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ABSTRACT

FORWARD-LOOKING BEHAVIOR IN HEALTH INSURANCE*

We investigate whether individuals adjust their health care utilization in anticipation of forthcoming price changes. Leveraging an exogenous increase in cost-sharing in the Swiss health care system at the age of 18, we estimate the impact of future price changes on current health care demand. Results indicate that individuals expecting higher future prices augment current outpatient health care spending by approximately CHF 40 (or 5%). This behavior is confined to low-cost male individuals, who likely have the strongest incentives to engage in anticipatory spending. We find no evidence for forward-looking behavior in the inpatient sector. Our study underscores the significance of forward-looking behavior in health care demand analysis, health insurance design, and the potential welfare implications of patient cost-sharing.

JEL CLASSIFICATION: D90, I11, I13

KEYWORDS: forward-looking behavior, health insurance, healthcare demand, dynamic incentives

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1 Introduction

Cost-sharing mechanisms are a cornerstone of health care systems worldwide, aimed at improving efficiency by requiring patients to bear part of the financial responsibility for their care. By making health care costs partially visible to consumers, cost-sharing is intended to reduce moral hazard and encourage more judicious use of medical resources. However, the design of most cost-sharing schemes introduces dynamic incentives. Specifically, annual cost-sharing resets, such as deductibles and stop-loss thresholds, create predictable changes in out-of-pocket prices at the start of each year. These sharp price changes may lead forward-looking individuals to optimize their health care consumption across time, potentially undermining the intended effects of cost-sharing policies.

Dynamic incentives are particularly salient in health care systems where cost-sharing structures are rigidly tied to the calendar year. In such systems, individuals facing predictable price increases in the future may shift consumption into periods with lower cost-sharing or even increase their overall demand. This forward-looking behavior is economically significant, as it affects the timing and efficiency of health care utilization and complicates policy goals aimed at controlling expenditures and promoting equitable access. Yet, our understanding of forward-looking health care behavior remains incomplete. While prior research has documented anticipatory responses in specific populations, such as the chronically ill or Medicare beneficiaries in the United States (Einav et al., 2015; Alpert, 2016; Johansson et al., 2023), there is limited evidence on how these incentives influence younger and healthier individuals or manifest in other institutional settings.

This paper addresses these gaps by investigating forward-looking health care behavior in Switzerland, a country with a competitive but regulated health insurance market. In Switzerland, individuals experience an exogenous and predictable increase in cost-sharing when they transition from the child health plan to the adult plan the year after they turn 18. This transition involves higher deductibles, an increased stop-loss, and substantial premium changes. By comparing individuals born in December – who face these cost-sharing increases one year earlier—to those born in January, we exploit a quasi-experimental variation in the timing of the transition to examine how individuals adjust their health care consumption in anticipation of higher future costs. Specifically, individuals born just days apart from each other face identical prices in the current year, while holding different forward-looking price perspectives.

We use comprehensive data from CSS insurance, Switzerland's largest mandatory health insurer, which encompasses approximately one-sixth of the Swiss population. Our study covers the period from 2010 to 2020 and targets birth cohorts spanning from 1993 to 2001, capturing individuals aged 16 to 20. The data comprises demographic information, health plan particulars, and a complete record of health care claims. Our analysis investigates various dimensions of health care demand, including total health care expenditures, medical visits, laboratory services, and pharmaceutical purchases.

Our findings provide evidence of forward-looking behavior, particularly among young men. In the year before transitioning to the adult health plan, men increase their outpatient health care utilization by approximately 5%, driven by a higher likelihood of physician visits and increased spending on prescriptions and laboratory services. This anticipatory behavior does not appear to be a simple reallocation of demand across time; rather, it reflects an overall increase in health care consumption. Importantly, we observe no similar behavior among young women. This gender difference likely stems from varying incentives: women are more likely to select lower deductibles in the adult plan, minimizing their cost-sharing increases, and their higher baseline health care use makes them more likely to reach their deductible regardless of anticipatory spending. These findings underscore the heterogeneous nature of responses to dynamic health care incentives.

Our study contributes to the growing literature on forward-looking behavior in response to non-linear health care pricing. A key focus of this research has been on whether individuals optimize health care demand across years in the presence of annual coverage resets. For example, Brot-Goldberg et al. (2017) and Gerfin et al. (2015) document significant changes in health care demand at the end of the year, driven by deductible changes or resets. Gerfin et al. (2015), specifically also document larger effects among healthier individuals consistent with our findings. Also, Lin and Sacks (2019) find evidence of increased demand after reaching stop-loss thresholds anticipating high future (out-of-pocket) prices.

Related studies examine demand responses to anticipated price reductions. For instance, Cabral (2016), Alpert (2016), Einav et al. (2015), and Johansson et al. (2023) find delayed care (dental treatments, claims for chronic drugs, drug purchases in general or primary care visits) in anticipation of future cost decreases or extensions in cost coverage.

Most of these studies often focus on specific populations – the elderly, individuals with chronic illnesses, or employer-based health insurance for well-educated and relatively high income employees (see e.g., Einav et al., 2015; Alpert, 2016; Johansson et al., 2023; Brot-Goldberg et al., 2017) – or specific types of outcomes – prescription drugs, dental treatments, or primary care visits (see e.g., Hjalmarsson, 2024; Alpert, 2016; Einav et al., 2015; Cabral, 2016; Johansson et al., 2023) – using data from many years ago (Lin and Sacks, 2019). In contrast, our study examines a broad set of health care demand measures in a younger, healthier population, potentially limiting their opportunities for timing health care consumption, using recent data. This demographic has received limited attention despite its relevance for understanding how annual deductibles and co-payments influence behavior across a wider population. This expands the scope of the literature and highlights the broader relevance of dynamic incentives in health care.

Our findings have important implications for health policy. Cost-sharing designs that create abrupt changes in out-of-pocket costs may induce dynamic responses that weaken their intended effects. Policymakers should consider alternative mechanisms, such as smoothing cost-sharing over time, to mitigate these behaviors and promote more efficient health care consumption.

The remainder of the paper is organized as follows: Section 2 explains the institutional setting, focusing on the health plan transition from child to adult plans, which forms the basis for our causal identification strategy. Sections 3 and 4 outline the data and the empirical framework. We study the forward-looking behavior in Section 5 and explain possible drivers for the documented results in Section 6. Leveraging our longitudinal data, we also explore the implications of forward-looking behavior in one year on health care consumption in the next year as shown in Section 7. Section 8 concludes.

2 Institutional Setting

Similar to health care systems in the Netherlands, in Germany, and under the Affordable Care Act in the United States, health insurance in Switzerland is characterized by competitive elements as well as strong governmental regulations (the description hereafter draws on Schmid et al., 2018). Individuals can choose freely among approximately sixty private insurers, which compete on price and quality. However, the system is heavily regulated to ensure risk solidarity, affordability, and universal access to care. All insurers are required to offer a standard health plan which provides coverage for the same set of predefined services.

The child version of the standard health plan has no deductible, and a co-insurance rate of 10% up to the stop-loss amount of CHF 350.[1] Besides this standard health plan, individuals can opt for higher deductibles ranging from CHF 100 to CHF 600 (see Table 1, column 1). They can also enroll in managed care (MC) plans, such as telemedicine, preferred provider, or health maintenance organization (HMO) plans, which introduce gatekeeping by requiring initial consultations with a general practitioner (GP) or telemedicine provider before accessing specialists.[2] Choosing a health plan with a higher deductible and/or managed care features results in a lower premium.[3] To further reduce the financial burden on families, child premiums are substantially lower than adult premiums, typically about one-quarter the cost.[4]

[1] For families with more than two children insured with the same provider, the cumulative stop-loss amount is capped at CHF 700 for all children combined.

[2] Some insurers set minimum age requirements for certain managed care plans (e.g., age 12 for telemedicine plans).

[3] Furthermore, individuals get a premium discount if they opt to suspend their accident coverage. This becomes feasible when an individual is employed for at least eight hours per week, at which point their employer is obligated to provide accident coverage.

[4] "Young" adults (ages 19 to 25) often benefit from insurer-granted premium discounts. Consequently, child premiums are approximately one-third of young adult premiums.

Upon reaching adulthood, individuals transition to the standard adult health plan with an individual deductible of CHF 300 and a stop-loss amount of CHF 700. Voluntary deductible options range from CHF 500 to CHF $2,500$ (see Table 1, column 2). Apart from these differences in cost-sharing and premiums, adults have the same health plan options as children. In particular, adults can also enroll in managed care health plans.

