care penetration and the availability of physicians in the state, were important determinants of disenrollment decisions. Furthermore, the impact of combinations of several of these effects when they occurred in the same markets was even greater, suggesting significant geographic variation in choice environments.

**Table E-1**  
**Summary of binary logistic analysis of All Reasons:**  
**2001–2002**

Reason Group	Disenrollees who were more likely to cite reason in both 2001 and 2002	Disenrollees who were less likely to cite reason in both 2001 and 2002
Plan Information	<p>Hispanics and African Americans (compared with non-Hispanic Caucasians)</p> <p>Those reporting fair to poor health (compared with persons reporting excellent health)</p> <p>Those who were most dissatisfied with their health plan</p>	<p>The older elderly (compared to the 65 to 69 reference age group)</p> <p>Those who disenrolled to another MMC plan (compared to disenrollees to FFS)</p> <p>People formerly in plans with a larger market share</p>
Doctor Access	<p>Those who were most dissatisfied with their former plan</p> <p>Those formerly in plans with drug coverage</p> <p>People residing in more urban places</p>	<p>Males, African Americans, and dually eligible persons</p> <p>Persons with less than a ninth grade education</p> <p>People formerly in plans with a larger market share</p>
Care Access	<p>Hispanics (compared to non-Hispanic Caucasians)</p> <p>Those reporting fair to poor health (compared with those in excellent health)</p> <p>Those who were more dissatisfied with their former plan</p> <p>Those formerly in plans with drug coverage</p> <p>Those formerly in plans with longer tenure</p>	<p>Those who disenrolled to another MMC plan</p> <p>Those in markets with greater managed care penetration in the private market</p>
Specific Needs	<p>Those reporting fair to poor health (compared with those in excellent health)</p> <p>Those who were more dissatisfied with their former plan</p> <p>People living in areas with greater shortages of doctors</p>	
Other Care or Service	<p>Hispanics (versus non-Hispanic Caucasians)</p> <p>Those who were more dissatisfied with their former plan</p>	
Premium/ Costs	<p>The nonelderly disabled (compared with those aged 65 to 69)</p> <p>Males (versus females)</p> <p>African Americans (versus non-Hispanic Caucasians)</p> <p>Less educated persons</p> <p>Dually eligible persons</p>	<p>The oldest elderly (compared with those aged 65 to 69)</p> <p>Those formerly in plans with drug coverage</p> <p>People residing in areas with physician shortages</p> <p>People residing in poorer elderly communities.</p>
Co-payments/ Coverage	<p>Those reporting fair health (compared with those in excellent health)</p> <p>People in markets with greater physician shortages</p>	<p>The oldest elderly (versus those aged 65 to 69)</p>

(continued)

**Table E-1**  
**Summary of binary logistic analysis of All Reasons:**  
**2001–2002 (continued)**

Reason Group	Disenrollees who were more likely to cite reason in both 2001 and 2002	Disenrollees who were less likely to cite reason in both 2001 and 2002
Drug Coverage	The nonelderly disabled (compared with those aged 65 to 69) People reporting good, fair, to poor health (compared to those in excellent health) Those formerly in plans with drug coverage People who disenrolled to another MMC plan (compared to disenrollees to FFS) People in markets with greater physician shortages People residing in more urban places	The oldest elderly (compared with those aged 65 to 69) People formerly in plans with a larger market share

### **Plan-Level Results**

In the plan-level analysis, we found the following in response to three specific research questions.

*Are higher voluntary plan disenrollment rates associated with citing specific types of reasons?*

In the absence of controls for any other factors, higher plan-level disenrollment rates were moderately associated with higher percentages of disenrollees citing drug coverage issues, doctor access, plan information problems, specific needs issues, and co-payments/coverage issues.

*Do high disenrollment rates suggest problems with access or quality of care for certain beneficiaries?*

When we introduced information to control for the characteristics of disenrollees along with their reasons for leaving a plan, we found that higher disenrollment rates were associated with higher percentages of disenrollees who had not graduated from high school, who were Hispanic, who left their plan to go to another MMC plan (rather than Original Medicare), and who cited problems with doctor access or concerns about premium/costs as their reasons for leaving. Higher disenrollment rates were associated with lower percentages of disenrollees reporting poor or fair health and lower average ratings of their former health plan. In other words, we found no evidence to support the assertion that higher disenrollment rates may suggest problems with quality of care.

**Table E-2**  
**Summary of generalized logit analysis of Most Important Reasons for leaving: 2001–2002**

Reason Group	Disenrollees more likely to cite as most important reason than premium/costs, in both 2001 and 2002	Disenrollees less likely to cite as most important reason than premium/costs, in both 2001 and 2002
Plan Information	<p>People who were more dissatisfied with their former plan</p> <p>People who disenrolled from plans with a larger market share that also had longer tenure with the Medicare program</p>	<p>People who disenrolled to another MMC plan (compared to disenrollees to FFS)</p>
Doctor Access	<p>Persons formerly in plans with drug coverage</p> <p>Persons formerly in plans with longer tenure with Medicare</p> <p>Persons residing in more urban areas</p> <p>People who disenrolled from plans with a larger market share that also had longer tenure with the Medicare program</p> <p>People who disenrolled from plans with a larger market share in markets with greater managed care penetration</p> <p>People who disenrolled from plans with a larger market share in markets with greater physician shortage</p>	<p>The under-65 disabled</p> <p>All ethnic groups relative to non-Hispanic Caucasians</p> <p>Persons with lower education levels</p>
Care Access	<p>The oldest elderly (aged 75+)</p> <p>People who were more dissatisfied with their former plan</p> <p>People who disenrolled from plans with a larger market share that also had longer tenure with the Medicare program</p> <p>People who disenrolled from plans with a larger market share in markets with greater physician shortage</p>	<p>The under-65 disabled</p> <p>Other non-Hispanic (versus non-Hispanic Caucasian)</p> <p>Persons with worse health status</p>
Drug Coverage	<p>People reporting worse health status</p> <p>People who were more dissatisfied with their former plan</p> <p>People formerly in plans with drug coverage and longer tenure in Medicare</p>	<p>The oldest elderly (aged 75+) were less likely than those aged 65 to 69</p> <p>People in markets with higher managed care penetration</p>

*What plan and market characteristics are associated with beneficiaries leaving plans?*

We examined the relationships between disenrollment rates and a variety of characteristics of the MMC plans themselves, as well as the markets in which they operate. We found that higher disenrollment rates were associated with higher MMC payments in the plan’s market, for-profit tax status, and a greater percentage of the population in the state being

underserved by primary care physicians. Lower disenrollment rates were associated with having a lower percent share of the MMC market.

Since this analysis included two years of data, we are more confident in asserting that higher disenrollment rates are more likely to be associated with issues surrounding providers and costs, rather than problems with quality. This is further supported by the fact that higher disenrollment rates were associated with fewer disenrollees reporting poor or fair health. However, higher disenrollment was associated with a greater number of Hispanic disenrollees and more disenrollees without a high school education. Higher disenrollment rates were also associated with some specific plan and market characteristics, such as for-profit tax status, more disenrollment to other MMC organizations (rather than to Original Medicare), higher payment rates to MMC organizations, and less availability of physicians in the state. In other words, disenrollment rates appear to be a better measure of “health care market” performance than of “health care quality” performance.



## SECTION 1 INTRODUCTION AND BACKGROUND

Two legislative actions caused the Centers for Medicare & Medicaid Services (CMS) to undertake the implementation of a nationwide survey of Medicare voluntary disenrollees from each Medicare managed care (MMC) plan. First, under the Physician Incentive Regulation Act of 1997, all Medicare and Medicaid plans that have contracts with physicians or physician groups that are at high risk of referral to specialists are required to annually conduct an enrollment and a disenrollment survey and report the results of both to CMS. In 1997, CMS pledged to MMC plans that it would develop a disenrollment survey and implement it nationwide to relieve those plans qualified for inclusion in the survey of the burden of conducting their own surveys. Second, along with various other mandates to support and inform Medicare beneficiaries, the Balanced Budget Act of 1997 (BBA) required that CMS report 2 years of health plan-level disenrollment rates on all MMC organizations.

Voluntary disenrollment rates from managed care plans are often viewed as a good “summary” indicator of member satisfaction and plan quality (U.S. GAO, 1996; U.S. GAO, 1997; U.S. GAO, 1998). Because “managed care” relies on the ability of patient-consumers to choose among competing health insurance plans, “voluntary disenrollment” has been recognized as an important outcome, one that may reflect plan performance and satisfaction with care (Buchmueller, 2000). Interest in disenrollment has been reinforced by the recent passage of Medicare reform legislation that continues to rely on private health plan options.

To satisfy the BBA requirement, CMS not only reports plan disenrollment rates on [www.medicare.gov](http://www.medicare.gov) but also provides information on *why* people left plans. Disenrollment rates are calculated from CMS’ enrollment results and then are paired with information on the MIR for leaving a plan, collected via the Medicare Consumer Assessment of Health Plans (CAHPS<sup>®</sup>) Disenrollment Reasons Survey (hereafter called the Reasons Survey). Table 1 provides an example of how this information is displayed at [www.medicare.gov](http://www.medicare.gov).

Debate exists over the relative role that member dissatisfaction plays in explaining voluntary disenrollment rates (Rector, 2000; Riley, Ingber, and Tudor, 1997; Schlesinger, Druss, and Thomas, 1999) and the suitability of disenrollment rates as a valid indicator of plan quality (Dallek and Swirsky, 1997; Newhouse, 2000; Rector, 2000; Riley, Feuer, and Lubitz, 1996; Schlesinger, Druss, and Thomas, 1999; U.S. GAO, 1998). The U.S. Government Accounting Office (GAO) (1996) issued a report in October 1996 urging public disclosure of disenrollment rates to help Medicare beneficiaries choose among competing plans. In later testimony to the U.S. Senate, the GAO reiterated the value of disenrollment information as an indicator of health plan quality (U.S. GAO, 1997).

A number of possible explanations for disenrollment have been identified. Reese (1997), for instance, suggests a link between rates of disenrollment and the magnitude of out-of-pocket costs, such as premiums and co-payments. Burstin and colleagues (1998/1999) point to problems with discontinuity of care as the driving motivator behind an individual opting to leave for a different health plan. Empirical studies have consistently shown a strong association between the decision to leave a health plan and an individual’s satisfaction with his care (Rossiter et al., 1989; Sainfort and Booske, 1996; Lewis, 1992). However, in the study by

**Table 1**  
**Percentage of plan members who left their Medicare managed care plan and**  
**the general reasons why in 2002**

Health plans	MIRs why members chose to leave		Total percentage of members who chose to leave
	Percentage of members who left because of health care or services	Percentage of members who left because of costs and benefits	
Average in the United States	5	5	10
Average for Alabama	7	9	16
H0151: United HealthCare of Alabama, Inc.	10	6	16
H0154: VIVA Medicare Plus	2	1	3

Schlesinger, Druss, and Thomas (1999), findings suggest that, although disenrollment rates are often used as measures of quality of care in report cards, the dissatisfied do not always disenroll, because it is too costly—especially for those in poor health and those enrolled in HMOs (vs. fee for service [FFS]). By contrast, Morgan et al. (2000) find that some elderly disenrolled from their MMC plans in Florida between 1990 and 1993 to obtain coverage for osteoarthritis-related joint replacement, while Rector (2000) and Newhouse (2000) found that elderly disenrolled after exhausting their drug benefits under their MMA plan. Anecdotal evidence suggests that this sort of “churning” activity (moving from plan to plan to maximize benefits attainable) takes place, and that plans have adjusted their benefit designs, especially regarding prescription drugs, to minimize churning.

Several studies have examined the relationship between voluntary disenrollment and beneficiary characteristics (e.g., Boxerman and Hennelly [1983]; Meng et al. [1999]; Riley, Ingber, and Tudor [1997]; Virnig et al. [1998]). For example, Riley, Ingber, and Tudor (1997) found that voluntary disenrollment rates are higher among black and other not non-Hispanic Caucasian beneficiaries and dually eligible beneficiaries than other beneficiaries. Further, they found that disenrollees to FFS are much less healthy (as measured by death rates) than disenrollees to other MMC plans.

Other studies have addressed the association between plan dissatisfaction and beneficiary characteristics (e.g., Druss et al. [2000]; Riley, Ingber, and Tudor [1997]; Rossiter et al. [1989]; Schlesinger, Druss, and Thomas [1999]). Because significant health disparities and different patterns of health care use exist for racial/ethnic minorities, these subgroups represent particularly important populations to examine in the context of Medicare disenrollment

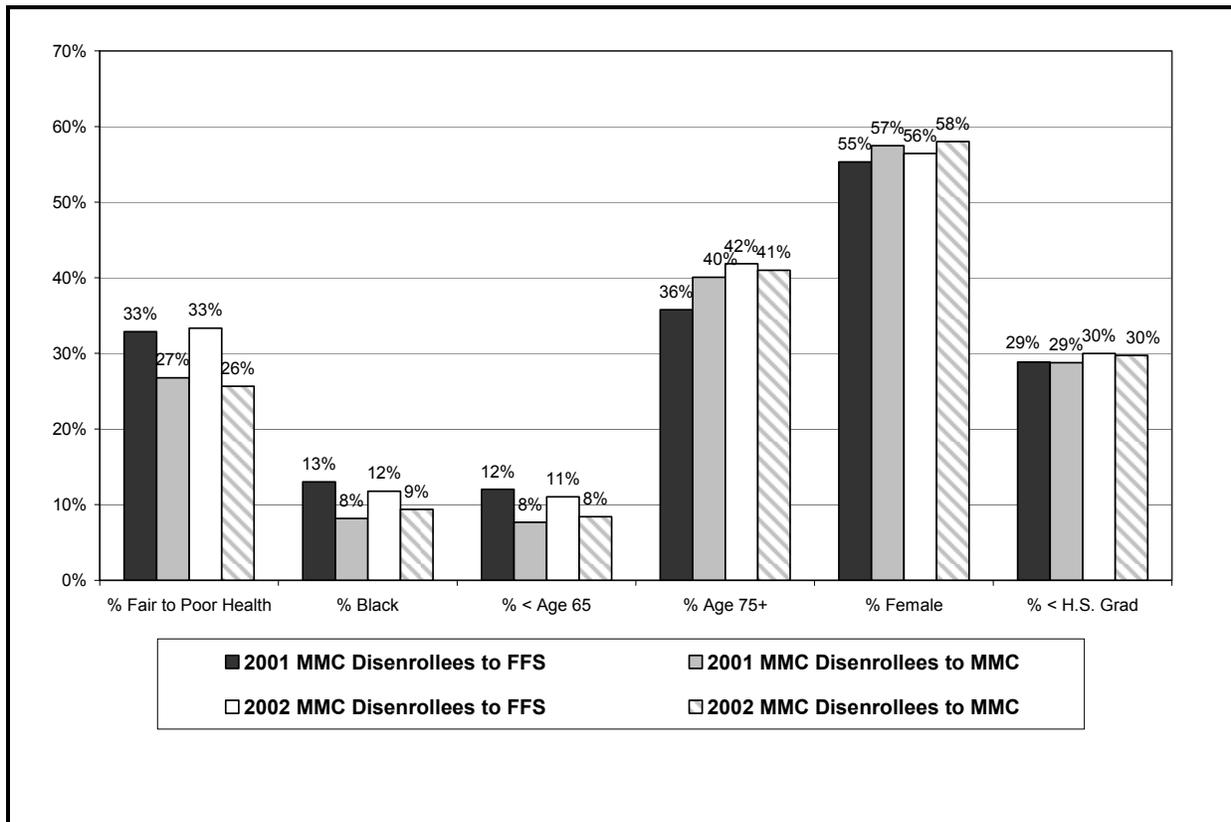
(Langwell and Moser, 2002). Also, the Medicare disabled population is about 14 percent of beneficiaries, and the numbers of Medicare disabled persons is expected to grow by about 3 million over the next 30 years, as the entire Medicare population doubles (CMS ORDI, 2002). Therefore, understanding the experiences of disabled persons in MMC is important as CMS implements managed care throughout the Medicare population.

Although the literature cited above is sizeable and growing, there is little or no published literature to date explaining variation in the observed reasons for leaving Medicare HMOs, variation in reasons for disenrollment among different MMC plans, differences among subgroups in their reasons for leaving, differences in multiple-disenrollment (churning) rates from market to market, or the importance of market factors in the disenrollment decision and as control factors in the analysis. Because the sample shifts over time to cover different geographic footprints (as plans exit, enter, and adjust service areas), holding market factors constant statistically is important, because these factors may confound other parameters of interest (such as beneficiary subgroup effects). Also, the market factors may impinge differently on different subgroups, which could be tested empirically (i.e., are the disabled more likely to leave MMC for FFS in markets where there is little competition among MMC plans?). Riley, Ingber, and Tudor (1997) consider the plan's market share as a determinant of disenrollment from MMC, and Schlesinger, Druss, and Thomas (1999) look at HMO penetration as a factor in disenrollment from commercial HMOs. Meanwhile, Cox et al. (2002) found that MMC plans operating in competitive markets had higher disenrollment rates compared to those in noncompetitive markets. We have identified no other studies that explicitly consider market characteristics and their role in disenrollment decisions.

This report contributes to the literature in all of these dimensions: beneficiary-level analysis and plan-level analysis of the determinants of voluntary disenrollment from MMC plans, holding statistically constant market factors that could confound the interpretation of other parameters of interest. Thus, a unique aspect of the work presented here is the comprehensive analysis of the multifaceted environment in which beneficiaries make choices, including person-specific, plan-specific, and market- or neighborhood-specific variables. Also, because the Medicare MMC lock-in rules are currently scheduled to begin in January 2006, we examine the amount of churning evident among disenrollees in 2000–2002. To this end, we examine the proportion of disenrollees who disenrolled once versus those who disenrolled more than once to another managed care plan.

Figure 1 breaks out the disenrollee population into two groups: MMC disenrollees who go to FFS and MMC disenrollees who go to another MMC. The figure shows that disenrollees whose health is fair to poor, whose health has worsened in the past year, who are black, and who are nonelderly disabled (i.e., less than 65 years old) are disproportionately going to FFS when they leave MMC plans. The Reasons Survey data can shed light on the reasons these and other beneficiaries leave.

**Figure 1**  
**MMC voluntary disenrollees to FFS compared with those to another MMC**



Based on the 2000–2002 estimates from CMS’ administrative data and the CAHPS<sup>®</sup> Reasons Survey, the national voluntary disenrollment rate from MMC plans remained relatively stable between 2000 and 2002, with only a very small decrease from 11 to 10 percent. The aim of the analysis in this report is to better understand the determinants of this rate and any emerging trends over the period 2001–2002. In the 2001 analyses, we conducted both descriptive and multivariate analyses, employing several different levels of analysis, using several measures of outcomes and characteristics of the complex MMC environment (Mobley et al., 2004). In this report, using the 2002 Reasons Survey, we repeat the multivariate analysis done in 2001 and compare findings across the 2 years. Following a conceptual model describing the environment in which beneficiaries make choices, one level of analysis is the beneficiary, another is the plan.

Next we provide information about the two alternative ways that reasons for disenrollment are collected and coded into outcome variables for subsequent analysis (for both the 2001 and 2002 surveys), a brief description of our conceptual model, and an overview of the 2001–2002 analyses and research questions addressed in this report.

## 1.1 Two Ways to Look at Reasons for Voluntary Disenrollment

This report includes two different ways to measure beneficiaries' reasons for disenrollment: all reasons (AR) each survey respondent gave for leaving and each survey respondent's most important reason (MIR) for leaving. For purposes of analysis, individual survey responses to both the AR and MIR survey questions were assigned to a set of eight more general categories of reasons for leaving. These eight categories or "reason groupings" (and the abbreviated labels we use to refer to these groupings) are as follows:

1. Problems with information from the plan (Plan Information).
2. Problems getting doctors you want (Doctor Access).
3. Problems getting care (Care Access).
4. Problems getting particular needs met (Specific Needs).
5. Other problems with care or service (Other Care or Service).
6. Premiums or co-payments too high (Premium/Costs).
7. Co-payments increased and/or another plan offered better coverage (Co-payments/Coverage).
8. Problems getting or paying for prescription medicines (Drug Coverage).

The eight AR groups are derived from responses to the following Medicare CAHPS Disenrollment Reasons Survey questions: 33 preprinted reason items (i.e., Did you leave health plan X for reason Z...?) and one two-part "other reasons" fill-in item (i.e., Were there other reasons... if so please describe them).<sup>2</sup> Respondents could choose as many of the 33 preprinted reasons as desired. Factor and variable cluster analyses were applied to the 33 preprinted reasons to find items that were highly associated, and the result of those analyses formed the basis for a final determination of the eight AR.<sup>3</sup> Each of the 33 preprinted reasons and responses to the "other reasons" question were assigned to one of the eight AR groupings. Respondents were assigned to a particular AR grouping if they cited at least one survey item that belonged to that reason grouping or had an "other reason" code that belonged to that reason grouping. Respondents could be assigned to multiple AR groupings depending on how many of the 33 individual items they cited and the distribution of those items across the eight reason groupings.

By contrast, the MIR groups are derived from a single survey response item—the single MIR variable, created from responses to this Reasons Survey fill-in survey question: "What was the one most important reason you left health plan X?" The same eight-reason groupings scheme used for the AR groups was initially used for assigning specific survey responses to the MIR item into a smaller set of eight aggregated categories. A respondent was assigned to only *one* of the eight MIR groupings on the basis of the coding of the single MIR item the respondent

---

<sup>2</sup>A copy of the entire 2002 Medicare CAHPS Disenrollment Reasons Survey is provided in Appendix A1.

<sup>3</sup>Appendix A2 describes the background and statistical methods used to identify appropriate groupings of reasons.

gave on the questionnaire. Subsequently, for consumer reporting, these eight MIR groups were collapsed further into the five MIR groups used in some of the analyses.<sup>4</sup>

These two different reasons groupings, which capture different dimensions of the choice environment, are described and compared in some detail in Section 3 of this report. Both sets are used as outcomes in the descriptive beneficiary-level analysis, which is reported in Section 4. See Appendix A2 for more about the grouping methodology.

## 1.2 Conceptual Model

Analysis of Medicare Fee-for-Service CAHPS<sup>®</sup> (MFFS-CAHPS) data finds variations in ratings across different population subgroups by age, race/ethnicity, income, education, and health status (RTI, 2003). These findings often mirror results from Medicare Advantage CAHPS<sup>®</sup> (MA-CAHPS) (Barents Group, 2003), which suggests that variations in beneficiary characteristics have consistent effects irrespective of the type of health care plan. Until neighborhood, market, or other spatial dimensions are included specifically in analyses, we cannot know definitively whether variation in reasons with (for example) race is actually due to race or some other factors. Furthermore, in the Barents Group report (2003), market attributes and plan benefits (which vary by level of market competition) are found to be important factors for determining MMC-CAHPS satisfaction ratings. This evidence contributes to the argument that market climate effects, which can vary considerably with geography, are important components to consider in understanding the variation in elderly satisfaction and dissatisfaction with care.

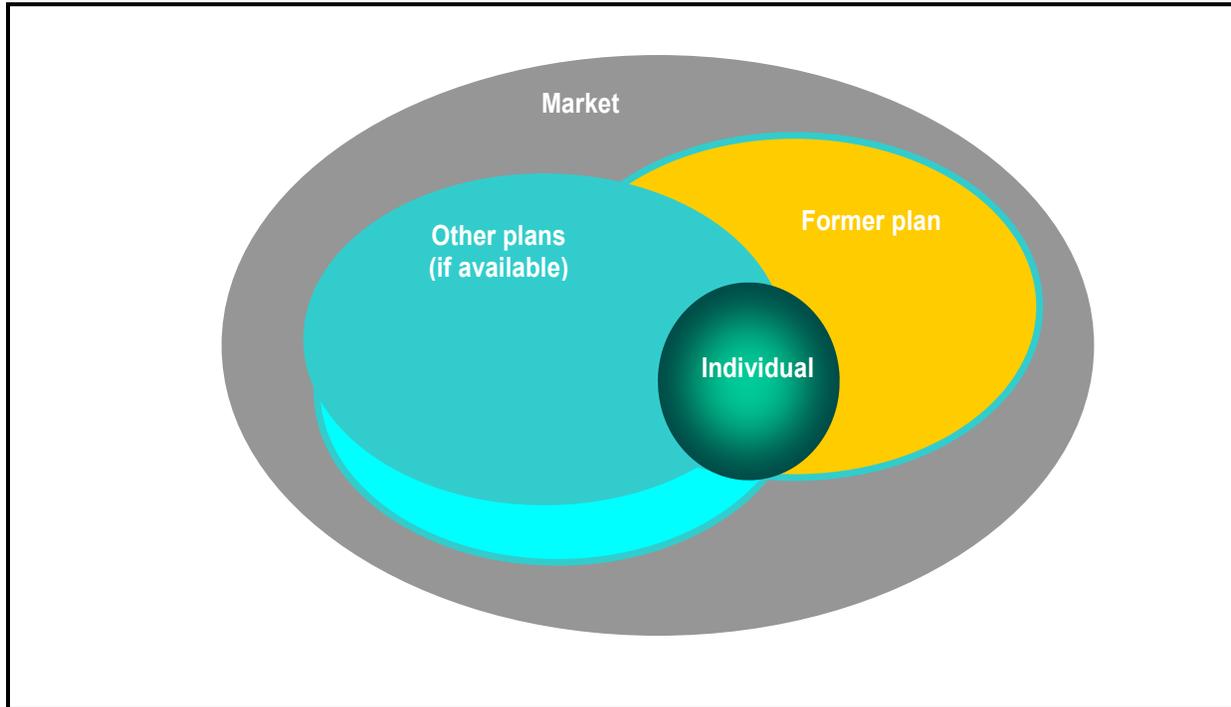
To fully model the complex environment that influences beneficiary reasons for disenrollment, we considered beneficiary-level variables, variables that may be important in beneficiaries' neighborhood or health care market, and variables describing the plan from which they disenrolled. The conceptual model with these three levels of variables is illustrated in Figure 2. The next step was to find available data that could be used to capture the various levels of effects. We identified dozens of available variables measuring aspects of markets and plans in many, and overlapping, ways.

Additional information about the subsets of variables chosen for the analyses is provided in Section 3. These variables were chosen to capture all aspects of the decision environment encompassed in the conceptual model (Figure 2).

---

<sup>4</sup>Some members of the project's Technical Expert Panel (TEP) have expressed concerns about beneficiaries' ability to report only one reason as their MIR for leaving the plan. Those who are unable to identify only one reason may choose to leave this item blank or write in more than one reason. In the latter situation, the current coding rule is to include only the code for the first reason listed. Consequently, the project team designed and conducted a qualitative and quantitative assessment of the MIR to explore how difficult it is for respondents to identify a MIR and whether the current coding rules introduce any systematic bias in the reporting of disenrollment reasons to consumer or plans. A draft of the findings from this assessment was submitted to CMS in March 2004 (RTI, 2003).

**Figure 2**  
**Conceptual model of the context for plan disenrollment**



### **1.3 Analyses to be Conducted/Research Questions to be Answered with the 2001–2002 Surveys and Comparisons Across Time**

In this report, we describe the findings from two types of analyses: beneficiary-level and plan-level—in two cross-sections (2001–2002) and provide a comparison of findings across the 2 years. Examining these levels allows us to answer important research questions, shedding light on different perspectives of the complex beneficiary choice decisions.

The objective of the beneficiary-level subgroup analysis is to determine whether beneficiaries with different health status, health insurance, health care utilization, and sociodemographic characteristics choose to leave MMC plans for different reasons. To meet this objective, as described in Section 4, we conducted both descriptive and multivariate analyses to address three main research questions:

#### *Descriptive Beneficiary-Level Analysis*

1. For each **reason grouping**, which subgroups of MMC plan voluntary disenrollees are more likely than other disenrollees to leave? Did this change in 2002 relative to 2001?
2. For each **subgroup of MMC plan voluntary disenrollees**, for what reasons are they more likely than other disenrollees to leave? Did this change in 2002 relative to 2001?

3. About what proportion of disenrollees only disenroll once, and what proportion disenroll multiple times? Are multiple switchers clustered geographically in the same markets, where there is greater plan choice? Did these proportions change over 2000–2002?

#### *Multivariate Beneficiary-Level Analysis*

4. Are beneficiaries in some **subgroups of MMC plan voluntary disenrollees** more likely to cite **specific reasons** for disenrollment, once confounding contextual factors are held constant statistically? Did this change in 2002 relative to 2001?
5. What plan and market characteristics are associated with beneficiaries citing specific reasons for disenrollment, and how do these contextual factors interact in their influences on beneficiary decisions? Did this change in 2002 relative to 2001?

#### *Multivariate Plan-Level Analysis*

For the multivariate plan-level analysis, described in Section 5, the three main research questions are the following:

1. Are higher voluntary plan disenrollment rates associated with citing specific types of reasons? Did this change in 2002 relative to 2001?
2. Do high MMC plan voluntary disenrollment rates suggest problems with access or quality of care for certain beneficiaries? Did this change in 2002 relative to 2001?
3. What plan and market characteristics are associated with beneficiaries leaving plans? Did this change in 2002 relative to 2001?

In the next section of this report (Section 2), we describe the Reasons Survey methods and results. Section 3 addresses variable development and contains tables of variables and sample statistics. Section 4 contains the methods and empirical results for the beneficiary-level analyses, and Section 5 contains the methods and empirical results for the plan-level analysis. Section 6 contains a summary of all results and a discussion of limitations of the analyses.

## SECTION 2 SURVEY METHODS AND RESULTS

### 2.1 Survey Methods

Although data were analyzed on an annual basis, the 2002 Reasons Survey was conducted on a quarterly basis to determine the *reasons* Medicare beneficiaries leave their MMC plans. A sample of Medicare beneficiaries who disenroll during one quarter is selected at the beginning of the next quarter, with data collection taking place over the next 4 months. The target population for the 2002 Reasons Survey consisted of Medicare beneficiaries who *voluntarily* left an MMC plan during calendar year 2002. The Reasons Survey was administered as a mail survey with telephone follow-up of nonrespondents. Data collection for the survey took place from July 2002 through July 2003.

