The New Economics of Working with Children? Evidence from Tax Returns*

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Abstract

While the labor force participation of mothers of young children has never been higher, use of paid childcare has fallen 10-15 percent below pre-pandemic levels in the United States. We provide new links between administrative tax data on paid childcare and maternal labor supply to investigate the cause of these seemingly incongruous trends. The key hypothesis we probe is the role of increased workplace flexibility. In particular, we examine whether the decline in paid childcare is driven by mothers in more flexible occupations and at firms with more generous remote-work policies. We also examine the role of increased grandparental caregiving driven by Covid-era early retirements and changes in the quality and price of non-relative childcare, and how grandparental availability interacts with the workplace flexibility of mothers. By matching firm remote-work policies with tax records, and leveraging differences in the timing of flexible arrangements among otherwise similar firms, we analyze the impact of increased workplace flexibility on childcare demand and wage growth for mothers. We find that 65 percent of the overall decline in paid childcare in 2022 and 2023 can be attributed to teleworkable jobs by mothers and fathers. Our panel dataset, encompassing the universe of U.S. taxpayers, provides an unprecedented first look at how the remote work revolution is shaping the gender wage gap.

Keywords: Work from home, Gender Pay Gap, Childcare

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1 Introduction

Despite substantial growth in female employment and wages in the last half of the twentieth century, women's progress in the labor market has stalled since the mid-1990s (England et al., 2020). Goldin (2014) argues that to close this "last chapter" of the gender pay gap, something needs to reduce the conflict between inflexible job demands and motherhood. As of 2024, the labor force participation of US mothers with young children hit an all-time high. In light of this unprecedented labor force participation, we document a new and surprising fact: paid childcare usage has *fallen* by more than ten percent relative to pre-Covid levels. This paper examines whether the post-COVID shift to remote and flexible work has improved women's—especially mothers'—career trajectories relative to men.

We probe three potential drivers of the simultaneous reduction in use of paid childcare and the increase in female labor force participation using tax records on the population of mothers of young children, their employers, and never before used tax records on household childcare spending. First, we investigate the role of the remote-work revolution on the ability of women to work without securing formal care for their children. Next, we probe the impact of the increasing availability of gig-work on the ability of mothers to work at times convenient for them without purchasing formal childcare. To our knowledge, this paper is the first to analyze IRS tax data on childcare usage.

By improving women's ability to work from home, has technology reduced households' demand for paid childcare? We link publicly announced return-to-office mandates for Fortune 100 public companies with administrative tax data to study how employment decisions and childcare usage respond to the availability of remote work. Using an event study approach comparing women at companies with different return-to-office dates, we are able to identify how childcare choices and career outcomes relate to the physical location of work. In addition to this direct approach, we employ a more data-driven identification of the availability of work-from-home arrangements which we can apply to a broader swath of firms using a measure of 2020/2021-era changes in the dispersion of employee zip-codes associated with

an employer. In theory, the effect of remote work on women's careers is ambiguous. It may induce some women to work more than they would be willing to were purchasing childcare necessary (Alon et al., 2020). On the other hand, women may encounter more disruptions when working from home relative to working away from home, and this may harm their promotion prospects (Adams-Prassl et al., 2023).

A related but distinct possibility is increased schedule flexibility due to a rise in self-employment/gig work in recent years, particularly post-Covid. Compared to wage and salary work, self-employment is often seen as providing more flexibility, potentially allowing for balancing work while children are at school or when alternative childcare is available. The largest rise in self-employment has come from gig work, in particular rideshare and delivery jobs. Delivery demand peaked during 2020-2021, but has remained largely robust since. While delivery gig jobs are not remote, they are characterized by schedule flexibility.

We also study changes in the supply of childcare and how these affect women's choices in the labor market. We focus on the relative availability of grandparental care driven by early retirements, alongside changes in the price and quality of formal center-based childcare. Abraham and Rendell (2023) discuss early retirements as a key source of "missing workers" who did not return to the workforce, but did not probe the consequences for childcare. The availability of grandparental care and the rise of remote work are features of the economy which have the potential to greatly affect women.

To understand how changes in the availability of grandparental care affect the propensity of women to work without purchasing formal childcare, we construct a three-generation link in the US tax data. We study how having a close grandparent (as measured by the distance to their zip-code of residence) affects usage of paid childcare, and how this relationship is mediated by the quality of formal childcare available. The Covid pandemic induced a wave of early retirements, potentially providing more opportunities for grandparents to help out with childcare responsibilities.

