

Encouraging Medicare Advantage Enrollees to Switch to Higher Quality Plans: Assessing the Effectiveness of a “Nudge” Letter

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There are considerable quality differences across private Medicare Advantage insurance plans, so it is important that beneficiaries make informed choices. During open enrollment for the 2013 coverage year, the Centers for Medicare & Medicaid Services sent letters to beneficiaries enrolled in low-quality Medicare Advantage plans (i.e., plans rated less than 3 stars for at least 3 consecutive years by Medicare) explaining the stars and encouraging them to reexamine their choices. To understand the effectiveness of these low-cost, behavioral “nudge” letters, we used a beneficiary-level national retrospective cohort and performed multivariate regression analysis of plan selection during the 2013 open enrollment period among those enrolled in plans rated less than 3 stars. Our analysis controls for beneficiary demographic characteristics, health and health care spending risks, the availability of alternative higher rated plan options in their local market, and historical disenrollment rates from the plans. We

compared the behaviors of those beneficiaries who received the nudge letters with those who enrolled in similar poorly rated plans but did not receive such letters. We found that beneficiaries who received the nudge letter were almost twice as likely (28.0% [95% confidence interval = 27.7%, 28.2%] vs. 15.3% [95% confidence interval = 15.1%, 15.5%]) to switch to a higher rated plan compared with those who did not receive the letter. White beneficiaries, healthier beneficiaries, and those residing in areas with more high-performing plan choices were more likely to switch plans in response to the nudge. Our findings highlight both the importance and efficacy of providing timely and actionable information to beneficiaries about quality in the insurance marketplace to facilitate informed and value-based coverage decisions. **Key words:** Medicare Advantage; quality measures; health insurance; insurance enrollment. (*MDM Policy & Practice XXXX;XX:xx-xx*)

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As the single largest payer for health care in the United States, Medicare provided insurance to more than 50 million Americans in 2015. While the majority still enrolled in the traditional fee-for-service Medicare, approximately 31% of Medicare beneficiaries enrolled in privately administered managed care plans (such as a health maintenance organization or preferred provider organization) under the Medicare Advantage program. Beneficiaries in such policies received all Medicare-covered Part A and Part B benefits, and often Part D benefits.¹ The number and share of enrollees in Medicare Advantage program have continued to increase through the past decade.²

There are considerable quality differences across these Medicare Advantage plans. In order to make plan quality information accessible and interpretable to beneficiaries, the Centers for Medicare & Medicaid Services (CMS) constructs and publishes a quality rating for Medicare Advantage plans to



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provide information about the quality of various insurance options. This rating, which started in 2008 and has incrementally evolved over the subsequent years, assigns a rating of 1 to 5 stars in half star increments to plans under Medicare Advantage contracts annually. Star Ratings are currently based on performance on more 50 quality indicators, including process-based quality via Healthcare Effectiveness Data and Information Set measures (such as colorectal cancer screening or plan all-cause readmission), enrollee experience with care and plans via Consumer Assessment of Healthcare Provider and Systems surveys (such as “getting appointments and care quickly”), enrollee self-reported health outcome measures from the Health Outcome Survey (such as “improving or maintaining physical health”), and other administrative data (such as enrollee complaints and voluntary disenrollment).³ Individual measures are then aggregated to construct a single overall 5-star scale for each contract, representing its overall quality performance. CMS publishes the Star Ratings on the Medicare Plan Finder website and plans often reference them in their own marketing materials. The Star Ratings only focuses on quality measures; it does not account for insurance plans’ financial structure, network appropriateness, or coverage generosity (plans need to meet CMS’s respective requirements on these aspects and pass annual auditing before they can operate under Medicare Advantage).