The sampling frame for the 2002 Reasons Survey consisted of all Medicare beneficiaries who had voluntarily disenrolled from one of 170 Medicare + Choice (M+C) organizations and continuing cost contracts in 2002. To be included in the sample, health plans were required to have contracts in effect on January 1, 2001; that is, they must have been in operation for at least 1 full year prior to the beginning of the survey year. The overall sampling goal for the Reasons Survey was to select up to 388 sample members per plan across all four quarters. The quarters were not sampled evenly, however. We attempted to match our sampling rate with the overall disenrollment pattern to minimize unequal weighting. This is generally based on the previous year's overall pattern.

The year 2002 was unusual because lock-in was scheduled to be implemented. So, rather than base the sampling on the previous year, we anticipated that there would be a higher than normal disenrollment in the first two quarters as beneficiaries made their decisions about their health coverage. Thus, the initial sample distribution was changed to 30 percent in Quarter 1, 22 percent in Quarter 2, 5 percent in Quarter 3, and 43 percent in Quarter 4. However, after Quarter 1, after learning that lock-in was not going into effect, we resumed our sampling strategy implemented in 2001 (the previous year). Even though lock-in seemed imminent, there were not as many Quarter 1 disenrollees as expected. So our final overall distribution in 2002 was 22 percent in Quarter 1, 20 percent in Quarter 2, 23 percent in Quarter 3, and 35 percent in Quarter 4.

As we have traditionally done in every prior survey year, if the number of disenrollees in a plan in any given quarter was not sufficient to meet the targeted number, we attempt to make up those cases in subsequent quarters. For some plans in some quarters, we therefore took a census of disenrollees.

In Quarter 3, we included a sample from a private fee-for-service (PFFS) plan, Sterling Health Insurance. Because this plan spans multiple states, we worked with the other CAHPS teams to develop a sampling plan to reflect geographic strata. Seven states were chosen that had a large number of disenrollees: Louisiana, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, and Washington. Each of these states formed its own stratum. An eighth stratum was created that contained the remainder of the United States. Our intention was to sample 388 disenrollees

from each stratum. However, because sampling began in Quarter 3, we realized that we would fall short of our quota in 2002.

A sample of 53,241 Medicare beneficiaries who had disenrolled from a M+C organization in 2001 was selected to participate in the 2002 survey. The number of Medicare beneficiaries selected in each quarter in the 2002 Reasons Surveys is shown in Table 2. The sample sizes for the 2000 and 2001 Reasons Surveys are shown for comparison purposes in Table 3. Note that the 2002 sample followed the trend of decreasing sample sizes begun the previous year. Because there were fewer M+C organizations under contract with CMS in 2002 than there were in 2001 (approximately 23 plans did not renew their contracts with CMS in 2002; another 9 elected not to renew their contracts with CMS in 2003, which affected our Quarter 4 sample).

**Table 2**  
**Sampling window/data collection schedule for the 2002 Reasons Survey**

Reasons quarter	Sampling window: (During which beneficiaries disenrolled)	Data collection period
1	January–March 2002	July–November 2002
2	April–June 2002	August–December 2002
3	July–September 2002	December 2002–May 2003
4	October–December 2002	March–July 2003

**Table 3**  
**Reasons Survey sample size by quarter**

2000 Reasons Survey		2001 Reasons Survey		2002 Reasons Survey	
Quarter	Sample size	Quarter	Sample size	Quarter	Sample size
1	19,958	1	13,595	1	11,716
2	18,829	2	12,454	2	10,501
3	23,219	3	15,017	3	12,118
4	25,459	4	23,364	4	18,906
Total	87,465	Total	64,430	Total	53,241

## 2.2 Sample Design and Selection

The data were collected via a mail survey with telephone follow-up of nonrespondents. The Reasons Survey was designed to collect information about the reasons why sample members left their former Medicare managed health care plan. The questionnaire<sup>5</sup> contained 77 questions, with specific topics as follows:

- Four screening questions to verify that the respondents were voluntary disenrollees.
- Thirty-seven questions about reasons for leaving the health plan, including 33 preprinted reasons, one question about any other reasons for leaving, and one question that asked for the *MIR* for leaving the plan.
- Six questions asking the respondent to rate the sample health plan and about the care received from that plan and the experience with that plan.
- Eight questions about the appeals process.
- Twenty-two questions about health status and demographic characteristics.

The survey instrument was designed to identify sample members who are considered “involuntary” disenrollees and exclude them from the analysis. Reasons for sample member ineligibility in the 2002 survey included the following:

- The sample member never left the MMC plan for any length of time during 2002.
- The sample member moved out of the area where the MMC plan was available.
- The MMC plan stopped serving Medicare beneficiaries in the sample member’s area.
- The sample member was enrolled in the plan without his or her knowledge (for example, by a salesperson or family member).
- The sample member was accidentally disenrolled from the plan (for example, due to a paperwork or clerical error).

In addition, deceased and institutionalized sample members were ineligible for the Reasons Survey.

The telephone survey instrument was designed to mirror the mail survey instrument as closely as possible and was conducted using computer-assisted telephone interviewing (CATI). Both the mail and telephone survey instruments were customized so that they were plan specific for each respondent. The survey instruments were also translated into Spanish and were available upon request, as either a hard copy questionnaire or as a Spanish-language telephone interview.

---

<sup>5</sup>A copy of the questionnaire used the 2002 Reasons Survey is included in Appendix A.

Data collection efforts on the 2002 Reasons Survey resulted in an overall response rate of 66.3 percent. This response rate was calculated using the following formula:

$$\frac{\text{Numerator} = \text{The number of completed interviews}}{\text{Denominator} = \text{All sample members included in the sample } \textit{minus} \text{ those considered ineligible (i.e., institutionalized, deceased, or involuntary disenrollees)}}$$

The response rate obtained in each quarter and overall for the 2000 through 2002 Reasons Surveys are shown in Table 4.

**Table 4**  
**Sample distribution and response rate by quarter: 2000 through 2002 Reasons Surveys**

Quarter		Number selected	Completed interviews	Response rate
2002	1	11,716	5,927	67.4%
	2	10,501	5,119	67.0%
	3	12,118	5,119	64.4%
	4	18,906	9,589	66.4%
	Subtotal	53,241	25,754	66.3%
2001	1	13,595	6,965	69.5%
	2	12,454	5,587	64.6%
	3	15,017	6,362	65.4%
	4	23,364	11,923	69.9%
	Subtotal	64,430	30,837	67.8%
2000	1	19,958	9,604	65.8%
	2	18,829	8,347	58.9%
	3	23,219	7,395	58.4%
	4	25,459	11,990	67.5%
	Subtotal	87,465	37,336	63.1%

Note that the response rate in the 2002 survey, although higher than that achieved in the 2000 survey, declined slightly from 2001. As Table 4 indicates, the response rate in the 2002 Reasons Survey varied by quarter, ranging from 64.4 percent to 67.4 percent. Because the data collection modes and procedures are the same in all quarters and in all survey years, it is difficult to surmise what factors could have led to the slight decline across the survey years.

The final disposition status of sample members selected into the 2000 through 2002 Reasons Surveys is shown in Table 5. Approximately 27 percent of the 2002 sample was ineligible to participate in the survey; that is, the sample members had died or became institutionalized after the sample was selected, or they were considered involuntary disenrollees. Involuntary disenrollees include sample members who reported the following:

- The plan stopped serving the area.
- They moved out of the plan's service area.
- They were enrolled in the plan without their knowledge.
- They were accidentally disenrolled from the plan due to a paperwork or clerical error.
- They did not disenroll from the sample plan.
- They were not on Medicare.

The "Other Ineligible" category shown in Table 5 includes sample members who marked "yes" to two or more of the questions designed to identify involuntary disenrollees or who reported that they were never on the sample plan. Approximately 7.4 percent of the 2002 sample refused to participate in the survey. We were unable to contact 7.2 percent of mail survey nonrespondents after repeated attempts, and 0.3 percent promised to complete and return the mail questionnaire when they were contacted by telephone but did not. Another 1.2 percent were physically or mentally incapable of participating in the interview, and 0.7 percent did not speak English or Spanish (language barriers). We were unable to obtain a telephone number for 7.7 percent of the mail survey nonrespondents.

The percentage of the sample that was deemed ineligible continued to decline from 2000 to 2002, although several categories of ineligibles showed an increase: deceased, institutionalized, and those who left because they moved outside of the plan's service area. In particular, the percentage of sample members reporting that they moved out of their plans' service area jumped from 6.8 percent in 2000 to 12.5 percent in 2002. The percentage of sample members who reported that they left because the plan was no longer offered to them declined dramatically from 2000 (12.8 percent) to 2002 (2.9 percent), reflecting the fact that fewer plans chose not to renew their contracts with CMS in 2002 and 2001 than did in 2000. The percentage of individuals for whom we were unable to obtain a telephone number declined from 2001 (9.1 percent) to 2002 (7.7 percent), most likely due to the added source of telephone numbers from the Social Security Administration (SSA); however, the percentage of cases we were unable to contact after repeated attempts increased from 2001 (4.9 percent) to 2002 (7.2 percent), likely reflecting the fact that, although we had more telephone numbers, many of them may not have been valid for the sample member.

**Table 5**  
**Final disposition of the 2000 through 2002 Reasons Survey samples**

Sample disposition	2000 Reasons Survey		2001 Reasons Survey		2002 Reasons Survey	
	Number	Percent of total	Number	Percent of total	Number	Percent of total
Completed Interviews	37,336	42.7%	30,837	47.9 %	25,754	48.4%
Mail survey	29,851	34.1%	25,625	39.8%	21,574	40.5%
Telephone interview	7,485	8.6%	5,212	8.1%	4,180	7.9%
Eligible Nonrespondents	21,855	25.0%	14,612	22.7%	13,066	24.5%
Mentally/physically incapable	1,249	1.4%	777	1.2%	659	1.2%
Language barrier	273	0.3%	339	0.5%	391	0.7%
Refusal	6,129	7.0%	4,381	6.8%	3,955	7.4%
Unable to contact after repeated attempts	4,601	5.3%	3,189	4.9%	3,817	7.2%
Promised to return mail survey	213	0.2%	74	0.1%	143	0.3%
Unable to obtain phone number	9,390	10.7%	5,852	9.1%	4,101	7.7%
Ineligibles	28,274	32.3%	18,981	29.5%	14,421	27.1%
Deceased	2,038	2.3%	1,579	2.5%	1,385	2.6%
Institutionalized	1,160	1.3%	1,322	2.1%	1,811	3.4%
Did not leave sample plan	2,950	3.4%	1,898	2.9%	1,859	3.5%
Plan no longer offered	11,181	12.8%	6,116	9.5%	1,556	2.9%
Moved outside plan service area	5,923	6.8%	5,956	9.2%	6,668	12.5%
Paperwork error	N/A	N/A	793	1.2%	422	0.8%
Enrolled by other	N/A	N/A	448	0.7%	158	0.3%
Other ineligibles <sup>1</sup>	5,022	5.7%	869	1.3%	562	1.1%
Eligible Sample Members	59,191	67.7%	45,449	70.5%	38,820	72.9%
Original Sample	87,465	100%	64,430	100%	53,241	100%

<sup>1</sup>Includes respondents who reported not being on Medicare, never being on the sample plan, or who gave inconsistent answers to the screening questions.

Of the 25,305 cases in 2002 considered complete and valid for analytical purposes (Table 4), some were excluded because they were TRICARE cases or employer drops, leaving 21,687 cases. An additional 1,530 were dropped because we were unable to assign plan benefits information to them, resulting in 20,157 cases available for the multivariate beneficiary-level

analysis, or approximately 80 percent of the complete and valid cases. In the 2001 analysis, the final response rate was similar (67.8 percent), and the 2001 cases considered complete for analytical purposes was 30,837 (higher primarily because a greater number of plans were reporting data). After deleting TRICARE and employer drops and cases missing plan benefits data, the analytical file for multivariate analysis was 23,958 observations, or approximately 78 percent of the complete and valid cases. Thus, the samples in 2001 and 2002 were similar in these dimensions.

To determine whether the geographic coverage of the surveys was similar, we compared the counties covered by sampling in 2001 and 2002. Of the entire CAHPS disenrollment sample, only 62 percent (601) of the 975 counties sampled in either year were sampled in both years. Between 2001 and 2002, 70 counties dropped out and 305 counties entered the survey's geographic footprint. For the subgroup of disabled beneficiaries, only 31 percent of counties with disabled beneficiaries were sampled both years, with 108 counties dropping out and 223 new counties entering the sample frame. With these large shifts in geographic coverage, it is extremely important to control statistically for market characteristics that change with the geographic footprint of the sample from year to year.

## **2.3 Nonresponse Analysis and Weighting**

### **2.3.1 Nonresponse Analysis**

After cleaning the data, we conducted a nonresponse analysis on the 2002 Reasons Survey data. We classified sample members as respondents or nonrespondents; response propensities were then modeled using logistic regression in SUDAAN<sup>®</sup>. The initial model included demographics, length of enrollment, dual eligibility status, census region, address indicators, and design variables.

New to the analysis are metropolitan and micropolitan statistical area indicators that the Office of Management and Budget (OMB) developed in June 2003. These definitions are very complex and involve the sizes of core cities within an area, the percentage of urbanization within a county, and economic and social integration between adjacent communities. For simplicity in this study, a metropolitan statistical area always includes at least one urbanized area of 50,000 or more inhabitants. And a micropolitan statistical area always includes at least one urban cluster of 10,000 or more inhabitants but fewer than 50,000.

All of these variables were simultaneously added to the logistic regression model and removed one at a time in a backwards stepwise fashion. Variables were retained if they had a p-value less than 0.20. The final logistic regression model contained the independent variables—age, race, dual eligibility, rapid enrollment, census region, a metropolitan statistical area indicator, and an indicator if the address was a P.O. box. The design variables (health plan and quarter) were of course included and forced to stay in the model.

The response propensity analysis showed that those who were older than 75 and nonwhite were less likely to respond to the survey. Sample members under age 65 were also less likely to respond. Dual eligibles were much less likely to respond. Beneficiaries who had been

with their plan for at least 6 months were more likely to respond than those who disenrolled rapidly.

The census region and metropolitan statistical area indicators were not statistically significant. But because their p-values were less than 0.20, they were retained to contribute to the overall fit of the model. There was a trend of responses improving from east to west across the United States (after accounting for other factors in the model), and there was a tendency for beneficiaries residing in metropolitan areas to have a slightly higher odds of response. Addresses containing a P.O. box, however, were statistically much less likely to complete the survey.

### **2.3.2 Disenrollee Design Weights**

The predicted response propensities were used to adjust the initial design-based weights upward for respondents so that they represented both respondents and nonrespondents; weights for nonrespondents were set to zero. The general approach used to adjust weights for nonresponse is described by Folsom (1991) or Iannacchione, Milne, and Folsom (1991). This approach gives more weight to those who are less likely to respond (i.e., dually eligible, disabled, older, and nonwhite respondents). Consequently, to the extent that the nonresponders may not live in the same places as responders, it is important to control for market factors.

For purposes of nonresponse adjustments, sample members who provided information on eligibility status were treated as respondents. Subsequently, those who were ineligible (deceased, institutionalized, involuntary disenrollees) were also given a weight as if they had completed the survey. Because we do not know the eligibility status of nonrespondents, this approach allowed us to estimate the proportion of ineligible sample members among the nonrespondents based on the respondent sample. When the ineligibles are discarded with their weighted values, the sum of the remaining weights (only including eligible sample members that completed a survey) now represents the *estimated population of eligible disenrollees*.

## SECTION 3 VARIABLE CREATION AND SELECTION, AND SAMPLE STATISTICS

### 3.1 Variable Creation for the Beneficiary-Level Analysis

#### 3.1.1 Outcome Variable Creation

As described in Section 1, reasons for leaving MMC plans were gathered using two different methods: AR and MIR. Both types of reasons were classified into a series of reasons groupings.<sup>6</sup> Tables 6a and 6b show the assignment of reasons survey items and labels to the reason groupings.<sup>7</sup> Each of the eight dichotomous outcome (grouping) variables for the subsequent analyses within this report signifies whether a respondent cited a reason for leaving assigned to that grouping. The top six reasons representing the most prevalent of the 33 underlying AR (Table 6a) and MIR (Table 6b) are bolded. “Doctor access problems” is in the top six for both Reasons groups, as are “Premium/Cost Issues” and “Co-pay/Coverage Issues.” The top six reasons given are quite stable over the 2 years. For the 33 preprinted reasons, “could not pay monthly premium” was replaced in 2002 by “plan increased the co-payment for office visits to your doctor and for other services.” For the MIR, “had problems with the plan doctors or other health care providers” was replaced in 2002 by “plan’s customer service staff were not helpful.”

#### 3.1.2 Subgroup Variable Creation

We selected 17 subgroup variables from items available on the Reasons Survey and/or available from CMS administrative records. In addition to variables that identify the subgroups of Medicare beneficiaries traditionally considered to be particularly vulnerable, we also examined specific types of disenrollees (e.g., those disenrolling to another managed care plan versus those disenrolling to FFS coverage). The subgroup variables chosen for this analysis fall into four main categories: health status, health insurance, other disenrollee, and sociodemographic variables.

- The disenrollee **health status variables** include beneficiaries’ reports of their health status, health status compared to a year ago, combined health status and 1-year health status change (created from the previous two survey items), and number of outpatient visits in the past 6 months.

---

<sup>6</sup>For reporting to consumers, three groupings (problems getting care, problems getting particular needs met, and other problems with care or service) are combined under the label “Getting Care,” and two other groupings (premiums or co-payments too high and co-payments increased and/or another plan offered better coverage) are combined under the label “Premiums, Co-payments, or Coverage.”

<sup>7</sup>In addition to the preprinted reasons, two other reasons were only collected when respondents cited them as their MIR for leaving a plan (i.e., these two reasons were not among the preprinted reasons and thus were not included in the individual-level analysis upon which we based the groupings: “insecurity about future of plan or continued coverage” and “no longer needed coverage under the plan.”) The team manually assigned these two reasons to appropriate groupings.

**Table 6a**  
**Assignment of 33 preprinted reasons for leaving a plan to eight groupings of reasons, 2002**  
**and 2001, with top six reasons in each year bolded**

		Disenrollment weighted percentage	
		All 33 preprinted reasons, 2002	All 33 preprinted reasons, 2001
Concerns about costs and benefits			
Plan Information problems	Given incorrect or incomplete information at the time you joined the plan	9.3	10.4
	After joining the plan, it wasn't what you expected	24.2	25.8
	Information from the plan was hard to get or not very helpful	14.7	14.4
	Plan's customer service staff were not helpful	14.8	15.2
Doctor Access problems	<b>Plan did not include doctors or other providers you wanted to see</b>	<b>29.3</b>	<b>28.9</b>
	Doctor or other provider you wanted to see retired or left the plan	15.6	15.4
	Doctor or other provider you wanted to see was not accepting new patients	4.1	5.1
	Could not see the doctor or other provider you wanted to see on every visit	12.9	12.8
Care Access problems	Could not get appointment for regular or routine health care as soon as wanted	8.4	10.6
	Had to wait too long in waiting room to see the health care provider you went to see	7.3	9.3
	Health care providers did not explain things in a way you could understand	6.4	7.6
	Had problems with the plan doctors or other health care providers	11.6	14.0
	Had problems or delays getting the plan to approve referrals to specialists	11.9	13.5
	Had problems getting the care you needed when you needed it	15.6	18.1
Specific Needs problems	Plan refused to pay for emergency or other urgent care	7.8	6.9
	Could not get admitted to a hospital when you needed to	2.6	2.6
	Had to leave the hospital before you or your doctor thought you should	2.2	2.4
	Could not get special medical equipment when you needed it	3.8	3.0
	Could not get home health care when you needed it	2.8	2.2
	Plan would not pay for some of the care you needed	20.5	15.7

(continued)

**Table 6a**  
**Assignment of 33 preprinted reasons for leaving a plan to eight groupings of reasons, 2002**  
**and 2001, with top six reasons in each year bolded (continued)**

		Disenrollment weighted percentage	
		All 33 preprinted reasons, 2002	All 33 preprinted reasons, 2001
Concerns about costs and benefits			
Other Care or Service problems	It was too far to where you had to go for regular or routine health care	6.3	6.7
	Wanted to be sure you could get the health care you need while you are out of town	7.3	6.4
	Health provider or someone from the plan said you could get better care elsewhere	9.8	7.8
	You, another family member, or friend had a bad experience with that plan	10.4	10.9
Premium/ Cost Issues	<b>Could not pay the monthly premium</b>	24.6	<b>29.1</b>
	<b>Another plan would cost you less</b>	<b>43.8</b>	<b>39.7</b>
	<b>Plan started charging a monthly premium or increased your monthly premium</b>	<b>37.7</b>	<b>39.9</b>
Co-pay/ Coverage Issues	<b>Another plan offered better benefits or coverage for some types of care or services</b>	<b>47.0</b>	<b>40.1</b>
	<b>Plan increased the co-payment for office visits to your doctor and for other services</b>	<b>30.7</b>	25.1
	<b>Plan increased the co-payment that you paid for prescription medicines</b>	<b>31.6</b>	<b>26.2</b>
Drug Coverage issues	Maximum dollar amount the plan allowed for your prescription medicine was too low	24.5	21.6
	Plan required you to get a generic medicine when you wanted a brand name medicine	11.3	9.4
	Plan would not pay for a medication that your doctor had prescribed	17.2	13.0

**Table 6b**  
**Assignment of MIR for leaving a plan to eight groupings of reasons, 2002 and 2001, with top six reasons in each year bolded**

		Disenrollment weighted percentage	
		MIR, <sup>1</sup> 2002	MIR, <sup>1</sup> 2001
Concerns about costs and benefits			
Plan Information problems	Given incorrect or incomplete information at the time you joined the plan	0.78	0.60
	After joining the plan, it wasn't what you expected	0.17	0.20
	Information from the plan was hard to get or not very helpful	0.21	0.20
	<b>Plan's customer service staff were not helpful</b>	<b>5.31</b>	3.7
	Insecurity about future of plan or about continued coverage	0.67	0.5
Doctor Access problems	<b>Plan did not include doctors or other providers you wanted to see</b>	<b>11.57</b>	<b>14.9</b>
	<b>Doctor or other provider you wanted to see retired or left the plan</b>	<b>10.92</b>	<b>9.1</b>
	Doctor or other provider you wanted to see was not accepting new patients	0.06	0.1
	Could not see the doctor or other provider you wanted to see on every visit	0.41	0.4
Care Access problems	Could not get appointment for regular or routine health care as soon as wanted	0.41	0.1
	Had to wait too long in waiting room to see the health care provider you went to see	0.19	0.1
	Health care providers did not explain things in a way you could understand	0.05	0.1
	<b>Had problems with the plan doctors or other health care providers</b>	2.85	<b>5.1</b>
	Had problems or delays getting the plan to approve referrals to specialists	1.78	1.6
	Had problems getting the care you needed when you needed it	1.14	1.9
Specific Needs problems	Plan refused to pay for emergency or other urgent care	0.14	0.30
	Could not get admitted to a hospital when you needed to	2.20	1.6
	Had to leave the hospital before you or your doctor thought you should	0.06	0.1
	Could not get special medical equipment when you needed it	0.36	0.1
	Could not get home health care when you needed it	0.11	0.1
	Plan would not pay for some of the care you needed	1.11	1.5

(continued)

**Table 6b**  
**Assignment of MIR for leaving a plan to eight groupings of reasons, 2002 and 2001, with top six reasons in each year bolded (continued)**

		Disenrollment weighted percentage	
		MIR, <sup>1</sup> 2002	MIR, <sup>1</sup> 2001
Concerns about costs and benefits			
Other Care or Service problems	It was too far to where you had to go for regular or routine health care	1.94	2.5
	Wanted to be sure you could get the health care you need while you are out of town	0.74	0.5
	Health provider or someone from the plan said you could get better care elsewhere	1.46	1.4
	You, another family member, or friend had a bad experience with that plan	0.89	0.6
Premium/ Cost Issues	<b>Could not pay the monthly premium</b>	<b>19.19</b>	<b>16.3</b>
	Another plan would cost you less	3.18	2.5
	<b>Plan started charging a monthly premium or increased your monthly premium</b>	<b>9.48</b>	<b>13.3</b>
Co-pay/ Coverage Issues	<b>Another plan offered better benefits or coverage for some types of care or services</b>	<b>5.46</b>	<b>4.7</b>
	Plan increased the co-payment for office visits to your doctor and for other services	1.32	1.1
	Plan increased the co-payment that you paid for prescription medicines	1.35	0.7
	No longer needed coverage under the plan	2.54	2.8
Drug Coverage issues	Maximum dollar amount the plan allowed for your prescription medicine was too low	4.53	4.1
	Plan required you to get a generic medicine when you wanted a brand name medicine	1.07	0.8
	Plan would not pay for a medication that your doctor had prescribed	4.77	3.5

<sup>1</sup>Percentages based on those who supplied a MIR or for whom one was imputed. The MIR was missing for 8 percent of respondents in 2001 and for 10 percent in 2002.

- The **health insurance variables** include dual eligibility status (derived from the state buy-in indicator from CMS administrative records as a proxy for Medicaid enrollment) and nonelderly disabled status (using age as a proxy).
- **Other disenrollee variables** include choice of coverage after disenrollment, length of time in plan before disenrollment, new personal doctor, whether received information

on how to file a complaint, answers to questions about problems getting care, and quarter in which the disenrollee left their plan.

- Disenrollee **sociodemographic variables** include race and ethnicity, education, and gender.

All subgroup variables described above (except dual eligibility status, choice of coverage after disenrollment, and quarter in which the disenrollee left their plan) are based on respondent-reported survey responses. The nonsurvey-based variables come from the CMS Enrollment Database (EDB). Frequency distributions for these subgroup variables are provided in Table 7.

**Table 7**  
**Description of categorical subgroup variables, n = 21,687 (2002) and 24,495 (2001)**

Variable	Disenrollment weighted percentage, 2002	Disenrollment weighted percentage, 2001
Health status characteristics		
Self-assessed health status		
Excellent	9	8
Very good	27	27
Good	34	35
Fair	23	23
Poor	6	7
Self-assessed health status compared with 1 year ago		
Better now	22	19
About the same	58	58
Worse now	20	23
Combined health status and 1-year health status change		
Excellent to good health that is same or better	65	63
Excellent to good health that is worse	6	7
Fair or poor health that is same or better	15	15
Fair or poor health that is worse	14	15
Number of outpatient visits in the 6 months before disenrollment		
None	10	11
1 to 3	44	49
4 or more	46	40

(continued)

**Table 7**  
**Description of categorical subgroup variables, n = 21,687 (2002) and 24,495 (2001)**  
**(continued)**

Variable	Disenrollment weighted percentage, 2002	Disenrollment weighted percentage, 2001
Health insurance characteristics		
Dual eligibility status		
Yes	15	15
No	85	85
Age		
64 or younger (nonelderly disabled)	10	10
65 to 69	22	25
70 to 74	27	27
75 to 79	21	20
80 or older	20	18
Choice of coverage after disenrollment		
Another managed care plan	50	46
Fee for service	50	54
Other disenrollee characteristics		
Length of time in plan before disenrollment		
Less than 6 months	9	11
6 months or more	91	89
Sampling quarter when disenrollee left plan		
1st: January–March 2002	28	26
2nd: April–June 2002	19	20
3rd: July–September 2002	15	17
4th: October–December 2002	38	37
New personal doctor		
Yes	33	37
No	67	63

(continued)

**Table 7**  
**Description of categorical subgroup variables, n = 21,687 (2002) and 24,495 (2001)**  
**(continued)**

Variable	Disenrollment weighted percentage, 2002	Disenrollment weighted percentage, 2001
Other disenrollee characteristics		
Proxy interview		
Yes	7	7
No	93	93
Received information on how to file a complaint		
Yes	26	25
No	74	75
Problems getting care		
Yes	15	18
No	85	82
Satisfaction with plan		
0—worst	5	6
1	2	2
2	4	3
3	5	4
4	5	5
5	16	17
6	7	7
7	10	9
8	17	17
9	10	9
10—best	18	20

(continued)

**Table 7**  
**Description of categorical subgroup variables, n = 21,687 (2002) and 24,495 (2001)**  
**(continued)**

Variable	Disenrollment weighted percentage, 2002	Disenrollment weighted percentage, 2001
Sociodemographic characteristics		
Race and ethnicity		
Hispanic	13	11
Non-Hispanic Caucasians	71	74
Non-Hispanic black or African American	11	11
Non-Hispanic other	5	5
Education		
8th grade or less	13	12
9th–11th grade	17	16
High school graduate/GED	32	32
Some college/2-year degree	25	24
Bachelor’s degree or more	14	15
Gender		
Male	43	44
Female	57	56

In Table 7, we see that the dual eligibles and nonelderly disabled maintain a constant share of the weighted sample over the 2 years (15 percent and 10 percent, respectively).

### 3.1.3 Other Variables

Other variables at the plan and market levels, described as plan-benefit variables, plan-specific variables, and market-level variables, are listed below, and described more fully in Tables 8 and 9.

- **Plan-specific variables** include for-profit versus nonprofit ownership, years of operation, plan’s CAHPS rating, plan’s primary care provider turnover rate, number

of MMC enrollees in plan, plan's market share of the Medicare market in their service area, and whether the plan offered drug coverage.<sup>8</sup>

- **Market-level variables** include MMC county payment rate for the aged, MMC penetration rate in 2000, change in MMC penetration from 1998 to 2000, level of private HMO+PPO penetration in 2001, percentage of population living in urban areas, percentage of population above age 65, proportion of population aged 65 to 74 in population above 65, percentage of households with elder householder and less than \$30,000 annual income in 1999, percentage of households with elder householder and less than \$15,000 annual income in 1999, percentage of population underserved by primary care providers in 2001, physicians per 1,000 elderly, and percentage of physicians in an area accepting Medicare assignment.