We find that 65% of the recent decline in paid childcare use stems from the weakening

link between working in a teleworkable job and using paid childcare. Whether a mother's job is teleworkable has about twice the explanatory power of father's jobs. Changes in gig work do not explain declines in paid childcare use. In addition, despite the increased availability of grandparents post Covid, grandparent-related factors (such as distance from mothers and employment) do not on net explain any of the decline in use of paid childcare. Our results suggest that the remote work revolution has allowed parents, and especially mothers, to avoid purchasing costly childcare while remaining employed.

Finally, we turn to understanding the impacts these structural changes have had on women's career trajectories and, consequently, on the gender pay gap. Recent and complementary work on the same question includes Harrington and Kahn (2024), which studies the decline in employment associated with motherhood and how it is mitigated in careers where women can work from home post-Covid. Our paper makes use of panel data and identification of specific firm policies to connect the ability to work from home with wage growth and career progression. On the one hand, work-from-home policies allow women to remain employed rather than leave the labor force when they become mothers. On the other hand, if work from home induces women to substitute away from care arrangements which take place out of the home and towards care arrangements which take place inside the home, there may be substantial productivity costs and career consequences associated with the shift towards working from home post-Covid (Adams-Prassl et al., 2023; Gallen, 2023).

This paper is organized as follows: we begin by describing the IRS tax data and public-use data used in our paper. Section 3 describes our empirical strategy. In Section 4, we explore summary statistics and trends in both sources. Results are presented in Section 5.

2 Theoretical Framework

We assume households live for two periods and have preferences over market goods C and mother's non-market hours L in each period. We assume for simplicity that fathers all work

full-time. For mothers, the time constraint is given by

$$1 = H + L$$

where L is mother's time in childcare and/or leisure, and H is her hours in market work.

$$U(C_1, C_2, L_1, L_2) = Log(C_1) + \psi \cdot Log(L_1) + \beta \cdot (Log(C_2) + \psi Log(L_1))$$

Traditional Tradeoff Between Paid Childcare and Work

We assume that households must purchase childcare in period 1 for every hour that mothers work at price p. In period 2, children do not need care. Wages in period 2 are higher the more mothers worked in period 1. The household budget in period 1 is given by

$$C_1 + A_1 \leq w_1 H_1 - pH_1 + I_1^{father}$$

The household budget in period 2 is given by

$$C_2 \leq (1 + r)A_1 + w_2(1 + H_1)H_2 + I_2^{father}$$

New Tradeoff Between Childcare and Work

We next consider the possibility that households do not mechanically have to purchase childcare at rate p. Instead, households may watch their children while working. However, we assume that there is a cost to doing so in terms of period 2 wages. Rather than a wage $w_2(1+H_1)$, a mother who did not purchase childcare is paid wage $w_2(1+\gamma H_1)$ for every hour worked in period 2, where $\gamma < 1$. A mother who did purchase childcare receives $w_2(1 + H_1)$. This lower wage in period 2 reflects lower productivity (and so a lower raise) for workers who are multitasking by watching children while working. With the possibility of not purchasing

childcare, the household budget in period 1 is given by

$$C_1 + A_1 \leq w_1 H_1 - pH_1 F + I_1^{father}$$

where F indicates that a household purchased paid childcare The household budget in period 2 is given by

$$C_2 \leq (1+r)A_1 + w_2(1+\gamma(1-F)H_1)H_2 + I_2^{father}$$

3 Data

3.1 IRS Tax Data

We draw on the universe of US tax records as well as birth records shared with the IRS from the Social Security Administration (SSA). In particular, we combine tax records on paid childcare usage with tax records on maternal labor supply. We also further examine the filings of firms where mothers work, and examine the location of grandparents in the tax data based on multi-generation mother-child SSA links. We describe each of these data elements in turn. Many labor market and childcare variables of interest are available back to 2000. We draw on these data to show trends over time. Given our main interest is more recent changes, our main empirical analysis will be conducted on panel from 2017 to the latest data available in 2023.

3.1.1 Paid Childcare in Tax Data

U.S. tax data provide a unique link between a household, their dependent children and care providers. To our knowledge, we are the first to analyze the tax data recording childcare usage. These data are collected when tax units with children claim the Child and Dependent Care Tax Credit (CDCC) or a Dependent Care Flexible Spending Account (DCFSA).

