Medicare prescription drug coverage: Consumer information and preferences

Joachim Winter*, Rowilma Balza†, Frank Caro‡, Florian Heiss*, Byung-hill Jun†, Rosa Matzkin§, and Daniel McFadden†¶

*Department of Economics, University of Munich, D-80539 Munich, Germany; †Department of Economics, University of California, 549 Evans Hall, Berkeley, CA 94720-3880; ‡Gerontology Institute, University of Massachusetts, Boston, MA 02125-3393; and §Department of Economics, Northwestern University, 2001 Sheridan Road, Evanston, IL 60208

Contributed by Daniel McFadden, March 17, 2006

We investigate prescription drug use, and information and enrollment intentions for the new Medicare Part D drug insurance program, using a sample of Medicare-eligible subjects surveyed before open enrollment began for this program. We find that, despite the complexity of competing plans offered by private insurers under Part D, a majority of the Medicare population had information on this program and a substantial majority planned to enroll. We find that virtually all elderly, even those with no current prescription drug use, can expect to benefit from enrollment in a Part D Standard plan at the low premiums available in the current market. However, there is a significant risk that many eligible seniors, particularly low-income elderly with poor health or cognitive impairment, will make poor enrollment and plan choices.

consumer choice | Medicare Part D | subsidized prescription drug insurance

Medicare Part D is a large new government program that offers subsidized prescription drug insurance with substantial protection against catastrophic drug costs. The Part D legislation mandated a market in which private insurance companies and HMOs compete to offer coverage, and consumers have choices of carriers and plans. Competition and consumer self-interest are supposed to make the market largely self-regulating, with minimal supervision by the Center for Medicare and Medicaid Services and its Office of the Inspector General. A first hurdle the market faces is that elderly consumers may not have the attention and acuity needed to avoid bad plans and drive them out of the market. We report results from our Retirement Perspectives Survey (RPS-2005) on the ability of elderly consumers to understand and make satisfactory choices in the Part D market, and conclude that a substantial minority, particularly those with poor health or cognitive impairment, will need to be guided and coaxed into making sensible choices. Two other hurdles have been studied in previous research (refs. 1–7 and A. E. Hall, personal communication). One is overcoming adverse selection: an insurance plan that is actuarially balanced when enrollees are representative of the population will become unbalanced if those most likely to have claims enroll and those least likely do not. Thus, Part D could fail to meet financial targets if the healthy fail to enroll. Adverse selection could also arise from consumer shopping across plans to find formularies that include drugs they need; this can cause plans with broad formularies to selectively attract consumers with expensive drug needs, making them unprofitable. Economics predicts that competition in this circumstance will lead to a "race to the bottom" in which plans have lowest common denominator formularies, and compete on features attractive to the healthy, such as low introductory premiums. Insurers will have incentives to resist accepting plan-switchers with preexisting health conditions requiring costly drug therapies, and to resist covering expensive "designer" and "specialty" drugs; this will lead to conflicts with consumers and pharmaceutical companies, who gain from free choice and expansive formularies. The last hurdle is moral hazard, in which insurance coverage encourages doctors and patients to opt for more medications, and be less selective in keeping down drug costs, and insurers respond by making the approval process for branded drugs burdensome. We conclude that if Part D is to succeed in its objective of making affordable medications available to most elderly, careful attention will be needed to overcome these hurdles.

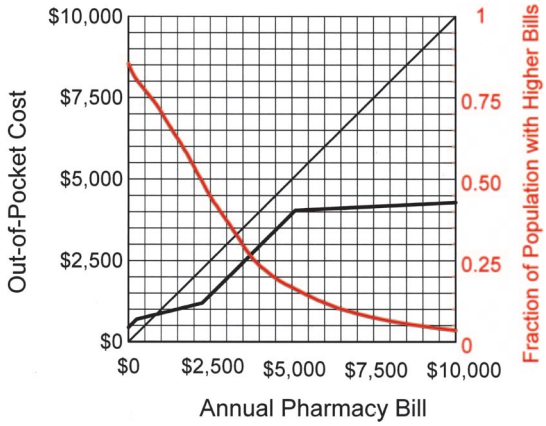

Fig. 1. Medicare standard plan benefit.

