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ABSTRACT

Choices increasingly abound for various government supported services, ranging from charter schools to health plans. 24 million elderly Americans have enrolled in Medicare Part D prescription drug coverage during the past two years and may choose among at least 40 plans. Using a conceptual framework in which individuals may misperceive prices in ways that depend on environmental factors, this paper presents a randomized experiment in which one group of seniors enrolled in free-standing private drug plans was presented personalized information on the potential cost savings from changing to the lowest cost drug plan while another group received information about accessing the Medicare website, where this same information was available. The personalized cost information reflected both plan premiums and out-of-pocket costs for the drugs the senior was taking. We also examine the informational environment in which seniors chose plans. The study focuses on the 2006 open enrollment period.

The intervention group plan-switching rate was 28 percent, while the comparison group rate was 17 percent. Average predicted costs for 2007 were \$104 lower for the intervention group as a whole and \$230 lower for those potentially affected by the intervention. We interpret these results as evidence of misperceived prices in the comparison group.

We find that most participants obtained their information from mailings from plans and from Medicare, sources that lacked personalized cost information. Knowledge of how plans work was low. Medicare offered personalized information via its help-line and website, but assistance from private sources was limited.

We conclude that additional efforts to distribute simple, personalized drug plan information would lead to significant reductions in Medicare beneficiaries' costs.

Keywords: field experiment; Medicare Part D; prescription drug insurance

JEL classifications: D89, I11

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I. Introduction

Policy makers are increasingly incorporating consumer choice and competition into the provision of government services. Social security, school selection programs and prescription drug insurance are three of the most prominent examples where choice has been proposed or adopted. The rationale for including choice and competition is straightforward. Individuals have heterogeneous preferences over many basic services. Choice allows individuals to select those providers whose services best match their preferences. Competition then facilitates a menu of services being provided at the cost-efficient frontier.

This argument relies on consumers effectively choosing well, being able to consider a menu of service providers and pick the one that best matches their needs. A body of research illustrates the difficulty of choosing and the tendency to focus on easily available, invariant components of prices. For example, an experiment with mutual fund prospectuses showed that subjects overwhelmingly failed to minimize fund fees even though this choice was clearly optimal in light of the experimental setting and structure of subjects' payments (Choi, Laibson, and Madrian, 2007), while in Sweden's privatized Social Security system, investors' choices appeared wiser and led to higher returns ex post later in the program when new participants tended to opt for the default fund than earlier in the program when an effective informational campaign encouraged participants to make their own choices. (Cronquist and Thaler, 2004). In the market for credit cards, individuals appear to systematically emphasize annual fees rather than interest rates as though they were not going to borrow and yet they do tend to borrow and then pay high finance charges (Ausubel, 1991). Consumers appear to pay more for identical goods when costs are shifted into add-ons (shipping, hotel phone calls, re-stocking fees; consumers), react to nominal prices more than real prices, etc.¹ In the case of Medicare Part D, many observers have highlighted seniors' difficulties with plan choice; further standardizing benefits and improving information are among the commonly suggested remedies. See, for example, Hoadley, 2008 and Frank and Newhouse, 2007.

Thaler and Sunstein (2008) argue that by knowing how people think, we can design choice environments that make it easier for people to choose, and that this "choice architecture" can encourage choices that increase average consumer surplus without restricting individual freedom of choice. Several recent studies have employed this logic in designing and testing interventions that alter choice environments and influence choice behavior. In the context of Mexico's privatized

¹ For more detailed discussion and references, see Chetty, Looney, and Kroft (2007), DellaVigna (2007), and Ellison (2006).

social security program, an experiment presenting fees in pesos instead of annual percentage rate to financially illiterate workers caused much more focus on fees when selecting between investment funds; the implied changes in demand elasticity from changing information formats could have a substantial effect on market prices (Hastings and Tejada-Ashton, 2008). In a study of school choice, parents were more likely to choose a school with higher average test scores after receiving publicly available information about the scores of schools, and their children improved their own test scores after attending a higher-scoring school (Hastings and Weinstein, 2007). In a study of sales taxes, posting the after-tax price (as opposed to having it added at the register) significantly reduced product demand even though the after-tax prices were the same (Chetty, Looney, and Kroft, 2007). In the case of Medicare, the release of HMO report cards in 1999 and 2000 appeared to increase enrollment in higher quality plans (Dafny and Dranove, 2008) a public mailing about the beneficiaries appear to learn both from Medicare

This paper explores the relevance of the choice environment, and specifically the misperception of prices, within the context of choosing Medicare Part D prescription drug insurance plans. Previous research looking at the health insurance components of Medicare has found that elderly beneficiaries seldom engage in the choice process (Gold, Achman, and Brown 2003). One basic building block of informed choice is understanding differences among choices, yet comprehension comparative of information presented in the most frequently used formats of charts and tables appears to diminish substantially with age (Hibbard 2001). Medicare beneficiaries indicate that some decisions about health plans are important and difficult, but few seek help (McCormack and Garfinkel 2001). Interestingly, research into the decision making of older adults finds that perhaps the most important trait to emerge with age is an increased reluctance to make decisions (Mather, 2006). One study, for example, found that only 10 percent of older adults who were both willing to consider total joint arthroplasty and perfect candidates chose to have it. Ensuing interviews revealed that, rather than actually deciding against the treatment, these older adults had merely tended to defer the decision until some underdetermined later date (Hudak et al., 2002).

The Medicare drug benefit was established as part of the Medicare Modernization Act of 2003, with coverage first beginning in January 2006. The drug benefit was subsidized, with Medicare paying about three-quarters of the premium. Medicare beneficiaries were offered the opportunity to voluntarily enroll in drug coverage either through a free-standing plan (complementing fee-for-service health insurance through Medicare) or through a Medicare Advantage plan (often a health

maintenance organization). After the introduction of the benefit, the percentage of Medicare recipients with drug coverage increased from about 67 to 90 percent, although analyses suggest that many of the remainder would also benefit if they were to enroll (Heiss, McFadden, and Winter 2006).

This paper focuses on plan selection among those who have enrolled in a free-standing plan, who are not receiving a low-income subsidy (where the benefits for individuals across plans are more standardized), and who are 65 years of age or more.² These individuals were typically choosing from among 40-60 plans, depending upon where they lived. The plans differed along a variety of dimensions including: amount paid every month (premium), how out-of-pocket expenses vary with total drug expenditures (co-payment schedule), coverage of drugs and dosages (formulary), utilization management tools (prior authorization, step therapy, quantity limitations), pharmacy accessibility, mail order discounts, customer service, and financial stability of insurer. With the large number of plans and the many dimensions to consider, making an informed choice was complicated. In particular, the costs of plans differ substantially depending upon the prescriptions that individuals make take. The Medicare website provides a tool for reducing some of the complexity by combining information on premium, co-payment schedule, formulary, and prescriptions used in order to create a personalized cost estimate.

Section II provides a conceptual framework for our analysis of plan choices. Section III presents the results from a randomized experiment, where we examine the impact of simple, clear, personalized, comparative, publicly available information about the potential savings from switching plans. Section IV discusses intervention costs relative to participants' savings and possible Medicare savings. Section V of this paper uses new data (two cross-sectional surveys, several audits of information sources) to describe the types of information that people used, the content of this information, and the knowledge imparted – in order to understand the context in which decisions were made. Section VI concludes.

II. Conceptual framework

To highlight key aspects of the choice of prescription drug plans, we start with a Perloff and Salop (1985) model of consumer preferences for differentiated products. In the standard model,

² Other research has examined the market structure and plan dimensions, such the factors involved in premium setting (Simon and Lucarelli 2006), and the willingness to pay for features such as gap coverage (Heiss, McFadden, and Winter, 2007). The cost management strategies do appear to have encouraged people to switch to cheaper medications (Neuman et. al 2007). Utilization has increased, while seniors' expenditures have decreased (Yin et al, 2008).

there are n plans, and a finite number of consumers L , each of whom have no monopsony power. Each consumer chooses the plan that maximizes her net surplus ($s_i = b_i - p_i$)

$$(1) \quad \max_i s_i$$

s_i is the surplus of the i -th plan, p_i is its price, and b_i is an element of the consumer's preference vector $\mathbf{b} = (b_1, b_2, \dots, b_n)$. The b_i measure the aggregated utility of plan-specific characteristics such as convenience and quality. We are interested in whether people actually choose in this way.

An alternative is that individuals do not choose based on actual price p_i but on their perception of the price which we denote by $p'_i(C)$. C here denotes exogenous features of the choice environment that may affect the extent of misperception.³ The choice environment captures the way information is presented, which in psychologically richer models can affect beliefs above and beyond what the information conveys. This may include advertising or presentations which simplify the information set. The key assumption in what follows is that we are focusing on a specific instance of C below (the simplification of obtainable information) which should not affect the choice in (1). Thus, the consumer perceives surplus to be $s'_i = b_i - p'_i(C)$ and hence maximizes:

$$(1') \quad \max_i s'_i$$

How do we differentiate the models in (1) and (1')? We form a test based on the idea that elements of C which do not affect $b_i - p_i$ cannot affect choices in (1) but could affect choices in (1'). Specifically, we alter the choice environment by presenting the publicly available personalized price vector p_i back to individuals. Presentation of this vector clearly could not affect choices if people were (pre-intervention) choosing according equation (1) since the personalized price vector p_i was needed to implement that maximization in the first place. In this sense, we are simply measuring whether people were choosing coherently according to the full information price vector. We test for impact from a difference in C on the probability of any action (switching plans) and on the systematic nature of the action (specifically, the senior's predicted costs in the 2007 plan).

We put further structure on the problem by decomposing the true price into two components ($p_i = x_i + y_i$). x_i is the common component of the price (premium) for the i -th plan that is the same for all consumers in a market. y_i is the individualized component of the price (out-of-pocket costs) for the i -th plan that depends in the individual's prescription drug use. The perceived price may differ from true price component x_i by the function $\varepsilon_i(C)$ that depends on the choice environment, and similarly from y_i by $\eta_i(C)$. Thus, the consumer perceives the price to be:

³ Perloff and Salop (1985) model the difference between true and perceived product characteristics as an additive error. We are being more specific in focusing on the perception of the price and its dependence on the choice environment.

$$(2) \quad p'_i(C) = (x_i + \varepsilon_i(C)) + (y_i + \eta_i(C)).$$

We define price misperception as having perception of the price depend on the choice environment, or $\text{Var}(\varepsilon_i(C) + \eta_i(C)) > 0$. Notice that price misperception here reflects an end state with no judgment passed on the process by which customers reached that end state. For example someone who simply failed to seek out price information and chose arbitrarily would misperceive by our definition. It is meant to capture the notion that people are choosing as if they faced a different price vector than the actual one. In our application of prescription drug plan choice, the information on the common component of the price is cheaper to obtain and simpler to present, since it does not depend on the multi-dimensional attributes of individual prescription use. We will therefore assume that $\text{Var}(\varepsilon_i(C)) < \text{Var}(\eta_i(C))$.

Thus our three tests are about whether presenting public information back to a chooser:

- Affects choice by increasing plan switching? Since C does not enter equation (1), it would not according to that model.
- Affects choice by decreasing average predicted costs of the selected plan when the choice environment emphasizes lower costs? Again, there would be no effect under the model in equation (1).
- Has less effect on the common component of predicted cost of the selected plan than the personalized component? Under our auxiliary assumption, $\text{Var}(\varepsilon_i(C)) < \text{Var}(\eta_i(C))$, we predict it would.

