

Medicare Part D Enrollment in a Biracial Community-Based Population of Older Adults

Kimberly A. Skarupski, PhD, MPH,^{1,2,3} Carlos F. Mendes de Leon, PhD,^{2,3,4}
Lisa L. Barnes, PhD,^{5,6} and Denis A. Evans, MD^{2,3,5,6}

Purpose: The Medicare Prescription Drug Benefit (Part D) program debuted in January 2006. We ascertained the sociodemographic and health characteristics of Blacks and Whites who enrolled in the early stages of the program. **Design and Methods:** Data were collected between April 2006 and October 2007 from an ongoing population-based biracial study of older adults. **Results:** We interviewed 2,694 subjects, 1,784 Blacks and 910 Whites, of whom 40% and 35% reported to have enrolled in Medicare Part D, respectively. Among Blacks, those who enrolled were more likely to be female, unmarried, have less education and income, more medical conditions, greater physical disability, and poorer physical function than Blacks who did not enroll. Among Whites, enrollees were older, female, and had less education compared with White nonenrollees. In the multivariate analyses, older age, female, being married, lower income, worse physical function, and better cognitive function were associated with program enrollment. **Implications:** These results indicate that the profiles of adults who initially enrolled in Medicare Part D differed somewhat by race. Program enrollment among Blacks was largely driven by financial need and poor health; however, among Whites, there was no such discernible pattern of enrollment. In addition, we observed a knowledge gap among Black nonenrollees who reported that they

were unaware of and confused by the program and plans. The findings suggest that Medicare Part D may serve different needs in different subpopulations. The long-term impact of these differential program profiles on Black–White health disparities remains uncertain and requires continued monitoring.

Key Words: Prescription drug benefit coverage, Race differences

The Medicare Modernization Act Prescription Drug Benefit (Part D) is insurance that covers brand name and generic prescription drugs for Medicare beneficiaries regardless of income, wealth, health status, or current prescription drug expenses. All Medicare beneficiaries and those who are eligible for Medicare—3 months before and after the month they turn age 65—may enroll by either joining a Medicare prescription drug plan or a Medicare Advantage Plan or other Medicare Health Plan that offers drug coverage. Medicare Part D beneficiaries generally pay a monthly premium, which varies depending on the plan selected, a yearly deductible, as well as a portion of the prescription costs, including a copayment or coinsurance (Medicare, 2008).

Since implementation in January 2006, a number of reports have documented early outcomes of the program; typically, these reports have focused on expenditures and drug utilization issues (Lichtenberg & Sun, 2007; Madden et al., 2008; Vogt, Joyce, & Goldman, 2008; Yin et al., 2008), but some have examined consumers' knowledge of and satisfaction and experiences with the program (Centers for Medicare and Medicaid Services [CMS], 2007; Heiss, McFadden, & Winter, 2006; Henry J. Kaiser Family Foundation, 2006; Hsu et al., 2008; Neuman et al., 2007). However, there is little information on initial experiences with the program across different racial

¹Address correspondence to Kimberly A. Skarupski, PhD, MPH, Assistant Professor, Rush Institute for Healthy Aging, Rush University Medical Center, 1645 West Jackson, Suite 675, Chicago, IL 60612-3227. E-mail: kimberly_skarupski@rush.edu

²Department of Internal Medicine, Rush Institute for Healthy Aging, Rush University Medical Center, Chicago, Illinois.

³Department of Internal Medicine, Rush University Medical Center, Chicago, Illinois.

⁴Department of Preventive Medicine, Rush University Medical Center, Chicago, Illinois.

⁵Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, Illinois.

⁶Department of Neurological Sciences, Rush University Medical Center, Chicago, Illinois.

groups. That is, what are the sociodemographic and health characteristics of older Blacks and Whites who enrolled in the early stages of the program?

Medicare Part D was designed to provide affordable prescription drug coverage to all 44 million Medicare beneficiaries. Although there is debate about the long-term public health and economic impact of the drug benefit program, there is evidence that the program has been successful in reducing drug costs for older adults. Before the program was implemented, it was projected that the drug benefit would reduce average out-of-pocket expenses for beneficiaries by approximately 14% and would concomitantly increase drug utilization by 6% (Pauly, 2004). Initial data after implementation of the program show that the program has resulted in an 18.4% reduction in out-of-pocket expenses and a 12.8% increase in prescription drug use (Lichtenberg & Sun). Furthermore, according to the CMS, beneficiaries saved an average of \$1,200 a year, with monthly premiums averaging \$22, 42% lower than originally estimated (CMS).

Despite the apparent initial economic success of the program for consumers, we know little about other outcomes. For example, CMS's three broad postimplementation goals for the program are "ensuring that competition promotes simplicity as well as better benefits, minimizing drug prices while providing access to needed drugs, and intensifying outreach to lower-income beneficiaries who do not yet have comprehensive drug coverage" (Bach & McClellan, 2006, p. 2312). Thus, although the program has seemingly met its goals of providing better benefits, minimizing drug prices, and providing access to needed drugs, the goal of *promoting simplicity* certainly failed, at least initially. Numerous problems arose at the program's implementation. At the onset, there were reports of consumer confusion about the myriad plans from which to choose as well as a general lack of understanding about the program (Bach & McClellan; Heiss et al., 2006; Henry J. Kaiser Family Foundation, 2006; Summer, Nemore, & Finberg, 2008). Indeed, CMS acknowledged substantial problems with the implementation, including problems with patient coverage at pharmacies and long wait times for the 1-800-Medicare hotline (CMS, 2007). The goal of *outreach to lower income beneficiaries* was arguably successful by the fact that enrollment rates were relatively high among low-income seniors partly due to CMS having automatically enrolled approximately 7 mil-

lion low-income beneficiaries in the "extra help" component of the program (Neuman et al., 2007). This low-income subsidy (LIS) was created to offset some of the costs of the monthly program premiums and associated prescription drug costs for beneficiaries with limited income and resources. The level of financial assistance is based on the beneficiary's income and assets (Medicare, 2008). However, although CMS has noted that their "beneficiaries are socioeconomically and medically diverse" (Bach & McClellan, p. 2312), it is important to remember that beneficiaries are also racially and ethnically diverse, and currently, there is very little information on early program experiences or correlates of enrollment in older Blacks and Whites.