One recent study demonstrated a relationship between Star Ratings and Medicare Advantage enrollment, suggesting that at least some beneficiaries consider quality in their decision making.⁴ Yet 9% of Medicare Advantage enrollments were in plans rated 2.5 stars or less in 2012.⁵ While some beneficiaries may choose these plans due to cost or coverage concerns, others may be unaware of their plan’s rating or that higher quality options are available.⁶ Furthermore, beneficiaries may face considerable inertia in switching plans^{7,8} due to the complexity of Medicare coverage decisions.⁹

In Fall 2012, during the 2013 Medicare Advantage open enrollment period, for the first time, CMS began sending letters (in English and Spanish) to all beneficiaries enrolled in plans that received less than 3 stars for the last 3 consecutive years to notify them of their plan’s low rating and suggest consideration of other coverage options for 2013.¹⁰ The nudge letter addressed to each individual directly by name and Medicare number explained what the stars meant, and explicitly noted:

You are currently enrolled in <Organization’s name>’s <Plan name>. <Organization’s name> has been rated “below average” or “poor” for at least the last three years. We encourage you to compare this plan to other options in your area and decide if it is still the right choice for you.

The letter then offered information on how to find other available plans, and how to enroll.

Under CMS policy, however, these “nudge” letters were not sent to beneficiaries whose plans were rated less than 3 stars for a period less than 3 consecutive years. For example, a beneficiary enrolled in a plan that was rated for 3, 2.5, and 2.5 stars in the past 3 years would not have received a nudge letter, whereas a beneficiary enrolled in a plan that received a star rating of 2.5, 2.5, and 2.5 over the past 3 years would have received one. This outreach policy provides us a unique opportunity to compare the enrollment behaviors of beneficiaries who received the nudge letters with those enrolled in similarly low-rated plans that did not receive the letters. Understanding the implications of such communication is essential for policy makers to promote desired changes in the health insurance marketplace.

In sectors outside of health care, targeted communication to support effective decision making has been extensively studied,^{11–16} yet such research in the US health care system remains underdeveloped. In this article, we used a beneficiary-level retrospective cohort to study the association between direct communication about health plan quality and enrollment decisions.

METHODS

Study Design

We performed a national beneficiary-level retrospective cohort analysis of Medicare Advantage plan selections during the 2013 open enrollment period among beneficiaries who were enrolled in plans rated less than 3 stars. To measure the association between CMS’s nudge letter and subsequent plan switching, we exploited the fact that the letters were *only* sent out to beneficiaries enrolled in Medicare Advantage plans with quality scores less than 3 stars for *3 consecutive years*, making beneficiaries who enrolled in low-rated plans but did not receive the letters a viable comparison group. This contrast allows us to better understand the effectiveness of the CMS policy initiative to

“nudge” beneficiaries out of consistently low performing plans.

Data

We obtained information on beneficiary enrollments and characteristics from CMS’s Integrated Data Repository and information on plan star ratings, nudge letter, and market characteristics from CMS’s Health Plan Management System.

We included all Medicare beneficiaries living in the 50 US states and Puerto Rico who were enrolled in a Medicare Advantage plan with an overall quality rating of less than 3 stars on 1 December 2012 and still enrolled in the Medicare program on 1 January 2013. We excluded beneficiaries living in the remaining outlining US territories and possessions due to idiosyncrasies in Medicare program administration and data collection in these areas, beneficiaries enrolled in plans sponsored by former employers due to strong incentives to remain in these plans notwithstanding ratings, and dually eligible beneficiaries due to potential influence of state Medicaid policy on enrollment. We also excluded young disabled beneficiaries as their health conditions might lead to strong preferences toward specific plan options and beneficiaries with end-stage renal disease as they face some restrictions in Medicare Advantage enrollment. We additionally excluded beneficiaries who moved to a different service area (i.e., county) between 2012 and 2013 as enrollment changes were likely due to the move itself and beneficiaries whose enrollments were administratively switched to a different coverage option (e.g., changes plan service areas, plan consolidations, plan terminations, beneficiary failures to pay premiums, administrative corrections, etc.). Finally, we excluded a small number of beneficiaries (N = 47) who did not have access to a higher rated plan coverage option in their local market.

Variables

We conceptualized a beneficiary’s decision to switch their enrollment as a function of 1) whether they received the nudge from CMS to switch, 2) demographic characteristics, 3) health and health care spending risk, and 4) the availability of alternative high-quality coverage options in their local market.