One key feature of these tests is worth noting: they simply testing for misperception of prices. Note, however, that a choice environment that makes prices clearer does not necessarily result in greater consumer surplus; surplus will depend on the relationship between the perception of prices and the perception of utility from choosing a plan. For example, if individuals systematically overestimate the quality of low-cost plans, then clarity about prices could lead to suboptimal choices of low-cost, low-quality plans. While our primary analysis focuses on misperception of prices, we also examine some quality measures.

III. Information intervention

To study the potential impact of information, we designed a randomized experiment in which the intervention group received a one page cover letter showing the individual's current plan and predicted annual cost, the lowest cost plan and its predicted annual cost, and the potential savings from switching to the lowest-cost plan. The intervention group also received a printout from the

Medicare Plan Finder of data on all available plans. Both the intervention and comparison groups received a brochure on how to use the Medicare website. Participants were University of Wisconsin Hospital patients, and were interviewed by students in the School of Pharmacy in the fall of 2006 to elicit an inventory of prescription drug use and other information to be used in the Plan Finder prior to randomization. At the time of the study interview, participants reported regularly using an average of five and half medications. The study participants were all from Wisconsin, nearly all white, with an average age of 75. About two-thirds were women, and about half were college graduates. A follow-up survey, completed in early 2007, inquired about whether participants switched plans and their choice process. The final analytical sample size was approximately 400. Additional details on the experimental methodology are in Appendix C.

There were 54 Medicare prescription drug plans available to our Wisconsin sample. In order to assess the dispersion in costs across plans for the same individuals, we compiled data on the predicted costs of every possible plan for 391 of the 406 individuals from our experiment. Analysis is shown in Table 1, with separate columns for groups of low, medium, high, and very high use individuals – defined as individuals taking 0-3, 4-6, 7-10, and 11+ medications respectively. The average cost of the lowest cost plan available to low use individuals was \$623, shown in column 1. The 27th least expensive plan, which is the plan at the median among the 54 available, cost an average of \$1,053, or almost twice as much. For the very high use group, the average cost of the median plan was \$1,233 more than the lowest cost plan, or more than one-third as much higher. The plans initially enrolled in by the individuals in our sample were nearer the median plan than the lowest cost plan: the average percentile rank was 38th for the lowest and highest use groups, and 44th for the two middle use groups. Two key findings from this analysis are that the difference in cost from selecting one plan versus another can be substantial and that, for most seniors, there are many plans available with similar or lower costs than those selected.

The results of the information experiment are shown in Table 2, with column 1 showing estimates for the full sample of 406 participants for whom we have data on 2007 plan choice. Analysis of the probability of switching plans between 2006 and 2007 is shown in panel A. 28 percent of those in the group receiving the letter intervention switched plans, compared to 17 percent in the comparison group. The difference of approximately 11.5 percentage points is found in a simple comparison of means and after controlling for covariates known at the time of random assignment (demographics and prescription drug information). The probability of such a large

difference occurring by chance under the null hypothesis of no effect of the intervention is very small, with p-values less than .005 for both specifications.

When asked about the choice process, about a quarter of both groups indicated that they considered changing plans but did not. In analyses not shown in the table, 44 percent of the comparison group reported spending two or more hours on the choice of their 2007 plan, and this was 9 percentage points higher in the intervention group (with a p-value of .07 on this difference). Nine percent of the comparison group found our mailing to be somewhat or very helpful, and this was 11 percentage points higher in the intervention group (with a p-value of less than .005 on this difference).

Regarding plan selection, the percentage of study participants in the least expensive plan increased (in analyses not shown in the table) from 6 to 13 percent in the intervention group from 2006 to 2007, while increasing from 8 to 9 percent in the comparison group.⁴ Among those who changed plans, the percentages in the intervention and comparison groups switching to the least expensive plan were 31 and 12 percent respectively. These results are consistent with the idea that our intervention caused individuals to consider the lowest cost plan, and more generally to spend more time investigating 2007 plan options, and to use the intervention materials in this process.

The average change in predicted 2007 cost between the plan chosen in 2007 (Y^{07}) and the plan chosen in 2006 (Y^{06}) is shown in panel B. This measure represents the savings from changing plans and is zero for those who remained in the same plan. Predicted cost is the estimated annual cost measure for 2007 computed by the Medicare Plan Finder for a given drug plan based on an individual's prescription drug use (as reported at the time of random assignment in fall 2006). The average decrease in predicted cost for the entire intervention group versus the comparison group was 104 dollars. Expressed in terms of the change relative to Y^{06} , this decrease was an average of .063 log points, or about six percent. Again, the probability of such a large difference occurring by chance under the null was less than .005.

The average cost change for the entire intervention group versus the comparison group averages over people who were not affected by the intervention and those who potentially were affected. It is a useful estimate of the effect of the intervention itself (the intent-to-treat effect), but it is also an underestimate of the impact on those who were potentially affected. The notion of being affected by the intervention involves an unobserved counterfactual of what would have happened if an

⁴ The test of the difference in enrollment rates in the least expensive plan in 2007 between the intervention and comparison groups, based on a regression controlling for plan in 2006 being the least expensive plan in 2007, had a p-value of .013.

individual had been randomly assigned to the other group. To be precise, it is helpful to use some notation. Define C as an indicator of being potentially affected by the intervention, where C involves the counterfactual and cannot be directly observed. Define S as an observed indicator for switching plans, and Z as an indicator for assignment to the intervention group. Define $Y = Y^{07} - Y^{06}$, Y_1 as the potential outcome if an individual were assigned to the intervention group, Y_0 as the potential outcome if an individual were assigned to the comparison group. The causal effect of the intervention is then $Y_1 - Y_0$.

There would be a causal effect for any individual who would have chosen a plan with a different predicted cost in the intervention group than in the comparison group. These situations include having the intervention cause someone to switch to a lower cost plan ($Y_1 < 0$; $Y_0 = 0$), having the intervention cause someone who was going choose a more expensive plan to not switch ($Y_1 = 0$; $Y_0 > 0$), and other cases (anytime $Y_1 \neq Y_0$). A special case is when someone would not switch plans regardless of the intervention, so there is no effect on cost. The upper bound on probability of this special case occurs when everyone who switches plans in one group would have switched if assigned to the other group ($1 - \max\{E[S | Z=1], E[S | Z=0]\}$). The lower bound on the probability of this special case occurs when no one who switches plans in one group would have switched if assigned to the other group ($1 - \{E[S | Z=1] + E[S | Z=0]\}$). Intuitively, we can use the lower bound on the fraction of zeros included in the estimate of the average cost change for the entire intervention group versus the comparison group in order to calculate a lower bound on the average cost change for those who potentially were affected by the intervention. This bound is based on the derivation in equation (3).⁵

$$\begin{aligned}
 (3) \quad & E[Y^{07} - Y^{06} | Z=1] - E[Y^{07} - Y^{06} | Z=0] \\
 &= E[Y_1 | Z=1] - E[Y_0 | Z=0] \\
 &= E[Y_1 - Y_0] \\
 &= E[Y_1 - Y_0 | C=1]Pr(C=1) + E[Y_1 - Y_0 | C=0]Pr(C=0) \\
 &= E[Y_1 - Y_0 | C=1]Pr(C=1) + 0 \\
 &\leq E[Y_1 - Y_0 | C=1]\{E[S | Z=1] + E[S | Z=0]\}
 \end{aligned}$$

⁵ The first line of equation 3 is the difference in observed outcomes between the intervention and comparison groups. The second line uses the definition of potential outcomes. The third line uses the independence of potential outcomes from randomly assigned groups. The fourth line uses the definition of conditional expectation. The fifth line uses the definition of C , where $Y_1 - Y_0 = 0$ when $C=0$. The sixth line uses the lower bound described in the text, where $Pr(C=0) = 1 - Pr(C=1) \leq 1 - \{E[S | Z=1] + E[S | Z=0]\}$.

We can now calculate an expression based on (3) for a lower bound on the average cost change for those who were potentially affected by the intervention, shown in equation (4).⁶

$$(4) \quad E[Y_1 - Y_0 | C=1] \geq \{E[Y^{07} - Y^{06} | Z=1] - E[Y^{07} - Y^{06} | Z=0]\} / \{E[S | Z=1] + E[S | Z=0]\}$$

Estimates for the full sample are shown in column 1 of panel C, based on (4) and also controlling for background covariates.⁷ Those affected by the intervention had an average of at least 230 dollars in predicted cost savings. In relative terms, this represents predicted savings of .139 log points, or about 13 percent.

In analyses not shown in the tables, we also examined impacts on the premium and out-of-pocket (non-premium) components of costs separately. We hypothesized that premium costs were already fairly transparent, and that the most of the impact of the intervention would be from making the complicated out-of-pocket costs clearer and more salient. It is also the case, however, that out-of-pocket costs in 2006 were about four times larger than premium costs. Similarly, if everyone simply switched to the lowest cost plan, premiums would fall \$111 per year and non-premium costs were predicted to fall \$414 for the year. The overall \$104 impact on costs reported in panel B of Table 3 is comprised of an \$11 impact on premiums and a \$92 impact on non-premium costs. Thus, most of the impact of the intervention was on non-premium costs. The ratio of premium to non-premium impact was more than twice as high as would have occurred from simply switching to the lowest-cost plan, indicating that switches to other plans involved a relatively larger amount of non-premium cost reduction and suggesting that this was an important channel through which the intervention had its impact consistent with the conceptual framework discussed in section II.

A corollary to the hypothesis of the intervention having an overall effect was that this effect would be larger when the potential savings was greater. Panel A of Table 3 shows results separately

⁶ This approach is similar to that used by Imbens and Angrist (1994) to estimate a local average treatment effect (LATE), where those who did not comply and take up the treatment offer are assumed to have been unaffected. However, LATE also involves an assumption of monotonicity and an exclusion restriction, and neither of these are needed for (3). If being treated were defined as being caused to switch plans, then monotonicity would be violated if the intervention caused some people to not switch who would have otherwise switched and the exclusion restriction would be violated if those in the comparison group who would have switched without the intervention nevertheless had their plan choice affected by the intervention. Our intuition is that the exclusion restriction does not hold in this application but monotonicity probably does. If we were to assume monotonicity holds but not impose the exclusion restriction, then panel C would rescale the results by $1/E[S | Z=1]$ instead of $1/\{E[S | Z=1] + E[S | Z=0]\}$, and would result in point estimates about 1.6 times larger in column 1.

⁷ Both the point estimates and standard errors use the estimates from panel B and are simply rescaled by $1/\{E[S | Z=1] + E[S | Z=0]\}$. There is a small amount of negative covariance between the estimation of average cost differences and switching rates, and accounting for this slightly reduces the standard errors in panel C; for simplicity, this adjustment is not included in the results shown.

for groups with potential savings (the difference between the predicted 2007 cost of their 2006 plan and the least expensive plan) below and above \$400, where the magnitudes in columns 3 and 4 are calculated as the lower bound for those affected by the intervention from Panel C of Table 3. The impacts on both switching probability and predicted costs were quite large when potential savings were greater than \$400, as hypothesized. More surprisingly, the impact on cost for the group with lower potential savings was not trivial (\$84, with a p-value of .058 on the difference) -- despite a modest impact of 7 percent on the switching probability -- and the relative cost effect (.121 log points, with a p-value of .054) was about the same magnitude as for group with higher potential savings.