In our search of the empirical literature, we identified one manuscript that included race among its reporting factors. In their national survey of 16,072 beneficiaries, Neuman and colleagues' (2007) findings showed two differences by race. First, Medicare Part D was identified as the primary source of drug coverage for 61.7% of African American older adults compared with 48.4% of White older adults. Second, African Americans had significantly lower rates of enrollment in Employer, Veterans Administration, and other plans but had a higher rate (12%) of having no plan compared with Whites (8%). Furthermore, among those not receiving the LIS benefits, fewer than 40% of African Americans with incomes at or below 150% of poverty said that they were aware of the LIS benefit compared with more than 50% of their White counterparts. Neuman and colleagues' (2007) results emphasize program enrollment status and a benefit knowledge gap by race but do not offer insight into characteristics of program enrollees by race.

The evidence for race or ethnic health disparities is unequivocal. It is widely known that Blacks experience worse physical health status than Whites (Harper & Alexander, 1990; Levine et al., 2001; Mendes de Leon, Barnes, Bienias, Skarupski, & Evans, 2005; Shuey & Willson, 2008; U.S. Department of Health and Human Services [USDHHS], 2000). Whether Blacks experience worse mental health status than Whites is less clear; however, there is evidence that Blacks report more depressive symptoms than Whites (Callahan & Wolinsky, 1994; Jackson-Triche et al., 2000; Skarupski et al., 2005). So, how did these physical and mental health differences manifest in the prescription drug program enrollment experience? In this paper, we explore the sociodemographic and health characteristics of

the people who enrolled in the program, by race, using data collected from an ongoing population-based study of older Blacks and Whites.

Methods

Participants

The data for this study come from the Chicago Health and Aging Project (CHAP), which is an ongoing longitudinal, biracial (62% Black), population-based study of risk factors for incident Alzheimer's disease and other age-related chronic conditions among community-dwelling residents aged 65 and older. A complete census of three contiguous neighborhoods on the South Side of Chicago resulted in a total of 6,158 residents who participated in the baseline survey conducted from 1993 to 1997 (response rate of 78.9%). Details of study procedure have been provided elsewhere (Bienias, Beckett, Bennett, Wilson, & Evans, 2003; Evans et al., 2003; Wilson et al., 1999); essentially, assessments are conducted at approximately 3-year intervals. Two modifications have been made to the composition of the original CHAP cohort: (a) successive age cohorts have been enrolled as community residents reach 65 years of age to ensure that the cohort does not become increasingly older and smaller and (b) a supplemental cohort of residents aged 65+ from an adjacent neighborhood has been enrolled to add more older Whites to reduce the racial imbalance in the cohort. For the purpose of this report, we use data from the first 2,694 participants who participated in the current 3-year interview cycle (April 2006 to April 2009). Interviews with these participants were conducted between April 2006, shortly after the introduction of the Medicare Part D program, and October 2007. All data were collected in the participants' homes by trained interviewers. The interviews included performance-based tests of physical and cognitive function as well as structured questions about sociodemographic characteristics, health, and lifestyle. The Institutional Review Board of Rush University Medical Center approved the study and all participants provided written informed consent.

Measures

Sociodemographics.—Included in the analyses were sex, age (65–74, 75–84, and 85+ years), race (Black vs. non-Black), years of education (less than high school, high school graduate, or more than

high school), income (low, midrange, and high), and marital status (never married, married, separated, divorced, and widowed).

Medicare Part D.—As part of in-home interviews, participants were asked the following four questions (a) Did you enroll in the Medicare Part D prescription drug coverage plan [that was first made available in November 2005], YES or NO? (b) Where did you enroll? Was it an “Internet Website,” in a pharmacy, in a doctor's office, at a workshop, or at some other place? (c) How satisfied are you with the plan you selected? (very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied) and (d) Did you not enroll because [choose all that apply]: (i) you did not know about this program, (ii) the program was too difficult to understand, (iii) you were uncertain about which plan to choose, (iv) you forgot to enroll, or (v) other (specify).

Health.—We assessed health via three domains: global self-rated health, physical disability and function, and medical conditions. Global self-rated health was measured using the single question from the Centers for Disease Control and Prevention (CDC) health-related quality of life core items: “As compared to other people your own age, would you say that your health is excellent, good, fair, or poor?” (CDC, 2000). These responses were recoded into three categories: excellent, good, and fair or poor.

Physical disability was assessed using the self-reported activities of daily living (ADLs) and instrumental activities of daily living (IADLs) measures. We used the six ADL questions based on the work of Katz (Branch, Katz, Knipmann, & Papsidero, 1984) that emphasize the ability to perform basic self-care functions (e.g., eating, bathing, dressing). The ADLs were rated on a 3-point scale: need no help, need help, and unable to do. A dichotomous ADL measure was constructed indicating disability as a report of needing help or unable to do one or more ADL tasks. We also used the 10 IADL questions based on the Duke Older Americans Resources and Services that focus on more complex self-care tasks (e.g., preparing meals, light housekeeping, shopping) (Fillenbaum & Smyer, 1981). The IADLs were rated on a 5-point degree of difficulty scale. A dichotomous IADL measure was constructed indicating disability as a report of having at least some difficulty in one or

more IADLs. Physical function was assessed via a lower extremity performance-based measure of basic physical function adopted from the Established Populations for Epidemiologic Studies of the Elderly (EPESE) studies (Guralnik et al., 1994; Reuben & Siu, 1990), including tests of tandem stand, chair stand, and timed walk. Data from the physical performance test are recoded into ordinal level scales and then averaged into a summary score such that lower scores indicate greater disability. For ease of interpretation, physical performance was recoded into tertiles: high, medium, and low performance.