The United States has had a federal CDCC since 1976. In the most recent tax year, a

tax unit can receive up to $2,100 in federal tax credits for childcare. The last permanent expansion was in 2003 as part of the Bush tax cuts. The American Rescue Plan Act (ARPA) temporarily but substantially increased the generosity of the CDCTC for tax year 2021 only. In this temporary expansion, the credit was made fully refundable, the maximum spending threshold rose to $16,000, and subsidy generosity increased to as much as 50 cents per dollar spent for households with adjusted gross income less than $125,000. In addition, many states offer top ups to the federal credit. The most generous are in Minnesota, Pennsylvania and New York, which go so far to double the value of the federal credit.

Qualifying tax units are those with any childcare or dependent care expenses that allow the filer (or spouse) to work, look for work, or go to school. Qualifying children must be under 13 years old.[1] The credit amount is a percentage of the first $3,000 of qualifying expenses, or $6,000 for two or more qualifying children. The federal credit is nonrefundable, and is therefore only relevant for tax units with tax liability. We will return to this point when we compare counts from the tax data with other sources of data on paid childcare usage. Another related tax benefit is the DCFSA, which has been available since 1982. Filers can contribute up to $2,500 into DCFSAs, per filer, pre-tax ($5,000 for a married couple). Taxfilers with a DCFSA may also claim the CDCC, but the DCFSA amount is deducted from the cap on qualifying CDCC expenses.

The CDCC is claimed by filing a tax form known as Form 2441, and tax units receiving a DCFSA also file this form. The important elements of this form are shown in Appendix Figure A.1. Tax units list each care provider, the SSN or EIN of the care provider, and amount paid. They also list the expenses for each of their eligible children.

3.1.2 Construction of Our Main Estimation Panel Using SSA child links

We begin with a spine of all mothers with young children born, where both the mother and child have been issued a Social Security Number (SSN). When someone files for a SSN, often

[1] While our focus is on mothers with young children, qualifying dependents can be any age if they cannot provide care for themselves.

at birth in the United States, the SSA also collects the SSNs of mothers and fathers, when available.[2] These data are shared with the IRS by the SSA. The data we access has complete coverage beginning with births in 1983.

To this dataset of matched mother-child-father pairs, we look one generation further back, linking the mothers to their parents (thus identifying the grandparents of the children). Given that we see links beginning in 1983, the oldest a mother can be in a mother-child pair with a grandparental link by the beginning of our 2017 panel would be 34.

3.1.3 Self-employment and Gig Work in Tax Data

Rates of self-employment have been declining in the major labor market surveys for decades. However, in recent years, there has been a rise in self-employment in the gig economy, driven by the rise of ridesharing and delivery platforms. These types of platform gig jobs are characterized by their low barriers to entry and hours flexibility.

Self-employment can be identified in tax data in a couple of ways. First, self-employed individuals file tax forms, Schedule C and SE. In addition, gig workers receive a tax form from the firms that they work for. Similar to a W2 for employees, gig companies issue a tax form known as Form 1099 to their gig workers. New platform gig companies can be further identified based on cross-referencing names with lists of major platforms (Garin et al., 2022).

3.1.4 Other tax data elements

Our main focus is on working mothers. We consider female labor supply both from employee and non-employee income. Our main measure of female labor supply comes from receiving a W2 for wage and salary income. We also consider self-employment income, as indicated by the filing or Form Schedule SE, or the receipt of a 1099 from a gig economy payer. We also

[2]Mother SSNs are rarely missing, but may be missing if the mother has not been issued an SSN, such as when a foreigner gives birth in the U.S. Father's SSNs can be missing in the case the father is not known or similarly has not been issued a SSN. SSN is not a prerequisite for a qualifying child for the CDCC. Filers can still receive the CDCC if their qualifying child has an ITIN or an ATIN. In future work we intend to include additional qualifying children that may not appear in the SSA data.

extract self-reported occupation on the 1040, when available. We use occupation to classify jobs based on whether they can be done remotely, using a methodology discussed in more detail below. Geographic location (zipcode and state) is determined based on the location where the W2 is sent if the mother is an employee, where a 1099 is sent if the mother is a gig worker with no W2 income, or where a 1040 is filed if a mother is a non-gig self-employed worker only.