### 3.1.4 Sample Size

Although the sampling frame includes 27,576 observations, 8 percent of the questionnaires were deemed ineligible or incomplete, and 7 percent of respondents were eliminated because their employer no longer offered the health plan in question. In addition, 6 percent of respondents represented beneficiaries who disenrolled from their plan to join the TriCare for Life program in fall 2002; their data were not analyzed. (This was a one-time opportunity for the subset of beneficiaries eligible for military benefits to sign up for a very comprehensive benefits package.) After removing these observations from the sampling frame, the nationally representative analytic sample for 2002 included 21,687 Medicare beneficiary respondents who voluntarily disenrolled from 170 MMC organizations during 2002. Additionally, 193 addresses could not be matched, and some other cases were lost because of missing plan-level data, resulting in only 20,157 of the 21,687 cases included in the AR analyses. For the MIR analyses, cases were excluded if the MIR was not given or could not be imputed, resulting in 18,345 of the 21,687 observations for analysis. For the analytic files, subgroup variables were imputed using hot-deck imputation. Table 8 shows the frequency distributions of the sample on the subgroup variables as a result of these imputations and sample means in 2001 and 2002 for each variable.

### 3.1.5 Address Matching for Market Data

Prior to including contextual variables reflecting the beneficiary's market characteristics, we needed to have an accurate county code for every beneficiary at the time the disenrollment

---

<sup>8</sup>CMS' administrative files for MMC beneficiaries in 2002 only maintained the contract (H) number for each beneficiary, not the specific benefit plan in which an individual was enrolled. Consequently, to include information on benefits in this analysis, it was necessary to assign benefits based on just one of the plans offered by each MCO. In reporting on levels of coverage across beneficiaries, CMS uses an algorithm that assumes that beneficiaries are enrolled in the most generous but least expensive plan available to them. We followed this same rule to assign each beneficiary to a specific benefit plan offered by their MCO in the county to which they were assigned (see Section 3.1.5 for a description of address matching).

**Table 8**  
**Variables used in beneficiary-level logistic regression of eight groupings for the 33**  
**preprinted reasons, disenrollment-weighted sample statistics (n = 21,687 in 2002; n= 23,985**  
**in 2001, superscript ‘1’ denotes the reference category)**

Variable name	Variable description	Units in which data are expressed	Source/date	Mean or percent, 2002	Mean or percent, 2001
IAGE	Age group	1 = 64 or younger <sup>1</sup>	Missing, imputed from CMS EDB, 2001, 2002	10%	10%
		2 = 65 to 69		22%	25%
		3 = 70 to 74		27%	27%
		4 = 75 to 79		21%	20%
		5 = 80 or older		20%	18%
IGENDER	Gender	1 = Male	Missing, imputed from CMS EDB, 2001, 2002	43%	44%
		2 = Female <sup>1</sup>		57%	56%
IEDUC	Education level	1 = 8th grade or less	Missing, imputed by hot-deck method using sample data	13%	12%
		2 = Some high school, but did not graduate		17%	16%
		3 = High school graduate or GED		32%	32%
		4 = Some college or 2-year degree		25%	24%
		5 = 4-year college graduate		7%	8%
		6 = More than 4-year college graduate <sup>1</sup>		7%	7%
IRACE_ETH	Race/ethnicity	0 = Hispanic	Missing, imputed by hot-deck method using sample data	13%	11%
		1 = Non-Hispanic Caucasian <sup>1</sup>		71%	74%
		2 = Non-Hispanic Black/African-American		11%	11%
		3 = Non-Hispanic other		5%	5%
IOVRALLHL	Health status	1 = Excellent	Missing, imputed by hot-deck method using sample data	9%	8%
		2 = Very good		27%	27%
		3 = Good		34%	35%
		4 = Fair		23%	23%
		5 = Poor <sup>1</sup>		6%	7%
IHLTHPLAN	Satisfaction with health plan	0 to 10 = Worst to best	Missing, imputed by hot-deck method using sample data	6.52	6.50
MCAID	Dual eligibility	1 = Yes	CMS EDB, 2001, 2002	0.15	0.15
		0 = No			

(continued)

**Table 8**  
**Variables used in beneficiary-level logistic regression of eight groupings for the 33**  
**Preprinted reasons, disenrollment-weighted sample statistics (n = 21,687 in 2002; n= 23,985**  
**in 2001) (continued)**

Variable name	Variable description	Units in which data are expressed	Source/date	Mean or percent, 2002	Mean or percent, 2001
MNG_Care	Whether disenrolled to another managed care plan of FFS	1 = disenrolled to another managed care plan 0 = disenrolled to FFS plan	Disenrollee sample data, 2001, 2002	0.5	0.46
MDSHORT01	Physician shortage: percentage of population underserved by primary care providers, by state	1%	AARP, 2001: <i>Reforming the Health Care System: State Profiles 2001</i>	8.26	8.45
XPOOR	Elderly poverty: proportion of households with elderly householder with annual income below \$15,000, by county	10%	U.S. Bureau of the Census, 1999	0.26	0.25
XURBAN	Measure of urban intensity: percentage of county population living in an urban area, by county	10%	U.S. Bureau of the Census, 2000	0.93	0.92
MSHAREPLAN	Plan's Medicare market share in their service area, by plan service area	10%	CMS GSA File, 2001, 2002	0.09	0.09
YEARSOP	Plan tenure: number of years plan has been in operation	5 year	CMS Monthly Enrollment Report, 2001, 2002	11.53	11.37
HMOPPO01	Private managed care penetration: the combined penetration of HMOs and PPOs in the private insurance market, by state	10%	InterStudy, 2001	0.64	0.64
DRUGSOME	Whether plan offered drug coverage	0 = No drug coverage 1 = Some drug coverage	CMS administrative files, 2001, 2002	0.83	0.79

decision was made.<sup>9</sup> To determine whether the beneficiary’s address matches the service area covered by the beneficiary’s plan, we used the 2002 Geographic Service Area (GSA) file provided on CMS’ Web site and the 2002 zip code to the Federal Information Processing Standards (FIPS) crosswalk and a 2002 SSA code to the FIPS crosswalk. First, we looked for plan ownership changes and consolidations and obtained accurate GSAs for all plans based on date of disenrollment. We used an updated beneficiary address file provided by CMS and first matched beneficiaries to their plan’s service areas using their county of residence. For the remaining unmatched records, we did additional matching based on zip code of residence—people who were outside the contract service area were assigned the county closest to their zip code if their zip code was within 20 miles of a contract service area. This has left 193 observations with no known valid address. Next, we used the 2002 GSA file to define groups of counties in plan service areas. These county groups were used to create averages for market data over the counties served by the plan, which were then assigned to the 193 unmatched beneficiaries based on the plan contract number. This was the same methodology used for address matching in 2001 (only 100 beneficiary addresses could not be matched in 2001).

### 3.2 Variable Creation for the Plan-Level Analysis

The primary outcome variables in this analysis were the plan-level disenrollment rates for 2001 and 2002 as reported by CMS on the [www.medicare.gov](http://www.medicare.gov) site. CMS calculates these rates based on enrollment records by determining the total number of beneficiaries who left an MMC coordinated care plan during the year and dividing this number by the total number of enrollees in the plan at any time during the year:

$$\frac{\text{Number of beneficiaries who leave plan voluntarily during year}}{\text{Cumulative annual enrollment}}$$

This unadjusted voluntary disenrollment rate was subsequently adjusted based on data from the 2001 and 2002 Reasons Surveys to account for other beneficiaries whom CMS considered to be involuntary disenrollees. In addition to accounting for those who left a plan because they died or moved out of the plan’s service area, we also adjusted the rates for the percentage of beneficiaries who reported leaving because their employer stopped covering the plan or the percentage who were eligible for and accepted a one-time opportunity to enroll in TriCare for Life.

Disenrollment rates were calculated by CMS from CMS enrollment files for each managed care organization (MCO) with an MMC contract. The term MCO is used throughout Section 5 in place of the term “plans,” because in MMC terminology, the term “plan” refers to a specific set of benefits offered for a particular premium (i.e., one MCO may offer more than one “plan”).

Other variables used in this analysis were compiled from a number of different sources and are described in the next sections.

---

<sup>9</sup>Initial address information was based on information in CMS’ EDB. This address (used for the initial survey mailings) did not necessarily reflect each disenrollee’s location when he/she left the plan. Thus, the county codes for these initial addresses did not always reflect a valid county/contract combination.

### 3.2.1 Variables from the Medicare CAHPS<sup>®</sup> Disenrollment Reasons Survey

The Reasons Survey was the source of two types of data used in this analysis: disenrollment reasons and beneficiary characteristics. As previously described, there are two main sources of disenrollment reasons in the Reasons Survey: yes/no responses to preprinted reasons and open-ended responses to a question regarding the MIR for leaving. Only the former type of reasons was used in this analysis. Each of these reasons was assigned to one of eight reason groupings; consequently, for each individual respondent, each reason grouping variable was assigned a value of one if the individual had cited any reason in that grouping and a zero otherwise. To create MCO-level reason variables for each reason grouping and each MCO, we summed the number of individuals who had cited a reason in that grouping and divided that number by the total number of survey respondents for that MCO. This process was used to create the following MCO-level variables:

- Percentage of disenrollees citing any reason in the Doctor Access group.
- Percentage of disenrollees citing any reason in the Plan Information group.
- Percentage of disenrollees citing any reason in the Care Access group.
- Percentage of disenrollees citing any reason in the Other Care or Service group.
- Percentage of disenrollees citing any reason in the Specific Needs group.
- Percentage of disenrollees citing any reason in the Premium/Costs group.
- Percentage of disenrollees citing any reason in the Co-payments/Coverage group.
- Percentage of disenrollees citing any reason in the Drug Coverage group.

Individual-level survey responses regarding beneficiary characteristics were aggregated to the MCO level in a similar manner (based on counts of positive responses divided by total respondents) to derive the following variables:

- Percentage under 65 (nonelderly disabled).
- Percentage reporting poor or fair health.
- Percentage who did not graduate high school.
- Percentage not non-Hispanic Caucasian.
- Percentage Hispanic.
- Percentage dually eligible (Medicaid).

Three other variables whose original source was CMS administrative files (rather than survey responses) were constructed in a similar manner from the Reasons Survey analysis file:

- Percentage leaving for another MMC plan.
- Percentage leaving during first and fourth quarters.
- Percentage leaving after less than 3 months.

### **3.2.2 Other Variables**

Other variables used in this analysis were derived from a number of different sources including the 2001 and 2002 Medicare Compare databases, the December 2001 and 2002 versions of the MMC GSA file, 2001 and 2002 CMS Monthly Enrollment Reports, Health Plan Employer and Data Information Set (HEDIS) data submitted to CMS for the 2001 and 2002 contract years, and other CMS and Census data in a database created by RTI. These variables, their sources, and additional notes about the construction of the variables are provided in Table 9.

**Table 9**  
**Other variables used in the MCO-level analysis of disenrollment rates**  
**(2001: n = 163; 2002: n = 153)**

Variable	Source, n	Notes	2001 mean	2002 mean
Years in operation		Years in operation in MMC	8.3	9.3
No. of MMC enrollees in MCO	Medicare Managed Care GSA file, December 2001, 2002		32,892	32,794
Plan's share of MMC market	Medicare Managed Care GSA file, December 2001, 2002		7.6%	8.7%
MMC penetration (2000)	Medicare Managed Care GSA, December 2000, 2001	Average of county-level MMC penetration rates in MCO's service area	27.6%	27.6%
Change in MMC penetration (1998–2000)	Medicare Managed Care GSA File, 1998–2000	Average change in MMC penetration for each county in MCO's service area	2.9%	2.4%
Average MMC payment	Medicare Managed Care GSA file, December 2001, 2002	Average MMC payment rate for counties in MCO's service area	\$568	\$588
Percentage of population ≥ 65	Census 2000	Average of county-level percentages for counties in MCO's service area	12.8%	12.9%
Percentage 65–74 as percentage of population ≥ 65	Census 2000	Average of county-level percentages for counties in MCO's service area	52.1%	51.6%
Percentage of households with householder ≥ 65, that have < \$30,000 annual income (1999 dollars)	Census 2000	Average of county-level percentages for counties in MCO's service area	46.5%	47.1%
Physicians per 1,000 elderly	Area Resource File	Average of county-level rates for counties in MCO's service area	19.9	19.1
Percentage of population underserved by primary care physicians in 2001	AARP, 2001: <i>Reforming the Health Care System: State Profiles 2001</i>	Average of state-level percentages for states in MCO's service area	9.4%	9.2%
Percentage of physicians who accept Medicare assignment in 2001	AARP, 2001: <i>Reforming the Health Care System: State Profiles 2001</i>	Average of state-level percentages for states in MCO's service area	88.5%	88.3%
Profit status	2001 and 2002 CMS Monthly Enrollment Reports	Whether MCO was organized as a for profit (= 1) or not-for-profit (= 0) entity.	0.62	0.59

## SECTION 4 BENEFICIARY-LEVEL ANALYSIS AND RESULTS

### 4.1 Descriptive Subgroup Analysis

As portrayed in the conceptual model (Figure 2), the factors that motivate a Medicare beneficiary to enroll or to disenroll from a given health plan are multifaceted. A variety of complicated and interrelated issues play a role in this decision, including costs, provider availability, patient–provider communication, benefit packages, and issues related to accessing care. To assess and evaluate the most prevalent explanations for Medicare HMO disenrollment, the Reasons Survey solicited information about a wide array of potential reasons for leaving a particular insurance plan. As noted already, these causes or rationales for disenrollment were then classified into eight groupings:

1. Plan Information problems.
2. Doctor Access problems.
3. Care Access problems.
4. Specific Needs problems.
5. Other Care or Service problems.
6. Premium/Costs issues.
7. Co-payments/Coverage issues.
8. Drug Coverage issues.

These eight clusters were (initially) used for both the AR and MIR groupings. These groupings are described earlier in the report (Sections 1 and 2). Section 4.1.1 examines the six most commonly cited explanations for disenrollment among the 33 preprinted reasons. Section 4.1.2 contains more descriptive details about the various reason groupings, comparing and contrasting the AR and the MIR groupings.

#### 4.1.1 Top Six Reasons among 33 Preprinted Reasons

The top six reasons represent the most prevalent of the 33 underlying AR items. It may be important to know this when interpreting the multivariate results, because some of these reasons appear to be the key drivers within the grouping in which they are included. The top six are displayed in Figure 3 and in bold in Section 3, Table 6a, where we see that only one of the AR groups may primarily be driven by a single question, which is about doctor access. The other five reasons relate to Premium/Cost and Co-pay/Coverage issues, summarized in Table 10.

**Table 10**  
**Reasons for disenrollment, and associated drivers**

Reason	Driver
Doctor Access	“Plan did not include doctors or other providers you wanted to see”
Co-payments/Coverage	“Another plan offered better benefits” “Plan increased the co-payment for office visits to your doctor and for other services” Plan increased the co-payment that you paid for prescription medicines
Premium/Costs	“Another plan would cost you less” “Plan started charging a monthly premium or increased your monthly premium”

As shown in Figure 3a, “Another plan offered better benefits” (47 percent) in 2002 was once again the most cited of the top six reasons given for disenrollment, as it had been for the two previous years. We see that five reasons remain in the top six reasons from 2000 to 2002. Four of these reasons relate to Premium/Cost or Co-payment/Coverage issues. The top two reasons, “Another plan offered better benefits” and “Another plan cost less,” increased by at least 4 percentage points in 2002. The reason “Co-payments increased for prescriptions” showed a sharp increase in 2002 (32 percent), after holding steady at 26 percent for 2000 and 2001. The greatest shifts for 2002 appear to be that an increasing number of beneficiaries disenrolled because of greater co-payment costs for both office visits and prescription drugs, and greater proportions of beneficiaries disenrolled because another plan offered better benefits or cost less. For the first time in the three reported years, “Co-payment increases for office visits” (31 percent) became one of the top six reasons in 2002. Two reasons that were among the top six in 2000 or 2001 that were no longer in the top six by 2002 were “plan not what expected” (2000) and “could not pay monthly premium” (2001). As beneficiaries’ understanding of managed care increases with experience, we would expect the “plan not what expected” reason to continue to decrease in importance over time.

Because the experiences of the disabled are of particular interest, we look next at the top six reasons given for disenrollment by the nonelderly disabled (beneficiaries under 65 years of age). In Figure 3b we examine the top six reasons given for the disabled disenrolling over time, 2000–2002. In Figure 3c we examine the top six reasons given by the nonelderly disabled versus the rest of the sample in 2001 and 2002.

**Figure 3a**  
**Top six reasons cited from among all 33 preprinted reasons, 2000–2002**

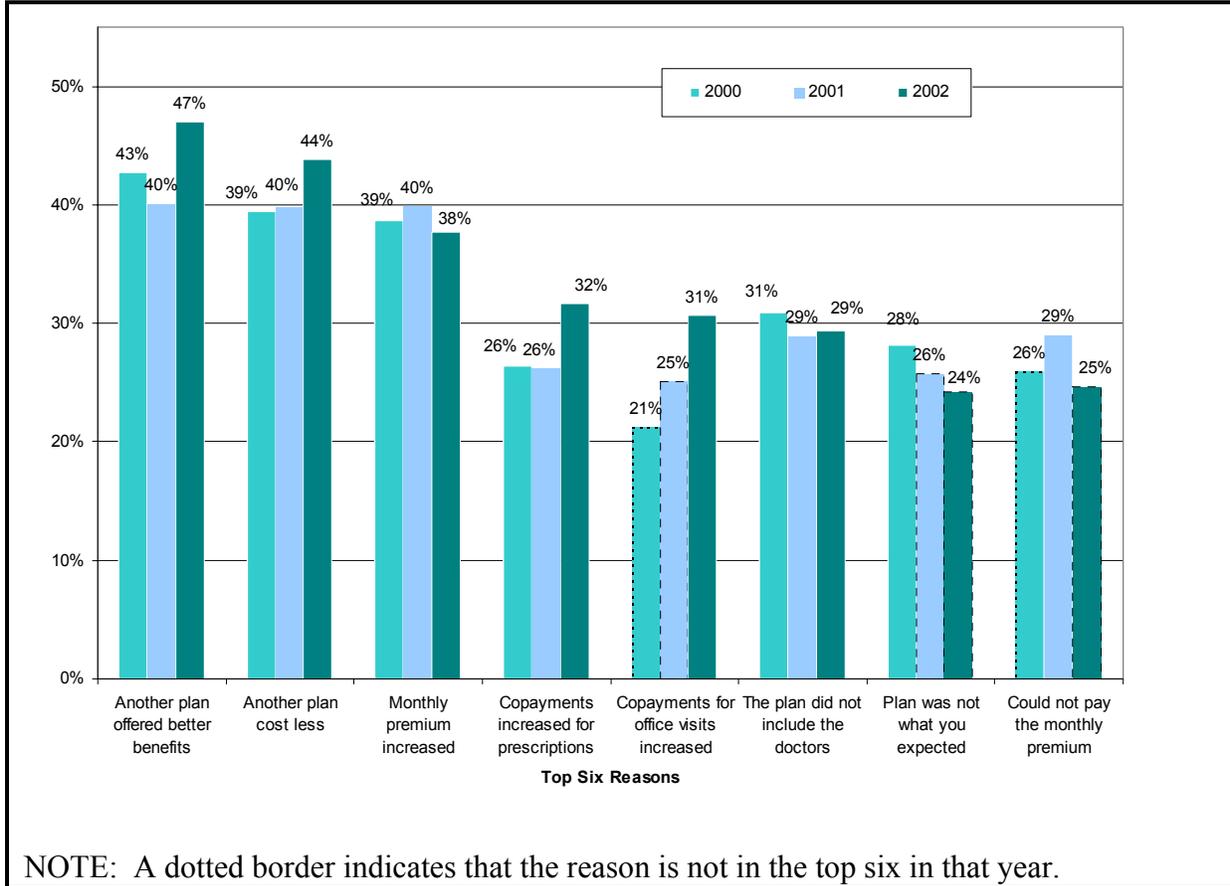


Figure 3b shows that five particular reasons (“Another plan offered better benefits,” “Another plan cost less,” “Monthly premium increased,” “Co-payments increased for prescriptions,” and “Could not pay the monthly premium”) persisted among the top six reasons for nonelderly disabled disenrollment in all 3 years. All of them were related to cost. The reason “The plan did not include the doctors” fell out of the top six reason list for the nonelderly in the third year. The percentage of the nonelderly disabled who disenrolled from their plans because the “Plan was not what you expected” was among the top six reasons in 2000 and 2001, and then it was replaced by the reason “Co-payments for office visits increased” in 2002. The propensity for the nonelderly disabled to cite “Another plan cost less,” “Co-payments increased for prescriptions,” and “Co-payments for office visit increased” increased from 2000 to 2002. A U-shaped pattern emerged for “Another plan offered better benefits” (dropping from 2000 to 2001 and then increasing again in 2002). The percentage of the nonelderly disabled who cited “Monthly premium increased” and “Could not pay the monthly premium” increased from 2000 to 2001 and decreased from 2001 to 2002. In summary, from 2000 to 2002, the disabled disenrollees’ complaints regarding the cost of their plans increased. In 2002, more nonelderly disabled disenrollees switched their complaints from premium to co-payment reasons. These were similar to the overall pattern observed in Figure 3a for all beneficiaries.

**Figure 3b**  
**Top six reasons given by disabled disenrollees under age 65, 2000–2002**

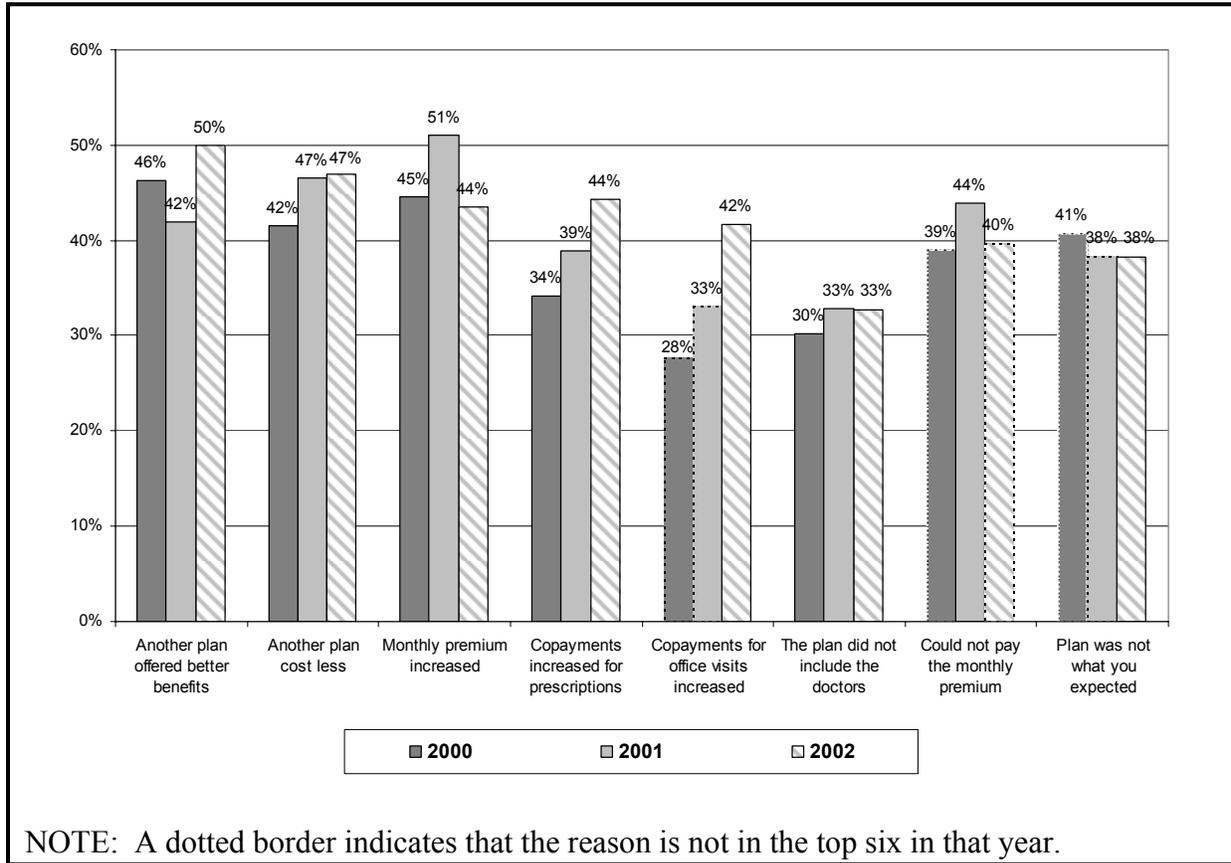
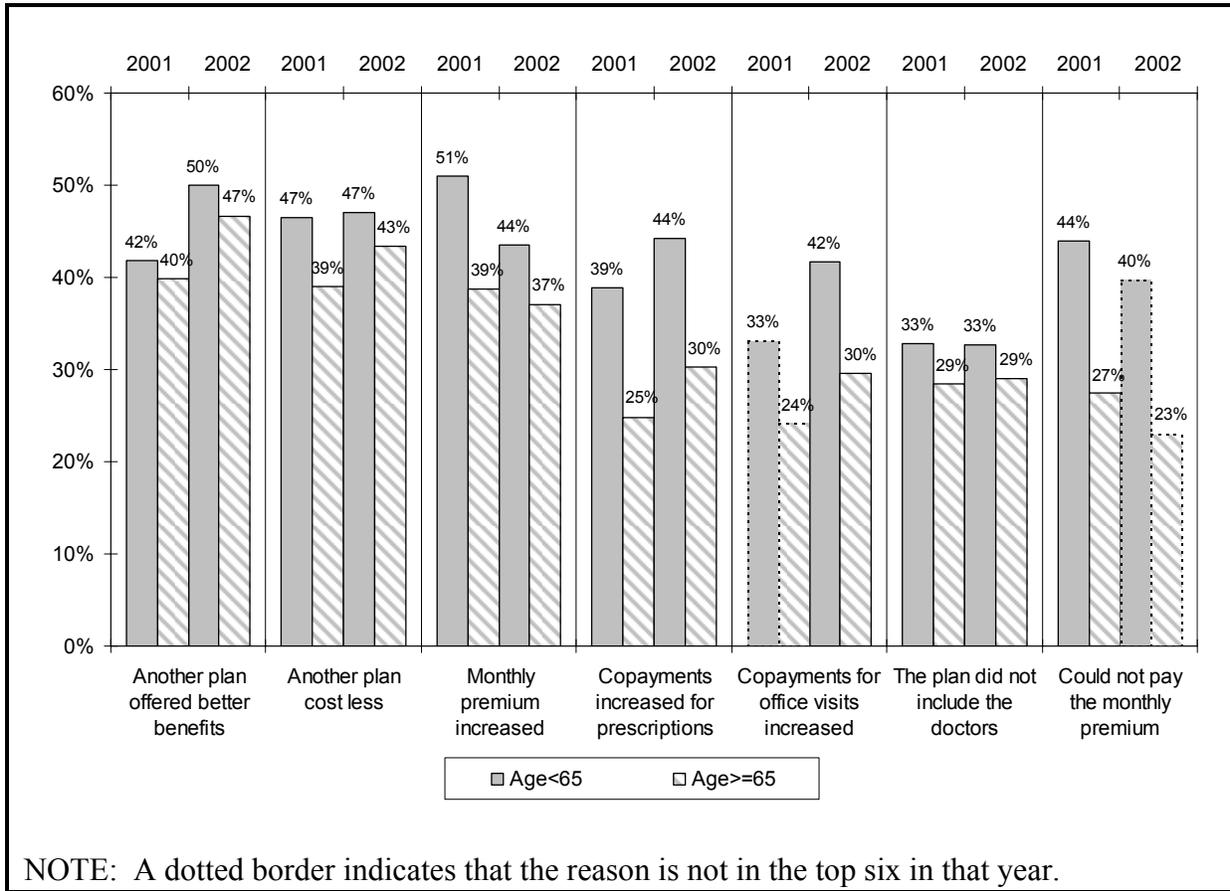


Figure 3c shows that there were more complaints from the nonelderly disabled disenrollees versus the 65 and over group related to all top six reasons. The largest differences between disabled and not disabled disenrollees were for “Could not pay the monthly premium” (44 percent of the nonelderly disabled versus 27 percent of the rest of the sample) in 2001 and “Co-payments increased for prescriptions” (44 percent of the nonelderly disabled versus 30 percent of the rest of the sample) in 2002. The smallest difference between the disabled and aged was “Another plan offered better benefits” in both years. The percentage differences between the two groups for the reasons “Another plan cost less” and “Monthly premium increased” narrowed from 2001 to 2002 (from 8 percent to 4 percent and from 12 percent to 7 percent, respectively).

In general, the top reasons given for disenrollment by the nonelderly disabled mirror what we see for the beneficiary population as a whole: “another plan offered better benefits” and “another plan cost less” are persistently the MIR given for disenrollment 2000–2002. The reason “monthly premium increased” is also persistently in the top three over time; however, for the disabled, this reason was the top reason in 2001, falling to third most important by 2002. More nonelderly disabled people are concerned about premium- and co-payment-related issues than the sample as a whole, suggesting that this subgroup is vulnerable to income-related reasons for disenrollment.

**Figure 3c**  
**Top six reasons for disenrollment given by the disabled (under age 65) versus disenrollees aged 65 and older, 2001 and 2002**



#### 4.1.2 Differences in the Reasons Groupings

Although the AR and MIR variables show agreement with respect to costs in beneficiary enrollment decisions, these variables do reflect different types of information. The MIR variable expresses the beneficiary’s primary reason for leaving a plan, while the AR variables provide accompanying or secondary reasons. Consequently, for the purposes of informing beneficiaries about their health plan options, the MIR variable appears to be the appropriate variable to report. Because most respondents cited more than one AR, the AR variables tend to include a larger set of reasons for disenrollment at the respondent level than the MIR variable. These AR variables are generally, but not always, inclusive of the MIR variable for an individual or set of individuals.

