Doctor Switching Costs*

Gordon B. Dahl[†]

Silke J. Forbes[††]

February 2023

Abstract

We exploit a quasi-random health insurance experiment which for some employees increased the price to keep their doctors between $600 to $1,900 per year, while holding all other insurance plan characteristics constant. Our setting allows us to identify doctor switching costs separately from inattention, option value and other characteristics. Forty-six percent of individuals are willing to pay the higher premiums to keep their doctors, and these doctor switching costs account for the largest share of inertia in plan choice. Our findings imply that older and sicker individuals would be more negatively impacted by reforms which restrict access to doctors.

JEL codes: I11, I13

Keywords: Choice Frictions, Health Insurance, Switching Costs

---

* We thank Kate Antonovics, Julie Cullen, Richard Gilbert, Roger Gordon, Mara Lederman, Evan Saltzman and Joachim Winter for useful comments and suggestions and seminar participants at several universities and conferences for constructive feedback. We also thank the UC Faculty Welfare Committee and HealthNet California for helping us to gain access to the data. Financial support from a UC Faculty Senate grant is gratefully acknowledged. Part of this research was conducted while Silke Forbes was visiting the MIT Sloan School and she thanks the School for its hospitality.

Declarations of interest: none.

[†]Department of Economics, University of California San Diego; Norwegian School of Economics; NBER; CESifo; CEPR; IZA; email: gdahl@ucsd.edu

[†]Department of Economics, Tufts University; email: silke.forbes@tufts.edu

1. Introduction

The cost of health insurance in the US is high and has been rising faster than inflation (Kaiser Family Foundation 2020). Policy proposals to address high costs are commonly based on insurance plan competition and consumer choice.[1] However, if consumers face switching costs when changing health plans, this could limit competition and contribute to higher prices (Farrell and Klemperer 2007, Klemperer 1987). Switching costs can stem from familiarity with a previous choice's product attributes, but they can be difficult to separate from other choice frictions such as bounded rationality and information frictions. The former have been estimated in a range of different industries,[2] while the latter have been found to play an important role in health insurance.[3]

In this paper, we estimate switching costs related to a key attribute of health insurance – a plan's coverage of one's existing doctor – while holding constant choice frictions from inattention, limited understanding, procrastination, and the time costs of researching different insurance options. For brevity, we refer to the combination of these choice frictions as "inattention" in this paper. Separating out doctor switching costs from inattention is critical in evaluating the welfare consequences of different policies. As we will show empirically, both factors play large roles but are often negatively correlated in their magnitudes (e.g., high-usage individuals have more doctor attachment but less inattention). This pattern, where consumers with the highest attachment to a product also are the most attentive, is likely to exist in other settings.

Attachment to one's existing doctors is important not only because health provider coverage is a key source of differentiation for health plans (Ho 2009, Ho and Lee 2017, 2019) but also because proposed policy reforms often require individuals to switch doctors. For a product as complex as health insurance, estimating doctor switching costs is challenging for two reasons. First, doctor switching costs are just one driver of inertia in plan choices, and it is hard to separate out this component. Second, different health insurance plans have many attributes which affect their desirability besides a patient's relationship with their existing doctor (e.g., size

---

[1] Other reforms have focused on expanding health insurance coverage (e.g., Leininger et al. 2010, Gross and Notowidigdo 2011, Finkelstein et al. 2012, Miller 2012, Barcellos and Jacobson 2015, Mazumder and Miller 2016).
[2] For example, pensions (Luco 2019), auto insurance (Honka 2014), electricity (Hortacsu et al. 2017), and banking (Allen et al. 2019, Stango and Zinman 2014).
[3] See Abaluck and Gruber (2011, 2016), Bhargava et al. (2017), Ericson (2014), Gruber et al. (2020), Handel (2013), Handel and Kolstad (2015), Ho et al. (2017), Ketcham et al. (2012), Polyakova (2016), and Saltzman et al. (2021).

of the network, covered medical services, co-pay amounts and prescription drug coverage). This makes it difficult to separate doctor switching costs from preferences for other plan characteristics.

We overcome these estimation challenges by exploiting a uniquely targeted change in the health insurance offerings of a large employer. Our setting has two key advantages: (i) there is only a single financial characteristic quasi-randomly changing – the premium – associated with a single non-pecuniary attribute changing – the doctor network – and (ii) a set of individuals are defaulted into a dominated plan. We are able to isolate the role of doctor switching costs from other plan characteristics (including network size) and inattention, something which has not been possible in other studies.

The setting for our natural experiment is the 10-campus University of California (UC) system which took its most popular existing health insurance plan, Health Net (HN), and created a second version just for UC employees, Health Net Blue and Gold (HNBG). The only differences between the two plans were the premiums and the doctor networks; financial characteristics (such as co-pays and deductibles), covered treatments and even plan administration stayed the same. The default option was the HN plan, which included all doctors, but had a higher premium. Many employees had existing doctors who were included in the HNBG plan while other employees had doctors who were only covered in the HN plan.

Employees whose existing doctors were included in the HNBG plan could avoid the premium increase if they actively opted out of the HN plan and in to the new HNBG plan. If the option value of a larger network is negligible, inattention is identified from employees in this group who did not opt in to lower premiums. For several reasons which we discuss below, the option value of a larger doctor network does not play an important role in our institutional setting, and we verify this empirically. Employees whose existing doctors were not included in the HNBG plan could also avoid the premium increase by opting into the HNBG plan, but doing so required that they switch to HNBG doctors. Identification of doctor switching costs comes from comparing the choices of this second group to the first, to account for inattention.

The creation of the new HNBG plan, which covered two-thirds of doctors in the existing HN plan and included all UC-affiliated physicians, was possible due to the UC administration's unique bargaining position and did not reflect a lower-quality doctor network. Importantly, both the HN and HNBG plans included a large fraction of all doctors practicing in California. As we describe later, this setting differs from many others in the literature, in that the HNBG plan did not differentially exclude high quality providers or drastically limit the set of available doctors or hospitals.

Our analysis yields four key results. First, consistent with the existing literature, we find evidence of sizable inattention (i.e., the combined choice frictions mentioned above), even though we have a relatively simple environment. The only plan attribute changing was physician networks, and the time cost associated with switching was minimal. Employees whose existing doctors were included in the new HNBG plan did not need to change doctors to take advantage of lower premiums. Twenty-one percent of these employees remained in HN the first year after the change, even though they could have saved between $638 and $1,851 annually (depending on family type) by switching to HNBG. Using geographic variation in the size of the local HN and HNBG networks as measures of option value, we find little evidence that option value matters, consistent with the institutional details of our setting.

Second, we find evidence that doctor switching costs are large: 46% of employees in the first year are willing to pay the considerably higher premiums required to keep their doctors. One would have erroneously concluded that this fraction was even larger without netting out inattention. Doctor switching costs account for 64% of inertia in the first year, with the remainder due to inattention.

Third, doctor switching costs and inattention decline only modestly over time. In the second year after the change, the proportion of employees willing to pay higher premiums to keep their doctor drops by 9 percentage points (pp) and inattention drops by 6 pp.

Fourth, when we estimate how switching costs are affected by individual characteristics, we find that inattention and doctor attachment vary inversely with expected healthcare use. Specifically, older individuals and "sicker" individuals (those with more prior doctor visits) have *less* inattention but *higher* attachment to their doctor.

Taken together, our findings have important implications for proposed policy reforms. For example, information campaigns about different insurance options are most likely to be successful with younger and healthier employees, who have more inattention *and* are less attached to their doctors. As another example, proposals which provide incentives for individuals to shift away from higher-cost doctors will have limited effectiveness for many individuals, but for different reasons: with the young and healthy because of inattention broadly defined and with the older and sicker because of doctor attachment. Our results also speak to the importance of policy defaults (e.g., Madrian and Shea 2001), which matter in the presence of inattention.

Our work relates to a series of papers which study switching between health insurance plans (Buchmueller and Feldstein 1997, Gruber and McKnight 2016, Heiss et al. 2021, Strombom et al. 2002). None of these studies estimate doctor attachment separately from inattention and other plan attributes, which is the primary contribution of our paper. More broadly, there are related literatures which examine adverse selection (e.g., Aron-Dine et al. 2015, Cutler and Reber 1998, Einav et al. 2013), hospital provider choice (Ericson and Starc 2015, Irace 2018, Raval and Rosenbaum 2018), and how physicians affect healthcare utilization (e.g., Agha et al. 2019, Finkelstein et al. 2016, Fadlon and van Parys 2020, Kwok 2019, Sabety 2021, and Simonsen et al. 2019).