We speculated that individuals who did not understand the differences among drug plans might have placed a high weight on name-recognition and popularity. (For example, the plan with the highest national enrollment in 2006 was co-branded by the AARP, formerly the American Association of Retired Persons.) We hypothesized that when the intervention made personalized cost information available to individuals in these plans, they would be relatively more likely to switch plans (although the impact on predicted costs for those affected would not necessarily be different). In Panel B, we find essentially the opposite result. Individuals in plans with market share of less than 15 percent are much more likely to switch plans (19 percent vs. 7 percent) and nearly all the potential cost savings from the intervention are concentrated in the group initially in small market share plans. Ex post, the results are more consistent with the idea that large market share plans attracted members who directly valued a trusted brand or other non-cost attributes and were relatively less sensitive to personalized cost information.

Since those who participated in the experiment may have been more dissatisfied with their 2006 plans than the national population, it is notable that the impact of the intervention in panel C was about as large for those rating their 2006 good or better versus fair or poor; if the impact had been concentrated among the dissatisfied, then we would have interpreted the results as being less broadly applicable. Given that our sample is much more educated than the national population, it is also notable that the impact of the intervention in panel D for those without a college degree was similar to (and slightly larger than) that for college graduates. Our sample also spent more on prescription drugs; the effect of the intervention on switch rates for those with relatively lower spending was relatively lower, while the effect on the percentage reduction in predicted costs was relatively greater (Table C5). These results are consistent with the notion that any limits in

comprehending information by less-educated groups are offset by the marginal value of information to this group.

We examined a variety of other subgroups in appendix table C5 (relative cost savings > 33 percent, monthly premium > \$30, 2006 premium – low-cost plan premium > \$10,) and table C6 (premium change of 2006 plan >\$7 per month, number of medications > 4, married, age > 73, female). Other than for relative costs savings, where the impacts were concentrated in the group with the large relative potential savings, the impacts on costs do not differ substantially between these subgroups.

As a complement to analysis of the impact of the intervention on average predicted costs, we also examined differences between the intervention and comparison groups in multivariate models of plan choice. In a conditional logit model, controlling for individual fixed effects, predicted cost, and predicted cost squared, the predicted probability of choosing a plan with the same price as that actually selected was 3.4 percent. We then enriched this basic model, controlling for plan fixed effects, interactions of an intervention group indicator with predicted cost and predicted cost squared, an indicator for being the lowest cost plan for that individual, and the interaction an intervention group indicator with the indicator for being the lowest cost plan.

The results indicate that the intervention group is significantly more sensitive to plan costs than the comparison group. The model predicts that a twenty-five percent decrease in predicted cost (say from \$2120 to \$1590, which is approximately from the average cost of the plan chosen in 2006 to the lowest cost plan in 2007) increases the odds of plan selection by 2.9. From a baseline for plan selection of 3.4 percent, this cost decrease increases the probability of plan selection to 9.2 percent. After controlling for cost, being the lowest price plan has a highly significant added impact on plan selection, increasing the odds by 5.3. This implies that among plans of essentially the same low cost, being the lowest cost plan increases the probability of plan selection from 9.2 percent to 35 percent.

In the comparison group, a twenty-five percent decrease in predicted cost increases the probability of plan selection from 3.4 to 4.4 percent. The probability was .014 that the observed intervention group cost sensitivity would be so large under the null hypothesis that it is the same as in the comparison group (calculated as the p-value on the joint test on the interactions of cost and cost-squared with an intervention group indicator). Being the lowest cost plan increases the probability of plan selection from 4.4 percent to 7.7 percent. A p-value calculation indicates that the

probability was .11 that the observed impact of being the lowest cost plan in intervention group is the same as the impact of being the lowest-cost plan in the comparison group.

In analyses not shown in the tables, we examined impacts on plan, using the three measures reported by Medicare: customer service, ease of prescription filling, and quality of pricing information. Our analysis found no significant differences between intervention and comparison groups on quality measures. Moreover, lower-cost plans were not substantially lower in measured quality. We plan to extend this analysis to include additional, alternate measures of quality, such as the prevalence prior authorization, quantity limits, and step therapy or the quality of coverage of new or specialty drugs.

In sum, there was a substantial impact of the intervention leading to both more plan switching and predicted cost savings. These savings were relatively small, but not trivial, for those who were already within 400 dollars of the lowest-cost plan, but quite sizable for those with larger potential savings. For the intervention group overall, the rate of switching increased 11.5 percentage points (relative to the comparison group rate of 17 percent) and the average predicted costs declined by at least 230 dollars, or 13 percent, among those potentially affected by the intervention. Impacts were larger among those with higher absolute potential savings and especially higher relative potential savings. The impact of the intervention on plan switching was much larger for those with low monthly premiums and those with plans having low market share.

IV. Cost-benefit analysis

The average cost savings for participants in the study were \$104 in the first year and could potentially persist for additional years. These savings seem large relative to our estimates that study participants spent no more than one additional hour of time on 2007 plan selection and the costs of our intervention, in terms of interviewer time plus materials, was about \$40 per participant.

Although there would be many challenging issues involved, Medicare or another organization with access to individual drug profiles could potentially combine drug use data with information about plan enrollment and subsidy eligibility to directly implement an intervention similar to ours at a much lower cost.⁸ Our results suggest that such an initiative might result in substantial savings to

⁸ Among the challenges would be the needs to work through the relative roles of government and third party intermediaries, to minimize the potential for plans to capture the market for advice, to respect individual privacy, to provide information that balanced cost and other considerations, and to hold beneficiaries well-being as the greatest value. Such a program could involve elements such as one-on-one counseling and the ability for beneficiaries and their advisors to manually update the automatically generated drug list.

seniors, although the per-person savings would likely be lower than those in our study due both to population differences [the level of out of pocket expenditures is about 50 percent higher in our sample than in a national sample (Domino et al. 2008) and a small pharmacy sample (Appendix C); those who elected to participate in our study may have been more willing and able to read and consider information about drug plan choice; etc.] and to differences in the intervention (it would be unlikely that a large, national initiative could generate the same level of attention as our mailing, which followed a one-on-one discussion with a pharmacy student associated with a local hospital). Also, the market for drug plans has matured since the time of our study, although it is unclear whether choices are now more or less robust as seniors' greater knowledge and experience may or may not offset errors caused by choices made early in the program that have not been re-considered and updated in light of changing drug needs and plan benefits.

In addition, an effective information intervention on a large scale could potentially affect Medicare expenditures. To the extent that plan switches represent seniors' choosing plans with lower costs overall, then the effect on Medicare expenditures is presumably negative because Medicare subsidies are tied to the enrollment-weighted national average of plans' cost for offering the drug benefit, via the bid process. To the extent that plan switches represent seniors choosing plans in which the cost-sharing formula favors their individual drug profile, holding overall plan costs constant, the effect on Medicare expenditures may be positive as plans' bids adjust to reflect their higher costs in the face of this type of adverse selection. (The plan bid reflects the plan's costs of offering the drug benefit, net of beneficiary cost-sharing and reinsurance.) Alternately, plans may adjust their cost-sharing formula and other aspects of the benefit to manage these selection dynamics. An effective large-scale intervention could also potentially affect net revenues for drug plans and pharmaceutical firms, depending on the extent to which differing plan costs stem from greater efficiency, lower service quality, plans steering customers towards lower cost drugs, lower plan profits, and lower payments to pharmaceutical manufacturers.

In order to analyze one aspect of the effect of our intervention on Medicare expenditures, we estimated the sample-average plan bid for the intervention and comparison group. For most plans, the plan bid (and the plan's contribution to the national average bid) is related to the premium according to a simple formula ($\text{bid} = \text{premium} + \53.08). For enhanced plans, the plan's contribution to the national average bid is only related to the portion of its bid which is associated with the cost of offering the standard benefit, while the full bid is reflected in the premium. In this case, we estimated this plan's contribution to the average by using the average of the sponsor's

bids for its non-enhanced plans; any sponsor offering an enhanced plan must also offer at least one not-enhanced plan. Using this method, we found small differences between study groups in the average bid for 2008 associated with the 2007 plan, and did not reject the null hypothesis that plan switches did not represent choice of plans with significantly lower plan costs.

In future work, we plan to supplement this analysis by examining the effect of the intervention on total drug costs paid by the plan, using the negotiated prices published on the Medicare website (the senior's cost in the coverage gap). The advantage of this analysis will be that it will allow us to analyze the role of off-formulary drugs and differential cost-sharing in generating seniors' cost-savings, but, the analysis' shortcoming will be that negotiated prices do not represent plans' actual net acquisition costs because they do not reflect rebates (retrospective payments from drug manufacturers to plans based on volumes) and other price concessions, which may be as significant as negotiated prices in driving differences in net acquisition costs among plans.

V. Context for choices

In order to better understand how information was being used in the choice process, we conducted a phone survey and a mail survey of Medicare Part D free-standing prescription drug plan beneficiaries in early 2007. Details on survey methodology are given in Appendix A. Results from the surveys are shown in Table 4.

In both surveys, we found that over 80 percent of participants were generally satisfied with their 2006 prescription drug plans. The percentage that switched plans between 2006 and 2007 was 10 and 15 percent in the phone and mail surveys respectively, slightly above the reported national rate of seven percent.⁹ An additional 14 percent in the phone survey considered switching for 2007 but did not switch.¹⁰ The U.S. Department of Health and Human Services (2007) reported results from a survey in January 2007 that 85 percent of seniors were aware of the open enrollment period, 50 percent reviewed their current coverage, 34 percent compared plans, and 17 percent evaluated premiums, co-payments, and coverage.

According to both surveys, the leading sources of information that participants used to learn about drug plans were mailings from plans and mailings from Medicare; such material is not personalized and does not convey transparent information about out-of-pocket costs. The majority

⁹ The national rate is for those not receiving the Low Income Subsidy (U.S. Department of Health and Human Services, 2007).

¹⁰ Our survey results are similar to Heiss, McFadden, and Winter (2007), who reported that 82% rated their 2006 plan good or better, 18% considered switching for 2007 but did not, and 11% switched plans from 2006 to 2007.

of respondents had read at least part of the official Annual Notice of Changes document describing any changes in their current plan. In the phone survey, we asked some additional questions. More interactive forms of information gathering, such as in-person, phone, or internet, were each used by less than 15 percent of respondents. Less than 20 percent reviewed personalized plan comparisons. Many respondents did not know about the most basic differences between plans.¹¹ Only 37 percent knew that only some (rather than all) plans have a deductible. Only 55 percent knew that different plans have different co-payments for generic drugs, rather than all plans having the same co-payments. In short, the vast majority of beneficiaries appeared to be content with their plan and did not learn much about alternatives.

To provide context for our choice results, we audited five potential sources of advice on choosing a drug plan: 1-800-Medicare, state health insurance assistance programs (SHIPs), senior centers, other telephone help-lines, and retail pharmacies.

