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INSIGHTS FROM INTERNAL MIGRATION IN SWITZERLAND

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The CSS Institute for Empirical Health Economics (CSS Institute for short) is an independent economic research institute established in 2007 by CSS Insurance. The CSS Institute conducts research in health economics and offers evidence-based policy advice on healthcare issues. Our key objective is to build bridges between academic research, policymakers and society.

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ABSTRACT

UNPACKING REGIONAL VARIATION IN HEALTH CARE: INSIGHTS FROM INTERNAL MIGRATION IN SWITZERLAND*

This paper analyzes health care utilization in Switzerland by tracking individuals who move across hospital service areas (HSAs). We replicate the empirical approach of Finkelstein et al. (2016) to decompose geographic variation in health care spending into patient-driven and supply-driven components. Our findings suggest that demand-side factors account for up to 60% of observed variation, with supply-side factors contributing only 40%, a pattern that holds for a broader population than the original U.S. study, which focused on individuals over 65. The supply-side influence varies significantly by type of care, ranging from 14% for prescription drug expenditures and 33% for physiotherapy costs to 42% for laboratory services and 57% for general practitioner (GP) costs. There is also substantial variation within specialists' services from low supply side shares as for gynecologists (33%) to high supply side shares as for surgery (67%). Additionally, we document substantial heterogeneity with higher supply responsiveness observed among younger individuals.

JEL CLASSIFICATION: I11, I13, H51
KEYWORDS: health care utilization, geographic variation, patient migration

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1 Introduction

Substantial geographic variation in health care spending has been extensively documented in the literature (Finkelstein et al., 2016; Skinner, 2011). In Switzerland, average health care expenditures vary considerably across cantons, with costs differing by a factor of 1.74 between the lowest and highest spending regions — specifically, from CHF 3,201 in Appenzell Innerrhodes to CHF 5,557 in Geneva in 2023 (Federal Office of Public Health FOPH, 2023b). Disentangling whether such variation predominantly originates from demand-side factors, such as patient preferences, socioeconomic status, or health status and literacy, or from supply-side characteristics, including provider practice style, availability of medical facilities, or reimbursement incentives, is crucial for designing targeted policy interventions aimed at enhancing system efficiency and controlling overall health care costs.

In this study, we build on the seminal contribution of Finkelstein et al. (2016), who pioneered a novel approach to disentangle demand- and supply-side drivers of regional variation in health care utilization using data on patient migration within the U.S. Medicare population. By extending this empirical strategy to the Swiss health care system, we provide new evidence from a younger and more demographically diverse population embedded in a different institutional environment. Switzerland's health system is characterized by mandatory insurance coverage, decentralized governance across 26 cantons, and strong individual-level financial incentives.

Leveraging administrative data from CSS Insurance, which covers a substantial share of the Swiss population, we track individuals who move across Hospital Service Areas (HSAs). We further complement this data with administrative data from the Federal Office of Public Health covering the entire population residing in Switzerland. Internal migration enables us to isolate and quantify the extent to which regional differences in health care utilization are driven by local health care supply versus individual-level demand. Our findings reveal that approximately 60% of the observed geographic variation can be attributed to demand-side factors, while the remaining 40% is attributable to supply-side factors. Notably, this aggregate estimate conceals important variation by type of service: while supply-side factors explain just 14% of variation in prescription drug expenditures, they account for as much as 67% in surgical care. Our analysis also uncovers considerable heterogeneity in supply responsiveness across age groups. Such granularity provides valuable insights for the design of targeted policy responses.

A growing body of international research has adapted the Finkelstein et al. (2016) framework to assess supply- and demand-side contributions to regional variation in health care utilization. Recent examples include studies in Germany (Salm and Wübker, 2020), the Netherlands (Moura et al., 2019), Norway (Godøy and Huitfeldt, 2020), and Sweden (Johansson and Svensson, 2022), all of which report substantially lower supply-side shares relative to the U.S. Together, these contributions help build a

more comprehensive understanding of the drivers of heterogeneity in health care utilization across different institutional environments.

In Switzerland, prior work has documented persistent variation in health care utilization across cantons and hospital service areas (e.g., Busato et al., 2011; Filippini et al., 2009; Panczak et al., 2017; Wei et al., 2018, 2020; Widmer et al., 2009), typically attributing these differences to demographic characteristics (e.g., age and gender) or supply-side factors (e.g., physician density). We contribute to this literature by employing a movers-based identification strategy, which enables us to causally estimate the role of regional factors in driving health care utilization. In addition, leveraging rich administrative data, we go beyond aggregate measures of health care costs by examining a detailed set of outcomes, providing a more comprehensive characterization of how regional environments shape health care. Finally, we assess heterogeneity by age and gender, shedding light on whether regional factors differentially affect specific patient groups.

The remainder of the paper is structured as follows: Section 2 describes the institutional background. Sections 3 and 4 present the data and the empirical strategy. Section 5 discusses the results, and section 6 concludes.

2 Background

Similar to health care systems in the Netherlands, in Germany, and under the Affordable Care Act in the United States, Switzerland's health insurance system combines competitive market elements with strong governmental regulation. Within this framework, Switzerland's health care system is characterized by a high degree of decentralization, with health policy and service provision largely governed by its 26 cantons. Despite this structural heterogeneity, the country ensures universal coverage through a national mandate requiring individuals to purchase insurance from private and competitive, yet highly regulated providers. Individuals can switch their compulsory (basic) health insurer once per year: the new contract typically starts on January 1, provided the existing policy is cancelled by the statutory deadline in November.

Insurers are obligated to offer a standard health plan which provides coverage for the same set of predefined services. Individuals may select higher deductibles or opt into managed care models — such as gatekeeping arrangements involving preferred providers or telemedicine — to reduce their premiums. Premiums themselves vary across three age categories (0–18, 19–25, and 26+), and within up to three premium regions per canton.

This fragmented institutional framework gives rise to pronounced regional variation in health care supply, utilization, and expenditures. To study these patterns, we adopt the geographic unit of Hospital Service Areas (HSAs), which reflect the functional organization of care delivery. HSAs are empirically

derived by patient flow data, ensuring that each unit contains at least one hospital and that residents primarily receive inpatient care within their own area. The Swiss Health Care Atlas defines 74 such HSAs, providing a spatial framework that closely mirrors actual service use and facilitates regional analysis of health system performance (Swiss Health Observatory, 2025).

