



# ISSUE BRIEF



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## ONLY TOO HUMAN: UNDERSTANDING HEALTH INSURANCE MARKETS WHEN CONSUMERS LACK INFORMATION

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When the state and federal health insurance exchanges were introduced in 2013, much attention was paid to the logistics of their launch, particularly the malfunctioning of the online technology and the need to drive a sufficient number of consumers (especially younger and healthier consumers) to the marketplaces so as to make them viable.

Now, as the rollout of the exchanges approaches its one-year anniversary, policymakers should be looking at a different question: how can we collect and use data from the exchanges to understand how consumers think about insurance choice, so as to make the exchanges function better?

As research I conducted with my colleague Benjamin Handel shows, doing this requires a new way of looking at the data on health insurance consumption.<sup>1</sup> The traditional model of insurance choice treats

insurance as a purely financial product, sought by fully informed and risk-averse consumers seeking to protect themselves from financial loss in the event of illness or injury.<sup>2</sup> Individuals are willing to pay a higher premium for a plan if it reduces their expected out-of-pocket spending, and the extent of their willingness to pay increases in tandem with their level of risk aversion. The model assumes that consumers, in selecting an insurance product, are able to reasonably estimate their expected out-of-pocket

### BRIEF IN BRIEF

- Good policymaking with respect to regulating health insurance markets requires a clear understanding of how individual consumers make insurance choices.
- The traditional model of health insurance choice assumes that consumers regard insurance as a purely financial product.
- But in actuality, there are many non-financial factors that affect consumer choice— notably, people may have inaccurate or unclear beliefs about their health care costs and the insurance options available (“information frictions”); they also have preferences about the “hassle costs” of dealing with a particular plan’s reimbursement and billing processes.
- Research shows that information frictions and perceived hassle costs can cause some consumers to disregard insurance plan options that in fact would be better for them financially.
- Survey data can help policymakers better understand consumer decision-making, and identify needed improvements to consumer education programs and to the design of the health insurance exchanges.

expenditures, accurately understand the features of the different insurance options, and are willing to pay a higher premium for a plan if it looks to reduce the mean or variation of out-of-pocket spending.

In actuality, however, modern health insurance is not a purely financial product. Many factors besides financial risk protection go into a consumer's decision of which insurance plan to purchase.<sup>3</sup> People evaluate plans by the types of care they cover and the access they give to specific hospitals and physician networks. Moreover, certain plan features like Health Savings Accounts and Flexible Spending Accounts introduce administrative hassles related to reimbursements and billing that can be off-putting for some consumers. Choosing insurance thus is a more complex choice that goes beyond the straightforward calculation of financial risk; consumers may be willing to pay more for a plan with particular non-financial attributes.

Choosing health insurance also is complex because of “information frictions”—instances of incomplete or inaccurate information. Even if one takes into account the many facets of health insurance in the standard model, consumers may not have a clear understanding of the distinct attributes of different insurance plans or the “hassle costs” associated with each one. They also may not be able to accurately forecast the costs of becoming sick, especially given the variety of potential health conditions they might face, treatment options available, and the price variations that exist across different treatment locations.<sup>4</sup>

While the existence of information frictions seems logical, showing their effects empirically is challenging, as it requires access to a substantial amount of data on insurance plan choices, plan attributes, as well as consumer beliefs about those attributes. We were able to surmount this data hurdle by conducting a study, looking at health benefits choices made by a group of employees at a single large firm in 2011 and 2012, in which we were able to combine

detailed administrative data (i.e., data on actual health insurance choices and patient claims) with a comprehensive survey in which the employees' answers were linked to the administrative data at the individual level. The survey was designed to identify

Most of the employees tracked in this data faced a choice between two different health insurance options: a Preferred Provider Organization (PPO) with generous first dollar coverage, and a high-deductible-high-premium (HDHP) plan. In financial terms,

**TABLE 1: KEY CHARACTERISTICS OF THE TWO PRIMARY PLANS STUDIED**

| Health Plan Characteristics  | PPO          | HDHP        |
|------------------------------|--------------|-------------|
| Premium                      | 0            | 0           |
| Health Savings Account (HSA) | No           | Yes         |
| HSA Subsidy*                 | -            | \$1,500     |
| Max. HSA Contribution**      | -            | \$3,100     |
| Deductible*                  | 0***         | \$1,500     |
| Coinsurance (IN)             | 0%           | 10%         |
| Coinsurance (OUT)            | 20%          | 30%         |
| Out-of-Pocket Max.*          | 0***         | \$2,500     |
| Provider Network             | Same as HDHP | Same as PPO |

\* Employee+1 Tier is 2x Individual Amount, 3+ tier is 2.5x Individual Amount

\*\* For 2 or more, \$6,250 is max. contribution

\*\*\* For out-of-network spending, PPO has a deductible of \$100 per person (up to \$300) and an out-of-pocket max. of \$400 per person (up to \$1200)

consumer information frictions as well as typically unobservable hassle costs. The results of our analysis, described below, point to the need to change the way in which policymakers and exchange regulators think about which types of plans to allow, how those plans should be priced, and how information about them should be communicated to consumers.