2. A Natural Experiment

2.1 A New Health Plan Just for UC Employees

In 2010, employees of the University of California (UC) system could choose from a variety of health insurance plans, with 44% of employees choosing Health Net, a regional HMO. Employees and their dependents had to choose primary care physicians (PCPs, or "doctors" for short) when enrolling in an HMO. The available set of doctors in the Health Net plan included all UC affiliated doctors, as well as doctors in several other provider networks. Starting in 2011, UC expanded its health insurance offerings to include two versions of Health Net, one with the previously existing network of doctors ("Health Net" or HN) and one with a subset of doctors ("Health Net Blue and Gold" or HNBG). The HNBG network included many high-quality providers (including all UC affiliated physician groups and hospitals).

Overall, about two thirds of all doctors in HN were included in HNBG, so both networks included many PCPs to choose from. The average employee in our sample has 247 PCPs covered by the HN plan within 10 miles of their home zip code and 153 PCPs in the HNBG plan. Looking more broadly across all of California, there were over 17,000 PCPs in HN and over 11,000 in HNBG. These represented a substantial fraction of doctors practicing in California in 2011: 68% of all California PCPs were included in HN and 44% were included in HNBG based on CDC data. In contrast, in Gruber and McKnight (2016) the average broad network plan covers 25% of all doctors in Massachusetts and the average narrow network 14%.

The HNBG option was set up with the intention of holding the line on premium rate increases, while the HN plan had the employee portion of subscriber premiums rise between 46% and 273% depending on family type and income (see Appendix Table A1). For example, the annual premium rose by $1,996 (or 86%) for employees with incomes between $47,000 to $93,000 who were insuring themselves plus their spouse and children. The new HNBG option, in contrast, was introduced with only a small premium increase ($145 per year, or 6.2%). The annual premium difference between the two plans is therefore $1,851. In 2012, the large gap between HN and HNBG premiums remained.

The creation of the new HNBG plan, which was only available to UC employees and not the much broader set of Health Net subscribers in California (which exceeded 2.5 million), was possible because of UC's unique bargaining position with UC-affiliated physicians. Importantly, all other aspects of insurance coverage, including plan characteristics and plan administration, remained the same as before for both the HN and HNBG insurance plans. For example, inpatient and emergency services, physician copays, prescription drug costs, deductibles, and behavioral health coverage all remained the same. The default option for all employees who were previously enrolled in HN remained HN, even if their existing doctors were in the HNBG network.

The University of California conducted an extensive information campaign to make individuals aware of the new HNBG plan. These communications explained: "The Health Net Blue & Gold HMO works exactly like the regular Health Net HMO plan… The only differences between the two Health Net plans are the cost of the monthly premiums and the network of providers… If your providers are in the Health Net Blue & Gold network and you enroll, you'll save the extra premium you'd pay for the full Health Net HMO network." (See Appendix A).

The behavior of employees whose existing doctors *were* included in the HNBG network can be used to estimate the amount of inattention. For these employees, actively choosing to change insurance from HN to HNBG results in a substantially lower premium, without the need to change doctors. But given the default option, an employee not paying attention or confused about the new plan would automatically stay enrolled in the now more expensive HN plan. Since all other insurance plan characteristics besides doctor networks remained the same, the fraction of these employees who do not switch represents the fraction of inattentive employees.[4]

In theory, it is possible that some employees would not want to switch to HNBG because they value the option of being able to see a doctor who is only in the broader HN plan. This is likely to play a limited role in our setting for five reasons: (i) both HN and HNBG doctors are part of very large networks, (ii) the vast majority of hospitals were included in both plans (233 out of 253), (iii) before the change, almost all referrals to specialists occur *within* what will become the new networks[5], (iv) employees can freely switch plans every year during open enrollment, regardless of their medical history, and (v) individuals who want more provider options would likely not choose the HN or HNBG plans (both HMOs) to begin with, but rather one of the more flexible national PPOs. Later in the paper, we verify empirically that option value is close to zero using geographic variation in the availability of doctors in the two networks.

Employees whose existing doctors *were not* covered under the HNBG option after the change in 2011 faced a trade-off: keep their current doctor and pay a higher premium to stay in HN, or switch to a doctor in the HNBG network and save money. If the level of inattention is not correlated with having a doctor who will be in the HNBG network and option value is negligible, one can identify the fraction of individuals who are willing to pay higher premiums to keep their current doctor, as we describe in Section 4.

2.2 Validity of the Natural Experiment

The assumption that HN and HNBG plans are viewed as equal-quality substitutes is central to our identification strategy. This is likely to be true since the creation of the HNBG plan was driven by the unique bargaining power UC had over its own doctors and hospitals, and not by a desire to differentiate plans based on doctor quality. UC was successful in pressuring

---

[4] Our setting has no heterogeneous attention triggers, unlike Heiss et al. (2021). Abaluck and Adams-Prassl (2021) and Barseghyan et al. (2021) study inattention in limited consideration set models. Our setting differs in that there is no variation in premiums or deductibles after conditioning on family type.

[5] In 2010, only 2.3% of individuals whose PCPs will be in the HNBG plan in 2011 are referred to specialists outside of what will become the HNBG network.

affiliated doctors and hospitals to limit price increases *for its own employees* in the HNBG plan. It did not have the same leverage to do this with the other provider networks in the HN network.[6]

A second reason to believe that doctors in the two plans are close substitutes is that Health Net's other customers continued to pay the same premiums for both sets of doctors. Over 2.5 million employees in other companies used HN's insurance in California. These other customers did not have access to the HNBG plan which was created just for UC employees. Relatedly, prior to 2011, both sets of doctors were in the same insurance plan and UC employees could pick any of these doctors without a cost difference. We find that individuals choose doctors in the pre-period in proportion to the fraction of each doctor type available in their home zip code, consistent with employees choosing doctors from the two groups based on ease of access rather than perceived quality differences.

Empirical support for doctor substitutability comes from medical group ratings collected by HN and published on its website. Each medical group is given a rating from one (lowest quality) to five stars (highest quality) in three broad categories: member satisfaction, clinical care, and preventive health. In Table 1, we regress whether a doctor is in the HNBG network on these three quality ratings. We find that HNBG doctors do not have systematically different ratings than doctors who are only in the larger HN network. Each of the individual coefficients is statistically insignificant and joint tests are likewise insignificant.

As another piece of evidence that the HNBG network was high quality, consider the U.S. News and World Report rankings of top hospitals for 2013-2014. Out of 440 hospitals in California, the five UC campuses with established medical centers rank in the top 20. While an excellent medical center is no guarantee that affiliated UC doctors are also excellent, and while not all HNBG doctors have a UC affiliation, these rankings are certainly suggestive.

We note that if HNBG doctors are better than HN-only doctors on average, then our estimates of doctor attachment are biased downward, as long as individuals are more likely to choose better doctors. We also point out that UC employees constitute a small fraction of the overall subscriber base. This means there are unlikely to be sizeable general equilibrium effects which would make it more difficult to find an HNBG doctor after the change. In fact, 94% of HNBG doctors were accepting new patients in the years after the change.

---

[6] Several non-UC providers also agreed to be in HNBG. It is difficult to know what negotiations led them to be included in the network, but as we show empirically, their inclusion is not related to observed quality.

Our natural experiment is inherently a cross sectional design, based on which doctors were being used in 2010. For our design to be valid, the employee's choice of doctor in 2010 should be uncorrelated with their latent propensity to change plans or inattention. In Appendix Table A2, we test whether demographics predict having a doctor in 2010 who will be in the HNBG network in 2011. None of the coefficients are individually significant and the joint F-test has a p-value of .26.

In terms of external validity, our estimation sample uses University of California employees throughout California. Seventy-nine percent of these employees are not faculty, but rather support staff such as administrators, custodians, technicians, and food service workers. To get a sense of how UC employees compare to the broader population, we look at 2010 Census data for California.[7] UC average earnings are $58,689 compared to $54,591 in the Census, 44% of employees are male versus 53% in the Census, and 32% are age 50 or older compared to 28% in the Census. In other words, our sample has slightly higher earnings, is more female, and is somewhat older.

3. Data

Our primary data sources are anonymized merged administrative records from UC and HN California for 2010-2012. This includes the health insurance plan chosen by each employee, demographics for the employee and insured family members, employee salary (in $5,000 bins), the number of doctor visits (but not the reason), and each family member's primary care physician (PCP). From these, we construct a dummy for whether the family had any doctor(s) in 2010 who would only be included in HN, but not in HNBG, in 2011.