Our primary outcome was whether the beneficiary continued their current Medicare Advantage Plan enrollment or switched to a different plan rated 2.5 stars or less, to a plan rated 3 stars or higher, to an unrated Medicare Advantage plan, or to fee-for-service Medicare in January 2013. Beneficiary exposure to the nudge was signified via a flag indicating whether the beneficiary was enrolled in a plan rated less than 3 stars for at least 3 consecutive years on 1 December 2012.

We controlled for beneficiary demographic characteristics, including age groups (65–70, 70–75, 75–80, 80–85, 85+), race (white, black, other), and gender. Since changes in health and subsequent health care spending can also precipitate changes in plan enrollments, we accounted for each beneficiary’s health care spending risk via CMS’s Hierarchical Condition Category risk score¹⁷ for 2012 (by quintile) and changes in this risk score between 2011 and 2012 (by quintile, flagging beneficiaries who were new to Medicare in 2012) in our model. We additionally controlled for disability status.

To account for the availability of high-quality alternative Medicare Advantage plans, we counted the number of plans rated 3 stars or higher available in each beneficiary’s service area (i.e., county of residence). Finally, to control for potential differences in underlying disenrollment patterns between plans subject to the nudge and those that were not, we also included each plan’s 2012 disenrollment rate as a proxy for unobserved plan characteristics other than the nudge letters that could have driven disenrollment.

Statistical Model

We used multinomial logistic regression to estimate the relationship between receiving the nudge from CMS and the likelihood of the various subsequent enrollment options. The multinomial outcome variable distinguishes individuals who did not switch plan from those who switched to a different plan rated 2.5 stars or less, to a plan rated 3 stars or higher, to an unrated Medicare Advantage plan, or to fee-for-service Medicare. As covariates, we included all the control variables described above and a full set of interactions between the nudge indicator and all the beneficiary and market characteristics in our model. Therefore, the multinomial logit specification allows estimates of the association of the nudge with subsequent enrollment to vary by subpopulation. Coefficients from

multinomial logit models are difficult to interpret even in the simplest cases, and they are virtually impossible to interpret directly when covariate interactions are included. Therefore, for purposes of interpretation, we calculated predicted probabilities of enrollment status given receipt and nonreceipt of the nudge and the marginal effects of the nudge for each level of each of the qualitative covariates. For each of the two continuous covariates—number of 3+ star plans in the market and 2012 disenrollment rate—we calculated the predicted probabilities and marginal effects at the 10th, 25th, 50th, 75th, and 90th percentile values of those variables. For each of these measures, we calculated 95% confidence intervals based on estimates of standard errors of the predicted probabilities and marginal effects using the Delta method.

RESULTS

After applying exclusion criteria, our sample included 150,095 beneficiaries who received the nudge letters and 155,327 who did not. The study sample had a lower percentage of whites, was older, less sick, and had higher income than the general Medicare population in 2012,¹⁸ consistent with selection into Medicare Advantage plans, and additionally into low-quality Medicare Advantage plans. Overall, nudge recipients and nonrecipients appeared to be similar across the characteristics that we measured. The biggest difference we observed was in the beneficiary race category, with white beneficiaries appearing to have received the nudge letter more frequently than not (46.0% vs. 40.2%). Minorities, on the other hand, appeared to have received the nudge relatively less frequently than not (15.4% vs. 19.7% for beneficiaries who were black and 38.5% vs. 40.2% for beneficiaries classified as other). Nudge letter recipients were slightly older and had slightly higher levels of health care spending risk as compared with those who did not receive the nudge. We did not observe substantial differences by gender, disability status, change in levels of health care spending risk, and number of available plans rated 3 stars or higher (Table 1).

