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The Power of Daughters: How Physicians' Family Influences Female Patients' Health*

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Abstract

While physicians are crucial to patient outcomes, what determines physician behavior and decision making remains to be understood. In this paper, we study how physicians' family characteristics influence physicians' behavior and patient health outcomes. Using administrative data from Denmark and the natural experiment of a child's gender, we find that having daughters affects male primary care physicians' practices and the health of their female patients. Specifically, female patients cared for by male physicians with one additional daughter (compared to one additional son) are 5.5% less likely to die from female-specific cancers, including breast and gynecologic cancers. This improvement in outcomes appears to stem from enhanced cancer screening and preventive efforts, leading to earlier detection and more successful prevention. Exploring potential mechanisms, we find that male physicians with more daughters show greater attentiveness to female-specific health guidelines and are more likely to collaborate with women. We also find suggestive evidence from survey data that female patients report higher levels of trust, empathy, and clearer communication with these physicians.

JEL codes: I10, I14, J12

Keywords: Women's Health, Primary Care Physician, Physician Behavior, Practice Style

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1 Introduction

Gender disparities in health care are well documented. For instance, as compared to men, women are more likely to have their symptoms dismissed by their healthcare providers and receive less intensive care conditional on the same symptoms (Hoffmann and Tarzian, 2001, Hernandez et al., 2007, Chen et al., 2008, Pietropaoli et al., 2010, Côté and Coutu, 2010, Pelletier et al., 2014, Cabral and Dillender, 2024, UK Department of Health and Social Care, 2021, World Economic Forum, 2024). Women also tend to be diagnosed later than men for the same diseases, including cancer (Westergaard et al., 2019, Din et al., 2015). Such gender-biased behaviors are reportedly more prevalent among male physicians (Champagne-Langabeer and Hedges, 2021, Cabral and Dillender, 2024). Understanding what influences the differential treatment of patients by gender and what affects the quality of care provided to women are central to addressing gender disparities in health care. Yet, what determines physician behavior and decision making, especially with regard to providing quality care to women, remains little understood. Recent research emphasizes the importance of physicians' characteristics for patient outcomes, highlighting that physician-patient match in aspects such as gender or race can reduce disparities in health care, potentially through improved communication and trust (Alsan et al., 2019, Cabral and Dillender, 2024, Currie and MacLeod, 2020, Currie and Zhang, 2023, Ginja et al., 2022, Greenwood et al., 2018, Harris, 2024, Hill et al., 2023, Kristiansen and Sheng, 2022, Miyawaki et al., 2024, Schwab and Singh, 2024, Ye and Yi, 2023).

In this paper, we study the role of a hitherto unexplored factor — physicians' family networks — in determining physician behavior and patient health. Specifically, we examine whether physicians' children, and particularly daughters, affect physician behavior and thereby the health of female patients.

Previous studies from non-medical settings show that fathers with daughters are more likely to think and behave in a feminist manner. For example, Washington (2008) demonstrates that US legislators with more daughters tend to vote more liberally on women's issues, such as reproductive rights.[1] Similar daughter-to-father effects have also been doc-

[1] Green et al. (2023), however, shows that the effect is only present for the years considered in Washington (2008).

umented in the cases of judges and CEOs (Glynn and Sen, 2015, Cronqvist and Yu, 2017, Ronchi and Smith, 2021). The mechanisms underlying such effects, however, remain little understood to date. It is also not clear whether such child-to-parent influence holds in a setting supposedly ruled by science and objectivity, such as medicine.

Our paper studies whether and how having daughters influences the practice style of physician fathers. We focus on high-stakes patient outcomes such as female cancer deaths, which are leading causes of mortality among women worldwide. In addition, we explore several intermediate outcomes related to healthcare delivery to women, such as vaccinations against human papillomavirus (HPV), prescription of contraceptive pills, and the use of preventive screening programs.[2] Furthermore, we combine several novel datasets, including unique survey data, to explore the potential mechanisms. This paper, to our knowledge, is the first to empirically study the influence of physicians' families, particularly the gender of their children, on physician behavior and patient outcomes.

A key challenge when studying the effects of daughters on their physician fathers is the lack of data measuring both physician family characteristics and patient outcomes. To overcome this challenge, we leverage high-quality administrative data from the Danish population registers, which cover the entire Danish population and provide detailed records of individual health and socioeconomic characteristics. Importantly, we are able to identify each individual's primary care physician (henceforth physician, in the UK also known as general practitioner or GP) as well as the physician's family background, including the number and gender of the physician's children.[3] The dataset provides a unique opportunity to study the influence of physicians' family composition, and particularly the gender of their children, on physician behavior and female patient health.

Our empirical strategy follows previous studies in exploiting the natural experiment of a child's gender to identify the effects of daughters or sons. Specifically, we regress patient health outcomes on the physician's number of daughters, while controlling for the

[2] UK Department of Health and Social Care (2021) mentions several of these conditions and procedures among topics that women find difficult to discuss with their physicians and that should be included in a national strategy for Women's Health.

[3] We focus on physicians working as sole practitioners instead of those working in duo- or multi-physician clinics because the patient data allow us to identify each person's primary care *clinic* only. This means we could only identify each person's physician in sole-physician clinics, which are the most common type of clinic in Denmark.

physician's total number of children. The identifying assumption is that, conditional on the total number of children, the number of daughters that a physician has is essentially random. To support the identifying assumption, we conduct a series of balance tests and find that, conditional on the number of children, the number of daughters that a physician has is uncorrelated with a rich set of physician and patient socioeconomic characteristics. In addition, consistent with the idea that patients do not typically observe the gender composition of physicians' children, we find no evidence of patient selection, either in or out of clinics, based on the physicians' number of daughters. Furthermore, we test for and rule out the potential concern that physicians might follow fertility stopping rules based on children's gender.

Our baseline analysis shows that while the number of daughters a male physician has does not influence overall female mortality, it does matter for mortality from female-specific health conditions. Specifically, female patients under the care of male physicians with one additional daughter (compared to one additional son) are 2.4% less likely to die from cancers. The effect is driven by a reduction in deaths from female-specific cancers (5.5%), including breast cancer (4.8%) and gynecologic cancers (6.5%), and is more pronounced among older women. This relationship holds across a battery of robustness checks, including measuring the number of daughters with continuous or dummy variables, running logit regressions, or conducting the analysis at the patient versus the clinic level. In contrast, we find no such effect among female physicians or on male patient mortality, suggesting that the impact of daughters is unique among male physicians for female-specific health outcomes.

Exploring what might explain the baseline results on cancer mortality, we find that female patients cared for by male physicians with more daughters tend to be diagnosed earlier, before the cancer has progressed. In particular, these patients are more likely to receive mammography below age 50 — before they are covered by the national breast cancer screening program. They are also more likely to receive additional tests that may have led to earlier detection of cervical cancer or pre-cancerous cell changes. These findings suggest that male physicians with more daughters tend to go the extra mile in testing for and preventing cancers that specifically affect women, contributing to earlier detection, reduced cancer progression, and fewer deaths.

A more challenging question is *how* daughters may affect their physician fathers. Empirical evidence on the mechanisms underlying daughters' influence in general remains scarce. Past studies in economics and sociology argue that parenting a daughter increases fathers' feminist sympathies (Warner and Steel, 1999, Washington, 2008). This suggests that daughters may improve male physicians' empathy and attitudes towards women, leading to higher-quality care for female patients. Alternatively, physicians may learn from their daughters and thus become more informed and knowledgeable about specific female health issues. Besides, male physicians with daughters might communicate more effectively with female patients.[4] While it is challenging to strictly separate these different channels, we present several pieces of evidence to explore the potential mechanisms.

First, we investigate whether the estimated effects of daughters depend on the age of daughters. If the effects are primarily driven by physician learning or knowledge, we would expect the effects to be stronger among physicians with older daughters, as these physicians would have been exposed to female-specific health knowledge or personal experiences for a longer period of time. Instead, we find that the effects of daughters are similar between physicians with older daughters and those with only young daughters, suggesting that knowledge or learning is unlikely to be the primary channel.

Second, we examine two major exogenous health information shocks over the past decade—a change in clinical guidelines regarding oral contraceptives and media-driven misinformation about potential side effects of the HPV vaccine—to analyze whether male physicians with more daughters respond differently compared to those with more sons. Using a difference-in-differences approach to exploit within-physician variation, we find that those with more daughters are more attentive to women's health needs. For instance, following the discovery that newer generations of oral contraceptives carry greater side effects, they are more likely to revert to prescribing safer, older versions. Similarly, during a period of misinformation about HPV vaccinations, these physicians are more effective at ensuring their female patients receive the vaccine. Both events received extensive media

[4]Previous studies demonstrate a positive correlation between effective physician-patient communication and patient health (Stewart, 1995).

coverage and national attention, suggesting that physicians with more daughters likely do not differ in the information they have regarding these issues. Rather, greater adherence to these guidelines likely reflects a higher level of care and concern from the physicians for their female patients, as well as stronger trust from the female patients.

Third, while we focus on sole practitioner physicians in our baseline analysis, we investigate male physicians in non-solo clinics and examine their choices of partners to further explore potential mechanisms. We find that male physicians with more daughters are more likely to team up with female physicians as their co-workers, which we interpret as additional evidence that daughters may impact their fathers' attitudes towards women.

Finally, we explore unique patient survey data, which we link with the population register data to more directly examine patient experiences and physician-patient relationships. We find evidence that male physicians with daughters are perceived as more empathetic and enjoy greater trust among their female patients. In addition, female patients find these physicians' communication easier to understand — an effect not driven by higher frequency of contact. Consistent with our baseline results on male patients, we find that the gender composition of physicians' children has no impact on male patients' satisfaction with their physicians.

While we cannot rule out the possibility that learning might also be part of the mechanisms, our results suggest that a significant part of daughters' influence on their physician fathers operates through improvements in physicians' empathy and attitudes towards women, which may in turn shape physician behavior and female patients' trust in the physicians. Our findings suggest that policies targeting male physicians' empathy, attitudes, and communication with female patients could be an effective — and relatively low-cost — way of addressing gender disparities in health care and improving key outcomes in women's health.

The paper makes several contributions to the literature. First, the paper contributes to the literature on gender inequalities in health care and health outcomes (Case and Paxson, 2005, Goldin and Lleras-Muney, 2019, Awaworyi Churchill et al., 2020). While gender disparities in health care are well documented (Hoffmann and Tarzian, 2001, Hernandez et al., 2007, Chen et al., 2008, Pietropaoli et al., 2010, Côté and Coutu, 2010, Pelletier et al., 2014), empirical evidence on the determinants of such disparities is still scarce (Cabral and Dillender, 2024). In addition, while physician beliefs and behaviors are crucial to patient outcomes (Epstein and Nicholson, 2009, Currie et al., 2016, Cutler et al., 2019, Currie and MacLeod, 2020, Simeonova et al., 2022, Singh, 2021), in general we still know little about what influences physician behavior and decision making. To our knowledge, this paper provides the first empirical evidence that physicians' family networks matter for both their professional behavior and subsequent patient outcomes. The findings also underscore the role of physicians' empathy, attitudes, and communication with women in improving women's health and reducing gender disparities in health care.

Moreover, the paper closely relates to the literature on the effects of children on parental beliefs and behaviors. Previous studies have examined the effects of child gender on parents' political preferences (Washington, 2008, Oswald and Powdthavee, 2010), judicial decision making (Glynn and Sen, 2015), corporate performance and decisions (Bennedsen et al., 2007, Cronqvist and Yu, 2017), gender norms (Warner and Steel, 1999, Borrell-Porta et al., 2019), criminal behaviors (Dustmann and Landersø, 2021), labor market outcomes (Lundberg and Rose, 2002, Maurin and Moschion, 2009), and marriages and intrahousehold bargaining (Dahl and Moretti, 2008, Li and Wu, 2011, Kabátek and Ribar, 2020). To our knowledge, we present the first empirical evidence of how the gender of healthcare providers' children affects high-stakes medical decision-making and outcomes, such as patient mortality and health. We also bring novel data to shed light on the mechanisms underlying such effects, which remain little understood in the literature.

2 Institutional Background

2.1 Primary health care in Denmark

Denmark has a tax-funded universal public health insurance system that aims at ensuring egalitarian access to healthcare. In this structure, privately owned primary care clinics effectively serve as gatekeepers for secondary health care services offered by specialists in hospitals and private clinics. Self-employed primary care physicians provide publicly subsidized services to their patients free of charge and must therefore acquire a clinic authorization number to receive reimbursement from the national health insurance system.[5] The national health authorities thus control the number of clinic authorizations issued in an area. In 2010, Denmark has approximately 3,500 primary care physicians, each serving an average of 1,600 patients (OECD, 2017, Simonsen et al., 2021). These physicians work in about 2,200 clinics, around 1,300 of which are solo practices.

Each patient is registered with a primary care physician of their choice and is generally required to see only that physician for primary health care services, except during holiday periods. While patients can change their primary care physicians, the ease of doing so varies in practice based on local physician availability. Switching typically costs about $30, though this fee is waived if the patient relocates to a different municipality or if their physician closes the clinic. In such cases, patients can choose from clinics that are accepting new patients within a radius of 5-15 kilometers from their home, depending on how urban their locality is. The information available to the patient when choosing a clinic is the physician's name, age, and gender.[6] Over the past two decades, the primary care sector has seen a decline in the number of physicians, particularly outside major cities, further limiting options for changing physicians (Madsen et al., 2023).

The primary care physician plays a crucial role for patients affiliated with their clinic, serving as the primary link between patients and the health care system. The physician is responsible for initial diagnoses, therapeutic interventions, prescription dispensation, chronic condition management, preventive care, and the facilitation of referrals to specialists in clinics or hospitals. While primary care physicians receive no fee for writing prescriptions, they are responsible for around 85% of all outpatient prescriptions.[7] The responsibilities of primary care physicians can vary widely and often require extensive communication and an ongoing relationship with patients (Heritage and Maynard, 2006). Often, a primary care physician serves as the family doctor, managing the health needs

[5]Primary care clinics operate under a hybrid reimbursement framework that combines capitation and fee-for-service models.

[6]Nowadays, most clinics also have websites providing additional information, such as the specialties of their physicians.

[7]Medication is provided free of charge while in hospital. Prescription drugs dispensed outside hospitals can be purchased in pharmacies and are highly subsidized, in particular for chronic conditions.

of multiple household members.

2.2 National screening programs

Having described the primary care sector, we now turn to screening programs for two dominant types of cancer affecting women: breast and cervical cancer. Breast cancer is the most prevalent, with approximately 4,000-5,000 new cases reported annually in Denmark (NORDCAN, 2023a). Survival rates for breast cancer are high, with a ten-year survival rate of 79% during 2001-2010 (NORDCAN, 2023b). Gynecologic cancers account for about 2,000 new cases each year, with cervical cancer being the only type routinely screened. Each year in Denmark, there are about 350-400 new cervical cancer cases and another 15,000 women being detected of precancerous cervical cell changes, with about 6,000 undergoing cone biopsies. The 5-year survival rate for cervical cancer improved from 67% in 2001-2010 to 74% in 2011-2020. A major development occurred around 2007, when national screening programs were fully implemented for both breast and cervical cancer.

Breast cancer screening In 1999, the Danish Parliament enacted a law mandating mammography screening for all women aged 50 to 69. The program began in 2007, and by 2008, all regions in Denmark had launched the national screening initiative (Christiansen et al., 2014). Women included in the program receive invitations for a mammogram every two years. The program has achieved significant engagement, with a national screening rate of 83% among those invited (RRKP, 2023).