Features of Medicare Part D

Medicare Part D impacts consumers differently, depending on how they previously paid for prescription drugs. In our survey, 26% of the Medicare population paid their own pharmacy bills, and the remainder had coverage for some or all of their bills, the sources being Medigap or other self-purchased insurance (11%), employer or union (32%), Medicaid (4%), Veterans Administration (6%), or a Medicare Advantage or HMO plan (21%). Consumers with conventional Medicare Part A or B coverage, with or without self-purchased prescription drug insurance, can enroll in one of the private plans available in their geographic area, or opt out of the program by the default of taking no action. If a consumer had employer or union coverage, then they will in most cases continue to be covered through coordination of their insurer with Medicare. Low-income consumers may qualify for means tested premium and copay reductions, particularly if they join a Medicare Advantage program. Veterans have coverage comparable to a Medicare advantage program. Consumers on Medicaid are assigned to a plan, with some option to switch plans.

The Center for Medicare and Medicaid Services has established a Standard plan under Part D that has an annual premium of $444, a deductible of $250, pays 75% of prescription drug pharmacy bills above $250 up to $2,250, has a "doughnut hole" with no additional benefits until pharmacy bills reach $5,100, and pays 95% of pharmacy bills above that level. Fig. 1 shows annual out-of-pocket

Conflict of interest statement: No conflicts declared.

Abbreviations: OPC, out-of-pocket cost; EPV, expected present value; SES, socioeconomic status.

¶To whom correspondence should be addressed. E-mail: mcfadden@econ.berkeley.edu.

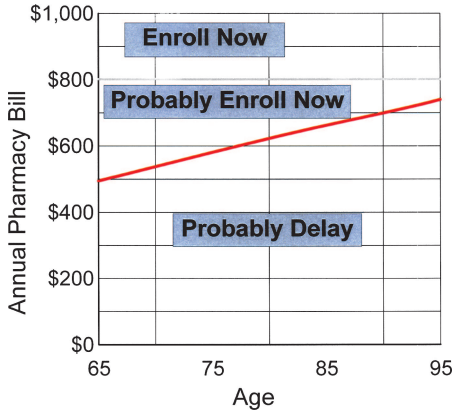

Fig. 2. Cost-minimizing enrollment thresholds at $444 annual premium.

cost (OPC), including premium, as a function of pharmacy bill. It also shows the fraction of the population whose 2006 pharmacy bills are expected to be above each level. The break-even point in 2006 for a Standard plan enrollee is $842; ≈27% of the Medicare population will fall below this level. If enrollment in the Standard plan were universal, then the expected government subsidy would be $1,092 per person in the Medicare population, and the 5% of the population with the largest pharmacy bills would reduce their OPCs by at least $4,600.

The private insurers who provide drug coverage under Part D may offer plans that are credibly comparable to the Standard plan at the same or lower premiums, or may offer enhancements to the Standard plan. Enhancements include coverage for the $250 deductible and/or the "doughnut hole" in the Standard plan, broader formularies than Medicare requires,‖ variations in the coinsurance or copayment tier structure and approval process, and convenience features such as broad pharmacy participation and mail-order services. For example, one national insurer is offering the Standard plan at a premium of $65 per year; an "Enhanced plan" at a premium of $135 per year that, up to the doughnut hole, provides generic drugs at a copayment of $7, preferred brand drugs at a copayment of $30, and non-preferred brand drugs at a copayment of $60; and a "Complete plan" at a premium of $611 per year that extends its enhanced plan coverage through the doughnut hole.**

Enrollees may change plans annually, and the Center for Medicare and Medicaid Services stipulates that approved plans must take all applicants. There are penalties for late enrollment, currently a 1% increase in premiums per month for delay past the initial enrollment period that ends May 15, 2006. Enrollment reopens each November, with additional provisions for consumers who move from current plan areas.

In evaluating Part D alternatives, consumers need to take into account not only their current pharmacy bills, but also the probabilities of developing new health conditions that will require treatment, and the distribution of costs of these treatments. They need to understand the formularies, approval rules, and copayment tiers of alternative plans, and how these may change over time. As a result, consumers are being asked to make relatively complex plan assessments, generally with incomplete information on future prospects. Because of the late enrollment penalties, there is not only a current financial risk of making a poor decision, but an option pricing problem of determining the value of enrolling to lock in current premium rates. Many seniors are challenged by these decisions, and risk making poor choices or procrastinating past the enrollment deadline.

Table 1. Impact of explanatory factors on prescriptions and pharmacy bills

Factor contrast	Change in number of prescriptions used	Change in annual pharmacy bill, $
Female/male	0.24**	4.30
Nonwhite/white	−0.25*	−8.20
Age + 1 year	0.05**	0.95
High/low SES	0.70**	14.49
Excellent/poor SRHS	−4.53**	−166.78**
Max/min cognitive score	−2.38**	62.13**
Pay own pharmacy bill/not	−1.02**	−20.26**
Chronic pain, all/none	0.62**	125.48**
Heartburn and stomach acid, all/none	1.03**	111.60**
High cholesterol, all/none	1.05**	81.24**
Migraine headaches, all/none	0.22	9.78
Muscle spasms, all/none	0.02	33.35**
Type 2 diabetes, all/none	1.61**	71.26**
Urinary incontinence, all/none	0.49**	36.86**

Estimates from full sample, $n = 4,732$ after deletion of six observations due to missing data. *, Significant at the 5% level; **, significant at the 1% level. SRHS, self-reported health score.