3 Data

CSS insurance data We utilize administrative data from CSS, a major Swiss health insurer covering approximately one-sixth of the Swiss population. The data set spans the period from 2010 to 2022. Based on this source, we construct two types of data sets tailored to distinct empirical objectives.

First, we compile a comprehensive data set for descriptive analyses — such as computing average health care expenditures at the level of Hospital Service Areas (HSAs) — by restricting the sample to individuals continuously insured with CSS throughout the observation window. This restriction reduces the sample to slightly over half a million individuals. Despite the decrease in sample size, the constraint is essential: without it, it would be impossible to distinguish whether attrition is due to individuals moving residences or simply switching to a different mandatory health insurer, thus confounding the interpretation of our results.

Second, for causal analysis, we construct a balanced panel of residential movers. In line with Finkelstein et al. (2016), we define a mover as an individual who relocates across HSAs (based on the reference date of December 31st) and who moves only once during the sample period. To ensure the move reflects a genuine shift in health care markets, we further require that the individual exhibits an increase of at least 50 percentage points in the share of health care services consumed in the destination HSA post-move.[1] To ensure that the pre- and post-treatment periods are sufficiently long, we restrict our sample of movers to individuals who moved between 2013 and 2019, yielding an annual sample of approximately 2,000 movers. As an extension, we also present results for all movers, regardless of their years of observation before and after moving.

A comparison of movers and non-movers (Table 1) reveals that movers are more likely to be male and German speaking, somewhat younger, and in better health, as indicated by both lower total annual health care costs and lower pharmaceutical cost group (PCG) scores. To mitigate concerns that health-related deterioration drives mobility, we exclude individuals receiving long-term care services (e.g., nursing home) and individuals who move to inpatient psychiatric care.

Relative to official statistics, average health care expenditures in our sample are slightly lower due to these exclusion restrictions. Nonetheless, regional expenditure patterns remain highly rep-

[1] For individuals with no expenditure, we follow Finkelstein et al. (2016) closely, by excluding them when they have no post-move/pre-move claims and a pre-move/post-move destination claim share greater/less than 5%/95%. See footnote 18 in Finkelstein et al. (2016) for more details.

Table 1: Descriptive Statistics

	Balanced sample		Movers sample
	(1)	(2)	(3)
Mover	No	Yes	Yes
Share female	51.69	46.03	45.89
Share German speaking	70.79	77.15	77.80
Age	45.61	39.04	39.43
Deductible (CHF)	832	1'113	1'164
Share accident coverage	56.65	45.19	43.04
Total health care costs per year (CHF)	2474	1545	1421
# of PCGs	0.39	0.21	0.20
Distinct # of indiv.	485'354	21'263	12'557

Note: This table reports descriptive statistics for the balanced sample of non-movers (column 1) and movers (column 2). Column 3 restricts column 2 to the subset used in the event study analysis, which requires individuals to be observed for at least three years prior to the move and up to three years afterward. Consequently, we lose observations when transitioning from column 2 to column 3, as we restrict the analysis to moves occurring between 2013 and 2019. Despite this sample restriction, the descriptive statistics remain broadly comparable.

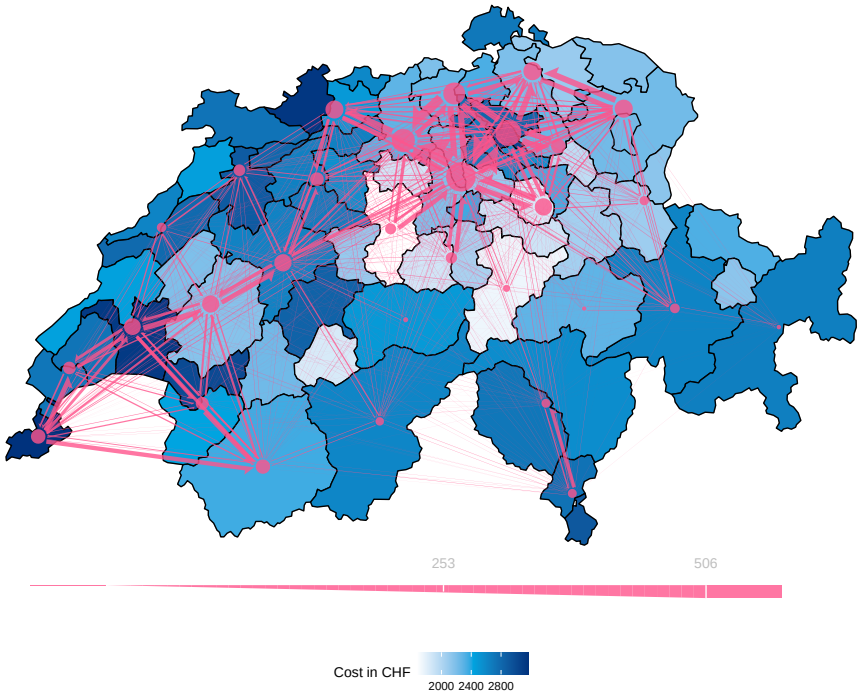
resentative. Figure 1 illustrates average annual total health care expenditures per HSA, with darker blue indicating higher-cost regions. Mean annual per capita expenditures across all HSAs amount to approximately CHF 2,400, with a standard deviation of CHF 345.[2] Generally, regions in the Western French-speaking part of Switzerland and Southern Italian-speaking part exhibit systematically higher expenditures than those in the central German-speaking areas. However, the two most expensive areas are highly urban areas with Geneva and Basel City.[3] Overlaying this map, we depict the most common internal migration flows, with line thickness reflecting the volume of movers. These flows show a high degree of linguistic region persistence: most moves occur within rather than across language regions.

In terms of demographic and insurance characteristics, our mover sample closely reflects the general (moving) population in Switzerland. Specifically, the age distribution of movers (see Figure A.1 Panel a) in our sample closely mirrors the official statistics on residential mobility by age (Federal Statistical Office FSO, 2023), displaying a bimodal pattern with peaks in early childhood and young adulthood and another small rise shortly after retirement. Likewise, the distribution of chosen health insurance deductibles prior to the move (see Figure A.1 Panel b) mirrors the average pattern (Federal Office of Public Health FOPH, 2023a), reflecting the typical selection behavior in the general population.