Primary care physicians are not directly responsible for conducting the screenings. Invitations are automatically sent through an electronic mailbox, bypassing the involvement of physicians, and screenings typically occur at hospitals. Primary care physicians can, however, play a role in encouraging women to participate in the screening program. For women not covered by the national screening program, namely those under age 50 or over 70, their physicians can refer them for further specialized testing if they detect signs of a tumor. The introduction of the national screening program made mammography more accessible and affordable, enabling physicians to refer patients not covered by the program for screening.

Cervical cancer screening Cervical cancer screening has been implemented in various forms in Denmark since the 1960s.[8] A national program was introduced in 2007, offering screenings every three years for women aged 23-49 and every five years for women aged 50-65.[9] The primary goal of the screening program is to detect precursors to cervical cancer, but it may also identify cases of cervical cancer that have yet to show symptoms.

The primary care physician typically performs cervical cancer screening using a Pap smear, or Pap test. Women in the eligible age range receive electronic invitations or reminders to schedule an appointment for the test.[10] Severe abnormal findings are referred directly for a colposcopy, which includes biopsies. For women under 30 with minor abnormal findings, a strategy of periodic retesting is used. In contrast, women aged 30 and older with minor abnormalities undergo a triage process involving HPV testing; positive HPV tests are typically referred to colposcopy (Lynge et al., 2018).

3 Data

3.1 Physician and patient samples

A key challenge in studying the impact of physicians' family composition on physician behavior and patient health is the lack of data measuring both physician family characteristics and patient outcomes. Our paper overcomes this challenge by using high-quality administrative data from the Danish population registers, which cover the entire Danish population. Specifically, we combine multiple nationwide registers and merge data on patients' demographics, socioeconomic variables, and health outcomes, including their mortality and healthcare utilization. In addition, the data allow us to form links be-

[8] Screening practices varied by county — some were systematic, while others targeted individuals with early symptoms or those at risk. There were also periods with no screening in certain counties.

[9] In 2017, the program was expanded to include older women above 69 years old in a one-time HPV screening test (Andersen et al., 2019). This group, initially excluded from the screening program, had the highest incidence and mortality rates for cervical cancer (Sundhedsstyrelsen, 2016).

[10] There are two types of Pap tests: one examines samples under a microscope, while the other tests for high-risk HPV viruses. Women over age 60 are generally recommended the former, while younger women receive the latter. The test procedure performed by the physician is the same for both types, with differences occurring only in the lab (Sundhedsstyrelsen, 2012). Screening is paused during pregnancy and resumes after birth.

tween patients and their primary care physicians, as well as between physicians and their families. The resulting dataset provides a unique opportunity to study the influence of physicians' families on physician behavior and patient health outcomes.

A limitation of the data, however, is that we can only identify each person's primary care *clinic*. This means that if multiple physicians work at the same clinic, we unfortunately cannot observe which physician is responsible for each patient. To address this issue, our empirical analysis focuses on physicians working in solo practices, which make up the majority — about 60% — of all primary care clinics (Figure A.1). For each physician, we obtain from the population registers a rich set of their individual and family characteristics, including their gender, age, ethnicity, residential location, years of practice, as well as information on the number and gender composition of their children.

Our primary focus is to understand the impact of having daughters on physician fathers. Therefore, our main analysis focuses on male physicians, although we also consider female physicians in additional analysis. To improve the comparability of our sample, we make two additional sample restrictions. First, we focus on non-ethnic minority physicians (93.4% of the sample), who are more likely to share similar cultural values and gender norms, thus making them more comparable. Second, to remove outliers, we exclude the small percentage of clinic-years with an unusually low number of patient visits (fewer than 750 patients), which accounts for 4.4% of the sample.[11] While these restrictions improve the comparability of our sample, we show in robustness checks that our results remain similar when we remove both restrictions. Our final physician sample for the baseline analysis includes 1,142 unique male physicians during 2007-2016, representing 41% of all clinics during this period.

The final dataset for our baseline analysis comprises an annual panel of patients cared for by our sample of male physicians from 2007 to 2016.[12] While our primary focus is on female patients and their health outcomes, we also examine male patient outcomes in

[11] The unusually low number of patient visits may stem from some physicians working only part-time during certain years or from a period prior to clinic closure. We use a threshold of 750 patients, which represents about half the average patient load for a primary care physician (Table 1), but the results are similar with alternative thresholds.

[12] As discussed in Section 2, this period follows the introduction of national screening programs for breast and cervical cancer, which have remained unchanged throughout.

additional analyses. We will now discuss in more detail the variables used in our study.

3.2 Main outcome variables

Mortality outcomes Our primary outcome of interest is female patient mortality. We focus on women over 40 because of the rarity of deaths among younger women. We examine both overall mortality and specific causes of death, focusing on the primary cause. We pay particular attention to causes that affect women specifically, including breast and gynecologic cancers, which are leading causes of death among women worldwide.[13]

Cancer diagnosis We investigate both the incidence of cancer and the age at initial diagnosis, separately for breast and gynecologic cancers. In addition, we examine the cancer stage at the time of the first diagnosis. We focus on the initial diagnosis because subsequent care and testing are often influenced by specialists at hospitals.

Cancer screening and diagnostic tests We obtain information on all cancer screenings and diagnostic tests provided to patients. These tests can occur at various locations, including physician clinics, specialist facilities, and hospitals.

Mammography is the primary test used for diagnosing breast cancer. Although the national screening program covers women aged 50 to 69, we also examine testing for women outside this age range, as physicians may play a more significant role in initiating tests for these women. We define mammography broadly to include various upper body examinations, such as X-rays, CT scans, or MRIs of the thorax and the breasts, which are routinely used to detect potential breast cancer. We focus on mammographies conducted at public hospitals.[14]

For gynecologic cancers, the only routine screening test available is the Pap test for cervical cancer. We examine Pap tests conducted by both physicians and medical specialists. In addition, we consider cone biopsies, which may be performed following an abnormal Pap test to detect cervical cancer or pre-cancerous cell changes.

[13] The ICD-10 codes used in our analyses are listed in Appendix Table A.2.

[14] Although mammographies can be performed by specialists in private clinics, this is relatively uncommon (in less than 5 percent of recorded mammographies).

Preventive measures and general health care utilization We assess each patient's interactions with their physician, including both the frequency of visits and the number of services provided during each visit. In addition, we incorporate data on contacts with medical specialists, such as gynecologists, to examine physician referrals. For each patient, we also collect information on HPV vaccination and the use of oral contraceptives, which we use in subsequent investigations of potential mechanisms.

Patient-level survey data To further explore potential mechanisms, we combine the register data with unique survey data from 2019 that includes nearly 15,000 individuals representative of the Danish population (Gensowski et al., 2021, Gensowski and Gørtz, 2024). This dataset provides a rich set of measures, including individual health behaviors, expectations, and opinions about respondents' primary care physicians. It covers aspects such as patients' perceptions of their physician's empathy and communication skills, as well as their confidence in the physician's decisions and recommendations. Importantly, we are able to link survey and register data at the individual level.

3.3 Summary statistics

Table 1 provides summary statistics for our baseline sample of male physicians and their patients at the clinic level. On average, the physicians are 58 years old. 95% of the physicians have at least one child, with an average of 2.4 children.[15] 26% of the physicians have no daughters. Most male physicians have at least one daughter, while 7% have three or more daughters.[16] On average, about 45% of the patients at these clinics are female, consistent with previous studies suggesting that patients often prefer physicians of the same gender (Godager, 2012).[17]

Figure 1 plots the raw relationship between physicians' number of daughters and female patients' mortality rate from female-specific cancers, defined as the number of deaths

[15] As a robustness check later in the paper, we exclude physicians with no children from our sample.

[16] Appendix Figure A.2 shows the distribution of children and daughters in our physician sample.

[17] Table A.1 compares our baseline sample of male physicians (column 5) to the full set of primary care physicians in Denmark (column 1). On average, the physicians and patients in our analysis sample are slightly older than those in the full sample. But the physicians are similar in terms of the number of children and daughters, and their patients have comparable levels of education and marital status.

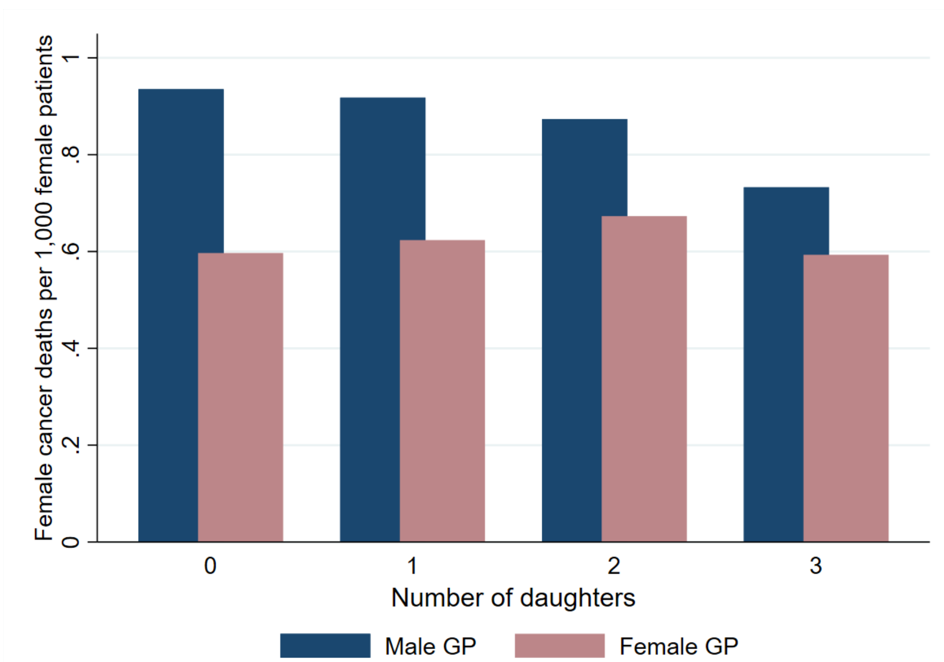
Table 1: Summary Statistics of Baseline Physicians and Their Patients

	(1) Mean	(2) SD
Baseline male physician characteristics		
Age	57.70	7.03
Any child	0.950	0.217
Number of children	2.43	1.09
First born girl	0.495	0.500
Number of daughters	1.17	0.93
No daughter	0.260	0.439
One daughter	0.393	0.488
Two daughters	0.277	0.448
Three or more daughters	0.071	0.256
Patient characteristics, overall		
Number of patients	1,518	407.7
Share female patients	0.453	0.049
Female patient characteristics		
Age	46.16	3.68
Months of education	155.0	8.51
Married	0.429	0.086
Death (per 100 female patients)	2.122	14.41
Cancer death (per 100 female patients)	0.553	0.452
Female-specific cancer death (per 100 female patients)	0.138	3.714
Breast cancer death (per 100 female patients)	0.087	2.942
Gynecologic cancer death (per 100 female patients)	0.051	2.268
Pap smear (per 100 female patients)	19.05	39.27
Mammography (per 100 female patients)	27.45	58.36
Oral contraceptive pill (per 100 female patients)	25.87	43.79
Number of clinics	1,142	
Number of clinics × year	7,322	

Note: The table presents summary statistics for the baseline sample of male solo physicians and their patients at the clinic level, averaged across 2007-2016. Column 1 shows the means, while column 2 reports the standard deviations. The statistics are computed based on all active practice years during 2007-2016.

from breast and gynecologic cancers per thousand female patients, separately for male and female physicians. This figure is based on raw data without any controls. Two broad patterns emerge from Figure 1. First, female patients of male physicians have a higher likelihood of dying from female specific cancers compared to those of female physicians. This disparity may be partly explained by the fact that the patients of male physicians are generally older (Table A.1, columns 4-5). In addition, the figure suggests a negative association between the number of daughters of male physicians and the female cancer death rate.[18] In contrast, this relationship is not observed among female physicians. While correlational, the figure provides suggestive evidence of potential influences of daughters on their physician fathers and the health outcomes of female patients. To establish causality, we now turn to our empirical strategy.

Figure 1: Female Cancer Deaths by Physician Gender and Number of Daughters



Notes: The figure shows the raw mortality rates from female-specific cancers by physician gender and the number of daughters the physician has, for the period 2007-2016. The sample includes all solo Danish physicians who have at least 750 patients per year. Mortality rates are calculated as the number of deaths from breast and gynecologic cancers per thousand female patients. This figure is based on raw data averaged across years without any controls.

[18]Figure A.3 provides the same analysis separately for breast and genital cancers among male physicians and shows a similar pattern to Figure 1.

4 Empirical Strategy

Our baseline empirical work investigates the influence of male physicians' daughters on the health outcomes of their female patients. A key concern is that the number of daughters a physician has may not be exogenous and could be correlated with other physician characteristics, such as age and the total number of children, which might also impact patient health. To address this concern, we use an empirical strategy pioneered by previous studies (Washington, 2008, Glynn and Sen, 2015, Cronqvist and Yu, 2017, Dustmann and Landersø, 2021), exploiting the natural experiment of a child's gender to identify the effects of daughters. Specifically, we regress patient health outcomes on the number of daughters a physician has, while controlling for the physician's total number of children. Intuitively, we compare female patients under the care of male physicians who have similar observable characteristics, including the same total number of children, except for differences in the (exogenous) gender composition of their children.

We run the following regression for our baseline analysis:

$$Y_{ijt} = \alpha + \beta Girls_{jt} + X_{ijt} + \gamma_j + \delta_t + \epsilon_{ijt} \tag{1}$$

where Y_{ijt} is the health outcome of female patient i of primary care physician j in year t. The main explanatory variable of interest, $Girls_{jt}$, is physician j's number of daughters in year t.[19] We control for the fixed effects for the physician's total number of children, γ_j, to compare physicians with the same number of children. We also include year fixed effects, δ_t, to control for any common shocks to women's health. X_{ijt} is a vector of controls for the physician's age and patient characteristics, including the patient's age dummies, months of education, a dummy for being an ethnic minority, and municipality fixed effects, which allow us to compare patients within the same municipality. ϵ_{ijt} is the error term. Standard errors are corrected for clustering at the physician level.

The coefficient β estimates the impact of physicians having one additional daughter (compared to one additional son) on female patients' health outcomes. The identifica-

[19] In practice, the number of daughters was constant for most physicians in our sample, as few had a new birth during the study period. In robustness checks, we also examine the results when restricting the sample to physicians whose number of children remains constant throughout the study period.

tion assumption is that the number of daughters a physician has is not correlated with unobserved factors affecting female patients' health, conditional on the physician's total number of children. To support this conditional exogeneity assumption, we present balance tests in the Appendix, Table A.3, to assess the correlation between *Girls* and both physician and patient characteristics. Table A.3 shows that, conditional on the total number of children, the number of daughters a physician has is uncorrelated with a rich set of physician and patient characteristics, including physician age, years of practice, marital status, total number of patients, total number of female patients, the share of female patients (both overall and by age group), as well as female patients' average age, education, income levels, ethnicity, and marital status. The balance tests therefore support the identification assumption of Equation 1.

A potential threat to our identification is that female patients might choose physicians based on the gender composition of the physicians' children. We consider this scenario unlikely in practice, as the gender composition of a physician's children is typically not observable to patients. The balance tests above also suggest that such selection is unlikely. Nonetheless, to further address this concern, we examine female patients who switched physicians during our study period and test if such switches are correlated with the physicians' number of daughters.[20] We present evidence in the Appendix, Table A.4, that the number of daughters of a physician does not predict whether female patients choose to enter or leave a clinic, supporting the view that female patients do not systematically select their physicians based on the gender composition of the physicians' children.