Publicity from Medicare and other sources emphasize the benefits consumers receive at their current prescription drug bills, and consumer preferences in our survey reflect this emphasis. In one respect, this is appropriate. Many prescriptions are for chronic conditions, making it highly predictable that they will continue in the future. Then, current pharmacy bills are a predictable component of future bills. However, two significant features of Part D plans are insurance against catastrophic drug costs in the future, and a premium penalty for late enrollment. Lack of information about these features may lead some consumers to enrollment decisions based on current pharmacy bills alone that are contrary to their best interest. Underlying the enrollment decision is an option value problem: determine whether the expected present value (EPV) of OPC is lower with immediate enrollment, or with delay and enrollment later if health warrants. Fig. 2 gives thresholds obtained from a simple approximation, detailed later, to the option value calculation; these apply to people who face the Medicare Standard plan with an annual premium of $444. For people with 2005 pharmacy bills above $801, the option of delaying enrollment is "out of the money;" these people can expect to reduce their OPC for prescription drugs in 2006 with Part D coverage, in addition to being insured against risks of high future bills.†† About 72.5% of the Medicare population meet this condition. For those with lower bills, there is an annual pharmacy bill threshold that rises with age from just below $500 to close to $750. Individuals who are

‖Approved plans must have formularies that include at least two drugs in each therapeutic category; the fraction of the 100 most frequently prescribed drugs included in currently approved formularies range from 65% to 100%, with a median of ≈90%.

**At the distribution of 2006 pharmacy costs in Fig. 1, this insurer's Standard plan will lose $388 per year. Thus, the company must anticipate that, through some combination of formulary control, bargaining with pharmaceutical companies, future premium increases, and acquisition of a customer base to which it can market other products, it can offset this loss. The insurer's Enhanced and Complete plans also will operate at smaller losses that will have to be made up.

††The break-even point for immediate enrollees, the pharmacy bill at which 2006 benefits from Medicare Part D coverage equal the premium, is $842. Taking into account the expected cost of new prescriptions that may be needed lowers this threshold to $802. People who face reduced premiums have lower enrollment thresholds. Plans with sufficiently low premiums make immediate enrollment attractive for all. A person with zero current pharmacy costs has a probability of ≈6.3% of developing a health condition in 2006 requiring medication, and an expected Standard plan benefit of $367 if this occurs. In addition, the expected gain from avoiding an annual late enrollment premium penalty of $31 beginning in 2007 varies from about $305 for a person of age 65 to $100 for a person of age 95. Thus, a Standard plan with a 2006 annual premium below $100 + (0.063 × $367) = $123 is beneficial for all Medicare consumers, even before considering the value of the insurance the plan offers.

Table 2. Consumer knowledge about medicare prescription drug coverage, age ≥65

Percentages	All	Low SES	Bad health	Low cognition	Low SES, health, cognition
Fair or Great Amount	33.5	30.3	28.3	28.6	22.3
Some	27.0	26.3	21.9	24.5	23.3
Little or nothing	39.5	43.4	49.8	46.9	54.3
n	1,884	736	444	757	134
P value		0.0	0.0	0.0	0.2

prepared to self-insure and are currently below this threshold will probably find delay desirable, whereas those between this threshold and $801 will probably find immediate enrollment desirable. About 24.4% of the Medicare population falls in the region where delay is probably desirable, and 3.1% in the region where immediate enrollment is probably but not definitely desirable. About 4.3% of the Medicare population have current annual pharmacy bills falling between $500 and $842, where an enrollment choice based on current bill and one based on EPV of OPC are likely to differ. Thus, in a large majority of cases, a choice based on current bill will also be optimal when the dynamics of the decision problem are taken into account.

Results

Sample Evidence on Prescription Drug Use. The RPS-2005 sample of the Medicare population averages 4.1 prescriptions per month. The distribution is quite skewed, with 11.5% using none, and 25% using six or more. Those who pay their own pharmacy bills average 3.3, whereas those with coverage for some or all of their bills average 4.4. This is potentially a significant moral hazard, perhaps due to under-medication of the self-financing, although some could be due to reverse causality, with the less healthy seeking out drug coverage.