Table 1: Cost-sharing in children and adult health plans

	Child health plan (0-18y)	Adult health plan ($>$ 18y)
Standard deductible (in CHF)	0	300
Deductible options (in CHF)	100, 200, 300, 400, 500, 600	500, 1000, 1500, 2000, 2500
Stop-loss (in CHF)	350	700

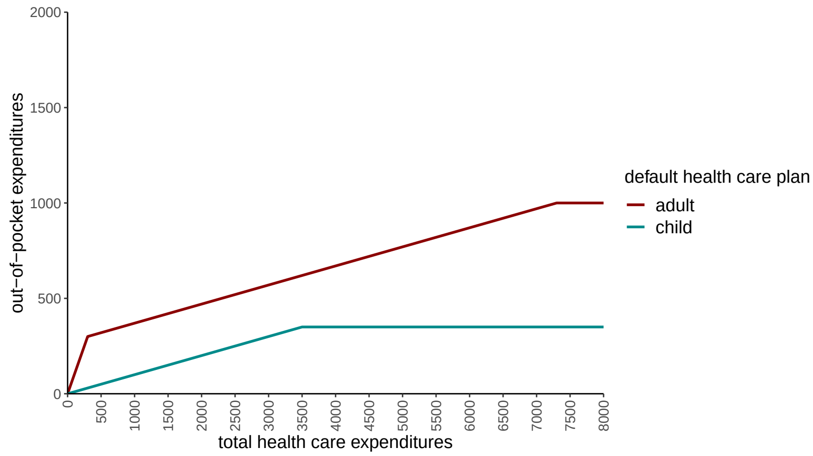
Notes: This table displays the standard deductible, the deductible options and the stop-loss amount in the child and the adult health plan. Individuals are in the child health plan as long as they are aged below 18 years and transition to the adult health plan in the year after they have turned 18 years old.

The transition from the child health plan to the adult health plan occurs at the onset of the calendar year during which individuals turn 19. For instance, individuals celebrating their 18th birthday on December 31 are considered adult in the following year. By contrast, their peers born just one day later, on January 1, remain classified as children for an additional year under the health insurance framework. This seemingly minor difference in birth dates has significant implications, as individuals born just days apart face substantially different future health care costs. Because of the change in the deductible set and the increase of the stop-loss amount when turning adult, adults usually pay more out-of-pocket for the same health care services compared to children. Figure 1 demonstrates these differences in out-of-pocket costs between children and adults under their respective standard health plans, shown across varying levels of total annual health care expenditures. Importantly, while both groups face the same out-of-pocket costs during their final year in the child health plan, their future price trajectories diverge sharply. This unique setting allows us to leverage the near-identical characteristics of these two groups to estimate the effect of future price changes on current health care demand. The empirical strategy is described in more detail in Section 4.

For the interpretation of our results, it is important to understand how and when individuals are informed about their transition to the adult health plan with higher cost-sharing. The process unfolds in several stages. Individuals born in December receive a letter in April of the year they turn 18 and are asked to redefine the contact person. Until this point, parents are typically recorded as the default contact.[5] This letter does not yet contain any specific information on the transition to the adult health plan

[5] In our data, approximately 99% of individuals retain their parents as the designated contact, either because they do not reply to the letter or because they deliberately keep their parents as the contact.

Figure 1: Cost-sharing in the default child and adult health insurance plan



Note: The graph reveals the differences in out-of-pocket expenditures between individuals in the standard child health plan, with a deductible of CHF 0, and the standard adult health plan, with a deductible of CHF 300, for different levels of total health care expenditures. Below the deductible, individuals pay their health care costs fully out-of-pocket. After reaching the deductible, individuals pay a coinsurance of 10% up to a stop-loss amount. The stop-loss amount for adults (CHF 700) is twice the stop-loss for children (CHF 350). There is no patient cost-sharing above the stop-loss.

in the following year. Between April and October, the responsible client advisor informs the children (or their parents) about next year's premium increase associated with their transition to the adult health plan.[6] In October, the health insurance company sends out the updated insurance policy revealing next year's monthly insurance premium for the chosen deductible, or the standard deductible plan if no voluntarily deductible has been chosen. Hence, by October at the latest, individuals should be fully aware of their transition to the adult health plan, including the associated increase in premiums and (potential) changes in their deductible.

3 Data

3.1 Health insurance claims data

For our analysis, we rely on data from CSS, Switzerland's largest mandatory health insurer. CSS covers approximately 1.5 million clients, representing about one sixth of the Swiss population. The dataset spans the years 2010–2020 and includes individuals born between 1993 and 2001. This focus captures individuals transitioning from adolescence to adulthood, specifically examining health outcomes for those born in December during the two years before and after reaching adulthood. For each individual, we observe detailed information on their health plan, including managed care features, deductible levels, accident

[6] In this phone call, individuals are additionally informed about their possibility of suspending accident coverage if they are in paid employment. As this could affect observed accident-related health care costs, we focus on illness-related costs in this study.

coverage, and premium amounts. Additionally, the invoice address serves as a proxy for determining whether premium bills are sent to the individual or their parents.[7] In terms of background characteristics, we have information on the date of birth, sex, language, nationality, and canton of residence.

The dataset provides comprehensive insights into individuals' interactions with the health care system. For each health insurance claim, we observe the date of provision, gross costs, patient cost-sharing, and cost categories (e.g., inpatient, outpatient, prescription drugs, laboratory services). Although outpatient diagnoses are generally unavailable, the dataset includes information on 26 chronic conditions identified through drug usage (referred to as "pharmaceutical cost groups"). Claims are also linked to provider data, enabling us to identify provider specialization.

Using this rich dataset, we construct various measures of health care demand. These include total gross health care costs (quarterly and annually), stratified by inpatient and outpatient services; a binary indicator of positive health care costs; and counts of outpatient physician visits, further classified into general practitioner (GP) and specialist visits. Additionally, we analyze expenditures on prescription drugs and laboratory services.[8]

3.2 Sample restrictions

Our analysis focuses on individuals transitioning to adult health plans, which occurs in the year after they turn 18. To minimize age-related confounding effects on health care demand, we restrict the sample to individuals born in December or January, ensuring that the age difference between groups is negligible. Additionally, we limit the sample to those insured with CSS for four consecutive years around the transition to adulthood. This restriction, which reduces the sample size by 20% to 17,715 individuals, is essential for constructing the three-year panel required for our primary estimations, pre-treatment balance tests, and an analysis of deductible choices under the adult health plan.

This four-year requirement also addresses the significant increase in insurance premiums upon entering the adult health plan, which incentivizes individuals to switch insurers.[9] To ensure comparability between the treatment and control groups, individuals must be additionally insured for a fourth year, representing the control group's first year in the adult health plan. Although this restriction might appear rather restrictive, we demonstrate in the Appendix (Table A.2) that relaxing it yields consistent results.

In addition to the four-year restriction, we apply four supplementary criteria to refine our sample, resulting in incremental reductions in size (sample reductions in percent in parentheses). First, we ex-

[7] While this proxy indicates who receives the bill, it does not reveal who ultimately pays it.
[8] We focus on illness-related costs as accident-related costs are covered only for individuals not yet in the labor market.
[9] In our sample, the probability of switching the health insurer doubles in this year, consistent with findings in the existing literature (see Figure 9.7 in Beck et al., 2013).

clude females who were pregnant during the observational period as pregnancy-related costs are exempt from cost-sharing in Switzerland (2.2%). Second, to avoid distortions caused by extreme cost outliers, we exclude individuals with total yearly costs exceeding CHF 13,000 or yearly outpatient costs above CHF 9,000 (4.8%).[10] Third, we exclude individuals from three cantons (Appenzell Inner Rhodes, Ticino, and Grisons) where school enrollment cutoffs align with the transition of the calendar year (5.3%). For these cantons, those born in December (treated) and those born in January (controls) are in a different school cohort, which may also affect health care demand.[11] Finally, we exclude individuals born on December 31 or January 1 to address potential inaccuracies in recorded birth dates, particularly among immigrants, where January 1 is sometimes used as a placeholder date (2.9%).[12] All restrictions together result in a final sample of 15,159 individuals.

3.3 Descriptive statistics

Table 2 provides descriptive statistics for the final sample, both overall and separately for individuals born in December (7,275) and January (7,884). The studied population is young and relatively healthy, with total yearly illness-related health care expenditures averaging approximately CHF 830 at the beginning of our observation period.[13] Hospitalizations are rare in this age group, with only 2.5% of individuals incurring positive inpatient costs. By contrast, outpatient services are far more common, with 81% of children recording at least some outpatient costs. Average annual outpatient expenditures per individual are CHF 757, with approximately 15% of these costs attributable to prescription drugs and 10% to laboratory services. On average, individuals visit physicians three times per year, with roughly two visits to GPs and one to specialists.