Premium and co-payment issues are the most prevalent reasons for the AR grouping: 78 percent of disenrollees who reported these reasons also identified premium issues as their MIR. This makes the premium category stand out in the MIR grouping, as seen in Figure 4. Similarly, 78 percent of beneficiaries who reported both Doctor Access and Co-payments among AR, also selected Doctor Access as their MIR.

**Figure 4**  
**National-level percentage of MIRs cited: 2000–2002**

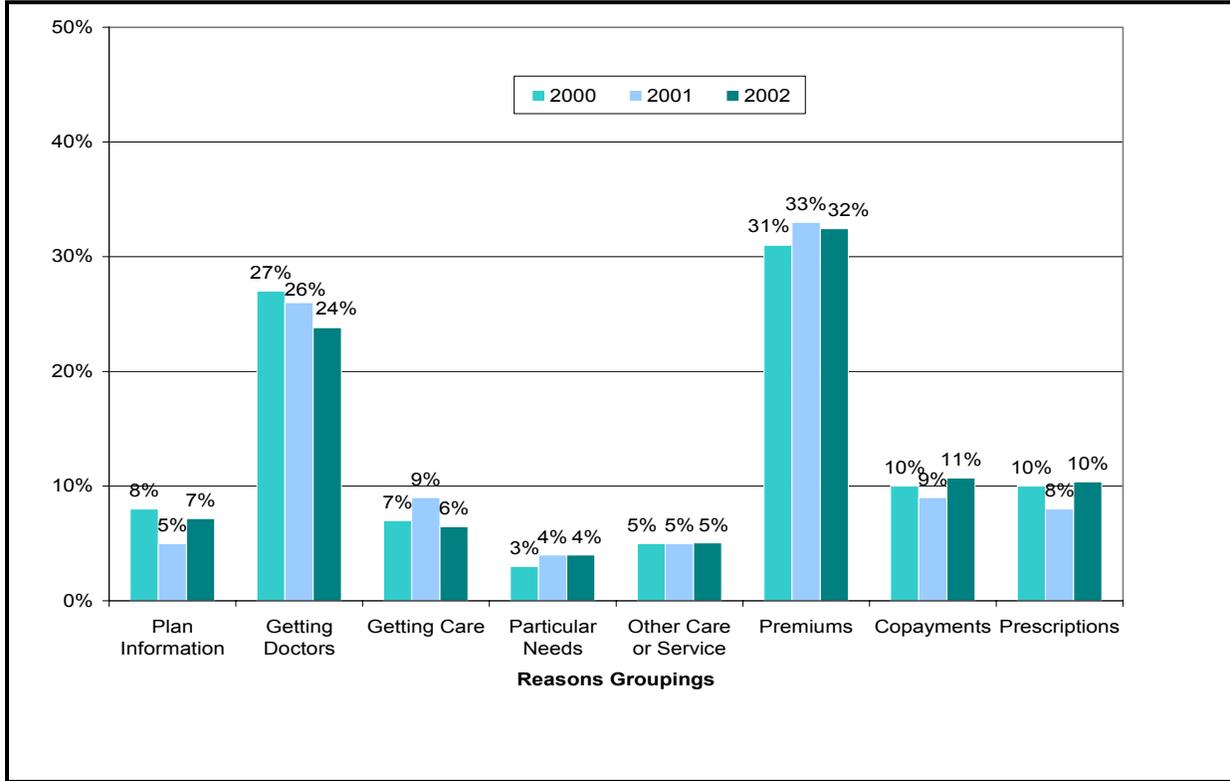


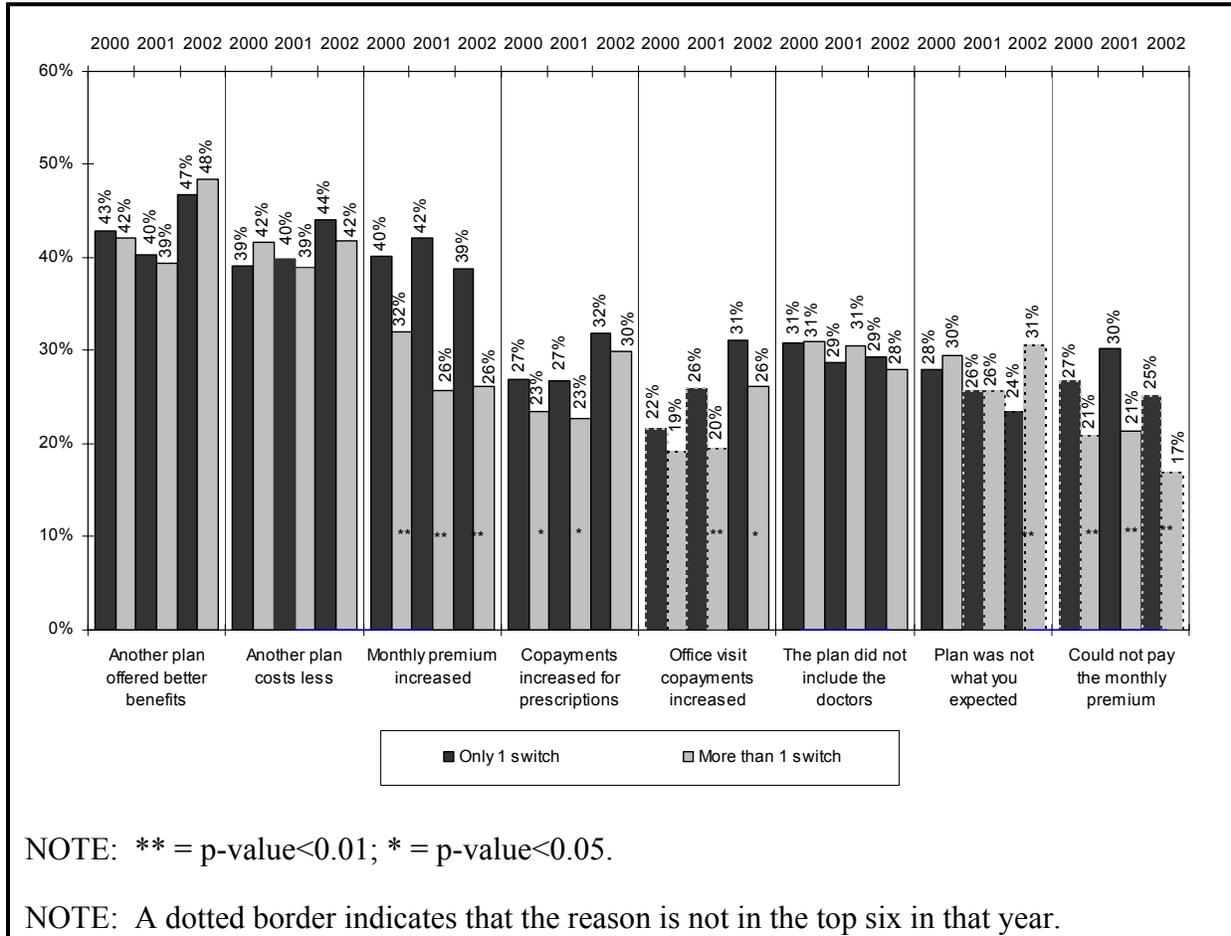
Figure 4 shows that, among the MIRs cited for leaving a plan, percentages were consistent across the years. For example, the most frequently cited reason for disenrollment in 2000 was Premium/Cost issues (31 percent). In 2001 and 2002, 33 percent and 32 percent of beneficiaries, respectively, cited Premium/Cost issues as their reason for leaving their plan. The proportion of beneficiaries who listed Getting Doctors as their MIR for disenrollment decreased consistently over time.

#### 4.1.3 Multiple Disenrollments

In this section, we compare the subgroup of beneficiaries who disenrolled only once during a year with those who disenrolled multiple times. (16.81 percent of disenrollees disenrolled multiple times in 2000, 13.41 percent in 2001, and 8.7 percent in 2002.) Figure 5 shows the proportion of disenrollees with multiple switches in 2000–2002.

As Figure 5 indicates, the greatest difference between single-time switchers and multiple-time switchers in the top six reasons for leaving their plans in each year is for the reason “Monthly premium increased.” In 2000, there is an 8 percent difference (40 percent–32 percent); in 2001, it jumps to 16 percent (42 percent–26 percent); in 2002, it falls back to 13 percent (39 percent–26 percent). These differences are statistically significant at the 0.01 level. There may be an emerging trend among single-time switchers to be more likely than multiple switchers to cite “Monthly premium increased” as their reason for leaving the plan from 2000–2002. The

**Figure 5**  
**Proportion of disenrollees with multiple switches in 2000–2002**



difference between these two groups of enrollees is also statistically significant for the reason “Could not pay the monthly premium,” which varied from 7 percent to 9 percent from 2000 to 2002 (although this reason does not show among the top six in 2000 and 2002). Other differences between single-time switchers and multiple switchers in the top six reasons given for leaving their plans are all more modest, about 2 to 5 percent in magnitude. In 2002, the percentage of disenrollees in each group who cited “Another plan offered better benefits” and “Co-payments increased for prescriptions” as their reasons for leaving increased (from about 40 percent to 47 percent and from about 25 percent to 30 percent). The percentages for both groups who cited the reason “Another plan costs less” or “The plan did not include the doctors” are stable through 3 years (about 40 percent and 30 percent).

Next, we turn to the multivariate analyses, where we examine the independent effect of each subgroup’s characteristics, holding constant other subgroup, plan-level, and market-level effects.

#### 4.2 Multivariate Statistical Methods and Results

Two main research questions are of interest in the multivariate beneficiary-level analyses:

- Are beneficiaries in some subgroups of MMC plan voluntary disenrollees more likely to cite specific reasons for disenrollment, once confounding contextual factors are held constant statistically? Have these relationships changed between 2001 and 2002?
- What plan and market characteristics are associated with beneficiaries citing specific reasons for disenrollment, and how do these factors influence beneficiary decisions? Have these relationships changed between 2001 and 2002?

As described previously, respondents could, and often did, give more than one reason that fell into more than one of the AR groups, whereas only one MIR was captured per respondent. Because the AR groups were neither mutually exclusive nor independent, we used binary logistic analysis on each of the AR groups separately. The MIR groups are mutually exclusive, because beneficiaries could only cite one MIR, so we were able to use a generalized (multinomial) logistic regression model (GLM) on these variables. In both the binary logistic and the multinomial logit estimation, we used the disenrollment weights described in Section 2.3. The major difference in the two approaches is that the GLM model estimates all of the MIR groups simultaneously and accounts for intercluster correlation in the multiple beneficiary observations within plans. Another difference is that the binary logistic analyses include more disenrollees, because some disenrollees did not provide a MIR.

Section 4.2.1 contains the individual binary logistic analysis methods and results for the AR groups. Section 4.2.2 contains the multinomial logistic regression methods and results for the MIR. (Table 5 in Section 3 presents descriptive statistics for the final subset of variables chosen for use in these analyses.)

#### **4.2.1 Model Description and Empirical Estimates From the AR Binary Logistic Model**

Individual logit models were estimated separately for each of the eight preprinted reason groups to investigate the relationships between subgroup variables and reasons given for disenrollment, while statistically holding constant plan-level and market-level variables that might confound these relationships. The eight AR groups include the following:

1. Plan Information problems.
2. Doctor Access problems.
3. Care Access problems.
4. Specific Needs problems.
5. Other Care or Service problems.
6. Premium/Costs issues.
7. Co-payments/Coverage issues.
8. Drug Coverage issues.

The descriptive results presented in Section 4.1 suggest that the most common motivations for disenrolling from Medicare managed care plans in 2001 and 2002 related to cost:

the two most prevalent reasons for leaving were concerns about premiums and co-payments (Figure 4). Although reason groupings may contain five or more reason “members,” it appears that particular members of a grouping overwhelm the others and “drive” the frequency distribution of the eight-reason category scheme. For instance, the six most often cited reasons for disenrolling were the driving forces behind the reasons groupings to which they belong. *Plan Information problems* were driven by individuals who said their plan was “not what was expected”; *Premium/Costs issues* were primarily dominated by persons who complained about increases in their monthly costs. Finally, *Doctor Access problems* appeared to indicate an inability to see the physicians of one’s choice; it did not reflect office wait times, appointment wait times, or physician communication problems (see Tables 6a and 6b, Section 3). Although these drivers of these motivations for disenrollment were interesting, to better understand the determinants of disenrollment, we performed a series of multivariate regression analyses that allowed us to account for other factors (i.e., market or plan effects) that could have affected patterns of disenrollment.

**Empirical results.** The binary logit model expresses the probability that a beneficiary disenrolls for at least one reason within the particular reason group being modeled, as a function of beneficiary and other variables. The log of the odds ratio is the parameter of greatest interest in a logistic regression, because of its ease of interpretation. Table 8, Section 3 contains a full description of all the variables used in the logistic analyses, with coding information, units, and information about data sources and year of data. The empirical results from the separate estimation of each binary logistic equation for each of the eight AR are contained in Table 11. Because of incomplete coverage by some of the plan-specific variables, the initial sample size of 24,495 (described in Section 3.1.2) was reduced to 23,958 for the 2001 analysis. For the 2002 analysis, a comparable 20,157 cases were available for the individual logit analyses.<sup>10</sup> The overall fit of all models is significant at better than the 99 percent level of confidence. Individual variables’ overall significance levels are indicated in the row starting with the variable name, while the significance of categorical effects relative to the omitted reference groups is indicated in the column next to the numerical estimates for each category. Two asterisks (\*\*) indicate significance at the 99 percent level of confidence, while one asterisk (\*) indicates significance at the 95 percent level of confidence. The highlighting in the table rows designates the reference category used for the categorical variables. In the discussion of results, only the statistically significant findings are noted. The subgroup differences discussed below are significant after controlling statistically for plan- and market-level factors.

---

<sup>10</sup>In both years, a comparable 78 percent of all complete and valid cases were included in the multivariate analyses, as described fully in Section 2. We conducted sensitivity analysis to see whether excluding variables with incomplete coverage, which allowed us to use all available beneficiary-level observations, had a meaningful impact on the results. Losing these 537 observations from the 2001 sample only caused minor changes in some coefficient estimates, which would not affect the interpretation of results. As a further test of robustness, we excluded about 500 more observations where address information did not directly correspond to a plan’s service area and still found that our empirical results remained generally constant.

**Table 11**  
**Empirical results (odds ratios) from the individual logistic regression estimation of each of the eight AR groups:**  
**n = 23,958 for 2001; n = 20157 for 2002; Overall significance >99 percent; shaded rows are reference group**

Variable name	Reason group																							
	Plan information				Care access				Specific needs				Other care or service				Premium/costs				Co-payments/ coverage			
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
Age	*	*					*				*				**	**	**	**	**	**	*	*	**	**
64 or younger	1.05	1.06	1.03	1.15	1.20	1.10	1.10	1.10	1.58**	1.13	1.10	0.93	1.68**	1.30*	1.30	0.94	1.73**	1.42**						
65 to 69																								
70 to 74	0.8*	0.83*	1.11	1.08	1.16	0.88	1.15	0.84	1.21	0.92	1.15	0.84	0.97	1	1.02	0.9	0.95	1.02						
75 to 79	0.81	0.79*	1.13	1.16	1.33*	1.09	1.22	1.16	1.23	0.98	1.22	1.16	1.00	0.81*	1.07	0.77**	0.96	0.76**						
80+	0.73*	0.79*	1.17	0.97	1.09	0.89	1.23	1.14	1.03	0.90	1.23	1.14	0.71**	0.79*	0.76*	0.76**	0.77*	0.78*						
Gender			**	*			**	**			**	**	**	**										
Male	0.90	0.99	0.79**	0.87*	0.94	0.89	0.79**	0.96	0.87	1.01	0.79**	0.96	1.27**	1.30**	1.08	0.99	0.9	0.93						
Female																								
Race and Ethnicity	**	**	**	*	**	*	**	*	*	*	**	*	**	**	*	*	*	*			*	*	*	*
Hispanic	1.94**	1.9**	0.83	0.92	1.64**	1.34*	1.87**	1.42**	1.07	1.16	1.87**	1.42**	0.83	1.04	1.19	1.33*	1.14	1.12						
Non-Hispanic Caucasian																								
Non-Hispanic black/ African American	1.51**	2.08**	0.6**	0.72**	1.21	1.24	1.25	1.17	1.11	1.42**	1.25	1.17	1.42**	1.68**	0.76*	1.07	1.02	1.20						
Non-Hispanic other	1.21	1.58*	0.85	0.94	0.94	1.31	0.92	1.27	0.83	1.12	0.92	1.27	1.11	1.11	1.27	1.18	0.77	0.72						
Education					*		*	*			*	*	*	**	*	*	*	*			*	*	*	*
≤8th grade	1.39	1.02	0.72*	0.72**	0.79	0.85	0.91	1.04	0.8	1.13	0.91	1.04	1.34*	1.78**	1.12	1.29*	1.19	1.42**						
9th–11th	1.12	1.08	0.88	0.85	0.93	1.02	0.92	0.89	0.77	1.17	0.92	0.89	1.29*	1.57**	1.18	1.26*	1.03	1.17						
High school/GED	0.97	1.02	0.89	0.86	0.7**	0.86	0.86	0.85	0.73*	1.09	0.86	0.85	1.08	1.7**	1.00	1.24*	1.21	1.32**						
Some college	0.98	1.1	1.00	0.91	0.94	1.04	1.06	1.01	0.77	1.08	1.06	1.01	0.99	1.5**	1.23	1.43**	1.03	1.22						
BA or more																								

(continued)



**Table 11**  
**Empirical results (odds ratios) from the individual logistic regression estimation of each of the eight AR groups:**  
**n = 23,958 for 2001; n = 20157 for 2002; Overall significance >99 percent; shaded rows are reference group (continued)**

Variable name	Reason group																
	Plan information		Doctor access		Care access		Specific needs		Other care or service		Premium/costs		Co-payments/ coverage		Drug coverage		
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	
Drug Coverage	**	**	*	**	**	**	*	**	**	**	**	**	**	**	**	**	*
No coverage	1.21**	1.09	1.16*	1.65**	1.45**	1.64**	0.95	0.83*	1.28**	1.10	0.79**	0.68**	0.91	0.75**	1.19**	1.17*	1.17*
Some coverage	0.97	0.98	1.12**	1.04	1.11**	1.14**	0.96	1.06	1.05	1.11**	0.95*	1.01	0.97	1.11**	1.05	1.12**	**
Years plan has been in operation	**	*	*	**	**	**	*	*	*	*	*	*	*	*	*	*	*
Market share of plan	0.84**	0.88*	0.91*	0.80**	1.24**	1.03	0.88*	0.92	1.02	0.95	1.08	1.12*	0.88**	0.96	0.71**	0.88*	*
Private managed care penetration	0.95	0.87*	0.98	1.03	0.73**	0.71**	1.38**	0.93	1.00	1.00	1.00	1.12	1.29**	1.04	1.4**	0.88*	*
Proportion of county that is urban	1.01	1.08**	1.07*	1.14**	0.98	1.11**	1.04	1.05*	0.91*	1.03	0.98	0.84**	1.08**	0.97	1.11**	1.08**	**
Proportion of elderly households with low annual income	1.04	1.08	1.08	1.31**	1.01	1.02	1.33**	0.92	1.04	1.06	0.83**	0.66**	1.19**	0.89*	1.16**	1.04	**
Proportion of population reporting a shortage of primary care physicians	1.00	1.03**	1.05**	1.00	0.97**	1.01	1.04**	1.03**	0.99	1.02**	0.96**	0.98**	1.02**	1.04**	1.02**	1.02**	**

\*\*Significant at the 99 percent level of confidence.

\*Significant at the 95 percent level of confidence.

## Summary of Binary Logit Results: Reason by Reason

### *Plan Information Problems*

Those who were more likely to cite Plan Information problems in both years included the following:

- Hispanics and African Americans compared to non-Hispanic Caucasians (the gap for African Americans and non-Hispanic Caucasians was even larger in 2002 than in 2001).
- People reporting fair to poor health compared to persons reporting excellent health.
- People who were the most dissatisfied with their health plan.

Those who were less likely to cite Plan Information problems in both years included the following:

- The older elderly (compared to the 65–69 reference age group).
- People who disenrolled to another MMC plan (versus those who disenrolled to FFS).
- People formerly in plans with a larger market share.

### *Doctor Access Problems*

Those who were more likely to cite Doctor Access problems in both years included the following:

- People who were most dissatisfied with their plans.
- People formerly in plans with some drug coverage.
- People residing in more urban places.

Those who were less likely to cite Doctor Access problems in both years included the following:

- Males, African Americans, and dually eligible persons.
- Persons with less than a ninth-grade education.
- People formerly in plans with a larger market share.

It is interesting to note that self-reported health status did not contribute significantly to the probability of citing Doctor Access reasons in either 2001 or 2002.

### *Care Access Problems*

Those who were more likely to cite Care Access problems in both years included the following:

- Hispanics compared to non-Hispanic Caucasians.
- People reporting fair to poor health compared with those in excellent health.
- People who were more dissatisfied with their former plan.
- Those whose former plan offered drug coverage.
- People formerly in plans with longer tenure.

Those who were less likely to cite Care Access problems in both years included the following:

- People who disenrolled to another MMC plan.
- People in markets with greater managed care penetration in the private market.

### *Specific Needs Problems*

Those who were more likely to cite Specific Needs problems in both years included the following:

- People reporting fair to poor health (compared to those in excellent health).
- People who were more dissatisfied with their former plan.
- People living in areas with greater shortages of doctors.

### *Other Care or Service Problems*

Those who were more likely to cite Other Care or Service problems in both years included the following:

- Hispanics (versus non-Hispanic Caucasians).
- People who were more dissatisfied with their plans.

### *Premium/Costs Issues*

Those who were more likely to cite Premium/Cost issues in both years included the following:

- The nonelderly disabled (compared with 65–69 age group).
- Males.

- African Americans.
- People who did not graduate from high school (compared with those with a college degree).
- Dually eligible persons.

Those who were less likely to cite Premium/Cost issues in both years included the following:

- The oldest old (age 80+).
- People whose former plan offered drug coverage.
- People residing in areas with physician shortages.
- Those in the poorer elderly communities.

#### *Co-payments/Coverage Issues*

Those who were more likely to cite **Co-payments/Coverage** issues in both years included the following:

- People reporting fair health status.
- People in markets with greater physician shortages.

Those who were less likely to cite **Co-payments/Coverage** issues in both years included the following:

- The oldest elderly (compared with the 65–69 age group).

#### *Drug Coverage Issues*

Those who were more likely to cite **Drug Coverage** issues in both years included the following:

- The nonelderly disabled.
- Persons disenrolling to another MMC plan.
- People reporting worse health.
- People whose former plan offered drug coverage.
- People in markets with greater physician shortages.
- People in more urban places.

Those who were less likely to cite **Drug Coverage** issues in both years included the following:

- The oldest old (age 80+).
- People formerly in plans with larger Medicare market shares were less likely to cite these reasons.

**Discussion of results: Subgroup by subgroup.** In 2001 and 2002, disabled beneficiaries under the age of 65 were more likely than those in the 65 to 69 age group to report that they left their former plan because premium/costs were too high, or that they were having problems getting drug coverage. In 2001, disabled beneficiaries were more likely to report that their specific needs were not being met than the 65 to 69 age group, but in 2002, this was no longer the case. The oldest elderly group was less likely to state problems with plan information, premium/costs, co-payments/coverage, or drug coverage in both years.

In both years, males were significantly less likely than females to cite doctor access as a reason for disenrolling, and males were more likely than females to cite plan premium/costs as a reason for disenrolling. Males were significantly less likely than females to cite other care or service problems in 2001 but not in 2002. Other reasons showed no significant differences across gender.

Compared to non-Hispanic Caucasians, Hispanics were more likely to reference care access, plan information problems, or other care or service problems when explaining their decision to disenroll. In both years, African Americans were more likely to disenroll because of premium/costs issues or plan information problems but less likely to disenroll because of doctor access problems. In 2002, African Americans were more likely than other races/ethnicities to cite specific needs not met.

Beneficiaries with less than a ninth-grade education were less likely than those with a college degree to cite doctor access and more likely to cite premium/costs in both years and more likely to cite concerns about co-payments/coverage and drug coverage in 2002. Other beneficiaries with less than a college degree were more likely than those with a degree to cite premium/cost and co-payment/coverage issues in 2002. Beneficiaries who were dually eligible for Medicare and Medicaid were more likely to disenroll because of premium/costs issues than were individuals who were not dual eligibles, and they were less likely to disenroll because of problems with doctor access in both 2001 and 2002.

People reporting their health to be fair or poor were more likely than those reporting excellent health to cite plan information, care access, specific needs problems, and drug coverage issues in both years. In 2002, people reporting fair to poor health were also more likely to cite other care or service problems and co-payment/coverage issues.

We found that beneficiaries who disenrolled to MMC plans were less likely than those who went to FFS to cite plan information and care access problems as reasons for leaving in both years. They were also less likely to cite doctor access and other care or service problems in

2002. Those who went to an MMC plan were more likely to cite drug coverage concerns in both years and to cite other cost issues in 2002.

Beneficiary ratings of their former plan was the most statistically significant, highest impact variable in the model. Disenrollees who gave their former plan the lowest ratings were more likely than more satisfied individuals to cite problems with plan information, care access, specific needs not being met, and other care or service as reasons for leaving. Less consistent were the findings for doctor access problems and issues with premium/costs, co-payments/coverage, and drug coverage—people giving more median plan ratings were more likely to cite these reasons for disenrolling than those who gave the highest ratings in both years.

Data limitations prevented us from specifically examining beneficiary income as a determinant of disenrollment. We have a proxy measure of income based on the beneficiary's county of residence. Because individuals are likely to live among others of similar circumstances, this variable may help control statistically for income variation among the Medicare population. The findings suggest that the Medicare population living in “poorer” elderly communities was more likely to cite doctor access as reasons for disenrollment in 2002. Elderly people living in poorer communities were less likely to cite premium/costs as a reason in either year.

Disenrollees whose former plan offered some drug coverage (versus none) were more likely to cite concerns about doctor access, care access, or drug coverage and less likely to cite concerns about premiums/costs as reasons for leaving in both years. Meanwhile, disenrollees from plans with longer tenure in the MMC program were more likely to cite access to care access problems in both years. Disenrollees from plans with a larger share of the MMC market were less likely to cite plan information, doctor access, and drug coverage issues as reasons for leaving (in both years). Concerns about premium/costs issues emerged in 2002 as significantly more likely for disenrollees from plans with a higher market share.

Market variables are included in the models to “hold constant statistically” some variables that could be confounded with beneficiary or plan-level effects. This is important because the sample shifts about geographically, so the market factors vary as a result of the sampling itself. Thus, we do not see consistent patterns over time in the logistic effects of these variables. For example, disenrollees in areas with higher managed care penetration in the private market were significantly more likely to cite drug coverage reasons in 2001 but significantly less likely in 2002. The propensity for citing specific needs or co-payment/coverage problems in high-penetration markets was significantly higher in 2001, but not significant in 2002. Similarly, the proportion of disenrollees in low-income neighborhoods, in places with a shortage of physicians, and in urban places shows variable effects on the probability that reasons are cited over time.

#### **4.2.2 Model Description and Empirical Estimates from the Generalized Logit Estimation of the MIR**

The five MIR groups that are used for consumer reporting are formed by combining some of the eight reason groups discussed in the previous section as follows:

- “Care Access problems” (Care Access), “Problems getting particular needs met” (Specific Needs), and “Other problems with care or service” (Other Care or Service) were collapsed into a general Care-related issues (Care) category.
- The “Premiums or co-payments too high” and “Co-payments increased and/or another plan offered better coverage” were collapsed into a general Premium and Co-pays category.
- Plan Information, Doctor Access, and Drug Coverage remained as separate groups.

Since the MIR groups are mutually exclusive (i.e., each disenrollee was assigned to one and only one MIR), we used the “Premium and Co-pays” reason as the reference category in the GLM analysis. This group was selected because it was the most prevalent (see Figure 4); more than 40 percent of the sample stated a reason in these groups: 41 percent in 2000, 42 percent in 2001, and 43 percent in 2002). In the multivariate model, each parameter was interpreted as the independent effect of that covariate on choosing Reason A versus the reference (Premium and Co-pays) reason, holding the effects of other covariates constant. The estimated coefficients (reported in Table 12) for the beneficiary-, plan-, and market-variable effects were interpreted as impacts on the odds of choosing some Reason A versus the Premium and Co-pays reason.

**Sample size, variable coding, and standardization.** After losing some observations with missing plan-level data or MIR, we had 22,470 beneficiary-level observations remaining for the analysis in 2001, and 18,345 remaining in 2002. To avoid an overparameterized model, a significance level of  $\alpha = 0.01$  was chosen for determining model specification, rather than the traditional  $\alpha = 0.05$ .<sup>11</sup>

Before conducting the GLM analysis, all explanatory variables were transformed and standardized. The transformations attempted to make the variables more symmetrical and included changing the coding or grouping of some categorical variables from the categorical coding used in the individual logit models. Symmetry is important in this model because, with categorical variables and their many interactions, lack of symmetry can result in “empty” categories, which can reduce the power of the model in statistical inference. The standardization made all of the explanatory variables have a mean of 0.0 and a variance of 1.0. There were several reasons for undertaking these steps. The first was to make the resulting parameters comparable across all explanatory variables. The second was to prevent explanatory variables with large variances from dominating the model. The third was to ease the interpretation of main effects in the presence of the numerous interactions and quadratic terms that were included in the model.

---

<sup>11</sup>The “model specification” is the group of main effects, interaction effects, and quadratic terms included in the empirical model for the group of explanatory variables in the model. A fully parameterized model would include all possible pairs of interactions, all three-way interactions, and each variable in both linear and quadratic form. The initial model specification included higher-order terms for all possible paired and three-way interactions and squared terms for all 15 main effect variables (Table 8). The specification was pared down to the final specification, which included only those nonlinear effects that had a p-value less than 0.01, and all main effects with a p-value less than 0.01, unless they were significant in higher-order terms. Two main effects in Table 8 were dropped—gender and dual eligibility—because these were not statistically significant in the model as either main effects or in higher-order terms.