Table 1 estimates the changes in average number of prescriptions and pharmacy bills that would result from hypothetical experimental treatments in which specified explanatory factors are set at contrasting levels, with all other factors left at their observed levels.[‡‡] These contrasts are (*i*) all female versus all male, (*ii*) all nonwhite versus all white, (*iii*) 1 year older versus current age, (*iv*) high versus low socioeconomic status (SES), with high SES being a college graduate with an annual income over $75,000, and low SES being a less than high school education with an annual income below $20,000, (*v*) excellent versus poor self-rated health status, (*vi*) highest versus lowest cognitive score, (*vii*) all versus none currently paying most of prescription drug bills, and (*viii*) all versus none diagnosed with specified health conditions. These estimates are obtained from an ordered probit statistical model for number of prescriptions and a regression model for pharmacy bills.

The number of prescriptions is higher for females and for whites, and falls sharply as self-rated health status and cognitive ability increase. High SES respondents use significantly more prescriptions than low SES ones. Because high SES individuals are healthier on average, this pattern corresponds to considerably less aggressive diagnosis and use of drug therapy among the poor and less educated elderly. Pharmacy bill changes follow the same pattern, but are less sensitive to demographic factors.

[‡‡]In Tables 1, 3, 5, 7, and 10, giving estimated contrasts, the results are based on unweighted observations, whereas in Tables 2, 4, 6, 8, and 9, giving estimated percentages in the relevant subpopulations, weighted observations are used. Tests for statistical independence in tables apply to the subtables formed from the specified column and the omitted complementary column formed by subtracting this column from the ''All'' column, and are based on unweighted observations. These statistical procedures are justified in supporting information, which is published on the PNAS web site.

Table 3. Impact of explanatory factors on knowledge of Part D

Factor contrast	Change in percent ''fair or great''
Female/male	−1.06
Nonwhite/white	−5.42**
Age + 1 year	0.48
High/low SES	13.64**
Excellent/poor SRHS	12.83**
Max/min cognitive score	9.98*
Pay own pharmacy bill/not	2.52
Prescriptions + 1, bill + $800	0.91**

Estimates from subsample of those qualifying for Medicare now or within 2 years, n = 2,435 after deletion of 10 observations due to missing data. *, Significant at 5% level; **, significant at 1% level.

Consumer Knowledge and Information Sources. Table 2 gives survey response to a questions about how much information consumers have on the Medicare prescription drug program. A substantial minority of the Medicare population, 39.5%, have little or no knowledge about Part D. Lack of information is severe among those with low SES, in bad health (poor or fair self-rated health status) or with low cognition, and those who combine low SES, bad health, and low cognition are particularly at risk, with 54.3% having little or no knowledge. Statistical P values are reported for tests that responses are independent of each condition.

Table 3 summarizes the factor contrasts estimated from an ordered probit model of response to the information question. Nonwhites have significantly less information, and those with high SES, good health, and high cognitive ability have significantly more information. Finally, we consider a treatment in which the number of prescriptions rises by one and the annual pharmacy bill rises by $800. Information increases significantly with this increase in prescription drug use.

Table 4 gives the likely sources that consumers anticipate using to obtain information on Part D. Medicare, insurance companies/benefits offices, and doctors/pharmacists are likely sources. Some elderly, particularly if cognitively impaired, will rely on agents such as relatives or caregivers to guide or make Part D decisions for them, so that their own decision-making capabilities are less relevant. It would be desirable in future research to study the availability and use of agents for the vulnerable elderly, and the degree to which these agents know the circumstances and alternatives of their elderly principles and lead them to best choices.

Table 5 gives the impact of various factor contrasts on the propensity to consult alternative sources. Higher SES consumers are more likely to consult insurance companies/benefits offices, and less likely to consult doctors/pharmacists, and those with high cognitive ability are less likely to consult family and doctors/pharmacists. Those paying their own bills now are more likely to consult public sources and less likely to consult insurance companies.