Most children in the sample are enrolled in the standard child health plan with a zero deductible. Health plans with free physician choice are slightly less common compared to MC plans with gatekeeping features. Additionally, 80% of child health plans include accident coverage, which indicates that four out of five 17-year-olds have not yet entered the labor market.

In terms of individual characteristics, just under half of the sample is female, and most individuals are Swiss and German-speaking. Approximately 7.4% of children are classified as chronically ill. The most common chronic conditions among young adults in the sample are asthma (3.2%), attention deficit hyperactivity disorder (1.9%), and mental or neurological disorders (0.8%), including migraines, epilepsy, or

[10] These thresholds approximately correspond to the top 1% of the corresponding cost distributions.
[11] For instance, because those born in December likely enter the labor market earlier.
[12] While scheduling of births is uncommon in Switzerland (Chuard and Chuard-Keller, 2021), this exclusion further ensures robustness by mitigating any bias associated with such practices.
[13] This is about one-fourth of the average yearly health care expenditure of CHF $3,567$ across all age cohorts (FOPH, 2022).

depression.[14]

Individuals born in December and those born in January appear highly comparable in terms of their pre-treatment outcomes, their pre-treatment health plan choices and their individual characteristics. Only two statistically significant differences are observed: the proportion of females and the share of individuals with a zero-deductible plan. However, these differences are small in size and economically negligible. Nevertheless to address any potential concerns, we conduct separate analyses for males and females in the results section and perform robustness checks focusing on the subsample of children with a zero deductible (see Table A.2 in the Appendix).

Table 2: Balance of covariates and pre-treatment outcomes

	Full sample	Jan	Dec	Diff	p-val
Pre-treatment annual health care use					
Total costs (CHF)	831	831	831	-0.037	0.999
Inpatient costs > 0	0.025	0.023	0.027	0.004	0.158
Inpatient costs (CHF)	73.3	67.1	79.9	12.8	0.148
Outpatient costs > 0	0.814	0.812	0.817	0.006	0.358
Outpatient costs (CHF)	757	764	751	-12.8	0.471
Drug costs (CHF)	117	118	116	-2.13	0.561
Laboratory costs (CHF)	80.5	79.8	81.3	1.55	0.592
No. of physician visits	3.05	3.06	3.04	-0.019	0.775
No. of GP visits	1.95	1.96	1.95	-0.011	0.807
No. of specialist visits	1.10	1.10	1.09	-0.008	0.849
Characteristics of child health plan					
No deductible	0.850	0.844	0.856	0.012	0.044
Deductible	63.5	66.2	60.5	-5.62	0.030
Free physician choice	0.452	0.451	0.452	0.001	0.869
Accident coverage	0.801	0.803	0.799	-0.005	0.474
Individual characteristics					
Female	0.468	0.460	0.477	0.017	0.040
Swiss Nationality	0.870	0.873	0.866	-0.006	0.252
German-speaking	0.702	0.706	0.697	-0.009	0.236
French-speaking	0.292	0.288	0.296	0.008	0.294
Italian-speaking	0.004	0.004	0.005	0.000	0.654
Chronically ill	0.074	0.076	0.072	-0.004	0.384
Observations	15,159	7,884	7,275		

Notes: The table shows the mean pre-treatment outcomes in annual terms and mean characteristics for the full sample and separately for those born in December (treated) and those born in January (controls). Additionally, it records the difference-in-means between the two groups and the p-value of this difference. The pre-treatment period is defined as the year in which both groups are still in the child health plan in the current and the next year, referred to as $t = -1$ (see Section 4). The child health plan features and the individual characteristics are measured in $t = 0$, the last year in which both groups are in the child health plan.

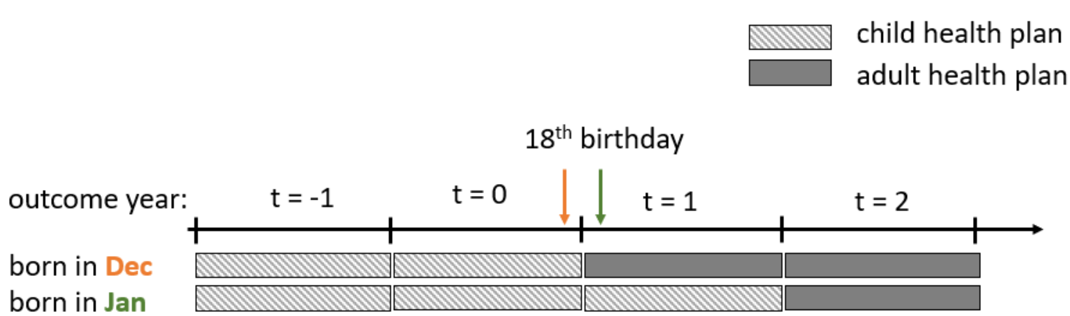
[14] We use data on pharmaceutical expenditure (pharmaceutical costs groups) to identify whether individuals suffer from a chronic disease.

4 Empirical Strategy

We are interested in estimating the impact of next year's health care prices on current demand. However, this is challenging in systems with deductibles, where the deductible choice is endogenous. Individuals who expect high health care expenditures in the following year tend to choose a lower deductible, whereas those anticipating lower expenditures opt for a higher deductible. This makes it challenging to causally identify the effect of an increase in cost-sharing on health care demand. We address this challenge by exploiting an exogenous variation in the deductible caused by the transition from the child to the adult health plan, which occurs the year after individuals turn 18.

Specifically, we compare individuals born in December, representing our treatment group ($D = 1$), with those born in January, representing our control group ($D = 0$). Treated individuals, who turn 18 in December, will enroll in an adult plan starting in January of the following year, which we denote with $t = 1$. In contrast, individuals in the control group, who turn 18 in January, will only join the same plan one year later (denoted with $t = 2$), despite being nearly the same age as those born in December. Our time indicator $t = 0$ consequently describes the period where both groups are still in the child plan but for those treated it is the last year, while the controls still enjoy another year of lower cost-sharing in the child plan. For pre-treatment balance checks, we also examine $t = -1$, when both groups face the same future price trajectory in the next year. An overview of the respective time periods is also given in Figure 2.

Figure 2: Identification strategy – Exploiting the discontinuous transition to the adult health plan



Notes: This figure illustrates our identification strategy. We exploit that individuals born in December, turning 18 slightly before the turn of the year, enter the adult health plan right after in January. In contrast, individuals turning 18 in January are in the child health plan for one more year. We refer to the last year where both groups are in the child health plan as $t = 0$, and the first year in the adult health plan of those born in December as $t = 1$. In $t = -1$, both groups are in the child health plan in the current and the following year. Hence, we can use year $t = -1$ for balance checks and placebo tests.

As deductibles range from CHF 0 to CHF 600 for children and CHF 300 to CHF 2500 for adults (see Table

1) and 85% of children are in the (standard) health plan with no deductible (see Table 2), an increase in the out-of-pocket price for health care is very likely when individuals enter the adult health plan. Moreover, Table 3 confirms that, in our sample, 99.4% of those born in December ($D = 1$) experience a deductible increase in $t = 1$, while individuals hardly change their deductible as long as they remain in the child health plan. For instance, only 0.8% of the controls ($D = 0$) increase their deductible in $t = 1$. Similarly, treated and controls do not change their deductible in $t = 0$ when both are still in the child health plan.

Table 3: Deductible increase triggered by transition to adult plan

	$D = 1$	$D = 0$	Diff
Period t = 0			
Deductible decrease	0.004	0.005	-0.001
Deductible increase	0.009	0.008	0.001
Period t = 1			
Deductible decrease	0.005	0.003	0.001
Deductible increase	0.994	0.008	0.985

Notes: The table depicts the share of individuals that increase (resp. decrease) their deductible in $t = 0$ and $t = 1$ in each case compared to the previous year.

Hence, the transition to the adult health plan is almost perfectly associated with an increase in the deductible and for sure results in a higher stop-loss amount.[15] Given this near-perfect association between the transition to the adult health plan and the increase in cost-sharing, we employ Ordinary Least Squares (OLS) to estimate the effect of a future increase in out-of-pocket costs on current health care demand. Specifically, we estimate the following regression:

$$Y_{i,t=0} = \alpha + \beta D_i + \mu_y + \epsilon_i \, , \tag{1}$$

where the treatment dummy D_i is equal to one for individuals born in December, and β captures the reduced-form effect of the exogenous deductible (and stop loss) increase in $t = 1$ induced by the transition from the child to the adult health plan on various health care demand measures $Y_{i,t=0}$ in the current year $t = 0$. Due to near-perfect compliance with treatment (see Table 3), the point estimates from an instrumental variable (IV) approach do hardly differ from the OLS estimates (see Section A.1 in the Appendix). For simplicity, we therefore refer to the estimated reduced-form effect, in what follows, as the causal effect of higher future out-of-pocket costs on current health care demand.[16]

[15] Consider that the stop-loss amount increases for all individuals from CHF 350 to CHF 700. However, for our relatively healthy population, changes in the deductible are likely to have a greater impact than the stop-loss amount.