In unadjusted analyses, we observed differences in subsequent enrollments by nudge receipt. Beneficiaries who received the nudge enrolled in a plan rated 3 stars or higher more frequently than those who did not (25.6% vs. 13.2%). Similarly, beneficiaries who did not receive the nudge continued their current Medicare Advantage plan

Table 1 Descriptive Characteristics of the Sample

	No Nudge	Nudge
N	155,327	150,095
No switch	78.9%	55.2%
Switch to 2 to 2.5 star plan	3.6%	7.6%
Switch to 3+ star plan	14.1%	29.4%
Switch to unrated	1.0%	4.1%
Return to fee-for-service	2.5%	3.7%
Age		
65–70	35.7%	33.1%
70–75	29.9%	29.8%
75–80	17.8%	18.7%
80–85	10.1%	10.8%
85+	6.5%	7.5%
Gender		
Female	55.6%	56.0%
Male	44.4%	44.0%
Race		
White	40.2%	46.0%
Black	19.7%	15.4%
Other	40.2%	38.6%
Not disabled	96.7%	96.3%
Disabled	3.4%	3.7%
Health care spending risk		
First spending risk quintile	22.7%	21.5%
Second spending risk quintile	24.1%	22.0%
Third spending risk quintile	19.2%	19.1%
Fourth spending risk quintile	17.9%	18.8%
Fifth spending risk quintile	16.2%	18.7%
Change in health care spending risk		
First spending risk change quintile	16.4%	18.9%
Second spending risk change quintile	21.0%	21.0%
Third spending risk change quintile	19.7%	18.0%
Fourth spending risk change quintile	19.5%	18.5%
Fifth spending risk change quintile	16.3%	17.3%
New in 2012	7.2%	6.4%
# of 3 star+ plans	23.7	24.3
Previous disenrollment rate	12.4%	17.1%

enrollment more often than those who did receive the nudge (78.9% vs. 55.2%) (Table 1).

Using the multinomial logistic model to adjust for observed characteristics of beneficiaries and plans, we found that beneficiaries who did not receive the nudge were much more likely to remain in their current plan as compared with those who received the nudge: 77.3% (95% confidence interval [CI] = 77.0%, 77.5%) versus 57.3% (95% CI = 57.1%, 57.6%). Most of the enrollment changes observed were toward higher rated plan options with beneficiaries receiving the nudge being more likely to switch to a plan rated 3 stars or more (28.0% [95% CI = 27.7%, 28.2%] vs. 15.3% [95%

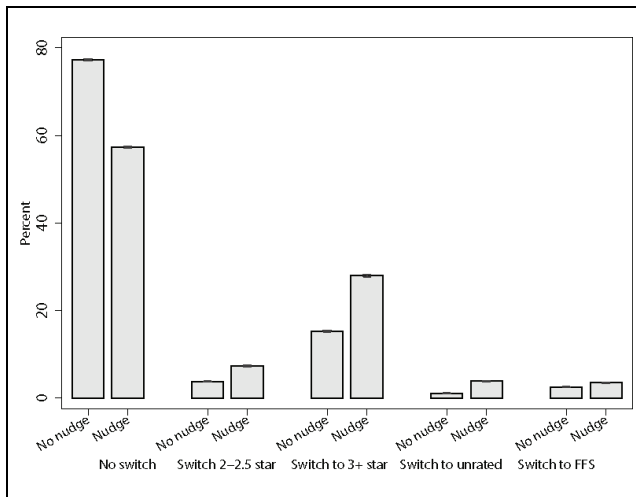


Figure 1 Predicted probability of switching plans. FFS = fee-for-service.

CI = 15.1%, 15.5%]). We also observed slightly higher rates of enrollment among nudge recipients into plans that were rated 2 stars, plans that were unrated, and into the fee-for-service Medicare program (Figure 1).