Federal Office of Pulic Health data To enhance the external validity of our analysis, we supplement the CSS insurance data with individual-level administrative data from the Swiss Federal Office of Public

[2] For the construction of average figures, we exclude the year of move for individuals who change residence.
[3] The ranking of HSAs is highly stable across years. Detailed results are available upon request.

Figure 1: Average Health Care Costs per Hospital Service Area (HSA) and Internal Migration Patterns



Note: The figure shows average total health care expenditures per Hospital Service Area (HSA) for the full sample of insured individuals with cheaper areas in white and more expensive areas in dark blue. The pink lines show the most common moving patterns for individuals changing their HSA according to the sample restrictions as explained in Section 3. We use the add_flowmap function in R with 30 nodes, meaning that only the thirty most important nodes will be visualized. Thicker lines correspond to more movers.

Health (FOPH, 2025). This dataset includes information on the entire population residing in Switzerland from 2019 to 2023, offering a comprehensive view of total health care expenditures per individual on an annual basis.

While our approach to the FOPH data mirrors the methodology applied to the CSS data, it is constrained by the fact that the FOPH data set only provides aggregate health care costs for each individual, without detailed information on the specific types of services utilized. As a result, we are unable to implement the same restrictions as in the CSS data.

The sole refinement applied to the FOPH data is the exclusion of individuals who move more than once during the observation period. This adjustment is necessary to ensure that the sample remains representative of individuals who undergo a single, stable relocation, thereby mitigating potential biases associated with multiple moves within the study window.

4 Empirical Strategy

To analyze changes in health care utilization upon moving, we adopt the event study framework developed by Finkelstein et al. (2016), applying it to our data set of individuals who move across hospital

service areas (HSAs) in Switzerland. Specifically, we estimate the following model:

$$Y_{it} = \alpha_i + \tau_t + \text{ Age Bin}_{it}\beta + \sum_{k \neq -1} \gamma_{(i,k)} * \delta_i + \epsilon_{it} \text{ ,} \tag{1}$$

where Y_{it} denotes the outcome of interest — in our main specification the logarithm of total annual health care costs — for individual i in year t. The model includes individual fixed effects α_i, year fixed effects τ_t, and controls for five-year age bins via β. The coefficients γ capture the dynamics of utilization relative to the move, where the year immediately preceding the move (period -1) serves as the reference category.

A key estimation challenge in this setting is that individuals move both from high- to low-spending HSAs and vice versa. To address this, we follow Finkelstein et al. (2016) and include a term δ, which captures the average difference in log spending between the mover's destination (d) and origin (o) HSA ($\overline{y}_{d(i)} - \overline{y}_{o(i)}$). This transformation ensures that the event-time coefficients reflect the extent to which movers' utilization changes relative to the destination-origin-difference in average health care utilization (a mover-specific benchmark) instead of being diluted by heterogeneity in move direction. The post-move event study coefficients can then be interpreted as capturing the share of variation attributable to supply-side factors. A coefficient of one, for example, means that a mover fully adapts to the utilization level of the destination while a coefficient of zero means the mover keeps utilization at the origin level. Because moves occur during the calendar year designated as event time zero — implying that individuals, on average, spend only part of the year in their new location — we average the coefficients from event years one to three to estimate the long-run supply-side contribution.

We complement the event study with a regression-based decomposition approach, also based on Finkelstein et al. (2016). We estimate HSA fixed effects using the sample of movers and non-movers, which allows us to separately identify HSA-level variation while controlling for individual fixed effects. In a second step, we split the sample based on HSA spending levels and compare individuals in the highest- and lowest-cost areas to estimate patient- and supply-side shares. For further details see Finkelstein et al. (2016), Section II.A - II.C. While the methodology is well-suited to the U.S. Medicare context, several of its underlying assumptions are less applicable to Switzerland. First, identification of HSA fixed effects relies entirely on movers, but most relocations are local — typically between neighboring HSAs. This localization is even stronger when contrasting the lowest- and highest-spending quartiles: only 3% of moves go from the cheapest to the most expensive HSAs (or vice versa). In Switzerland, however, average HSA spending differs markedly across cultural and linguistic regions — areas with relatively little migration. Consistent with this, 63% of moves stay within the bottom or top half of HSAs by spending. As a result, the second-stage comparison between high- and low-cost HSAs effectively extrapolates beyond the support of the mover data. Second, HSA fixed effects are esti-

mated without weighting, which can be problematic for outcomes with low incidence, such as specific service categories. For these outcomes, some HSAs include only a handful of movers with positive spending, making the fixed-effect estimates noisy and potentially extreme.

Given these limitations of the regression-based decomposition in the Swiss context, we proceed by focusing primarily on the event-study approach, which offers a more robust identification strategy that is less sensitive to the modelling assumptions violated by Swiss migration patterns.

5 Results

Figure 2 illustrates the event study estimates for total health care costs over time relative to the move. Results are based on the sample of movers that can be observed both three years before and after moving (column 3 in Table 1). The estimates show no evidence of differential pre-trends in health care utilization prior to the move, supporting the validity of the event-study design. The year immediately before the move (period -1) serves as the reference year and is normalized to zero. Consistent with Finkelstein et al. (2016), we observe a discrete jump in health care spending at the time of the move, indicative of a change in local health care supply. Averaging the post-move coefficients over event years one to three — excluding year zero, during which individuals typically spend only part of the year in their new location — yields an estimated supply-side contribution of 41%, and a corresponding patient-side share of 59%.