For medical conditions, CHAP obtains self-report information via in-person interviews using standardized questions derived from the EPESE on the number of physician-diagnosed diseases (Cornoni-Huntley, Brock, Ostfeld, Taylor, & Wallace, 1986). The questions focus on the following conditions: myocardial infarction, stroke, cancer, diabetes, high blood pressure, Parkinson's disease, shingles, thyroid disease, and hip fracture. These conditions are summarized into a continuous measure of number of chronic medical conditions.

Assessment of cognitive function was based on four brief tests: two measures of episodic memory, immediate and delayed recall of 12 ideas contained in the brief, orally presented East Boston Story (Albert et al., 1991); one test of perceptual speed via a modified form of the oral version of the Symbol Digit Modalities Test (Smith, 1984)—a procedure in which participants are given 90 s to identify as many digit symbol matches as possible; and the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975), a widely used 30-item screening test to measure global cognitive functioning in older adults. A summary measure of cognitive function was created by converting the scores on each of the four tests to *z* scores using the baseline mean and standard deviation of each test and then averaging them to yield a single measure scaled in standard units with higher scores indicating higher cognitive performance (Wilson et al., 1999). For ease of interpretation, cognitive function was recoded into tertiles: high, medium, and low function.

Assessment of depressive symptoms was based on the 10-item version of the Center for Epidemiologic Studies Depression scale (CES-D) (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). This abbreviated CES-D is derived from the original 20-item version (Radloff, 1977) and has acceptable

reliability and a similar factor structure compared with the original version (Kohout et al., 1993). Item responses are coded in a yes–no format, yielding a summary measure (CES-D) with a range from 0 to 10 after one sums across the individual items. Higher scores indicate more depressive symptoms.

Analysis

To facilitate comparison and interpretation of correlates between enrollees and nonenrollees within race groups, the health variables were recoded into tertiles, with the exception of ADLs and IADLs, which were recoded into binary levels because 82% and 69% of the responses were values of 0, respectively. We used the chi-square statistic to compare proportional differences and the independent samples *t* test to compare mean differences between enrollees and nonenrollees within race groups on the variables of interest. We used logistic regression to model the variables associated with program enrollment. We tested sequential models, examining sociodemographic factors first (Model 1), then adding health factors (Model 2). To account for the possibility that these factors were differentially associated with program enrollment depending on race, we separately tested the interaction between each covariate and race with Model 2 covariates and retained significant interaction terms ($p < .05$) for Model 3. We used the continuous versions of the covariates (e.g., education, income, ADLs, IADLs, physical and cognitive function) in the models. Analyses were performed using SAS[®] Version 8 (SAS Institute, 2000).

Results

Participant Sociodemographic, Health, and Program Enrollment Characteristics

Table 1 shows the sociodemographic, health, and program enrollment characteristics of the 2,694 participants. The average age of the participants was approximately 78 years, 64% were female, and 43% were married. The average number of years of education was approximately 13; 24% reported having 11 or fewer years of education, 29% reported having 12 years of education, and 46% reported having 13 or more years of education. Participants' income was split into tertiles with 38% in the low-income category, 29% in the midincome range, and 33% in the higher income range. Blacks were younger and had less education

Table 1. Participants' Sociodemographic, Health, and Program Enrollment Characteristics

Variables	Total (N = 2,694)	Blacks (n = 1,784)	Whites (n = 910)	p
Sociodemographics				
Age, mean (SD)	77.8 (7.4)	76.7 (6.9)	80.0 (8.0)	<.0001
Female, no. (%)	1,733 (64.3)	1,144 (64.1)	589 (64.7)	.7586
Married, no. (%)	1,148 (42.6)	760 (42.6)	388 (42.6)	.9856
Education, mean (SD)	12.9 (3.4)	12.1 (3.2)	14.5 (3.2)	<.0001
Education categories, no. (%)				<.0001
0–11	655 (24.4)	579 (32.5)	76 (8.4)	
12	790 (29.4)	554 (31.1)	236 (26.0)	
13+	1,244 (46.3)	647 (36.4)	597 (65.7)	
Income ^a categories, no. (%)				<.0001
Low	930 (37.9)	775 (48.3)	155 (18.3)	
Mid	719 (29.3)	528 (32.9)	191 (22.5)	
High	803 (32.8)	301 (18.8)	502 (59.2)	
Health				
Self-reported health, no. (%)				<.0001
Excellent	561 (20.8)	276 (15.5)	285 (31.3)	
Good	1,351 (50.2)	885 (49.6)	466 (51.2)	
Fair or poor	782 (29.0)	623 (34.9)	159 (17.5)	
No. of medical conditions				<.0001
0	434 (16.1)	236 (13.2)	198 (21.8)	
1	1,001 (37.2)	641 (35.9)	360 (39.6)	
2+	1,259 (46.7)	907 (50.8)	352 (38.7)	
Physical disability—ADLs				.4900
0	2,228 (82.7)	1,469 (82.3)	759 (83.4)	
1+	466 (17.3)	315 (17.7)	151 (16.6)	
Physical disability—IADLs				.8378
0	1,876 (69.6)	1,240 (69.5)	636 (69.9)	
1+	818 (30.4)	544 (30.5)	274 (30.1)	
Physical function				<.0001
High performance	654 (25.6)	339 (20.1)	315 (36.3)	
Medium	988 (38.6)	693 (41.0)	295 (34.0)	
Low performance	918 (35.9)	659 (39.0)	259 (29.8)	
Cognitive function				<.0001
High function	881 (33.7)	448 (25.8)	433 (49.5)	
Medium	875 (33.5)	621 (35.7)	254 (29.1)	
Low function	857 (32.8)	670 (38.5)	187 (21.4)	
Depressive symptoms				<.0001
0	1,120 (42.0)	637 (36.1)	483 (53.5)	
1	609 (22.8)	387 (21.9)	222 (24.6)	
2+	941 (35.2)	743 (42.1)	198 (21.9)	
Program enrollment				
Enrolled in the Medicare Part D program, no. (%)	1,022 (37.9)	708 (39.7)	314 (34.5)	.0088

Notes: ADLs = activities of daily living; IADLs = instrumental ADLs.