Table 4. Sources of information, age ≥65

Source	Very, %	Somewhat, %	Unlikely, %
Official Medicare information	37.2	33.2	29.6
Internet sites other than Medicare's site	7.0	23.5	69.5
Doctor, pharmacist, or other health care professional	22.6	40.9	36.5
Current insurance firm or agent, or employers benefit	40.6	26.7	32.7
Family or friends	16.5	38.7	44.8
Newspaper/press reports	12.1	41.5	46.4

Table 5. Impact of explanatory factors on probabilities of "very likely" sources

Factor contrast	Medicare	Internet	Doctor	Insurance	Family	Newspaper
Female/male	1.4	0.6	1.6	6.0**	2.1	0.4
Nonwhite/white	6.2*	4.2**	2.2	−0.1	−1.3	1.1
Age + 1 year	−0.4	−0.2	−0.4	0.6	0	0
High/low SES	20.5**	6.6**	−12.0**	18.9**	−3.0	1.7
Excellent/poor SRHS	1.3	2.5	−2.9	7.3	−1.9	0.9
Max/min cognitive score	1.4	−4.4	−19.7**	7.4	−12.4*	0.3
Pay own pharmacy bill/not	11.9**	5.6**	5.0**	−15.2**	5.7**	5.4**
Prescriptions + 1, bill + $800	0.5	0.4	0.9*	0.6	−0.5	−0.3
n	2,397	2,346	2,367	2,389	2,352	2,341

*, Significant at the 5% level; **, significant at the 1% level.

Plan Preferences and Enrollment Intentions. Survey respondents in the Medicare population were asked whether they had enrolled or intended to enroll in a prescription drug plan; 17% indicated this was not likely. As Table 6 shows, this percentage falls for those with health problems, and rises for those who are poorly informed about Part D. *P* statistics are reported for independence of response and the conditions of low cognition, for the condition of combined bad health, low SES, and low cognition, for independence in the subtable of health status, and in the subtable of response versus information. Note that 19% of those in very good health say they are unlikely to enroll. This percentage is comparable to the fraction of the Medicare population that fall in the region of Fig. 2 where delay is expected to give lower EPV of OPC, making this an attractive alternative for those willing to self-insure.

The impacts of various factors on the percentage "likely" (i.e., already covered, very likely, or somewhat likely) are given in Table 7. Enrollment is significantly more likely among those of high SES and those having higher numbers of prescriptions and pharmacy bills, and significantly less likely among those who currently pay their own pharmacy bills.

Option Value of Enrollment. We describe the option value calculation underlying Fig. 2. If an eligible person enrolls immediately in Part D, her EPV of OPC will be the discounted present value of the $444 annual premium plus her expected pharmacy bill less the Part D benefit in each year from 2006 to the end of her life. If, on the other hand, she delays 1 year, then the EPV of her OPC is her expected pharmacy bill for 2006 plus the discounted EPV of her cost stream from 2007 on assuming optimal future enrollment decisions that take into account the Medicare premium penalty for late enrollment (7% in 2007, and 12% per year thereafter) and new information she will obtain on health and prescription costs. With information on the probabilities of developing new health conditions, and the distributions of drug costs for required therapies, this can be formulated as a dynamic stochastic programming problem, and solved by backward recursion to determine a threshold depending on age such that if the current pharmacy bill is below the threshold, an individual who seeks to minimize EPV of OPC cost will choose to delay. This is a difficult computation that goes beyond Medicare cost estimation tools (8), and we simplify it by approximating a necessary condition for delay, replacing expectations of future decisions contingent on intervening health events by future decisions given the expectations of these events, as in ref. 9. We implement this calculation using U.S. life tables, estimates from the Health and Retirement Survey of the annual probability of developing a condition requiring a new prescription drug therapy (10), and estimates from our survey and the Medicare Current Beneficiary Survey (MCBS) of the distribution of annual drug costs for a new therapy (for details, see supporting information).

There are four factors that may modify this calculation for an individual. First, additional information on health that will be revealed in the future, and decisions contingent on this information, gives delay some added option value. Second, risk aversion gives immediate enrollment added insurance value. Trial calculations indicate that, for individuals with moderate risk aversion, the effect of these two factors on the threshold for delay is relatively small, on the order of $100 or less. Third, individuals may have different personal probabilities for new health conditions and prescription drug requirements than the ones we have used based on very limited data on medication cost transition probabilities. Fourth, individuals may have discount rates other than the 5% real rate we have used.

Consumer Preferences Across Plans. Subjects were asked for their preferences among the alternatives of no prescription drug coverage, the Medicare Part D Standard plan, and three hypothetical alternative plans.

Guaranteed benefit plan. Medicare pays 52.3% of approved prescription drug costs, no matter how high or low these costs are. The annual premium of $444 is the same as the Standard Plan.

Major cost protection plan. Medicare pays all approved prescription drug costs above $2,444 per year, but nothing until your cost at the pharmacy reaches this level. The annual premium of $444 is the same as the Standard Plan.

No copay plan. You pay an up-front annual premium of $1,889 per year, and all approved prescription drug costs are then fully covered, with no copayments.