Another potential concern is that physicians might follow a fertility stopping rule, where those with a preference for a particular child gender may continue having children until they achieve a desired number of children of that gender. If this were the case, the number of daughters a physician has conditional on the total number of children could be correlated with a preference for female children, which may threaten our empirical strategy. To address this concern, we follow Washington (2008) and Cronqvist and Yu (2017) to test for such fertility stopping rules. Specifically, we examine whether having a first-born daughter predicts the total number of children among physicians, as well

[20]We exclude switches due to clinic closures and focus on switches made more intentionally.

as whether having the first two children of the same gender affects the total number of children. The results, presented in Table A.5, show that physicians do not follow such fertility stopping rules, providing further support for our identification assumption.

5 Results

Having discussed our empirical strategy, we now present the results on the impact of daughters on their physician fathers' behavior and the health of female patients. Our baseline analysis focuses on mortality outcomes, particularly deaths from female-specific cancers. We also examine other health outcomes and explore potential mechanisms.

5.1 Baseline results on mortality

Our baseline analysis examines the relationship between the number of daughters of male physicians and the mortality outcomes of their female patients. Table 2 presents the results for overall female mortality and mortality by leading causes of death, with effect sizes relative to the mean of each outcome variable reported in the last row of the table. Column 1 shows that the gender composition of physicians' children does not appear to affect overall female mortality. In contrast, column 2 shows that female patients cared for by male physicians with one additional daughter (compared to one additional son) are 0.013 percentage points (or 2.4% relative to the mean) less likely to die from any type of cancer. This effect is particularly pronounced for cancers that affect women specifically, such as breast and gynecologic cancers, which see a 5.5% reduction in mortality relative to the mean (column 3). The estimate for non-female-specific cancer deaths, shown in column 4, is also negative and of meaningful magnitude, although it is not statistically significant at conventional levels. In addition, there is no observed effect on cardiovascular (CV) deaths (column 5). These results suggest that while the number of daughters a male physician has may not influence overall female mortality, it could have a significant impact on health issues and causes of death that specifically affect women.

To further investigate the baseline results, we examine the effects on female-specific cancer mortality by cancer type and women's age group in Table 3. Panel A of the Table

Table 2: Physicians' Number of Daughters and Female Patient Mortality

	Death by Cause				
	Any (1)	Cancer (2)	Female-specific cancer (3)	Other cancer (4)	CV (5)
Girls	-0.000031	-0.000131**	-0.000077***	-0.000053	0.000004
	(0.000113)	(0.000053)	(0.000026)	(0.000045)	(0.000057)
Observations	3,109,917	3,109,917	3,109,917	3,109,917	3,109,917
Mean of Dep. Var.	0.0173	0.00545	0.00141	0.00404	0.00417
Std.Dev. of Dep. Var.	0.130	0.0736	0.0375	0.0634	0.0644
Effect in %	0.18	-2.40	-5.46	-1.31	-0.10

Notes: This table presents the estimated effects of physician daughters on female patient mortality by cause. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcomes are binary variables that equal 1 if the patient dies in a given year from any cause (column 1), any type of cancer (column 2), female-specific cancers (i.e., breast or gynecologic) (column 3), other types of cancer (column 4), or cardiovascular diseases (column 5), and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. The estimated effects, measured as percentages relative to the mean of the outcome variables, are reported in the last row of the table. Standard errors, in parentheses, are corrected for clustering at the physician level. *** p <0.01, ** p <0.05, * p <0.1.

shows that the reduction in deaths from female-specific cancers is evident for both breast cancer (4.8%) and gynecologic cancer (6.5%). In addition, the effects are more pronounced among women over 60 years of age (Panel B). Furthermore, we show in Appendix Table A.6 that the effects are stronger for less educated patients, but of similar size across ethnic majority and minority groups.

5.2 Robustness checks

In the Appendix, we provide a set of robustness checks, examining a series of alternative samples and specifications. We show the baseline results with the control variables added gradually and find that the baseline estimate on female cancer deaths is highly similar with or without the controls (Table A.7). While we imposed some restrictions on our baseline physician sample to improve comparability, our main findings are similar when we lift these restrictions (Table A.8). Specifically, Table A.8 shows that the results

Table 3: Physicians' Number of Daughters and Female Cancer Deaths

	(1)	(2)	(3)
	Death from Female-Specific Cancers		
	Overall	Breast	Gynecologic
Panel A: Baseline sample			
Girls	-0.000077***	-0.000042**	-0.000035**
	(0.000026)	(0.000020)	(0.000016)
Observations	3,109,917	3,109,917	3,109,917
Mean of Dep. Var.	0.00141	0.000876	0.000535
Std.Dev. of Dep. Var.	0.0375	0.0296	0.0231
Effect %	-5.5	-4.8	-6.5
Panel B: Patients aged 60+			
Girls	-0.000151***	-0.000102***	-0.000049*
	(0.000047)	(0.000038)	(0.000029)
Observations	1,554,692	1,554,692	1,554,692
Mean of Dep. Var.	0.00237	0.00149	0.000884
Std.Dev. of Dep. Var.	0.0487	0.0386	0.0297
Effect %	-6.4	-6.9	-5.5

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. For Panel A, the sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. For Panel B, the sample consists of female patients from Panel A who are above 60 years old. The outcomes are binary variables that equal 1 if the patient dies from any female-specific cancers (column 1), breast cancer (column 2), or gynecologic cancer (column 3) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. The estimated effects, measured as percentages relative to the mean of the outcome variables, are reported in the last row of each panel. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

are robust to including ethnic minority physicians (column 1), to having no restriction on the minimum number of patients in the clinic (column 2), and to lifting both conditions simultaneously (column 3). The result also holds when we extend the analysis sample to 2019 (column 4).[21] Besides, we show that the results are similar when we focus on patients who stayed with the same physician throughout the study period (column 5) or when we examine physicians who had no change in the number of children during the study period (column 6). Furthermore, while about 5% of physicians in our sample have no children, our results remain similar when we exclude these physicians (Table A.9).

We also explore alternative ways of measuring the number of daughters. Instead of a linear variable, we use categorical variables to measure the number of daughters (i.e., one, two, or three or more) and find consistent results (Table A.10). Specifically, the effects of having any number of daughters are sizable, although they are more pronounced for physicians with two or more daughters. In addition, the results are robust to defining treatment as having any daughters, the proportion of daughters, or having a majority of daughters (Table A.11).[22]

To address the prevalence of zeroes in the binary mortality outcome variable, we run logistic regressions as an alternative specification and find consistent results (Table A.12). Furthermore, we find similar results when we aggregate our data from the patient-year level to the clinic-year level to examine female cancer mortality *rate* (defined as the number of female-specific cancer deaths per thousand female patients), which also largely removes the presence of zeroes in the outcome variable (Table A.13).

Taken together, the robustness of the results across the battery of checks further strengthens the causal interpretation of our baseline findings.

[21] As mentioned in section 2, we focus on the period 2007-2016 for our baseline analysis because it represents a time with stable female cancer screening guidelines. As mentioned in Section 2, in 2017, cervical cancer screenings in Denmark were expanded to women above 69 years old through a one-time HPV test (Andersen et al., 2019), which largely reduced the role and discretion of primary care physicians in cervical cancer screenings.

[22] The estimate for having a first-born daughter is negative, but it is smaller in magnitude and not statistically significant. This is likely because physicians with a first-born son may still have daughters in subsequent births, making a first-born daughter a less precise measure of daughter influence.

5.3 Female cancer diagnoses, testing, and prevention

Having shown the baseline results and robustness checks, we now delve deeper into potential explanations for the reduction in female cancer mortality. Using a similar specification to equation 1 and consistent with the baseline analysis, we focus on female patients with male physicians and examine 1) the timing of cancer diagnoses (Table A.14); 2) various screening and diagnostic tests that may contribute to the prevention or early detection of female cancers (Table A.15); 3) the cancer stage at diagnosis (Table A.16); and 4) for gynecological cancer, detection of pre-cancerous cervical cell changes (Table A.17). The results, shown in the Appendix, are discussed in detail below.

Breast cancer First, we examine breast cancer diagnosis by patient age groups in Panel A, Table A.14. The outcome is an indicator variable equal to 1 if the female patient is diagnosed with breast cancer for the first time in that year and 0 otherwise. Column 1 of the panel shows no effect of physician daughters on the overall likelihood of patients being diagnosed with breast cancer. It is evident, however, that female patients of male physicians with more daughters tend to be diagnosed earlier, which is marked by a shift in first diagnosis from later in life (column 4) to ages between 22 and 49 (column 2), an age group not yet covered by the national breast cancer screening program.

What might explain this shift in first diagnosis to an earlier age? One possibility could be earlier testing. To investigate earlier testing as a potential channel, we examine the use of mammography by female patients of different age groups (Panel A, Table A.15). As seen in column 2 of Panel A, Table A.15, we find that female patients of male physicians with more daughters (as opposed to more sons) are more likely to receive mammography between age 22 and 49. As mentioned earlier, women in this age group are not yet covered by the national breast cancer screening program, which only covers those between 50 and 69 years old, and hence are not expected to undergo regular breast cancer screenings.[23] While primary care physicians are not tasked with treating breast cancers, they could nonetheless play a role in encouraging patients to participate in the screening program

[23]Similarly, we find a positive effect on mammography for women above 70 years old — a group also not covered under national screening — as seen in column 4 of the table, although it is not precisely estimated possibly because of the smaller sample size.

on time and arranging mammograms for female patients not covered under the national screening program. The earlier testing and detection of breast cancer may therefore have contributed to the lower probability of dying from the disease. Indeed, we look at cancer stage upon diagnosis and find that, among female patients diagnosed with breast cancer, those whose physicians have more daughters tend to be diagnosed at an earlier cancer stage before it has spread to the surrounding tissue (Panel A, Table A.16).[24]

Taken together, the evidence in this subsection suggests that male physicians with more daughters tend to provide enhanced care for female patients, going even beyond the national screening guidelines and possibly paying greater attention to women who may be overlooked by national screening programs. As a result, they could facilitate earlier detection of breast cancers and save more lives.

Gynecologic cancer Next, we turn to examine outcomes related to the diagnosis and testing for gynecologic cancer, which appears to follow a slightly different story. First, we look at gynecologic cancer diagnosis by patient age groups. We find that for female patients whose physicians have more daughters, the probability of ever being diagnosed with gynecologic cancer is lower (column 1 of Panel B, Table A.14). Together with the baseline finding of a reduction in gynecologic cancer deaths, the fewer diagnoses here likely suggest a more successful prevention of the cancer.

What might explain a a more successful prevention of gynecologic cancer? We show that physicians with more daughters do not differ in their use of Pap tests, which are used for cervical cancer screening (Panel B, Table A.15). This likely reflects the fact that Pap tests are a routine component of the national cervical cancer screening program, which covers a wide age range (from 23 to 65 years old) and thus leaves little variation in Pap test usage across different physicians.[25]

We do, however, find suggestive evidence that male physicians with more daughters

[24]This effect is driven by women diagnosed between ages 50 and 70, as shown in Panel A of Table A.16. A likely explanation is that women with physicians who have more daughters and are diagnosed before age 50 would otherwise have been diagnosed after entering the national screening program at age 50. In this counterfactual scenario, the cancer would have had time to spread to surrounding tissue, which explains the observed reduction in cancer progression at ages 50-70.

[25]In general, Pap tests are considered less necessary and typically not recommended for women above 65 years old.

are more likely to refer their female patients, especially women between 22-49 years old, to get a cone biopsy (Panel C, Table A.15). Cone biopsy, also known as conization, is a procedure that can be used following an abnormal Pap test to diagnose cervical cancer or pre-cancerous cell changes.[26] The greater use of cone biopsy may contribute to earlier detection of gynecologic cancers or, more commonly, pre-cancerous cell changes before cancer develops, which could then be treated early to prevent cancer. Indeed, we find that physicians with more daughters are more likely to detect pre-cancerous cervical cell changes (Table A.17). In addition, among patients diagnosed with gynecological cancers, those cared for by physicians with more daughters tend to have their cancers diagnosed at an earlier stage (Panel B, Table A.16). The findings thus suggest that male physicians with more daughters (as opposed to more sons) may be more diligent in screening for gynecologic cancers and providing more intensive care and prevention efforts.

Taken together, the evidence in this subsection suggests that male physicians with more daughters are more likely to go the extra mile in testing for and preventing women-specific cancers. Their increased effort leads to earlier detection, reduced cancer progression, and fewer deaths.

5.4 Evidence from Male Patients and Female Physicians

Male patient mortality So far, we have focused on female patient outcomes. In the Appendix (Table A.19), we test if *male* patients are affected by their physicians' daughters.[27] We find that male patients under the care of male physicians with more daughters do not have different mortality rates, whether overall or by causes, including cancer or male-specific cancer. The results suggest that daughters do not necessarily make male physicians better doctors overall or more skilled at preventing or diagnosing cancers across the board. Instead, daughters appear to make male physicians better specifically in areas related to female health.

[26] A cone biopsy involves the removal of a cone-shaped piece of tissue from the cervix. It could be used for both diagnostic and therapeutic purposes: it can diagnose cervical cancer or pre-cancerous cell changes and, if necessary, treat abnormal cells by removing them. In contrast, Pap tests are used solely for screening purposes and cannot diagnose cancer or pre-cancerous changes.

[27] In Table A.18, we conduct a balance test on male patient characteristics and show that they are largely balanced across male physicians with different number of daughters.

Female physicians We have focused on the influence of daughters on their physician fathers. A natural question is whether daughters also have the same influence on *female* physicians. A challenge to study female physicians, however, is that their sample size is much smaller, accounting for only about 30% of all solo-clinic physicians. The smaller sample size could pose a challenge to our identification strategy. Indeed, in Appendix Table A.20, a balance test on the female physician sample shows that, conditional on the total number of children, female physicians with more daughters and their patients still tend to be different in several dimensions.[28] One must therefore be cautious in interpreting the results for female physicians.

With this caveat in mind, Table A.21 shows the estimated effects of daughters among female physicians. Columns 1-3 of the Table examine female cancer mortality (both overall and by cause), while columns 4-5 look at cancer mortality among *male* patients of female physicians, such as cancers of male reproductive organs (column 5). Across these outcomes, we find no effect from having more daughters among female physicians.[29] The results suggest that daughters do not affect *all* physicians; their effects are unique to male physicians. This finding suggests that parenting daughters brings something unique to male physicians that they may otherwise lack as compared to female physicians.

Taken together, the results in this subsection highlight daughters' unique influence on male physicians and female patient outcomes. We now delve deeper into how daughters may affect their physician fathers.

6 Mechanisms

We have shown that daughters influence the behavior of male physicians and the health outcomes of their female patients. A puzzle and a broader question lie in the mechanism. Indeed, empirical evidence on *how* daughters influence their fathers remains scarce in the literature. Previous studies in economics and sociology argue that parenting a daughter

[28]As shown in Table A.20, on average these female physicians are significantly more likely to be married, have more female patients (particularly in the 18-64 age group), and their female patients tend to have lower income and are more often ethnic minorities.

[29]In line with the absence of effects on female cancer deaths, we also find no effect on the age at first female cancer diagnoses among female physicians. Results are available upon request.

could increase fathers' feminist sympathies (Warner and Steel, 1999, Washington, 2008). This suggests that daughters may improve their physician fathers' empathy and attitudes towards women, which could lead to higher-quality care for female patients. In addition, daughters may help their physician fathers gain greater awareness or knowledge of specific female health issues, which in turn may also benefit female patients. Besides, male physicians with daughters may be more effective at communicating with female patients. While it is challenging to strictly separate these different channels, we discuss how we explore the potential mechanisms below.