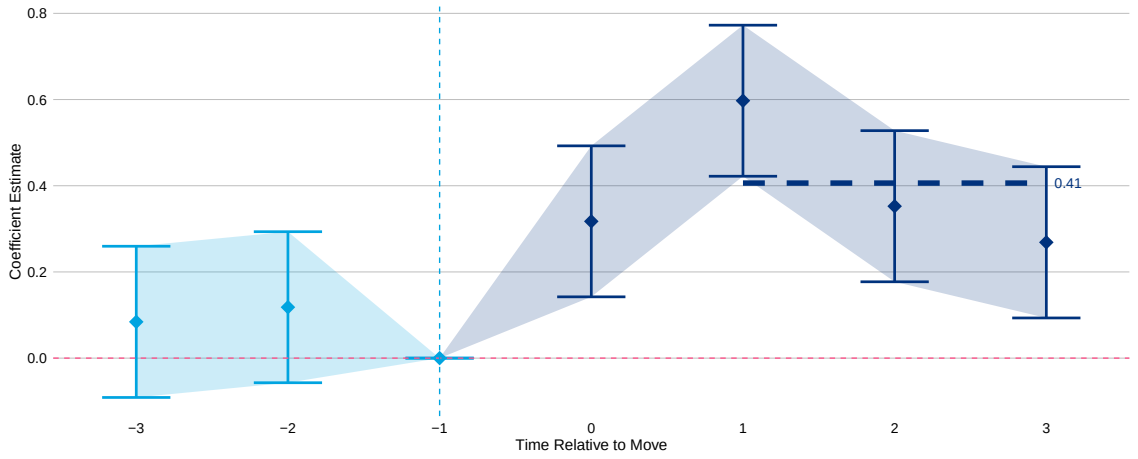
Results including movers who may exit the sample due to window censoring (column 2 in Table 1), depicted in Appendix Figure A.2 Panel (e), remain qualitatively similar. Specifically, we observe virtually no pre-trends during the eleven years preceding the move. In the eleven-year post-move period, the average supply share is 44%, only slightly higher than in our baseline specification.

As an additional check, we estimate a version of the baseline model restricted to individuals who reached adulthood by the time of their move. The resulting average supply share for this subgroup is 41%, exactly aligning with our main findings.

A potential limitation of relying on insurance claims data is that they do not cover the entire Swiss health care market. This concern is particularly salient if movers are more likely to switch insurers, in which case the subset of movers who remain with the same insurer may not be representative of the broader population of movers.

To assess the external validity of our estimates based on CSS insurance data, we complement our analysis with nationwide administrative data from the Swiss Federal Office of Public Health (FOPH). These data cover the full residential population of Switzerland from 2019 to 2023 and include information on total health care expenditures, age group, and health service area (HSA) of residence at the

Figure 2: Event Study on Log of Total Health Care Costs



Note: This figure shows the event-study coefficients γ of estimating equation 1 on the main outcome of log of total health care costs for the three periods prior to moving up to three periods after moving. The reference period -1 prior to moving is normalized to zero. In year zero, individuals, however, only spent part of the year at the new destination place. This is why the dashed line plots the average event study coefficients of periods 1 to 3 only.

end of each year. Applying the same event-study specification as in equation 1, we obtain a supply share of 22 percent in the baseline FOPH data (see Appendix Figure A.3) and 23 percent when imposing the restriction that individuals are observed continuously over the full five-year period (excluding newborns, deaths, and in- and out-migration).

While the FOPH data offer the advantage of full population coverage, they suffer from two important limitations relative to the CSS data. First, we cannot exclude individuals who move for health-related reasons, such as transitions into nursing homes or inpatient psychiatric care. Second, we cannot exclude individuals who formally change residence but continue to consume most of their health care services in their origin area. In the CSS data, we address this issue by restricting the sample to movers who experience at least a 50 percentage point increase in the share of health care services consumed in the destination area; we refer to individuals who do not satisfy this criterion as *non-exposed movers*.

Both sample adjustments are crucial for identification. Individuals who obviously move because of deteriorating health and non-exposed movers are not plausibly exposed to the health care supply environment of the destination area. Including such individuals mechanically biases the supply share downward.

The purpose of incorporating the FOPH data, however, is to assess external validity. To isolate the role of these adjustments, we therefore re-estimate our main specification using CSS data under progressively relaxed restrictions. First, when including individuals receiving long-term care services or inpatient psychiatric care — who may plausibly move for health-related reasons — the estimated supply share declines from 41 percent in the baseline CSS sample to 37 percent (see Appendix Figure A.4a). Second, when additionally including *non-exposed movers* by relaxing the 50 percentage point

restriction in the share of health care consumption at the destination area, the estimated supply share declines sharply to 18 percent (see Appendix Figure A.4b), closely matching the estimate obtained using the full FOPH sample.

This pattern indicates that failure to exclude *non-exposed* movers is particularly consequential. Without this correction, the estimated supply share is half as large as in the baseline specification. Moreover, for this group, supply shares increase substantially over time following the move, consistent with gradual adjustment to the destination environment (Appendix Figure A.4b). These dynamics further underscore the importance of restricting attention to movers who are plausibly exposed to the supply conditions of the destination area.

Overall, this exercise demonstrates that insurance claims data from Switzerland's largest insurer closely mirror patterns observed in nationwide administrative data, while offering critical advantages in terms of sample refinement and outcome specificity. Despite narrower coverage, the CSS data allows for more credible identification of supply effects and facilitate the analysis of diverse outcomes not available at the aggregate level, which we exploit in the next section 5.1 on different outcomes.

Relative to the findings in Finkelstein et al. (2016), who report a supply share of approximately 50% in the U.S. Medicare context, our estimate for Switzerland is notably smaller and more in line with the estimates of other European countries (Godøy and Huitfeldt, 2020; Johansson and Svensson, 2022; Moura et al., 2019; Salm and Wübker, 2020). This difference may reflect key institutional features of the Swiss health care system, such as mandatory insurance coverage and more fragmented provider markets, as well as differences in sample composition.

5.1 Different Outcomes

As illustrated in Figure 3, supply-side contributions to health care spending vary substantially across different domains, ranging from 14% to 67%. Notably, services where provider discretion is smaller or where patient preferences are likely to play a larger role — such as prescription drugs and physiotherapy — exhibit relatively low supply-side shares (14% and 33%, respectively), suggesting greater influence of demand-side factors in these areas. In contrast, services with greater scope for provider discretion, such as laboratory testing, exhibit higher supply responsiveness, with a supply-side share of 42%.