[16] We perform additional robustness checks and discuss the application of further estimation methods such as regression discontinuity design (RDD) and Differences-in-differences (DiD) in Section A.2 in the Appendix.

To ensure the validity of β as an estimator of the causal effect, we next examine the exogeneity and exclusion criteria. We argue that whether individuals are born in December or January is as-if randomly assigned. There are no confounders that determine both the individual's health care demand and whether an individual is born in December or January. As the birth month is determined at birth, the only possible way endogeneity could arise is, when parents strategically time the birth of their child. Given that tax benefits for parents in Switzerland depend on the age and educational status of their children, and considering that we restricted the sample to cantons in which treated and controls should be in the same school cohort, tax benefits are largely comparable across both groups. Chuard and Chuard-Keller (2021) also show that birth scheduling due to financial incentives, such as a birth allowance, is not a pervasive issue in Switzerland. Moreover, we demonstrate that our sample exhibits balance across nearly all predetermined characteristics, as evidenced in Table 2. Although there are a few variables where statistically significant differences between those born in December and those born in January are observed, these differences hold minimal economic significance.

We further assert that the only channel through which the birth month (December vs. January) influences the health care costs is the fact that those born in December enter the adult health plan one year earlier while those born in January remain one year longer in the child health plan. By restricting the sample to those born in December or January, we can ensure that the slight age difference is too small to have a direct effect on the health care demand. In line with this argument, Table 2 shows that the slight age difference did not result in significant differences of health care demand pre-treatment. Furthermore, we undertake measures to ascertain that the cutoff from December to January does not coincide with other significant cutoffs within the Swiss context that could potentially influence the outcomes. To mitigate this concern, we exclude three cantons for which enrollment cutoffs align with the transition of the calendar year.[17]

Now that we have ensured that the main assumptions are met, we present in the next section the results on forward-looking behavior, meaning the effect of the increase of the next year's health care prices on the current health care demand. Descriptive results on demand responses in the first year ($t = 1$) with higher cost-sharing are shown in Section 7.

[17] Moreover, note that, in Switzerland, disability insurance covers the treatments of congenital defects not only for children but young adults up to the age of 20 years.

5 Results on forward-looking behavior

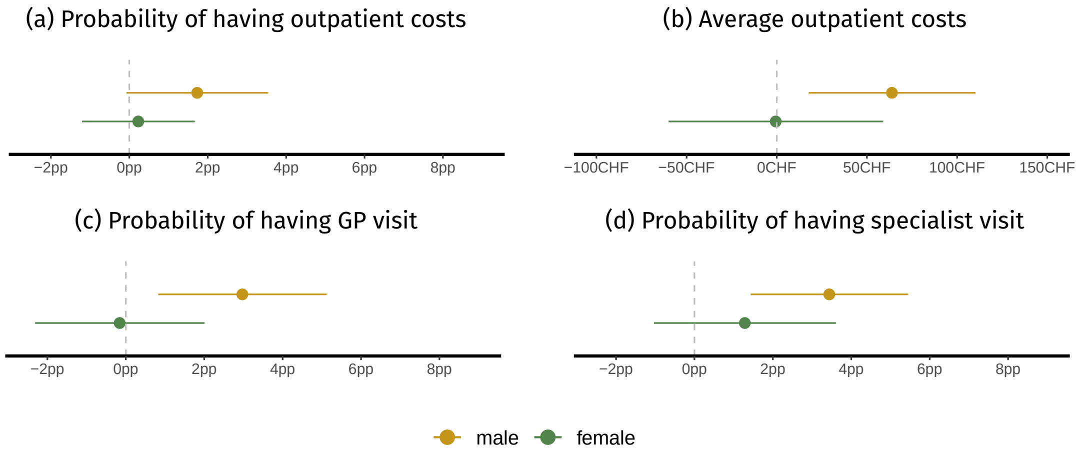
Our main results presented in Table 4 suggest that anticipating the increase in next years' out-of-pocket price for health care leads to an increase in health care demand in the current year. Panel A indicates that the probability to have positive outpatient costs increases by 1.2 percentage points (or 1.4%). Moreover, the annual outpatient costs increase on average by CHF 39.7 (or 4.8%). Panel B reveals a significant increase in the probability to have a physician visit within the year preceding the out-of-pocket price increase. The likelihood of visiting a general practitioner (GP) increases by 1.7 percentage points (2.7%), while the probability of consulting a specialist rises by 2.9 percentage points (7.2%). These results indicate a substantially larger effect on specialist visits. Considering the overall number of physician visits per year, the estimates suggest that, on average, every sixth individual has an additional outpatient physician visit. Again the increase in the average number of outpatient visits is larger for specialists than for GPs. As expected, we find no significant impact of higher anticipated out-of-pocket prices on today's demand for inpatient care as shown in Panel C. Inpatient care is typically less discretionary and more difficult to plan or shift to periods with lower cost-sharing, making it less responsive to changes in future prices.

Table 4: Effect of increase in future out-ot-pocket prices on current demand

Dependent variable	Effect	P-value	Baseline
A. Annual outpatient costs			
Outpatient costs $>$ 0	0.012	0.041	0.829
Outpatient costs (CHF)	39.7	0.038	823
B. Annual outpatient physician visits			
Physician visits $>$ 0	0.022	0.001	0.738
GP visits $>$ 0	0.017	0.031	0.633
Specialist visits $>$ 0	0.029	0.000	0.402
Total number of physician visits	0.109	0.117	3.28
Number of GP visits	0.043	0.345	2.07
Number of specialist visits	0.066	0.145	1.21
C. Annual inpatient costs			
Inpatient costs $>$ 0	0.001	0.820	0.027
Inpatient costs (CHF)	7.14	0.435	77.3
Observations			15,159

Notes: This table presents the reduced-form effect of an increase in future out-of-pocket prices in year $t = 1$ on current health care demand in year $t = 0$. The p-value is calculated based on heteroskedasticity-robust standard errors. The baseline represents the average outcome in the control group in current year ($t = 0$). The estimation is performed on the final sample of 15,159 individuals with 7,275 treated individuals and 7,884 controls.

Figure 3: Sex-specific effect of higher next year's out-of-pocket prices on current demand



Notes: This figure shows the causal (reduced-form) effects of higher out-of-pocket prices in $t = 1$ on annual health care costs and physician visits in $t = 0$ separately for male and female individuals. The point estimates represent the (reduced-form) effects obtained from the OLS estimation in Equation (1). Heteroscedasticity-robust standard errors were used to calculate the 95% confidence intervals.

5.1 Heterogeneity in demand responses

A heterogeneity analysis reveals that the observed effects are mainly driven by male individuals and are influenced by health plan type and regional differences.

As depicted in Figure 3a, we estimate an increase of 1.7 percentage points (or 2.2%) in the probability of having positive outpatient costs for males, whereas for females the effect is considerably smaller and very close to zero. Similarly, Figure 3b reveals that average outpatient costs per male patient increase significantly by CHF 63.9 (9.8%), while the corresponding effect for females is approximately zero. This pattern extends to physician visits. Figure 3c shows that males exhibit a 3 percentage point (5.1%) increase in the probability of visiting a GP, whereas for females, the estimate is -0.2 percentage points (-0.3%) and statistically insignificant. The difference is even more pronounced for specialist visits (Figure 3d). Among males, the probability of a specialist visit increases by 3.4 percentage points (12.1%), while for females, the effect is modest (1.3 percentage points or 2.4%) and not statistically significant. Potential explanations for these gender differences are explored in Section 6.

The demand response among males also varies significantly by health plan type (see Table B.4 in the Appendix). Men enrolled in plans with free physician choice exhibit more pronounced forward-looking behavior compared to those in MC plans with gatekeeping. This divergence may stem from two key factors. First, managed care plans, which require referrals from GPs before accessing specialists, may effectively restrict unnecessary health care consumption. Supporting this interpretation, we observe similar increases in GP visits across both health plan types but no significant increases in specialist visits or average outpatient costs for individuals in MC plans. This suggests that GPs in MC plans may act as gatekeepers, limiting additional, potentially unnecessary health care usage.[18] Second, individuals with a larger moral hazard tend to self-select into more generous health plans (see Einav et al., 2013), such as those with free physician choice. Due to the larger moral hazard, they may also react more strongly to future price changes and therefore, engage more heavily in forward-looking behavior.