Our baseline sample consists of full-time staff and faculty between the ages of 18-63 enrolled in Health Net in 2010. The unit of observation is an employee, as all covered family members must be in the same plan. We focus on the decisions of existing employees and require that individuals be in our sample for each year from 2010-2012.[8] We exclude employees who are healthcare professionals because they are likely to be systematically different in their health plan

[7] We require at least 20 hours a week and 27 weeks a year, roughly corresponding to benefits eligibility. To match our UC sample, we consider ages 18-63.

[8] Having a doctor in the HNBG network does not predict leaving university employment. Moreover, employees do not exit our sample by opting out of insurance, because all employees receive at least the default "core" plan, a zero cost PPO plan with a high deductible and coinsurance. Relatedly, doctors could exit the HN network; excluding families whose doctors were in the HN network in 2010 but drop out in 2011 or 2012 barely affects the results.

choices, and we drop individuals with incomes below $25,000 or above $200,000. Finally, we drop individuals who live in the zip code for UC Davis and immediately adjacent zip codes due to its lack of HNBG doctors and the associated difficulties the UC system had implementing the HNBG plan there. Our final estimation sample includes 17,017 employees.

4. Modeling Inattention and Switching Costs

Using the sample of employees who were with HN in 2010, prior to the introduction of HNBG, we estimate multinomial logit (MNL) models of health insurance choice in 2011 and 2012. In the estimation, we allow for employees to choose a PPO or another HMO, in addition to the choices to stay with HN or to switch to HNBG.

When evaluating insurance options, we assume that individuals care about being able to keep their doctor, the plan premiums, and other plan characteristics (potentially including the size of the doctor network). We model the indirect utility for individual *i* choosing plan *j* as

$$\mu_i V_{i,HN} + (1 - \mu_i)[-\beta_i Z_{ij} - \alpha p_j + W_{ij}\gamma] + \epsilon_{ij} \tag{1}$$

where μ_i is equal to 1 if i is inattentive, $V_{i,HN}$ is the indirect utility of the default, HN, Z_{ij} is a dummy variable which equals 1 if i's current doctors are not covered by plan j, p_j is the plan premium, and W_{ij} captures other plan characteristics. Doctor attachment is captured by β_i. $Z_{i,HN} = 0$ for all employees because HN includes all doctors. HN and HNBG are identical on all plan characteristics, W_{ij}, except possibly the option value of a larger network. ϵ_{ij} is an error term which is distributed Type I extreme value, giving rise to an MNL model.

Inattentive individuals will stay with HN, the default plan, while attentive individuals will consider all insurance plans and choose their preferred option. The logit choice probability for HN is the probability of being inattentive (and staying with the default) plus the probability of being attentive times the probability that the individual receives higher indirect utility from HN than from the other plan options. The options other than HN have analogous choice probabilities for attentive individuals, but – because they are not the default – they will not be the choice for inattentive employees.

To understand identification, assume there is no option value. In our setting, the premium difference ($p_{HN} - p_{HNBG}$) varies across the four family types but is constant within family type.

Therefore, we cannot identify a price coefficient once we control for family type. A simple multinomial logit model would include constants for each family type and a set of dummies for having HN-only doctors, one for each family type. The constants estimate the probability of inattention, μ, for each family type. The coefficients on the Z variables are the probability of being attentive multiplied by the value of keeping one's doctor, $(1-\mu)\beta$. β can be interpreted as the fraction of individuals within each family type who are willing to pay at least the premium difference to keep their existing doctor(s). In our empirical estimation, we will include additional individual characteristics beyond family type to allow for heterogeneity in inattention and doctor attachment.

As discussed in Section 2.1, the option value of the larger network is likely to be negligible in our setting. Empirically, we estimate γ using measures of local network size and find option value to be small and statistically insignificant and, more importantly, the implied β coefficients are barely affected.[9]

5. Results

5.1 Unconditional Estimates

We start by presenting simple cross tabulations. Table 2 shows the 2011 and 2012 health plan choices of employees based on whether they had at least one family member whose existing PCP was not in the HNBG network. Average inattention is captured by employees who stayed with the HN plan even though their existing doctors were covered by HNBG (20.7% in 2011). Doctor attachment is then calculated as the differential rate of staying with HN for those with HN-only versus HNBG doctors divided by the percentage of attentive employees. In 2011, the unconditional estimate of doctor attachment is 45.6%, which means that 45.6% of individuals are willing to pay at least the premium difference to keep their doctors. Similar calculations appear in the table for 2012.

Employees who choose neither HN nor HNBG mostly switch to other HMO plans which will force them to find a new doctor, with the rate being higher for those whose existing doctor is not in HNBG, as expected. A few employees switch to a PPO plan, which allows them to keep their prior doctor, albeit at a higher cost. Therefore, a broader estimate of switching costs would

[9] With option value, β is calculated by dividing the coefficient on Z_{HNBG} by $1-[\mu+(1-\mu)(W_{HN}-W_{HNBG})\gamma]$. If γ is zero, this reduces to $1-\mu$.

add on the difference in the number of individuals who switch to a PPO across the two groups, which is (2.7 - 1.2)/(1 - 0.207) = 1.9%.

5.2 Baseline MNL Estimates

Our MNL model allows for four choices: (i) switch to HNBG (base category), (ii) stay with HN, (iii) switch to a PPO, and (iv) switch to another HMO. The key outcome of interest is the probability of staying with HN compared to switching to HNBG. For options (iii) and (iv), which are not the focus of the paper, we cannot separate out inattention and doctor switching costs from preferences for other plan characteristics.

In Table 3 we report estimates using two specifications: without and with controls for local doctor network size as measures of any potential option value. We report the results for each specification in three columns, one for each of the choices (HN, PPO, Other HMO), showing marginal effects relative to the base category of HNBG. In the first specification, we include controls for log income, age, gender, and total number of doctor visits by all family members between 2008-2010.[10] The marginal effects for these variables capture heterogeneity in inattention. This model further includes a dummy for whether the family has HN-only doctors, as well as interactions of this dummy with the demographic characteristics. The coefficients on these interaction terms can be used to calculate heterogeneity in doctor attachment. We include fixed effects for the employee's family type as well as their 3-digit zip code to control for unobserved regional differences in the choice environment. Estimates without 3-digit zip code fixed effects are presented in Appendix Table A3 as a robustness check and yield similar results.

The HN column in the top panel of Table 3 shows how inattention varies with demographic characteristics. Older employees (age>=50) are 1.8 pp less inattentive than younger ones, and male employees are 10.1 pp more inattentive than females. Individuals who had zero doctor visits in 2010 are roughly 4 to 6 pp more inattentive compared to those who have seen a doctor. Finally, income has a positive but statistically insignificant effect on inattention.[11] The effects of demographics on the other choices are sensible given that PPOs (other HMOs) are more (less) expensive but less (more) restrictive.

---

[10] Our results are robust to other definitions for doctor visits, including the average number of visits per family member and the number of visits for the family member with the highest number.

[11] Relatedly, having a UC-affiliated doctor could reduce the costs of researching the new plan (see Appendix A). Consistent with this, this group is 6 pp less inattentive.

Turning to the second panel, we report the marginal effects of having HN-only doctors on plan choice. The non-interacted coefficient of 0.226 is the marginal effect of choosing HN for an individual with mean income, who is under 50, female, and had zero doctor visits. The interaction terms reveal a wide heterogeneity based on an employee's characteristics. We estimate that a doubling of employee income reduces the rate of switching to the cheaper HNBG plan for those who would no longer be able to see their doctors by 5.2 pp. We further find affected employees who are age 50 or older are 7.3 pp less likely to switch, while affected males are 8.3 pp more likely to switch. The number of doctor visits likewise has a strong influence on switching. Relative to those who did not visit a doctor, the rate of not switching increases monotonically, rising by 3.2 pp for 1-5 visits, 10.5 pp for 6-15 visits, and 19.2 pp for more than 15 visits.

These marginal effects are the product of one minus the inattention parameters (1-μ), and the doctor attachment parameters (β) in Section 4. In the top panel of Figure 1, we translate these effects into estimated doctor attachment using the average predicted choice probabilities by demographic group. These calculations use a similar logic as Table 2, but condition on observed characteristics. The figure also plots the heterogeneity in inattention, using the average predicted choice probabilities by demographic group.