^aNine percent of the income data are missing in the total population (10.1% for Blacks and 6.8% for Whites).

and lower income than Whites. Blacks reported excellent health at less than half the rate of Whites and reported fair or poor health at nearly twice the rate of Whites. Similarly, Blacks reported more medical conditions but reported no difference in ADLs or IADLs compared with Whites. Blacks had worse physical and cognitive function and more depressive symptoms than Whites. Overall, 38% of the population reported having enrolled in

the Medicare Part D program by the end of the assessment cycle; the rate of enrollment was higher among Blacks (40%) than Whites (35%).

Medicare Part D Enrollment Experiences

Table 2 shows the participants' Medicare Part D enrollment experiences by race. There were distinct race differences in which the participants enrolled

Table 2. Medicare Part D Enrollment Experiences, by Race (N = 1,022)

Variables	Black enrollees (n = 708)	White enrollees (n = 314)	p
Where did you enroll? no. (%)			<.0001
Doctor's office	294 (41.9)	55 (17.6)	
Pharmacy	123 (17.5)	48 (15.4)	
Workshop	72 (10.3)	41 (13.1)	
Web site	11 (1.6)	24 (7.7)	
Other	202 (28.8)	144 (46.2)	
How satisfied are you with the plan? no. (%)			<.0001
Very satisfied	308 (44.1)	191 (61.4)	
Somewhat satisfied	330 (47.2)	95 (30.6)	
Somewhat dissatisfied	44 (6.3)	18 (5.8)	
Very dissatisfied	17 (2.4)	7 (2.3)	
Proportion enrolled by assessment period, no. (%)			.0362
April 1, 2006, to October 31, 2006	172 (24.3)	57 (18.2)	
November 1, 2006, to April 30, 2007	204 (28.8)	85 (27.1)	
May 1, 2007, to October 31, 2007	332 (46.9)	172 (54.8)	
Variable	Black nonenrollees (n = 1,075)	White nonenrollees (n = 594)	
Did you not enroll because ..., no. (%)			<.0001
Did not know about this program	142 (13.2)	14 (2.4)	
Program too difficult to understand	139 (12.9)	8 (1.4)	
Uncertain about which plan to choose	111 (10.3)	13 (2.2)	
Forgot to enroll	74 (6.9)	4 (0.7)	
Other	609 (56.7)	555 (93.4)	

in the program, their satisfaction with the program, and when they enrolled as well as differences between Black and White nonenrollees and their reasons for not having enrolled in the program. Among Black enrollees, the most common site of enrollment was in the doctor's office (42%), whereas only 18% of Whites reported that they enrolled in a doctor's office. Conversely, nearly half of Whites (46%) enrolled via some "other" mechanism compared with approximately one third (29%) of Blacks. The vast majority of both Blacks (91%) and Whites (92%) reported that they were either very satisfied or somewhat satisfied with the program. However, the distinction between "somewhat" and "very" satisfied was greater for Whites; 61% reported that they were very satisfied compared with 44% of Blacks reporting "very satisfied." Rates of program participation increased during the course of the study, but Blacks were more likely to have enrolled early in the program compared with Whites. During the assessment period closest to the program's roll-out in January 2006 to April 1, 2006, and October 31, 2006—nearly one quarter (24%) of the Black participants had enrolled in the program compared with 18% of their White counterparts. Among program non-enrollees, Blacks were more likely than Whites to report having been unaware of the program or

having experienced program confusion. For example, when asked why they did not enroll in the program, Blacks were 5–12 times more likely than Whites to report that they did not know about the program (13% vs. 2%), the program was too difficult to understand (13% vs. 1%), or that they were uncertain about which plan to choose (10% vs. 2%). The vast majority (93%) of White nonenrollees stated that they did not enroll for "other" reasons compared with only more than half (57%) of Blacks nonenrollees. When asked a follow-up question to explain these other reasons, the most typical responses were that the participant already had another or a better plan or that they did not need the program.

Sociodemographic and Health Correlates of Enrollment

Table 3 shows the sociodemographic and health correlates of program enrollment, comparing enrollees to nonenrollees *within* race groups. Overall, program enrollment was associated with older age, female, being unmarried, having less education and income, worse self-reported health, more medical conditions, more ADL and IADL disabilities, worse physical function, and more depressive symptoms.