Cultural and structural variations between Switzerland's Latin and German-speaking cantons offer an additional dimension of heterogeneity. Prior research has shown that Latin cantons tend to have higher per-capita health expenditures (see, e.g., Crivelli et al., 2006). Table B.5 suggests that forward-looking behavior is present among males in both language regions, though the effects differ in magnitude. In German-speaking cantons, the increase in average outpatient costs is CHF 80 (13%), compared to CHF 31 (4%) in Latin cantons. While effects in Latin cantons are generally smaller and often not statistically significant, this may partly reflect the smaller sample size for this subgroup.

5.2 Anticipatory spending by type of health care service

Given that men appear to adjust their current health care demand in anticipation of future increases in out-of-pocket costs, we focus on male individuals to investigate which health care services drive this demand expansion.[19]

The results in Figure 4a reveal a significant increase in the probability of incurring positive drug costs and laboratory service costs, with these increases being more pronounced compared to the rise in overall outpatient costs. Additionally, while the probability of having positive outpatient costs rises substantially in the second half of the year (i.e., Q3 and Q4), the increase is smaller in the first two quarters.

Figure 4b illustrates the changes in average costs across service types and by quarter of service provision. To facilitate comparisons across categories with differing baseline cost levels, the figure depicts changes in average costs relative to their baseline values.[20] On average, drug costs rise by approximately 8%, while costs for laboratory services increase by slightly more than 10%. Figure 4b further shows that the average cost increase is strongest in the fourth quarter of the year.

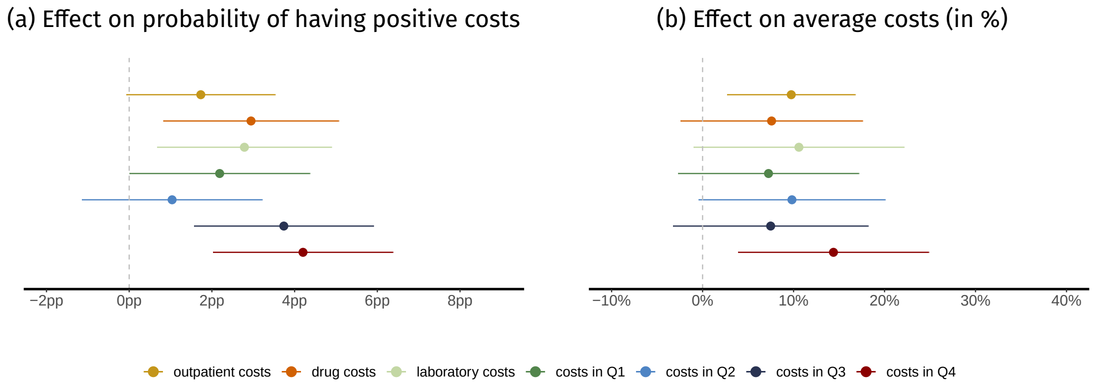
This temporal pattern suggests that individuals adjust their behavior more markedly as the transition to higher cost-sharing approaches. This is what we would expect, considering that some health care use cannot be shifted too far across time. Furthermore, some individuals may only become aware of the upcoming cost-sharing increase after receiving their updated insurance policy in October.

[18] Previous studies have documented the cost-saving effects of MC in Switzerland, although the underlying mechanisms remain unclear (see, e.g., Trottmann et al., 2012; Kauer, 2017).

[19] For completeness, we also show the results for females in Table B.3 in the Appendix.

[20] Baseline values are defined as the average annual (or quarterly) costs in the control group.

Figure 4: Effect of higher next year's out-of-pocket prices on current health care costs



Notes: This figure shows the causal effect of higher out-of-pocket prices in $t = 1$ on various categories of health care costs and quarterly outpatient health care costs in $t = 0$ for male individuals (see Table B.3 in the Appendix). Panel (a) depicts the effect on the probability of having positive costs separately for different cost categories. Panel (b) shows the effect on average costs. We scale the effects in (b) by their corresponding average outcomes in $t = 0$ in the control group to improve comparability, because different cost categories have different baselines. Heteroskedasticity-robust standard errors are used to calculate the 95% confidence intervals.

6 Explanations for the effect heterogeneity

Our findings suggest that men increase their health care use today in response to a future price increase. Hence, our results provide evidence for forward-looking behavior of male individuals. In contrast, we do not observe increased demand among women in anticipation of the price increase. However, the absence of such anticipatory spending does not necessarily imply that women are not forward-looking. It might be that males and females face different incentives due to inherent differences in their characteristics, in their pre-treatment health care consumption, and in their actual future price.

Table 5 reveals in fact significant differences in pre-treatment health care demand between males and females. Women, for example, exhibit significantly higher average annual health care costs than men and are 8.5 percentage points (10.9%) more likely to incur any health care costs pre-treatment. These differences are partly explained by gynecological screenings: nearly one-third of women undergo at least one gynecologist visit annually, with an average cost of CHF 156 per visit.[21] As a result, females might have less room for additional health care demand in response to future price increases. In contrast, male individuals might take the opportunity to do a final check-up in the period where cost-sharing is still low. They may also do so to better assess their health status to decide, based on this information, which deductible to choose for $t = 1$. This explanation aligns with the observed increase in laboratory costs among men.

Women's higher pre-treatment health care use also affects their expected future costs. Table 5 shows

[21] These figures are calculated for period $t = 0$ using the control group (i.e., those born in January). These gynecologist visits might also partly explain the higher number of annual physician and specialist visits.

Table 5: Sex-specific differences in past health care demand and health plan choices

	Females	Males	Diff	P-value
Annual health care demand in $t = -1$				
Total costs	953	720	233	0.000
Outpatient costs	877	636	241	0.000
Costs $>$ 0	0.862	0.777	0.085	0.000
Costs $>$ 300	0.613	0.489	0.124	0.000
Costs $>$ 2500	0.091	0.070	0.021	0.001
Number of physician visits	3.61	2.53	1.08	0.000
Number of specialist visits	1.43	0.786	0.645	0.000
Health plan in $t = 0$				
Free physician choice	0.442	0.462	-0.021	0.079
No deductible	0.854	0.857	-0.003	0.722
Deductible t=0	61.5	59.6	1.87	0.610
Accident coverage	0.172	0.228	-0.056	0.000
Health plan in $t = 1$				
Deductible CHF 300	0.588	0.554	0.034	0.003
Deductible CHF 500, 1000, 1500, or 2000	0.211	0.224	-0.013	0.175
Deductible CHF 2500	0.200	0.222	-0.022	0.024
Deductible t=1	976	1037	-61.3	0.004
Observations	3,469	3,806		

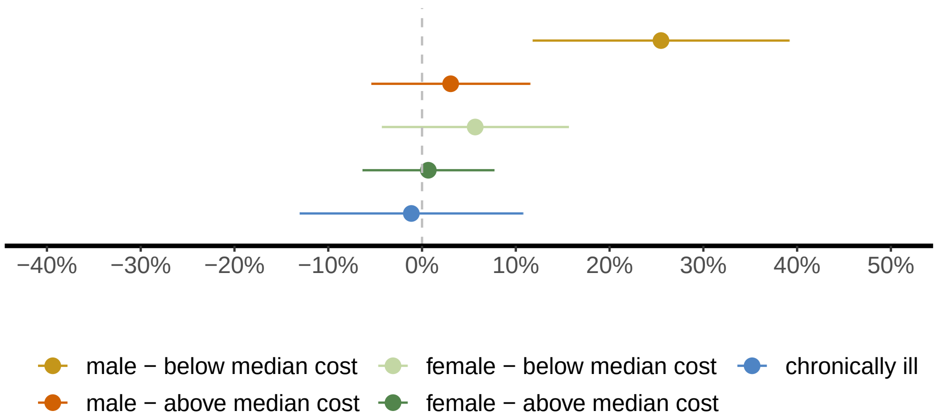
Notes: This table shows sex-specific average pre-treatment outcomes and health plan choices for treated individuals (i.e., born in December). The p-value indicates whether pre-treatment outcomes and/or health plan choices differ statistically significantly between female and male individuals in the treatment group. P-values are calculated using heteroskedasticity-robust standard errors.

that women are 12.4 percentage points (25.4%) more likely than men to incur pre-treatment costs exceeding CHF 300 in $t = -1$, suggesting that many women would also exceed this amount in $t = 1$, the minimum deductible under the adult health plan. Consequently, nearly 60% of women select the lowest deductible (CHF 300) for $t = 1$, compared to a smaller share of men. While deductible choices in the child health plan do not significantly differ by gender, women are 3.4 percentage points (6.1%) more likely to choose the lowest deductible and men are 2.2 percentage points (9.9%) more likely to select the highest deductible (CHF 2,500) in $t = 1$. Ex post, 47% of women reach their deductible in $t = 1$, compared to only 34% of men. Although deductible choices and health care costs are (partly) endogenous, these patterns suggest that women and men face fundamentally different (expected) future prices, potentially reducing women's incentives to increase their demand in $t = 0$.