6.1 Knowledge and learning

First, we examine knowledge and learning from daughters as a potential channel. If the effects are primarily driven by physician knowledge and learning, we would expect the effects to be stronger among physicians with older daughters, who are more likely to have experienced various female-specific health conditions and transfer such knowledge to their physician fathers. We thus examine whether the effects depend on the age of daughters.

In particular, we focus on the age of the oldest daughter and check if the daughter effects are different between physicians with an older daughter and those with only younger daughters. We find that the effects of daughters are similar between physicians with older daughters and those with only younger daughters (Table A.22). The daughter effects are present even among physicians with only young daughters below 11 years old, an age group that is unlikely to have experienced or transferred female cancer-related knowledge to their physician fathers (see column 1 of Table A.22). The results suggest that knowledge or learning is unlikely to be the main channel.

6.2 Empathy and attitudes towards women

Empathy and attitudes towards women could be an alternative mechanism for how daughters influence their physician fathers. To explore this channel, we first examine male physicians' choices of partners in non-solo clinics to investigate whether daughters may influence their fathers' preferences for working with a female partner. We then exploit two major exogenous health information shocks to study whether male physicians with more daughters are more attentive and responsive to medical guidelines concerning women. Finally, we use novel patient-level survey data to investigate the daughter effects on patients' experiences and physician-patient relationships, which sheds further light on how daughters may influence physicians' behavior and interactions with patients.

6.2.1 Gender of partners for non-solo physicians

While our baseline analysis focuses on solo physicians because we could identify their patients more clearly, many other primary care physicians work in clinics with multiple physicians (Figure A.1). For male physicians in such clinics, their choice of partner in the clinic could be informative about their gender attitudes. We therefore test whether a male physician's number of daughters predicts the gender of his partner in non-solo clinics.

Column 1 of Table 4 focuses on duo-physician practices and shows that male physicians with one additional daughter (compared to one additional son) is 5 percentage point (or 8.5%) more likely to team up with a female partner. Columns 2 and 3 of the table show that this effect remains positive and meaningful when we include clinics with more than two physicians, although the results are not statistically significant. This lack of significance is likely due to the fact that almost all larger clinics have a female physician, which reduces the variation available in such settings.[30] The finding supports the view that having daughters may impact male physicians' attitudes towards women, as reflected in their propensity to collaborate with female colleagues in the clinic.

6.2.2 Reactions to female-specific medical guidelines

Next, we examine two major exogenous health information shocks in Denmark over the past decade—a change in clinical guidelines regarding oral contraceptives and media-driven misinformation about potential side effects of the HPV vaccine—to test whether male physicians with more daughters respond differently. Greater attentiveness to women's health guidelines could also indicate a higher level of care and concern for female patients.

[30] As shown in column 3 of Table 4, in primary care clinics with two or more physicians, 78% have a female physician.

Table 4: Physicians' Number of Daughters and Gender of Partner in Non-Solo Practices

	(1)	(2)	(3)
	Having a Female Partner, by Clinic Size		
	2 physicians	2-3 physicians	2+ physicians
Girls	0.050**	0.022	0.015
	(0.023)	(0.016)	(0.010)
Observations	3,940	7,193	11,439
Mean of Dep. Var.	0.586	0.684	0.776
Std.Dev. of Dep. Var.	0.493	0.465	0.417

Notes: This table presents the estimated effects of physician daughters on having a female partner among male physicians in non-solo practices. Each column shows the results from a separate OLS regression similar to equation (1), where each observation is a physician-year. The sample consists of male physicians working in non-solo practices, including clinics with two physicians (column 1), two or three physicians (column 2), or two or more physicians (column 3). The outcome is a binary variable that equals 1 if the male physician has a female partner in the clinic, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Prescription of oral contraceptives We begin with the case of contraceptive pills, which are widely adopted in Denmark. By the age of 20, 85% of women have been prescribed hormonal contraception. The type of hormonal contraceptive pills used has changed dramatically over the period, as shown in Appendix Figure A.4. In particular, the third-generation contraceptive pill was the most frequently used during 1999-2011, accounting for about 70% of the total oral contraceptive pill prescriptions. During 2009-2011, however, new medical research linked third- and fourth-generation oral contraceptives to higher risks of venous thromboembolism (blood clots in the veins). In late 2011, the Danish health authorities recommended the use of the second-generation pills as the first choice for oral contraceptives (Løkkegaard and Nielsen, 2014). Following this recommendation, the use of the second-generation pill rose dramatically from 20 percent in 2011 to 87 percent in 2018, as seen in Figure A.4.[31]

We use a difference-in-differences approach to test whether male physicians with more daughters are more likely to switch back to prescribe the second-generation pills after the discovery that newer generation pills have greater side effects. To perform the analysis,

[31] Source: Authors' own calculations from medstat.dk.

we compile data on filled prescriptions of oral contraceptive pills from the National Prescription Register. While we focus on women in the fertile age between 13 and 55 years old, the results are similar using alternative age cutoffs.

We exploit within-physician variation using the following event study specification:

$$Y_{ijt} = \alpha + \sum_{d=2008}^{2017} \beta_d \, Girls_j \times I_t^d + \sum_{d=2008}^{2017} \gamma_j \times I_t^d + \mu_j + \delta_t + X_{ijt} + \epsilon_{ijt}, \qquad (2)$$

where Y_{ijt} is the outcome of interest, i.e., the use of the second-generation oral contraceptive pills for patient i of physician j in year t. The main explanatory variable is the interaction between physician j's preexisting number of daughters in 2011, $Girls_j$, and a vector of year dummies, I_t^d. We control for the interaction between physicians' number of children fixed effects, γ_j, also measured in 2011, and a vector of year dummies to allow γ_j to have a differential effect over time. In addition, we include physician fixed effects and year fixed effects, μ_j and δ_t, to control for any time-invariant characteristics of each physician as well as common shocks to all physicians. We also include the same baseline patient and physician time-varying controls, X_{ijt}. Standard errors are clustered at the physician level. Examining within-physician change over time, we keep in our sample only physicians who were in practice both before and after 2011.

Figure 2 presents the event study estimates for the prescription of second-generation pills, using 2011 as the reference year. It is evident that, conditional on having the same number of children, male physicians with more daughters are more likely to revert to prescribing the second-generation pill following the guideline change in late 2011.[32]

Given that the health risks associated with the newer-generation pills were widely publicized in Danish media and that the guideline change was well known, the differential prescription of the second-generation pill is unlikely to be a result of different knowledge or information.[33] Rather, we interpret the differential prescription behavior as further

[32] Table A.23 shows that the number of physician daughters is not associated with an overall change in the total prescription of oral contraceptives after 2011.

[33] Major Danish media outlets reported extensively on the risks associated with the second-generation oral contraceptive pill. For example, the national public service TV and radio channel *Danish Radio*, the conservative newspaper *Berlingske*, and the left-wing newspaper *Politiken* all published articles in late October 2011 with the same headline: "New oral contraceptive pills increase the risk of blood clots".

Figure 2: Physicians' Number of Daughters and Prescription of 2^{nd}-Generation Pills

Notes: The figure plots the event study estimates of the effects of physician daughters on the likelihood of female patients being prescribed second-generation oral contraceptive pills during 2008-2017. The estimates come from a single OLS regression following equation (2), with the year 2011 as the reference period. The sample consists of all female patients aged 13-55 under the care of the baseline male physicians. The outcome is a binary variable that equals 1 if the female patient in a given year is prescribed the second-generation pill, and 0 otherwise. The explanatory variables are the physician's number of daughters in 2011 interacted with year dummies. The regression controls for physician fixed effects, physician number of children fixed effects interacted with year dummies, physicians' age, patients' education in months, patient age fixed effects, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. The vertical line marks the onset of the change in medical guidelines regarding oral contraceptives in 2011. The dots are the estimated coefficients and the vertical lines represent the 95% confidence intervals.

evidence that having daughters may influence physician fathers' empathy towards women, making male physicians more attentive to female-specific medical information and needs.

HPV vaccination To explore the mechanisms further, we examine another female-specific health practice: HPV vaccinations. Since 2009, the Danish Childhood Vaccination Program has included vaccination against Human Papillomavirus (HPV) for girls aged 12 and older. The vaccinations are typically administered at primary care physicians' clinics.

Following an initial high uptake, HPV vaccination rates declined dramatically after negative media coverage during 2013-2015 linked the vaccine to serious side effects, which were later proven to be unfounded (Gørtz et al., 2020, Hansen et al., 2020). The most significant decline in HPV vaccination rates occurred after 2014, as seen in Figure A.5.

Following the event-study approach in equation 2 to exploit within-physician variation, we study whether the number of daughters a male physician has affects the likelihood of their young female patients receiving HPV vaccinations after the negative media coverage. Focusing on 13-year-old girls in each year and examining their HPV vaccination status, Figure 3 presents the event study estimates, with 2014 as the reference year. The figure shows that, after the negative media coverage, girls under the care of male physicians with more daughters are more likely to receive HPV vaccinations by age 13. We find similar evidence using a traditional difference-in-differences setup, interacting the number of daughters with a *Post* indicator for years after 2014 (Table A.24).

Given that the negative media stories were widely reported and attracted national attention, we believe the effects are unlikely due to differences in the *information* that male physicians have depending on whether they have daughters. Rather, we think it is likely that male physicians with more daughters may be more effective in ensuring that their female patients adhere to important health guidelines, even amidst widespread misinformation. These findings may also reflect the level of trust between patients and physicians. Patients with greater trust in their physicians are more likely to follow vaccination recommendations despite negative media coverage.

6.2.3 Evidence from patient survey data

Our analysis thus far has relied on administrative data. To further explore the mechanisms, we now leverage unique individual-level survey data that are linked to the administrative register data.[34] The survey provides a unique opportunity to examine the impact of physician daughters on patient experiences and the physician-patient relationship.

[34] The survey, conducted in the summer of 2019, invited a randomly selected representative sample of individuals aged 18-75 in Denmark (Gensowski et al., 2021, Gensowski and Gørtz, 2024). The respondents were contacted via a national secure messaging system which is linked to each Danish citizen's social security number and used exclusively for official communication. The response rate including partial responses was 33.7%, and complete responses 30%. The completed survey data was anonymized and merged to the administrative registers on a secure server by Statistics Denmark. The survey questions on physician satisfaction used in this analysis were sent to a randomly selected subsample of individuals aged 20-75.

Figure 3: Physicians' Number of Daughters and HPV Vaccination

Notes: This figure plots the event study estimates of the effects of physician daughters on the likelihood of female patients receiving HPV vaccinations by age 13 during 2011-2018. The estimates come from a single OLS regression similar to equation (2), with the year 2014 as the reference period. The sample in each year consists of all the 13-year-old girls under the care of the baseline male physicians. The outcome is a binary variable that equals 1 if the female patient has received any HPV vaccination by age 13, and 0 otherwise. The explanatory variables are the physician's number of daughters in 2014 interacted with year dummies. The regression controls for physician fixed effects, physician number of children fixed effects interacted with year dummies, physicians' age, patients' education in months, patient age fixed effects, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. The vertical dashed line marks the onset of negative media coverage of HPV vaccines. The dots are the estimated coefficients and the vertical lines represent the 95% confidence intervals.

From the survey, we analyze responses to a set of questions on patients' perceptions of collaboration, communication clarity, time attention, empathy, and trust with their primary care physician. The questions were formulated as follows: 1) Collaboration: "The doctor and I made all treatment decisions together." 2) Communication clarity: "The doctor's explanations were easy to understand." 3) Time attention: "The doctor spent enough time during my consultation." 4) Empathy: "The doctor understood my needs and problems and took them seriously." 5) Trust: "I had confidence in my doctor's decisions and recommendations." Respondents rated their agreement on a 5-point Likert scale, where 1 denotes "Do not agree" and 5 denotes "Completely agree."[35]

In this part of the analysis, to increase statistical power and maximize sample size, we use the entire sample of female patients in clinics with at least one male physician rather than limiting it to female patients of solo male practitioners. The dataset thus includes female patients in all types of clinics (solo and non-solo), where both female and male physicians may be present. Since the sample and specification differ from those of our main analysis, these results should be interpreted as suggestive.

We use an outcome variable that indicates whether the patient agrees with each statement (i.e., a value ≥ 3) and run the following regression:

$$Y_{ij} = \alpha + \beta_1 MalePhysicianGirls_j + X_{ij} + \epsilon_{ij} \tag{3}$$

where Y_{ij} is a binary variable equal to 1 if respondent i of primary care clinic j agrees with the statement and 0 otherwise. The variable $MalePhysicianGirls_j$ captures the presence of daughters among male physicians in the clinic, which we measure in two ways: 1) as an indicator that takes the value of 1 if any male physician in the clinic has a daughter, or 2) as the share of male physicians in the clinic with at least one daughter.[36] The control variables X_{ij} include both patient and clinic characteristics. Similar to the baseline, we control for the same patient characteristics, including age fixed effects, ethnicity, and education level. At the clinic level, we control for number of physicians fixed effects, share of male physicians in the clinic, average age of the physicians, share of ethnic majority physicians, region fixed effects, and the fixed effects for the average number of children among physicians.[37] Standard errors are clustered at the clinic level.

Agreements to the five statements are strongly correlated, as seen from the correlation

[35]The response options were: 1 "Do not agree", 2 "Partly agree", 3 "Agree", 4 "Strongly agree", or 5 "Completely agree".

[36]While the treatment variable "any male physician with a daughter" indicates the presence of at least one male physician with a daughter, the share of male physicians in the clinic with at least one daughter reflects the probability of having such a physician. As mentioned earlier, when multiple physicians are present in the clinic, we cannot observe which physician the patient is seeing. Therefore, we create a summary measure based on all male physicians in the clinic.

[37]The average number of children among physicians has been rounded to the nearest whole number. Those with four or more children on average have been grouped with those with three children on average.

matrix in Table A.25. In addition to the five binary outcome variables indicating whether the patient agrees with each statement, we create a composite measure derived from factor analysis, which captures the underlying dimension that explains the largest portion of variance among the observed variables. This factor combines the original variables and reflects a common theme or construct that ties them together; in our context, we interpret this measure as overall satisfaction with the physician.[38]

The results, presented in Table 5, suggest that female patients rate male physicians with daughters similarly in terms of collaboration and time spent (columns 2 and 4), but higher in terms of trust, empathy, and overall satisfaction (columns 1, 5, and 6).[39] In contrast, we find no effect on patient satisfaction—neither along specific dimensions nor overall—when we conduct the same analysis for *male* patients (see Table A.27), consistent with the baseline null effect on male patient mortality. The differing results by patient gender also suggest that the higher satisfaction among female patients does not stem from higher clinic quality in general.

We interpret the survey results as suggestive evidence that male physicians with daughters (compared to those with only sons) provide a more satisfying experience for their female patients, including greater empathy, which manifests in higher levels of trust and confidence from their female patients.

6.3 Communication

Lastly, we consider communication as an alternative channel. Male physicians who have parented daughters might be more adept at communicating with women. Consistent with this view, column 3 of Table 5 shows that these physicians' communication is more easily understood by their female patients. We interpret this finding as suggestive evidence that better communication might be part of the mechanisms underlying the baseline results. In comparison, we find that the number of daughters a male physician has does not affect the likelihood or frequency of contact between female patients and their physicians

[38] The factor loading and unique variance from the factor used to measure overall satisfaction with the physician are shown in Table A.26.

[39] The estimate for empathy is more sensitive and not statistically significant at conventional levels when using the share of male physicians with a daughter as the explanatory variable (p-value = 0.12).