To highlight the importance of separating out the two sources of inertia, consider two examples. A young male earning $150,000 who has not visited his doctor and who has an HN-only doctor is predicted to stay in the HN plan 60% of the time. Doctor attachment accounts for 24 pp of this effect, while inattention accounts for a larger 36 pp. Contrast this with an older female with 6-15 doctor visits and $50,000 income who has an HN-only doctor. She is predicted to stay in the HN plan 59% of the time, which is a very similar overall probability. But in sharp contrast to the man, this persistence is largely due to doctor attachment (42 pp) rather than inattention (16 pp). Without considering the underlying sources of inertia, one would have wrongly concluded that these two individuals were quite similar, even though they are not.

Our main MNL estimates split families into two groups: those who have one or more HN-only doctors, versus those who have only HNBG doctors. Another margin on which doctor attachment could vary is the number of family members that would have to switch doctors to save on premiums. In Table 4, we explore this possibility using an expanded MNL model and find that predicted doctor attachment increases monotonically on this dimension. For example, consider employees with exactly 2 insured family members in 2011. If one family member needs to change their doctor, 32.1% of these families are willing to pay the increased premium. But if both would need to change their doctor, this rises to 56.4%. Similar patterns are found for families with 3 members and 4 members and for the year 2012. Another possible split is the number of HN-only doctors that would need to be changed in a family (as family members may share the same doctor). In unreported results, we find that doctor attachment does not vary much along this dimension. This suggests that it is the attachment each individual has to their doctors, rather than the search costs of finding new doctors, that matters most.

5.3 MNL Estimates Including Controls for Option Value

We argued in Section 2.1 that, a priori, option value should play a limited role in our setting for several reasons. To explore this, we use geographic variation in the number of nearby available doctors in the HN and HNBG plans. The relative variation in the local availability of HN versus HNBG doctors is illustrated spatially in Appendix Figure A1. At the 75th percentile, 80% of local HN doctors are also included in the HNBG plan, while at the 25th percentile, 52% are included.

We use the number of nearby available doctors in the two networks as proxies for option value and estimate their impact on plan choice. In the last three columns of Table 3, we include the log number of HN-only doctors and the log number of HNBG doctors within a 10-mile radius of an employee's 5-digit home zip code. We also interact the "has HN-only doctors" variable with these two variables to capture any differences between the groups.

The estimates in the top two panels of Table 3 remain virtually unchanged when including these controls. Moreover, all estimated effects for the number of nearby plan-specific doctors are small and statistically insignificant. Employees are no more likely to stay with HN in areas with more HN-only doctors, nor are they more likely to switch to HNBG in areas with more HNBG doctors. These findings are consistent with option value having little, if any, effect. To illustrate the diminutive role of option value in our setting, we calculate that only 1.4% of employees would change their decision if they moved from an area where the number of HN-only doctors was at the 25th percentile versus the 75th percentile.

We reach a similar conclusion when using other proxies for option value. In Appendix Table A3 we present estimates using a 25-mile radius, and the findings are similar. While not shown, we also estimated specifications which control separately for the number of PCPs and the number of specialists and found similar results.

5.4 Inattention and Doctor Attachment in Year 2

A natural follow-up question is what happens to inattention and doctor attachment in 2012, after individuals have been paying the new premiums for a year and can choose insurance plans again during open enrollment. Appendix Table A4 presents MNL estimates for choices mirroring those in Table 3, but for 2012 instead of 2011. The bottom panel of Figure 1 summarizes how inattention and doctor attachment change between 2011 and 2012 by demographics. Inattention drops by 5-6 pp, with limited heterogeneity in this drop by background characteristics. Despite these drops, there remains substantial inattention by the second year after the change. Doctor attachment also falls, by 9 pp on average, consistent with the idea that it can take some time to transition to a new doctor. Female and older employees and families with many doctor visits experience the largest drops in doctor attachment.

5. Conclusion

This paper provides the first causal evidence on switching costs associated with doctor attachment, separate from other sources of inertia. The magnitude of the effect is large: 46% of employees are willing to pay between $600 and $1,900 per annually (depending on family size) to keep their existing doctors. There is also evidence of sizeable inattention, with 21% of employees suboptimally staying with the more expensive default plan even though they could have kept their doctors and saved money by switching. These doctor switching costs and inattention decline only modestly over time. We find that inattention and doctor attachment vary in opposite directions with expected healthcare use.

Our findings underscore the importance of preserving individuals' access to their existing doctors. A challenge is to do so while also minimizing the number who end up paying higher premiums due to inattention. One possibility is to default individuals into in the lowest-cost plan which allows them to keep their existing doctors, which is not what happened in our setting.

More broadly, our paper emphasizes the importance of separating out doctor attachment from other sources of inertia, particularly when evaluating the incidence of different policy reforms. While older employees and those with higher utilization are more attentive, they are less willing to change their doctor in exchange for a lower premium. This group would suffer a greater welfare loss if they were forced into a network that did not include their existing doctor. In contrast, males and lower income individuals are both more inattentive and less attached to their current doctors. This group would receive a larger welfare gain if they were forced or defaulted into a network that gave them a lower premium.

References

Abaluck, Jason and Abi Adams-Prassl (2021), "What do Consumers Consider Before They Choose? Identification from Asymmetric Demand Responses", *Quarterly Journal of Economics* 136(3), 1611–1663.

Abaluck, Jason and Jonathan Gruber (2011), "Choice Inconsistencies among the Elderly: Evidence from Plan Choice in the Medicare Part D Program", *American Economic Review* 101(4), 1180-1210.

Abaluck, Jason and Jonathan Gruber (2016), "Evolving Choice Inconsistencies in Choice of Prescription Drug Insurance", *American Economic Review* 106(8), 2145-2184.

Agha, Leila, Brigham Frandsen, and James B. Rebitzer (2019), "Fragmented Division of Labor and Healthcare Costs: Evidence from Moves across Regions," *Journal of Public Economics* 169, 144–159.

Allen, Jason, Robert Clark and Jean-Francois Houde (2019), "Search Frictions and Market Power in Negotiated Price Markets", *Journal of Political Economy* 127(4), 1550-1598.

Aron-Dine, Aviva, Liran Einav, Amy Finkelstein and Mark Cullen (2015), "Moral Hazard in Health Insurance: Do Dynamic Incentives Matter?", *Review of Economics and Statistics* 97(4), 725-741.

Barcellos, Silvia Helena, and Mireille Jacobson (2015). "The Effects of Medicare on Medical Expenditure Risk and Financial Strain." *American Economic Journal: Economic Policy* 7 (4): 41–70.Barseghyan, Levon, Francesca Molinari and Matthew Thirkettle (2021), "Discrete Choice under Risk with Limited Consideration", *American Economic Review* 111(6), 1972-2006.

Bhargawa, Saurabh, George Loewenstein and Justin Sydnor (2017), "Choose to Lose: Health Plan Choices from a Menu with Dominated Options", *Quarterly Journal of Economics* 132(3), 1319-1372.

Buchmueller, Thomas C. and Paul J. Feldstein (1997), "The Effect of Price on Switching Among Health Plans", *Journal of Health Economics* 16, 231-247.

Centers for Disease Control, Chronic Kidney Disease Surveillance System—United States, http://www.cdc.gov/ckd.

Cutler and Reber (1998), "Paying for Health Insurance: The Trade-off Between Competition and Adverse Selection", *Quarterly Journal of Economics* 113(2), 433-466.

Einav, Liran, Amy Finkelstein, Stephen P. Ryan, Paul Schrimpf and Mark R. Cullen (2013), "Selection on Moral Hazard in Health Insurance", *American Economic Review* 103(1), 178-219.

Ericson, Keith M. (2014), "Consumer Inertia and Firm Pricing in the Medicare Part D Prescription Drug Insurance Exchange", *American Economic Journal: Economic Policy* 6(1), 38-64.

Ericson, Keith and Amanda Starc (2015), "Measuring Consumer Valuation of Limited Provider Networks", *American Economic Review: Papers & Proceedings* 105(5), 115-119.

Fadlon, Itzik, and Jessica van Parys (2020) "Primary Care Physician Practice Styles and Patient Care: Evidence from Physician Exits in Medicare," *Journal of Health Economics* 71.

Farrell, Joseph and Paul Klemperer (2007), "Coordination and Lock-in: Competition with Switching Costs and Network Effects", in: Armstrong, Mark and Robert Porter (eds.), *Handbook of Industrial Organization, Vol. 3*. Elsevier.

Finkelstein, Amy, Sarah Taubman, Bill Wright, Mira Bernstein, Jonathan Gruber, Joseph P. Newhouse, Heidi Allen, et al. (2012). “The Oregon Health Insurance Experiment: Evidence from the First Year.” *Quarterly Journal of Economics* 127 (3): 1057–1106.