Furthermore, male individuals are slightly more likely to be enrolled in a free-physician-choice health plan in $t = 0$, a plan type where forward-looking behavior is more pronounced as shown previously.

To explore whether higher baseline health care utilization among women explains the absence of anticipatory demand, we estimate our model separately for individuals with pre-treatment costs above

Figure 5: Heterogeneity in forward-looking behavior by low-cost and high-cost individuals



*Notes:*This figure shows the causal effect of higher out-of-pocket prices in $t = 1$ on outpatient costs in $t = 0$, separately for males and females with costs above and below their sex-specific median costs, and for chronically-ill individuals. The point estimates represent the OLS estimates based on Equation (1) for the respective subsample. Because baseline costs differ between the five groups, effects relative to the corresponding baseline costs are depicted to improve comparability. Heteroskedasticity-robust standard errors are used to calculate the 95% confidence intervals.

and below their gender-specific median, as well as for chronically ill individuals. Our findings in Figure 5 suggest that, anticipating the cost-sharing increase in the next year, low-cost females might also slightly increase their health care demand (albeit not statistically significantly). The point estimate (in relative terms) is higher for low-cost females (5.7%) compared to high-cost males (3.1%). Additionally, the observed effects among men are primarily driven by healthier individuals. For chronically ill individuals, we find no significant change in health care demand in response to anticipated cost-sharing increases.

7 Demand shifting or extra demand

As demonstrated in the previous section, we observe forward-looking behavior among young, healthy men who increase health care utilization in anticipation of a future deductible increase. Two potential mechanisms could explain this anticipatory spending. Forward-looking individuals might shift demand from $t = 1$ to $t = 0$, reallocating health care consumption to reduce their financial burden without increasing overall demand. Alternatively, the forward-looking behavior could lead to an actual increased demand, that is, the health care spending would not have occurred (in a later period) in absence of the deductible increase. For instance, individuals could visit a physician to check their health status before selecting the adult deductible. To distinguish between these mechanisms of demand shifting and extra demand, we analyze health care consumption in $t = 1$.

When comparing the treatment and the control group in $t = 1$, there are three potential causes for differences in health care costs. First, demand shifting of the treatment group. If treated individuals shift demand from $t = 1$ to $t = 0$, their average demand will be smaller in $t = 1$ than the demand of the control group. Second, classic moral hazard of the treatment group. In $t = 1$, most treated individuals have a higher deductible and hence face a higher out-of-pocket price for health care. As a result, their demand could be lower than without the price increase. Third, forward-looking behavior of the *control* group. The control group remains in the child health plan in $t = 1$, transitioning to the adult plan the following year $t = 2$. Consequently, they might exhibit anticipatory spending in $t = 1$, increasing their costs. Each of these factors could widen the observed differences in health care costs between the treatment and control groups in $t = 1$.

The transition to the adult health plan with considerable higher insurance premiums could also trigger changes in health plan choices. Our data indicate that the share of individuals enrolled in a free-physician-choice plan decreases by 14.8 percentage points (32.7%) among the treated group in $t = 1$, as many switch to managed care plans to obtain premium discounts. In contrast, only 2.9% of the control group switch plans in $t = 1$.[22] Hence, this might represent a further channel for differences in health care costs between treatment and control group in $t = 1$.

There could also be an additional source of cost "differences" for period $t = 1$ based on how health care bills are submitted. Under the "payer" system, health care providers directly bill insurers, while under the "guarantee' system, patients receive the bill and must submit it to the insurer themselves for reimbursement. Which system applies depends on various factors, see Schmid (2017) for more details. Treated individuals in $t = 1$, who are less likely to exceed their deductible, may have reduced incentives to submit bills under the guarantee system. This could result in observed costs underestimating actual health care consumption for the treatment group and hence increase the difference in (observed) health care costs between the treatment and the control group. To mitigate this issue, we focus on health care costs processed under the payer system, which accounts for approximately two-thirds of total expenditures.[23]

Table 6 reports descriptive differences in average outpatient costs in $t = 1$ between treatment and control group. Panel A shows no significant difference in average outpatient costs processed under the payer system between treated and control males. This finding suggests that men's increased demand in $t = 0$ is not due to demand shifting but represents additional health care consumption. Given that we find no evidence for anticipatory spending among females, a decrease in health care demand among treated females could indicate that females exhibit moral hazard behavior, consuming less in period $t = 1$ when they face higher out-of-pocket costs. Panel B shows a slight decrease in the probability to have outpatient

[22] See Table B.7 in the Appendix for detailed health plan transition data.

[23] Although the incentives incorporated in the guarantee system should not affect choices of individuals in the child health plan (majority in plan with no deductible), we report in Table B.3 Panel D in the Appendix estimates of forward-looking behavior on bills from the payer system only. The results are comparable to our main results.

costs of 1.8 percentage points (or 2.3%). However, there is no significant difference in average outpatient costs processed under the payer system. Thus, if moral hazard exists in this setting, its effect appears limited among young females.

Table 6: Descriptive differences in health care demand in $t = 1$

Dependent Variable	$D = 0$	$D = 1$	Diff	P-value
A. Male individuals				
Outpatient costs (payer system)	428	437	8.63	0.639
Outpatient costs $>$ 0 (payer system)	0.631	0.625	-0.006	0.575
Observations	4,182	3,663		
B. Female individuals				
Outpatient costs (payer system)	669	651	-17.8	0.446
Outpatient costs $>$ 0 (payer system)	0.784	0.766	-0.018	0.077
Observations	3,627	3,466		

Notes: For this analysis, we excluded 221 individuals (or 1.5%) that suspended their health insurance during (part of) year $t = 1$, probably starting to serve the military.

8 Conclusion

Cost-sharing is a key mechanism in many health care systems, designed to improve efficiency by requiring patients to bear a portion of their health care costs. Since cost-sharing thresholds typically reset annually, individuals often face sharp changes in out-of-pocket prices at the start of each year. These discontinuous changes create dynamic incentives, encouraging individuals to consider future out-of-pocket prices when optimizing their health care consumption. Such forward-looking behavior, however, can weaken the intended effects of cost-sharing.

Our study provides evidence of forward-looking behavior among young men, who increase their health care demand in the year preceding an exogenous rise in cost-sharing. This finding suggests that young men respond to dynamic incentives by consuming more health care today when they anticipate higher out-of-pocket costs tomorrow. In contrast, young women do not exhibit similar anticipatory behavior. This difference may stem from lower incentives among women for two reasons: (1) women are more likely to select the lowest deductible (CHF 300) in the adult health plan, resulting in a smaller increase in out-of-pocket costs, and (2) based on their prior health care utilization, women are more likely to reach their deductible in the following year, reducing the benefits of anticipatory spending.

Our findings contribute to the growing literature on forward-looking behavior in health care (e.g., Einav et al., 2015; Alpert, 2016; Johansson et al., 2023), which has largely focused on specific, often sicker populations. In contrast, we show that even relatively healthy individuals respond to dynamic incentives. Importantly, this response does not appear to reflect a mere re-timing of care but an overall increase in health care consumption in the period before cost-sharing rises. These results have important implications for the design of health plans. Specifically, cost-sharing mechanisms that create abrupt changes in out-of-pocket costs at the turn of the year may not be optimal, as they induce dynamic responses that undermine their intended effects.

While our study demonstrates demand responses to anticipated changes in out-of-pocket costs, it does not allow us to assess whether lower cost-sharing leads to overuse of health care as we have no information on the optimal health care consumption. Nevertheless, understanding whether individuals consume suboptimal levels of care under different cost-sharing regimes is an important avenue for future research. Additionally, our analysis cannot disentangle whether the observed changes in health care demand are driven by the children themselves or by their parents, who act as invoice recipients.[24] Finally, the first year in the adult health plan for the treated group introduces various potential confounders why health care costs might change, limiting our ability to fully identify causal effects during this period. We view this as an opportunity for future research to explore the mechanisms and consequences of transitioning to adult health plans.

By shedding light on the anticipatory behavior of young adults in response to cost-sharing, our findings highlight the need for health care policies that account for dynamic incentives and their impact on demand.

[24] For the majority of individuals under 20, parents are listed as the invoice recipients in our data.