Our adjusted analyses also revealed differences in subsequent enrollment by beneficiary race, health care cost risk, and number of available higher quality enrollment options. Rates of switching do not vary substantively by age or gender. However, in response to the nudge, white beneficiaries had the highest probability of switching out of their current plan and into a plan rated 3 stars or higher (Table 2). Nudges to white beneficiaries were associated with a 15.7% (95% CI = 15.2%, 16.2%) increased probability of switching enrollment to a plan rated 3 stars or higher. In contrast, nudges to black beneficiaries led to a 10.5% (95% CI = 9.9%, 11.0%) increase in switches to 3 stars or better plans and nudges to those who were classified as other race resulted in an increase in switching to 3 stars or better plans of 10.3% (95% CI = 9.9%, 10.8%). Second, disabled beneficiaries were slightly more likely to switch to 3 stars or better plans following a nudge (14.0% [95% CI = 12.4%, 15.5%] vs. 12.6% [95% CI = 12.3%, 12.9%]). Beneficiaries with higher health care spending risk appeared to be less likely to switch their enrollment to a plan rated 3 stars or higher. Those in the first quintile of health care spending risk who received a nudge were 24.4% (95% CI = 23.4%, 24.5%) less likely not to switch compared to 12.4% (95% CI = 11.6%, 13.3%) among those in the fifth

quintile. The association between nudge receipt and switching enrollments to a plan rated 3 stars or higher also diminishes with increased health care spending risk. The difference in probabilities of switching to a plan rated 3 stars or higher between nudge recipients and nonrecipients fell from 16.4% points among those in the first quintile of risk to 9.1% points for those in the fifth (Table 2).

The availability of 3+ stars options in the local market appears to be an important determinant of switching. Beneficiaries with more plan options rated 3 stars or higher in their local market were more likely to switch their enrollment to a plan rated 3 stars or higher. Those in markets at the 10th percentile of available “good” options (9 plans) increased the probability of switching to a 3+ stars plan by 7.9% (95% CI = 7.5%, 8.3%), compared to 20.5% (95% CI = 19.9%, 21.1%) among those in the 90th percentile (47 plans).

Finally, we found that the associations between the nudge and subsequent enrollment behavior are stable across levels of historical plan disenrollment rates (Table 2).

DISCUSSION

Knowledge of quality is essential for patients to make educated decisions about cost, coverage, and quality when enrolling in a health insurance plan. Public reporting may not be sufficient because many consumers may not observe relevant information. In this study, we assessed the effect of a direct beneficiary communication that synthesized results of plan quality performance. CMS informed the population of beneficiaries enrolled in consistently poor-performing plans (i.e., those rated less than 3 stars for at least 3 consecutive years) about the opportunity to switch to a higher performing enrollment option. Understanding the effect of such a nudge is essential as we strive to create a more transparent marketplace.

We found that beneficiaries who received the nudge were approximately twice as likely to switch to a higher rated plan as those enrolled in plans with similarly poor ratings that did not receive the nudge. Forty-four percent of beneficiaries who received the nudge switched coverage options while only 21% of those who did not receive the nudge did so. Not all beneficiary subgroups responded similarly to the nudge. Both white beneficiaries and healthier beneficiaries (as reflected by lower health care cost risk scores) were more likely to switch enrollments in response to the nudge.

While the nudge letter does inform beneficiaries of their plan's low quality and encourage them to compare options, it is possible that some of this observed shift to higher quality plans may be due to other considerations such as changing coverage needs and costs constraints. The decision by some to continue with existing plan enrollments, on the other hand, may have been driven by concerns about increased costs or having to switch providers, and may have been entirely rational for some beneficiaries. We also observed that a small number of beneficiaries responded to the nudge by switching to a similarly poor rated Medicare Advantage plan. While examining the drivers of these specific coverage decision outcomes was beyond the scope of this study, it does suggest that it is important to ensure that nudged beneficiaries are equipped with the proper tools and skills needed to make optimal coverage decisions. These findings also highlight the need for further qualitative research to better understand reasons for staying in low-performing plans and the communication approaches that may better meet beneficiary information needs in making optimal enrollment decisions.

Furthermore, it is notable that beneficiaries residing in areas with greater choice and more high-performing plans were more likely to switch to a higher performing option in response to the nudge. These findings underscore the need for a robust marketplace with multiple viable options for beneficiaries, and suggest that efforts to oversimplify plan options for beneficiaries could lead to less activated consumer behavior. One recent study has also reported that Medicare Advantage penetration is continuing to grow and that this growth is concentrated in lower income counties.² This suggests that nudge letters could play a bigger role in driving enrollments into higher quality plans as beneficiaries continue to gain more coverage options over time, particularly in potentially underserved areas.