A particularly illustrative pattern emerges in the case of general practitioner (GP) services. The decision to initiate a GP visit appears to be largely patient-driven, with a relatively low supply-side share of 40%. However, when examining the total costs associated with GP-provided care — capturing follow-up consultations — the supply-side contribution rises considerably to 57%. This is consistent with the view that while patients retain agency in initiating care, providers exert greater influence over

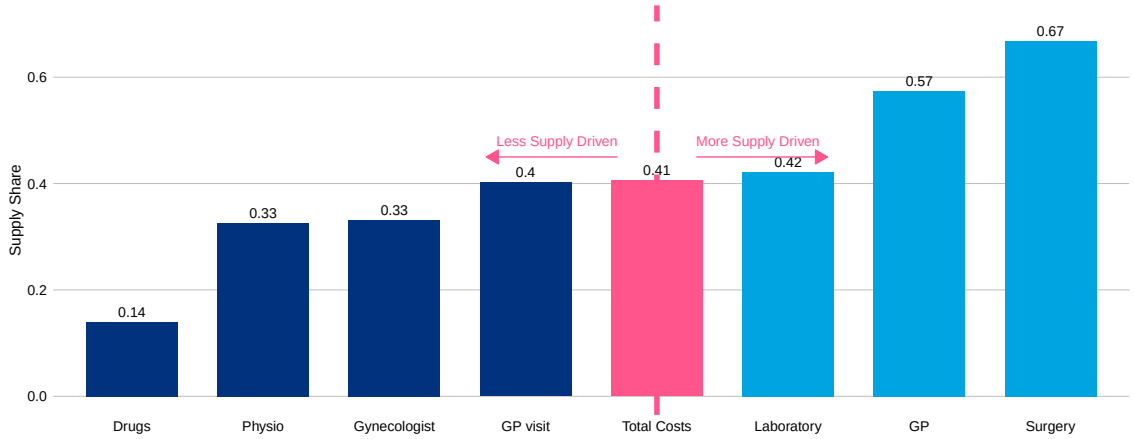
the intensity and trajectory of subsequent treatment.

Another interesting pattern — not depicted in Figure 3 — emerges for prescription drugs. Overall, the supply share of prescription drugs is relatively low, at 14%, which aligns with prior expectations and the Swedish study (Johansson and Svensson, 2022). However, among the subset of drugs prescribed by self-dispensing physicians, this share increases markedly to 55.3%.[4] This is in line with expectations, since with moving to a place where self-dispensing by physicians is allowed, the supply share of self-dispensed prescription drugs is rising.

Even within specialist care, we observe considerable heterogeneity in supply responsiveness. For example, gynecological services exhibit a supply-side share of 33%, whereas surgical care shows a markedly higher share of 67%. These findings highlight the central role of provider behavior in shaping health care expenditures and suggest that variation in supply-side influence is systematically linked to the degree of clinical discretion and financial interest inherent in different types of care.

We also observe substantial variation in supply shares across outcomes for movers who may exit the sample due to window censoring (column 2 in Table 1), as depicted over time in Appendix Figure A.2. The findings closely resemble our main results, with the relative ranking of supply shares across outcomes remaining almost stable. Specifically, supply shares range from 19% for prescription drugs (Panel (a), Appendix Figure A.2) to 69% for surgical care (Panel (h), Appendix Figure A.2).

Figure 3: Event Study Estimates for Different Outcomes



Note: All outcomes are measure in log of the respective costs with the exception of GP visit that is a dummy variable incidating whether you have been at the GP or not. The depicted estimate is the average over periods 1 to 3 after moving. We do not inlcude period 0 in the average estimate since on average individuals will have spent half the year still in the origin place. Period -1 is the reference period. The estimate corresponds to the average supply share. The main estimate on the log of total health care costs is highlighted with the vertical dashed line in pink. Outcomes on the left are estimated to be less supply driven, and outcomes on the right to be more supply driven.

[4] In Switzerland, physicians in some cantons are permitted to dispense medications directly to patients, a practice known as self-dispensation. This system allows doctors to both prescribe and sell medications, potentially influencing prescribing behavior and increasing the likelihood that prescriptions are filled immediately. (Müller et al., 2023)

5.2 Heterogeneites

Figure 4 disaggregates the main findings — the supply share of total health care utilization and laboratory services — by gender and age group. As we have demonstrated similar results for the regressions using the samples in columns (2) or (3) of Table 1, we focus on the full sample of movers in our heterogeneity analyses because of sample size considerations.[5] On average, the supply share is very similar for females (45%) and for males (47%), however, with a bit of a different trend where supply shares for women tend to be higher initially and decrease over time. Interestingly, also, we find larger differences for certain specific outcomes such as laboratory services with supply shares for women of 56% and for men of 26%. This pattern aligns with expectations and results reported by Moura et al. (2019), as women tend to visit physicians more frequently and maintain more regular contact with the health care system. As with the earlier results on GP visits and GP-related costs, more frequent interactions may facilitate greater opportunities for follow-up treatments. This, in turn, increases provider discretion.

In contrast, the results by age group reveal a more striking divergence. Individuals under the age of 45 exhibit a substantially higher supply share (68%) compared to those aged 45 and older (30%). Among older individuals, who tend to require more intensive and frequent treatment, the scope for provider discretion appears more limited — potentially due to more standardized care protocols — resulting in lower supply shares. Additionally, younger individuals may form habits or preferences more quickly in their initial interactions with providers, reinforcing the influence of initial provider exposure.