Table 5: Effects on Patient Experiences and Physician-Patient Relationships

	(1) Overall satisfaction	(2) Collaboration	(3) Communication clarity	(4) Time attention	(5) Empathy	(6) Trust
Panel A.						
Any male physician with a daughter	0.075**	0.020	0.024**	0.009	0.026*	0.026**
	(0.035)	(0.015)	(0.012)	(0.014)	(0.014)	(0.012)
Panel B.						
Share of male physicians with at least one daughter	0.065**	0.014	0.021*	0.008	0.020	0.026**
	(0.032)	(0.014)	(0.011)	(0.013)	(0.013)	(0.012)
Observations	8,011	8,051	8,053	8,056	8,052	8,060
Mean of Dep. Var.	-0.0687	0.764	0.869	0.779	0.819	0.821
Std.Dev. of Dep. Var.	0.977	0.425	0.338	0.415	0.385	0.383

Notes: This table presents the estimated effects of physician daughters on measures of patient experience and physician-patient relationships, based on patient survey data collected in 2019. Each column shows the results from a separate OLS regression following equation (3), where each observation is a patient. The sample consists of all female patients in the patient survey connected to a primary care clinic with at least one male physician. For columns 2-6, the outcome is a binary variable that equals 1 if the patient agrees with the given statement about their experience and relationship with the physician, and 0 otherwise. In column 1, the outcome is a composite measure that summarizes the patient's overall satisfaction with the physician, based on factor analysis that combines the five statements across columns 2-6. The explanatory variable in panel A is an indicator that equals 1 if any male physician in the clinic has a daughter, and 0 otherwise. The explanatory variable in panel B is the share of male physicians in the clinic with at least one daughter. Each regression controls for patients' education in months, patient age dummies, an indicator for ethnic minority patients, region fixed effects, fixed effects for the number of physicians in the clinic, physicians' average age, share of male physicians in the clinic, share of ethnic majority physicians in the clinic, and fixed effects for the average number of children among physicians, where the average number of children has been rounded to the nearest whole number. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

(see Table A.28). Thus, while female patients may not receive more services on average, each visit tend to provide better care overall.

7 Conclusion

While physicians play a crucial role in patient outcomes, the determinants of their behavior and decision-making remain little understood. In particular, causal evidence on what influences the quality of care for women, who are known to experience systemic gender-based disparities in health care, remains limited. This paper assembles a unique dataset to study the impact of physician family networks — specifically the influence of their children — on both physician behavior and the health of female patients.

We find that daughters influence their physician fathers in important ways. Female patients cared for by male physicians with more daughters are significantly less likely to die from female-specific cancers. These patients are also more likely to be diagnosed at a younger age when the cancer is less likely to have progressed. In addition, the results suggest that male physicians with more daughters may go the extra mile for patients in their care, such as conducting screenings for women who may be overlooked by the national guidelines or providing more intensive cancer care and prevention efforts.

We document that a significant part of daughters' influence on their physician fathers likely operates through improvements in physicians' empathy and attitudes towards women. Male physicians with more daughters tend to show greater attentiveness to female-specific health guidelines, are more likely to collaborate with female colleagues, are trusted more, and are perceived as more empathetic by female patients.

Our paper provides the first empirical evidence on whether—and how—physicians' family environment influences their professional practice and consequently high-stakes health outcomes for women. The results provide new insights into the determinants of physician behavior, empathy, and gender disparities in healthcare more broadly. Thus, policies targeting male physicians' empathy, attitudes, and communication with women could be an effective and relatively low-cost way of addressing gender disparities in health care and improving key health outcomes for women.

References

Alsan, M., O. Garrick, and G. Graziani (2019). Does Diversity Matter for Health? Experimental Evidence from Oakland. *American Economic Review 109*(12), 4071–4111.

Andersen, B., B. S. Christensen, J. Christensen, D. Ejersbo, H. N. Heje, K. M. Jochumsen, T. Johansen, L. G. Larsen, E. Lynge, R. Serizawa, P. H. Viborg, and M. Waldstrøm (2019). HPV-prevalence in elderly women in Denmark. *Gynecologic Oncology 154*(1), 118–123.

Awaworyi Churchill, S., M. E. Munyanyi, K. Prakash, and R. Smyth (2020). Locus of control and the gender gap in mental health. *Journal of Economic Behavior Organization 178*, 740–758.

Bennedsen, M., K. M. Nielsen, F. Perez-Gonzalez, and D. Wolfenzon (2007). Inside the family firm: The role of families in succession decisions and performance. *The Quarterly Journal of Economics 122*, 647–691.

Borrell-Porta, M., J. Costa-Fonta, and J. Philipp (2019). The 'mighty girl' effect: does parenting daughters alter attitudes towards gender norms? *Oxford Economic Papers 71*(1), 25–46.

Cabral, M. and M. Dillender (2024). Gender differences in medical evaluations: Evidence from randomly assigned doctors. *American Economic Review 114*(2), 462–99.

Case, A. and C. Paxson (2005). Sex differences in morbidity and mortality. *Demography 42*(2), 189–214.

Champagne-Langabeer, T. and A. L. Hedges (2021). Physician gender as a source of implicit bias affecting clinical decision-making processes: a scoping review. *BMC Medical Education 21*(171).

Chen, E. H., F. S. Shofer, A. J. Dean, J. E. Hollander, W. G. Baxt, J. L. Robey, K. L. Sease, and A. M. Mills (2008). Gender disparity in analgesic treatment of emergency department patients with acute abdominal pain. *Academic Emergency Medicine 15*(5), 414–418.

Christiansen, P., I. Vejborg, N. Kroman, I. Holten, J. P. Garne, P. Vedsted, S. Møller, and E. Lynge (2014). Position paper: Breast cancer screening, diagnosis, and treatment in denmark. *Acta Oncologica 53*(4), 433–444.

Côté, D. and M.-F. Coutu (2010). A critical review of gender issues in understanding prolonged disability related to musculoskeletal pain: how are they relevant to rehabilitation? *Disability and Rehabilitation 32*(2), 87–102.

Cronqvist, H. and F. Yu (2017). Shaped by their daughters: Executives, female socialization, and corporate social responsibility. *Journal of Financial Economics 126*(3), 543–562.

Currie, J., W. B. MacLeod, and J. Van Parys (2016). Provider practice style and patient health outcomes: The case of heart attacks. *Journal of Health Economics 47*, 64–80.

Currie, J. and J. Zhang (2023, 02). Doing More with Less: Predicting Primary Care Provider Effectiveness. *The Review of Economics and Statistics*, 1–45.

Currie, J. M. and W. B. MacLeod (2020). Understanding doctor decision making: The case of depression treatment. *Econometrica 88*(3), 847–878.

Cutler, D. M., J. S. Skinner, A. D. Stern, and D. Wennberg (2019). Physician Beliefs and Patient Preferences: A New Look at Regional Variation in Health Care Spending. *American Economic Journal: Economic Policy 11*(1), 192–221.

Dahl, G. B. and E. Moretti (2008). The demand for sons. *The Review of Economic Studies 75*, 1085–1120.

Din, N. U., O. C. Ukoumunne, G. Rubin, W. Hamilton, B. Carter, S. Stapley, and R. D. Neal (2015). Age and Gender Variations in Cancer Diagnostic Intervals in 15 Cancers: Analysis of Data from the UK Clinical Practice Research Datalink. *BMC Medical Education 10*(5).

Dustmann, C. and R. Landersø (2021). Child's gender, young fathers' crime, and spillover effects in criminal behavior. *Journal of Political Economy 129*(12), 3261–3301.

Epstein, A. J. and S. Nicholson (2009). The formation and evolution of physician treatment styles: An application to cesarean sections. *Journal of Health Economics 28*(6), 1126–1140.

Gensowski, M. and M. Gørtz (2024). The education-health gradient: Revisiting the role of socio-emotional skills. *Journal of Health Economics*, 102911.

Gensowski, M., M. Gørtz, and S. Schurer (2021). Inequality in personality over the life cycle. *Journal of Economic Behavior Organization 184*, 46–77.

Ginja, R., J. Riise, B. Willage, and A. Willen (2022). Does Your Doctor Matter? Doctor Quality and Patient Outcomes. *CESifo Working Paper* (9788).

Glynn, A. N. and M. Sen (2015). Identifying judicial empathy: Does having daughters cause judges to rule for women's issues? *American Journal of Political Science 59*(1), 37–54.

Godager, G. (2012). Birds of a Feather Flock Together: A Study of Doctor–Patient Matching. *Journal of Health Economics 31*(1), 296–305.

Goldin, C. and A. Lleras-Muney (2019). "xx>xy?: The changing female advantage in life expectancy". *Journal of Health Economics 67*, 102224.

Green, D. P., O. Hyman-Metzger, G. Sood, and M. A. Zee (2023). Revisiting a natural experiment: Do legislators with daughters vote more liberally on women's issues? *Journal of Political Economy Microeconomics 1*(3), 506–516.

Greenwood, B. N., S. Carnahan, and L. Huang (2018). Patient–Physician Gender Concordance and Increased Mortality among Female Heart Attack Patients. *Proceedings of the National Academy of Sciences 115*(34), 8569–8574.

Gørtz, M., N. T. Brewer, P. R. Hansen, and M. Ejrnæs (2020). The contagious nature of a vaccine scare: How the introduction of hpv vaccination lifted and eroded mmr vaccination in denmark. *Vaccine 38*(28), 4432–4439.

Hansen, P. R., M. Schmidtblaicher, and N. T. Brewer (2020). Resilience of hpv vaccine uptake in denmark: Decline and recovery. *Vaccine 38*(7), 1842–1848.

Harris, E. (2024, 06). Patients Treated by Female Physicians Had Better Mortality Rates. *JAMA 331*(22), 1884–1884.

Heritage, J. and D. W. Maynard (2006). *Introduction: Analyzing interaction between doctors and patients in primary care encounters*, pp. 1–21. Studies in Interactional Sociolinguistics. Cambridge University Press, Cambridge.

Hernandez, A. F., G. C. Fonarow, L. Liang, S. M. Al-Khatib, L. H. Curtis, K. A. LaBresh, C. W. Yancy, N. M. Albert, and E. D. Peterson (2007, 10). Sex and Racial Differences in the Use of Implantable Cardioverter-Defibrillators Among Patients Hospitalized With Heart Failure. *JAMA 298*(13), 1525–1532.

Hill, A. J., D. B. Jones, and L. Woodworth (2023). Physician-patient race-match reduces patient mortality. *Journal of Health Economics 92*, 102821.

Hoffmann, D. E. and A. J. Tarzian (2001). The girl who cried pain: a bias against women in the treatment of pain. *The Journal of Law, Medicine & Ethics 28*(4_suppl), 13–27.

Kabátek, J. and D. C. Ribar (2020, 12). Daughters and Divorce. *The Economic Journal 131*(637), 2144–2170.

Kristiansen, I. L. and S. Y. Sheng (2022). Doctor who? the effect of physician-patient match on the ses-health gradient. *The Effect of Physician-Patient Match on The SES-Health Gradient (July 8, 2022).*

Li, L. and X. Wu (2011). Gender of children, bargaining power, and intrahousehold resource allocation in china. *Journal of Human Resources 46*(2), 295–316.

Lundberg, S. and E. Rose (2002). The effects of sons and daughters on men's labor supply and wages. *The Review of Economics and Statistics 84*, 251–268.

Lynge, E., B. Andersen, J. Christensen, D. Ejersbo, K. Jochumsen, T. Johansen, J. K. Kristensen, L. G. Larsen, F. Mehnert, E. Mikkelsen, K. Nielsen, C. Rygaard, R. Serizawa, and M. Waldstrøm (2018). Cervical screening in denmark – a success followed by stagnation. *Acta Oncologica 57*(3), 354–361.

Løkkegaard, E. and A. K. Nielsen (2014). Adolescent girls in denmark use oral contraceptives at an increasingly young age, and with more pauses and shifts. *Danish Medical Journal 61*(10), A4936.

Madsen, M. H., M. B. Johansen, M. C. F. Jensen, C. L. Westergaard, and I. W. Tapager (2023). Speciallæge i almen medicin - en undersøgelse af begrundelser for forskellige karrierevalg og -veje. Technical report, VIVE.

Maurin, E. and J. Moschion (2009). The social multiplier and labor market participation of mothers. *American Economic Journal: Applied Economics 1*, 251–72.

Miyawaki, A., A. Jena, and L. Rotenstein (2024). Comparison of hospital mortality and readmission rates by physician and patient sex. *Annals of Internal Medicine 177*(5), 598–608. PMID: 38648639.

NORDCAN (2023a). Breast Cancer - 1-year prevalence, Numbers, Females, Diagnosed 1995-2018. Technical report, The Association of the Nordic Cancer Registries. https://nordcan.iarc.fr/en/dataviz/prevalence?mode=cancer&group_populations=0&multiple_cancers=1&populations=208&cancers=980_180&sexes=2&key=total&years=1994_2018&multiple_populations=0&years_available=1943_2020&survival=1&surv_period=10 Accessed: 08.10.2023.

NORDCAN (2023b). Breast Cancer - Age-Standardized Relative Survival (%), Females, Diagnosed 2001-2010. Technical report, The Association of the Nordic Cancer Registries. https://nordcan.iarc.fr/en/dataviz/survival?mode=cancer&group_populations=0&multiple_cancers=1&populations=208&cancers=980_180&sexes=2&key=asr_n&years=1997_2020&multiple_populations=0&years_available=1943_2020&survival=10&surv_period=10 Accessed: 08.10.2023.

OECD (2017). Primary Care in Denmark. Technical report, OECD.

Oswald, A. J. and N. Powdthavee (2010). Daughters and left-wing voting. *The Review of Economics and Statistics 92*, 213—-227.

Pelletier, R., K. H. Humphries, A. Shimony, S. L. Bacon, K. L. Lavoie, D. Rabi, I. Karp, M. A. Tsadok, and L. Pilote (2014). Sex-related differences in access to care among patients with premature acute coronary syndrome. *Cmaj 186*(7), 497–504.

Pietropaoli, A. P., L. G. Glance, D. Oakes, and S. G. Fisher (2010). Gender differences in mortality in patients with severe sepsis or septic shock. *Gender medicine 7*(5), 422–437.

Ronchi, M. and N. Smith (2021). Daddy's girl: Daughters, managerial decisions, and gender inequality. Working paper, Bocconi University.

RRKP (2023). Dansk Kvalitetsdatabase for Mammografiscreening - Årsrapport 2017 - Første halvdel af femte nationale screeningsrunde . Technical report, Regionernes kliniske kvalitetsudviklingsprogram. https://www.rkkp.dk/siteassets/de-kliniske-kvalitetsdatabaser/databaser/mammografiscreening/mammografiscreening-2017.pdf Accessed: 08.10.2023.

Schwab, S. and M. Singh (2024). How power shapes behavior: evidence from physicians. *Science 384*(6697).

Simeonova, E., N. Skipper, and P. R. Thingholm (2022). Physician health management skills and patient outcomes. *Journal of Human Resources*.

Simonsen, M., L. Skipper, N. Skipper, and P. R. Thingholm (2021). Discontinuity in care: Practice closures among primary care providers and patient health care utilization. *Journal of Health Economics 80*, 102551.

Singh, M. (2021). Heuristics in the delivery room. *Science 374*(6565).

Stewart, M. A. (1995). Effective physician-patient communication and health outcomes: a review. *Canadian Medical Association Journal 152*(9), 1423.

Sundhedsstyrelsen (2012). SCREENING FOR LIVMODERHALSKRÆFT - anbefalinger. Technical report, Sundhedsstyrelsen. https://www.sst.dk/~/media/B1211EAFEDFB47C5822E883205F99B79.ashx Accessed: 08.10.2023.