**Table 12**  
**Results (odds ratios) from GLM estimation of the MIR for disenrollment: n = 22,470 in 2001; n = 18,345 in 2002; Overall significance >99.9 percent; shading indicates reference group**

Variable Name	Reason Comparison							
	Plan Info vs. Premium and Co-pays, 2001	Plan Info vs. Premium and Co-pays, 2002	Doctor Access vs. Premium and Co-pays, 2001	Doctor Access vs. Premium and Co-pays, 2002	Care vs. Premium and Co-pays, 2001	Care vs. Premium and Co-pays, 2002	Drug Coverage vs. Premium and Co-pays, 2001	Drug Coverage vs. Premium and Co-pays, 2002
<b>Age</b>								
64 or younger	1.12	1.49	0.56**	0.46*	0.64**	0.46*	1.51*	1.17
<b>65 to 74</b>								
75+	1.49**	1.17	1.07	1.22*	1.28**	1.36**	0.72**	0.82*
<b>Race and Ethnicity</b>								
<b>Non-Hispanic Caucasian</b>								
Hispanic	0.88	0.90	0.53**	0.58**	1.52**	0.63**	1.21	0.85
Non-Hispanic African American	0.93	0.90	0.46**	0.54**	0.87	0.59**	0.84	1.00
Non-Hispanic other	0.95	0.88	0.59**	0.54**	0.78*	0.38**	0.83	0.48**
<b>Education</b>								
Less than high school graduate	0.73	0.83	0.54**	0.74*	0.64**	0.98	0.71	1.25
<b>High school graduate or more</b>								
<b>Health Status</b>								
<b>Excellent—very good</b>								
Good—poor	1.22	0.78*	1.32**	0.86	1.31*	1.39*	1.62**	1.52**
<b>Disenroll to FFS or MMC</b>								
<b>FFS</b>								
MMC	0.72*	0.64**	0.94	0.61**	0.76**	0.83	1.88**	1.73**
<b>Satisfaction with Plan<sup>1</sup></b>								
0	6.39	5.36	1.88	0.88	9.27	4.44	3.32	4.07
1	5.95	4.94	1.84	0.87	8.43	4.14	3.21	3.96
2	5.18	4.22	1.75	0.84	7.02	3.61	3.00	3.74
3	4.26	3.38	1.64	0.80	5.41	2.97	2.73	3.45
4	3.34	2.58	1.51	0.77	3.93	2.35	2.41	3.09
5	2.54	1.92	1.37	0.74	2.76	1.82	2.09	2.71
6	1.91	1.44	1.25	0.72	1.93	1.41	1.79	2.31
7	1.47	1.12	1.14	0.72	1.39	1.13	1.52	1.93
8	1.18	0.94	1.06	0.75	1.08	0.96	1.30	1.58
9	1.02	0.89	1.01	0.83	0.95	0.91	1.12	1.27
<b>10</b>								

(continued)

**Table 12**  
**Results (odds ratios) from GLM estimation of the MIR for disenrollment: n = 22,470 in 2001; n = 18,345 in 2002; Overall significance >99.9 percent (continued)**

Variable Name	Reason Comparison						Drug Coverage	Drug Coverage
	Plan Info vs. Premium and Co-pays, 2001	Plan Info vs. Premium and Co-pays, 2002	Doctor Access vs. Premium and Co-pays, 2001	Doctor Access vs. Premium and Co-pays, 2002	Care vs. Premium and Co-pays, 2001	Care vs. Premium and Co-pays, 2002	vs. Premium and Co-pays, 2001	vs. Premium and Co-pays, 2002
<b>Drug Coverage</b>								
No coverage								
Some coverage	0.79*	<b>1.30*</b>	1.14*	1.84**	1.12	<b>1.57**</b>	1.05	0.91
Years plan has been in operation	1.19	0.72*	1.86**	1.31**	1.23**	0.87	1.48**	0.99
Market share of plan	0.64**	1.00	0.59**	1.33**	0.74**	1.49**	0.41**	0.98
Private managed care penetration	0.64**	1.18	0.61**	1.20	0.69**	1.20	0.80**	0.57**
Prop. of the county that is urban	1.27**	1.10	1.40**	1.50**	1.09	1.31**	1.04	1.41**
Prop. of elderly households with low annual income	1.31**	0.92	1.32**	1.02	1.14*	1.07	1.23**	1.07
Prop. of population in area with shortage of PCPs	0.83	1.04	1.12	1.32*	0.88	1.14	0.53**	0.82
<b>Nonlinear Interaction Terms</b>								
(Plan's Medicare market share) * (plan tenure)	1.28**	1.18*	1.36**	1.13*	1.13*	1.17**	1.12*	0.99
(Private managed care penetration) * (plan's Medicare market share)	1.55**	1.02	1.20**	1.10*	1.19**	0.97	1.26**	0.96
(Physician shortage) * (plan's Medicare market share)	1.22**	1.10	1.19**	1.14**	1.26**	1.12*	1.05	1.27**
(Elderly poverty) * (private managed care penetration)	0.75**	0.95	0.83**	0.91	0.83**	0.93	0.90*	1.10
<b>(Plan's Medicare market share) * (drug coverage)</b>								
No coverage <sup>2</sup>	0.64	1.00	0.59	1.33	0.74	1.49	0.41	0.98
Some coverage	0.95**	0.85	1.07**	0.81**	1.34**	1.07	0.85**	1.00
<b>(Plan tenure) * (drug coverage)</b>								
No coverage <sup>2</sup>	1.19	0.72	1.86	1.31	1.23	0.87	1.48	0.99
Some coverage	0.91	1.18	0.89**	1.15	0.77**	1.05*	1.05**	1.39**

(continued)

**Table 12**  
**Results (odds ratios) from GLM estimation of the MIR for disenrollment: n = 22,470 in 2001; n = 18,345 in 2002; Overall significance >99.9 percent (continued)**

Variable Name	Reason Comparison						Drug Coverage	Drug Coverage
	Plan Info vs. Premium and Co-pays, 2001	Plan Info vs. Premium and Co-pays, 2002	Doctor Access vs. Premium and Co-pays, 2001	Doctor Access vs. Premium and Co-pays, 2002	Care vs. Premium and Co-pays, 2001	Care vs. Premium and Co-pays, 2002	vs. Premium and Co-pays, 2001	vs. Premium and Co-pays, 2002
(Private managed care penetration) * (drug coverage)								
No coverage <sup>2</sup>	0.64	1.18	0.61	1.20	0.69	1.20	0.80	0.57
Some coverage	1.22**	0.89	1.35**	1.01	1.05**	0.88*	1.28**	0.96**
(Physician shortage) * (drug coverage)								
No coverage <sup>2</sup>	0.83	1.04	1.12	1.32	0.88	1.14	0.53	0.82
Some coverage	1.23*	1.27	1.39*	0.83**	1.17**	1.20	1.48**	1.12
(Physician shortage) * (whether disenrolled to another managed care plan or FFS)								
FFS <sup>2</sup>	0.83	1.04	1.12	1.32	0.88	1.14	0.53	0.82
MMC	0.64	0.79	0.69**	1.18	0.78	1.08	0.35**	0.71

\*\*Significant at the 99 percent level of confidence.

\*Significant at the 95 percent level of confidence.

<sup>1</sup>This variable is treated as continuous in the model specification, which also includes a quadratic term. Using the variable in its categorical form would have resulted in too many partitions of data in the GLM model. The satisfaction with plan variable is significant in the GLM model at better than 99 percent in all reason categories. We combined the linear and quadratic terms and created this table of effects by unit score of the variable (0–10), for comparability with the results reported for the individual logit models. In both Tables 11 and 12, the quadratic effect of satisfaction on reason is obvious, because there is an increasingly high odds ratio as satisfaction falls.

<sup>2</sup>These reference categories are calibrated at the main effects of the continuous variables in these interaction terms. The interaction effects are interpreted as a change from this main effect baseline caused by the binary interaction variable attaining its “1” (nonreference) category. For example, looking at the last two rows and cells in the table above, the main effect for physician shortage in the Drug Coverage versus Premium and Co-pays reason (0.53) is reduced (0.35) when the beneficiary disenrolls to another MMC plan. A beneficiary living in an area of physician shortage is less likely to cite Drug Coverage versus Premium and Co-pays and even less likely if they also disenroll to another MMC plan.

In the GLM, the main effects of variables are their effects independent of the interaction effects that these variables may have with others. For variables with significant interactions with others, the main effects do not capture the full effect of the variable. To calculate the full effect of (a change in) a variable, both its main effect and all interaction effects must be considered jointly. This somewhat complicates the interpretation of the results, but the added complexity allows one to assess nonlinear and interaction effects that, if omitted, may cause bias on main effect parameters.

When the explanatory variables were standardized, the parameters (odds ratios) for the main effects could be interpreted as the expected change in the odds ratio between the two comparison MIR groups (Reason A versus Cost Reason) when all other variables were set to their means. Because all variables were standardized, this implies that all variables were set to zero. The exception was for categorical variables, which were set to their reference group or level. This standardization greatly facilitates the interpretation of full effects for variables that have nonlinear interactions in the model.

There is a significant amount of positive correlation between the responses for individuals within the same plan. Failure to account for this intraplan correlation would result in poor estimates of variance. Specifically, if not accounted for, a positive intraplan correlation would cause the variances for the parameters discussed in this section to be underestimated.<sup>12</sup> Underestimating the variances would lead to liberal hypothesis tests (false positive results) and would result in an overparameterized model, because we used a specific significance level as a cutoff to determine which higher-order parameters to include in the model specification. To account for the intraplan correlation, variances were estimated using the Generalized Estimating Equations (GEE) variance estimation procedure available in SUDAAN (RTI, 2001). For robustness, we also considered whether intramarket correlation of plan- *and* market-level variables might reduce the estimated variances. The bias to the standard errors from intramarket correlation was about the same magnitude as that caused by intraplan correlation. (The intramarket correction picked up the intraplan effects to the extent that beneficiaries in the same plans face both the same plan- and market-level variables.) We report the results from the model correcting for intraplan correlation, which is most consistent with the disenrollment weights (described in Section 2.3) used in the sample design.

The final model specification for 2001 contained 13 main effects (13 of the 15 variables described in Table 8), 23 interactions, and 3 squared terms. The empirical results for both years using this same model are presented in Table 12. For parsimony, we present and discuss only some (9) of the 23 interaction effects.

**Summary of findings from GLM analysis.** In general, we found consistency between the binary logistic analysis of the AR and the GLM analysis of the MIR. Below, we discuss the GLM results and then compare these with the individual logit results on a subgroup-by-subgroup basis.

To improve symmetry in the GLM analysis, the age variable was recoded as a categorical variable with three levels corresponding to the age groupings of <65, 65 to 74 and 75+, with 65 to 74 as the reference group. The oldest Medicare beneficiaries were more likely than the younger elderly to cite Care-related issues (Care) as their MIR for leaving their plan than Premium and Co-pays (the reference reason) but less likely to cite Drug Coverage than Premium and Co-pays in 2001 and 2002. The generalized logit model allows this sort of assessment of the relative importance of two reasons groupings because one grouping (Premium and Co-pays) is the reference group, to which all others are compared.

---

<sup>12</sup>The sample design effects for the parameters had a median of 2.54. This implies that ignoring the intraplan correlation would produce estimated variances for the parameters that are 2.54 times too small.

The nonelderly disabled (64 or younger) were less likely to cite Doctor Access or Care-related issues than Premium and Co-pays in both years.

The race/ethnicity variable had non-Hispanic Caucasians as the reference group. Results suggest that all other races/ethnicities were less likely to identify Doctor Access versus Premium and Co-pays problems as their MIR in both 2001 and 2002. This extends the findings from the individual logistic analysis of AR, that African Americans were more likely than non-Hispanic Caucasians to cite Premium and Co-pays and less likely to cite Doctor Access in both 2001 and 2002.

Results suggest that beneficiaries with less than a high school education were less likely to cite Doctor Access in 2001 and 2002 than Premium and Co-pays as their MIR for disenrolling. Because individuals with less education generally have lower income, this finding is consistent with what one might expect.

To induce symmetry, overall health was recoded from a five-category variable to a two-category dummy variable. The recoding is 0 = (1,2: excellent/very good) and 1 = (3,4,5: good/fair/poor). Individuals with worse self-assessed health status were significantly more likely than those in better health to indicate that Drug Coverage and Care-related issues were more important than Premium and Co-pays in both years. Those in worse health were less likely to cite Plan Information than Premium and Co-pays as their MIR in 2002. These findings about those in poorer health extend the logistic analysis findings of AR, where we found a similar pattern for the Care-related and Drug Coverage reasons but found no significant relationship between health status and the Co-payments/Coverage or Premium/Costs reason in 2001.

Beneficiaries who disenrolled to another MMC plan instead of an FFS plan were more likely to cite Drug Coverage reasons and less likely to cite Plan Information than Premium and Co-pays in both years. In 2002, they were less likely to cite Doctor Access than Premium and Co-pays. These findings are consistent with the AR logit results.

The findings for the disenrollees' ratings of their former plan suggest that people who rated their plan lower were more likely to cite all other reasons than Premium and Co-pays as their MIR, with larger impacts from the Plan Information and Care-related groups relative to Premium and Co-pays in both years. These findings are consistent with the AR logit results, where we saw the clearest satisfaction gradient for the Plan Information, Care Access, Specific Needs, and Other Care or Service groups.

The variable indicating drug coverage is a dichotomous variable that is 0 if the disenrollee's former plan did not offer drug coverage and 1 otherwise. We found highly significant interactions of drug coverage with four continuous plan- and market-level variables in both the 2001 and the 2002 models. This indicates that the effect that these continuous variables had on MIR selection was quite dependent on whether a beneficiary's former plan offered some drug coverage or no drug coverage. The four interactions between drug coverage and other variables (years plan has been in operation, plan market share, level of private market HMO and PPO penetration, and physician shortage) were significant in both the 2001 and 2002 models. At the 95 percent level of significance, beneficiaries with some drug coverage were less likely to cite Plan Information than Premium and Co-pays in 2001 but more likely to cite this reason in 2002. In 2002, disenrollees from plans that offered drug coverage were now *more* likely to cite

Care-related issues than Premium and Co-pays, which differs from the 2001 findings. The propensity to cite Doctor Access as more important than Premium and Co-pays remained stable over 2001 and 2002. Next, we discuss the four significant interactions with the drug coverage variable in 2001 and 2002.

The findings for the variable measuring the number of years a plan had been in operation suggest that individuals who left plans with longer tenure with Medicare were generally more likely to cite Doctor Access than Premium and Co-pays as their MIR in both 2001 and 2002. However, if their former plan offered drug coverage, they were more likely to cite Drug Coverage as their MIR than Premium and Co-pays in both 2001 and 2002. In 2002, those whose former plan offered drug coverage were more likely to also cite Care-related issues (and Drug Coverage) as their MIR than Premium and Co-pays.

People who left plans with larger market shares during 2001 were more likely to cite Premium and Co-pays than all other reasons as their MIR for leaving. In 2002, however, those who left plans with a greater share of the Medicare market were more likely to cite Doctor Access and Care-related issues as their MIR than Premiums and Co-pays. When the plan's share of the market is interacted with drug coverage, if no drug coverage was offered, there were no significant relationships; however, with some drug coverage, increased market share in 2002 was associated with a lower propensity to cite Doctor Access than Premium and Co-pays as a MIR. This is the reverse of the findings for 2001.

The continuous variable measuring the proportion of the private insurance market in the state that is held by PPO or HMO plans is a measure of overall market penetration by managed care. The results suggest that in 2001 beneficiaries living in markets with greater managed care penetration were typically more likely to cite Premium and Co-pays than all other reasons as their MIR for disenrolling. However, for those whose former plan offered drug coverage, this relationship was reversed—disenrollees from plans offering drug coverage in markets with more managed care were more likely to cite all other reasons as their MIR than disenrollees from plans with no drug coverage. In 2002, the findings were different—the only significant relationship for disenrollees in markets with more managed care was the tendency to cite Premiums and Co-pays as most important rather than Drug Coverage. This tendency was also true for those who left plans that offered some drug coverage.

The interaction of private managed care penetration with plan market share suggests that as either or both plan market share and managed care penetration increased, the other four reasons become more important relative to Premium and Co-pays. This suggests that, for beneficiaries living in states with higher managed care penetration and in local markets dominated by a large Medicare HMO plan, they were more concerned with other problems besides Premium and Co-pays.

The continuous variable measuring physician shortage is defined by the percentage of the state population considered to be underserved by primary care providers in 2001. The only significant finding for disenrollees in areas with greater shortages of physicians who left their plans in 2002 was an increased tendency to cite Doctor Access rather than Premium and Co-pays as their MIR. However, the interaction between physician shortage and drug coverage suggests

that in areas with greater physician shortages Doctor Access was less likely to be cited as an MIR when the beneficiary's former plan offered some drug coverage.

To assess robustness of the results, we refit the generalized logit model in 2002, allowing the data to determine which interaction effects were most significant in that year. The comparison of the 2002 data estimation results using the 2002 model with the 2002 data estimation results using the 2001 model is presented in Appendix A3, Table A3-1, where we see that the results on main covariates are quite stable to model specification although the group of most significant ( $\alpha \leq 0.01$ ) interaction effects was quite different across the 2 years. For the main effects, in only a few places was a coefficient significant in one model but not in the other, but even where they were different they were always in a consistent direction (i.e., above or below 1). Thus, even though they had different collections of significant interaction terms, the two different models did not affect the parameter estimates on the terms held in common with the 2001 data and model. Thus, we can be reassured that the results for 2002 displayed in Table 12 (using the 2001 model) are not biased by model misspecification.

As one final check on the robustness of the model, we considered whether the collection of about 1,100 beneficiaries who disenrolled from a private FFS plan was somehow different than the rest of the MMC disenrollees and whether they should be excluded from the analysis. We found that the results in Tables 11 and 12 were very robust to the exclusion of this subgroup of disenrollees.



## **SECTION 5**

### **PLAN-LEVEL RESULTS**

The analysis reported in this section investigated the assertion that reports of plan disenrollment rates can suggest beneficiaries' relative satisfaction with various attributes of their plans, including quality, and determine the following:

1. Are higher voluntary plan disenrollment rates associated with citing specific types of reasons for disenrollment? With citing more reasons for disenrollment?
2. Do high disenrollment rates suggest problems with access or quality of care for certain beneficiaries?
3. What plan and market characteristics are associated with beneficiaries leaving plans?

#### **5.1 Descriptive Analysis**

The outcome variables for this analysis were the voluntary disenrollment rates for 2001 and 2002 as calculated and reported by CMS, based on MMC enrollment data. The units of analysis were MCOs participating in Medicare during 2001 and 2002. We first used descriptive statistics to examine the dependent and potential independent variables and then conducted bivariate analyses using correlation and analysis of variance (as appropriate for continuous and categorical independent variables). We provide the results of this descriptive analysis in this section. In Section 5.2, we report on the results of a series of regression models to investigate relationships between MCO disenrollment rates (more precisely, the natural log of these rates) and potential covariates.

Disenrollees from 196 MCOs were surveyed in the 2001 Reasons Survey. CMS calculated disenrollment rates for 170 of these MCOs. (Disenrollment rates were not calculated for plans that withdrew from the MMC program effective January 1, 2002.) There were fewer than 10 respondents to the Reasons Survey for seven of the 170 MCOs, so these seven MCOs were excluded, leaving 163 MCOs for this analysis. There were 153 MCOs meeting similar criteria for 2002 and 149 MCOs meeting the criteria for both years.

The average Medicare MMC enrollment at the end of 2001 for these MCOs was 32,982 (with a standard deviation of 52,912). The MMC enrollment ranged from 570 to 453,081 beneficiaries, but the majority of plans (10th to 90th percentile) had 3,000 to 71,000 enrollees. The mean voluntary disenrollment rate during 2001 for these 163 MCOs was 12 percent (with a standard deviation of 10), a median of 9 percent, and a range from 1 to 56 percent. (The mean disenrollment rate for the seven excluded plans was 5 percent, and the range was from 1 to 13 percent.) The average Medicare MMC enrollment at the end of 2002 for the 153 MCOs was 32,794 (with a standard deviation of 62,566).

Figures 6a and 6b display the distribution of voluntary disenrollment rates for these MCOs in 2001 and 2002, respectively. Figure 7 plots the disenrollment rates for 2002 against those for 2001 for the 149 plans included in the Reasons Survey for both years.

**Figure 6a**  
**2001 voluntary disenrollment rates**

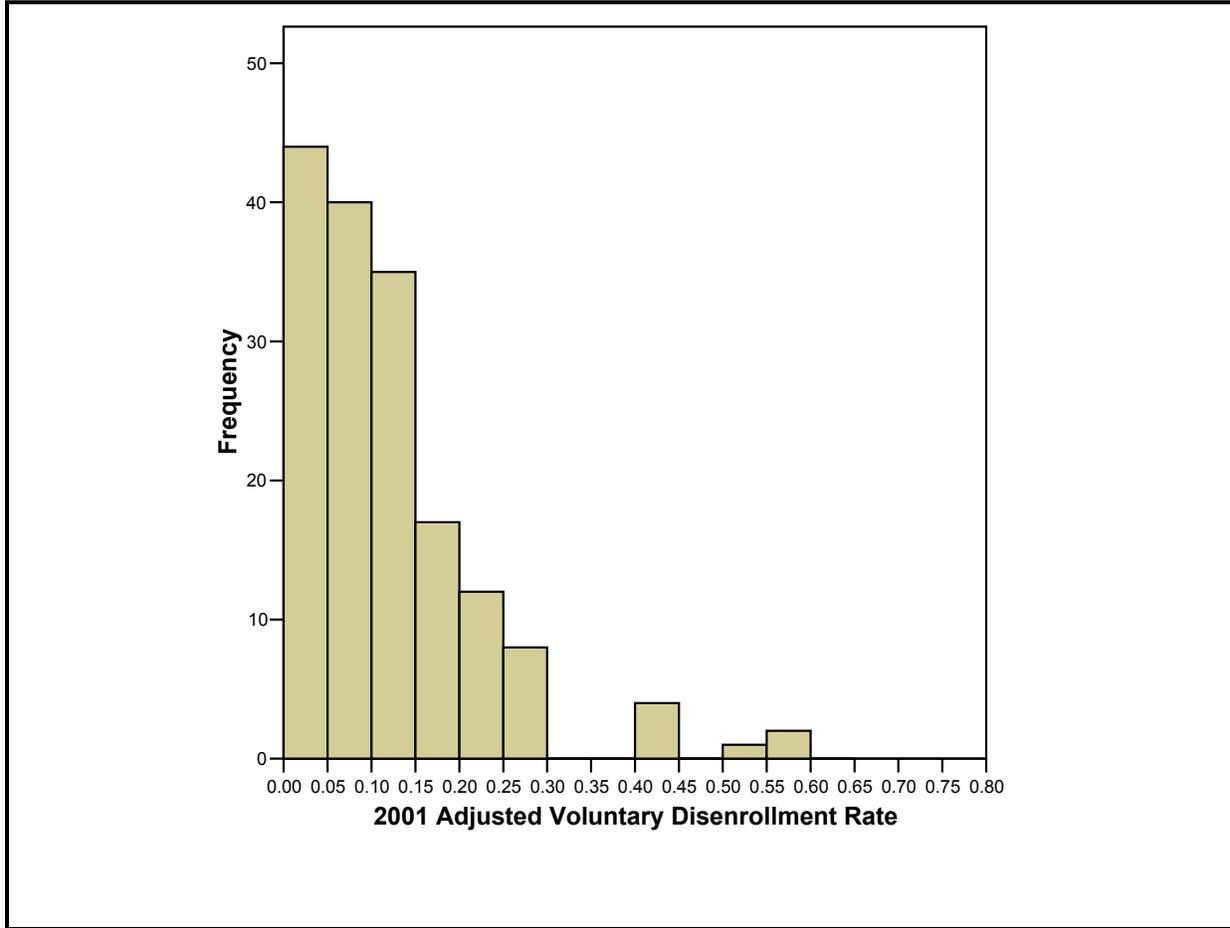
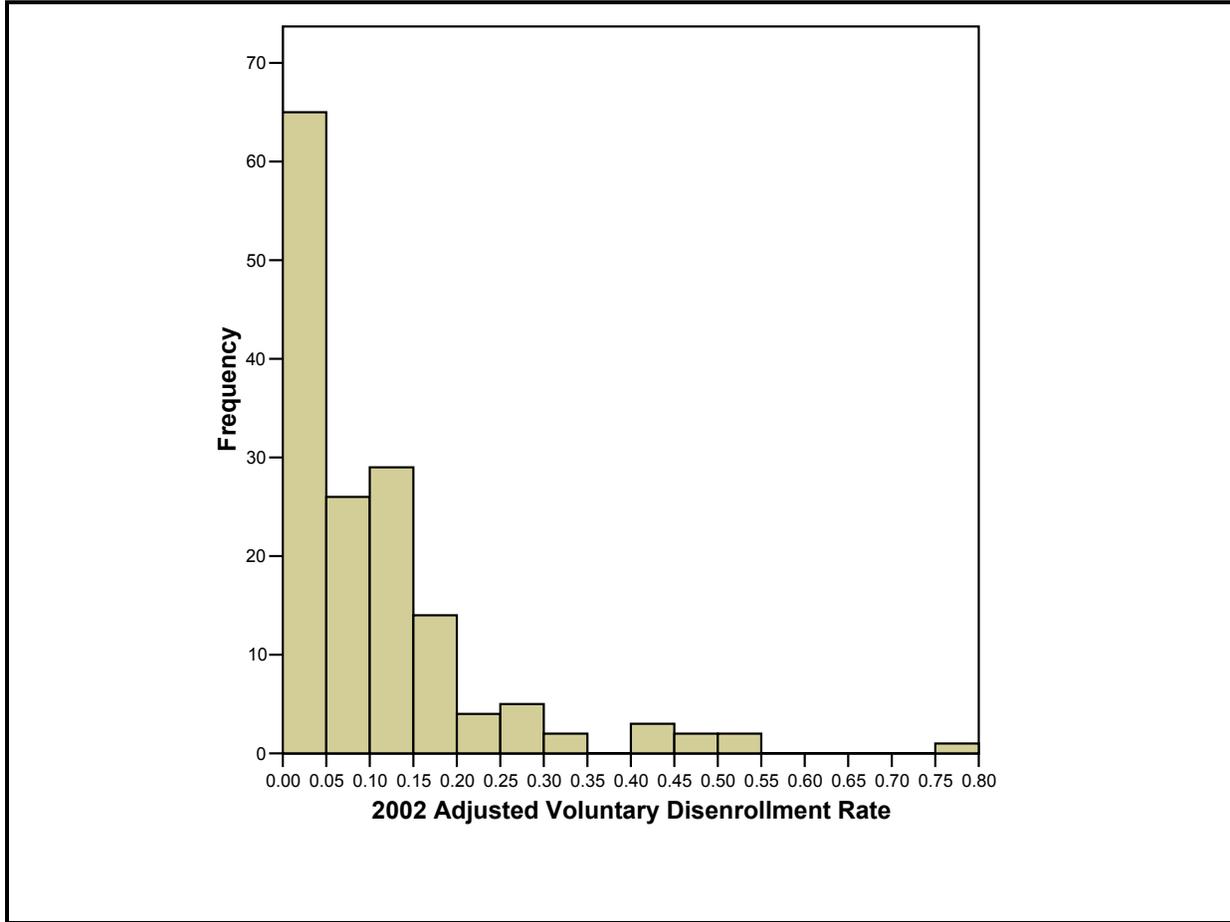


Figure 7 shows that the correlation between 2001 and 2002 disenrollment rates was fairly strong but also points to the existence of a few outlier MCOs whose rates were high in 2002 but not in 2001, high in 2001 but not in 2002, or high in both years.

Table 13 presents descriptive statistics for the disenrollee characteristics. For example, the average percentage of disenrollees from an MCO in 2002 who reported that they were in poor or fair health was 31 percent, but in at least one MCO, this percentage was as low as 5 percent and in another it was as high as 57 percent.