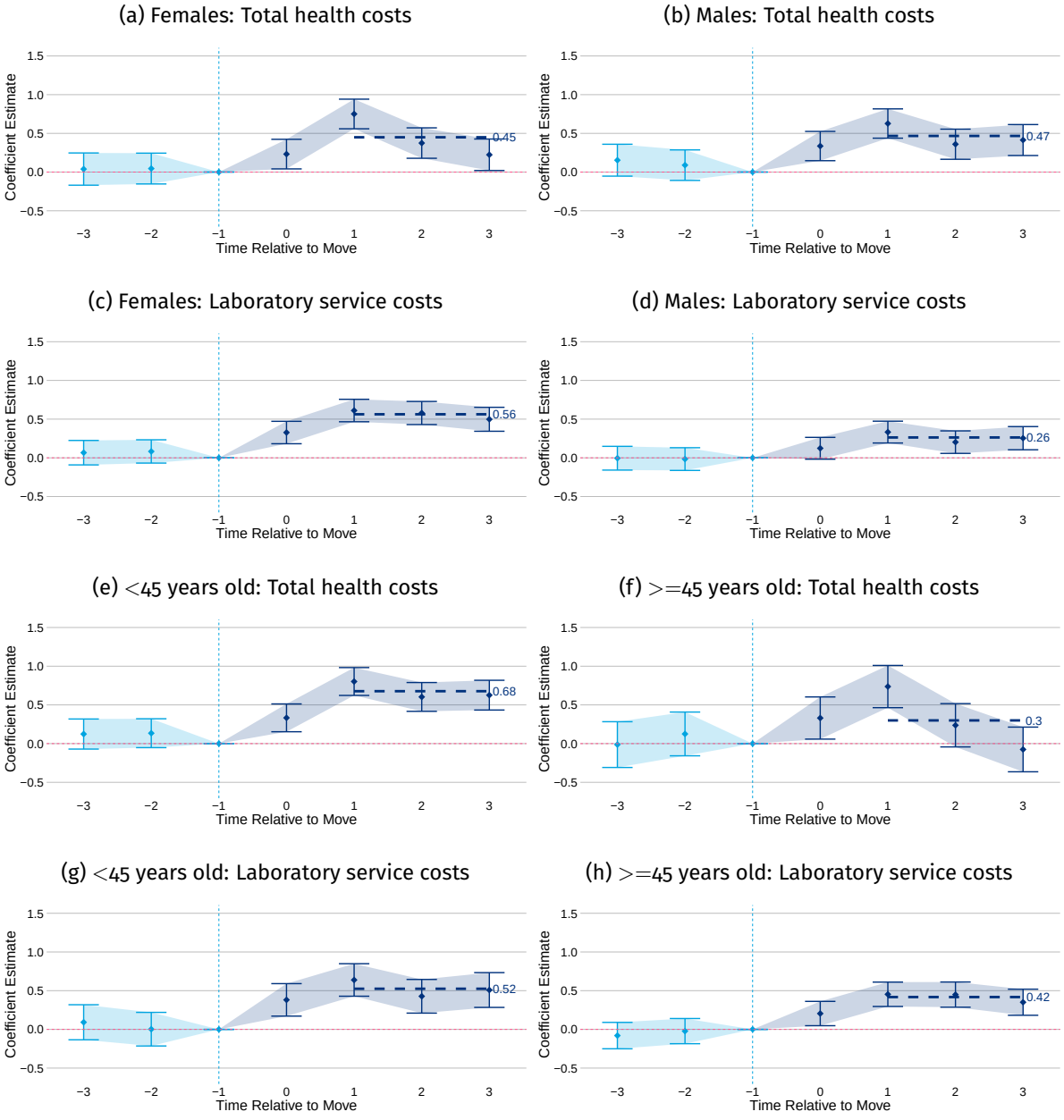
These findings can be loosely compared to those reported by Finkelstein et al. (2016), who study a Medicare population aged 65 and above and find a supply share of approximately 50%. In contrast, our estimates suggest considerably lower supply shares within the Swiss context. While data limitations prevent us from replicating the same age thresholds — due to a small number of movers over the age of 65 — extrapolating from our age-specific results suggests that supply shares in Switzerland are likely even lower for this older group.

5.3 Robustness

Switzerland's tariff system creates region-specific price differences that could, in principle, contaminate a cost-based decomposition. On the inpatient side, nationally identical DRG weights are multiplied by a hospital-specific base rate which takes into account regional price differences; on the outpatient side, physician services are billed in TARMED tax points whose CHF value is set at the cantonal level, also taking into account regional price differences. For other outcomes such as prescribed

[5] Note, however, that we restrict years relative to the move between -3 and +3, again for sample size reasons.

Figure 4: Heterogeneous Event Study Results for Log of Total Health Care Costs



Note: This figure shows the event-study coefficients γ of estimating equation 1 with the respective sample of movers as labelled in the subpanels on the log of total health costs and laboratory service costs, respectively.

medications there is less concern as prices are regulated at the federal level. To make sure our results are not simply picking up these price gradients, we re-estimate the event-study model with quantity-based outcomes that are immune to local price variation: (i) the number of GP consultations, (ii) an indicator for having at least one inpatient admission, and (iii) the number of specialist visits (gynecology and surgery). In every case the post-move profile, and hence the inferred supply share, is remarkably similar to the corresponding cost measure.

Our baseline estimates rely on the log plus one transformation. We re-estimate equation (1) in levels and find very similar results with slightly smaller supply shares. Furthermore, we augment the main event-study specification by adding the full sample of non-movers. This approach allows non-movers to add variation in estimating the age and year coefficients. Our results are essentially identical to the baseline results. Taken together, these alternative specifications confirm that our central findings are robust to plausible variations in functional form and identification strategy.

Finally, using the regression-based approach, we estimate HSA fixed effects from the combined sample of movers and non-movers, and subsequently compute supply shares by comparing individuals in the top 50% versus the bottom 50% of HSAs ranked by average health care costs. This method yields lower supply share estimates — approximately 27%. While the supply share estimates derived from the regression and event-study approaches differ substantially, we reiterate that, in the Swiss context, the specific migration patterns introduce important limitations for the regression design, particularly when analyzing more granular outcomes.

6 Conclusion

This study contributes to the literature on regional variation in health care utilization by leveraging internal migration data from Switzerland. Employing the methodology established by Finkelstein et al. (2016), we decompose geographic variation into demand-driven and supply-driven components within a distinctly different institutional context, characterized by mandatory insurance coverage and decentralized governance. Our analysis reveals that approximately 60% of the variation in health care spending in Switzerland is attributable to patient characteristics, while supply-side factors account for roughly 40%. Importantly, the influence of supply-side factors exhibits significant heterogeneity by type of service, with relatively lower supply-side shares in patient-preference-sensitive areas, such as prescription drugs (14%) and physiotherapy (33%), and higher shares in areas allowing greater provider discretion, notably laboratory services (42%) and surgical care (67%) .