## THE DATA

The firm we worked with had over 50,000 employees, the average income of whom was higher than that of the general population, and who seemed more likely to have the education, resources, and cognitive skills necessary to overcome information frictions.

the HDHP entailed a substantial deductible as well as higher co-insurance rates, and it linked to a health savings account (HSA). However, while the plans differed in their financial characteristics, because they both were administered by the same insurer and were self-insured plans, they were identical in all other key features, including having the same network of health care providers. Table 1 provides a side-by-side comparison of these different features.

As of 2010, the share of employees that had selected the HDHP option remained below 1 percent. Overwhelmingly, employees opted for the PPO. Then, starting in 2011, the employer modified the parameters of the HDHP plan and started an extensive education and marketing campaign

<sup>1</sup> This brief is based on Benjamin R. Handel and Jonathan T. Kolstad, “Health Insurance for Humans: Information Frictions, Plan Choice, and Consumer Welfare,” Working Paper 19373 (National Bureau of Economic Research, 2013), <http://www.nber.org/papers/w19373.pdf>.

<sup>2</sup> Michael Rothschild and Joseph Stiglitz, “Equilibrium in Competitive Insurance Markets: An Essay on the Eco-

nomics of Imperfect Information,” *Quarterly Journal of Economics* 90 (1976), 630-649.

<sup>3</sup> See also Katherine Ho, “Insurer-Provider Networks in the Medical Care Market,” *The American Economic Review* 99 (2009), 393-430; David M. Cutler, Mark McClellan, and Joseph P. Newhouse, “How Does Managed Care Do It?” *The RAND Journal of Economics* 31 (2000), 526-

548.

<sup>4</sup> For other research on information frictions in insurance choice, see Jeffrey R. Kling, Sandhil Mullanathan, Eldar Shafir, Lee Vermeulen, and Marian Wrobel, “Comparison Friction: Experimental Evidence from Medicare Drug Plans,” Working Paper 17410 (National Bureau of Economic Research, 2011), <http://www.nber.org/papers/w17410>;

Jason Abaluck and Jonathan Gruber, “Choice Inconsistencies Among the Elderly: Evidence from Plan Choice in the Medicare Part D Program,” *American Economic Review* 101 (2011), 1180-1210.

<sup>5</sup> Richard J. Zeckhauser demonstrates that this tradeoff between reduced medical spending and increased risk exposure is fundamental to optimal insurance plan

to encourage more employees to move to the HDHP, with the intention of phasing out the PPO and making the HDHP the only option by 2013. Consequently, HDHP enrollment increased to 8.25 percent in 2011 and to 13.25 percent in 2012—still, a relatively small share of all employees.

Because we also had access to actual health expenditure data, we were able to calculate the share of employees that, in retrospect, would have been better off in the HDHP. What we found was that, assuming all employees contributed the maximum amount to their HSA, 73 percent of them should have switched to the HDHP in 2011—not merely the 8.25 percent that actually did. Perhaps more striking, even if employees made no contribution to their HSA, still 35 percent of them would have been better off financially in the HDHP.

Why did such a small share of these employees embrace the HDHP, when so many of them would have benefitted from it? Were these employees simply risk-averse, and therefore more attracted to the financial characteristics of the PPO? This is what the traditional model of insurance choice would suggest. Their behavior could, however, result from a lack of accurate information about the different plan features between the PPO and HDHP, or a lack of understanding about their likely medical expenditures, or beliefs about provider networks or administrative hassles entailed by one plan versus the other. It is this possibility we want to explore further.

In order to measure the extent to which information frictions and beliefs about hassle costs and other non-financial attributes affected the choices made by these employees, we developed a survey instrument, which we sent in March 2012 to 4,500 employees across three different groups: (1) employees that had been in the HDHP in 2011 and remained in it as of 2012; (2) new 2012 HDHP enrollees; and (3) those in the PPO plan.