In our calls to 1-800-Medicare, customer service representatives consistently made personalized plan suggestions, drawing upon Medicare's website tool, the Prescription Drug Plan Finder. This publicly available website allows input of information on prescriptions (say, those being taken currently) and preferences about pharmacy location and mail order use, and then generates a predicted annual cost for each drug plan in that person's geographic area. Our calls to SHIPs generated either referrals to Medicare or offers of similar assistance. Our visits to senior centers sometimes resulted in general discussions about the drug benefit or partial demonstrations of the Medicare website but never in comparative information in the hands of the auditor. A search for and audit of other sources of telephone advice indicated that few third parties had emerged. Most sources were not helpful or referred the caller to Medicare or another information source. In one noteworthy exception (a major pharmacy chain), the help-line offered personalized suggestions, using technology similar to Medicare's, and mailed a personalized report.¹²

A small fraction of pharmacies offered personalized in-store assistance with plan choice. In four of the 88 pharmacies audited, staff people made personalized plan suggestions based on a Plan Finder. In five pharmacies (all in one chain), a staff person offered personalized plan information that included information about the entire universe of plans. Sixty-nine of the 88 pharmacies had

¹¹ In survey data collected in 2005, just prior to the beginning of open enrollment, Winter et al. (2006) also found low knowledge about the structure of the benefit and the potential differences between plans.

¹² In addition, a second major pharmacy chain offered an internet service in conjunction with a technology partner specializing in decision support systems. A code was developed to trigger the import of individual medications into the partner's Medicare Part D decision tool. Customers and pharmacy staff were able to produce personalized Medicare Part D Plan comparisons by entering these codes into the tool.

print materials, although our user testing indicated that these materials alone were not sufficient for seniors to understand the cost implications of plan choice even in very simple cases. Even the simple message, “Choice among drug plans has significant cost implications, and personalized help is available from Medicare,” was not clearly and consistently delivered.

VI. Conclusion

To analyze how people choose and whether people misperceive prices in ways that can be affected by the environment, we conducted a randomized experiment with seniors involved in free-standing Medicare private drug plans, in which our intervention involved mailing simple, personalized information about potential cost savings from switching plans and half of study participants had potential annual cost savings of \$375 or more from changing to the lowest-cost plan. The intervention led to higher rates of changing plans - 28 percent in the intervention group versus 17 percent in the comparison group - and lower costs; average predicted costs were \$104 lower in the intervention group than in the comparison group and a lower bound on savings for those potentially affected by the intervention was \$230. Moreover, consistent with the notion of mis-perception, the savings were relatively concentrated in the less-obvious out-of-pocket costs rather than the more transparent premium costs. The intervention led to no differences between study groups in plan quality as measured by CMS.

Independently, we examined seniors’ attitudes and experiences and the informational environment surrounding drug plan choice. We found that seniors were generally satisfied with their Medicare drug plans, and less than one-sixth of individuals switched plans between 2006 and 2007. Although many reviewed general mailings from their current plan, most people did not seek personalized information about their options – even though useful and free information was available from Medicare by phone and on the internet. Moreover, few third parties emerged to offer significant assistance.

A standard model of consumer preferences does not easily explain why a “small” intervention, which essentially consisted of mailing out information that was also publicly available without charge via a simple phone call to 1-800-Medicare, had such a substantial impact on choices. To reconcile the cost differences between the intervention and comparison groups and a model of a rationally optimizing consumer, one must assume that other non-cost features of the new 2007 plans were sufficiently inferior to the 2006 plans to make the average consumer nearly indifferent between the two in spite of the sizable cost savings, which is inconsistent with our finding regarding

measured quality. Alternately, one must assume either that the subjective costs of calling 1-800-Medicare were very high relative to receiving a phone call and letter or that information on the letterhead of the University of Wisconsin and following an interview with a pharmacy student was deemed different and more relevant than the same information from CMS or another source. While not trivial, these differences seem small relative to an average predicted cost savings on \$104.

In the 2007 follow-up interview, we asked participants in the comparison group how much they thought they could save if they had chosen the least expensive plan. Of those who could give an estimate, more than 70 percent gave an underestimate, and the average underestimate was more than \$400. Hence, the study results seem consistent with misperceived prices in the comparison group.

We also believe it is quite possible that individuals, especially in this elderly population, were intimidated by the complexity of the many plans and many plan features and simply decided not to think about changing plans despite the potential financial gains. This psychology-based explanation would also be consistent with the widespread disinclination to consider switching plans but the large impact on switching from the intervention.

This evidence of low knowledge, significant effects of personalized information, and limited information from private sources suggests that making simple, accurate, personalized information available from Medicare will continue to be important. Increasing awareness about the availability of Medicare information by phone and on the web and finding other ways to communicate the information are likely to be valuable. However, given the observed reluctance of most individuals to reassess their choices, engaging a larger share of Medicare enrollees may require more pro-active efforts.

As the next step for this paper, we are currently in the field collecting 2008 follow-up data. These data will allow us to examine whether those who switched in 2007 stayed with their plans –a key measure of satisfaction with the choice for 2007. We will also examine health status, experienced convenience and quality, other business relationships with plan sponsors as factors in choices, reported perceptions of differences between plans, actual 2007 cost (to compare with predicted cost) and types of drug usage.

References

- Bernartzi, S. and Thaler, R. "How Much is Investor Autonomy Worth?" *Journal of Finance* 57:4 (2002) 1593-1616.
- Chetty, R., Looney, A., and Kroft, K. "Salience and Taxation: Theory and Evidence." Unpublished manuscript, U. of California-Berkeley, September 2007.
- Choi, J. Laibson, D. and Madrian, B. "Why Does the Law of One Price Fail? An Experiment with Mutual Funds" Unpublished manuscript (November 2007).
- Cronquist, H. and Thaler, R., "Design Choices in Privatized Social Security Systems: Learning from the Swedish Experience." *AEA Papers and Proceedings*, 94:2, (May 2004), 424-428.
- Dafny, L. and Dranove, D., "Do Reports Cards Tell Consumers Anything They Don't Already Know? The Case of Medicare HMOs." Unpublished manuscript, Northwestern University, April 2008.
- DellaVigna, S. "Psychology and Economics: Evidence from the Field." Unpublished manuscript, U. of California-Berkeley, September 2008.
- Domino, M. E., Stearns, S. C., Norton, E. C., and Yeh, W. "Why Using Current Medications to Select a Medicare Part D Plan May Lead to Higher Out-of-Pocket Payments." *Medical Care Research and Review* 65:1 (February 2008), 114-126.
- Ellison, G. "Bounded Rationality in Industrial Organization." In R. Blundell, W. K. Newey, and T. Persson (Eds.), *Advances in Economics and Econometrics: Volume 2: Theory and Applications, Ninth World Congress*. Cambridge: Cambridge University Press (2006): 142-174.
- Frank, R. and Newhouse, J. "Mending the Medicare Drug Benefit: Improving Consumer Choices and Restructuring Purchasing," Hamilton Project Discussion Paper 2007-03, April 2007.
- Gold, M., Achman, L., and Brown, R. "The Salience of Choice for Medicare Beneficiaries." *Managed Care Quarterly* 11:1 (Winter 2003), 24-33.
- Hastings, J. S., and Weinstein, J. M. "Information, School Choice, and Academic Achievement: Evidence from Two Experiments." *Quarterly Journal of Economics*, forthcoming.
- Hastings, J. S., and Tejada-Ashton, L., "Financial Literacy, Information, and Demand Elasticity: Survey and Experimental Evidence." Unpublished manuscript, Yale University, February 2008.
- Hibbard, J., Slovic, P., Peters, E., et al. "Is The Informed-Choice Policy Approach Appropriate For Medicare Beneficiaries?" *Health Affairs* 20:3 (May/June 2001):199-203.
- Heiss, F., McFadden, D., and Winter, J. "Early results: Who failed to enroll in Medicare Part D, and why?" *Health Affairs*, 25 (2006), w344-w354.

Heiss, F., McFadden, D., and Winter, J. "Mind the Gap! Consumer Perceptions and Choices of Medicare Part D Prescription Drug Plans." NBER Working Paper No. 13627, November 2007.

Hoadley, J. "Medicare Part D: Simplifying the Program and Improving the Value of Information for Beneficiaries," Commonwealth Foundation Issue Brief, May 2008.

Hudak, P. L., Clark, J. P., Hawker, G. A., Coyte, P. C., Mahomed, N. N., & Kreder, H. J. "You're perfect for the procedure! Why don't you want it? Elderly arthritis patients' unwillingness to consider total joint arthroplasty surgery: A qualitative study." *Medical Decision Making*, 22 (2002), 272-278.

Mather, M. "A review of decision making processes: Weighing the risks and benefits of aging." In L. L. Carstensen and C. R. Hartel (Eds.), *When I'm 64. Committee on Aging Frontiers in Social Psychology, Personality, and Adult Developmental Psychology*. Washington, DC: The National Academies Press (2006): 145-173.

McCormack, L., Garfinkel, S., Hibbard, J., et al. "Beneficiary Survey-Based Feedback on New Medicare Information Materials." *Health Care Financing Review* 23:1 (Fall 2001):37-46.

Neuman, P., Strollo, M.K., Guterman, S., Rogers, W.H., Li, A., Rodday, A.M.C., and Safran, D.G. "Medicare Prescription Drug benefit Progress Report: Findings From a 2006 National Survey of Seniors," *Health Affairs* 26:5 (2007), W630-W643.

Simon, K.I., and Lucarelli C. "What Drove First Year Premiums in Stand-Alone Medicare Drug Plans?" NBER Working Paper No. 12595, October 2006.

Thaler, R. H., and Sunstein, C. R. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven: Yale University Press, 2008.

Tversky, A., and Kahneman, D. "Rational Choice and the Framing of Decisions." *Journal of Business* 59:4 (1986), S251-S278.

U.S. Department of Health and Human Services. "Medicare Drug Plans Strong and Growing." Press Release, January 30, 2007. (Accessed November 24, 2007)

http://www.aoa.gov/Medicare/news/media/Final_Enrollment_Numbers.pdf

Winter, J., Balza, R., Caro, F., Heiss, F., Jun, B., Matzkin, R., and McFadden, D. "Medicare prescription drug coverage: Consumer information and preferences." *Proceedings of the National Academy of Sciences*, 103:20 (May 16, 2006), 7929-7934.

Yin, W., Basu, A., Zhang, J. X., Rabbani, A., Meltzer, D. O., and Alexander, G. C. "The Effect of the Medicare Part D Prescription Benefit on Drug Utilization and Expenditures." *Annals of Internal Medicine* 148 (2008), 169-177.