Additionally, we identify marked differences in demand- and supply-side responsiveness across demographic groups, finding higher supply-side contributions among younger populations. These findings underscore the nuanced role of supply-side factors in shaping health care utilization, high-

lighting the importance of tailored policy interventions that reflect the complex interplay between patient preferences and supply-side dynamics. As rising health care costs continue to pose significant challenges, policies designed to address provider incentives and promote efficient health care provision must carefully account for these differential effects across service types and patient demographics.

Future research should further explore the underlying mechanisms driving the identified demand- and supply-side variation, particularly by investigating the institutional and organizational structures unique to the Swiss healthcare system. In particular, it would be valuable to examine how different policy designs — such as the degree of physician discretion, the use of clinical guidelines, and the alignment of provider incentives — shape these patterns. Moreover, it would be insightful to compare these findings to systems with similar managed competition frameworks, such as the Affordable Care Act (ACA) in the United States, rather than solely to Medicare Part D. Such comparisons could offer broader lessons about the quality and efficiency of different healthcare models and the effectiveness of managed competition in practice.

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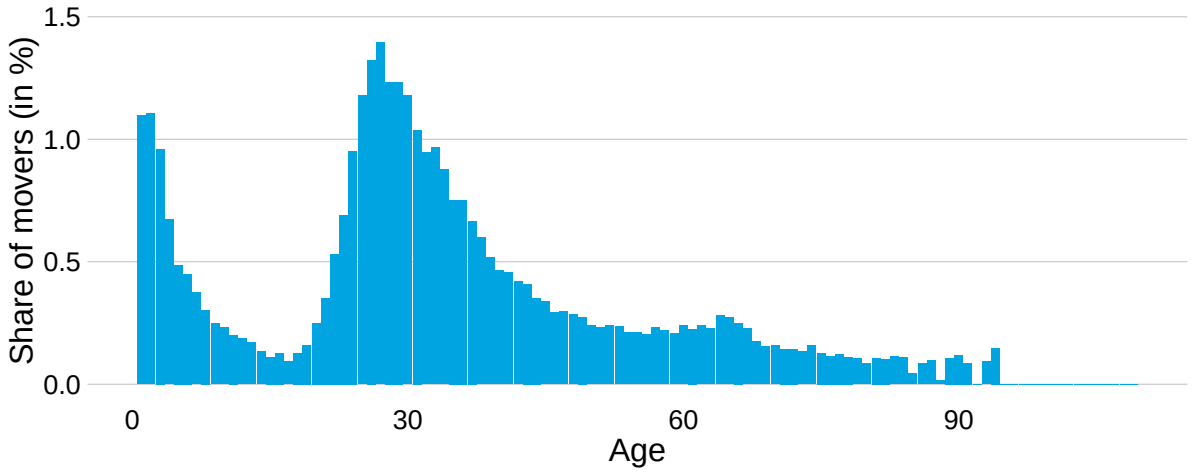
Appendix