As outlined in Tables 2 and 3, the

survey questions covered four major areas of benefits selection:

- Knowledge of the financial features of the HDHP: Could respondents correctly answer questions requiring knowledge of the key financial features of the HDHP?
- Beliefs about plan attributes and medical expenses: Did respondents have an

- Personal assessment of the effort respondents devoted to choosing a plan, the clarity of their beliefs about the available plans, and their level of satisfaction with their choice.

Analysis of the survey data indeed reveals information frictions that basic administrative data cannot capture. Only

**TABLE 2: RESPONSE TO PLAN FINANCIAL CHARACTERISTICS SURVEY QUESTIONS**

| Question  | Correct | Incorrect | Not Sure |
|---|---------|-----------|----------|
| What is the deductible under the HDHP?                  | 27.08%  | 22.40%    | 50.53%   |
| <b>HDHP-Existing</b>                                    | 52.68   | 11.23     | 36.10    |
| <b>HDHP-New</b>   | 50.79   | 13.49     | 35.73    |
| <b>PPO</b>  | 21.53   | 24.66     | 53.82    |
| How much is the employer HDHP subsidy?                  | 31.42   | 19.94     | 48.64    |
| <b>HDHP-Existing</b>                                    | 73.40   | 11.05     | 15.54    |
| <b>HDHP-New</b>   | 68.65   | 11.21     | 20.14    |
| <b>PPO</b>  | 22.50   | 21.92     | 55.58    |
| What is the out-of-pocket max. under the HDHP?          | 18.47   | 21.98     | 59.55    |
| <b>HDHP-Existing</b>                                    | 28.32   | 22.11     | 49.57    |
| <b>HDHP-New</b>   | 31.87   | 18.91     | 49.21    |
| <b>PPO</b>  | 15.85   | 22.31     | 61.84    |
| What is the coinsurance rate under the HDHP?            | 18.56   | 25.64     | 55.80    |
| <b>HDHP-Existing</b>                                    | 33.85   | 21.24     | 44.91    |
| <b>HDHP-New</b>   | 29.07   | 21.37     | 49.56    |
| <b>PPO</b>  | 15.66   | 26.61     | 57.73    |
| Do you get to keep HSA funds after the end of the year? | 75.69   | 9.23      | 15.08    |
| <b>HDHP-Existing</b>                                    | 96.73   | 1.38      | 1.90     |
| <b>HDHP-New</b>   | 94.22   | 1.75      | 4.03     |
| <b>PPO</b>  | 71.23   | 10.96     | 17.81    |
| How much is \$1000 worth in pre-tax dollars?            | 14.50   | 44.86     | 40.64    |
| <b>HDHP-Existing</b>                                    | 16.93   | 31.78     | 51.30    |
| <b>HDHP-New</b>   | 15.76   | 42.73     | 41.51    |
| <b>PPO</b>  | 14.09   | 46.58     | 39.33    |

accurate understanding of the PPO and HDHP networks of providers? And could they accurately assess past and expected future medical expenditures?

- Time and hassle costs: What did respondents expect about the time required to manage their HSA and HDHP, and what was their tolerance for hassle in the HDHP?

37 percent of employees, for instance, could correctly estimate how much they had spent on health care in the previous year, despite the fact that the majority expressed confidence in their estimation. Moreover, only 35 percent of respondents understood that the provider networks for the PPO and HDHP were identical, while almost half answered that they were “not sure” as to how