Finkelstein, Amy, Matthew Gentzkow, and Heidi Williams (2016), “Sources of Geographic Variation in Health Care: Evidence from Patient Migration,” *Quarterly Journal of Economics* 131(4), 1681–1726.

Gruber, Jonathan and Robin McKnight (2016), “Controlling Health Care Costs Through Limited Network Insurance Plans: Evidence from Massachusetts State Employees”, *American Economic Journal: Economic Policy* 8(2), 219-250.

Gruber, Jonathan, Benjamin R. Handel, Samuel H. Kina, and Jonathan T. Kolstad (2020), “Managing Intelligence: Skilled Experts and AI in Markets for Complex Products”, *NBER Working Paper* 27038.

Gross, Tal, and Matthew J. Notowidigdo (2011). “Health Insurance and the Consumer Bankruptcy Decision: Evidence from Expansions of Medicaid.” *Journal of Public Economics* 95 (7–8): 767–78.

Handel, Benjamin R. (2013), “Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts”, *American Economic Review* 103(7), 2643-82.

Handel, Benjamin R. and Jonathan T. Kolstad (2015), “Health Insurance for “Humans”: Information Frictions, Plan Choice, and Consumer Welfare”, *American Economic Review* 105(8), 2449-2500.

Heiss, Florian, Daniel McFadden, Joachim Winter, Amelie Wuppermann and Bo Zhou (2021), “Inattention and Switching Costs as Sources of Inertia in Medicare Part D”, *American Economic Review* 111(9), 2737-81.

Ho, Kate, (2009), “Insurer-Provider Networks in the Medical Care Market”, *American Economic Review* 99(1), 393-430.

Ho, Kate and Robin Lee (2017), “Insurer Competition in Health Care Markets”, *Econometrica* 85(2), 379-417.

Ho, Kate and Robin Lee (2019), “Equilibrium Provider Networks: Bargaining and Exclusion in Health Care Markets”, *American Economic Review* 109(2), 473-522.

Ho, Kate, Joe Hogan and Fiona Scott Morton (2017), “The Impact of Consumer Inattention on Consumer Pricing in the Medicare Part D Program”, *RAND Journal of Economics* 48(4), 877-905.

Honka, Elisabeth (2014), “Quantifying Search and Switching Costs in the US Auto Insurance Industry”, *RAND Journal of Economics* 45(4), 847-884.

Hortacsu, Ali, Seyed Ali Madanizadeh, and Steven L. Puller (2017), “Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market”, *American Economic Journal: Economic Policy* 9(4), 192-226.

Irace, Mariano (2018), “Patient Loyalty in Hospital Choice: Evidence from New York”, *University of Chicago, Becker Friedman Institute for Economics Working Paper* 2018-52.

Kaiser Family Foundation (2020), *Peterson-Kaiser Health System Tracker*, www.healthsystemtracker.org, accessed on 12/17/2020.

Ketcham, Jonathan D., Claudio Lucarelli, Eugenio J. Miravete and M. Christopher Roebuck (2012), “Sinking, Swimming or Learning to Swim in Medicare Part D”, *American Economic Review* 102(6), 2639-73.

Klemperer, Paul (1987), “Markets with Consumer Switching Costs”, *Quarterly Journal of Economics* 102, 375-394.

Kwok, Jennifer H. (2019), "How Do Primary Care Physicians Influence Healthcare? Evidence on Practice Styles and Switching Costs from Medicare," *mimeo*, University of Illinois at Chicago.

Leininger, Lindsey, Helen Levy, and Diane Schanzenbach (2010). "Consequences of SCHIP Expansions for Household Well-Being." *Forum for Health Economics and Policy* 13 (1).

Luco, Fernando (2019), "Switching Costs and Competition in Retirement Investment", *American Economic Journal: Microeconomics* 11(2), 26-54.

Madrian, Brigitte C. and Dennis F. Shea (2001), "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior", *Quarterly Journal of Economics* 116(4), 1149-1525.

Mazumder, Bhashkar, and Sarah Miller (2016). "The Effects of the Massachusetts Health Reform on Household Financial Distress." *American Economic Journal: Economic Policy*, 8 (3): 284-313.

Miller, Sarah. 2012. "The Impact of the Massachusetts Health Care Reform on Health Care Use among Children." *American Economic Review* 102 (3): 502–07.

Polyakova, Maria (2016), "Regulation of Insurance with Adverse Selection and Switching Costs: Evidence from Medicare Part D", *American Economic Journal: Applied Economics* 8(3), 165-195.

Raval, Devesh and Ted Rosenbaum (2018), "Why Do Previous Choices Matter for Hospital Demand? Decomposing Switching Costs from Unobserved Preferences", *Review of Economics and Statistics* 100(5), 906-915.

Sabety, Adrienne (2021), "The Value of Relationships in Health Care," *mimeo*, University of Notre Dame.

Saltzman, Evan, Ashley Swanson, and Daniel Polsky (2021), "Inertia, Market Power, and Adverse Selection in Health Insurance: Evidence from the ACA Exchanges" *NBER Working Paper* 29097.

Simonsen, Marianne, Lars Skipper, Niels Skipper, and Peter Rønø Thingholm (2019), "Discontinuity in Care: Practice Closures among Primary Care Providers and Patient Health," *mimeo*, Aarhus University.

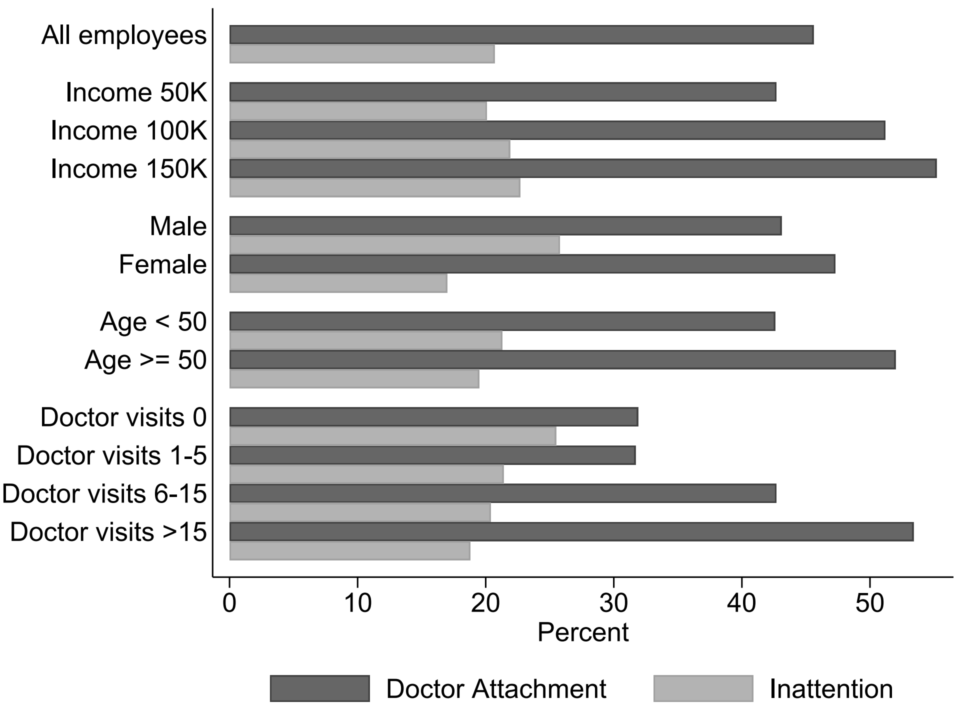
Sorensen, Alan (2006), "Social Learning and Health Plan Choice," *RAND Journal of Economics*, 37(4), 929-945.

Stango, Victor and Jonathan Zinman (2014), ""Limited and Varying Consumer Attention: Evidence from Shocks to the Salience of Overdraft Fees", *Review of Financial Studies* 27(4), 990-1030.