The alternative plans all have the same actuarial value as the Standard plan for the Medicare population, but differ in the degree to which they provide insurance against major pharmacy costs. The Major Cost and No Copay plans provide almost complete insurance against major costs, with the latter eliminating the deductible and charging an up-front premium for the actuarial value of this replacement. The Guaranteed benefit plan is more favorable than

Table 6. Intention to enroll in medicare prescription drug coverage

Percentages	All	Low SES	Bad health	Low cognition	All bad	Well informed	Somewhat informed	Poorly informed
Covered now or very likely	65.1	61.9	67.4	65.4	56.4	71.8	66.1	58.9
Somewhat likely	17.9	18.9	20.9	19.5	27.1	13.5	17.9	21.5
Not likely	17.0	19.2	11.7	15.1	16.5	14.7	16.0	19.6
n	1,884	734	444	757	134	652	527	770
P value, %		0.7	0.1	0.29	0.2		0.0	

Table 7. Impact of explanatory factors on intention to enroll

Factor contrast	Change in percent "likely"
Female/male	0.5
Nonwhite/white	−1.3
High/low SES	7.7**
Excellent/poor SRHS	−5.4
Max/min cognitive score	4.4
Pay own pharmacy bill/not	−25.0**
Prescriptions + 1, bill + $800	2.3**

Estimates from subsample of those qualifying for Medicare now or within 2 years, n = 2,432 after deletion of 13 observations due to missing data. *, Significant at the 5% level; **, significant at the 1% level.

the Major Cost plan at low pharmacy bills, but entails substantial risk at high bills. These hypothetical alternatives vary more from the Standard plan than most products currently being offered, but preferences among them may provide some indication of preferences for features of actual plans.

The proportion choosing no plan, 17.3%, is close to the proportion indicating in an earlier question that they were unlikely to enroll in Part D; this is true despite the range of the hypothetical plans. Table 8 shows that 70.6% of the population's choice between no plan and one of the hypothetical plans minimizes EPV of OPC. However, there are 10% who intend to delay even though it is likely in their self-interest to enroll. On the other hand, 19.4% of those intending to enroll would achieve lower EPV of OPC by delaying. Of course, some of that group may want the insurance against catastrophic costs in the future, and these could be rational decisions if there is strong aversion to the risk of large, low-probability losses.

Consider next choice among the hypothetical plans. The first column of Table 9 gives the shares of the Medicare population preferring each of these alternatives. The Standard plan is the most popular, the guaranteed benefit plan the second most popular, and the catastrophic plans the least popular. The remainder of Table 9 gives the percentages of the Medicare population that choose the row alternative, and would have minimized the EPV of OPC by choosing the column alternative. Thus, 13.9% choose the Standard Plan and this is also the plan that minimizes their EPV of OPC, whereas 10.3% choose the Standard plan while delaying enrollment (no plan) minimizes EPV of OPC. Enrollee choice among the alternative plans is not explained well by cost minimization; only 36.3% of enrollees choose the plan than minimizes EPV of OPC, or what is nearly the same because choice among plans can be revisited next year, their OPC at their current drug utilization. Furthermore, consumers do not seem to place much value on the insurance component of the alternative plans; among enrollees, the guaranteed benefit plan that offers relatively poor insurance against catastrophic drug costs is the minimum cost alternative in only 3.2% of cases, but is preferred by 27.1%, whereas the catastrophic plans are preferred by 21.5% and are the minimum cost alternative for 51.2%. We conclude that consumers are likely to have difficulty choosing among plans to fine-tune their prescription drug coverage,

Table 8. Hypothetical enroll/delay choice, %

Intended choice (November 7–15, 2005)	Total	Action that minimizes EPV of OPC: Enroll	Delay
Enroll	82.7	63.3	19.4
Delay	17.3	10.0	7.3
Total	100	73.4	26.6

Estimates from subsample of those qualifying for Medicare now or within 2 years, n = 1,808 after deletion of 188 observations due to missing data.

Table 9. Hypothetical choices, %

Chosen alternative	Total	Minimum EPV of OPC: Standard plan	Guaranteed benefit	Major cost/ no copay	No plan
Total	100.0	33.4	2.4	37.6	26.6
Standard plan	38.8	13.9	1.2	13.5	10.3
Guaranteed benefit plan	22.4	7.5	0.5	9.3	5.1
Major cost/No copay plan	21.5	6.5	0.4	10.6	4.0
No plan	17.3	5.5	0.3	4.2	7.3

Estimates from subsample of those qualifying for Medicare now or within 2 years, n = 1,808 after deletion of 188 observations due to missing data.

and do not seem to be informed about or attuned to the insurance feature of Part D plans.