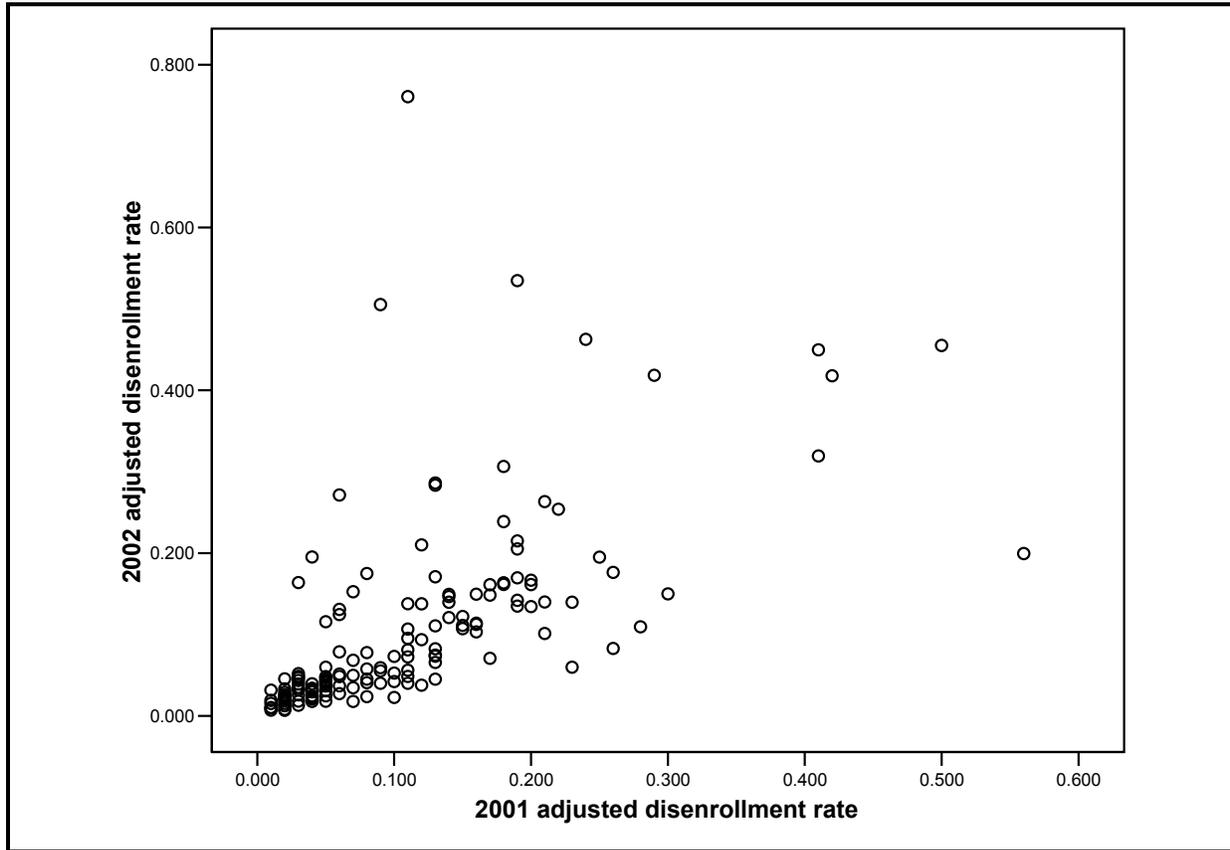
Table 14 presents descriptive statistics by MCO for the reasons cited for leaving a plan. On average, the most frequently cited reason group in 2001 was Premium/Costs with 54 percent of disenrollees from an MCO citing a reason for leaving that fell in this group, but in 2002, more disenrollees cited concerns about Co-payments/Coverage than Premiums/Costs (59 percent versus 57 percent). However, the range of percentages of disenrollees from an MCO citing reasons in these grouping was very broad in both years. The least frequently cited reason grouping, Specific Needs, had both the lowest average by MCO in 2001 and 2002 as well as the smallest range.

**Figure 6b**  
**2002 voluntary disenrollment rates**



Tables 15a and 15b present the results of bivariate analyses to determine whether higher MCO disenrollment rates were associated with particular types of reasons for leaving. We calculated Pearson's correlation coefficients for the MCOs and determined that disenrollment rates were moderately associated (between 0.2 and 0.4) with the Drug Coverage and Doctor Access reasons groupings in both 2001 and 2002 and with the Specific Need and Co-payments/Coverage groupings in 2002. However, the distribution of disenrollment rates is highly skewed. To account for the lack of a normal distribution, we calculated the natural logarithm of each disenrollment rate. Correlation coefficients were higher with the natural log of the disenrollment rate, so, in addition to the two reason groupings noted above, we also noted moderate associations between higher disenrollment rates and higher percentages of disenrollees citing Plan Information and Specific Needs problems and Co-payments/Coverage issues. In addition, higher disenrollment rates were also associated with the citing of reasons. On average, disenrollees from MCOs cited more reasons for leaving than disenrollees from MCOs with lower disenrollment.

**Figure 7**  
**2002 vs. 2001 adjusted voluntary disenrollment rates**



**Table 13**  
**Disenrollee characteristics by MCO, 2001 and 2002**

Disenrollee characteristics	2001 (n = 163)				2002 (n = 153)			
	Min.	Max.	Mean	Std. dev.	Min.	Max.	Mean	Std. dev.
Percent female	34.8	75.1	57.7	6.1	40.0	87.5	58.6	7.4
Percent under 65 (nonelderly disabled)	0.0	45.1	11.8	6.9	0.0	32.2	10.0	5.6
Percent reporting poor or fair health	9.9	57.0	30.2	8.0	5.4	57.3	31.2	9.6
Percent who did not graduate high school	6.2	59.5	28.2	9.9	0.0	66.2	30.1	11.6
Percent not non-Hispanic Caucasian	0.0	97.6	15.9	17.8	0.0	73.7	10.9	14.3
Percent Hispanic	0.0	62.7	7.0	10.2	0.0	85.6	7.7	13.0
Percent dually eligible (Medicaid)	0.0	80.9	16.9	12.2	0.0	81.7	18.3	13.9
Percent leaving to another MMC plan	0.0	91.1	38.0	25.5	0.0	95.2	37.7	28.2
Percent leaving in 1st or 4th quarter	38.2	98.5	61.6	9.2	21.7	94.2	64.0	12.5
Percent leaving after less than 3 months	0.0	33.0	9.3	8.0	0.0	36.4	7.4	6.8
Average rating of health plan	2.1	8.1	5.8	0.9	3.5	8.6	6.6	0.9

**Table 14**  
**Disenrollment reasons cited by MCO, 2001 and 2002**

Percentage of disenrollees citing any reason in group	2001				2002			
	Min.	Max.	Mean	Std. dev.	Min.	Max.	Mean	Std. dev.
Co-payments/Coverage	23%	83%	53%	13	20%	90%	59%	14
Premium/Costs	16%	93%	54%	20	15%	96%	57%	20
Plan Information	4%	90%	35%	14	9%	87%	35%	15
Doctor Access	1%	74%	36%	17	4%	79%	34%	17
Other Care or Service	0%	93%	26%	10	9%	60%	28%	10
Drug Coverage	0%	56%	27%	12	0%	57%	27%	13
Care Access	3%	61%	28%	13	3%	78%	26%	14
Specific Needs	5%	55%	24%	10	0%	57%	26%	11

**Table 15a**  
**Were higher rates associated with different types of reasons for leaving in 2001?**

Percentage of disenrollees citing any reason in grouping	Correlation with adjusted disenrollment rate			
	Normal		Natural log	
Drug Coverage	0.343	p < .01	0.481	p < .01
Doctor Access	0.250	p < .01	0.339	p < .01
Plan Information	0.192	p < .05	0.257	p < .01
Specific Needs	0.192	p < .05	0.247	p < .01
Co-payments/Coverage	0.153	n.s.	0.206	p < .01
Other Care or Service	0.002	n.s.	0.009	n.s.
Care Access	-0.002	n.s.	0.053	n.s.
Premium/Costs	-0.036	n.s.	-0.007	n.s.

As noted elsewhere (Harris-Kojetin et al., 2002), there are associations between citing reasons in one group with citing reasons in a different group. Because of this characteristic at the individual level, we were concerned that if the same association was found at the MCO level, we might risk introducing unacceptable levels of collinearity into any multivariate models if all eight reasons groupings were included. We calculated correlation coefficients between the MCO-level reasons variables, and the results are presented in Tables 16 and 16b.

**Table 15b**  
**Were higher rates associated with different types of reasons for leaving in 2002?**

Percentage of disenrollees citing any reason in grouping	Correlation with adjusted disenrollment rate			
	Normal		Natural log	
Drug Coverage	.301	p < .01	.479	p < .01
Doctor Access	.296	p < .01	.342	p < .01
Plan Information	.198	p < .05	.242	p < .01
Specific Needs	.293	p < .01	.372	p < .01
Co-payments/Coverage	.237	p < .01	.322	p < .01
Other Care or Service	.094	n.s.	.074	n.s.
Care Access	.053	n.s.	.086	n.s.
Premium/Costs	-.060	n.s.	-.074	n.s.

**Table 16a**  
**Correlation between MCO-level reason groups, 2001**

	Plan information	Doctor access	Care access	Specific needs	Other care or service	Premium/ costs	Co-payments/ coverage	Drug coverage
Plan Information	1.000							
Doctor Access	0.520	1.000						
Care Access	0.796	0.583	1.000					
Specific Needs	0.717	0.323	0.466	1.000				
Other Care or Service	0.715	0.467	0.800	0.504	1.000			
Premium/Costs	-0.520	-0.670	-0.550	-0.407	-0.523	1.000		
Co-payments/Coverage	0.152	-0.152	0.001	0.461	0.177	0.231	1.000	
Drug Coverage	0.466	0.287	0.232	0.512	0.278	-0.110	0.542	1.000

Note: The shaded boxes indicate significance at the 99% level.

From this analysis, we observed that leaving due to Plan Information problems was highly correlated ( $r > 0.7$ ) with leaving because of Care Access, Specific Needs, and Other Care or Service problems. Consequently, this reason was dropped from the subsequent multivariate models to reduce multicollinearity. The Premium/Costs group was negatively associated with all other reason groups and had previously suggested no bivariate relationship with disenrollment rate, but this variable was retained in case it showed a significant association when we controlled for other reasons for leaving.

**Table 16b**  
**Correlation between MCO-level reason groups, 2002**

	Plan information	Doctor access	Care access	Specific needs	Other care or service	Premium/costs	Co-payments /coverage	Drug coverage
Plan Information	1.000							
Doctor Access	0.467	1.000						
Care Access	0.811	0.569	1.000					
Specific Needs	0.737	0.275	0.509	1.000				
Other Care or Service	0.739	0.461	0.802	0.574	1.000			
Premium/Costs	-0.540	-0.753	-0.598	-0.366	-0.515	1.000		
Co-payments/Coverage	0.192	-0.258	-0.006	0.525	0.073	0.211	1.000	
Drug Coverage	0.366	0.133	0.218	0.497	0.246	-0.110	0.585	1.000

Note: The shaded boxes indicate significance at the 99% level.

We were also interested in determining the level of correlation between the percentage of disenrollees citing reasons in particular groupings in 2001 and 2002. As shown in Table 17, there was significant correlation between the 2 years with the highest correlations for the percentage of disenrollees citing problems with Doctor Access and Concerns about Drug Coverage and the least association for problems with Other Care or Service.

**Table 17**  
**Correlation between MCO-level reason groups in 2001 and 2002**

	Plan information	Doctor access	Care access	Specific needs	Other care or service	Premium/costs	Co-payments /coverage	Drug coverage
Plan Information	0.732	0.425	0.606	0.578	0.499	-0.509	0.156	0.342
Doctor Access	0.481	0.682	0.528	0.274	0.426	-0.535	-0.171	0.146
Care Access	0.618	0.491	0.761	0.351	0.469	-0.500	0.019	0.218
Specific Needs	0.527	0.307	0.335	0.673	0.315	-0.334	0.392	0.422
Other Care or Service	0.478	0.352	0.563	0.335	0.460	-0.480	0.049	0.200
Premium/Costs	-0.476	-0.487	-0.450	-0.370	-0.385	0.643	0.069	-0.098
Co-payments/Coverage	0.182	0.033	0.066	0.417	0.145	0.028	0.648	0.523
Drug Coverage	0.441	0.389	0.291	0.461	0.311	-0.218	0.405	0.762

Note: The shaded boxes indicate correlations of particular reason groups across time.

Our final set of bivariate analyses involved investigating other plan or market characteristics that might be associated with disenrollment rates. Tables 18a and 18b present the results of these analyses.

**Table 18a**  
**What plan and market characteristics were associated with disenrollment rates**  
**in 2001 (n = 163)?**

	Mean (sd)	Results of bivariate analysis
Years in operation with CMS	8.33 (5.37)	
No. of MMC enrollees in MCO	32,892 (52,912)	
Plan's share of MMC market		Correlation with natural log of disenrollment rate: $-.286^{**}$
Profit status	For profit 62% Not for profit 38%	14.3% ANOVA: $F = 18.6^{**}$ 7.4%
MMC penetration (2000)	27.6% (3.8)	
Change in MMC penetration (1998–2000)	2.9% (3.5)	
Average MMC payment (2001)	\$568 (\$76)	Correlation with natural log of disenrollment rate: $.509^{**}$
Percentage of population $\geq 65$	12.8% (2.6)	
Percentage 65–74 as percentage of population $\geq 65$	52.1% (2.3)	
Percentage of households with householder $\geq 65$ , that have $< \$30,000$ annual income (1999 dollars)	46.5% (5.9)	
Physicians per 1,000 elderly	19.9 (6.4)	
Percentage of population underserved by primary care physicians in 2001	9.4% (4.4)	Correlation with natural log of disenrollment rate: $.192^*$
Percentage of physicians who accept Medicare assignment	88.5% (5.8)	

\*\*Significant at the 99 percent level of confidence.

\*Significant at the 95 percent level of confidence.

## 5.2 Multivariate Analysis

As with the descriptive analysis, the outcome variables for these MCO-level analyses were the 2001 and 2002 voluntary disenrollment rates as calculated by CMS using MMC enrollment data. The units of analysis were MCOs participating in Medicare during 2001 and 2002. After completing our descriptive and bivariate analyses to assist with variable selection, we ran a series of regression models to investigate relationships between MCO disenrollment rates (more precisely, the natural log of these rates). We entered potential covariates into our models in groups. In other words, in the first model, we regressed disenrollment rates on the disenrollee characteristics of each MCO. In the next model, we regressed disenrollment rates on reasons for leaving. A third model included significant plan and market characteristics. Because of the small number of MCOs available for analysis, we used this approach to minimize the number of covariates in each model.

**Table 18b**  
**What plan and market characteristics were associated with disenrollment rates**  
**in 2002 (n = 153)?**

	Mean (sd)	Results of bivariate analysis
Years in operation with CMS	9.32 (5.62)	
No. of MMC enrollees in MCO	32,794 (62,566)	
Profit status	For profit 59% Not for profit 41%	12.6% ANOVA: F = 4.02** 8.7%
Plan's share of MMC market		Correlation with natural log of disenrollment rate: -.444**
MMC Penetration (2000)	27.6% (3.8)	Correlation with natural log of disenrollment rate: .219**
Change in MMC penetration (1998–2000)	2.4% (3.3)	
Average MMC payment (2002)	\$588 (\$76)	Correlation with natural log of disenrollment rate: .557**
Percentage of population ≥ 65	12.9% (2.7)	
Percentage 65–74 as percentage of population ≥65	51.6% (2.2)	
Percentage of households with householder ≥65, that have < \$30,000 annual income (1999 dollars)	47.2% (5.9)	
Physicians per 1,000 elderly	19.1 (6.5)	Correlation with natural log of disenrollment rate: .174*
Percentage of population underserved by primary care physicians in 2001	9.2% (4.2)	
Percentage of physicians who accept Medicare assignment	88.4% (5.8)	

\*\*Significant at the 99 percent level of confidence.

\*Significant at the 95 percent level of confidence.

The first regression models included the set of disenrollee variables as covariates. Table 19 presents the results of the analyses for 2001 and 2002, examining whether disenrollment rates were associated with particular disenrollee characteristics. Both models were significant. In general, the same variables were significant in both years with a couple of exceptions. Higher disenrollment rates were associated with plans that had the following:

- More disenrollees who did not graduate high school.

**Table 19**

**Were disenrollment rates associated with particular disenrollee characteristics in 2001 and 2002?**

Dependent variable: Natural log disenrollment rate	Standardized coefficients			
	2001 (n = 163)		2002 (n=153)	
Percentage female (*)	0.0	*	0.01	
Percentage under 65 (nonelderly disabled)	0.0		0.00	
Percentage reporting poor or fair health**	-0.0	***	-0.23	***
Percentage who did not graduate high school**	0.0	***	0.23	***
Percentage who were not non-Hispanic Caucasian	0.0		0.24	***
Percentage Hispanic**	0.0	***	0.18	***
Percentage dually eligible (Medicaid)**	-0.0	***	-0.14	*
Percentage leaving to another MMC plan**	0.0	***	0.32	***
Percentage rapid (leaving after less than 3 months)**	-0.0	***	-0.23	***
Average rating of former health plan	-0.0	***	-0.35	***
	F = 13.8**		F = 15.99***	
	Adj. R <sup>2</sup> = .44		Adj. R <sup>2</sup> = .53	

\*\*\*Significant at the 99 percent level of confidence.

\*Significant at the 90 percent level of confidence.

- More Hispanic disenrollees.
- More nonwhite disenrollees (i.e., those who were not non-Hispanic Caucasian) (2002 only).
- More disenrollees switching to MCOs (vs. FFS).
- Fewer disenrollees in fair or poor health.
- Fewer dually eligible (2001 only).
- Fewer rapid disenrollees.
- Lower disenrollee ratings of their former health plan.

In the next model, we examined whether disenrollment rates were associated with disenrollees' reasons for leaving. Table 20 presents these results and shows that this model explained from 35 to 45 percent of the variation in disenrollment rates. Higher disenrollment rates were associated in both 2001 and 2002 with a greater percentage of disenrollees leaving as a result of problems getting the doctors they wanted, with more disenrollees leaving because premiums were too high, and with problems getting or paying for prescription medicines. In

**Table 20**  
**Are disenrollment rates associated with reasons for leaving?**

Dependent variable: Natural log of disenrollment rate	Standardized coefficients 2001 (n = 163)		Standardized coefficients 2002 (n = 153)	
Doctor Access problems	0.53	***	0.73	***
Care Access problems	-0.12		-0.16	
Specific Needs problems	0.17	*	0.30	***
Other Care or Service problems	-0.16		-0.18	*
Premium/Costs issues	0.32	***	0.41	***
Co-payments/Coverage	-0.03		0.10	
Drug Coverage issues	0.37	***	0.29	***
	F = 13.6***		F=19.05***	
	Adj. R <sup>2</sup> = .35		Adj. R <sup>2</sup> = .45	

\*\*\*Significant at the 99 percent level of confidence.

\*Significant at the 90 percent level of confidence.

2002, higher disenrollment rates were also associated with a greater percentage of disenrollees citing problems with getting specific needs met.

We then combined the covariates with a significance level of at least 0.10 and combined the two models together to examine disenrollment rates controlling for both disenrollee characteristics and reasons for leaving. The results of this model are presented in Table 21. The direction of the relationships between each covariate and the disenrollment rate remained the same, and most covariates remained significant in both years, except for the percentage of disenrollees who were Hispanic which was only significant in 2001.

One of the difficulties with this set of analyses was the relatively small number of MCOs with MMC contracts in each year. To increase the power available, we next explored the possibility of combining the 2 years of data. Table 22 shows the results of a combined model of disenrollment rates for both 2001 and 2002 regressed on disenrollee characteristics and reasons for leaving. This model supported the findings when each year was run separately and did not identify any additional significant covariates, but it did clarify the potential significance of covariates that were significant in one year and not the other.<sup>13</sup>

---

<sup>13</sup>One concern about such an analysis is a lack of independence between cases that represent the same MCO but different years. To test for the impact of this potential violation of the assumptions on which ordinary least squares (OLS) regression is based, we ran alternative mixed models with the year as a factor held constant in the model. Although these models showed fairly strong correlation between cases for the same plan across years (averaging around 0.40), the actual impact on the direction and significance of covariates in the model was negligible. All covariates that showed significant relationships in the OLS regressions showed similarly

**Table 21**  
**Are disenrollment rates associated with disenrollee characteristics and reasons for leaving in 2001 and 2002?**

	Standardized coefficients		Standardized coefficients	
	2001 (n = 163)		2002 (n = 153)	
Female	0.08		0.00	
Reporting poor or fair health	-0.28	***	-0.18	**
Did not graduate high school	0.24	***	0.25	***
Hispanic	0.19	***	0.01	
Dually eligible (Medicaid)	-0.12	*	-0.03	
Left to go to another MMC plan	0.23	***	0.36	***
Left after less than 3 months	-0.15	*	-0.08	
Average rating of health plan	-0.20	**	-0.11	
Doctor access problems	0.38	***	0.50	***
Specific needs problems	0.07		0.18	*
Concerns about premiums	0.27	***	0.36	***
Problems getting/paying for prescription medicines	0.12	*	0.14	*
	F = 15.7*** Adj. R <sup>2</sup> = .52		F = 16.9*** Adj. R <sup>2</sup> = .59	

\*\*\*Significant at the 99 percent level of confidence.

\*\*Significant at the 95 percent level of confidence.

\*Significant at the 90 percent level of confidence.

The final set of variables to introduce into the analysis was the plan and market information (mostly measured at the county level but with a few variables available only at the state level). Table 23 presents the regression results for disenrollment rates and plan and market characteristics separately for the 2 years, and Table 24 displays the results for a combined model of both years. These variables collectively explained about 39 percent of the variation in disenrollment rates. Higher disenrollment rates were associated with higher MMC payments, higher MMC penetration in the plan's service area, for-profit tax status, and a greater percentage of the population in the state being underserved by primary care physicians. Lower disenrollment rates were associated with having a lower share of the MMC market.

---

significant relationships in the mixed model in the same direction. For ease of interpretation, we only present results of the OLS regression in this report, but the other results are available upon request.

**Table 22**  
**Are disenrollment rates associated with disenrollee characteristics and reasons for leaving, 2001 and 2002 combined?**

	Unstandardized coefficients		Standardized coefficients	Sig.
	Beta	Std. error	Beta	
(Constant)	-1.45	0.58		**
Percentage citing problems with doctors	2.66	0.30	0.50	***
Percentage citing problems getting care	-2.91	0.42	-0.42	***
Percentage citing problems getting specific needs met	1.12	0.48	0.12	**
Percentage citing concerns about premiums	1.13	0.27	0.24	***
Percentage citing concerns with drug coverage	0.60	0.35	0.08	*
Percentage female	-0.16	0.53	-0.01	
Percentage reporting poor or fair health	-1.85	0.52	-0.18	***
Percentage who did not graduate high school	1.25	0.42	0.15	***
Percentage nonwhite	0.67	0.27	0.12	**
Percentage Hispanic	1.52	0.36	0.19	***
Percentage dually eligible (Medicaid)	-0.36	0.37	-0.05	
Percentage leaving to another MMC plan	1.00	0.15	0.29	***
Percentage leaving after less than 3 months	-1.86	0.60	-0.15	***
Average rating of health plan	-0.39	0.06	-0.43	***
			F = 36.4 ***	
			Adj. R <sup>2</sup> = .61	

For the final model, we combined the variables from Table 22 with significant coefficients with those from Table 24 to look at the association between disenrollment rates and disenrollee characteristics, reasons for leaving, and plan and market characteristics.<sup>14</sup> To control for the variation in size of the MCOs, we also included the number of MMC enrollees in each plan even though this variable had not been found to be significant in earlier models. The results of the full model are presented in Table 25.<sup>15</sup>

<sup>14</sup>To control for the variation in size of the MCOs, we also included the number of MMC enrollees in each plan even though this variable had not been found to be significant in earlier models.

<sup>15</sup>To test the stability of the final model, we conducted outlier analysis to examine the impact on the model of removing plans with particularly high disenrollment rates. There were three plans in 2001 and six in 2002 for which the disenrollment rate was more than three standard deviations above the overall mean disenrollment rate. Only one plan was an outlier in both years.<sup>15</sup> The plans ranged in size from 3,163 enrollees to 60,604 MMC enrollees, and their disenrollment rates ranged from 45 to 76 percent. Rerunning the full regression model without these nine cases did not change the significance or direction of any of the relationships.

**Table 23**  
**Are disenrollment rates associated with plan and market characteristics in 2001 and 2002?**

Dependent variable: Natural log of disenrollment rate	Standardized coefficients		Standardized coefficients	
	2001 (n = 163)		2002 (n = 153)	
Plan's share of Medicare market	-0.21	***	-0.37	***
For-profit status	0.26	***	0.10	
Average MMC payment rate in plan's service area	0.42	***	0.40	***
MMC penetration, 2000	0.11		0.17	**
Change in M+C penetration (12/98-12/00)	0.01		0.18	***
MDs per 1,000 elderly	-0.08		-0.07	
Percentage of population underserved by primary care physicians	0.20	***	0.03	
	F = 15.1	***	F = 17.3	***
	Adj. R <sup>2</sup> = .38		Adj. R <sup>2</sup> = .43	

\*\*\*Significant at the 99 percent level of confidence.

\*\*Significant at the 95 percent level of confidence.

\*Significant at the 90 percent level of confidence.

The final model shows that plans having higher disenrollment rates were likely to have the following characteristics:

- A higher percentage of disenrollees citing problems getting doctors.
- A higher percentage of disenrollees citing concerns about premiums.
- A higher percentage of disenrollees who did not graduate high school.
- A higher percentage of Hispanic disenrollees.
- A higher percentage of disenrollees going to another MMC plan.
- For-profit tax status.
- Higher MMC payments in the MCO's service area.
- A higher percentage of state population underserved by primary care physicians.
- A lower percentage of disenrollees citing problems getting care.
- A lower percentage of disenrollees reporting poor or fair health.

**Table 24**  
**Are disenrollment rates associated with plan and market characteristics in 2001 and 2002 combined?**

	Unstandardized coefficients		Standardized coefficients	Sig.
	Beta	Std. error	Beta	
(Constant)	-5.36	0.36		***
Plan's share of Medicare market	-5.16	0.80	-0.32	***
For-profit status	0.33	0.09	0.18	***
Average MMC payment rate in plan's service area	0.44	0.06	0.37	***
MMC penetration, 2000	1.15	0.34	0.16	***
Change in M+C penetration (12/98-12/00)	3.29	1.35	0.12	**
MDs per 1,000 elderly	-0.01	0.01	-0.05	
Percentage of population underserved by primary care physicians	2.21	1.02	0.10	**
		F = 30.2 ***		
		Adj. R <sup>2</sup> = .39		

\*\*\*Significant at the 99 percent level of confidence.

\*\*Significant at the 95 percent level of confidence.

- A lower percentage of disenrollees leaving within 3 months of enrollment.
- A lower disenrollee rating of the plan.
- A lower percentage share of the MMC market.

**Table 25**  
**Results for final full regression model of MMC disenrollment rates in 2001 and 2002**  
**combined**

Dependent variable: Natural log of adjusted disenrollment rate	Unstandardized coefficients		Standardized coefficients	Significance
	Beta	Std. error	Beta	
(Constant)	-2.56	0.58		***
Percentage citing problems with doctors	2.28	0.29	0.42	***
Percentage citing problems getting care	-2.60	0.41	-0.38	***
Percentage citing problems getting particular needs met	0.68	0.46	0.08	
Percentage citing concerns about premiums	1.19	0.26	0.26	***
Percentage citing concerns re drug coverage	0.45	0.33	0.06	
Percentage reporting poor or fair health	-1.78	0.47	-0.17	***
Percentage who did not graduate high school	0.86	0.41	0.10	**
Percentage nonwhite	0.13	0.27	0.02	
Percentage Hispanic	1.15	0.35	0.15	***
Percentage leaving to another MMC plan	0.60	0.19	0.18	***
Percentage leaving after less than 3 months	-2.39	0.56	-0.19	***
Average rating of health plan	-0.37	0.05	-0.41	***
Plan's share of Medicare market	-3.22	0.71	-0.20	***
For-profit status	0.16	0.07	0.09	**
Average MMC payment rate in plan's service area	0.22	0.06	0.18	***
MMC penetration, 2000	0.30	0.37	0.04	
Change in M+C penetration (12/98-12/00)	0.21	1.11	0.01	
Percentage of population underserved by primary care physicians	2.45	0.82	0.11	***
Number of enrollees in plan	0.00	0.00	0.03	
Adjusted R <sup>2</sup>	0.662			
F	33.500			***

\*\*\*Significant at the 99 percent level of confidence.

\*\*Significant at the 95 percent level of confidence.

## SECTION 6 CONCLUSIONS

### 6.1 Summary of Findings

The findings from the beneficiary- and plan-level analyses are summarized and synthesized in this section. First, we summarize the multivariate analyses of disenrollment *reasons* conducted at the beneficiary level, and then discuss the results of the plan-level analysis of disenrollment *rates*.

#### 6.1.1 Summary of Findings from Beneficiary-Level Analysis

One research question of interest asked whether beneficiaries in some subgroups of MMC plan voluntary disenrollees were more likely to cite specific reasons for disenrollment, once confounding factors were held constant statistically. The multivariate beneficiary-level analysis found that, even controlling for confounding by plan-level, market-level, and other subgroup characteristics, there were significant differences among the subgroups in the reasons cited for disenrollment. In fact, once these sources of confounding were controlled for statistically, we found significant differences across subgroups that were not always apparent in the descriptive (bivariate) analysis, especially for the MIR. In general, we found consistency between the binary logistic analysis of the AR and the GLM analysis of the MIR. In the discussion that follows, we summarize the GLM results that showed consistency across both 2001 and 2002 and compare these with the individual logit results on a **subgroup-by-subgroup** basis. In particular, we found the following:

- The **oldest beneficiary group** was more likely than the younger elderly to cite Care-related issues than Premium and Co-pays (the reference reason) as their MIR for leaving but less likely to cite Drug Coverage than Premium and Co-pays. These findings are particularly interesting because, in the individual logistic analysis of AR, we found that the oldest beneficiaries were less likely than younger elderly beneficiaries to cite Drug Coverage, Premium/Costs, and Co-payment/Coverage reasons, but we could not assess the relative importance of Drug Coverage and Premium and Co-pays for this group.
- The **nonelderly disabled** were less likely to cite Doctor Access or Care-related issues than Premium and Co-pays.
- All other **races/ethnicities** were less likely than non-Hispanic Caucasians to state Doctor Access versus Premium and Co-pays as their MIR. In the individual logistic analysis of AR, we found that only African Americans were less likely (than non-Hispanic Caucasians) to cite Doctor Access problems.
- Results suggest that beneficiaries with less than a high school **education** were less likely to cite problems with Doctor Access than Premium and Co-pays as their MIR. Because individuals with less education generally have lower income, this finding is consistent with what might be expected.