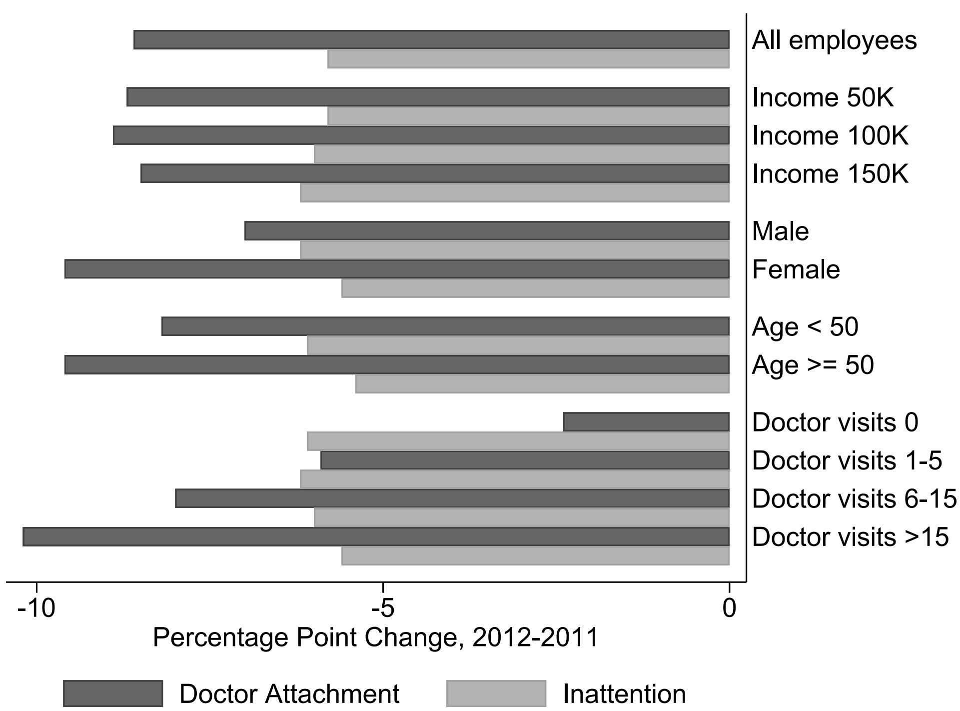
Strombom, Bruce A., Thomas C. Buchmueller and Paul J. Feldstein (2002), "Switching Costs, Price Sensitivity and Health Plan Choice", *Journal of Health Economics* 21, 89-116.

Figure 1: Heterogeneity in Inattention and Doctor Attachment

Panel A: Inattention and Doctor Attachment in the First Year



Panel B: Reductions in Inattention and Doctor Attachment in the Second Year



Notes: Predictions based on the estimates appearing in the first specification of Table 3.

Table 1: Do Quality Ratings Predict Whether a Doctor Will Be in HNBG?

	(1)	(2)	(3)
Clinical Care Rating	0.088	0.046	0.122
	(0.131)	(0.087)	(0.420)
Member Satisfaction Rating	-0.073	-0.059	-0.153
	(0.071)	(0.047)	(0.206)
Preventive Health Rating	-0.121	-0.046	-0.410
	(0.125)	(0.087)	(0.387)
F-test for joint significance (p-value)	0.47	0.51	0.40
3-digit Zip FE	No	Yes	No
N	56,553	54,739	42,271

Notes: Probit regressions of an indicator for whether a doctor is in the HNBG network on quality ratings (marginal effects). Data are from 2011. The unit of observation is a doctor, and quality ratings are measured at the medical group level. Standard errors in parentheses and F-tests are clustered by medical group. The number of observations drops in specification (2) because in a few 3-digit zip codes there is no variation in the dependent variable. Column (3) excludes doctors who are in the UC system.

** significant at 1%, *, significant at 5%, $^{+}$ significant at 10%.

Table 2: Health Plan Choices in 2011 and 2012, Unconditional Estimates

	All HNBG doctors (N=10,982)	Has HN-only doctors (N=6,035)
Choice in 2011		
Stay with HN	20.7%	56.9%
Switch:		
to BG	74.3	30.9
to other HMO	3.7	9.5
to PPO	1.2	2.7
Inattention: 20.7		
Doctor Attachment: (56.9-20.7)/(100-20.7) = 45.6		
Choice by 2012		
Stay with HN	14.9	46.4
Switch:		
to BG	78.6	38.9
to other HMO	5.0	11.3
to PPO	1.6	3.4
Inattention: 14.9		
Doctor Attachment: (46.4-14.9)/((100-14.9) = 37.0		

Notes: Inattention is given by the percentage of employees with all HNBG doctors who stay with HN. Doctor attachment is calculated as the percentage of attentive employees who stay with HN divided by the percentage of attentive employees.

Table 3: Health Plan Choices in 2011, Multinomial Logit Estimates (Marginal Effects)

	Baseline			Including Option Value		
Plan Choice:	HN	PPO	Other HMO	HN	PPO	Other HMO
Log income	0.042	0.018**	-0.056**	0.040	0.018**	-0.056**
	(0.026)	(0.002)	(0.015)	(0.026)	(0.002)	(0.014)
Age ≥50	-0.018+	-0.008**	-0.003	-0.017+	-0.008**	-0.003
	(0.009)	(0.002)	(0.005)	(0.009)	(0.002)	(0.005)
Male	0.101**	-0.005*	-0.010	0.102**	-0.004*	-0.009
	(0.009)	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)
1-5 doctor visits	-0.042**	0.005	-0.008	-0.041**	0.005	-0.008
	(0.013)	(0.005)	(0.012)	(0.013)	(0.005)	(0.012)
6-15 doctor visits	-0.050**	0.007*	-0.018*	-0.049**	0.007*	-0.018*
	(0.014)	(0.004)	(0.008)	(0.015)	(0.003)	(0.008)
>15 doctor visits	-0.062**	0.007	-0.036**	-0.061**	0.007	-0.036**
	(0.019)	(0.005)	(0.011)	(0.019)	(0.005)	(0.011)
Has HN-only Doctors†	0.226**	0.014	0.023	0.237**	0.014	0.026+
	(0.026)	(0.009)	(0.015)	(0.028)	(0.010)	(0.014)
“Has HN-only Doctors” Interacted with:						
Log income	0.052*	0.000	0.029**	0.053+	0.000	0.030*
	(0.027)	(0.005)	(0.009)	(0.028)	(0.004)	(0.012)
Age ≥50	0.073**	0.007	-0.006	0.069**	0.006	-0.006
	(0.019)	(0.006)	(0.007)	(0.020)	(0.004)	(0.006)
Male	-0.083**	0.003	0.004	-0.083**	0.003	0.004
	(0.009)	(0.002)	(0.011)	(0.009)	(0.002)	(0.011)
1-5 doctor visits	0.032	-0.004	0.037+	0.030	-0.004	0.036*
	(0.022)	(0.010)	(0.019)	(0.022)	(0.010)	(0.018)
6-15 doctor visits	0.105**	-0.006	0.015	0.103**	-0.007	0.016
	(0.024)	(0.009)	(0.011)	(0.024)	(0.009)	(0.013)
>15 doctor visits	0.192**	-0.010	0.028+	0.189**	-0.010	0.029*
	(0.024)	(0.010)	(0.014)	(0.024)	(0.009)	(0.014)
Option Value						
Log (# HN-only doctors in 10-mile radius)				0.006	0.001	0.010+
				(0.014)	(0.003)	(0.005)
Has HN-only doctors * Log (# HN-only doctors in 10-mile radius)				-0.002	0.002	-0.008
				(0.016)	(0.003)	(0.006)
Log (# HNBG doctors in 10-mile radius)				0.004	-0.001	-0.012+
				(0.017)	(0.004)	(0.008)
Has HN-only doctors * Log (# HNBG doctors in 10-mile radius)				-0.024	-0.003	0.007
				(0.016)	(0.003)	(0.007)

Notes: N=17,017. Base category is HNBG. Sample restricted to employees who had HN in 2010. Doctor visits cover the period 2008-2010. Additional controls include 3-digit zip code fixed effects and family type fixed effects. Heterogeneity in inattention is captured by the uninteracted coefficients in the HN columns. Variation in doctor attachment is captured by the interacted coefficients in the HN columns. Standard errors in parentheses are clustered at 3-digit zip code level.

† Marginal effect for the reference group of women under age 50 with mean income and zero doctor visits.

** significant at 1%, *, significant at 5%, + significant at 10%.

Table 4: Doctor Attachment as a Function of the Number of Affected Family Members

	Number of family members with HN-only doctors	Family size 2	3	4
2011				
Doctor Attachment	1	32.1	21.5	15.5
	2	56.4	35.7	34.6
	3	-	54.9	45.4
	4	-	-	60.7
2012				
Doctor Attachment	1	24.2	18.0	12.3
	2	48.1	26.6	24.9
	3	-	45.5	33.2
	4	-	-	46.4

Notes: Estimated doctor attachment for employees whose families have HN-only doctors. The entries show the percentage of families who would be willing to pay the higher premiums of the HN plan to keep all of their existing doctors as a function of the number of family members with HN-only doctors. For example, we predict that 32.1 percent of two-person families are willing to pay higher premiums to keep their doctors if one of the two family members would have to switch doctors, compared to 56.4 percent of two person families in which both family members would have to switch doctors.