Figure A.1: Descriptives of Movers

(a) Share of movers by age



(b) Deductible of movers in the year prior to moving

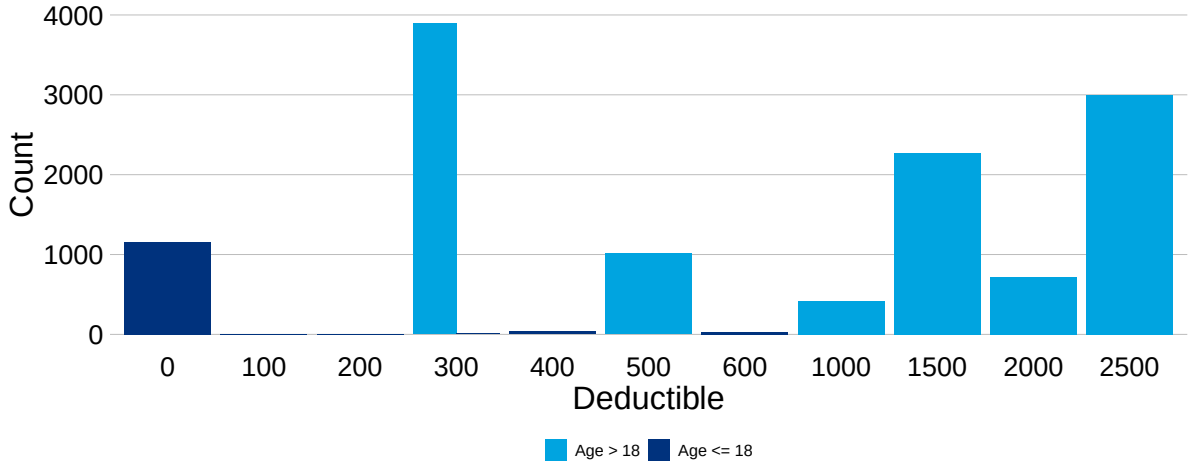
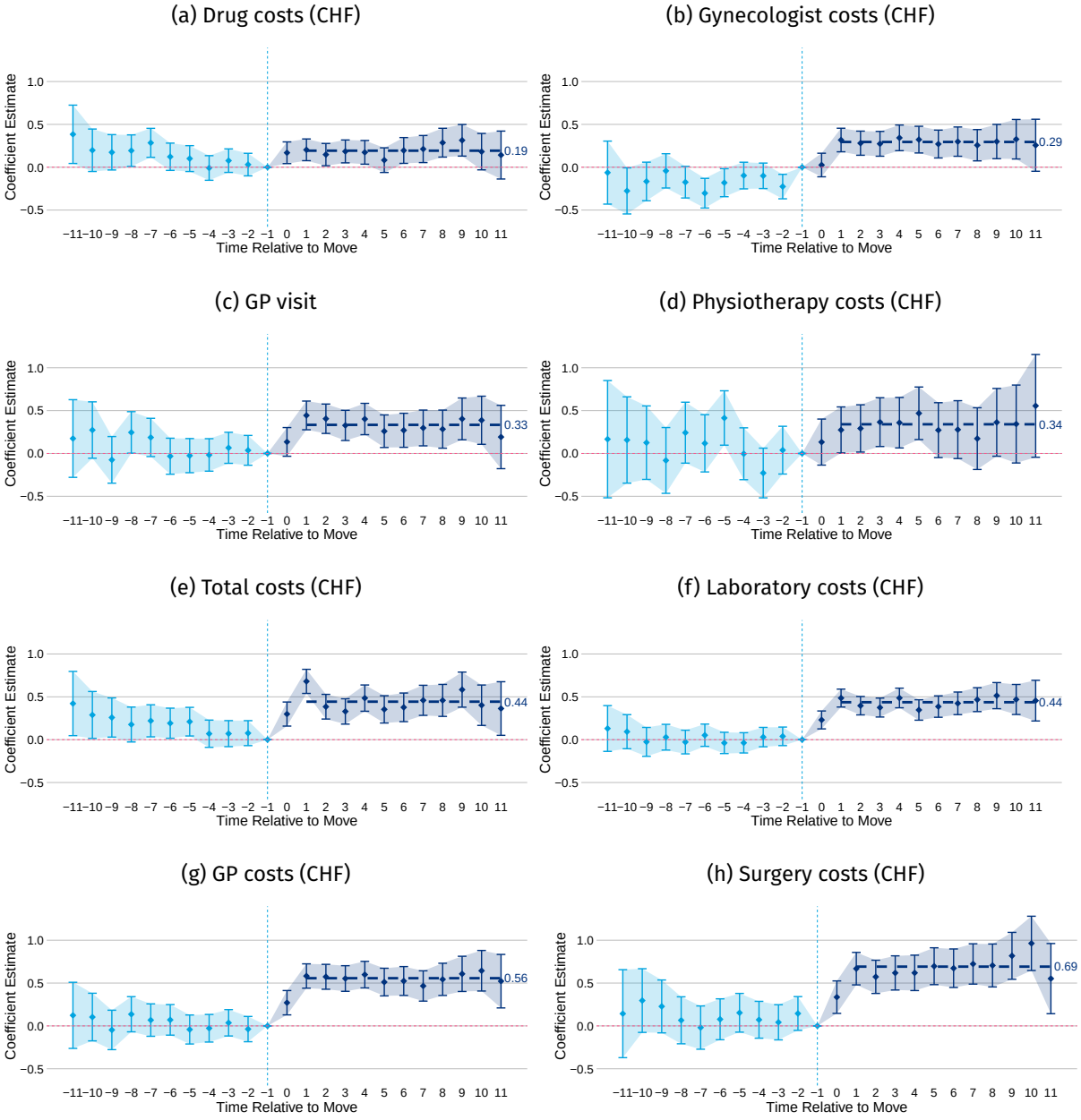
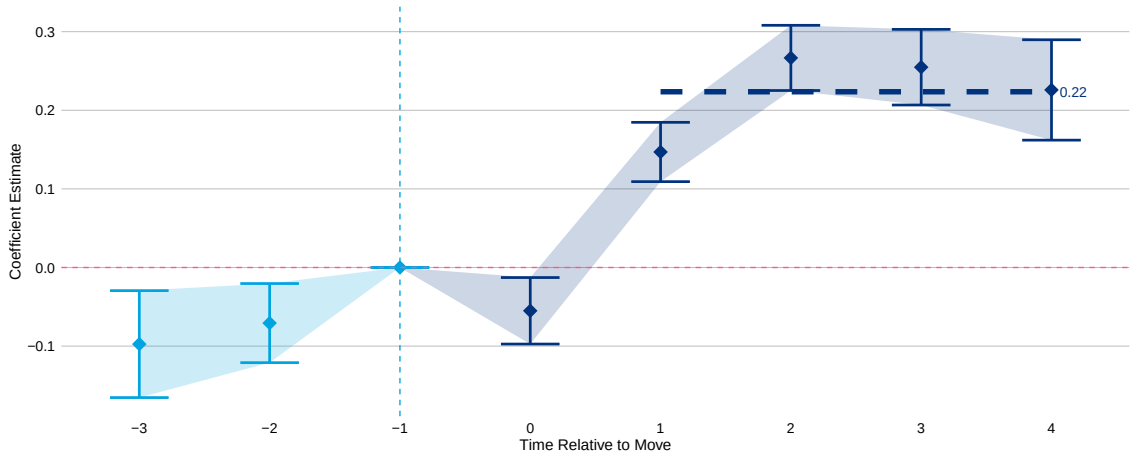


Figure A.2: Event Study Various Outcomes: Full Sample of Movers



Note: This figure shows the event-study coefficients γ of estimating equation 1 with the full sample of movers on all outcomes as labelled in the subpanels. The reference period -1 prior to moving is normalized to zero. In year zero, individuals, however, only spent part of the year at the new destination place. This is why the dashed line plots the average event study coefficients of periods 1 to 11 only.

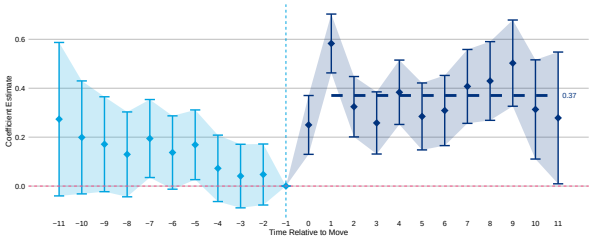
Figure A.3: Event Study on Log of Total Health Care Costs - FOPH data



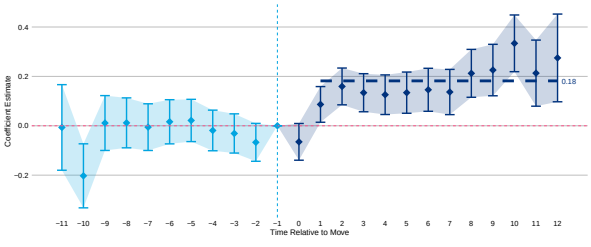
Note: This figure shows the event-study coefficients γ of estimating equation 1 on the main outcome of log of total health care costs using the full Swiss sample of the Federal Office of Public Health (FOPH) from 2019 to 2023. The reference period -1 prior to moving is normalized to zero.

Figure A.4: Event Study On Log of Total Health Care Costs: Relaxing Restrictions

(a) Incl. psychiatry and long-term care



(b) Incl. *non-exposed movers*



Note: This figure shows the event-study coefficients γ of estimating equation 1 with the full sample of movers relaxing certain restrictions as labelled in the subpanels a) and b) on the main outcome of log of total health care costs. The reference period -1 prior to moving is normalized to zero.