- Individuals with worse **self-assessed health status** were significantly more likely than those in better health to indicate that Care-related issues and Drug Coverage reasons were more important as reasons for leaving than Premium and Co-pays. This helps us understand the relative importance of Care-related issues and Drug Coverage reasons relative to Premium and Co-pays for the less healthy group. In the individual logistic analysis of AR, we found consistent results for the Care-related issues and Drug Coverage reasons but found no significant relationship between health status and Co-payments/Coverage or Premium/Costs reasons in 2001. In 2002, the logistic results suggested those in poorer health were more likely to cite problems with Co-payments/Coverage as reasons for leaving.
- Beneficiaries who **disenrolled to another MMC plan**, instead of the FFS plan, were less likely to cite Plan Information and more likely to cite Drug Coverage than Premium and Co-pays. This is consistent with the binary logit results, but, for the latter, we were not able to assess the relative ranking of Drug Coverage versus Premium/Costs or Co-payments/Coverage.
- The findings for the individual's reported **satisfaction with their health plan** suggest that people who rated their plan lower were more likely to cite Plan Information, Care Access, and Drug Coverage reasons than Premium and Co-pays as their MIR, with larger impacts from the Plan Information and Care-related issues groups relative to Premium and Co-pays. These findings are consistent with the binary logit results, where we saw the clearest satisfaction gradient for the Plan Information and Care-related issues groups, but we were not able to determine the relative importance of Premium and Co-pays.

Another research question asked, "What plan and market characteristics are associated with beneficiaries citing specific reasons for disenrollment?" As indicated below, we found that various plan- and market-level effects were important determinants of disenrollment decisions:

- **In plans offering drug coverage:** Disenrollees from these plans were more likely to cite problems with Doctor Access, Care Access, and concerns about Drug Coverage as reasons for disenrollment compared with disenrollees from plans that did not offer drug coverage; beneficiaries were more likely to cite Doctor Access than Premium and Co-pays as the MIR.
- **In plans with longer tenure in operation:** Disenrollees from these plans were more likely to cite problems getting Care Access as a reason for disenrollment and to cite Doctor Access rather than Premium and Co-pays as their MIR.
- **In plans with a larger share of the Medicare market:** Disenrollees from these plans were less likely to cite Plan Information, Doctor Access, or Drug Coverage as reasons for disenrollment.
- **In markets with higher private-sector managed care penetration:** Disenrollees in these markets were less likely to cite problems with Care Access as a reason for

disenrollment and were less likely to cite Drug Coverage than Premium and Co-pays reasons as the MIR.

- **In more urban neighborhoods:** Disenrollees were more likely to cite problems with Doctor Access or Drug Coverage as reasons for disenrollment; disenrollees were more likely to cite Doctor Access rather than Premium and Co-pays as their MIR in both years. Care-related issues and Drug Coverage were also cited more frequently than Premium and Co-pays as an MIR in 2002.
- **In states with people living in areas with physician shortages:** Disenrollees were more likely to cite problems with Specific Needs or concerns about Co-payments/Coverage or Drug Coverage as reasons for disenrollment, but they were less likely to cite Premium/Costs reasons. In 2002 only, beneficiaries were more likely to cite problems with Doctor Access than Premium and Co-pays as their MIR.

A third research question examined how plan- and market-level factors interacted in their influences on beneficiary decisions, specifically the MIR for disenrollment. The multivariate beneficiary-level analysis found that the effects of various plan- and market-level factors were highly nonlinear and interactive, suggesting significant geographic variation in choice environments from place to place. For the plan-level and market-level effects, the generalized logit model of the MIR allowed for greater complexity and nonlinearity in estimation than did the binary logit models for the AR, and we focus our summary on those results. In particular:

- Whether a disenrollee had access to drug coverage in their former plan was not quite as influential in the model in 2002 as it had been in 2001. In fact, while the main effect of drug coverage on MIR continued to be significant for Doctor Access reasons, the direction of its impact was reversed for Plan Information. Beneficiaries whose former plan offered drug coverage were more likely to cite Doctor Access than Premium and Co-pays and switched from being less likely to cite Plan Information than Premium and Co-pays in 2001 to being more likely to cite this as an MIR in 2002. None of the significant interactions with market-level variables in the 2001 model was significant for 2002, but there was a significant interaction with the length of tenure of the plan in the Medicare program in both years: people leaving plans that offered some drug coverage and longer tenure were more likely to cite Drug Coverage as their MIR than Premium and Co-pays.
- The most consistency across the 2 years in interactions occurred for interactions with a plan's share of the Medicare market: the interaction between a plan's Medicare market share and the length of tenure of the plan in the Medicare program suggests that, as either or both plan share and plan tenure increase, Plan Information, Doctor Access, and Care-related issues all become more likely to be cited as the MIR than Premium and Co-pays. Similar effects result for Doctor Access and Care-related issues when either plan share and/or physician shortages increase and for Doctor Access when either plan share or general managed care penetration increase.

### **6.1.2 Findings from Multivariate Plan-Level Analysis**

Results from the plan-level analysis of 2002 disenrollment rates support the findings from the analysis of the 2001 rates: we continued to find that higher disenrollment rates were more likely to be associated with more beneficiaries leaving because of issues regarding accessing their preferred choice of providers or concerns about costs, rather than because of problems getting care. Furthermore, a smaller percentage of disenrollees from plans with higher disenrollment rates reported poor or fair health than did disenrollees from plans with lower disenrollment rates. However, higher disenrollment rates were associated with a greater percentage of disenrollees being of Hispanic origin and having a higher percentage of disenrollees who had not completed high school. Higher disenrollment rates were also associated with some specific plan and market characteristics, including for-profit tax status, lower plan ratings by disenrollees, more disenrollment to other MMC organizations (rather than to Original Medicare), higher payment rates to MMC organizations in the area, and less availability of physicians in the state. In other words, disenrollment rates appear to be a better measure of “health care market” performance than of “health care quality” performance.

### **6.2 Limitations of the Analyses**

The survey was designed to sample beneficiaries in a manner that would yield the best information possible for plan-level reporting. The survey design weights are therefore not ideal for a beneficiary-level analysis. In addition, because multiple beneficiaries belonged to the same plans and resided in the same markets, there was a commonality among the individual-level observations in some of the data fields. This redundancy may cause downward bias on standard errors, making results seem more significant than they were. Because plans spanned several counties, it was not possible to completely control for this complex redundancy in our logistic models. We experimented with county-level control for intracluster correlation, then with plan-level control for intracluster correlation, and found similar results using either correction (we could not do both simultaneously). Because the sample was so large and there is a possibility that standard errors are biased downwards, we used a fairly stringent significance level (1 percent) as an offset, which is a conservative approach that may be warranted in this situation.

The GLM model in particular required a parsimonious specification, because it was heavily parameterized with interaction and quadratic terms. We attempted to find the best variable among a group of possible candidates to reflect a particular aspect of the contextual environment. For example, “whether drug coverage was offered by the plan,” was one of several plan benefit variables we might have chosen. These benefit variables were highly correlated in the dimension of better coverage (e.g., lower co-pays, better drug benefits). We chose the variable reflecting drug coverage because it was the most powerful discriminator at the market level in our analysis of the coincidence of reasons. Because of this parsimony in model specification, it is important to recognize that the drug coverage variable is simply a proxy for “better coverage,” because those other coverage variables not included in the model are positively correlated with it. Caution should be used when interpreting the drug coverage coefficients.

Finally, when interpreting the results from the GLM model, one should keep in mind that the parameter estimates reflect a hypothetical situation that was created to model the underlying

variation in the data. As is true in linear regression analysis as well, one must be careful not to “extrapolate beyond the range of the data.” In linear regression, results are most reliable at the “point of means” (where all variables are at their sample means), but there is usually no such observation in reality. By analogy, the GLM allows for complex interactions and nonlinear structures that can perfectly describe the underlying data (in the fully saturated form of the model). When we interpret the coefficients, we can posit particular scenarios (high plan market share, very urbanized area, no drug coverage), but places such as this may not, in fact, exist. For robust reporting, the researcher could use cartographic methods to examine the joint spatial distribution of the data, identify plausible scenarios, and then interpret coefficients in these more realistic scenarios. This may be an interesting area for future research. Regardless of whether this is done, the GLM model is quite capable of controlling statistically for the myriad of confounding plan- and market-level variables, so that we can reliably examine the independent impacts of subgroup variables on reasons for disenrollment.



## SECTION 7 REFERENCES

AARP, 2001. Reforming the Healthcare System: State Profiles. Available online: [http://research.aarp.org/health/d17589\\_reform.html](http://research.aarp.org/health/d17589_reform.html)

Barents Group: Implementation of the Medicare Managed Care CAHPS<sup>®</sup>: Report On the Stability of Subgroup Plan Performance Ratings over Time. CMS Contract No. 500-95-0057T0#4, July 23, 2003.

Boxerman, S., and Hennelly, V.: Determinants of disenrollment: Implications for HMO managers. The Journal of Ambulatory Care Management May:12-23, 1983.

Buchmueller, T.C.: The health plan choices of retirees under managed competition. Health Services Research 35(5):949-976, 2000.

Burstin, H.R., Swartz, K., O'Neil, A.C., Orav, E.J., and Brennan, T.A.: The effect of change of health insurance on access to care. Inquiry 35(4):389-397, 1998/99.

Centers for Medicare & Medicaid Services (CMS) ORDI: Program information on Medicare, Medicaid, SCHIP, and other programs of the Centers for Medicare & Medicaid Services. Online CMS Chart Series (<http://cms.hhs.gov/charts/default.asp>), June 2002.

Cox, D., Lanyi, B., and Strabic, A.: Medicare Health Maintenance Organization Benefits Packages and Plan Performance Measures. Health Care Financing Review 24(1):133-144, 2002.

Dallek, G., and Swirsky, L.: Comparing Medicare HMOs: Do They Keep Their Members? Washington, DC. Families USA Foundation, December 1997.

Druss B., Schlesinger, M., Thomas, T., and Allen, H.: Chronic illness and plan satisfaction under managed care. Health Affairs January/February 19(1):203-9, 2000.

Folsom, R.E.: Exponential and Logistic Weight Adjustments for Sampling and Nonresponse Error Reduction. Proceedings of the American Statistical Association, Social Statistics Section, 1991.

Harris-Kojetin, L., Bender, R., Booske, B., Lynch, J., Scheffler, S., Kenyon, A., Lance, T., and Rudolph, B.: Medicare CAHPS<sup>®</sup> 2000 Disenrollment Reasons Survey: Findings from an Analysis of Key Beneficiary Subgroups: Final Report. November 2002.

Iannacchione, V.G., Milne, J.G., and Folsom, R.E.: Response Probability Weight Adjustments Using Logistic Regression. Proceedings of the American Statistical Association, Section of Survey Research Methods, 1991.

Kim, Jae-On, and Mueller, Charles W.: Introduction to Factor Analysis. Beverly Hills. Sage, 1978.

Langwell, K.M., and Moser, J.W.: Strategies for Medicare health plans serving racial and ethnic minorities. Health Care Financing Review 23(4):131-47, 2002.

Lewis, A.: What buyers should ask about quality. Business & Health 10(12):64-65, 1992.

Meng, Y., Gocka, I., Leung, K., Elashoff, R., and Legoretta, A.: Disenrollment from an HMO and its relationship with the characteristics of Medicare beneficiaries. Journal of Health Care Finance Winter 26(2):53-60, 1999.

Mobley, L., Booske, B., McCormack, L., Brown, G., and Lynch, J.: Analysis of the Medicare CAHPS® 2001 Disenrollment Reasons Survey: Final Report. Submitted to Centers for Medicare & Medicaid Services, March 2004.

Morgan, R.O., Virnig, B.A., DeVito, C.A., and Persily, N.A.: Medicare HMO disenrollment and selective use of medical care: Osteoarthritis-related joint replacement. American Journal of Managed Care 6(8):917-923, August 2000.

Newhouse, J.P.: Switching health plans to obtain drug coverage. Journal of the American Medical Association 283(16):2161-2162, 2000.

Rector, T.S.: Exhaustion of drug benefits and disenrollment of Medicare beneficiaries from managed care organizations. Journal of the American Medical Association 283(16):2163-2167, 2000.

Reese, S.: Disenrollment: What it costs and how to stop it. Business & Health 15(10):40-44, 1997.

Riley, G., Feuer, E., and Lubitz, J.: Disenrollment of Medicare cancer patients from health maintenance organizations. Medical Care 34(8):826-36, August 1996.

Riley, G., Ingber, M., and Tudor, C.: Disenrollment of Medicare beneficiaries from HMOs. Health Affairs 16(5):117-124, September/October 1997.

Rossiter J., Langwell, K., Wan, T., and Rivnyak M.: Patient satisfaction among elderly enrollees and disenrollees in Medicare health maintenance organizations: Results from the National Medicare Competition Evaluation. Journal of the American Medical Association 262(1):57-63, July 7, 1989.

RTI International: SUDAAN User's Manual, Release 8.0., Research Triangle Park, NC: RTI International (www.rti.org/sudaan). 2001.

RTI International: Medicare Fee-for-Service National Implementation Subgroup Analysis: Final Report for Year 2. March 2003.

Sainfort, F., and Booske, B.C.: Role of information in consumer selection of health plans. Health Care Financing Review 18(1):31-54, 1996.

Schlesinger, M., Druss, B., and Thomas, T.: No exit? The effect of health status on dissatisfaction and disenrollment from health plans. Health Services Research 34(2):547-576, June 1999.

United States General Accounting Office (U.S. GAO): Medicare: HCFA Should Release Data To Aid Consumers, Prompt Better HMO Performance. Report to Congressional Requesters. October GAO/HEHS-97-23, 1996.

United States General Accounting Office (U.S. GAO): Medicare Managed Care: HCFA Missing Opportunities to Provide Consumer Information. Testimony before the Special Committee on Aging, U.S. Senate. April GAO/T-HEHS-97-109, 1997.

United States General Accounting Office (U.S. GAO): Medicare: Many HMOs Experience High Rates of Beneficiary Disenrollment. Report to the Special Committee on Aging, U.S. Senate. GAO/HEHS-98-142, 1998.

Virnig, B., Morgan, R., DeVito, C., and Persily, N.: Medicare HMOs: Who joins and who leaves?" American Journal of Managed Care 4(4):511-518, 1998.

Widaman, K.F.: Common factor analysis versus principal components analysis: Differential bias in representing model parameters? Multivariate Behavioral Research 28:263-311, 1993.



**APPENDIX A-1**  
**2000 MEDICARE CAHPS DISENROLLMENT REASONS**  
**QUESTIONNAIRE**





# 2002 Medicare Satisfaction Survey<sup>-DR</sup>



**CAHPS**<sup>®</sup>  
Consumer Assessment  
of Health Plans

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0779. The time required to complete this information collection is estimated to average 15 minutes per response, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: CMS, 7500 Security Boulevard, N2-14-26, Baltimore, Maryland 21244-1850, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

## Instructions for Completing This Questionnaire

This questionnaire asks about you and your experiences in a Medicare health plan. Answer each question thinking about yourself. Please take the time to complete the questionnaire because your answers are very important to us.

- Please use a BLACK ink pen to mark your answers.
- Be sure to read all the answer choices before marking your answer.
- Answer all the questions by putting an “X” in the box to the left of your answer, like this:

Yes  
 No → **Go to Question 3**

- You will sometimes be instructed to skip one or more questions, depending on how you answered an earlier question. When this happens, you will see an arrow with a note that tells you what question to answer next, as shown in the example above.

If the answer you marked is not followed by an arrow with a note telling you where to go next, then continue with the next question, as shown below.

### EXAMPLE

1. **Do you wear a hearing aid now?**

Yes  
 No → **Go to Question 3**

2. **How long have you been wearing a hearing aid?**

Less than 1 year  
 1 to 3 years  
 More than 3 years  
 I don't wear a hearing aid

3. **In the last 6 months, did you have any headaches?**

Yes  
 No

**IMPORTANT:  
PLEASE READ BEFORE  
BEGINNING THE QUESTIONNAIRE**

**Our records show that you were a member of [HEALTH PLAN NAME] and that you left that plan for some period of time during the last 6 months.**

**If this is correct, please complete this questionnaire about the reasons why you left [HEALTH PLAN NAME].**

**If you did not leave [HEALTH PLAN NAME], or if you were never enrolled in that plan, please call us toll-free at 1-877-834-7063 and let us know.**

## REASONS YOU LEFT [HEALTH PLAN NAME]

The following questions ask about reasons you may have had for leaving [HEALTH PLAN NAME].

Just as it is important for us to learn why you left [HEALTH PLAN NAME], it is also important for us to know what reasons did not affect your decision to leave that plan.

Therefore, please mark an answer for every question below unless the instruction beside the answer that you mark tells you to stop and return the questionnaire, or to skip one or more questions.

1. Did you leave because you moved outside the area where [HEALTH PLAN NAME] was available?

Yes → **STOP.** Do not answer the rest of these questions. Please put your questionnaire in the postage-paid envelope and mail it back to us. Thank you.

No

2. Did you leave [HEALTH PLAN NAME] because the plan left the area or you heard that the plan was going to stop serving people with Medicare in your area?

Yes

No

3. Did you leave [HEALTH PLAN NAME] because you found out that someone had signed you up for the plan without your knowledge (for example, a relative, salesperson, or someone else)?

Yes

No

4. Did you leave [HEALTH PLAN NAME] because of a paperwork or clerical error (for example, you were accidentally taken off the plan)?

Yes

No

5. Some people leave their Medicare health plan because their former employer no longer offers the plan. Did you leave [HEALTH PLAN NAME] because your former employer or your spouse's former employer no longer offered [HEALTH PLAN NAME] to you?

Yes

No

Neither I nor my spouse were enrolled in this plan through a former employer.

#### DOCTORS AND OTHER HEALTH CARE PROVIDERS

A doctor or other health care provider can be a general doctor, a specialist doctor, a physician assistant, or a nurse.

6. Did you leave [HEALTH PLAN NAME] because the plan did not include the doctors or other health care providers you wanted to see?

Yes

No

7. Did you leave [HEALTH PLAN NAME] because the doctor you wanted to see retired or left the plan?

Yes

No

8. Did you leave [HEALTH PLAN NAME] because the plan doctor or other health care provider you wanted to see was not accepting new patients?

Yes

No

9. Did you leave [HEALTH PLAN NAME] because you could not see the plan doctor or other health care provider you wanted to see on every visit?

Yes

No

10. Did you leave [HEALTH PLAN NAME] because the plan doctors or other health care providers did not explain things in a way you could understand?

Yes

No

11. Did you leave [HEALTH PLAN NAME] because you had problems with the plan doctors or other health care providers?

Yes

No

12. Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and others who specialize in one area of health care.

Did you leave [HEALTH PLAN NAME] because you had problems or delays getting the plan to approve referrals to specialists?

Yes

No

## ACCESS TO CARE

13. Did you leave [HEALTH PLAN NAME] because you had problems getting the care you needed when you needed it?

Yes

No

14. Did you leave [HEALTH PLAN NAME] because the plan refused to pay for emergency or other urgent care?

Yes

No

15. Did you leave [HEALTH PLAN NAME] because you could not get admitted to a hospital when you needed to?

Yes

No

16. Did you leave [HEALTH PLAN NAME] because you had to leave the hospital before you or your doctor thought you should?

Yes

No

17. Did you leave [HEALTH PLAN NAME] because you could not get special medical equipment when you needed it?

Yes

No

18. Did you leave [HEALTH PLAN NAME] because you could not get home health care when you needed it?

Yes

No

19. Did you leave [HEALTH PLAN NAME] because you had no transportation or it was too far to the clinic or doctor's office where you had to go for regular or routine health care?

Yes

No

20. Did you leave [HEALTH PLAN NAME] because you could not get an appointment for health care as soon as you wanted?

Yes

No

21. Did you leave [HEALTH PLAN NAME] because you had to wait too long past your appointment time to see the health care provider you went to see?

Yes

No

22. Did you leave [HEALTH PLAN NAME] because you wanted to be sure you could get the health care you need while you are out of town or traveling away from home?

Yes

No

## INFORMATION ABOUT THE PLAN

23. Did you leave [HEALTH PLAN NAME] because you thought you were given incorrect or incomplete information at the time you joined the plan?

Yes

No

24. Did you leave [HEALTH PLAN NAME] because after you joined the plan, it wasn't what you expected?

Yes

No

25. Did you leave [HEALTH PLAN NAME] because information from the plan about things like benefits, services, doctors, and rules was hard to get or not very helpful?

Yes

No

## PHARMACY BENEFIT

26. Did you leave [HEALTH PLAN NAME] because the maximum dollar amount the plan allowed each year (or quarter) for your prescription medicine was not enough to meet your needs?

Yes

No

The plan that I left did not cover my prescription medicines.

27. Did you leave [HEALTH PLAN NAME] because the plan required you to get a generic medicine when you wanted a brand name medicine?

Yes

No

The plan that I left did not cover my prescription medicines.

28. Did you leave [HEALTH PLAN NAME] because the plan would not pay for a medication that your doctor had prescribed?

- Yes
- No
- The plan that I left did not cover my prescription medicines.

**COST AND BENEFITS**

29. Did you leave [HEALTH PLAN NAME] because another plan would cost you less?

- Yes
- No

30. Did you leave [HEALTH PLAN NAME] because the plan would not pay for some of the care you needed?

- Yes
- No

31. Did you leave [HEALTH PLAN NAME] because another plan offered better benefits or coverage for some types of care or services?

- Yes
- No

32. A premium is the amount that you pay to receive health care coverage from a health plan. Some health plans charge a premium to people on Medicare who are enrolled in that health plan.

This additional premium that the health plan charges is separate from the premium that people on Medicare pay for Medicare Part B, which is usually deducted from their Social Security Check each month.

Did you leave the plan because [HEALTH PLAN NAME] started charging you a monthly premium, or increased the monthly premium that you pay?

- Yes
- No
- The plan I left did not start charging a premium, nor did it increase my premium.

33. Some people have to leave their Medicare health plan because they cannot afford to pay the premium. Did you leave [HEALTH PLAN NAME] because you could not pay the monthly premium?

Yes

No

The next two questions ask about co-pays or co-payments, which are the amounts that you pay for certain medical services such as office visits to your doctor, prescription medicines, and other services.

34. Did you leave because [HEALTH PLAN NAME] increased the co-payment that you paid for office visits to your doctor and for other services?

When answering this question, do not include co-payments that you may have paid for prescription medicines.

Yes

No

The plan I left did not increase my co-payment for office visits.

35. Did you leave because [HEALTH PLAN NAME] increased the co-payment that you paid for prescription medicines?

Yes

No

The plan I left did not increase my co-payment for prescription medicines.

#### OTHER REASONS

36. Did you leave [HEALTH PLAN NAME] because the plan's customer service staff were not helpful or you were dissatisfied with the way they handled your questions or complaint?

Yes

No

37. Did you leave [HEALTH PLAN NAME] because your doctor or other health care provider or someone from the plan told you that you could get better care elsewhere?

Yes

No

38. Did you leave [HEALTH PLAN NAME] because you or your spouse, another family member, or a friend had a bad experience with that plan?

Yes

No

39. Besides the reasons already asked about in Questions 2-38, are there any other reasons you left [HEALTH PLAN NAME]?

Yes

No → If no, go to Question 41 below

40. On the lines below, please describe your other reasons for leaving [HEALTH PLAN NAME]. *(Please print.)*

---

---

---

41. What was the one most important reason you left [HEALTH PLAN NAME]? *(Please print.)*

---

---

---

## YOUR EXPERIENCE WITH [HEALTH PLAN NAME]

The next set of questions is about your experience with [HEALTH PLAN NAME].

42. At the time that you left [HEALTH PLAN NAME], did this plan cover some or all of the costs of your prescription medicines?

Yes

No

43. For about how many months were you a member of [HEALTH PLAN NAME] before you left?

1 month or less

2 months

3 months

4 months

5 months

6 months or more

Some of the following questions ask about the last 6 months you were in [HEALTH PLAN NAME]. If you were in this plan for less than 6 months, answer the questions thinking about the number of months that you were a member of that plan.

44. In the 6 months before you left [HEALTH PLAN NAME] (not counting times you went to an emergency room), how many times did you go to a doctor's office or clinic to get care for yourself?

None

1

2

3

4

5 to 9

10 or more

**A personal doctor or nurse is the health provider who knows you best. This can be a general doctor, a specialist doctor, a physician assistant, or a nurse.**

**45. Did you get a new personal doctor or nurse when you were a member of [HEALTH PLAN NAME]?**

Yes

No

**46. Think about all the health care you got from all doctors and other health providers in the 6 months before you left [HEALTH PLAN NAME].**

**Using any number from 0 to 10 where 0 is the worst health care possible, and 10 is the best health care possible, what number would you use to rate all your health care?**

0 → Worst health care possible

1

2

3

4

5

6

7

8

9

10 → Best health care possible

47. Think about all your experience with [HEALTH PLAN NAME].

Using any number from 0 to 10 where 0 is the worst health plan possible, and 10 is the best health plan possible, what number would you use to rate [HEALTH PLAN NAME]?

- 0 → Worst health plan possible
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 → Best health plan possible

## APPEALS AND COMPLAINTS

An appeal is a written complaint you can make to your health plan if they decide not to provide or pay for health care services or equipment, or to stop providing health care services or equipment.

48. Sometimes people cannot get their health plan to provide or pay for services that they think they need. Were you ever told by [HEALTH PLAN NAME] how to file a formal complaint if this happened to you?

- Yes
- No

49. Was there ever a time when you strongly believed that you needed and should have received health care or services that [HEALTH PLAN NAME] or your doctor decided not to give you?

- Yes
- No → If no, go to Instruction Box 1 on the next page

50. The Medicare Program is trying to learn more about the health care or services that Medicare health plan members believed they needed but did not get.

May we contact you again about the health care or services that you did not receive if we need more information?

- Yes
- No
- I was able to get the health care and services that I thought I needed when I was a member of this plan.

**INSTRUCTION BOX 1**

When answering Questions 51 through 55, please think about the time when you were a member of [HEALTH PLAN NAME].

51. If [HEALTH PLAN NAME] decided not to provide or pay for care that you believed you needed, did you know who to contact at [HEALTH PLAN NAME] to ask them to reconsider?

- Yes
- No
- Don't Know

52. Did you ever ask [HEALTH PLAN NAME] to reconsider a decision to not provide or pay for a treatment?

- Yes
- No

53. If [HEALTH PLAN NAME] decided not to provide or pay for a particular treatment, could your doctor have contacted someone at the plan and asked them to reconsider?

- Yes
- No
- Don't Know

54. If [HEALTH PLAN NAME] decided not to reconsider providing or paying for a particular treatment, would [HEALTH PLAN NAME] have automatically referred it to another organization for an independent review?

- Yes
- No
- Don't Know

**55. If this independent organization turned down your request for reconsideration to [HEALTH PLAN NAME], did you have the right to ask for another review by a judge?**

- Yes
- No
- Don't Know

## ABOUT YOU

The next set of questions asks for your views about your health, about how you feel and how well you are able to do your usual activities.

**56. In general, how would you rate your overall mental health now?**

- Excellent
- Very good
- Good
- Fair
- Poor

**57. In general, how would you rate your overall health now?**

- Excellent
- Very good
- Good
- Fair
- Poor

**58. Compared to one year ago, how would you rate your health in general now?**

- Much better now than one year ago
- Somewhat better now than one year ago
- About the same as one year ago
- Somewhat worse now than one year ago
- Much worse now than one year ago

The next two questions are about activities you might do during a typical day.

59. Does your health now limit you in doing moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf? If so, how much?

- Yes, limited a lot
- Yes, limited a little
- No, not limited at all

60. Does your health now limit you in climbing several flights of stairs? If so, how much?

- Yes, limited a lot
- Yes, limited a little
- No, not limited at all

The next two questions ask about your physical health and your daily activities in the past 4 weeks.

61. During the past 4 weeks, have you accomplished less than you would like as a result of your physical health?

- Yes
- No

62. During the past 4 weeks, were you limited in the kind of work or other activities you did as a result of your physical health?

- Yes
- No

The next two questions ask about problems with your work or other regular daily activities as a result of any emotional problems, such as feeling depressed or anxious.

63. During the past 4 weeks, have you accomplished less than you would like as a result of any emotional problems, such as feeling depressed or anxious?

- Yes
- No

64. During the past 4 weeks, did you do work or other regular activities less carefully than usual as a result of any emotional problems, such as feeling depressed or anxious?

- Yes
- No

65. During the past 4 weeks, how much did pain interfere with your normal work, including both work outside the home and housework?

- Not at all
- A little bit
- Moderately
- Quite a bit
- Extremely

The next three questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

66. How much of the time during the past 4 weeks have you felt calm and peaceful?

- All of the time
- Most of the time
- A good bit of the time
- Some of the time
- A little of the time
- None of the time

67. How much of the time during the past 4 weeks did you have a lot of energy?

- All of the time
- Most of the time
- A good bit of the time
- Some of the time
- A little of the time
- None of the time

68. How much of the time during the past 4 weeks have you felt downhearted and blue?

- All of the time
- Most of the time
- A good bit of the time
- Some of the time
- A little of the time
- None of the time

**69. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?**

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

**70. What is your age now?**

- 44 or younger
- 45 to 64
- 65 to 69
- 70 to 74
- 75 to 79
- 80 or older

**71. Are you male or female?**

- Male
- Female

**72. What is the highest grade or level of school that you have completed?**

- 8th grade or less
- Some high school, but did not graduate
- High school graduate or GED
- Some college or 2-year degree
- 4-year college graduate
- More than 4-year college degree

**73. Are you of Hispanic or Latino origin or descent?**

- Yes, Hispanic or Latino
- No, not Hispanic or Latino

**74. What is your race? Please mark one or more.**

- White
- Black or African-American
- Asian
- Native Hawaiian or other Pacific Islander
- American Indian or Alaska Native

**75. Did someone help you complete this questionnaire?**

Yes → **If yes, go to Question 76 below**

No → **If no, go to Question 77 in the next column**

**76. How did that person help you? Please check all that apply.**

Read the questions to me

Wrote down the answers I gave

Answered the questions for me

Translated the questions into my language

Helped in some other way  
*(Please print.)*

---

---

---

**77. We would like to be able to contact you in case we have any questions about any of your answers. Please write your daytime telephone number below.**

--	--	--	--	--	--	--	--	--	--

**THANK YOU.**

**Please mail your completed questionnaire in the postage-paid envelope.**



**APPENDIX A-2**  
**2000 MEDICARE CAHPS DISENROLLMENT REASONS**  
**REASONS GROUPING METHODOLOGY**



**APPENDIX A-2**  
**2000 MEDICARE CAHPS DISENROLLMENT REASONS**  
**REASONS GROUPING METHODOLOGY**

As noted previously, one of the primary purposes of conducting the Reasons Survey was to report reasons to consumers, via the Medicare Web site and other media, to supplement information on the rates at which people voluntarily disenroll from plans. The [www.Medicare.gov](http://www.Medicare.gov) Web pages include information about two major categories of “most important reasons” cited by people who leave Medicare plans. These two main categories were tested by the CAHPS development team during the development of draft report templates for inclusion of disenrollment rates and reasons in the *Medicare and You* handbook and on the Web. The two categories were given the following labels:

- Members left because of health care or services.
- Members left because of costs and benefits.