Table 3. Sociodemographic and Health Correlates of Medicare Part D Enrollees, by Race

Variables	Total enrollees (<i>N</i> = 1,022)	<i>p</i> ^a	Black enrollees (<i>n</i> = 708)	<i>p</i> ^a	White enrollees (<i>n</i> = 314)	<i>p</i>
Sociodemographics						
Age, no. (%)		.0393		.1380		.0413
65–74	319 (34.6)		256 (36.9)		63 (27.6)	
75–84	524 (39.6)		361 (41.0)		163 (37.0)	
85+	179 (39.7)		91 (43.3)		88 (36.5)	
Sex, no. (%)		<.0001		<.0001		.0144
Males	305 (31.7)		211 (33.0)		94 (29.3)	
Females	717 (41.4)		497 (43.4)		220 (37.4)	
Marital status, no. (%)		.0439		.0121		.7618
Never married	43 (38.7)		13 (35.1)		30 (40.5)	
Married	414 (36.1)		285 (37.5)		129 (33.3)	
Separated	8 (20.0)		7 (18.9)		1 (33.3)	
Widowed	485 (40.2)		347 (43.2)		138 (34.2)	
Divorced	72 (38.3)		56 (38.1)		16 (39.0)	
Education, no. (%)		<.0001		.0001		.0241
Less than high school	302 (46.1)		271 (46.8)		31 (40.8)	
High school graduate	264 (33.4)		199 (35.9)		65 (27.5)	
Greater than high school	454 (36.5)		236 (36.5)		218 (36.5)	
Income, no. (%)		<.0001		<.0001		.3523
Low	414 (44.5)		358 (46.2)		56 (36.1)	
Mid	246 (34.2)		172 (32.6)		74 (38.7)	
High	255 (31.8)		89 (29.6)		166 (33.1)	
Health						
Self-reported health, no. (%)		.0220		.1201		.6079
Excellent	188 (33.5)		96 (34.8)		92 (32.3)	
Good	514 (38.1)		350 (39.6)		164 (35.2)	
Fair or poor	320 (40.9)		262 (42.1)		58 (36.5)	
No. of medical conditions		.0096		.0125		.3836
0	138 (31.8)		76 (32.2)		62 (31.3)	
1	380 (38.0)		247 (38.5)		133 (36.9)	
2+	504 (40.0)		385 (42.5)		119 (33.8)	
Physical disability—ADLs		.0259		.0224		.5872
0	824 (37.0)		565 (38.5)		259 (34.1)	
1+	198 (42.5)		143 (45.4)		55 (36.4)	
Physical disability—IADLs		.0331		.1123		.1506
0	687 (36.6)		477 (38.5)		210 (33.0)	
1+	335 (41.0)		231 (42.5)		104 (38.0)	
Physical function		<.0001		.0001		.0666
High performance	205 (31.4)		106 (31.3)		99 (31.4)	
Medium	362 (36.6)		262 (37.8)		100 (33.9)	
Low performance	399 (43.5)		294 (44.6)		105 (40.5)	
Cognitive function		.1695		.1715		.4516
High function	318 (36.1)		163 (36.4)		155 (35.8)	
Medium	353 (40.3)		261 (42.0)		92 (36.2)	
Low function	320 (37.3)		262 (39.1)		58 (31.0)	
Depressive symptoms		.0352		.1737		.4321
0	394 (35.2)		235 (36.9)		159 (32.9)	
1	247 (40.6)		163 (42.1)		84 (37.8)	
2+	374 (39.7)		304 (40.9)		70 (35.4)	

Notes: ADLs = activities of daily living; IADLs = instrumental ADLs.

^aThe *p* values reflect the statistical significance between those who enrolled and those who did not enroll, within groups.

For Blacks, enrollment status statistically differed depending on sex, marital status, education, income, number of medical conditions, ADL physical disability, and physical function. Women were

more likely to have enrolled compared with men (43% vs. 33%) and widows reported the highest enrollment rates (43%). Those with less education were more likely to have enrolled—47% of those

with less than a high school diploma enrolled compared with 37% of those with more than a high school education. Similarly, those with lower income also had the highest enrollment rates—46% of those in the lowest income tertile compared with 30% of those in the highest tertile. Blacks with poorer health were more likely to have enrolled in the program. Those with two or more medical conditions were more likely to have enrolled (43%) compared with 32% reporting zero medical conditions. Likewise, 45% enrolled who had a score of 1 or higher for ADL disability compared with 39% among those with a score of 0 and participants with low physical function were more likely to have enrolled (45%) compared with their high physical function peers (31%).

For Whites, enrollment status statistically differed depending on age, sex, and education; there were no differences between White program enrollees and nonenrollees for any of the health correlates. Older adults, females, and those with less education were more likely to have enrolled. Enrollment was 37% for those aged 75+ compared with 28% for those aged 65–74. Females were also more likely to have enrolled than men—37% versus 29% and 41% of those with less than a high school diploma enrolled compared with 28% of those with high school graduates.

Modeling Medicare Part D Enrollment

Table 4 shows the results from the logistic regression models of the factors associated with program enrollment. Model 1 shows that older age, being female, married, and lower income were associated with a greater likelihood of having enrolled in the program; race was not associated with program enrollment. Adding the health factors in Model 2 did not substantively change the sociodemographic factors associated with program enrollment. Of the health-related variables, better physical function was associated with a reduced likelihood and better cognitive function was associated with a greater likelihood of enrollment. Model 3 shows that adding the significant interactions with race did not substantively change the odds ratios (ORs) from prior models. Of the three interaction effects with race we tested, only the race by education interaction effect was significant (OR = 0.93, 95% confidence interval [CI] = 0.87–0.99). Calculation of the race-specific ORs indicated that years of education showed a slight positive association with enrollment among Whites (OR = 1.05,

95% CI 1.00–1.11) and a nonsignificant negative association among Blacks (OR = 0.98, 95% CI 0.93–1.03).