We also add mortality, geographic location, labor supply and retirement status of the grandparents. First, we link to death dates, as recorded by the SSA (if applicable). We note whether the grandparents work as employees based on receipt of W2, or are retired, based on receipt of Social Security income (1099-SA) or pension/retirement account withdrawals (1099-R). We identify the location of grandparents based on 1040 filings or information returns received in a tax year.

3.2 Comparisons to Public-Use Data

3.2.1 CPS ASEC

We complement tax data with public use data from the CPS ASEC for a similar period, from 2000 to the present. The CPS is the premier labor force survey in the United States, with rich detail available on jobs, worker demographics and household structure.[3] Since October 2022, the CPS has asked a series of questions about telework.[4] Given the CPS records detailed household stucture, we also flag if a grandparent is living in the same household.

The CPS also asks some questions related to paid childcare.[5] We validate cross-sectional

[3]One possible concern during the immediate Covid period is that response rates declined dramatically. However, we are looking at a longer period through the latest data available.

[4]The question is asked in the monthly survey. The main question asked is "At any time last week, did (you/name) telework or work at home for pay?" The respondent is then asked about the hours engaged in telework and if they also teleworked prior to February 2020.

[5]Between 2001 and 2006, the question was: Did (you/anyone in this household) pay for the care of (your/their) (child/ children) while they worked in [year]? [include preschool and nursery school; do not include kindergarten or grade/elementary school]. From 2007 onwards, the question became: Did (you/ anyone in this household) pay for the care of (your/their) (child/children) while (you/they) worked in [year] [include: all child care expenses including preschool and nursery school expenses before and after school care, and summer care. Do not include: cost of kindergarten or grade/elementary school.]

statistics when possible in both the CPS and tax data. There are a number of potentially desirable properties of the CPS data for this purpose. Households can report using paid childcare in the CPS whether or not they are tax filers. In addition, there is no incentive in the CPS to conceal "under the table" childcare. There are also no tax credit-induced incentives to over-report spending. Unlike the tax data, however, there is no further information about the childcare which parents purchase. Beyond the small sample relative to the tax data, another potential drawback is that individuals may not accurately recall the cost of childcare when asked by an enumerator, compared to when filling out their taxes under the potential risk of audit.

3.2.2 ATUS

Additionally, we supplement the tax data with time-use data from the American Time Use Survey (ATUS) for the years 2003 to 2023. The ATUS is a nationally representative sample drawn from households that have completed their eighth and final CPS interview. In each household that takes part in the ATUS, one individual is selected as a "designated person" and is invited to complete a time-dairy, which is a report of all activities they engaged in specified 24-hour periods.[6] In addition to tracking how the designated person spends their time, the ATUS records where and with whom they were while engaging in each activity. The ATUS also includes rich demographic and economic information linked from the last CPS monthly interview.

We use the ATUS to analyze an alternative measure of the prevalence of remote work among fathers and mothers of children under 14 across the years. Given that the survey asks respondents to specify where they performed each activity, we are able to calculate, for parents that worked on diary day, what share of working hours was done remotely.[7] Specifically, we define remote work in the ATUS as any work time spent in a location other

[6]Unfortunately, the ATUS does not collect time-use data for household members other than the designated person.

[7]For each activity, respondents also specify where it took place. The ATUS interviewer asks: "Where were you while you were [ACTIVITY]?"

than the designated person's workplace.[8] Additionally, the ATUS also allows us to document how working parents have managed childcare throughout the years. Childcare in the ATUS can be reported in two ways. First, it may be recorded as a primary activity when the designated person is directly engaged with a child, such as helping with homework, playing together, or preparing meals.[9] Childcare may also be recorded as a secondary activity when the designated person reports having supervised a child under 13 while engaged in other activities. We utilize both of these childcare definitions to look at how working parents adjusted their childcare provision in response to the telework-related shifts in work arrangements.

4 Empirical Strategy

4.1 Identifying Telework

We are interested in the relationship between telework and paid childcare. We thus need to identify telework. Unfortunately, there is no flag in the tax data for telework. We thus employ multiple complementary approaches to identify telework.