During the preparation of this work the authors used ChatGPT4o in order to improve language and readability. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Appendix

A Robustness checks

A.1 Instrumental variable approach

Technically, not all individuals necessarily experience an increase in their deductible when transitioning from the child to the adult health plan. Because children deductibles range from CHF 0 to CHF 600 and adult deductibles from CHF 300 to CHF 2500 (see Table 1), it is possible that treated individuals reduce their deductible when entering the adult health plan or controls increase their deductible while still remaining in the child health plan. Our OLS estimation in the main part of the paper, therefore, identifies the reduced-form effect. However, as shown in Table 3, the two cases mentioned are rare. Almost all treated individuals face an increase in their deductible when entering the adult health plan, whereas most controls, staying in the child health plan for one more year, experience no change in their deductible with the start of the next year. Nevertheless, for completeness, we provide the results of an instrumental variable (IV) approach to identify the causal effect of the next year's increase in out-of-pocket prices on current health care demand for the subgroup of compliers.

To estimate the local average treatment effect (LATE), we use two stage least squares (2SLS). First, we estimate the following first stage regression including year fixed effects, μ_y, to increase precision:

$$D_{i,t1} = \alpha + \beta Z_i + \mu_y + \epsilon_i \;, \tag{2}$$

where Z_i is an binary variable equal to one for individuals born in December and $D_{i,t1}$ is a binary variable equal to one for individuals that experience an increase in their deductible $t = 1$.

Second, we use the predicted probability of a deductible increase, $\widehat{D_{i,t1}}$, to estimate the causal effect of anticipating future out-of-pocket price increases on health demand measures in the current year:

$$Y_{it} = \gamma + \delta \widehat{D_{i,t1}} + \eta_y + \nu_i \;, \tag{3}$$

To obtain consistent estimates of the effect, we need to impose three assumptions: Exogeneity, exclusion and relevance of the instrument. We already argued in the main part of this paper that whether individuals are born in December or January should be as-if randomly assigned. Additionally, we showed that covariates are largerly balanced. Moreover, we find no evidence that the slight age difference affects health care demand in the pre-treatment year, which supports the exclusion restriction. Finally, we have a strong first stage (see Table A.1 Panel B) with almost all individuals born in December experiencing a deductible increase in $t = 1$, whereas those born in January do not change their deductible in $t = 1$.

Due to almost perfect compliance, we expect the results from the IV estimation to be very similar to those from the OLS estimation. Nevertheless, for completeness, we provide the IV results for average outpatient costs, separately for male and female individuals, in Table A.1.

Table A.1: IV approach

Dependent variable	Estimate	P-value	Baseline	N obs
A. Local average treatment effect				
Outpatient costs $t = 0$	40.3	0.038	823	15,159
Outpatient costs $t = 0$ (males)	64.8	0.007	655	8,062
Outpatient costs $t = 0$ (females)	-0.604	0.984	1020	7,097
B. First stage				
Deductible increase $t = 1$	0.985	0.000	0.008	15,159
Deductible increase $t = 1$ (males)	0.985	0.000	0.011	8,062
Deductible increase $t = 1$ (females)	0.986	0.000	0.005	7,097

Notes: The point estimates in Panel A show the local average treatment effect of a future increase in out-of-pocket price of health care on current health care demand using two stage least squares. The reported standard errors are heteroskedasticity-robust. Year-fixed are used to increase the precision of the estimation with multiple cohorts. The point estimates from the first stage in Panel B reveal the difference in the probability of having a deductible increase in $t = 1$ between those born in January ($Z = 0$) and those born in December ($Z = 1$) who are exposed to treatment.

Because IV and OLS results are essentially the same, we decided to focus on the OLS results in the main part of this paper so as not to complicate the analysis unnecessarily.

A.2 Additional robustness checks

To asses the validity of our empirical strategy, we perform several further robustness checks, reported in Table A.2. First, we estimate our OLS specification using pre-treatment outpatient costs from year $t = -1$ as the outcome. In this year, we expect no significant difference in costs between those born in December and those born in January, as both groups are still in the child health plan in the next year and therefore, both groups benefit from low out-of-pocket prices for another year. Our results in Panel A confirm that there is no significant difference in outpatient costs in $t = -1$ between treatment and control group, for both male and female individuals.[25]

Second, we test whether our results are robust to slight modifications of the sample. In Panel B.1, we show results based on smaller windows around the cut-off to trade off the plausibility of exclusion and exogeneity against the sample size. Specifically, we estimate our specification for female and male

[25] Table 2 has already shown that average pre-treatment outpatient costs do not significantly differ between treatment and control group for the full sample. Here, we show it separately for male and female individuals and use Equation (1), adapted for year $t = -1$, which additionally includes year fixed effects.

Table A.2: Additional robustness checks

Dependent variable	Subsample	Window	Weights	Estimate	P-value	Baseline	N obs
A. Placebo test							
Outpatient costs $t = -1$	-	+/- 30 days	Uniform	-11.7	0.509	757	15,159
Outpatient costs $t = -1$	Males	+/- 30 days	Uniform	-5.5	0.802	639	8,062
Outpatient costs $t = -1$	Females	+/- 30 days	Uniform	-28.4	0.313	892	7,097
B. Sample restrictions							
B.1. Varying window around cut-off							
Outpatient costs $t = 0$	-	+/- 20 days	Uniform	35.2	0.128	821	5,293
Outpatient costs $t = 0$	Males	+/- 20 days	Uniform	60.0	0.032	647	2,881
Outpatient costs $t = 0$	Females	+/- 20 days	Uniform	-11.2	0.763	1027	2,412
Outpatient costs $t = 0$	-	+/- 10 days	Uniform	19.7	0.553	849	2,648
Outpatient costs $t = 0$	Males	+/- 10 days	Uniform	73.2	0.069	663	1,441
Outpatient costs $t = 0$	Females	+/- 10 days	Uniform	-54.9	0.309	1071	1,207
B.2. Children with zero deductible							
Outpatient costs $t = 0$	-	+/- 30 days	Uniform	40.7	0.054	880	12,879
Outpatient costs $t = 0$	Males	+/- 30 days	Uniform	62.9	0.016	720	6,851
Outpatient costs $t = 0$	Females	+/- 30 days	Uniform	4.60	0.890	1062	6,028
B.3. Sample with relaxed restr.							
Outpatient costs $t = 0$	-	+/- 30 days	Uniform	28.8	0.104	848	17,731
Outpatient costs $t = 0$	Males	+/- 30 days	Uniform	52.1	0.017	688	9,413
Outpatient costs $t = 0$	Females	+/- 30 days	Uniform	-6.02	0.830	1028	8,318
C. Weighting							
Outpatient costs $t = 0$	-	+/- 30 days	Triangular	23.3	0.291	830	15,159
Outpatient costs $t = 0$	Males	+/- 30 days	Triangular	55.5	0.037	655	8,062
Outpatient costs $t = 0$	Females	+/- 30 days	Triangular	-27.3	0.441	1038	7,097
Outpatient costs $t = 0$	-	+/- 30 days	Epanech.	28.5	0.173	827	15,159
Outpatient costs $t = 0$	Males	+/- 30 days	Epanech.	57.8	0.023	653	8,062
Outpatient costs $t = 0$	Females	+/- 30 days	Epanech.	-19.5	0.561	1033	7,097
D. Difference-in-difference							
Outpatient costs $t = 0$	-	+/- 30 days	Uniform	51.1	0.050	823	30,318
Outpatient costs $t = 0$	Males	+/- 30 days	Uniform	69.0	0.032	655	16,124
Outpatient costs $t = 0$	Females	+/- 30 days	Uniform	28.1	0.497	1020	14,194

Note: This table presents results on forward-looking behavior applying different estimation methods and sample restrictions. P-values are calculated based on heteroskedasticity-robust standard errors.

individuals with a birthday within 20 and 10 days of the turn of the year instead of 30 days. The patterns for the different windows are fairly similar, there is a positive significant effect for male individuals, whereas female individuals do not significantly change their health care demand in the year preceding the increase in the out-of-pocket price. In Panel B.2, we estimate the effect for the subsample of children in a zero-deductible child health plan. This ensures that all treated individuals necessarily face an increase in their deductible when entering the adult health plan. Moreover, it controls for the slight difference in the proportions of zero-deductible plans between the treatment and the control group as depicted in Table 2. Again, the estimates are very close to our main results in the paper. Moreover, in Panel B.3, we relax the sample restrictions allowing individuals to switch their insurer in $t = 1$.[26] Panel B.1 suggests that relaxing

[26] This relaxation has the drawback that we no longer observe the chosen deductibles in $t = 1$, the first year in the adult health

this sample restriction results in similar albeit somewhat smaller point estimates.