Discussion

Overall, we found that almost 4 of 10 older adults had enrolled in the Medicare Part D program between the period of April 1, 2006, to October 31, 2007. We also observed a gradual increase in enrollment rates over time, with program participation reaching about 50% toward the latter stages of the study, which was about a year and half after rollout of the program. The results of these analyses also suggest somewhat distinct Medicare Part D program enrollment profiles among Blacks and Whites. Enrollment rates were higher in Blacks compared with Whites and the program enrollment pattern among Blacks appears to have been motivated by financial and health needs more so than among Whites. Black enrollees generally were more disadvantaged in terms of lower socioeconomic status and poorer physical health. They were also more likely to be unmarried females, have less education and income, have more medical conditions, and greater physical disability as measured by ADLs and poorer physical function than those who did not enroll. Among Whites, enrollees were older females with less education than nonenrollees, but health was apparently not associated with Whites having enrolled in the program. In the multivariate analyses, older age, female, being married, lower income, worse physical function, and better cognitive function were associated with program enrollment.

Location was a prominent factor in program enrollment. Whereas less than one fifth of White enrollees enrolled in their doctor's office, nearly half of Black enrollees enrolled in their doctor's office, which is somewhat surprising given historic health care access barriers encountered by Blacks. But whether our survey participants were contacted by CMS and encouraged to enroll in their doctor's office or if access to health care is typically a problem for our participants is unknown. Indeed, one of CMS's major program strategies *was* making contact with and counseling vulnerable populations, particularly widows and unmarried women and those less educated and with lower incomes (Heiss et al., 2006). Furthermore, whether this enrollment process was facilitated by the physicians themselves, the nursing staff, other health care practitioners, or administrative staff is unclear;

Table 4. Modeling Medicare Part D Enrollment, Using Logistic Regression, Odds Ratio (95% confidence intervals)

	Model 1	Model 2	Model 3
Sociodemographics			
Age	1.02 (1.01–1.03)**	1.02 (1.00–1.03)*	1.02 (1.00–1.03)*
Male	0.69 (0.57–0.83)***	0.70 (0.58–0.86)***	0.67 (0.55–0.82)***
Married versus not married	1.27 (1.04–1.55)*	1.30 (1.05–1.59)*	1.30 (1.06–1.60)*
Education	1.01 (0.98–1.03)	1.00 (0.97–1.03)	1.05 (0.99–1.11)
Income	0.91 (0.87–0.95)***	0.90 (0.86–0.94)***	0.92 (0.86–0.99)*
Black	1.03 (0.84–1.27)	0.98 (0.79–1.23)	1.71 (0.94–3.26)
Health			
Self-reported health	—	0.98 (0.86–1.12)	0.98 (0.86–1.12)
No. of medical conditions	—	1.07 (0.98–1.17)	1.06 (0.97–1.16)
Physical disability—ADLs	—	0.92 (0.82–1.03)	0.92 (0.82–1.02)
Physical disability—IADLs	—	1.01 (0.96–1.06)	1.01 (0.96–1.06)
Physical function	—	0.95 (0.92–0.98)***	0.95 (0.91–0.98)***
Cognitive function	—	1.28 (1.10–1.49)**	1.54 (1.18–2.00)**
Depressive symptoms	—	0.98 (0.94–1.03)	0.98 (0.94–1.03)
Race interactions			
Black Race × Education	—	—	0.93 (0.87–0.99)*
Black Race × Income	—	—	0.96 (0.87–1.04)
Black Race × Cognitive Function	—	—	0.79 (0.59–1.06)

Notes: Dashes indicate that a variable was not included in the model. ADLs = activities of daily living; IADLs = instrumental ADLs.

* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

regardless, the doctor's office proved to be an efficient mechanism for reaching the Black population in this large-scale nationwide educational and outreach campaign. Our findings suggest that the doctor's office can be a vital source of program education, information, and intervention, particularly for older Blacks. Other national, state, and local programs such as Medicaid, civic engagement programs, Meals on Wheels, adult day care, caregiving, and senior housing programs may improve their outreach and impact by exploring collaborative relationships with doctor's offices.

Similar to Neuman and colleagues' (2007) findings, we also observed a knowledge gap evident among Blacks who did not enroll in the program. More than one third of Black nonenrollees reported that they were unaware of or confused by the program or plans. However, the fact that 13% of Blacks and 2% of Whites reported that they did not know about the program, actually aligns with CMS's report that "85 percent of seniors were aware of the open-enrollment period" (CMS, 2007). Beyond the basic knowledge of the Medicare Part D program, the complexity of the program added to consumer lack of knowledge and confusion (Summer et al., 2008). In fact, Hsu and colleagues (2008) recently reported that the majority of beneficiaries were unaware of or had limited knowledge of the coverage gap, otherwise known

as the doughnut hole, which happens when beneficiaries with moderate to high drug expenses are personally responsible for a substantial portion of their drug costs (Goldman & Joyce, 2008).

The import of our findings to program policy is pronounced when considering the projected increase in the U.S. Black elderly population; by 2050, 14% of the Black population will be aged 65 or older compared with 8% today (U.S. Bureau of the Census, 1996). Similar increases are projected for other race and ethnic groups. It remains to be seen whether or not improving access to prescription drugs through the Medicare Part D program contributes to minimizing health disparities in old age. In addition to working closely with doctors' offices, pharmacies, and drug plans, CMS can expand its outreach efforts by establishing collaborative relationships with consumer advocacy groups, including Area Agencies on Aging, community-based organizations, and public health departments. Continued monitoring is required to assess the long-term impact of the program, especially among vulnerable subpopulations whose lower incomes oftentimes force difficult decisions of choosing food over medicine (Madden et al., 2008). For example, cost-related medication nonadherence (CRN) is especially high in minority groups. CRN refers to "cost-coping behaviors" such as skipping, splitting, sharing, or

substituting pills, switching to cheaper prescriptions, and getting free samples; one study reported that one third of their sample engaged in cost-coping behaviors (Hsu et al., 2008). Soumerai and colleagues (2006) reported CRN prevalent behaviors in 18% of African Americans compared with 12% in Whites, and Madden and colleagues (2008) noted only small reductions in CRN and forgoing basic needs on the heels of Medicare Part D implementation.