Sundhedsstyrelsen (2016). Styrket indsats på kræftområdet - Fagligt oplæg til kræftplan IV. Technical report, Sundhedsstyrelsen. https://www.sst.dk/-/media/Udgivelser/2016/Styrket-indsats-p-krftomrdet--et-fagligt-oplg-til-Krftplan-IV/styrket-indsats-paa-kraeftomraadet-2016-fagligt-oplaegt-til-kraeftplan-IV-2016.ashx Accessed: 06.05.2024.

UK Department of Health and Social Care (2021). Results of the 'women's health – let's talk about it' survey. Technical report, Department of Health Social Care, United Kingdom.

Warner, R. L. and B. S. Steel (1999). Child rearing as a mechanism for social change: The relationship of child gender to parents' commitment to gender equity. *Gender and Society 13*, 503–517.

Washington, E. (2008). Female socialization: How daughters affect their legislator fathers' voting on women's issues. *The American Economic Review 98*(1), 311–332.

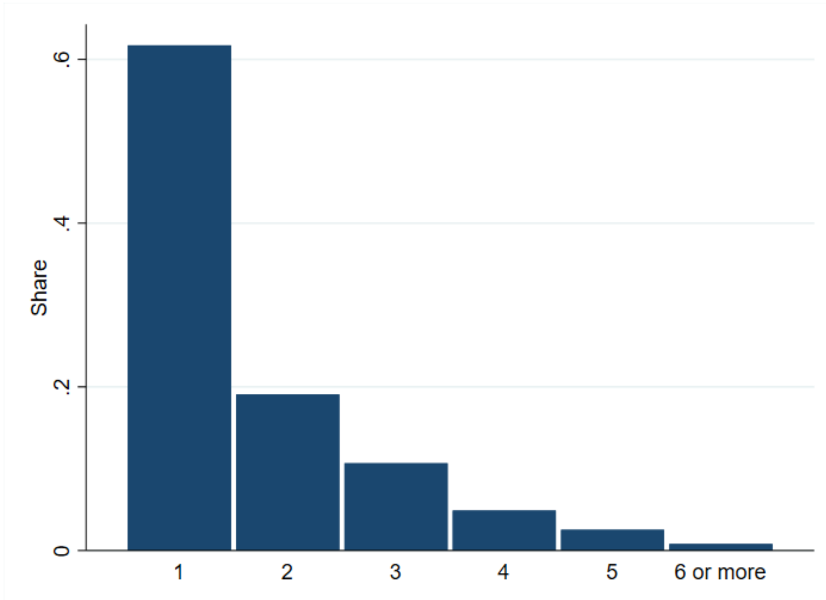
Westergaard, D., P. Moseley, F. K. H. Sørup, P. Baldi, and S. Brunak (2019). Population-wide analysis of differences in disease progression patterns in men and women. *Nature Communications 10*(1).

World Economic Forum (2024). Closing the Women's Health Gap: A $1 Trillion Opportunity to Improve Lives and Economies. Technical report, World Economic Forum in collaboration with the McKinsey Health Institute.

Ye, H. and J. Yi (2023, 07). Patient-Physician Race Concordance, Physician Decisions, and Patient Outcomes. *The Review of Economics and Statistics 105*(4), 766–779.

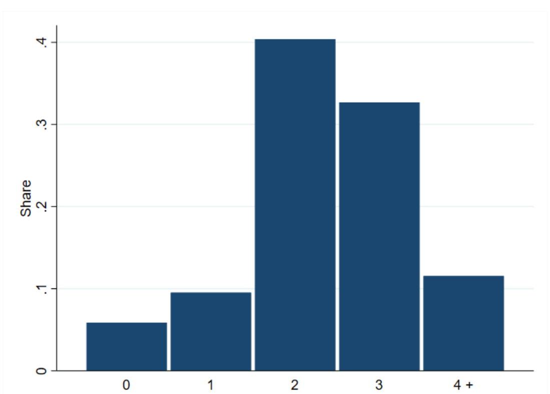
8 Online Appendix

Figure A.1: Number of Physicians per Primary Care Clinic

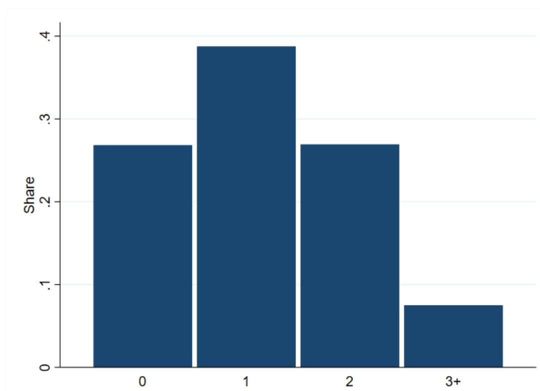


Notes: The figure shows the distribution (%) of primary care clinics in Denmark based on the number of physicians working in each clinic over the period 2007-2016.

Figure A.2: Number of Children and Daughters Among Baseline Physicians



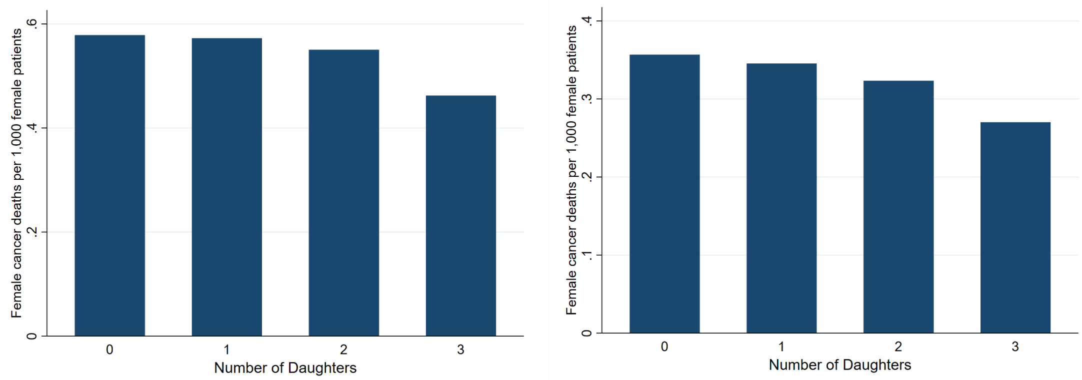
A: Number of children



B: Number of daughters

Notes: The figures show the distribution (%) of male physicians in our baseline sample based on the number of children and daughters they have for the period 2007-2016.

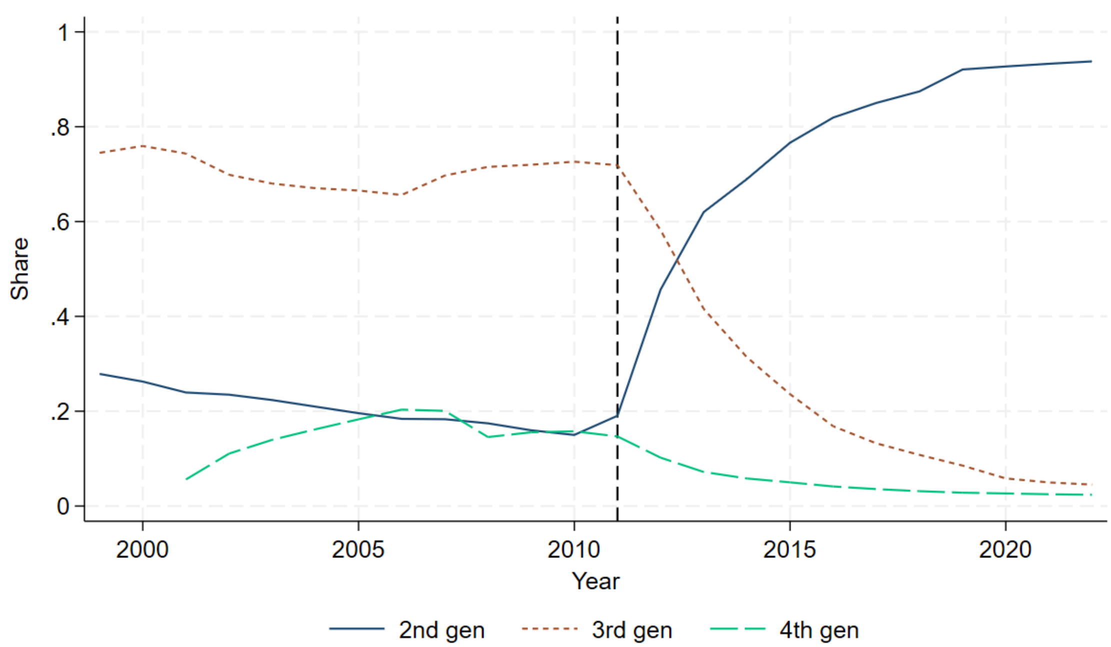
Figure A.3: Breast and Gynecologic Cancer Deaths by Physician Number of Daughters



A: Breast cancer **B:** Gynecologic cancer

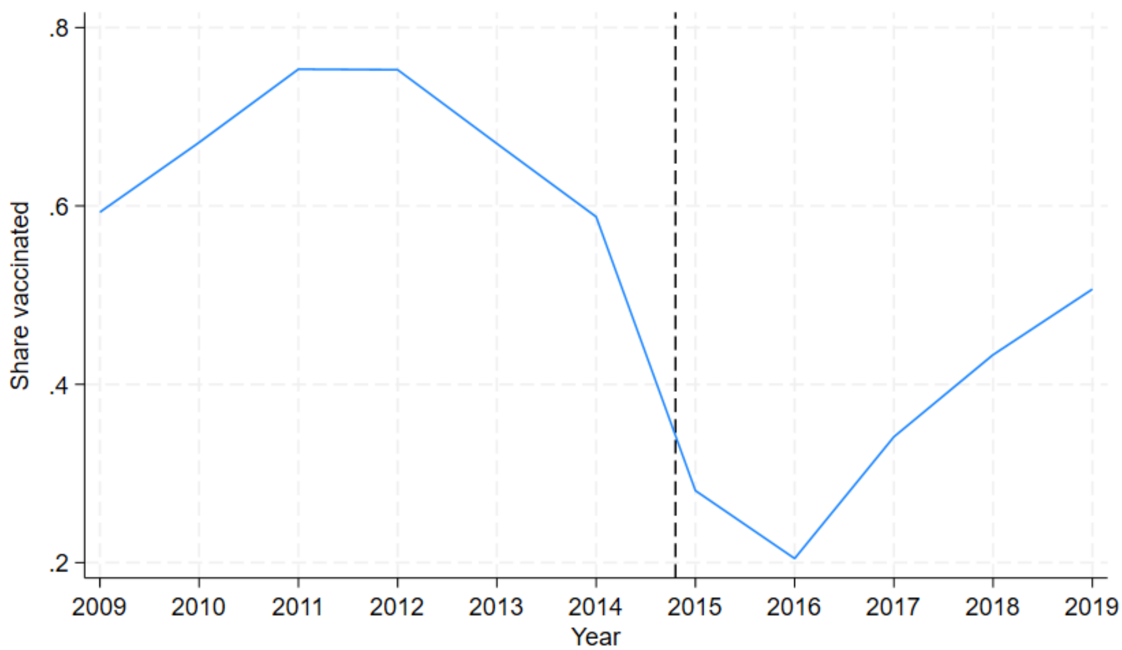
Notes: The figure shows the raw mortality rates of breast and gynecologic cancers among female patients of baseline male physicians, by the number of daughters the physician has. Mortality rates are calculated as the number of deaths from breast or gynecologic cancers per thousand female patients. The figures are based on raw data averaged across the years 2007-2016 without any controls.

Figure A.4: Use of Oral Contraceptive Pills by Generation of the Pill



Notes: The figure shows the proportion of oral contraceptive pills in use in Denmark by pill generation during 1999-2022. The dashed line indicates the year 2011, when greater side effects of the 3rd and 4th generation pills were discovered. The data include pills used by all women and are obtained from medstat.dk.

Figure A.5: HPV Vaccination Rates Among 12-Year-Old Girls



Notes: The figure shows the share of 12-year-old girls receiving the HPV vaccine in Denmark each year during 2009-2019. The dashed line marks the onset of negative media coverage.

Table A.1: Summary Statistics

	(1) All physicians	(2) All solo physicians	(3) Analysis sample	(4) Analysis sample: Female	(5) Analysis sample: Male (Baseline)
Physician characteristics					
Solo clinic	0.594	1.000	1.000	1.000	1.000
	(0.491)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.612	0.683	0.688	0.000	1.000
	(0.410)	(0.465)	(0.463)	(0.000)	(0.000)
Native	0.941	0.934	1.000	1.000	1.000
	(0.210)	(0.248)	(0.000)	(0.000)	(0.000)
Age	54.36	56.32	56.41	53.56	57.71
	(7.46)	(7.78)	(7.43)	(7.50)	(7.03)
Any child	0.961	0.936	0.941	0.921	0.950
	(0.194)	(0.245)	(0.235)	(0.270)	(0.217)
Number of children	2.36	2.33	2.35	2.16	2.43
	(0.94)	(1.10)	(1.09)	(1.06)	(1.09)
First born girl	0.492	0.492	0.503	0.520	0.495
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Number of daughters	1.14	1.134	1.15	1.01	1.17
	(0.80)	(0.92)	(0.91)	(0.88)	(0.93)
No daughter	0.183	0.270	0.259	0.258	0.260
	(0.387)	(0.444)	(0.438)	(0.438)	(0.439)
One daughter	0.287	0.404	0.413	0.458	0.393
	(0.453)	(0.491)	(0.492)	(0.498)	(0.488)
Two daughters	0.245	0.259	0.259	0.220	0.277
	(0.430)	(0.438)	(0.438)	(0.414)	(0.448)
Three or more daughters	0.284	0.067	0.069	0.064	0.071
	(0.451)	(0.249)	(0.253)	(0.245)	(0.256)
Patient characteristics					
Number of patients	2356.78	1439.25	1509.59	1490.53	1518.25
	(1561.37)	(488.22)	(398.45)	(376.55)	(407.74)
Share female patients	0.502	0.492	0.496	0.591	0.453
	(0.077)	(0.091)	(0.083)	(0.060)	(0.049)
Age	44.79	45.15	45.13	42.87	46.16
	(4.24)	(4.57)	(4.10)	(4.07)	(3.68)
Months of education	155.94	156.00	156.20	158.76	155.04
	(8.68)	(9.02)	(8.73)	(8.65)	(8.51)
Married	0.428	0.415	0.419	0.398	0.429
	(0.089)	(0.094)	(0.088)	(0.088)	(0.086)
Number of clinics	3,358	2,230	1,724	582	1,142
Number of clinics × year	20,244	12,015	10,647	3,325	7,322

Notes: The table provides summary statistics for various samples of physicians and their patients, averaged over the period 2007-2016. The physician characteristics were averaged across physician-years, and the patient characteristics were averaged across clinic-years. For each variable, both the mean and the standard deviation (in parentheses) are reported. Column 1 includes all primary care physicians in Denmark. Column 2 includes only solo physicians. Column 3 narrows the sample down to solo physicians from Column 2 who are ethnically Danish and have at least 750 patients. Column 4 includes only the female physicians from Column 3. Lastly, Column 5 consists of the male physicians from Column 3, forming the sample for our baseline analysis. All statistics are calculated based on active practice years between 2007 and 2016.