We additionally considered using the regression discontinuity design (RDD). Recall that we compare average health care demand between those born shortly before and those born shortly after the turn of the year. Hence, we have a setting with a discrete running variable (birth date) and few mass points (30 days before and 30 days after the turn of the year). According to Cattaneo et al. (2023), due to the low number of mass points near the cut-off, the commonly used continuity-based approach to RD analysis does not appeal to our setting. It is recommended to use the local randomization approach to RD analysis instead (see Cattaneo et al., 2023, for details). The local randomization approach assumes that the treatment is as-if randomly assigned near the cutoff (i.e., the turn of the year) and can therefore be interpreted as a randomized experiment near the turn of the year. However, this implies that the outcomes are independent of the running variable (birth date). In contrast to the continuity-based approach, there is hence no direct effect of age on the outcome in the narrow window around the turn of the year. Under these assumptions, however, the local randomization approach is essentially a simple difference-in-means estimation as performed with OLS. Considering that the comparability of observations is even more plausible near the cut-off, RDD usually applies higher weights to these observations. We, therefore, also provide the results of weighted OLS estimation using triangular and epanechnikov kernels in Panel C. Again, the results are hardly sensitive to the inclusion of different weights.

Finally, the estimates in Panel C of Table A.2 result from a difference-in-difference (DiD) approach using whether individuals enter the adult health plan in the following year (i.e., born in December) as exogenous treatment indicator. DiD controls for potential pre-treatment differences in the level of health care costs between those born in December and those born in January. While it allows for such level differences in costs, it requires the two groups to follow the same cost trend (for details on the method see e.g. Cunningham, 2021). The magnitude of the point estimates overall and for males are highly comparable, whereas the estimate for females is somewhat higher but still not significant and, especially in relative terms, much smaller than for males.

plan for those treated.

B Additional Tables

Table B.3: Heterogeneity in forward-looking behavior by sex

	Males			Females		
Dependent variable	Effect	P-value	Baseline	Effect	P-value	Baseline
A. Annual health care utilization						
Physician visits > 0	0.033	0.001	0.665	0.005	0.607	0.824
GP visits > 0	0.030	0.007	0.584	-0.002	0.887	0.690
Specialist visits > 0	0.034	0.001	0.280	0.013	0.277	0.545
Number of physician visits	0.208	0.012	2.56	-0.057	0.615	4.14
Number of GP visits	0.154	0.008	1.74	-0.105	0.138	2.46
Number of specialist visits	0.054	0.287	0.821	0.049	0.528	1.67
B. Annual health care costs						
Outpatient costs > 0	0.017	0.059	0.775	0.002	0.754	0.893
Inpatient costs > 0	0.002	0.523	0.023	-0.002	0.709	0.032
Laboratory costs > 0	0.028	0.010	0.352	0.003	0.794	0.591
Drug costs > 0	0.029	0.006	0.606	-0.010	0.347	0.732
Outpatient costs	63.9	0.007	655	-0.596	0.984	1020
Inpatient costs	14.8	0.221	66.0	-2.70	0.846	90.4
Drug costs	7.97	0.138	105	-5.76	0.306	140
Laboratory costs	6.77	0.073	63.9	3.41	0.561	136
C. Quarterly health care costs						
Outpatient costs Q1 > 0	0.022	0.049	0.456	0.010	0.392	0.604
Outpatient costs Q2 > 0	0.010	0.351	0.454	0.000	0.982	0.600
Outpatient costs Q3 > 0	0.037	0.001	0.418	0.005	0.645	0.573
Outpatient costs Q4 > 0	0.042	0.000	0.425	0.006	0.605	0.601
Outpatient costs Q1	12.6	0.153	174	-4.594	0.668	261
Outpatient costs Q2	16.1	0.061	164	0.466	0.965	258
Outpatient costs Q3	11.3	0.172	151	3.488	0.731	228
Outpatient costs Q4	23.8	0.007	165	0.044	0.997	274
D. Costs processed with “payer” system only						
Outpatient costs (payer system) > 0	0.032	0.003	0.606	0.003	0.738	0.760
Outpatient costs (payer system)	49.3	0.008	413	12.5	0.583	626
Observations			8,062			7,097

Notes: This table presents the sex-specific (reduced-form) effects of increased future out-of-pocket prices ($t = 1$) for health care on today's demand for health care ($t = 0$) estimated using OLS based on Equation (1). P-values are calculated based on heteroskedasticity-robust standard errors.

Table B.4: Heterogeneity in forward-looking behavior by health plan type

	Free physician choice			Managed care plans		
Dependent variable	Effect	P-value	Baseline	Effect	P-value	Baseline
A. Annual health care utilization						
Physician visits > 0	0.052	0.000	0.689	0.016	0.257	0.644
GP visits > 0	0.041	0.010	0.599	0.019	0.195	0.572
Specialist visits > 0	0.057	0.000	0.311	0.014	0.283	0.254
Number of physician visits	0.273	0.025	2.74	0.154	0.168	2.41
Number of GP visits	0.139	0.100	1.81	0.167	0.034	1.68
Number of specialist visits	0.134	0.081	0.926	-0.013	0.846	0.733
B. Annual health care costs						
Outpatient costs > 0	0.037	0.004	0.791	0.000	0.973	0.761
Laboratory costs > 0	0.033	0.043	0.374	0.024	0.093	0.333
Drug costs > 0	0.038	0.016	0.636	0.022	0.132	0.581
Outpatient costs	95.7	0.008	711	36.1	0.243	608
Drug costs	17.8	0.066	122	-0.930	0.867	90.8
Laboratory costs	6.96	0.255	70.7	6.23	0.185	58.2
Observations			6,847			8,312

Notes: This table presents the males' health plan type -specific (reduced-form) effects of increased future out-of-pocket prices for health care on today's demand for health care estimated using OLS based on Equation (1). P-values are calculated based on heteroskedasticity-robust standard errors.

Table B.5: Heterogeneity in forward-looking behavior by language region

	German-speaking cantons			Latin cantons		
Dependent variable	Effect	P-value	Baseline	Effect	P-value	Baseline
A. Annual health care utilization						
Physician visits > 0	0.033	0.008	0.660	0.033	0.083	0.675
GP visits > 0	0.028	0.034	0.590	0.033	0.105	0.568
Specialist visits > 0	0.031	0.009	0.256	0.046	0.019	0.335
Number of physician visits	0.195	0.045	2.55	0.239	0.126	2.58
Number of GP visits	0.135	0.056	1.81	0.201	0.043	1.57
Number of specialist visits	0.060	0.286	0.740	0.038	0.719	1.01
B. Annual health care costs						
Outpatient costs > 0	0.019	0.099	0.759	0.016	0.324	0.810
Laboratory costs > 0	0.030	0.023	0.376	0.025	0.190	0.291
Drug costs > 0	0.024	0.059	0.600	0.043	0.030	0.618
Outpatient costs	80.2	0.003	605	30.8	0.515	769
Drug costs	6.42	0.255	97.9	11.4	0.355	121
Laboratory costs	6.33	0.141	65.0	7.30	0.343	60.7
Observations			10,636			4,488

Notes: This table presents the males' effects of increased future out-of-pocket prices for health care on today's demand for health care estimated using OLS based on Equation (1), separately by language region. Latin cantons include French- and Italian-speaking cantons. P-values are calculated based on heteroskedasticity-robust standard errors.

Table B.6: Heterogeneity in forward-looking behavior by sex and pre-treatment costs

Sample	Effect	Effect (in %)	P-value	Baseline	N obs
Dependent variable: Annual outpatient costs (in CHF)					
female - above median cost	8.89	0.668	0.852	1,332	3,333
female - below median cost	30.2	5.67	0.264	533	3,333
male - above median cost	26.7	3.05	0.479	874	3,725
male - below median cost	80.6	25.5	0.000	316	3,725
chronically ill	-20.5	-1.14	0.851	1,795	1,043

Notes: This table presents the effects of higher next year's out-of-pocket prices (in $t = 1$) on current outpatient cost (in $t = 0$), separately by sex and by group of individuals with high (above median) and low (below median) pre-treatment health care consumption (measured in $t = -1$). The effects are estimated using OLS based on Equation (1). P-values are calculated based on heteroskedasticity-robust standard errors.

Table B.7: Reconsideration of health plan choice

D	Share in MC plan			
	$t = 0$	$t = 1$	Diff (pp)	Diff (%)
1	54.8%	69.6%	14.8 pp	27.0%
0	54.9%	56.5%	1.6 pp	2.9%

Notes: This table depicts the proportions of individuals in managed-care health plans − in contrast to a free-physician-choice plan − in a given year ($t = 0$ or $t = 1$) separately for treated and controls.