It has been suggested that insights from behavioral economics (nudges, defaults, strategically structuring choice architecture, etc.) may be effective tools for improving health outcomes in the health care system.^{19–21} Our findings add to the growing body of literature showing the potential for behavioral nudges to improve health care quality and subsequent outcomes.

Prior research has shown that behavioral nudges can improve patient health behaviors,^{22–26} clinical decision making,²⁷ and insurance coverage decisions.²⁸ CMS could consider both enhancing existing nudges with more detailed information about

available options and sending nudges to the broader population of Medicare Advantage enrollees. For example, future nudge letters could include listings of higher quality options with equal or lower expected costs than the beneficiary's current plan selection. In designing new nudges, however, it is important to consider the context in which coverage decisions will be made. One of the possible reasons why we observed that a majority of plan switches were to higher rated plans was that many of the coverage options available to beneficiaries were rated higher than the poorly rated plans beneficiaries were enrolled in at baseline. CMS might not see the same results if it were to adopt a higher quality threshold that leaves relatively fewer opportunities for improvement.

In addition, CMS and other organizations could consider testing other behavioral nudges to promote greater use of preventative services or adherence to therapies. For example, nudge letters could be sent to newly diagnosed diabetics encouraging them to take advantage of Medicare's Diabetes Self-management Training benefit. Personalized medication adherence feedback reports incorporating social norming cues could also be sent to beneficiaries with chronic conditions to nudge more consistent medication use.

Our study has limitations. First, while all of the plans examined were poorly rated (i.e., less than 3 stars), it is possible that plans with at least 3 consecutive years of low-quality ratings may differ from plans with low ratings for shorter periods in other unobservable ways that may have driven higher disenrollment rates, independent of the nudge. To control for potential differences in underlying disenrollment patterns between plans subject to the nudge and those that were not, we included each plan's 2012 disenrollment rate in our model. We considered each plan's 2012 disenrollment rate to be both the most proximate to coverage decisions we were examining and broadly representative of each plan's overall experience. Even after adjusting for these prior disenrollment rates, we found that the associations between the nudge and subsequent enrollment behaviors were still statistically significant.

Second, our analysis did not consider the effects of premiums, expected out-of-pocket costs, and features of benefit design as the focus of this research was to evaluate the effects of the beneficiary nudges on enrollments in the Medicare Advantage program, not to describe the interaction between the nudge and beneficiary and plan-level drivers of specific

Table 2 Predicted Probability of Switching Plans by Beneficiary and Market Characteristics