Table 10 gives the impacts of factor contrasts on the percent probabilities that each plan is chosen, obtained from a multinomial logit model of choice. Generally, preferences are not sensitive to health, but high SES people and people with large pharmacy bills are less likely to choose no plan, and those who currently pay their own bills are more likely to choose no plan.

Discussion

We conclude from our study that a majority of the Medicare population will handle satisfactorily the choices offered by the market for prescription plans, but that the lack of information and acuity among the vulnerable, and procrastination, will lead to suboptimal choices for a substantial minority. An important corrective may be assistance from children or caregivers for the most vulnerable, but our study has not examined the role that proxy decision-makers will play in Part D choices. Many elderly consumers fail to understand the value of Part D as insurance against catastrophic prescription drug costs, and may as a consequence fail to enroll, or enroll in expensive plans that emphasize low premiums or coverage of deductibles rather than catastrophic benefits. Part D's startup problems are probably going to exacerbate the problem of nonenrollment.

Adverse selection and moral hazard are likely to be significant problems in the future, and are likely to complicate plan switching and coverage of expensive designer and specialty drugs. Given the heavy use and advertising by insurers of "loss-leader" premiums to lock in market share, we can anticipate considerable turmoil as insurers and plans come and go, and premiums and coverages change. There will almost certainly be considerable churning and grumbling in this market in the future.

If the market component of Medicare Part D is to be successful, in the sense that it provides choices that consumers want, and achieves the efficiencies it seeks, it will probably be necessary for Medicare to expand its effort to reach all consumers and provide them with information and assistance in making wise choices. There is clearly a significant minority who will not achieve satisfactory outcomes out of self-interest, and will have to be coaxed and wheedled into making sensible choices. The American Association of Retired Persons (AARP) and Medicare web sites provide useful information, but are inaccessible to many of the most vulnerable. If elders are to be given sound advice on the merits of enrollment and alternative plans, community-based, privately financed advocacy organizations are likely to have to take the initiative. Medicare and the Social Security Administration could provide training and tools for these organizations. It is also going to be important for Medicare to look carefully at the incentives and cost controls in their contracts with insurers, and plans for monitoring compliance, to keep a handle on adverse selection and moral hazard.

Because Part D is a major social experiment on the use of private markets to provide social insurance, monitoring its performance is

Table 10. Impacts on hypothetical choices: Changes in probabilities

Factor contrast	*P* value	Medicare standard	Guaranteed benefit	Major cost protection	No copay	No plan
Female/male	0.073	−1.7	4.1	−1.8	−0.9	0.3
Nonwhite/white	0.722	2.5	−1.5	−0.9	1.5	−1.5
Age + 1 year	0.56	0.3	−0.1	0.1	−0.1	−0.2
Age + 1 year (65–74)	0.533	0.3	−0.1	−0.1	−0.4	0.2
Age + 1 year (≥75)	0.264	0	0	0.3	0.1	−0.4
High/low SES	0.005	−1.1	3.7	7.1	−4.8	−4.7
Excellent/poor SRHS	0.187	−2.8	−6.5	−1.3	12.4	−1.7
Max/min cognitive score	0.047	4.9	14.1	−6.1	−15.6	2.7
Pay own pharmacy bill/not	0	−4.8	3.1	−0.8	−4.9	7.4
Prescriptions + 1, bill + $800	0	−0.2	0.7	0	2.6	−3.2

Estimates from subsample of those qualifying for Medicare now or within 2 years, $n = 2{,}338$ after deletion of 107 observations due to missing data. SRHS, self-reported health score.

a research priority. At present, even the most basic information on transition probabilities for pharmacy bills and health conditions that is needed for careful calculation of the value of insurance plans is not publicly available. Either existing or new consumer panels that track enrollment, plan choice, health conditions and prescription drug use, and relate it to socioeconomic and cognitive status are needed to inform consumer choices and future policy discussions.

Materials and Methods

The Retirement Perspectives (RPS-2005) Survey. We fielded a self-administered internet questionnaire on November 7–15, 2005, using a panel of subjects enrolled by Knowledge Networks, a commercial survey firm. This panel was recruited from a random sample of the underlying population. To ensure consistent delivery of survey content, each household is provided with identical hardware (web TVs), even if they already own a computer or have Internet access. The sample is selective in that it excludes individuals or their proxies who are unable or unwilling to operate the survey hardware. Probability weighting based on demographics and socioeconomic status is used to adjust for selective sampling and nonresponse, so in these dimensions the sample is representative of the underlying population. Nevertheless, the panel oversamples people with technical sophistication, and undersamples people who are institutionalized or severely cognitively impaired. For example, ≈50% of the panel have internet access, compared with 30% in the underlying population. Members are compensated for participation in the panel. For our study, 5,879 members of the panel aged 50 and over were contacted. Of these, 4,738 individuals completed the survey (cooperation rate, 80.6%). Our present analysis is restricted to respondents who are currently in the Medicare-eligible population, for the purposes of our study defined as age 65 and older, or will be eligible within 2 years.