Our findings raise the possibility that Medicare Part D serves the health needs of older Blacks more directly than those of older Whites, given the more consistent associations between program enrollment and markers of poor health in our data among Blacks. The reasons for the differential pattern of enrollment correlates by race are unclear and merit further investigation. One possibility is that, on average, a lower portion of older Blacks had supplemental insurance that included prescription drug benefits before introduction of the Medicare Part D program. Unfortunately, we cannot test this theory as we do not have information on participants' supplemental health insurance coverage. Another possibility is that older Blacks are more likely to have comorbid chronic health conditions, leading to a greater proportion of them depending on multiple drug regimens for the management of their conditions. A note of caution here is that our data come from a population of older Blacks and Whites who live in a large Midwestern urban area. Although similar findings may be found in other urban areas across the country, they cannot necessarily be generalized to smaller towns and rural areas or to populations with other racial or ethnic backgrounds.

The general consensus is that the Medicare Part D prescription drug program survived its initial implementation challenges and is a success. More than 90% of the current 44 million Medicare beneficiaries now have comprehensive prescription drug coverage (CMS, 2007; Goldman & Joyce, 2008; Heiss et al., 2006), whereas in 1999, 38% of Medicare beneficiaries reported that they had no drug coverage (Laschober, Kitchman, Neuman, & Strabic, 2002). The fact that our population is rapidly aging and growing increasingly racially and ethnically diverse merits a sustained investment in ensuring that all older adults reap the Medicare Part D program's rewards.

Continued program monitoring is critical because the stakes are high for the prescription drug benefit's success. The Congressional Budget Office

(2007) has estimated the cost of the program to be \$811.5 billion for 2007–2016. Various stakeholders anticipate a wide range of program benefits. CMS anticipates being able to ensure increased plan competition resulting in lower costs and better options that are easy for consumers to understand, and physicians anticipate that their patients will be able to fill and use their prescriptions as intended (Bach & McClellan, 2006). Policymakers expect reduced emergency department use and reduced unnecessary hospitalizations. These and other program outcomes will have tremendous economic and public health implications, particularly with regard to eliminating the widely documented race or ethnic health disparities in older populations (Levine et al., 2001; USDHHS, 2000). Evidence of differential program enrollment experiences and varying sociodemographic and health correlates of enrollees by race emphasize opportunities for targeting educational and health care outreach initiatives for medication therapy needs, barriers, and adherence. The long-term impact of the differential use of this new program on Black–White health disparities remains uncertain and requires continued monitoring.

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References

- Albert, M., Smith, L. A., Scherr, P. A., Taylor, J. O., Evans, D. A., & Funkenstein, H. H. (1991). Use of brief cognitive tests to identify individuals in the community with clinically diagnosed Alzheimer's disease. *International Journal of Neuroscience*, 57, 167–178.
- Bach, P. B., & McClellan, M. B. (2006). The first months of the prescription-drug benefit—A CMS update. *New England Journal of Medicine*, 354, 2312–2314.
- Bienias, J. L., Beckett, L. A., Bennett, D. A., Wilson, R. S., & Evans, D. A. (2003). Design of the Chicago Health and Aging Project (CHAP). *Journal of Alzheimer's Disease*, 5, 349–355.
- Branch, L. G., Katz, S., Knipmann, K., & Papsidero, J. A. (1984). A prospective study of functional status among community elders. *American Journal of Public Health*, 74, 266–268.
- Callahan, C. M., & Wolinsky, F. D. (1994). The effect of gender and race on the measurement properties of the CES-D in older adults. *Medical Care*, 32, 341–356.
- Centers for Disease Control and Prevention. (2000). *Measuring healthy days*. Atlanta, GA: Author.
- Centers for Medicare and Medicaid Services. (2007). Medicare drug plans strong and growing: Beneficiaries compared plans and continued to sign-up for prescription drug coverage. *CMS Office of Public Affairs*. For immediate release January 30, 2007. Retrieved May 22, 2008, from http://www.cms.hhs.gov/apps/media/press_releases.asp