Table A.2: Cause of Death and ICD-10 Codes

Cause of Death	ICD-10
Cancer	C
Female specific cancers	C50 -C58
Malignant neoplasm of breast	C50
Malignant neoplasms of female genital organs	C51-C58
Vulva	C51
Vagina	C52
Uterus and cervix	C53-C55
Cervix uteri	C53
Corpus uteri	C54
Uterus, part unspecified	C55
Ovary	C56
Other and unspecified female genital organs	C57
Malignant neoplasms of male genital organs	C60-C63
Diseases in the circulatory system	I

Notes: This table shows the list of diseases considered in the mortality analysis along with their ICD-10 codes.

Table A.3: Balance Tests

	(1) Physician age	(2) Physician experience	(3) Physician married	(4) ln(Patients)	(5) ln(Female patients)	(6) % Female patients	(7) % Fem. pat. age<18
Girls	-0.249	-0.040	0.013	-0.002	-0.003	-0.000	-0.000
	(0.277)	(0.189)	(0.013)	(0.009)	(0.011)	(0.002)	(0.000)
Observations	7,322	7,322	7,322	7,322	7,322	7,322	7,322
Mean of Dep. Var.	57.71	12.90	0.838	7.295	6.497	0.453	0.0466
Std.Dev. of Dep. Var.	7.031	5.192	0.369	0.247	0.298	0.0494	0.0153

	(8) % Fem. pat. age 18-64	(9) % Fem. pat. age> 65	(10) Fem. pat. age	(11) Fem. pat. education	(12) Fem. pat. ln(income)	(13) % Fem. pat. minority	(14) % Fem. pat. married
Girls	0.000	0.000	0.020	-0.192	-0.005	0.003	-0.003
	(0.001)	(0.001)	(0.106)	(0.282)	(0.003)	(0.002)	(0.002)
Observations	7,322	7,322	7,322	7,322	7,322	7,322	7,322
Mean of Dep. Var.	0.292	0.115	56.76	154.8	12.50	0.0927	0.536
Std.Dev. of Dep. Var.	0.0373	0.0367	3.127	9.842	0.141	0.0749	0.0944

Notes: The table shows the results of a balance test examining whether physicians with more daughters (compared to more sons) differ in terms of physician and patient characteristics. The sample consists of all male physicians in our baseline sample during 2007-2016. Each column shows the results from a separate OLS regression similar to equation (1), where each observation is a clinic-year. The outcome variables, measuring physician and patient characteristics, are listed at the top of each column. The explanatory variable is the number of daughters the physician has. Each regression controls for physician number of children fixed effects, year fixed effects, and municipality fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Physicians' Number of Daughters and Female Patients' Selection Into or Out of the Clinics

	(1)	(2)	(3)	(4)
	Women aged 22+		Women aged 40+	
	Selecting out	Selecting in	Selecting out	Selecting in
Girls	0.00224	0.00352	0.00228	0.00289
	(0.00332)	(0.00245)	(0.00346)	(0.00250)
Observations	4,099,514	4,098,930	3,035,867	3,035,401

Notes: The table tests whether female patients select into or out of clinics based on the physicians' number of daughters. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 22 years old (columns 1-2) or above 40 years old (columns 3-4) under the care of the baseline male physicians during 2007-2016. In columns 1 and 3, the outcome is a binary variable that equals 1 if the patient leaves for another clinic in the given year, and 0 otherwise. The explanatory variable is the number of daughters her original physician has. In columns 2 and 4, the outcome is a binary variable that equals 1 if the patient joins a new clinic from another clinic in the given year, and 0 otherwise. The explanatory variable is the number of daughters her new physician has. We exclude physician switches due to clinic closures. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.5: Testing for Fertility Stopping Rules

	(1)	(2)
	Total number of children	
First-born girl	-0.089	
	(0.072)	
First and second child same gender		0.030
		(0.072)
Observations	808	719
Mean of Dep. Var.	2.530	2.719
Std.Dev. of Dep. Var.	0.986	0.876

Notes: The table presents the results from an exercise testing whether physicians follow fertility stopping rules. The sample consists of male physicians in our baseline sample. Each column shows the results from a separate OLS regression, where each observation is a physician. The outcome variable for each column is the total number of children the physician has. We measure total number of children in the last year observed, which is either 2016 or the year of clinic closure. In column 1, the explanatory variable is a dummy variable that equals 1 if the physician's first-born child is a girl, and 0 otherwise. The sample includes only baseline physicians with at least one child. In column 2, the explanatory variable is a dummy variable that equals 1 if the physician's first- and second-born children have the same gender, and 0 otherwise. The sample includes only baseline physicians with at least two children. Each regression controls for physician age and municipality fixed effects. *** p <0.01, ** p <0.05, * p <0.1.

Table A.6: Baseline Estimates by Patients' Educational Level and Ethnicity

	(1)	(2)	(3)	(4)
	Education		Ethnicity	
	Low	High	Majority	Minority
Girls	-0.000130***	-0.000045	-0.000080***	-0.000075
	(0.000048)	(0.000030)	(0.000026)	(0.000081)
Observations	1,235,853	1,873,788	2,915,782	194,135
Mean of Dep. Var.	0.00192	0.00107	0.00144	0.00100
Std.Dev. of Dep. Var.	0.0438	0.0327	0.0379	0.0317

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality by patients' educational level and ethnicity. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016, which is then split by patients' educational level (low vs. high) in columns 1-2 and by patients' ethnicity (majority vs. minority) in columns 3-4. Low education is defined as having a high school degree or less, while high education includes any level of education above high school. The outcome is a binary variable that equals 1 if the patient dies from female-specific cancer (breast or gynecologic) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Baseline Estimates with Controls Gradually Added

	(1)	(2)	(3)	(4)
	Death from Female-Specific Cancers			
Girls	-0.000062**	-0.000063**	-0.000064**	-0.000077***
	(0.000027)	(0.000027)	(0.000027)	(0.000026)
Observations	3,250,770	3,250,770	3,250,770	3,109,917
Mean of Dep. Var.	0.00145	0.00145	0.00145	0.00141
Std.Dev. of Dep. Var.	0.0381	0.0381	0.0381	0.0375
Year FE		X	X	X
Municipality FE		X	X	X
Physician controls			X	X
Patient controls				X

Notes: This table shows the baseline estimates on female-specific cancer mortality with control variables gradually added. Each column shows the results from a separate OLS regression and follows a similar sample and specification as in column 3 of Table 2. Column 1 includes only physician number of children fixed effects and no other controls. In column 2, we add year fixed effects and municipality fixed effects. In column 3 and 4, we further control for the physician and patient characteristics in the baseline specification. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.8: Baseline Estimates Using Different Samples

	(1) Include minority physicians	(2) Drop number of patient restriction	(3) (1) + (2)	(4) Extend years to 2007-2019	(5) Stayers	(6) No change in number of children
Girls	-0.000069***	-0.000070***	-0.000061**	-0.000064***	-0.000074**	-0.000077***
	(0.000025)	(0.000025)	(0.000025)	(0.000023)	(0.000032)	(0.000026)
Observations	3,255,357	3,143,721	3,292,520	3,703,780	2,556,963	3,076,267
Mean of Dep. Var.	0.00138	0.00142	0.00139	0.00138	0.00156	0.00141
Std.Dev. of Dep. Var.	0.0371	0.0377	0.0372	0.0371	0.0395	0.0375

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality when using different analysis samples. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The outcome is a binary variable that equals 1 if the patient dies from female-specific cancer (breast or gynecologic) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. In Column 1, we drop the restriction that physicians must be Danish. Column 2 drops the requirement for physicians to have at least 750 patients. Column 3 removes both restrictions from columns 1-2. In column 4, we extend the baseline sample to the year 2019. In column 5, we restrict the sample to patients who stayed with the same physician throughout the study period. In column 6, we restrict the analysis to physicians who had the same number of children throughout the study period. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.9: Baseline Estimates for Only Physicians with Children

	(1)	(2)	(3)
	Death from Female-Specific Cancers		
	Overall	Breast	Gynecologic
Girls	-0.000074***	-0.000043**	-0.000031*
	(0.000026)	(0.000020)	(0.000016)
Observations	2,955,522	2,955,522	2,955,522
R-squared	0.001	0.001	0.000
Mean of Dep. Var.	0.00137	0.000847	0.000526
Std.Dev. of Dep. Var.	0.0370	0.0291	0.0229

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality, after removing physicians without any child. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The table follows the same specification as Table 3, except that here the sample includes only patients whose physicians have at least one child. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.10: Baseline Estimates Using Dummy Variables for Number of Daughters

	(1)	(2)	(3)
	Death from Female-Specific Cancers		
	Overall	Breast	Gynecologic
1 Daughter	-0.000062	-0.000044	-0.000018
	(0.000060)	(0.000047)	(0.000038)
2 Daughters	-0.000163**	-0.000093*	-0.000070*
	(0.000064)	(0.000051)	(0.000041)
3 or more Daughters	-0.000214**	-0.000109	-0.000105*
	(0.000097)	(0.000076)	(0.000057)
Observations	3,109,917	3,109,917	3,109,917

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality, when using dummy variables to measure number of daughters. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcomes are binary variables that equal 1 if the patient dies from any female-specific cancers (column 1), breast cancer (column 2), or gynecologic cancer (column 3) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has, measured as dummy variables instead of a continuous variable. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.11: Baseline Estimates Using Alternative Treatment Variables

	(1)	(2)	(3)	(4)	(5)
	Treatment Defined as				
	Any daughter	Share of daughters	Most daughters	Only daughters	First-born daughter
Treatment	-0.000104*	-0.000150**	-0.000085*	-0.000088	-0.000027
	(0.000056)	(0.000063)	(0.000044)	(0.000055)	(0.000044)
Observations	3,109,917	3,109,917	3,109,917	3,109,917	3,109,917
Mean of Dep. Var.	0.00141	0.00141	0.00134	0.00132	0.00134
Std.Dev. of Dep. Var.	0.0375	0.0375	0.0366	0.0363	0.0366
Mean of treatment var.	0.743	0.464	0.354	0.236	0.467

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality, when using alternatively defined treatment variables. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcome is a binary variable that equals 1 if the patient dies from female-specific cancer (breast or gynecologic) in the given year, and 0 otherwise. The regression uses different treatment variables specified in the column headers to measure physician daughters, including having any daughters (column 1), the share of daughters among all children (column 2), having most daughters (column 3), having only daughters (column 4), and having a first-born daughter (column 5). Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects.Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.12: Baseline Estimates Using Logit Regressions

	(1)	(2)	(3)
	Death from Female-Specific Cancers		
	Overall	Breast	Gynecologic
Girls	-0.0606***	-0.0539**	-0.0731**
	(0.0198)	(0.0249)	(0.0324)
Observations	3,109,152	3,100,560	3,094,341
Mean of Dep. Var.	0.00141	0.000878	0.000537
Std.Dev. of Dep. Var.	0.0375	0.0296	0.0232
Marginal effects	-0.000051	-0.000027	-0.000023

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality using a logit function. Each column shows the results from a separate logit regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcomes are binary variables that equal 1 if the patient dies from any female-specific cancers (column 1), breast cancer (column 2), or gynecologic cancer (column 3) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. The marginal effects, estimated at the average of the covariates, are reported in the last row of the table. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.13: Effects on Female-Specific Cancer Deaths at the Clinic Level

	(1)	(2)	(3)	(4)
		Death Rate		
	Any death	Overall	Breast	Gynecologic
Girls	-0.0150*	-0.0471***	-0.0281**	-0.0190*
	(0.00818)	(0.0181)	(0.0141)	(0.0109)
Observations	7,322	7,322	7,322	7,322
Mean of Dep. Var.	0.456	0.947	0.593	0.354
Std.Dev. of Dep. Var.	0.498	1.241	0.992	0.756

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality, with baseline patient data aggregated to the clinic-year level. Each column shows the results from a separate OLS regression, where each observation is a clinic-year. The sample consists of all male physicians in our baseline sample during 2007-2016. In column 1, the outcome is a binary variable that equals 1 if the clinic has any female patient dying from breast or gynecologic cancer in the given year, and 0 otherwise. For columns 2-4, the outcomes are the number of deaths per 1,000 female patients in the given year from any female-specific cancers (column 2), breast cancer (column 3), or gynecologic cancer (column 4). Each regression controls for physicians' age, physician number of children fixed effects, patients' average education in months, average patient age, share of ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.14: Physicians' Number of Daughters and Female Cancer Diagnoses by Age

	(1)	(2)	(3)	(4)
	Diagnosed for the First Time			
	Ages 22+	Ages 22-49	Ages 50-70	Ages 71+
Panel A: Breast cancer				
Girls	-0.000010	0.000093***	-0.000032	-0.000278**
	(0.000051)	(0.000036)	(0.000093)	(0.000129)
Observations	4,099,989	1,781,576	1,574,246	744,167
Mean of Dep. Var.	0.00438	0.00127	0.00663	0.00715
Std.Dev. of Dep. Var.	0.0661	0.0356	0.0812	0.0843
Panel B: Gynecologic cancer				
Girls	-0.000045**	-0.000013	-0.000090**	-0.000048
	(0.000021)	(0.000020)	(0.000037)	(0.000065)
Observations	4,099,989	1,781,576	1,574,246	744,167
Mean of Dep. Var.	0.00104	0.000415	0.00134	0.00192
Std.Dev. of Dep. Var.	0.0322	0.0204	0.0366	0.0438

Notes: This table presents the estimated effects of physician daughters on female cancer diagnoses by age. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of female patients above 22 years old under the care of the baseline male physicians during 2007-2016 and is divided into different age groups for each column, as specified at the top of each column. The outcomes in each panel are binary variables that equal 1 if the patient is diagnosed with breast cancer (Panel A) or gynecologic cancer (Panel B) for the first time in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.15: Physicians' Number of Daughters and Female Cancer Testing by Age

	(1)	(2)	(3)	(4)
	Receiving the Screening or Diagnostic Test			
	Ages 22+	Ages 22-49	Ages 50-70	Ages 71+
Panel A: Mammography				
Girls	0.000464	0.001399**	-0.000944	0.001623
	(0.000856)	(0.000553)	(0.001568)	(0.001342)
Observations	4,099,989	1,701,884	1,653,938	744,167
Mean of Dep. Var.	0.221	0.0604	0.393	0.208
Std.Dev. of Dep. Var.	0.415	0.238	0.488	0.406
Panel B: Pap smear				
Girls	-0.000591	-0.000597	-0.000940	0.000094
	(0.001001)	(0.001355)	(0.001070)	(0.000853)
Observations	4,099,989	1,781,576	1,230,777	1,087,636
Mean of Dep. Var.	0.193	0.290	0.173	0.0543
Std.Dev. of Dep. Var.	0.394	0.454	0.378	0.227
Panel C: Cone biopsy				
Girls	0.000051	0.000125*	-0.000038	0.000036
	(0.000038)	(0.000072)	(0.000045)	(0.000039)
Observations	4,099,989	1,781,576	1,230,777	1,087,636
Mean of Dep. Var.	0.00233	0.00381	0.00153	0.000846
Std.Dev. of Dep. Var.	0.0482	0.0616	0.0391	0.0291

Notes: This table presents the estimated effects of physician daughters on female cancer screening and diagnostic tests by age. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of female patients above 22 years old under the care of the baseline male physicians during 2007-2016 and is divided into different age groups for each column, as specified at the top of each column. The outcomes in each panel are binary variables that equal 1 if the patient receives a mammogram (Panel A), Pap test (Panel B), or cone biopsy (Panel C) in the given year, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.16: Physicians' Number of Daughters and Female Cancer Stage at Diagnosis