CMS reports each plan’s disenrollment rate first as a total rate, and then broken out according to these two main categories. For example, if the overall disenrollment rate for a plan is 10 percent, and 40 percent of enrollees surveyed cited problems with care or services and 60 percent cited concerns about costs, the percentages reported will be 10 percent, 4 percent, and 6 percent, respectively.

In addition, CMS wanted to allow consumers interested in more information about either of these categories to be able to “drill-down” to see more detailed subgroupings of reasons. This led to the following guidelines for developing appropriate groupings of disenrollment reasons:

1. The two main categories should address reasons related to care or services and cost or benefits.
2. The two main categories were to be mutually exclusive.
3. Each reason should be classified within either of the two main categories.
4. Each subgrouping should fall within only one of the two main categories.
5. Subgroupings of reasons should be mutually exclusive.
6. The number of subgroupings for reporting to consumers had to fit within the space constraints of a single Web page.
7. The number of groupings of reasons for reporting to health plans could be larger than the number of groupings for consumers, but the health plan groupings should be capable of being aggregated to the consumer level.

Early efforts to develop potential groupings of reasons were based on factor analyses of the first two quarters of 2000 reasons data.<sup>1</sup> These efforts produced groupings that appeared to have reasonable face validity, thus supporting the use of factor analysis for identifying groupings of reasons. Efforts to update these early results to include data from Quarter 3 yielded similar but not identical groupings of reasons. This suggests that there were some core groupings of reasons that related to each other consistently, and another, smaller group of reasons where changes in sample size led to different or dual factor loadings. In other words, there are some All Reasons that either could have been interpreted in different ways by respondents, or that may have been related to several different type of reasons.

When analyzing the full year of 2000 reasons data, we revised our approach to developing groupings of reasons to follow the consumer reporting approach (i.e., to first divide the reasons into two main categories, and then to divide each main category into appropriate subgroupings). There were two possible strategies we could follow in performing this initial division into two categories:

1. Manually assign each most important/all reason to the two main categories.
2. Analyze the data for possible groupings.

We chose to apply a combination of these strategies to divide the reasons into two categories.

Having allocated the All Reasons and Most Important Reasons (MIRs) between the two main categories (CARE or SERVICES and COSTS and BENEFITS), we then proceeded to conduct a series of factor analyses to identify potential subgroupings within each category:

1. Individual-level analysis of All Reasons.
2. Plan-level analysis of All Reasons.
3. Plan-level analysis of MIRs.

The remainder of the section describes the background and statistical methods used to identify appropriate groupings of reasons and the results of those analyses. As a result of a series of factor analyses and variable cluster analyses, we developed eight reason groupings: five groupings that address problems with care or service, and three groupings that address concerns about plan costs.<sup>2</sup> **Table A-1** shows the assignment of reasons survey items and labels to the reason groupings.<sup>3</sup>

---

<sup>1</sup>These efforts were conducted prior to the decision to follow the consumer reporting approach of dividing the reasons into two main categories, so the results from these efforts are not reported in this report.

<sup>2</sup>For reporting to consumers, three groupings (problems getting care, problems getting particular needs met, and other problems with care or service) are combined under the label “Getting care,” and two other

**Table A-1**  
**Assignment of reasons for leaving a plan to groupings of reasons**

Reasons grouping	Reasons for leaving a plan
<b>Problems with care or service</b>	
Problems with information from the plan	<ul style="list-style-type: none"> <li>• Given incorrect or incomplete information at the time you joined the plan</li> <li>• After joining the plan, it wasn't what you expected</li> <li>• Information from the plan was hard to get or not very helpful</li> <li>• Plan's customer service staff were not helpful</li> <li>• Insecurity about future of plan or about continued coverage</li> </ul>
Problems getting particular doctors	<ul style="list-style-type: none"> <li>• Plan did not include doctors or other providers you wanted to see</li> <li>• Doctor or other provider you wanted to see retired or left the plan</li> <li>• Doctor or other provider you wanted to see was not accepting new patients</li> <li>• Could not see the doctor or other provider you wanted to see on every visit</li> </ul>
Problems getting care	<ul style="list-style-type: none"> <li>• Could not get appointment for regular or routine health care as soon as wanted</li> <li>• Had to wait too long in waiting room to see the health care provider you went to see</li> <li>• Health care providers did not explain things in a way you could understand</li> <li>• Had problems with the plan doctors or other health care providers</li> <li>• Had problems or delays getting the plan to approve referrals to specialists</li> <li>• Had problems getting the care you needed when you needed it</li> </ul>
Problems getting particular needs met	<ul style="list-style-type: none"> <li>• Plan refused to pay for emergency or other urgent care</li> <li>• Could not get admitted to a hospital when you needed to</li> <li>• Had to leave the hospital before you or your doctor thought you should</li> <li>• Could not get special medical equipment when you needed it</li> <li>• Could not get home health care when you needed it</li> <li>• Plan would not pay for some of the care you needed</li> </ul>

(continued)

---

groupings ("premiums or copayments too high" and "copayments increased and/or another plan offered better coverage") are combined under the label "Premiums, Copayments, or Coverage".

<sup>3</sup>In addition to the preprinted reasons, there were two other reasons that were only collected when respondents cited them as their most important reason for leaving a plan (i.e., these two reasons were not among the preprinted reasons and thus were not included in the individual level analysis upon which we based the groupings: "insecurity about future of plan or continued coverage," and "no longer needed coverage under the plan"). The team manually assigned these two reasons to appropriate groupings.

**Table A-1**  
**Assignment of reasons for leaving a plan to groupings of reasons (continued)**

Reasons grouping	Reasons for leaving a plan
Other problems with care or service	<ul style="list-style-type: none"> <li>• It was too far to where you had to go for regular or routine health care</li> <li>• Wanted to be sure you could get the health care you need while you are out of town</li> <li>• Health provider or someone from the plan said you could get better care elsewhere</li> <li>• You or another family member, or friend had a bad experience with that plan</li> </ul>
<b>Concerns about costs and benefits</b>	
Premiums or copayments too high	<ul style="list-style-type: none"> <li>• Could not pay the monthly premium</li> <li>• Another plan would cost you less</li> <li>• Plan started charging a monthly premium or increased your monthly premium</li> </ul>
Copayments increased and/or another plan offered better coverage	<ul style="list-style-type: none"> <li>• Another plan offered better benefits or coverage for some types of care or services</li> <li>• Plan increased the copayment for office visits to your doctor and for other services</li> <li>• Plan increased the copayment that you paid for prescription medicines</li> <li>• No longer needed coverage under the plan</li> </ul>
Problems getting or paying for prescription medicines	<ul style="list-style-type: none"> <li>• Maximum dollar amount the plan allowed for your prescription medicine was too low</li> <li>• Plan required you to get a generic medicine when you wanted a brand name medicine</li> <li>• Plan would not pay for a medication that your doctor had prescribed</li> </ul>

Each of the All Reasons variables were essentially dichotomous (i.e., “yes” if that was a reason a beneficiary left a plan, and “no” if the respondent did not indicate this was a reason why they left the plan). In order to conduct factor analysis at the individual level on these dichotomous variables, we imported the data into PRELIS/LISREL 8.3.<sup>4</sup> For

<sup>4</sup>For the individual level data, we normalized the data prior to the factor analysis. While this was not required for factor analysis, standardization scales the data in a sample-specific manner. Given the changing environment in managed care plans and constantly shifting enrollment, it is appropriate to treat this as a sample-specific analysis.

the plan-level analysis, values of the dichotomous variables were summed for each CMS contract number, and a rate was calculated for each contract, where the numerator represents the number of disenrollees who endorsed the item, and the denominator was the number of complete interviews. Since this calculation created a variable that was no longer dichotomous, it was appropriate to use a standard statistical package for the factor analyses (we used SPSS v.10).

Since each respondent only indicated one MIR, it was not possible to conduct individual-level factor analysis for these reasons. For the plan-level analysis of the MIRs, we first converted the one variable containing the MIR code into 32 dichotomous variables<sup>5</sup> representing the same reasons as the All Reasons.<sup>6</sup> Thus, only one of these 32 variables had a value of 1 for an individual indicating their MIR. Plan-level variables were then calculated in the same manner as the plan-level All Reasons variables, and factor analyses were conducted using SPSS v.10.

When using factor analysis to determine groupings, the factors represent the common variance of variables, excluding the unique variance. While the technology of factor analysis provides factors, it is important for the researcher to determine whether the factors make sense in light of their knowledge of the topic. It is possible to have nonsensical factors emerge in an exploratory analysis.

The types of factoring used in the analysis also can determine the number of factors. For example, Principal Components Analysis (PCA) will create uncorrelated or orthogonal factors, and the number of factors that will be extracted result in the maximum variance. Principal Factor Analysis (PFA) seeks the least number of factors by estimating the squared multiple correlations of each variable, with the remainder of the variables in the matrix. According to Widaman (1993) principal components analysis should not be used to obtain parameters reflecting latent constructs or factors. In this case, we were attempting to obtain latent constructs, and thus used PFA.

The correlation matrix used for the analysis depends on the nature of the variables used in the analysis. Because of the dichotomous nature of the All Reasons questions, tetrachoric correlations were used in the individual-level factor analysis (hence our decision to use PRELIS/LISREL 8.3, which can produce a tetrachoric correlation matrix). A traditional correlation matrix was used for the plan-level analysis, based upon the continuous nature of the independent variables.

When determining the number of factors that seem important, the researcher generally looks at the eigenvalues. The eigenvalue for a given factor measures the variance in all the variables that is accounted for by the factor. The factor's eigenvalue may be computed as the sum of its squared factor loadings for all the variables. If a factor has a low eigenvalue, then it is contributing little to the explanation of variances in

---

<sup>5</sup>There is one less MIR code, since these codes were created prior to the addition of another reason in the Quarter 2 survey regarding inability pay the premium.

<sup>6</sup>This was performed by aggregating the important reason codes to the 10's level.

the variables, and may generally be ignored. We used the Kaiser-Guttman Rule for dropping factors from the analysis. The rule is to drop all factors that have an eigenvalue below 1.0. Any eigenvalue below 1.0 may be redundant with another more important factor. In addition, we also looked at the amount of variance explained to be sure to keep enough factors.

Factor rotation is important because it is difficult to interpret non-rotated solutions, because variables tend to load on multiple factors. In this case, we utilized varimax rotation because it minimizes the number of variables that have high loadings on any one given factor. It assists in identifying the variables associated with a single factor.

When examining the data, one looks at the factor loadings and determines which items load on the factor. The factor loadings are the correlation coefficients between the variables (rows) and the factors (columns). In this case, we followed guidelines suggesting that items should have a factor loading of at least 0.4 to be considered as contributing significantly to the factor. Analogous to a Pearson's  $r$ , the squared factor loading is the percentage of variance in the variable accounted for by the factor. For exploratory factor analysis, it is recommended (by Thurstone) that each factor have a minimum of three items loading on it (see Kim and Mueller, 1978:77).

***Individual-level analysis.*** For the individual-level data, we were attempting in the analysis to uncover a latent structure of the 33 All Reasons variables. When the reasons had been assigned to each of the two main categories, we ran each category independent of the other. In an iterative fashion, we moved from one to four factors in both categories after normalizing the data. After three factors in the COST and BENEFITS grouping and after four factors in the CARE and SERVICES grouping, we no longer had three items loading on each factor, nor did each factor have an eigenvalue of 1.0. In the process, we discovered four items that did not load significantly on any one factor.<sup>7</sup> We removed the four items from the analysis, as is generally recommended.

The convention used for determining the statistical appropriateness of the extracted factors was the same as that used in the plan-level analysis. That is, each factor had to have an eigenvalue over 1.0. Thus, it was first determined statistically that the most appropriate number of factors for the individual-level analysis of the All Reasons for the COST category was three. For the CARE and SERVICES factor analysis, it was a four-factor solution that met these statistical criteria. We then reviewed the factors to assess whether they seemed to make sense in terms of the substantive issues, and they clearly are congruent with the literature on disenrollment reasons. The factors were

---

<sup>7</sup>You had no transportation or it was too far to the clinic or doctor's office where you had to go for regular or routine health care?

You wanted to be sure you could get the health care you need while you are out of town or traveling away from home?

Your doctor or other care health provider or someone from the plan told you that you could get better care elsewhere?

You or another family member or a friend had a bad experience with that plan?

somewhat correlated with each other, suggesting that the factors within each of these categories should be measured together in order to fully understand the construct.

***Plan-level analysis.*** The factor procedure in SPSS allows for any number of factors to be extracted. In this case, we used the following two conventions to determine the validity of the factors that were extracted: if the eigenvalue of the factor was over 1.0 (the Kaiser Criterion), and the total amount of variance accounted for by the factors with values over 1.0 reached approximately 70 percent of the variance. In analyzing reasons at the plan level, we realized that inclusion of plans with low numbers of completed interviews might distort our results due to higher variance. Consequently, for all plan-level analyses we ran analyses twice: for all plans, and for those plans with 30 or more completed interviews.

For the reasons in the COSTS and BENEFITS category, we identified an optimal solution with three factors with eigenvalues over 1.0 that together explained 85 percent of the total variance. For the Problems with Care or Service category, we identified a four-factor solution that accounted for 76 percent of the total variance, after removing the three variables that were excluded from the individual-level analysis.

Similar to the plan-level analysis of all reasons, we used SPSS to identify potential groupings of most important reasons within the two main categories. Applying the same criteria for identifying the validity of factors that were extracted, we were unable to extract more than one factor within either the COSTS and BENEFITS or the CARE and SERVICE categories. The only factor solution with a significant result on the Chi-Square goodness of fit test was a three-factor solution for the most important reasons in the CARE and SERVICE category (among plans with 30 or more completed interviews), but this solution only explained 31 percent of the total variance.

When the statistical and substantive criteria had been met, we reviewed the factors and the items loading on the factors to determine whether there were differences between factors identified at the plan level and factors identified at the individual level of analysis. The factors for COST and BENEFITS were identical across the individual- and plan-level analyses, while there were minor differences in the loading of items in CARE and SERVICES.<sup>8</sup> These minor differences might be explained in terms of data aggregation issues. It is likely that individuals from a specific plan may have had similar experiences that caused them to disenroll, and aggregation of these similar experiences by plan could result in some differences between the individual-level factor analysis and the plan-level factor analysis. The use of two different levels of variables (continuous and dichotomous) could also impact on the results, given the different correlation matrices used in the analysis. As mentioned earlier, in the plan-level analysis, the matrix was a Pearson correlation, while in the individual-level analysis, we used a tetrachoric correlation matrix.

---

<sup>8</sup>These results were also very similar to those derived from additional variable cluster analyses that were performed.

Conceptually, one could argue either way between whether we are seeking to create groupings at the individual or the plan level—the information is coming from and is to be reported to consumers, but the data to be presented and compared will be at the plan level. In choosing between the differences in the individual- and plan-level factor loadings for the CARE and SERVICES, we weighted the individual-level results over the plan-level results. It appeared from our review that the individual-level factor analysis had captured the important domains, and that the items loading on those domains were, in fact, appropriate.

Having decided to use the individual-level results in favor of the plan-level results for deriving appropriate groupings of reasons, we were left with the tasks of determining how to handle the reasons that had not loaded on to any factors, and labeling the factors. The resulting reason groupings, while derived statistically, must also make sense in terms of how one might think about disenrollment from a plan.

Each of the four items that did not load on any factor may have been measuring something other than the other factors that had been extracted. For example, one of these items, the transportation question, may pull in two substantively different reasons: the respondent's own lack of transportation; or the plan's lack of clinics within a close geographic area. Meanwhile, the "care out of town" variable may reflect a more general concern about getting care in managed care plans in general, rather than a characteristic of a particular plan. Since none of these reasons could be statistically assigned to a specific grouping, we examined them to see whether they could be assigned based on their substance, but there was no existing grouping that captured the essence of any of the four reasons. Consequently, we decided to assign them to an "Other" factor within CARE and SERVICES. While such a "catch-all" category is less desirable than a more specific category, none of these reasons was cited frequently enough to warrant the creation of a single-item grouping. Furthermore, the use of the label "Other" implies that this grouping contains items not otherwise categorized, and thus, does not mislead users. The final step in the analysis involved reviewing the items within each group and labeling the groupings as clearly and succinctly as possible. Such labeling always involves a tradeoff between being able to provide full representation of all the items while maintaining a reasonable length for the label.<sup>9</sup>

---

<sup>9</sup>While these labels have not been explicitly tested with consumers, we drew upon expertise within the team from those involved in previous consumer testing of disenrollment information.

**APPENDIX A-3**  
**ROBUSTNESS CHECKS FOR**  
**GENERALIZED LOGIT MODEL SPECIFICATION**

### APPENDIX A-3

To assess robustness of the results, we refit the generalized logit model in 2002, allowing the data to determine which interaction effects were most significant in 2002. The comparison of the 2002 results with the 2001 versus the 2002 models is presented in Table A3-1. In Table A3-1, shaded and bolded rows highlight any differences in the two sets of results. In the second page of the table we see the interaction terms that were significant in both model specifications (including the four drug coverage interactions discussed above). On page 3 of the table are the collection of interaction terms that were significant in 2001 but not in 2002; finally page 4 of the table shows the collection of interaction terms significant in 2002 but not in 2001.

The model comparisons in Table A-3 suggest that our estimation results for main covariates are quite stable to model specification although the group of most significant ( $\alpha \leq 0.01$ ) interaction effects was quite different across the 2 years. For the main effects, there were only a few places where a coefficient was significant in one model but not in the other, but even where they were different they were always in a consistent direction (i.e., above or below 1). Thus, even though they had different collections of significant interaction terms, the two different models did not affect the parameter estimates on the terms held in common with the 2001 data and model. Thus, we can be reassured that the results for 2002 displayed in Table 12 (using the 2001 model) are not biased by model misspecification.

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data)**

Variables in the model	Dependent variables—odds ratio												
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays						
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model					
<b>Age</b>	**	**											
64 or younger	1.49	1.87	0.46 *	0.56	0.46 *	0.81	1.17	1.13					
65 to 74													
75+	1.17	1.18	1.22 *	1.22 *	1.36 **	1.30 **	0.82 *	0.78 *					
<b>Race and Ethnicity</b>	**	**											
Hispanic	0.90	0.92	0.58 **	0.63 **	0.63 **	0.64 **	0.85	0.87					
Non-Hispanic white													
Non-Hispanic black/ African American	0.90	0.90	0.54 **	0.55 **	0.59 **	0.60 **	1.00	1.04					
Non-Hispanic other	0.88	0.91	0.54 **	0.61 **	0.38 **	0.41 **	0.48 **	0.51 **					
<b>Education</b>	*												
<b>Less than high school graduate</b>	<b>0.83</b>	<b>0.85</b>	<b>0.74 *</b>	<b>0.86</b>	<b>0.98</b>	<b>1.05</b>	<b>1.25</b>	<b>1.16</b>					
High school graduate or more													
<b>Health Status</b>	**	**											
Excellent—very good													
Good—poor	0.78 *	0.80	0.86	0.93	1.39 **	1.39 **	1.52 **	1.43 **					
<b>Leave for FFS or MMC</b>	**	**											
MMC	0.64 **	0.57 *	0.61 **	0.37 **	0.83	0.39 **	1.73 **	2.27 **					
FFS													
<b>Satisfaction with Plan</b>	**	**											
0	5.361	5.890	0.880	0.922	4.441	3.956	4.066	4.265					
1	4.941	5.428	0.865	0.906	4.137	3.692	3.955	4.143					
2	4.220	4.634	0.838	0.875	3.607	3.232	3.743	3.911					
3	3.380	3.707	0.804	0.836	2.972	2.679	3.447	3.590					
4	2.581	2.824	0.768	0.795	2.349	2.135	3.093	3.206					
5	1.922	2.095	0.737	0.758	1.816	1.667	2.706	2.790					
6	1.437	1.555	0.718	0.734	1.407	1.308	2.311	2.369					
7	1.115	1.194	0.719	0.730	1.125	1.061	1.930	1.965					
8	0.935	0.985	0.752	0.758	0.960	0.921	1.578	1.597					
9	0.886	0.914	0.834	0.837	0.910	0.890	1.267	1.274					
10													
<b>Drug Coverage</b>	**	**											
No coverage													
Some coverage	1.30 *	1.14	1.84 **	1.56 **	1.57 **	1.09	0.91	1.18					

(continued)

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data) (continued)**

Variables in the model	Dependent variables—odds ratio												
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays						
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model			
Years of Operation in 5-Year Unit	**	**											
YEARSOP	0.72 *	0.64 **	1.31 **	1.17	0.87	0.85	0.99	0.84					
Plan's Market Share in 10% Unit	**	**											
MSHAREPLAN	1.00	1.06	1.33 **	1.27 **	1.49 **	1.42 **	0.98	1.01					
Level of HMO+PPO Penetration in 10% Unit	**	**											
HMOPPO01	1.18	1.18	1.20	1.28	1.20	1.28 *	0.57 **	0.63 **					
Percentage Living in Urban Area in 10% Unit	**	**											
XURBAN	1.10	1.12	1.50 **	1.45 **	1.31 **	1.24 **	1.41 **	1.36 **					
Percentage ≥65 Living below \$15,000 in 10% Unit		**											
<b>XPOOR</b>	<b>0.92</b>	<b>1.01</b>	<b>1.02</b>	<b>1.04</b>	<b>1.07</b>	<b>1.17</b>	<b>1.07</b>	<b>1.19</b>	<b>**</b>	<b>**</b>	<b>**</b>	<b>**</b>	<b>**</b>
Physician Shortage (state) Score	*	**											
MDSHORT01	1.04	0.96	1.32 *	1.50 **	1.14	1.08	0.82	0.67 **					
Plan Market Share (MSHAREPLAN) * Drug Coverage (DRUGSOME)	**	**											
, No coverage	1.00	1.06	1.33	1.27	1.49	1.42	0.98	1.01					
, Some coverage	0.85	0.90	0.81 **	0.82 **	1.07	1.13	1.00	1.04					
Years Operation * Drug Coverage (DRUGSOME)	**	**											
, No coverage	0.72	0.64	1.31	1.17	0.87	0.85	0.99	0.84					
, Some coverage	1.18	1.10 *	1.15	1.12	1.05 *	1.05 **	1.39 **	1.24 **					
Level of HMO+PPO penetration in 10% Unit * DRUGSOME	**	**											
, No coverage	1.18	1.18	1.20	1.28	1.20	1.28	0.57	0.63					
, Some coverage	0.89	0.83 *	1.01	0.92	0.88 *	0.86 **	0.96 **	1.02 **					

(continued)

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data) (continued)**

Variables in the model	Dependent variables—odds ratio								
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays		
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	
Physician Shortage * DRUGSOME	**	**							
, No coverage	1.04	0.96	1.32	1.50	1.14	1.08	0.82	0.67	
, Some coverage	1.27	1.14	0.83	** 0.86	** 1.20	1.17	1.12	0.89	
HMOPPO01 * MNG_CARE	**	**							
, FFS	1.18	1.18	1.20	1.28	1.20	1.28	0.57	0.63	
, MMC	1.25	1.32	0.82	** 0.86	** 0.99	1.17	0.46	0.49	*
	**	**							
SATISFACTION WITH PLAN * YEARSOP	1.00	0.98	1.02	1.02	1.02	1.00	1.30	** 1.26	**
	**	**							
SATISFACTION WITH PLAN**2	1.37	** 1.36	** 1.12	* 1.13	* 1.31	** 1.31	** 1.01	1.02	
	**	**							
HMOPPO01 * YEARSOP	1.13	1.15	* 1.17	** 1.24	** 1.11	1.10	* 1.12	1.05	
	**	**							
MDSHORT01 * MSHAREPLAN	1.10	1.10	1.14	** 1.14	** 1.12	* 1.10	* 1.27	** 1.48	**
	**	**							
MDSHORT01 * HMOPPO01	0.95	0.97	0.83	** 0.71	** 1.19	** 1.19	* 1.02	0.96	
	**	**							
MDSHORT01**2	0.96	0.98	1.15	** 1.11	** 0.99	0.99	0.81	** 0.76	**
	**	**							
XPOOR * XURBAN	1.26	** 1.23	** 1.41	** 1.42	** 1.19	** 1.13	* 1.13	* 1.03	
Satisfaction with Plan* Leave for FFS or MMC									
, FFS	0.58		1.05		0.62		0.63		
, MMC	0.54		0.98		0.67		0.60		
Percentage ≥65 Living Below \$15,000 in 10% Unit * Leave for FFS or MMC (MNG_CARE)									
, FFS	0.92		1.02		1.07		1.07		
, MMC	1.16		1.05		1.12		1.29		

(continued)

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data) (continued)**

Variables in the model	Dependent variables—odds ratio							
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays	
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model
Leave for FFS or MMC * Education								
FFS, high school graduate. or more	1.00		1.00		1.00		1.00	
FFS, less than high school graduate	0.83		0.74		0.98		1.25	
MMC, high school graduate or more	0.64		0.61		0.83		1.73	
MMC, less than high school graduate	0.56		0.62		0.93		1.98	
XURBAN**2	1.00		1.11		1.17 *		1.16	
	**							
<b>MSHAREPLAN * YEARSOP</b>	<b>1.18 *</b>		<b>1.13 *</b>		<b>1.17 **</b>		<b>0.99</b>	
YEARSOP**2	0.85 *		0.94		0.96		0.91	
HMOPPO01 * XURBAN	0.98		1.00		0.97		0.99	
HMOPPO01 * MSHAREPLAN	1.02		1.10 *		0.97		0.96	
MDSHORT01 * YEARSOP	0.95		1.02		0.96		1.13	
	*							
<b>MDSHORT01 * SATISFACTION WITH PLAN</b>	<b>1.08</b>		<b>0.95</b>		<b>1.12 *</b>		<b>1.09</b>	
XPOOR * YEARSOP	0.96		0.98		1.00		0.92	
XPOOR * HMOPPO01	0.95		0.91		0.93		1.10	
HMOPPO01 * MNG_CARE	**							
<b>FFS</b>	<b>1.18</b>		<b>1.20</b>		<b>1.20</b>		<b>0.57</b>	
<b>MMC</b>	<b>1.25</b>		<b>0.82 **</b>		<b>0.99</b>		<b>0.46</b>	

(continued)

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data) (continued)**

Variables in the model	Dependent variables—odds ratio							
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays	
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model
<b>MDSHORT01 * MNG_CARE</b>								
, FFS	1.04		1.32		1.14		0.82	
, MMC	0.79		1.18		1.08		0.71	
<b>HMOPPO01 * AGE</b>								
, 64 or younger	0.62		0.69		0.40 *		1.14 *	
, 65 to 74	1.18		1.20		1.20		0.57	
, 75+	1.14		1.16		1.33		0.61	
<b>Level of HMO+PPO Penetration in 10% Unit (HMOPPO01) * Leave for FFS or MMC (MNG_CARE) * Drug Coverage (DRUGSOME)</b>		**						
<b>FFS, no coverage</b>		<b>1.18</b>		<b>1.28</b>		<b>1.28</b>		<b>0.63</b>
<b>MMC, no coverage</b>		<b>1.32</b>		<b>0.86</b>		<b>1.17</b>		<b>0.49</b>
<b>FFS, coverage</b>		<b>0.83</b>		<b>0.92</b>		<b>0.86</b>		<b>1.02</b>
<b>MMC, coverage</b>		<b>0.93</b>		<b>0.62</b>		<b>0.78</b>		<b>0.78</b>
<b>Physician Shortage * Leave for FFs or Health Status (POVERALLHL) * Drug Coverage (DRUGSOME)</b>		**						
<b>Good–poor, no coverage</b>		<b>0.96</b>		<b>1.50</b>		<b>1.08</b>		<b>0.67</b>
<b>Excellent–very good, no coverage</b>		<b>0.91</b>		<b>1.26</b>		<b>1.14</b>		<b>1.01</b>
<b>Good–poor, coverage</b>		<b>1.14</b>		<b>0.86</b>		<b>1.17</b>		<b>0.89</b>
<b>Excellent–very good, Coverage</b>		<b>1.09</b>		<b>0.72</b>		<b>1.23</b>		<b>1.34</b>
		**						
<b>MSHAREPLAN**2</b>		<b>1.04</b>		<b>0.95</b>		<b>1.02</b>		<b>0.79 **</b>
		**						

(continued)

**Table A3-1**  
**Comparison of the estimation results for 2002, using two different generalized logit models**  
**(using 2002 data with model fit on 2001 data, then model fit on 2002 data) (continued)**

Variables in the model	Dependent variables—odds ratio									
	Problem with information vs. premium and copays		Problem with doctor vs. premium and copays		Problem with getting care vs. premium and copays		Problem with medicine vs. premium and copays			
	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model	2001 model	2002 model		
<b>MSHAREPLAN *</b>		<b>0.91</b>		<b>0.93</b>		<b>0.89</b>	*		<b>0.78</b>	**
<b>XPOOR</b>		**								
<b>XPOOR **2</b>		<b>0.99</b>		<b>0.86</b>	**	<b>1.00</b>			<b>0.97</b>	
		**								
<b>HMOPPO1**2</b>		<b>0.99</b>		<b>0.76</b>	**	<b>1.00</b>			<b>0.95</b>	