	No Switch		Switch to 2–2.5		Switch to 3+		Switch to Unrated		Switch to FFS	
	Effect	95% CI	Effect	95% CI	Effect	95% CI	Effect	95% CI	Effect	95% CI
Age										
65–70	–19.8	(–20.4, –19.2)	3.1	(2.8, 3.4)	13.2	(12.6, 13.7)	2.6	(2.4, 2.8)	1.0	(0.7, 1.2)
70–75	–19.8	(–20.6, –19.1)	3.5	(3.0, 3.9)	12.4	(11.7, 13.2)	2.8	(2.4, 3.3)	1.1	(0.8, 1.4)
75–80	–20.7	(–21.5, –19.9)	3.9	(3.4, 4.4)	12.9	(12.1, 13.6)	3.0	(2.4, 3.5)	0.9	(0.7, 1.2)
80–85	–19.3	(–20.2, –18.3)	4.0	(3.4, 4.7)	11.7	(10.8, 12.6)	2.7	(2.0, 3.3)	0.9	(0.5, 1.2)
85+	–19.8	(–21.0, –18.6)	4.8	(4.2, 5.4)	11.6	(10.5, 12.6)	2.3	(1.9, 2.7)	1.1	(0.6, 1.6)
Sex										
Female	–19.0	(–19.4, –18.6)	3.3	(3.1, 3.5)	12.3	(11.9, 12.7)	2.6	(2.4, 2.7)	0.8	(0.7, 1.0)
Male	–21.1	(–21.6, –20.6)	3.9	(3.7, 4.2)	13.0	(12.6, 13.5)	3.0	(2.8, 3.1)	1.2	(1.0, 1.4)
Race										
White	–24.0	(–24.5, –23.4)	3.3	(3.1, 3.6)	15.7	(15.2, 16.2)	4.3	(4.0, 4.5)	0.6	(0.4, 0.8)
Black	–16.1	(–16.8, –15.5)	0.6	(0.3, 0.8)	10.5	(9.9, 11.0)	4.0	(3.4, 4.5)	1.1	(0.9, 1.3)
Other	–16.9	(–17.4, –16.5)	4.8	(4.5, 5.1)	10.3	(9.9, 10.8)	0.7	(0.6, 0.8)	1.1	(0.9, 1.3)
Disability										
Not disabled	–19.8	(–20.2, –19.5)	3.5	(3.3, 3.7)	12.6	(12.3, 12.9)	2.7	(2.6, 2.8)	1.0	(0.9, 1.1)
Disabled	–23.5	(–25.2, –21.8)	5.5	(4.6, 6.5)	14.0	(12.4, 15.5)	2.7	(2.1, 3.2)	1.3	(0.7, 2.0)
Health care spending risk										
First spending risk quintile	–24.4	(–25.3, –23.4)	5.5	(4.8, 6.2)	14.1	(13.1, 15.1)	3.5	(2.7, 4.2)	1.4	(1.0, 1.8)
Second spending risk quintile	–22.4	(–23.3, –21.4)	4.4	(3.8, 5.0)	13.9	(13.0, 14.8)	2.9	(2.3, 3.5)	1.2	(0.9, 1.6)
Third spending risk quintile	–20.1	(–20.8, –19.3)	3.5	(3.1, 3.9)	13.0	(12.3, 13.7)	2.7	(2.4, 2.9)	0.9	(0.6, 1.1)
Fourth spending risk quintile	–18.6	(–19.5, –17.7)	2.7	(2.2, 3.2)	12.3	(11.5, 13.2)	2.5	(2.0, 3.1)	1.0	(0.6, 1.3)
Fifth spending risk quintile	–12.4	(–13.3, –11.6)	1.3	(0.9, 1.7)	9.1	(8.3, 9.8)	1.7	(1.5, 2.0)	0.3	(0.0, 0.7)
Change in health care spending risk										
First spending risk change quintile	–16.4	(–17.4, –15.4)	2.7	(2.2, 3.3)	10.4	(9.5, 11.3)	2.3	(1.8, 2.8)	1.0	(0.6, 1.3)
Second spending risk change quintile	–19.3	(–20.2, –18.3)	3.6	(3.0, 4.2)	12.1	(11.2, 13.0)	2.6	(2.0, 3.1)	1.0	(0.6, 1.3)
Third spending risk change quintile	–20.0	(–20.7, –19.2)	3.9	(3.5, 4.3)	12.3	(11.6, 13.0)	2.6	(2.4, 2.9)	1.2	(0.9, 1.5)
Fourth spending risk change quintile	–21.0	(–21.9, –20.1)	3.8	(3.3, 4.4)	13.5	(12.7, 14.3)	2.6	(2.1, 3.1)	1.1	(0.7, 1.4)
Fifth spending risk change quintile	–20.7	(–21.6, –19.7)	3.9	(3.3, 4.6)	13.4	(12.5, 14.4)	2.6	(2.0, 3.2)	0.7	(0.4, 1.1)
New in 2012	–27.6	(–29.1, –26.0)	3.2	(2.7, 3.8)	14.7	(13.3, 16.1)	9.1	(7.9, 10.4)	0.5	(–0.2, 1.2)
Number of 3+ stars plan options										
9 Plans (10th percentile)	–15.5	(–16.0, –15.1)	1.7	(1.5, 1.9)	7.9	(7.5, 8.3)	3.4	(3.2, 3.6)	2.6	(2.4, 2.8)
12 Plans (25th percentile)	–16.1	(–16.5, –15.7)	2.0	(1.8, 2.2)	8.9	(8.5, 9.2)	3.2	(3.1, 3.4)	2.0	(1.8, 2.2)
19 Plans (50th percentile)	–17.7	(–18.1, –17.4)	2.7	(2.5, 2.9)	11.2	(10.9, 11.5)	2.8	(2.7, 3.0)	0.9	(0.8, 1.1)
34 Plans (75th percentile)	–22.6	(–23.0, –22.2)	4.6	(4.4, 4.8)	16.2	(15.9, 16.6)	2.0	(1.9, 2.2)	–0.3	(–0.4, –0.1)
47 Plans (90th percentile)	–27.8	(–28.4, –27.2)	6.5	(6.2, 6.9)	20.5	(19.9, 21.1)	1.5	(1.3, 1.6)	–0.7	(–0.8, –0.5)
Prior year disenrollment rate										
5.8% (10th percentile)	–19.4	(–19.8, –19.0)	3.8	(3.6, 4.0)	12.3	(11.9, 12.6)	2.5	(2.4, 2.7)	0.8	(0.6, 1.0)
7.7% (25th percentile)	–19.7	(–20.1, –19.3)	3.8	(3.6, 4.0)	12.4	(12.1, 12.8)	2.6	(2.5, 2.7)	0.8	(0.7, 1.0)
11.5% (50th percentile)	–20.2	(–20.5, –19.8)	3.8	(3.6, 3.9)	12.7	(12.4, 13.0)	2.7	(2.6, 2.9)	0.9	(0.8, 1.1)
18.5% (75th percentile)	–20.6	(–21.0, –20.3)	3.6	(3.4, 3.7)	13.0	(12.7, 13.3)	2.9	(2.8, 3.1)	1.1	(1.0, 1.2)
25.7% (90th percentile)	–20.5	(–21.0, –20.1)	3.3	(3.1, 3.5)	12.9	(12.5, 13.4)	3.1	(2.9, 3.2)	1.3	(1.1, 1.5)