	(1)	(2)	(3)	(4)
	Cancer Has Spread to Surrounding Tissue			
	Ages 22+	Ages 22-49	Ages 50-70	Ages 71+
Panel A: Breast cancer				
Girls	-0.00983**	-0.00356	-0.0137**	-0.00279
	(0.00477)	(0.01164)	(0.0060)	(0.00842)
Observations	17,430	2,256	10,165	5,009
Mean of Dep. Var.	0.757	0.797	0.771	0.710
Std.Dev. of Dep. Var.	0.429	0.402	0.420	0.454
Panel B: Gynecologic cancer				
Girls	-0.00568*	-0.00309	-0.00516	-0.0204*
	(0.00295)	(0.00230)	(0.00927)	(0.0110)
Observations	21,833	14,690	4,219	2,924
Mean of Dep. Var.	0.186	0.0457	0.325	0.688
Std.Dev. of Dep. Var.	0.389	0.209	0.469	0.463

Notes: This table presents the estimated effects of physician daughters on female cancer stage upon diagnosis. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample includes all female patients under the care of the baseline male physicians who are diagnosed with breast cancer (Panel A) or gynecologic cancer (Panel B) for the first time during 2007-2016. The outcomes in each panel are binary variables that equal 1 if the patient's cancer tumor has spread to surrounding tissue, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.17: Physicians' Number of Daughters and Detection of Cervical Cell Changes

	(1)	(2)	(3)	(4)
	Pre-Cancerous Cervical Cell Changes Detected			
	Ages 22+	Ages 22-49	Ages 50-70	Ages 71+
Girls	0.00488*	0.00218	0.00835	0.0117
	(0.00282)	(0.00214)	(0.00884)	(0.0119)
Observations	21,833	14,690	4,219	2,924
Mean of Dep. Var.	0.840	0.959	0.721	0.417
Std.Dev. of Dep. Var.	0.366	0.198	0.449	0.493

Notes: This table presents the estimated effects of physician daughters on the detection of pre-cancerous cervical cell changes. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample includes all female patients under the care of the baseline male physicians who are diagnosed with gynecologic cancer or pre-cancerous cervical cell changes for the first time during 2007-2016. The outcomes in each panel are binary variables that equal 1 if the patient is diagnosed with cervical cell changes, and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.18: Balance Tests on Baseline Physicians' Male Patient Characteristics

	(1) % Male patients	(2) % Male pat. age<18	(3) % Male pat. age 18-64	(4) % Male pat. age> 65	(5) Male pat. age	(6) % Male pat. education	(7) % Male pat. ln(income)	(8) Male pat. minority	(9) % Male pat. married
Girls	0.000	-0.000	0.001	-0.001	-0.054	-0.255	-0.006	0.003	-0.004*
	(0.002)	(0.000)	(0.002)	(0.001)	(0.095)	(0.229)	(0.004)	(0.002)	(0.002)
Observations	7,322	7,322	7,322	7,322	7,322	7,322	7,322	7,322	7,322
Mean of Dep. Var.	57.71	0.0517	0.397	0.0990	53.49	162.7	12.77	0.0927	0.573
Std.Dev. of Dep. Var.	7.031	0.0166	0.0733	0.0335	3.448	9.739	0.205	0.0777	0.104

Notes: The table shows the results of a balance test examining whether physicians with more daughters (compared to more sons) differ in terms of their male patient characteristics. The sample consists of all male physicians in our baseline sample during 2007-2016. Each column shows the results from a separate OLS regression similar to equation (1), where each observation is a clinic-year. The outcome variables, measuring male patient characteristics, are listed at the top of each column. The explanatory variable is the number of daughters the physician has. Each regression controls for physician number of children fixed effects, year fixed effects, and municipality fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.19: Physicians' Number of Daughters and Male Patient Mortality

	Death by Cause			
	Any	Cancer	Male-specific cancer	CV
	(1)	(2)	(3)	(4)
Girls	0.000182	0.000069	-0.000006	-0.000024
	(0.000122)	(0.000059)	(0.000018)	(0.000060)
Observations	3,219,989	3,219,989	3,219,989	3,219,989
Mean of Dep. Var.	0.0181	0.00576	0.000811	0.00478
Std.Dev. of Dep. Var.	0.133	0.0757	0.0285	0.0690

Notes: This table presents the estimated effects of physician daughters on male patient mortality by cause. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all male patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcomes are binary variables that equal 1 if the patient dies in a given year from any cause (column 1), any type of cancer (column 2), male-specific cancers (i.e., male reproductive organs) (column 3), or cardiovascular diseases (column 4), and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.20: Balance Tests for Female Physicians

	(1) Physician age	(2) Physician experience	(3) Physician married	(4) ln(Patients)	(5) ln(Female patients)	(6) % Female patients	(7) % Fem. pat. age<18
Girls	0.261	-0.083	0.078**	-0.008	0.003	0.007**	0.001
	(0.465)	(0.351)	(0.030)	(0.012)	(0.012)	(0.003)	(0.001)
Observations	3,325	3,325	3,325	3,325	3,325	3,325	3,325
Mean of Dep. Var.	53.56	10.65	0.661	7.283	6.752	0.591	0.0593
Std.Dev. of Dep. Var.	7.499	6.136	0.473	0.213	0.230	0.0598	0.0201

	(8) % Fem. pat. age 18-64	(9) % Fem. pat. age> 65	(10) Fem. pat. age	(11) Fem. pat. education	(12) Fem. pat. ln(income)	(13) % Fem. pat. minority	(14) % Fem. pat. married
Girls	0.007*	-0.001	-0.080	-0.605	-0.011*	0.008*	-0.003
	(0.004)	(0.002)	(0.235)	(0.478)	(0.006)	(0.004)	(0.003)
Observations	3,325	3,325	3,325	3,325	3,325	3,325	3,325
Mean of Dep. Var.	0.426	0.105	53.39	163.5	12.60	0.124	0.517
Std.Dev. of Dep. Var.	0.0785	0.0385	3.807	10.74	0.146	0.0847	0.0998

Notes: The table shows the results of a balance test examining whether female physicians with more daughters (compared to more sons) differ in terms of physician and patient characteristics. The sample consists of all female physicians in our analysis sample (i.e., Danish solo physicians with at least 750 patients) during 2007-2016. Each column shows the results from a separate OLS regression similar to equation (1), where each observation is a clinic-year. The outcome variables, measuring physician and patient characteristics, are listed at the top of each column. The explanatory variable is the number of daughters the physician has. Each regression controls for physician number of children fixed effects, year fixed effects, and municipality fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.21: Female Physicians' Number of Daughters and Patient Mortality

	Female Mortality			Male Mortality	
	Female cancer (1)	Breast (2)	Gynecologic (3)	Overall (4)	Male cancer (5)
Girls	0.000033	0.000022	0.000010	0.000078	0.000036
	(0.000034)	(0.000029)	(0.000022)	(0.000218)	(0.000039)
Observations	1,498,169	1,498,169	1,498,169	1,056,577	1,056,577
Mean of Dep. Var.	0.00109	0.000661	0.000429	0.0165	0.000762
Std.Dev. of Dep. Var.	0.0330	0.0257	0.0207	0.127	0.0276

Notes: This table presents the estimated effects of physician daughters on patient mortality by cause among female physicians. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of patients above 40 years old under the care of the female physicians in our analysis sample (i.e., Danish solo physicians with at least 750 patients) during 2007-2016. The sample is divided by gender across the columns, with columns 1-3 for female patients and columns 4-5 for male patients. For columns 1-3, the outcomes are binary variables that equal 1 if the female patient dies in a given year from any female-specific cancer (breast or gynecologic) (column 1), breast cancer (column 2), gynecologic cancer (3), and 0 otherwise. For columns 4-5, the outcomes are binary variables that equal 1 if the male patient dies in a given year from any cause (column 4) or male-specific cancer (i.e., cancers of the male reproductive organs) (column 5), and 0 otherwise. The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.22: Baseline Estimates Based on the Age of the Oldest Daughter

	(1)	(2)	(3)
	Age Range of the Physician's Oldest Daughter		
	≤11	≥26	≥40
Girls	-0.000077***	-0.000089**	-0.000081***
	(0.000026)	(0.000036)	(0.000026)
Age range	-0.000411*	0.000067	0.000372
	(0.000224)	(0.000093)	(0.000277)
Girls × Age range	0.000168	-0.000007	-0.000063
	(0.000147)	(0.000054)	(0.000138)
Observations	3,109,917	3,109,917	3,109,917
Mean of Dep. Var.	0.00132	0.00135	0.00131
Std.Dev. of Dep. Var.	0.0364	0.0367	0.0362

Notes: This table presents the estimated effects of physician daughters on female-specific cancer mortality by the age of the physician's oldest daughter. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 40 years old under the care of the baseline male physicians during 2007-2016. The outcome is a binary variable equal to 1 if the patient dies from any female-specific cancers (breast or gynecologic) in the given year, and 0 otherwise. The explanatory variables include the number of daughters the physician has as well as its interaction with an indicator for the age range of the physician's oldest daughter, as specified in the column headers. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.23: Physicians' Number of Daughters and Oral Contraceptive Pill Prescription

	(1)	(2)	(3)	(4)
	Ages 13-55		Ages 20-55	
	Any	2^{nd} generation	Any	2^{nd} generation
Girls × Post	-0.000328	0.00491*	-0.000423	0.00430*
	(0.001)	(0.003)	(0.001)	(0.002)
Observations	1,736,412	1,736,412	1,499,245	1,499,245
Mean of Dep. Var.	0.270	0.0468	0.236	0.0436
Std.Dev. of Dep. Var.	0.444	0.211	0.425	0.204

Notes: This table presents the estimated effects of physician daughters on the likelihood of female patients being prescribed any or the second-generation oral contraceptive pills during 2008-2017. The estimates in each column come from a single OLS regression similar to equation (2), where the dummy variable *Post* indicate years from 2012 onwards. The sample consists of all female patients aged 13-55 (columns 1-2) and those aged 20-55 (columns 3-4) under the care of the baseline male physicians. The outcome is a binary variable that equals 1 if the female patient in a given year is prescribed any oral contraceptive pill (columns 1 and 3) or the second-generation pill (columns 2 and 4), and 0 otherwise. The explanatory variables are the physician's number of daughters in 2011 interacted with the *Post* dummy for years after 2011. The regression controls for physician fixed effects, physician number of children fixed effects interacted with year dummies, physicians' age, patients' education in months, patient age fixed effects, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors are clustered at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.24: Physicians' Number of Daughters and HPV Vaccinations

	(1)	(2)
	HPV Vaccination by Age 13	
	Any	Number
Girls × Post	0.0199**	0.0284
	(0.0087)	(0.0202)
Observations	22,122	21,015
Mean of Dep. Var.	0.677	1.313
Std.Dev. of Dep. Var.	0.468	1.114

Notes: This table presents the estimated effects of physician daughters on young female patients' HPV vaccinations during 2011-2018. The estimates in each column come from a single OLS regression similar to equation (2), where the dummy variable *Post* indicate years from 2015 onwards. The sample consists of all the 13-year-old girls under the care of the baseline male physicians in each year. In column 1, the outcome is a binary variable that equals 1 if the female patient has received any HPV vaccination by age 13, and 0 otherwise. In column 2, the outcome is the total number of HPV vaccinations the female patient has received by age 13. The explanatory variable is the physician's number of daughters in 2014 interacted with the *Post* dummy for years after 2014. The regression controls for physician fixed effects, physician number of children fixed effects interacted with year dummies, physicians' age, patients' education in months, patient age fixed effects, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.25: Correlation Matrix of the Agreement Variables

	(1)	(2)	(3)	(4)	(5)
(1) Collaboration	1.000				
(2) Communication clarity	0.434*	1.000			
(3) Time attention	0.377*	0.455*	1.000		
(4) Empathy	0.447*	0.508*	0.588*	1.000	
(5) Trust	0.451*	0.507*	0.522*	0.700*	1.000

Notes: The table shows the correlation matrix between the survey items used to measure physician satisfaction. The correlation is based on all people responding to the survey, which is 20,906 individuals. $*$ shows significance at the 5 percent level.

Table A.26: Factor Loadings and Uniqueness of the Agreement Variables

	Factor1	Uniqueness
(1) Collaboration	0.572	0.673
(2) Communication clarity	0.646	0.583
(3) Time attention	0.673	0.548
(4) Empathy	0.809	0.345
(5) Trust	0.783	0.387

Notes: The table shows the factor loading pattern matrix and unique variance from the different survey items used to create the composite measure of overall physician satisfaction. The values are based on all people responding to the survey, which is 20,906 individuals.

Table A.27: Effects on Patient Experiences and Physician-Patient Relationships – Male Patients

	(1) Overall satisfaction	(2) Collaboration	(3) Communication clarity	(4) Time attention	(5) Empathy	(6) Trust
Panel A.						
Any male GP with a daughter	-0.007	-0.007	0.004	0.015	-0.003	-0.012
	(0.031)	(0.016)	(0.012)	(0.016)	(0.013)	(0.012)
Panel B.						
Share of male physicians with at least one daughter	-0.009	-0.001	-0.000	0.017	-0.006	-0.013
	(0.030)	(0.015)	(0.011)	(0.015)	(0.012)	(0.012)
Observations	6,791	6,829	6,826	6,829	6,833	6,829
Mean of Dep. Var.	0.0612	0.780	0.897	0.808	0.864	0.880
Std.Dev. of Dep. Var.	0.845	0.414	0.305	0.394	0.343	0.325

Notes: This table presents the estimated effects of physician daughters on measures of patient experience and physician-patient relationships, based on patient survey data collected in 2019. Each column shows the results from a separate OLS regression following equation (3), where each observation is a patient. The sample consists of all male patients in the patient survey connected to a primary care clinic with at least one male physician. For column 2-6, the outcome is a binary variable that equals 1 if the patient agrees with the given statement about their experience and relationship with the physician, and 0 otherwise. In column 1, the outcome is a composite measure that summarizes the patient's overall satisfaction with the physician, based on factor analysis that combines the five statements across columns 2-6. The explanatory variable in panel A is an indicator that equals 1 if any male physician in the clinic has a daughter, and 0 otherwise. The explanatory variable in panel B is the share of male physicians in the clinic with at least one daughter. Each regression controls for patients' education in months, patient age dummies, an indicator for ethnic minority patients, region fixed effects, fixed effects for the number of physicians in the clinic, physicians' average age, share of male physicians in the clinic, share of ethnic majority physicians in the clinic, and fixed effects for the average number of children among physicians, where the average number of children has been rounded to the nearest whole number. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.28: Physicians' Number of Daughters and Patients' Healthcare Utilization

	(1) Any contact	(2) Number of visits	(3) Services per visit
Girls	-0.000029	0.0268	-0.00979
	(0.000746)	(0.0449)	(0.00905)
Observations	3,841,524	3,841,524	3,841,524
Mean of Dep. Var.	0.919	7.025	1.597
Std.Dev. of Dep. Var.	0.272	6.150	0.884

Notes: This table presents the estimated effects of physician daughters on female patients' health care utilization. Each column shows the results from a separate OLS regression following equation (1), where each observation is a patient-year. The sample consists of all female patients above 22 years old under the care of the baseline male physicians during 2007-2016. The outcomes are a binary variable that equals 1 if the patient has any contact with her physician in the given year (column 1), the total number of times she visited the physician in the year (column 2), and the average number of services the physician provided per visit (column 3). The explanatory variable is the number of daughters the physician has. Each regression controls for physicians' age, physician number of children fixed effects, patients' education in months, patient age dummies, an indicator for ethnic minority patients, municipality fixed effects, and year fixed effects. Standard errors, in parentheses, are corrected for clustering at the physician level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.