Table 1. Distribution of plan costs, by number of medications

	Medications as of 2006			
	0-3 (1)	4-6 (2)	7-10 (3)	11+ (4)
Average cost of least expensive plan	\$623	\$1,417	\$2,580	\$3,556
Average cost of 27 th least expensive (median) plan	\$1,053	\$2,019	\$3,383	\$4,789
Average cost of plan selected	\$937	\$1,883	\$3,142	\$4,279
Average percentile rank of plan selected	38th	44th	44th	38th
Sample size	142	128	78	43
Fraction of total sample	0.36	0.33	0.20	0.11

Table 2. Analysis of switching plans between 2006 and 2007

A. Probability of switching		
$E[S Z=1]$.282
$E[S Z=0]$.168
$E[S Z=1] - E[S Z=0]$.115*
		(.041)
$E[S Z=1, X=x] - E[S Z=0, X=x]$.116*
		(.041)
B. Average predicted cost change		
$E[Y^{07} - Y^{06} Z=1, X=x] - E[Y^{07} - Y^{06} Z=0, X=x]$		-104*
		(27)
$E[\ln(Y^{07}/Y^{06}) Z=1, X=x] - E[\ln(Y^{07}/Y^{06}) Z=0, X=x]$		-.063*
		(.017)
C. Average predicted cost change lower bound for those affected by the intervention		
$\{E[Y^{07} - Y^{06} Z=1, X=x] - E[Y^{07} - Y^{06} Z=0, X=x]\}$		-230*
$/ \{E[S Z=1]+E[S Z=0]\}$		(60)
$\{E[\ln(Y^{07}/Y^{06}) Z=1, X=x] - E[\ln(Y^{07}/Y^{06}) Z=0, X=x]\}$		-.139*
$/ \{E[S Z=1]+E[S Z=0]\}$		(.037)
Sample size		406

Notes. S: switched plans between 2006 and 2007. Z: indicator of assignment to intervention group. X: vector of covariates (indicators for gender, single, college graduate, post-graduate, married, age<70; age<75; drug insurance rated fair or poor in 2006; sixth-order polynomial predicted potential savings of 2006 plan versus lowest-cost plan; sixth-order polynomial of the log of the ratio of predicted potential savings to lowest-cost plan). $E[X=x]$: conditional expectations are approximated using linear regression. Y^{07} : predicted 2007 cost of plan chosen in 2007. Y^{06} : predicted 2007 cost of plan chosen in 2006. Standard errors in parentheses. * = p-value <.05.

Table 3. Analysis of switching plans between 2006 and 2007, by subgroups

	Switching probability		Lower bound impact on predicted cost		N
	Comparison	Intervention	Dollars	Log points	
	(1)	(2)	(3)	(4)	
A. Dollar potential savings					
≤ \$400	.145	.215	-84 (44)	-.121 (.062)	217
> \$400	.195	.353~	-355* (106)	-.153* (.048)	189
B. Sponsor share of sample in 2006					
≤ .15	.141	.333~	-489* (115)	-.292* (.064)	142
> .15	.180	.252	-45 (61)	-.056 (.047)	264
C. Satisfaction rating of 2006 plan					
Fair, Poor, or unknown	.235	.370	-91 (95)	-.138* (.062)	124
Good, Very good, or Excellent	.144	.235~	-257* (79)	-.125* (.049)	282
D. Education					
Not college graduate	.154	.284~	-256* (84)	-.149* (.054)	213
College graduate	.183	.280	-165* (68)	-.129* (.052)	193

Notes. All subgroups are defined on characteristics known prior to random assignment. Dollar potential savings = predicted 2007 cost of plan chosen in 2006 – predicted 2007 cost of least expensive plan. Relative potential savings = 1 – (predicted 2007 cost of least expensive plan / predicted 2007 cost of plan chosen in 2006). ~ = p-value <.05 on difference between columns 1 and 2. Column 3 estimated using method in Table 3, panel C, row 1. Column 3 estimated using method in Table 3, panel C, row 2. Standard errors in parentheses. * = p-value <.05.

Table 4. Information on choices from representative samples, early 2007

	Phone Survey (1)	Mail Survey (2)
At least somewhat satisfied with 2006 plan	.85	.83
Switched plans from 2006 to 2007	.10	.15
Read at least some of Annual Notice of Change	.57	.86
Ever reviewed mailings for plan choice	.53	
Ever had in-person contact for plan choice	.14	
Ever had phone contact for plan choice	.07	
Ever used internet for plan choice	.04	
Ever reviewed side-by-side comparison for choice	.34	
Ever reviewed personalized information for choice	.18	
Knows that not all plans have a deductible	.37	
Knows plans have different co-payments for generics	.55	
Sample size	348	1430

Appendix A: Survey Methods

A-1. National Phone Survey

The national phone survey asked 400 seniors enrolled in Part D about their information-seeking behavior and plan knowledge in February and early March 2007. Deft Research, LLC, a market research firm specializing in health care markets and Medicare conducted the survey on our behalf. The initial sample frame consisted of 10,000 phone numbers, which, based on market research data bases, were likely to reach households containing at least one senior. To be eligible for the survey, a potential respondent must be 65 or older, receiving Medicare benefits, and enrolled in a private drug plan at the time of the survey. As part of initial screening, interviewers confirmed that participants were not enrolled in a Medicare HMO or receiving drug benefits from a former employer or the military.

Survey staff attempted to call 4383 numbers of which 710 (16 percent) did not work, were not residences, or had other problems. In 2733 cases (62 percent), the potential respondent declined to participate; in 464 (11 percent), no-one in the household was eligible for the survey; in 76 (2 percent), the respondent did not complete the survey, and, in 400 cases (9 percent), an interview was completed.

Survey participants answered approximately 35 questions concerning the name of their drug plan in 2006 and 2007, their process for choosing their 2006 and 2007 drug plans, including sources of information, their activities during open-enrollment period, their information sources and preferences, their knowledge of Part D (with emphasis on knowledge of the extent of variation among Part D drug plans), and their knowledge of benefits in their own plans. The majority of these questions were multiple-choice; however, questions concerning information sources were “open response.” The survey also included an additional 11 questions about basic individual characteristics, including eligibility for subsidies.

To create the analytic file, we eliminated 49 participants from analyses of 2007 data because, although these participants reported being enrolled in private drug plans, when they were asked to name their plan, they named an employer-based plan or a Medicare HMO. We also removed three people from the 2007 sample because they were not on 2006 plans, and one additional person in a 2006 plan for whom we did not have data for a 2007 plan, leading to final sample sizes of 351 or 349 for most analyses.

Analyses of plan knowledge required us to match survey data with plan data. Although the survey instrument contained a complete list of plans and 130 participants named a plan on this list, many participants named a sponsor but not a plan (141) or gave an open-ended response (78). We imputed the plan name in these cases when we could do so with confidence, for example, when a named sponsor had only one plan or when an open-ended response matched a known plan. As a result of these efforts, 273 observations included a specific plan name and approximately half of these (127) could be matched to CMS data on plan features.

The main source of plan data was CMS’ list of Medicare Stand-Alone plans, which we supplemented by using the Plan Finder to view plans available in a representative zip code in each plan region and manually entering co-payments.

Members of this sample were more likely to be relatively young, female, and college educated than the national population of seniors. Fifty-eight percent of the sample was between 65 and 74 years of age; 33 percent between 75 and 84; and 8 percent over 85; the corresponding national percentages in 2005 were 51, 36, and 14. Seventy-one percent of the sample was female (59 percent). Five percent lacked a high school degree (17 percent), while 27 percent had some college (18 percent) and 25 percent had a college diploma or more (18 percent). Note that one component of these differences may be differences between the population of seniors with Medicare drug plans and the general population of seniors, the other component being differences between the project sample and the national Part D population.

A-2. National Written Survey

The national written survey asked 11,541 seniors enrolled in Medicare a few questions about Medicare drug plan choice in January 2007. These questions were appended to an existing national written survey of 33,571 pharmacy customers conducted in January 2007 by WilsonRx, a consumer research organization that specializes in the retail pharmacy sector, in partnership with a national research panel. This survey, which was mailed to 67,028 households, had a 50 percent response rate across all age groups.

Of this sample, 4,646 seniors (40 percent of seniors with Medicare) had a separate Medicare drug plan in 2007. These participants answered seven multiple-choice questions concerning the name of their drug plan, their process for plan choice, and their activities during the open-enrollment period. The survey also included many other questions, including basic individual characteristics. For these analyses of plan choice, data from the written survey was merged with plan data. The written survey contained check boxes for the top eleven plans in terms of 2006 enrollment, and only individuals who checked one of these boxes were included in the merged sample.

Table A1a. National Phone and Written Surveys: Choice Process and Knowledge

<u>National Phone Survey</u>	Percent of Sample	<u>National Written Survey</u> <i>(Compared to Phone Survey where applicable)</i>	Percent of Sample – Unrestricted _h	Percent of Sample – Restricted _h
2006 Plan Choice^a, N=348		2007 Plan Choice	N=2423	N=1430
Chose 2006 plan after considering several plans	.49	Chose 2007 plan after considering several plans	.69	.77
Chose 2006 plan without considering other plans	.20	Chose 2007 plan without considering other plans	.12	.12
Assigned to 2006 plan, did not make a choice	.31	Put in 2007 plan, did not make a choice	.15	.08
Don't know/refused	.01	Don't know/Refused	.03	.02
Features Reviewed for 2006 Plan Not Assigned to a Plan in 2006, N=238		Features reviewed for 2007 Plan Not Assigned to a Plan in 2007	N=2048	N=1317
Cost and coverage of current drugs	.69	Cost and coverage of current drugs	.83	.86
Premium	.58	Premium	.76	.80
Trusted company	.57	Trusted company	.48	.50
Access to a preferred pharmacy	.46	Access to a preferred pharmacy	.58	.62
Coverage of drugs possibly need in future	.30	Coverage of drugs possibly need in future	.39	.41
		Most important feature reviewed for 2007 Plan Not Assigned to Plan in 2007	N=2048	N=1317
		Cost and coverage of current drugs	.43	.44
		Premium	.17	.19
		Trusted company	.09	.09
		Access to a preferred pharmacy	.04	.04
		Coverage of drugs possibly needed in the future	.04	.05
		Other/don't know/refused	.22	.18
Sources of Information Reviewed for 2007 Plan, N=351		Sources of Information Reviewed for 2007 Plan	N=2423	N=1430
Mailings from a plan (own or other)	.47	Mailings from current plan	.64	.67
Mailings from Medicare	.27	Mailings from Medicare	.26	.26
Mailings from AARP	.17	--		
Phone calls with a plan (own or other)	.06	Phone calls / internet site of current plan	.12	.14
Internet sites of a plan (own or other)	.03	Phone calls / internet site of other plans	.10	.11
-		Phone calls / internet site of Medicare	.07	.07
Information Types Reviewed for 2007 Plan, N=351				
Mailings	.53			
In-person contact	.14			
Phone Calls	.07			
Internet	.04			
Review of Comparative Info, N=351				
Reviewed information comparing plans	.34			
Reviewed personalized plan comparisons	.18			
Activities During Open Enrollment for 2007, N=349		Read mailings from Drug Describing Changes between 2006-2007	N=2423	N=1430
Read ANOC ^c thoroughly	.27	Read Thoroughly	.53	.56
Read some parts of ANOC ^c	.30	Read Some Parts	.28	.30
Did not read ANOC ^c	.17	Did not read	.06	.04
Did not receive / do not remember receiving ANOC ^c	.26	Did not receive / do not remember receiving	.08	.07
Don't know	.01	Don't know/refused	.05	.03