Note: FFS = fee-for-service; CI = confidence interval.

enrollment decisions. It is possible that changes in the relative value of various coverage options may have also contributed to beneficiary enrollment and

disenrollment patterns. It is important to note, however, that plan-specific missing information such as premiums and coverage restrictions would bias the

effect of the nudge only if they interacted with receipt of the nudge letter. If plans that triggered the nudge also had higher premiums, then we might attribute effects of prices to the nudge. But if the nudged plans had lower premiums, our findings would be biased toward zero, that is, they would underestimate the effect of the nudge. Similar arguments would apply to other plan attributes. We have no systematic evidence of interactions between plan characteristics and the nudge, but internal case studies and anecdotal evidence do not suggest such interactions. Future research should work to quantify these effects in more detail.

Finally, while this research showed a strong association between receipt of the nudge and subsequent switching behavior based on an empirical analysis, it cannot establish a causal pathway between the nudge and subsequent enrollment decisions, particularly because we do not know whether the recipients actually read the letters. Since this was an observational study of an existing quality reporting program, there was no “control” mailing that would allow us to differentiate the effect of the nudge letter from a general open enrollment notification. Additionally, it is possible that other unobserved factors related to persistently low-quality ratings, such as marketing efforts from competitors, could have also contributed to the enrollment patterns that we observed, independent of the nudge.

CONCLUSION

We found that targeted beneficiary nudges were strongly associated with beneficiary enrollment decisions. The approximately twofold increase in the rates of switching enrollments we observed in relation to the nudge highlight both the importance and efficacy of providing timely, actionable information to beneficiaries about quality in the Medicare Advantage marketplace to facilitate optimal, value-based coverage decisions. This finding also has implications for other agencies that try to directly convey messages and to promote informed choices.

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