**TABLE 3: RESPONSES TO PLAN NON-FINANCIAL CHARACTERISTICS, HASSLE COSTS AND MEDICAL EXPENDITURE SURVEY QUESTIONS**

| Question  |                           |         |                       |            |                            |           |          |  |
|---|---------------------------|---------|-----------------------|------------|----------------------------|-----------|----------|--|
| How do the provider networks of the two plans compare?                    | Same                      |         | HDHP bigger           |            | PPO bigger                 |           | Not sure |  |
|   | 34.52%                    |         | 6.04%                 |            | 12.46%                     |           | 46.98%   |  |
| <b>HDHP-Existing</b>  | 41.28                     |         | 6.74                  |            | 2.76                       |           | 49.22    |  |
| <b>HDHP-New</b>   | 49.39                     |         | 3.33                  |            | 4.20                       |           | 43.08    |  |
| <b>PPO</b>  | 32.09                     |         | 6.26                  |            | 14.48                      |           | 47.16    |  |
| How much do you expect to spend in the HDHP?                              | None                      | <1 hour | 1.5 hours             | 6-10 hours | 11-20 hours                | >20 hours | Not sure |  |
|   | 1.76%                     | 5.99%   | 21.73%                | 17.40%     | 12.88%                     | 24.92%    | 15.34%   |  |
| <b>HDHP-Existing</b>  | 5.18                      | 19.17   | 46.11                 | 17.62      | 5.53                       | 6.39      | -        |  |
| <b>HDHP-New</b>   | 3.50                      | 14.71   | 40.81                 | 22.24      | 11.21                      | 7.53      | -        |  |
| <b>PPO</b>  | 1.17                      | 3.52    | 16.83                 | 16.83      | 13.89                      | 28.96     | 18.79    |  |
| ...in the PPO?  |                           |         |                       |            |                            |           |          |  |
| <b>PPO</b>  | 15.85                     | 29.75   | 29.16                 | 11.35      | 2.94                       | 4.11      | 6.85     |  |
| How do you feel about spending time managing your health plan?            | Understand, not concerned |         | Accept, but concerned |            | Don't like, no matter what |           |          |  |
|   | 14.82%                    |         | 42.52%                |            | 42.65%                     |           |          |  |
| <b>HDHP-Existing</b>  | 39.03                     |         | 32.64                 |            | 28.32                      |           |          |  |
| <b>HDHP-New</b>   | 26.62                     |         | 39.05                 |            | 34.33                      |           |          |  |
| <b>PPO</b>  | 10.76                     |         | 44.04                 |            | 45.21                      |           |          |  |
| How much was spent on you and your dependents in 2011?                    | Correct                   |         | Overestimate          |            | Underestimate              |           | Not sure |  |
|   | 36.66%                    |         | 29.81%                |            | 23.31%                     |           | 10.22%   |  |
| <b>HDHP-Existing</b>  | 41.97                     |         | 35.75                 |            | 16.41                      |           | 5.87     |  |
| <b>HDHP-New</b>   | 37.13                     |         | 27.85                 |            | 23.47                      |           | 11.56    |  |
| <b>PPO</b>  | 36.01                     |         | 29.35                 |            | 24.07                      |           | 10.57    |  |
| How confident are you in this estimate?                                   | Very confident            |         | Somewhat confident    |            | Not confident              |           |          |  |
|   | 35.85%                    |         | 43.90%                |            | 20.25%                     |           |          |  |
| <b>HDHP-Existing</b>  | 38.34                     |         | 49.22                 |            | 12.44                      |           |          |  |
| <b>HDHP-New</b>   | 30.11                     |         | 46.13                 |            | 23.77                      |           |          |  |
| <b>PPO</b>  | 36.20                     |         | 43.05                 |            | 20.74                      |           |          |  |
| Do you think you will benefit/would have benefited from the HDHP in 2012? | Yes                       |         | No                    |            | Not sure                   |           |          |  |
|   | 16.49%                    |         | 58.35%                |            | 25.16%                     |           |          |  |
| <b>HDHP-Existing</b>  | 56.65                     |         | 23.83                 |            | 19.52                      |           |          |  |
| <b>HDHP-New</b>   | 30.47                     |         | 42.91                 |            | 26.62                      |           |          |  |
| <b>PPO</b>  | 10.37                     |         | 63.99                 |            | 25.64                      |           |          |  |

the networks of the two plans compared. The level of incorrect and uncertain beliefs about a plan attribute like provider network that is relatively straightforward, as well as described clearly in information provided by the employer, only underscores the extent to which information frictions exist. And the existence of these information frictions was consequential. Respondents who believed (incorrectly) that the PPO had the larger provider network only chose the HDHP 6 percent of the time, even though they would have been better off doing so 40 percent of the time.

The results also are revealing with regard to hassle costs. Compared to those

who had direct experience with the HDHP, a much larger share of PPO respondents believed that they would need to spend at least 20 hours of their time to deal with it. Almost 90% of the PPO enrollees expressed at least some concern about the amount of time required to manage the HDHP, even though they did not have direct experience with that plan.

In sum, the results confirm that information frictions exist within many of the key choice dimensions that consumers consider when purchasing health insurance. They also suggest that information frictions and perceived hassle costs play a critical role in shaping consumer choice.

## QUANTIFYING THE IMPACT

Taking the analysis one step further, we developed a series of econometric models to put the impact of information frictions and hassle costs into quantifiable, monetary terms. We created a “baseline model,” which captures the traditional view of health insurance choice as a purely financial decision; a “baseline model with inertia,” to account for the propensity of people to allow their insurance choice to simply roll over from year to year; and then a “full model” that adds in five additional factors: information about plan design features; provider network knowledge; consumers’ information on their

own health expenditures; knowledge of HSA tax benefits; and preferences regarding time and hassle costs.