Appendix

“Doctor Switching Costs”

Gordon B. Dahl and Silke Forbes

Appendix A. Description of the New HNBG Plan.

Every year, UC employees can change their insurance plans during a month-long open enrollment period. Employees in HN who wanted to switch to HNBG had to make an active choice during open enrollment by filling out a simple form, either online or on paper. The default for employees who make no change during open enrollment is to stay in their existing health plan. Each employee received information about the HNBG introduction in the form of several emails and an annually distributed flyer about UC insurance options. These outreach efforts made clear that the only thing changing was which doctors would be in the network and that other plan characteristics, such as copays, covered services, and plan administration would remain identical.

During open enrollment, the following explanation was provided both electronically and in a mailing by the University of California.

HEALTH NET BLUE & GOLD HMO

The Health Net Blue & Gold HMO works exactly like the regular Health Net HMO plan: You choose a primary care physician (PCP) who coordinates all of your care. When you need to see a specialist, your PCP refers you to the appropriate provider in the Health Net network. You pay a copayment for most services, other than some preventive care, which has no copayment.

The only differences between the two Health Net plans are the cost of the monthly premiums and the network of providers. The Blue & Gold network was created specifically for UC and includes cost-efficient providers who meet the criteria established by Health Net and approved by the California Department of Managed Health Care. The Blue & Gold network includes about 65 percent of Health Net HMO's physician network and hospitals, including all UC medical centers and medical groups.

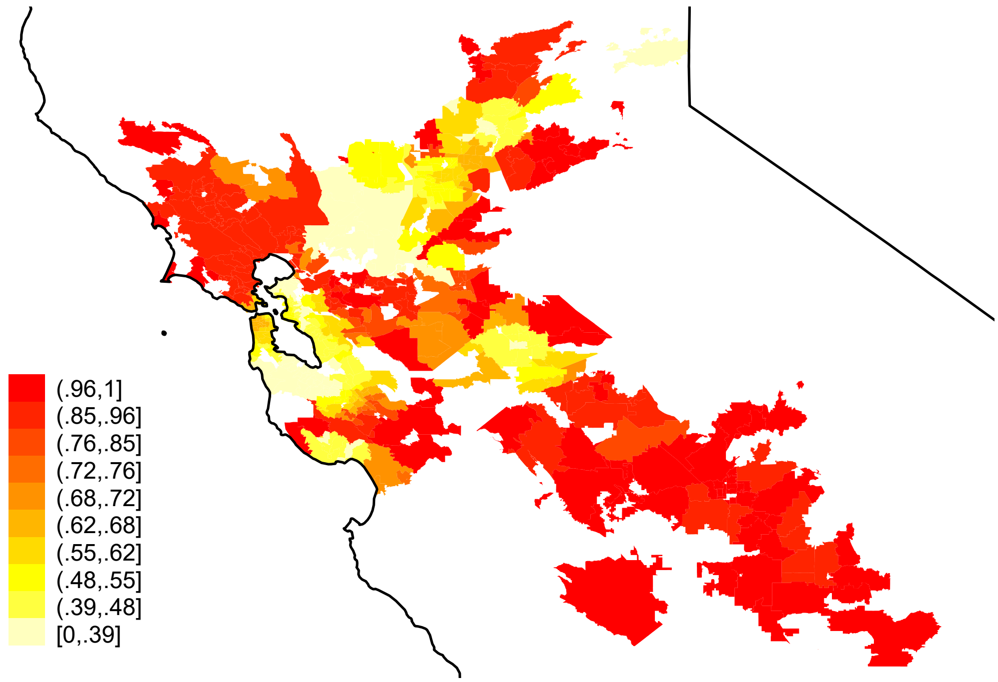
More than 60 percent of current UC Health Net members use doctors in the Health Net Blue & Gold HMO network. If your providers are in the Health Net Blue & Gold network and you enroll, you'll save the extra premium you'd pay for the full Health Net HMO network.

You must select the Health Net Blue & Gold HMO during Open Enrollment to participate. If you are a current Health Net HMO member and take no action during Open Enrollment, you will remain in the Health Net HMO plan, even if your current doctor and medical group are in the Health Net Blue & Gold HMO plan. To see if your medical providers are in the Health Net Blue & Gold network, visit the Health Net website at www.healthnet.com/uc.

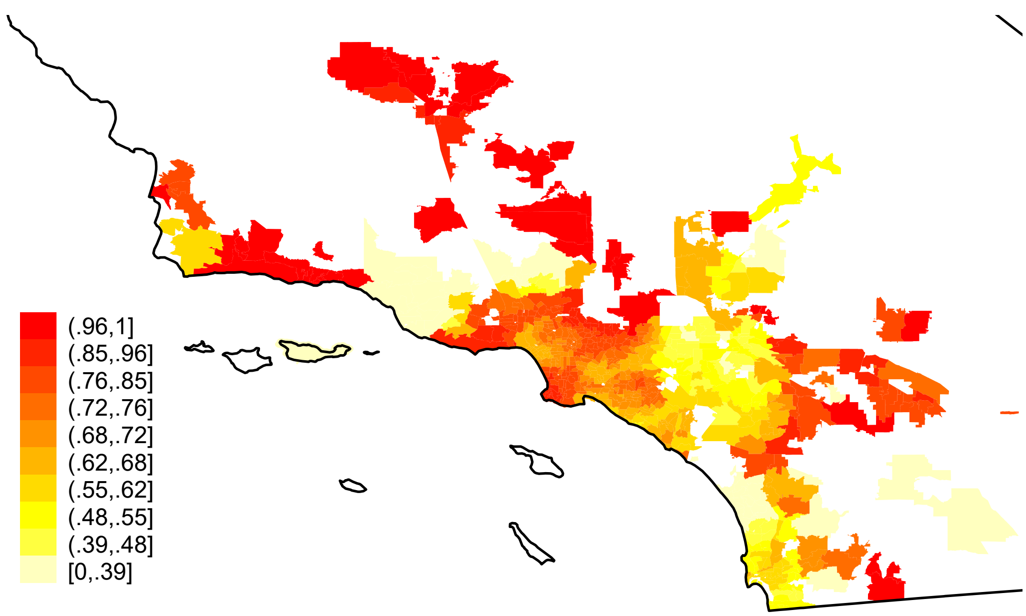
If you prefer the full Health Net HMO network, you still have that choice: same great coverage and low out-of-pocket costs.

Figure A1: Geographic Variation in the Availability of HNBG Doctors

Panel A: Northern California



Panel B: Southern California



Notes: The heat map plots the fraction of HN doctors who are also included in the HNBG network. Fractions are calculated by five-digit zip code using doctors within a ten-mile radius of the zip code centroid. Each of the ten categories have an equal number of zip codes in them.

Table A1: Premium Increases for Staying with HN versus Switching to HNBG

	% premium increase relative to the previous year					Annual premium difference HN vs. HNBG
	for employees who stay with HN				for employees who switch to HNBG	
	Income Tier 1	Income Tier 2	Income Tier 3	Income Tier 4	Same for all income tiers	Same for all income tiers
2011						
Self only	272.6%	110.1%	70.1%	51.9%	6.2%	$638
Self plus children	272.5	110.1	70.1	51.9	6.2	1,149
Self plus adult	141.9	79.0	57.6	45.6	6.2	1,340
Self plus adult and children	163.2	85.5	60.5	47.2	6.2	1,851
2012						
Self only	6.5	7.2	7.6	7.8	8.8	653
Self plus children	6.5	7.2	7.6	7.8	8.8	1,190
Self plus adult	7.0	7.5	7.7	7.9	8.8	1,388
Self plus adult and children	6.9	7.4	7.7	7.9	8.8	1,918

Notes: The last column shows the premium difference between HN and HNBG in the same year. Conditional on family type, the difference in HN vs. HNBG premiums is the same regardless of income, though premium amounts vary with income. See Appendix Table A.4 for premium amounts by family type and income tier. In 2011, the tiers were set as annual income less than $47k, $47-93k, $93-140k, and over $140k. In 2012, the tiers were less than $48k, $48-96k, $96-144k, and over $144k.

Table A2: Do Demographics Predict Having a Doctor in 2010 Who Will be in HNBG in 2011?