The survey lasted ≈22 min and covered, in addition to questions about Part D, questions about health status and conditions, long-term care choices, prescription drug use and cost, and attitudes toward risk. An extensive list of additional socioeconomic and demographic variables were provided by Knowledge Networks as background on panel members. Embedded within the survey were a series of experiments that test for response errors, but these are not reported here. As a simple measure of cognitive impairment for our respondents, we sum self-reported difficulty with instrumental activities of daily living (IADL) for money management and taking medications, plus the number of errors made on five items that test numerical and logical skills. We have no direct test of the validity of this index, but in the Health and Retirement Survey (HRS), the sum of the medications and money IADLs correlates 0.36 with the cognitive battery contained in that survey. We classify individuals above the median on this scale as having low cognitive function.

Other Data. We use the 2001 Medicare Current Beneficiary Survey (MCBS) distribution of annual pharmacy bills (the cost of prescription drugs at the pharmacy, before insurance, and before discounts obtained by insurance companies, or by consumers through use of discount cards) with Medicare adjustments to 2005 and 2006 for undercounting and price changes (www.cms.hhs.gov/MCBS). We also use an AARP survey giving median prices of commonly prescribed drugs (as of April 2005) for nine listed health conditions (chronic pain, heartburn and stomach acid, high cholesterol, arthritis and muscle pain, menopausal symptoms, migraine headaches, muscle spasms, type 2 diabetes, and urinary incontinence; www.aarp.org/health/comparedrugs).

RPS-2005 Sample Pharmacy Bills. For each of the listed health conditions, we ask respondents taking prescription drugs for these conditions to indicate, from a list of the most frequently prescribed drugs for the condition, and an "other" category, what prescriptions they have used in the past 30 days. Each respondent's indicated prescriptions, priced at the AARP medians, plus an average cost per prescription for nonlisted drugs, is used to estimate their total monthly pharmacy bill. Adapting a methodology used in estimation of economic consumption (11, 12), we adjust our constructed costs so that their annualized distribution coincides with Medicare's MCBS estimates of the distribution of prescription drug costs in 2005.

We thank Peter Diamond, Alan Garber, Dana Goldman, Elisabeth Goldstein, James Smith, and Richard Suzman for information and comments. This research was supported by the National Institute on Aging, Behavioral and Social Research.

1. Goldman, D. P., Joyce, G. F., Escarce, J. J., Pace, J. E., Solomon, M. D., Laouri, M., Landsman, P. B. & Teutsch, S. M. (2004) *J. Am. Med. Assoc.* **291,** 2344–2350.
2. Huskamp, H. A., Deverka, P. A., Epstein, A. M., Epstein, R. S., McGuigan, K. A. & Frank, R. G. (2004) *N. Engl. J. Med.* **349,** 2224–2232.
3. Huskamp, H. A., Frank, R. G., McGuigan, K. A. & Zhang, Y. (2005) *J. Econ. Manage. Strategy* **14,** 729–753.
4. Joyce, G. F., Escarce, J. J., Solomon, M. D. & Goldman, D. P. (2002) *J. Am. Med. Assoc.* **288,** 1733–1739, and erratum (2002) **288,** 2409.
5. Moran, J. R. & Simon, K. I. (2005) *Working Paper* (National Bureau of Economic Research, Cambridge, MA), no. 11068.
6. Yang, Z., Gilleskie, D. B. & Norton, E. C. (2004) *Working Paper* (National Bureau of Economic Research, Cambridge, MA), no. 10964.
7. McAdams, D. & Schwarz, M. (2006) *Working Paper* (National Bureau of Economic Research, Cambridge, MA), no. 12008.
8. U.S. Government, Medicare Administration (2005) *Federal Register* **70,** 4466.
9. Lumsdaine, R. L., Stock, J. H. & Wise, D. A. (1994) in *Studies in the Economics of Aging*, ed. Wise, D. A. (Univ. of Chicago Press, Chicago), pp. 183–224.
10. Adams, P., Hurd, M. D., Merrill, A., McFadden, D. & Ribeiro, T. (2003) *J. Econ.* **112,** 3–56.
11. Browning, M., Crossley, T. F. & Weber, G. (2003) *Econ. J.* **113,** F540–F567.
12. Skinner, J. (1987) *Econ. Lett.* **23,** 213–216.