Continued on Following Page

Table A1b. National Phone and Written Surveys: Plan Information

<u>National Phone Survey</u>	Percent of Sample	<u>National Written Survey</u> <i>(Compared to Phone Survey where applicable)</i>	Percent of Sample – Unrestricted ^h	Percent of Sample – Restricted ^h
2006 Plan Satisfaction, N=349		2006 Plan Satisfaction	N=2423	N=1430
Very satisfied	.64	Highly satisfied	.24	.23
Somewhat satisfied	.22	Satisfied	.56	.60
Neither satisfied nor dissatisfied	.03	--		
Somewhat dissatisfied	.06	Dissatisfied	.11	.11
Very dissatisfied	.03	Highly dissatisfied	.04	.04
Don't know	.02	Refused	.04	.02
Considered Changing Plans from 2006-2007^a, N=348		Switched Plans from 2006-2007	N=2423	N=1430
Yes, considered changing plans	.14	Did not switch plans from 2006-2007	.86	.85
No, did not consider changing plans	.73	-		
Did not know I had a choice	.02	-		
N/A, Switched plans from 2006-2007	.10	Switched plans from 2006-2007	.14	.15
Don't know	.01			
Hypothetical Sources of Information Respondents Would Use, N=351^b				
Mailings from a plan (Own or Other)	.23			
Mailings from Medicare	.14			
Phone calls to/from a plan	.11			
Mailings from AARP	.08			
In-person contact with friends/family	.07			
In-person contact with plan representatives	.07			
Medicare website	.06			
Plan website	.06			
Phone calls to/from Medicare	.06			
Hypothetical Types of Information Respondent Would Review, N=351				
Mailings	.27			
In-person contact	.23			
Phone calls	.19			
Internet	.14			
Hypothetical Reports Medicare or a senior center could offer, N=351				
Three-page report on the seven cheapest available plans	.34			
Detailed report focused on quality of service / plan features, less focused on cost	.23			
Half-page report on the three cheapest available plans	.17			
No report – rather receive information from other sources	.27			

Continued on Following Page

Table A1c. National Phone and Written Surveys: Plan Knowledge

<u>National Phone Survey</u>	Percent of Sample	<u>National Written Survey</u> (Compared to Phone Survey where applicable)	Percent of Sample – Unrestricted ^h	Percent of Sample – Restricted ^h
Medicare Knowledge Questions^d, N=351				
Knows <u>some</u> Medicare plans have a deductible (not <u>all</u> plans)	.37			
Knows <u>some</u> plans offer coverage in the gap (not <u>none</u> of the plans)	.37			
Knows plans have <u>different</u> co-payments for generic drugs (not the <u>same</u> co-payments)	.55			
Knows plans <u>may choose not to cover some</u> drugs (not that they <u>must cover all</u> drugs)	.63			
Knows <u>different plans are better for different people</u> (not <u>some plans are better than others</u>)	.82			
Knows you can <u>only change plans during open enrollment</u> (not any time)	.74			
Plan Knowledge Questions^e, N=127				
Knows level of plan premium	.56			
Knows whether plan premium changed 2006-2007 ^f	.50			
Knows level of plan deductible	.52			
Knows level of plan co-payment/cost-sharing	.39			
Knows whether plan co-payment/cost-sharing changed 2006-2007 ^g	.41			

^a One respondent did not know his/her plan in 2006 and is considered part of the 2006 Part D universe, but was not asked choice process questions.

^b Those on Part D in 2007 include the 348 respondents who were on Part D in both 2006 and 2007 and 3 respondents who were not enrolled in 2006. (There was one respondent enrolled in 2006 who was not enrolled in 2007.)

^c ANOC refers to the Annual Notification of Changes sent by Part D plans to members of their plan during open enrollment.

^d All respondents were given the choice of two answers or "don't know". Percentages shown are the number who answered correctly.

^e All respondents were asked what they believed were the levels of their plan characteristics and whether any changes had occurred to these plan characteristics. Percentages shown are the number who were correct in their beliefs of plan levels and changes.

^f 6 people for whom 2007 plan data is available, had unidentified 2006 plans so N=121.

^g 14 people had unidentified co-payment/cost-sharing data for either 2006 or 2007.

^h The unrestricted sample includes all individuals who reported that they had "a separate Medicare drug plan" as opposed to "drug coverage from a current or former employer, a union, the VA, or TRICARE." The restricted sample eliminates individuals who reported any health insurance from a source other than self-purchase and Medicare to address the concern that the unrestricted sample might include individuals who had a separate Medicare drug plan that had been paid for and chosen by a third party.

Table A2. National Phone and Written Surveys: Demographics

<u>National Phone Survey</u> (N=352 on Part D in 2006 or 2007)	Percent of Sample	<u>National Written Survey</u> (Compared to Phone Survey where applicable) (N=2423, Unrestricted; N=1430, Restricted)	Percent of Sample – Unrestrict ed ^a	Percent of Sample – Restricted ^a
Age				
65-69	.31			
70-74	.27			
75-79	.22			
80-84	.13			
85+	.08			
Gender				
Male	.29			
Female	.71			
Education				
Less than high school	.05			
High school diploma or equivalent	.41			
Some college	.27			
College diploma or more	.25			
Don't know/refused	.03			
Income		Income		
\$20,000 or less	.25	\$19,999 or less	.08	.08
\$20,001 to \$50,000	.31	\$20,000 to \$49,999	.56	.57
\$50,001 to \$80,000	.14	\$50,000 to \$84,999	.23	.22
More than \$80,000	.05	More than \$85,000	.13	.13
Don't know/refused	.26	-		
Number of Prescription Drugs – Total		Number of Prescription Drugs – Total		
None	.09	None	.01	.01
1 to 2	.19	1 to 2	.10	.11
3 to 5	.37	3 to 5	.29	.30
6 to 9	.25	6 to 9	.29	.30
10 or more	.09	10 or more	.31	.28
Don't know/refused	.01	-		
Number of Generic Prescription Drugs				
None	.14			
1 to 2	.32			
3 to 5	.26			
6 to 9	.11			
10 or more	.02			
Don't know/refused	.14			
Receives Extra Help or Partial Help		On Medicaid		
Yes	.03	Yes	.02	N/A
No	.93	No	.98	N/A
Don't know/refused	.04	-		
Has Supplemental Health Insurance				
Yes	.62			
No	.36			
Don't know/refused	.02			

^a The unrestricted sample includes all individuals who reported that they had "a separate Medicare drug plan" as opposed to "drug coverage from a current or former employer, a union, the VA, or TRICARE." The restricted sample eliminates individuals who reported any health insurance from a source other than self-purchase and Medicare to address the concern that the unrestricted sample might include individuals who had a separate Medicare drug plan that had been paid for and chosen by a third party.

Appendix B: Audit Methods

The information audit collected one-on-one advice about drug plan choice from 125 organizations that provided personal, apparently unbiased information about the Medicare drug benefit during the 2006 Open Enrollment period. Specifically, the final audit sample consisted of 12 calls to 1-800-Medicare (Medicare's national source of help and information), five calls to SHIPs (Medicare's network of locally based counselors), 88 in-person visits to Boston-area pharmacies, seven in-person visits and one phone call to Boston-area senior centers, and 12 calls to other telephone help-lines. The audit placed particular emphasis on pharmacies because of our interest in third-party private-sector information sources. These five information sources represent four of seniors' most common sources of information about Medicare prescription drug coverage (pharmacies, the Medicare help-line, senior centers, and senior organizations, which were well-represented in the calls to other phone lines).¹³ Other common sources of information were excluded because they did not offer one-on-one help (publications, the media, the Medicare website), were not apparently unbiased (insurance companies offering drug plans or administering other Medicare benefits), or could not be audited effectively (friends and family).

The calls to SHIPs were based on a random sample of states and contact information provided by Medicare. The pharmacy sample was constructed via a two-step process. First, we chose 18 Boston-area communities creating a purposive balance between urban and suburban locations and levels of median income. Within each community, to the extent possible, we sampled equal numbers independent, chain, and mass-merchandise pharmacies. The final sample consisted of 100 pharmacies in 18 communities. Seven of these pharmacies were later deemed ineligible for the study because they had closed or were overly specialized, and auditors could not locate five, leading to a final total of 88 pharmacies audited.

For the audit of senior centers, we created a sample of 11 locations which were listed as senior centers in the yellow pages and responded by phone that services were available for seniors who were choosing a Medicare drug plan. Due to time limitations, auditors only attempted to visit four of these locations and called one. To broaden the sample, we encouraged one surveyor (a long-time Boston resident) to visit other senior or community centers in her neighborhood, leading to an additional three completed surveys and raising the final total to eight.

The sample of other telephone help-lines was based on a keyword search, "Medicare drug plan help" (7 leads), recommendations from pharmacists (3 leads), and referrals/recommendations from the help-lines themselves (2 leads). The final total of 12 help-lines included three plan sponsors with national foundations/advocacy groups, one pharmacy help-line, two state-sponsored help-lines, two federal agencies, three national non-profit/advocacy organizations, and one independent rating organization.

For the phone calls to CMS, SHIPs, and other help-lines, research assistants placed the calls and used the following introduction, "I'm helping my aunt to choose a Medicare drug plan and it's hard

¹³ Source: CMS, Medicare Current Beneficiary Survey, 2005 Access to Care: Survey KN Supplement (Knowledge and Information Needs) Codebook, published 2005.

<http://www.cms.hhs.gov/MCBS/Downloads/A05%20Ric%20KN.pdf>

Most common sources of information are based on unweighted tabulations of data collected in January-April 2006.

to figure out which one would be best. Can you offer advice?" From that point forward, the research assistants listened and asked neutral follow-up questions. For the calls to 1-800-Medicare, the research assistants used actual Medicare numbers provided by two volunteers; in the other calls, the research assistants did not use the Medicare numbers.

A physician developed two different medication lists for use in the information audit. One was a "high cost" drug list, which consisted of six brand name drugs, and the other was a "low-cost" drug list, which consisted of three generic drugs. Both were intended to seem unremarkable to a pharmacist and suitable for a relatively young, apparently healthy Medicare beneficiary. Neither was necessarily typical of the Medicare population. The two lists differed substantially. For the low-cost list, among the 51 health plans available in Cambridge MA, the mean estimated annual cost was \$664, while for the high-cost list, this figure was \$4,950. The set of low-cost plans differed for the two drug lists, and each list was used for a randomly selected half of the audit's calls and visits.

Temporary workers, trained by the researchers, made the in-person visits to pharmacies and senior centers using a survey guide. To start the interview, the auditor (1) introduced herself and asked for advice in choosing a Medicare Part D plan. The auditor then followed-up with three focused questions to ask (2) if the individual could recommend a plan, (3) what decision process to use to choose a plan, and (4) which plan features are most important. At this point, the auditor pulled out a fictional drug list on an index card, and (5) expressed concern about choosing a plan that made sense for her drug needs. To close the interview, the auditor would (6) ask where she could go for more help choosing a plan, (7) ask the individual how important the differences between plans are, and (8) ask for written materials about Medicare Part D. In the pharmacies, auditors spoke to the person who seemed most immediately available behind the pharmacy counter and collected all available print materials.

Auditors took comprehensive notes. All data were coded for certain basic outcomes, such as whether a plan was suggested, whether a plan finder was used, whether the auditor was referred to Medicare, etc. The audit data were linked to data on the set of plans available in the Boston area and the associated costs to permit us to analyze whether the plans suggested were, in fact, low cost plans. For the audit of pharmacies, we created and coded for a list of interview themes and coded print materials for source, type of item, and content.