- Congressional Budget Office. (2007). *Fact sheet for CBO's March 2007 baseline: Medicare*. Retrieved May 22, 2008, from <http://www.cbo.gov/budget/factsheets/2007b/medicare.pdf>
- Cornoni-Huntley, J., Brock, D. B., Ostfeld, A. M., Taylor, J. O., & Wallace, R. B. (1986). *Established populations for epidemiologic studies of the elderly: Resource data book*. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, National Institute of Health.
- Evans, D. A., Bennett, D. A., Wilson, R. S., Bienias, J. L., Morris, M. C., Scherr, P. A., et al. (2003). Incidence of Alzheimer disease in a biracial urban community: Relation to apolipoprotein E allele status. *Archives of Neurology*, *60*, 185–189.
- Fillenbaum, G. G., & Smyer, M. A. (1981). The development, validity, and reliability of the OARS multidimensional functional assessment questionnaire. *Journal of Gerontology*, *36*, 428–434.
- Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state": A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, *12*, 189–198.
- Goldman, D. P., & Joyce, G. F. (2008). Medicare Part D: A successful start with room for improvement. *Journal of the American Medical Association*, *299*, 1954–1955.
- Guralnik, J. M., Simonsick, E. M., Ferrucci, L., Glynn, R. J., Berkman, L. F., Blazer, D. G., et al. (1994). A short physical performance battery assessing lower extremity function: Association with self-reported disability and prediction of mortality and nursing home admission. *Journal of Gerontology: Medical Sciences*, *49*, 85–94.
- Harper, M., & Alexander, C. (1990). Profile of the black elderly. In M. S. Harper (Ed.), *Minority aging*. USDHHS No. HRS (P-DV-90-4) (pp. 193–222). Washington, DC: U.S. Government Printing Office.
- Heiss, F., McFadden, D., & Winter, J. (2006). Who failed to enroll in Medicare Part D, and why? Early results. *Health Affairs (Project Hope)*, *25*, 344–354.
- Henry J. Kaiser Family Foundation. (2006). *Seniors' early experiences with the Medicare prescription drug benefit: Selected findings from the Kaiser Health Poll Report Survey: Chartpack*. Menlo Park, CA: Author.
- Hsu, J., Fung, V., Price, M., Huang, J., Brand, R., Hui, R., et al. (2008). Medicare beneficiaries' knowledge of part D prescription drug program benefits and responses to drug costs. *Journal of the American Medical Association*, *299*, 1929.
- Jackson-Triche, M. E., Greer Sullivan, J., Wells, K. B., Rogers, W., Camp, P., & Mazel, R. (2000). Depression and health-related quality of life in ethnic minorities seeking care in general medical settings. *Journal of Affective Disorders*, *58*, 89–97.
- Kohout, F. J., Berkman, L. F., Evans, D. A., & Cornoni-Huntley, J. (1993). Two shorter forms of the CES-D (center for epidemiological studies depression) depression symptoms index. *Journal of Aging and Health*, *5*, 179–193.
- Laschober, M. A., Kitchman, M., Neuman, P., & Strabic, A. A. (2002). Trends in Medicare supplemental insurance and prescription drug coverage, 1996–1999. *Health Affairs (Project Hope), Suppl Web Exclusions*, 127–138.
- Levine, R. S., Foster, J. E., Fullilove, R. E., Fullilove, M. T., Briggs, N. C., Hull, P. C., et al. (2001). Black-white inequalities in mortality and life expectancy, 1933–1999: Implications for healthy people 2010. *Public Health Reports (Washington, DC: 1974)*, *116*, 474–483.
- Lichtenberg, F. R., & Sun, S. X. (2007). The impact of Medicare Part D on prescription drug use by the elderly. *Health Affairs (Project Hope)*, *26*, 1735–1744.
- Madden, J. M., Graves, A. J., Zhang, F., Adams, A. S., Briesacher, B. A., Ross-Degnan, D., et al. (2008). Cost-related medication nonadherence and spending on basic needs following implementation of Medicare Part D. *Journal of the American Medical Association*, *299*, 1922–1928.
- Medicare. (2008). *Prescription drug coverage: Basic information*. Retrieved November 5, 2008, from <http://www.medicare.gov/pdp-basic-information.asp>
- Mendes de Leon, C. F., Barnes, L. L., Bienias, J. L., Skarupski, K. A., & Evans, D. A. (2005). Racial disparities in disability: Recent evidence from self-reported and performance-based disability measures in a population-based study of older adults. *Journal of Gerontology: Social Sciences*, *60*, 263–271.
- Neuman, P., Strollo, M. K., Guterman, S., Rogers, W. H., Li, A., Rodday, A. M. C., et al. (2007). Medicare prescription drug benefit progress report: Findings from A 2006 national survey of seniors. *Health Affairs*, *26*, 630.
- Pauly, M. V. (2004). Medicare drug coverage and moral hazard. *Health Affairs (Project Hope)*, *23*, 113–122.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401.
- Reuben, D. B., & Siu, A. L. (1990). An objective measure of physical function of elderly outpatients. The physical performance test. *Journal of the American Geriatrics Society*, *38*, 1105–1112.
- SAS Institute. (2000). *SAS/STAT user's guide, version 8*. Cary, NC: Author.
- Shuey, K. M., & Willson, A. E. (2008). Cumulative disadvantage and black-white disparities in life-course health trajectories. *Research on Aging*, *30*, 200–225.
- Skarupski, K. A., Mendes de Leon, C. F., Bienias, J. L., Barnes, L. L., Everson-Rose, S. A., Wilson, R. S., et al. (2005). Black-white differences in depressive symptoms among older adults over time. *Journal of Gerontology: Psychological Sciences*, *60*, 136–142.
- Smith, A. (1984). *Symbol digit modalities test manual—Revised*. Los Angeles: *Western Psychological Services*.
- Soumerai, S. B., Pierre-Jacques, M., Zhang, F., Ross-Degnan, D., Adams, A. S., Gurwitz, J., et al. (2006). Cost-related medication nonadherence among elderly and disabled Medicare beneficiaries. *Archives of Internal Medicine*, *166*, 1829–1835.
- Summer, L., Nemore, P., & Finberg, J. (2008, May). Medicare Part D: How do vulnerable beneficiaries fare? *Issue Brief No. 1127, Vol. 35*. New York, NY: The Commonwealth Fund.
- U.S. Bureau of the Census. (1996). *Current population reports, special studies, P23-190, 65+ in the United States*. Washington, DC: U.S. Government Printing Office. Retrieved May 22, 2008, from <http://www.census.gov/population/www/pop-profile/elderpop.html>
- U.S. Department of Health and Human Services. (2000). *Tracking Healthy People 2010*. Washington, DC: Author.
- Vogt, W. E., Joyce, G. F., & Goldman, D. P. (2008). *Effects of Medicare Part D on pharmacy use and out-of-pocket spending*. Pittsburgh, PA: RAND Corporation.
- Wilson, R. S., Bennett, D. A., Beckett, L. A., Morris, M. C., Gilley, D. W., Bienias, J. L., et al. (1999). Cognitive activity in older persons from a geographically defined population. *Journal of Gerontology: Psychological Sciences*, *54*, 155–160.
- Yin, W., Basu, A., Zhang, J. X., Rabbani, A., Meltzer, D. O., & Alexander, G. C. (2008). The effect of the Medicare Part D prescription benefit on drug utilization and expenditures. *Annals of Internal Medicine*, *148*, 169–177.

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