The results of the full model were telling in explaining why so many employees in our sample chose the PPO plan, despite the fact that a clear majority of them would have been better off with the HDHP. Just looking at information about plan design features, we found that a single incorrect answer about the HDHP causes a consumer to value the HDHP by \$220 less than a consumer with full, accurate information. Moreover, those who believed (again, incorrectly) that the PPO has a larger network of medical providers valued the HDHP by \$1,726 less than a consumer that understood the provider networks are actually identical. Those who underestimated their own annual medical expenditures valued the HDHP by \$279 less than someone who had correct knowledge of those expenditures. But it was preferences regarding time and hassle costs that were the most impactful. Those who indicated a “strong distaste” for hassle costs valued the HDHP by \$87 less for each additional stated hour of insurance-related billing, logistics, and administrative tasks. Taken together, information frictions and hassle costs in some cases caused consumers to value the HDHP by more than \$1,000 less than identical individuals that did not face these frictions—and, consequently, led many of them to select the PPO option, even though they would have been better off with the HDHP.

## **POLICY IMPLICATIONS**

Our research carries important implications for health care policy, particularly since more employers and policymakers have been looking specifically to HDHPs to help incentivize consumers to reduce “wasteful” medical expenditures. However, switching to these plans does place an increased financial risk burden on consumers, so it is important to understand whether the switch is “worth it”—i.e., whether the social benefits from reduced wasteful expenditures are greater

than the welfare loss faced by consumers from the increased financial risk exposure of the HDHP.<sup>5</sup>

To explore this issue, we went back to our data to assess the welfare impact of forcing all the employees in our sample that opted for the PPO to switch to the HDHP. In this, we restricted ourselves to examining the specific aspects of insurance choice that are the most welfare-relevant: risk preferences; out-of-pocket health care expenditure risk; and idiosyncratic plan preferences. And again, we assessed consumer welfare using our three different models: the baseline model, the baseline model with inertia, and the full model that includes information frictions and hassle costs.

By our calculations, the baseline model,

**“Only 37 percent of employees could correctly estimate how much they had spent on health care in the previous year, despite the fact that the majority expressed confidence in their estimation.”**

where consumers are assumed to be very risk averse, predicts an average consumer welfare loss of \$1,475 from forcing consumers to shift from the PPO to the HDHP. However, we found that when we account for information and hassle costs, risk aversion among consumers goes down. In other words, when consumers are better informed about plan features and expected hassle costs, they are more willing to choose the HDHP. Consequently they are not as risk averse as one would predict without accounting for information frictions and they are less impacted by the heightened risk that an HDHP entails. So the welfare loss experienced by consumers goes down as well—in our calculations, by two-thirds, when compared to the baseline model.

But is the reduction in welfare loss sufficient to warrant, in this case, forcing consumers into an HDHP? One needs to tradeoff the welfare loss from increased risk exposure in the HDHP policy with the savings from reduced use of medical care due to having a higher deductible. Our results suggest that, after accounting for information frictions, the welfare loss is about equal to the gains from reduced use of care. Therefore, the policy could be justified using standard estimates for consumer response to prices after accounting for information frictions but using the standard model we would reach the opposite conclusion.

What does all of this modeling mean for policymakers? Good policymaking with respect to regulating health insurance markets requires a clear understanding of how individual consumers make insurance choices, as well as the potential impact on consumer welfare of limiting or modifying the choice environment. As the research indicates, policymakers need to factor into their thinking not simply the financial incentives that drive consumer behavior in purchasing health insurance, but also the ways in which uncertainty about plan features and beliefs about the hassle of enrolling in high deductible plans shape behavior as well.

Moreover, the research shows the power of linking survey data with administrative data to obtain a more accurate and nuanced picture of how consumers value health insurance and make insurance plan decisions. Now that the health insurance exchanges have been up and running for a year, policy analysts should consider implementing surveys that capture the actual level of knowledge among consumers, to better understand consumer risk preferences and to use that understanding to improve both consumer education programs as well as the design of the exchanges themselves. As our research suggests, there is still much that can be done to make sure the exchanges account for the full complexity of health insurance decision-making.

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Professor Kolstad's research interests lie at the intersection of health economics, industrial organization and applied microeconomics. The unifying theme of his work is an effort to understand how information, market structure, and regulation alter firm organization, individual incentives and, ultimately, welfare. In April 2014, the International Health Economics Association named him the recipient of its annual Arrow Award, honoring the best paper in Health Economics, for his work on "Information and Quality When Motivation is Intrinsic: Evidence from Surgeon Report Cards." Professor Kolstad's work has appeared in major academic journals, including the *American Economic Review*, *Journal of Health Economics*, and *Journal of Public Economics*.

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