In addition to this coding, researchers directly measured the effectiveness of certain print materials. In July of 2007, we tested the Medicare knowledge of a group of 39 seniors at a senior center in Cambridge MA before and after they reviewed selected informational materials collected as part of the pharmacy audit. For this exercise, we selected four items that were widely available, reflected diverse sources, and had the apparent purpose of communicating basic information about Part D.

As a final component of the information audit, we collected and reviewed several Annual Notices of Plan Changes (ANOCs), official communications between plans and their enrolled members.

Table B1. Responses to Request for Assistance

	Total Sample	Pharmacies	Medicare Help-Line	SHIP Help-Lines	Other Help Lines	Senior Centers
<i>Total Contacts Made</i>	125	88	12	5	12	8
<u>Final Relevant Outcome (most helpful action scored)</u>						
Personalized plan suggestions made	19	4	12	-	3	-
Personalized plan information given w/o specific plan suggestions	5	5	-	-	-	-
Non-personalized plan suggestions made	17	16	-	-	-	1
Referral to Medicare	39	32	-	1	3	2
Referral to other source offering personalized assistance	3		-	0	1	0
Offer of appointment-declined				4		
<u>Other Outcomes</u>						
<u>Identification of Plans and/or Plan Sponsors During Contact</u>						
Plan sponsor selectively named, not based on drug list	19	16	-	-	2	1
Specific plan selectively named	17	3	11	-	3	-
<u>Quality of Plan Suggestions</u>						
Lowest cost plan available (for given drug list) named	10	1	8	-	1	-
High drug list	4	-	3	-	1	-
Low drug list	6	1	5	-	-	-
<u>Referrals to Other Sources of Assistance</u>						
To Medicare	54	43	-	4	4	3
To other public-sector source	20	12	-	2	2	4
To plan sponsor	13	11	-	0	1	1

Notes. This table represents key outcomes from the audit of information sources.

Table B2. Effectiveness of Print Materials

A. Demographic Information	
Mean: Female	.60
Mean: Ages 65-74 (as opposed to 75+)	.54
Mean: On Medicaid	.49
Mean: Has Prescription Drug Coverage	.90
Mean: Has neither Prescription Drug Coverage nor is on Medicare	.08
B. Pre- and Post-Test Means: “Medicare Knowledge Questions”	
Pre-Test Mean [Q1-12] (Standard Error)	6.05 (.48)
Post-Test Mean [Q1-12] (Standard Error)	7.90 (.41)
Difference in Pre- and Post-Test Means (Standard Error)	1.85*** (0.39)
C. Pre- and Post-Test Means: “Application/Calculation Questions”	
Pre-Test Mean [Q13-15] (Standard Error)	.36 (.11)
Post-Test Mean [Q13-15] (Standard Error)	.51 (.12)
Difference in Pre- and Post-Test Means (Standard Error)	.15 (.09)

Notes. This table presents demographic information and results from the “User Testing of Print Materials” experiment conducted at the Cambridge Senior Center with 39 seniors. ***Significant at 1% level.

Appendix C: Experimental Methods

This information experiment collected baseline data on drug utilization and Medicare drug plan enrollment from 550 seniors via a telephone interview in the fall of 2006. Half of these study participants, selected at random, received a personalized mailing highlighting the potential savings from changing plans, while the other half received a more general mailing. A second telephone interview, in the spring of 2007, inquired whether the participant had changed plans for 2007 and about the process of plan choice.

Patients who were over 65 and seen at the University of Wisconsin Hospital and Clinics made up the sample frame for the study. Patients were eligible for the study if they were enrolled in Medicare and in a stand-alone Medicare drug plan. Project staff attempted to contact 14,183 individuals, of whom 5,014 (35 percent) had moved, died, or were never reached; 5,024 (35 percent) were ineligible; 3,595 (25 percent) chose not to participate; and 550 (3 percent) were interviewed.¹⁴

In the baseline interviews, pharmacy students from the University of Wisconsin collected the drug utilization and other information needed to generate personalized reports using the Medicare Plan Finder as well as the name of the participant's current Medicare drug plan and other basic personal information. The Medicare Plan Finder was used to estimate annual costs for 2008 in all available plans. These estimates were generated using the "general search" feature of the Plan Finder and thus did not utilize participants' Medicare numbers or the Plan Finder's capability to link to Medicare enrollment databases. Like all estimates provided by the Plan Finder, these estimates were based on current drug utilization and assumed that drug utilization would not change during the year.¹⁵

Study participants were randomized into two groups. Members of the comparison group received a general letter and an informational brochure about how to use the Medicare website created by a reputable organization for seniors, while members of the intervention group received a personalized letter that presented their estimated annual costs for 2008 in the current and lowest cost plan and the savings from making the change. (Exhibit C1-C3.) The letter was accompanied by the full print-out from the Medicare website, which showed, in cost order, the names of all 54 plans in the participant's zip code along with the associated costs and four other plan features. (See Exhibit C4 for an example.) Absent the intervention, seniors could have

¹⁴ The randomized experiment potentially provides strong internal validity but not necessarily external validity. Patients with recent hospital and clinic visits (especially to an academic medical center) may be more likely than the general population to have experienced recent changes in their health status and drug utilization and to benefit from effort and information directed at Medicare drug plan choice. In addition, the requirement for informed consent and the low participation rates may make the study population unrepresentative of the overall Medicare population. Seniors who were willing to join the study may be more likely than the general population to believe they could benefit from information about drug plan choice and may be correct in this belief, leading the study to potentially over-estimate the magnitude of impacts if the intervention were received by the general population. We are in the process of by cross-checking our data with administrative data (not subject to study participation screening) on prescription use by pharmacy customers to examine possible differences in potential savings from plan switching between our study participants and a non-study sample.

¹⁵ The Plan Finder's measure of estimated annual cost is not the same as an ideal measure of expected annual costs because it does not capture expected changes in drug utilization stemming either from changes in seniors' drug needs or from changes induced by the plan.

acquired the print-out by using the website themselves, calling Medicare, or visiting some senior centers; the information in the letter came directly from the print-out.¹⁶ All letters were printed on the stationery of the University of Wisconsin Hospital and Clinics, mailed in December 2007, contained identical introductory and concluding paragraphs, and included the internet address of the Medicare Plan Finder.

In the spring, all participants received a follow-up phone call to determine whether they had changed plans and the name of the new plan. In this call, interviewers also asked about 20 additional questions covering participants' activities during the open-enrollment period, including sources of information; perspectives on drug plan choice and drug plan information; and knowledge of the potential savings from changing plans.¹⁷

Baseline interviews for study participants were completed with 451 individuals. The main analytic file of 406 observations contained data from the baseline and follow-up interviews plus the estimated annual cost in the 2006, 2007, and lowest cost plan as estimated by the Plan Finder. There were several sources of study attrition. 13 individuals could not identify their 2007 plan. 6 individuals dropped Part D coverage for 2007. 26 could not be interviewed because they withdrew consent, could not be located, died, or could not respond for other reasons. Combining all sources of attrition, 8.3 percent of study participants in the intervention group had missing data in our analyses, and 11.6 percent had missing data in the comparison group. The difference of 3.3 percentage points was not large enough to reject with confidence the null hypothesis of equal attrition in the two groups.

Note that some additional individuals, not included in the counts above, were removed from the study based on information collected in the baseline survey. 17 were removed because their 2006 plan was not offered in 2007. An additional 64 were eligible for subsidies and hence faced a different choice process and set of plan options. 10 were not residents of Wisconsin.

For 391 of the 406 observations, we augmented the file by entering costs for all of the 54 available plans. These data were used for analyses of the variation in costs among plans and to create the plan-level variables that were then appended back on to the main analytic file.

Relative to the national population of seniors, study participants were typical in terms of age and gender but substantially better educated. Table C1 shows that 53 percent of the sample was between 65 and 74 years of age; 36 percent between 75 and 84; and 11 percent over 85; the

¹⁶ Our auditors, who called Medicare in late December, were not offered personalized print-outs by mail, presumably because these print-outs might not arrive before December 31. A pilot auditor, who called earlier, was offered and did receive a print-out by mail. Our auditors who visited senior centers were sometimes shown how to use the website but were never given print-outs; however some of our calls to SHIPs suggested that a print-out might have been available from this source if a senior had made an appointment and/or had provided a Medicare number.

¹⁷ The question on potential savings was: "Our final two questions ask about your expectations for 2007. ... About how much money do you think you could save if you switched to the least expensive Medicare drug plan?" a. Less than \$100; b. \$100-\$199; c. \$200-\$500; d. More than \$500; e. I already have the cheapest plan." Calculation of underestimation was predicted cost for 2007 minus lower bound imputed expected savings equal to zero for (e), 100 for (a), 200 for (b), and 500 for (c). A potentially offsetting factor in this lower bound calculation was the possibility that individuals lowered their expected savings estimates assuming they would switch at the time of the interview in the spring of 2007 rather than hypothetically switching at the beginning of 2007.

corresponding national percentages were 51, 36, and 14.¹⁸ Sixty-three percent of the sample was female; 65 percent were married; 5 percent lacked a high school degree; 48 percent had a college diploma or more. These figures were 59 percent female, 58 percent were married, 27 percent with no high school degree, and 19 percent with a college degree or more in the national population ages 65 and over.¹⁹

Seniors were randomly assigned to intervention and comparison group and, as expected, the study data suggested the measured characteristics of the two groups were generally similar with one important exception: at baseline, members of the intervention group were more likely to rate their prescription drug coverage as poor or fair and hence, might be expected to have greater rates of plan-switching. Multivariate analyses included this variable.

Table C2 provides additional detail on the dispersion of predicted costs. Table C3 provides additional detail on switching and predicted savings. Table C4 provides additional detail on the plan choice process in 2006. Tables C5 and C6 provide additional results on switching impacts by subgroup.

In order to compare our sample to data on individuals who did not elect to participate in research study, we obtained data on prescriptions filled by a sample of CVS/pharmacy customers. We selected 110 customers who were over 65, had PDP-paid prescriptions in 2006, had no Medicaid-paid prescriptions in either 2005 or 2006, had the majority of their prescriptions paid either by a PDP or by self, and did not appear to be receiving Extra Help subsidies, based on co-payments. For these customers, we created profiles, intended to represent drugs taken on a regular basis (the same standard used in Wisconsin); these profiles included drugs for which the senior had four or more fills during the last six months of 2006. In a manual review, we excluded 13 because they were not on a Medicare plan, 23 because they appeared to be receiving a subsidy and 15 because we were unable to identify specific plans. The final sample of 59 included 41 for whom we identified a sponsor but not a plan. For these individuals, we made two calculations: one in which we identified the lowest cost plan from those offered by the sponsor and the other in which we identified the highest cost plan from those offered by the sponsor. The pharmacy data is likely missing some data on prescriptions that the individual filled at other pharmacies; a countervailing factor is that some individuals with insurance but without prescription use are omitted from the sample by construction.

We also compared the predicted 2007 costs in the lowest cost plan for our sample to results shown in Domino et al., 2008, in which the authors applied the Medicare Plan Finder to data on prescriptions for a national sample of seniors in the 2003 Medicare Expenditure Panel Survey.