	Individual's doctor in 2010 is in the HNBG network in 2011	Sample mean
Log income	0.013	10.98
	(0.021)	
Age ≥50	0.003	0.32
	(0.010)	
Male	-0.005	0.44
	(0.008)	
1-5 doctor visits	0.002	0.13
	(0.014)	
6-15 doctor visits	-0.033	0.27
	(0.027)	
>15 doctor visits	-0.050	0.50
	(0.031)	
F-test (p-value)	0.26	

Notes**:** N=43,454. Individual-level regression for employee and family members using 2010 data, before the introduction of HNBG. Doctor visit data is merged in from a separate dataset and uses the total between 2008-2010. The variables are defined at the employee level. The regression also controls for 3-digit zip fixed effects. Standard errors in parentheses and F-test are clustered at 3-digit zip code level.

** significant at 1%, *, significant at 5%, + significant at 10%.

Table A3: Robustness Checks for 2011, Multinomial Logit Estimates (Marginal Effects)

	No Zip-Code Fixed Effects			Alternative Option Value		
Plan Choice:	HN	PPO	Other HMO	HN	PPO	Other HMO
Log income	0.062**	0.019**	-0.049**	0.039	0.018**	-0.052**
	(0.012)	(0.003)	(0.007)	(0.025)	(0.003)	(0.013)
Age≥50	-0.017+	-0.008**	0.000	-0.017+	-0.008**	-0.003
	(0.010)	(0.003)	(0.006)	(0.009)	(0.002)	(0.004)
Male	0.090**	-0.004	-0.013*	0.102**	-0.005*	-0.009
	(0.009)	(0.003)	(0.005)	(0.009)	(0.002)	(0.007)
1-5 doctor visits	-0.034*	0.005	-0.014	-0.042**	0.005	-0.007
	(0.016)	(0.004)	(0.012)	(0.013)	(0.005)	(0.012)
6-15 doctor visits	-0.043**	0.005	-0.025*	-0.049**	0.007*	-0.017*
	(0.016)	(0.004)	(0.012)	(0.015)	(0.004)	(0.008)
>15 doctor visits	-0.058**	0.004	-0.044**	-0.062**	0.007	-0.034**
	(0.017)	(0.004)	(0.012)	(0.019)	(0.005)	(0.010)
Has HN-only Doctors†	0.281**	0.012	0.038**	0.234**	0.015	0.030**
	(0.028)	(0.009)	(0.014)	(0.030)	(0.009)	(0.011)
"Has HN-only Doctors" Interacted with:						
Log income	0.067**	-0.000	0.035**	0.055**	0.000	0.028**
	(0.018)	(0.005)	(0.010)	(0.019)	(0.005)	(0.009)
Age≥50	0.081**	0.007	-0.011	0.072**	0.006+	-0.005
	(0.017)	(0.006)	(0.007)	(0.019)	(0.004)	(0.006)
Male	-0.078**	0.003	0.002	-0.084**	0.003	0.003
	(0.012)	(0.004)	(0.007)	(0.009)	(0.002)	(0.011)
1-5 doctor visits	0.024	-0.002	0.043*	0.035	-0.004	0.033+
	(0.029)	(0.009)	(0.018)	(0.022)	(0.011)	(0.018)
6-15 doctor visits	0.100**	-0.002	0.021	0.105**	-0.007	0.015
	(0.030)	(0.009)	(0.014)	(0.024)	(0.009)	(0.010)
>15 doctor visits	0.197**	-0.006	0.035*	0.192**	-0.010	0.028*
	(0.033)	(0.008)	(0.017)	(0.024)	(0.010)	(0.013)
Option Value (25-mile radius)						
Log (# HN only doctors)				-0.006	-0.002	0.030*
				(0.019)	(0.003)	(0.015)
Log (# HNBG doctors)				0.015	0.001	-0.032+
				(0.022)	(0.004)	(0.018)
Has HN-only doctors * log (# HN-only doctors)				0.009	0.001	-0.019+
				(0.028)	(0.004)	(0.010)
Has HN-only doctors * log (# HNBG doctors)				-0.037	-0.004	0.018+
				(0.026)	(0.004)	(0.010)

Notes: N=17,017. Base category is HNBG. Sample restricted to employees who had HN in 2010. Doctor visits cover the period 2008-2010. Additional controls include family type fixed effects. Standard errors in parentheses. The second specification in columns 4-6 also includes 3-digit zip code fixed effects and has standard errors clustered at the 3-digit zip code level. Heterogeneity in inattention is captured by the uninteracted coefficients in the HN columns. Variation in doctor attachment is captured by the interacted coefficients in the HN columns.

† Marginal effect for the reference group of women under age 50 with mean income and zero doctor visits.

** significant at 1%, *, significant at 5%, + significant at 10%.

Table A4: Health Plan Choices in 2012, Multinomial Logit Estimates (Marginal Effects)

	Inattention and Doctor Attachment			Including Option Value		
Plan Choice:	HN	PPO	Other HMO	HN	PPO	Other HMO
Log income	0.038	0.027**	-0.068**	0.036	0.026**	-0.068**
	(0.024)	(0.003)	(0.015)	(0.024)	(0.003)	(0.015)
Age ≥50	-0.010	-0.011**	-0.011*	-0.010	-0.011**	-0.010*
	(0.009)	(0.003)	(0.005)	(0.009)	(0.003)	(0.005)
Male	0.107**	-0.008*	-0.009	0.109**	-0.007**	-0.008
	(0.007)	(0.003)	(0.006)	(0.007)	(0.003)	(0.006)
1-5 doctor visits	-0.046**	0.005	-0.020	-0.046**	0.005	-0.021+
	(0.017)	(0.007)	(0.013)	(0.018)	(0.007)	(0.012)
6-15 doctor visits	-0.054**	0.005	-0.032**	-0.054**	0.005	-0.033**
	(0.019)	(0.005)	(0.010)	(0.020)	(0.005)	(0.010)
>15 doctor visits	-0.067**	0.006	-0.047**	-0.065**	0.006	-0.047**
	(0.024)	(0.007)	(0.012)	(0.025)	(0.007)	(0.012)
Has HN-only Doctors†	0.223**	0.015	0.026*	0.238**	0.015	0.029**
	(0.020)	(0.011)	(0.013)	(0.024)	(0.011)	(0.011)
"Has HN-only doctors" Interacted with:						
Log income	0.043	-0.005	0.032**	0.046	-0.005	0.033**
	(0.027)	(0.005)	(0.012)	(0.030)	(0.005)	(0.011)
Age ≥50	0.053**	0.016*	-0.004	0.050**	0.015*	-0.004
	(0.017)	(0.007)	(0.008)	(0.017)	(0.007)	(0.008)
Male	-0.074**	0.006	-0.001	-0.075**	0.005	-0.001
	(0.012)	(0.004)	(0.010)	(0.012)	(0.004)	(0.009)
1-5 doctor visits	0.008	0.000	0.043*	0.007	0.000	0.042*
	(0.017)	(0.010)	(0.018)	(0.017)	(0.011)	(0.018)
6-15 doctor visits	0.064**	-0.005	0.019	0.062**	-0.006	0.019
	(0.022)	(0.009)	(0.015)	(0.022)	(0.010)	(0.014)
>15 doctor visits	0.130**	-0.009	0.019	0.127**	-0.009	0.021
	(0.030)	(0.009)	(0.014)	(0.030)	(0.010)	(0.014)
Option Value (10-mile radius)						
Log (# HN-only doctors)				0.012	0.001	0.015*
				(0.015)	(0.003)	(0.006)
Has HN-only doctors * log (# HN-only doctors)				-0.003	-0.001	-0.019**
				(0.017)	(0.003)	(0.007)
Log (# HNBG doctors)				-0.013	0.002	-0.010
				(0.019)	(0.004)	(0.010)
Has HN-only doctors * log (# HNBG doctors)				-0.014	-0.004	0.010
				(0.018)	(0.003)	(0.008)

Notes: N=17,017. Base category is HNBG. Sample restricted to employees who had HN in 2010. Doctor visits cover the period 2008-2010. Additional controls include 3-digit zip code fixed effects and family type fixed effects. Heterogeneity in inattention is captured by the uninteracted coefficients in the HN columns. Variation in doctor attachment is captured by the interacted coefficients in the HN columns. Standard errors in parentheses are clustered at the 3-digit zip code fixed effect.

† Marginal effect for the reference group of women under age 50 with mean income and zero doctor visits.

** significant at 1%, *, significant at 5%, + significant at 10%.