Roughly speaking, the level of out of pocket expenditures is about 50 percent higher in our sample than in these samples. Specifically, based on using the more expensive plans, in the pharmacy data, the 2007 average predicted cost in the plan chosen was \$1,382; in our sample, it was \$2,119, or 53 percent higher. In the Domino study, the average 2006 predicted cost in the lowest cost plan was \$1114; in our sample, the corresponding 2007 predicted cost was \$1594, or 43 percent higher. These differences are probably due to a combination of our sample being drawn from a universe of hospital patients, comprised of individuals who voluntarily participated

¹⁸ Source: US Census Bureau, "Age and Sex for States and Puerto Rico: April 1, 2000 to July 1, 2000," published August 4, 2006. <http://www.census.gov/popest/states.asrh/SC-EST2005-02.html>.

¹⁹ Source: US Census Bureau, "Educational Attainment in the United States: 2004, Detailed Tables," published March 2005.

in a study involving discussion of prescription drugs, and more recent than the MEPS data. However, the potential savings from changing plans, as a share of current expenditure, was similar or lower in our sample than in the national pharmacy sample (30 percent in our sample, between 24 and 41 percent in the pharmacy sample, depending on the method used), suggesting that the study did not disproportionately attract those who stood to benefit financially from changing plans.

Table C1. Experiment Demographics

	Mean (SE in Parentheses)			Difference in means: (SE)	Significance of the difference in means: t-statistics
	Overall (N=406)	Comparison (N=197)	Intervention (N=209)		
	(1)	(2)	(3)		
Female	.63 (.02)	.63 (.03)	.64 (.03)	.01 (.05)	.14
Age	75.16 (.32)	74.64 (.46)	75.65 (.43)	1.01 (.63)	1.60
High school or equivalent	.95 (.01)	.94 (.02)	.95 (.01)	.01 (.02)	.58
College diploma	.48 (.02)	.47 (.04)	.48 (.03)	.01 (.05)	.13
Graduate degree	.18 (.02)	.20 (.03)	.16 (.03)	-.05 (.04)	1.18
White	.97 (.01)	.98 (.01)	.96 (.01)	-.02 (.02)	1.07
Married	.65 (.02)	.67 (.03)	.63 (.03)	-.04 (.05)	.81
Mean Number of Medications	5.47 (.18)	5.31 (.25)	5.62 (.26)	.31 (.36)	.86
<3 Medications	.36 (.02)	.34 (.03)	.38 (.03)	-.04 (.04)	.91
3-6 Medications	.32 (.02)	.32 (.03)	.32 (.03)	-.01 (.04)	.12
7+ Medications	.31 (.02)	.33 (.03)	.29 (.03)	.02 (.04)	.41
2006 Plan Rated Very Good/ Excellent	.38 (.02)	.41 (.04)	.34 (.03)	-.07 (.05)	1.39
2006 Plan Rated Poor/ Fair	.31 (.02)	.26 (.03)	.35 (.03)	.09 (.05)	1.98**
Predicted cost of 2006 Plan in 2007	\$2119.39 (87.19)	\$2125.95 (122.64)	\$2113.20 (124.07)	-\$12.75 (174.67)	.07
Predicted cost of Lowest-Cost Plan in 2007	\$1593.55 (72.72)	\$1606.23 (102.55)	\$1581.59 (103.23)	-\$24.64 (145.67)	.17
Potential Savings ^a	\$525.84 (31.02)	\$519.73 (44.46)	\$531.61 (43.41)	\$11.88 (62.14)	.19

Notes. This table displays descriptive statistics for the overall sample as well as by both experimental groups (columns 1, 2, 3) and reports differences and associated t-statistics between group means (columns 4, 5). Figures may not sum to do rounding. ^aPotential savings" is defined as the difference between predicted cost of the 2006 plan (in 2007 terms) and the identified lowest-cost cost plan. *Significant at the 10% level. **Significant at the 5% level. ***Significant at 1% level.

Table C2. Additional Detail on Predicted Cost

<i>N=406</i>	Mean	Median	Minimum	Maximum	Standard Deviation
Predicted cost of 2006 Plan (in 2007 terms)	\$2119	\$1356	\$178	\$9630	\$1757
Predicted cost of Lowest-Cost Plan in 2007	\$1594	\$856	\$178	\$7989	\$1465
Predicted cost of 2007 Chosen Plan	\$2043	\$1336	\$178	\$9007	\$1677
Potential Savings ^a	\$526	\$377	\$0	\$4946	\$625
Predicted Savings ^b	\$76	\$0	-\$744	\$4825	\$378

Notes. This table displays detailed summary statistics on predicted annual cost variables in the information experiment. ^a“Potential savings” is defined as the difference between 2006 plan cost (in 2007 terms) and the identified lowest-cost plan. ^b“Predicted savings” is defined as the difference between the cost of 2007 chosen plan and the cost of the 2006 plan in 2007 terms.

Table C3. Experiment Outcomes

	Comparison		Intervention		Difference in means: (SE)	Significance of the difference in means: t-statistics (6)
	N	Mean (SE)	N	Mean (SE)		
	(1)	(2)	(3)	(4)		
Switched plans from 2006 to 2007	197	.17 (.03)	209	.28 (.03)	.11 (.04)	2.78***
<i>Switched to lowest-cost plan</i>	197	.02 (.01)	209	.09 (.02)	.07 (.02)	2.95***
<i>Switched to other plan</i>	197	.15 (.03)	209	.20 (.03)	.05 (.04)	1.30
Mean predicted savings ^a switched plans	33	\$97.36 (60.68)	59	\$468.34 (112.14)	\$370.98 (156.95)	2.36**
<i>Mean predicted savings^a switched to lowest-cost plan</i>	4	\$308.75 (147.42)	18	\$713.00 (190.50)	\$404.25 (416.70)	.97
<i>Mean predicted savings^a switched to other plan</i>	29	\$68.21 (64.94)	41	\$360.93 (136.10)	\$292.72 (171.07)	1.71*
Mean predicted savings ^a all respondents	197	\$16.31 (10.37)	209	\$132.21 (34.69)	\$115.90 (37.13)	3.12***
<i>Estimated actual cost of 2006 plan all respondents</i>	197	\$2125.95 (122.64)	209	\$2113.20 (124.07)	-\$12.75 (174.67)	.07
<i>Potential savings^b all respondents</i>	197	\$519.73 (44.46)	209	\$531.61 (43.41)	\$11.88 (62.14)	.19
<i>Estimated actual cost of 2007 plan all respondents</i>	197	\$2109.65 (121.47)	209	\$1980.99 (114.29)	-\$128.65 (166.63)	.77

Notes. This table displays key switching and cost statistics for the overall sample by experimental group post-intervention (columns 1, 2, 3, 4) and reports the differences and associated t-statistics between group means (columns 5, 6). Figures may not sum due to rounding. ^a "Mean predicted savings" is defined as the difference between the cost of 2007 chosen plan and the cost of the 2006 plan in 2007 terms. ^b "Potential savings" is defined as the difference between 2006 plan cost (in 2007 terms) and the identified lowest-cost plan. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table C4. Choice Process

	Comparison		Intervention		Difference in means: (SE)	Significance of the difference in means: t-statistics
	N	Mean (SE)	N	Mean (SE)		
	(1)	(2)	(3)	(4)	(5)	(6)
Considered Changing Plans ^a	164	.31 (.04)	150	.35 (.04)	.04 (.05)	.67
Average time spent deciding on 2007 plan in 2006 (hours) ^b	193	2.97 (.33)	201	3.69 (.31)	.72 (.45)	1.61
Spent enough time deciding?	197	.72 (.03)	209	.75 (.03)	.04 (.04)	.81
Read project materials thoroughly	197	.26 (.03)	209	.45 (.03)	.19 (.05)	3.96***
Do not remember receiving materials	197	.34 (.03)	209	.24 (.03)	.10 (.04)	2.14**
Found materials somewhat or very helpful	197	.09 (.02)	209	.20 (.03)	.11 (.03)	3.14***
Received other information in fall 2006	197	.53 (.04)	209	.56 (.03)	.03 (.05)	.64
Percent overestimating potential savings ^c	109	.09 (.03)	129	.12 (.03)	.02 (.04)	.61
Percent underestimating potential savings ^c	109	.72 (.04)	129	.54 (.04)	-.17 (.06)	2.77**

Notes. This table displays other follow-up variables for the overall sample post-intervention as well as by both experimental groups (columns 1, 2, 3, 4) and reports differences and associated t-statistics between group means (columns 5, 6). Figures may not sum due to rounding. ^a 92 respondents not applicable as they did change plans. ^b 12 respondents unable to estimate time spent deciding on 2007 plan in 2006. ^c Overestimation and underestimation figures determined by subtracting potential savings from response to question: "About how much money do you think you could save if you switched to the least expensive Medicare drug plan?" 168 respondents were unable to estimate potential savings.

Table C5. Analysis of switching plans between 2006 and 2007, by cost subgroups

	Switching probability		Lower bound impact on predicted cost		N
	Comparison	Intervention	Dollars	Log points	
	(1)	(2)	(3)	(4)	
A. Relative potential savings					
≤ 33%	.193	.276	-87 (51)	-.052 (.027)	230
> 33%	.133	.290~	-470* (124)	-.279* (.084)	176
B. Plan cost in 2006					
≤ \$1500	.125	.221	-122* (48)	-.184* (.075)	217
> \$1500	.215	.354~	-283* (99)	-.105* (.037)	189
C. Monthly premium in 2006					
≤ \$30	.085	.292~	-184* (75)	-.145* (.057)	190
> \$30	.243	.274	-163* (74)	-.115* (.051)	216
D. 2006 plan - low-cost plan premium per month					
≤ \$10	.117	.283~	-217* (68)	-.135* (.051)	202
> \$10	.223	.282	-242* (92)	-.135* (.053)	204

Notes. All subgroups are defined on characteristics known prior to random assignment. Dollar potential savings = predicted 2007 cost of plan chosen in 2006 – predicted 2007 cost of least expensive plan. Relative potential savings = 1 – (predicted 2007 cost of least expensive plan / predicted 2007 cost of plan chosen in 2006). ~ = p-value <.05 on difference between columns 1 and 2. Column 3 estimated using method in Table 3, panel C, row 1. Column 3 estimated using method in Table 3, panel C, row 2. Standard errors in parentheses. * = p-value <.05.

Table C6. Analysis of switching plans between 2006 and 2007, by additional subgroups

	Switching probability		Lower bound impact on predicted cost		N
	Comparison	Intervention	Dollars	Log points	
	(1)	(2)	(3)	(4)	
A. Premium change of 2006 plan					
≤ \$7 per month	.130	.260~	-182* (78)	-.152* (.060)	188
> \$7 per month	.200	.301	-261* (86)	-.139* (.050)	218
B. Number of medications					
≤ 4	.152	.250	-134* (56)	-.177* (.070)	195
> 4	.184	.310~	-268* (93)	-.110* (.038)	211
C. Marital status					
Not married	.154	.169	-134 (104)	-.159 (.085)	142
Married	.174	.348~	-239* (71)	-.133* (.040)	264
D. Age					
≤ 73 years old	.151	.247	-239* (92)	-.134* (.063)	195
> 73 years old	.187	.308~	-215* (77)	-.131* (.046)	211
E. Gender					
Male	.164	.342~	-240* (85)	-.193* (.063)	149
Female	.169	.248	-202* (77)	-.110* (.045)	257

Notes. Same as Table C5.