4.1.1 Occupation-Based Measure

One possible approach to measure teleworkability is to use the index from Dingel and Neiman (2020), which classifies occupations based on their feasibility for remote work using O*NET survey data on job characteristics. We can apply this index to occupations in both the tax data and CPS.[10] Since O*NET's six-digit codes are more detailed than CPS's four-digit codes, we utilize crosswalks between O*NET, SOC, and CPS codes with harmonized

[8] To estimate the amount of work being performed from home, we focus on two specific activities: "Work, main job" and "Work, other job(s)". The activity codes for these activities are 050101 and 050102, respectively

[9] We classify three groups of activities as primary childcare: "Caring for and Helping Household Children", "Activities Related to Household Children's Education", and "Activities Related to Household Children's Health". The activity codes for these groups are 030100, 030200, and 030300, respectively

[10] As noted above, occupation is self-reported in the tax data on 1040s.

occupation codes from IPUMS, to align the data. The index is then aggregated to the CPS occupational level to create our teleworkability variable. The main limitation of this approach is that we cannot compare teleworkability across firms within occupation.

4.1.2 Dispersion measure

The tax data include self-reported occupation, to which we can apply the Dingel and Neiman (2020) measure, but additionally include firm-level information which we use to create two finer measures of firm-level rates of work-from-home. First, for firms with more than 50 employees in every year between 2013 and 2023, we create a proxy for the Covid-era increase in remote work arrangements based on increases in geographic dispersion of workers. We first count the number of unique ZIP3s where employees at a specific firm work. We then identify firms with stability in this measure pre-2019, but large changes between 2019 and 2022.[11] Specifically, for firm j with N_{jt} employees in year t, we measure

$$\omega_{jt} = \frac{\#unique\ ZIPi3_{jt}}{N_{jt}}$$

We consider a firm "work from home" if we see $\omega_{j,2022} - \omega_{j,2019} > 0.1$, and changes of less than .01 in absolute value in the measure between any consecutive years in the window excluding 2019-2022.[12]

4.1.3 Return to Office Mandates

In a third approach, we collect data on the return-to-office (RTO) policies of Fortune 100 companies using publicly available information from news articles and management statements. Specifically, we record the dates when these companies introduced RTO mandates requiring corporate staff to return to the office for any number of days per week. Additionally, we document the adoption of full-time RTO mandates and track the evolution of remote

[11] ZIP3 refers to the first three digits of a 5 digit zipcode. There are 875 ZIP3s in the United States.

[12] For disclosure reasons we cannot explain the rational behind these cutoffs, but we are taking a data-driven approach and will explain our choices clearly once disclosed.

work policies, as some companies transitioned from hybrid schedules to five-day in-office requirements.

To construct this dataset, we first performed Google searches that combined company names with the terms "RTO mandate", "return-to-office", and "work from home", covering the period from May 2020 to December 2024 for the 100 largest companies. This approach allowed us to document remote work policies for a sample of 66 companies. Among these firms, 58 implemented some form of company-wide RTO mandate, while the remaining 8 maintained generally flexible work arrangements. These flexible companies either allowed individual teams to determine their preferred work schedules or publicly stated that they had no plans to require employees to return to the office.[13]

We supplement the collected RTO dates with information from the Flex Index database, an online platform documenting work-from-home policies for over 10,000 companies and maintained by carpool company Scoop Commute. The database includes details about the type of policy adopted (fully flexible, hybrid, or full-time in-office), the minimum number of required in-office days per week, and whether specific days are mandated for attendance (e.g., Monday through Wednesday or other weekday combinations).

Finally, for the public companies in our dataset, we retrieved EIN tax IDs from an online source, enabling us to link RTO mandate dates to our sample of employees in the tax data.[14] This linkage allows us to analyze how changes in flexible work arrangements affected employment and childcare decisions among working women.

We seek to study the impact on women's careers of being employed at a firm which returned to office soon after the pandemic. To do this, we consider women on similar career trajectories before 2021. We compare women's average earnings growth between 2021 and 2023, relative to the earnings growth of non-mothers and men in strict RTO-firms relative

[13]Fortune and Forbes list examples of prominent companies that embraced flexible work models and opted out of RTO mandates, e.g. see https://fortune.com/2023/10/14/nvidia-skips-return-to-office-sticks-to-remote-work-among-hottest-tech-companies/ and https://www.forbes.com/sites/jackkelly/2021/12/22/intel-adopted-a-hybrid-first-work-mod

[14]EIN tax IDs come from eintaxid.com.

to more lenient firms.

We consider the following difference-in-differences regression:

$$y_{it} = \gamma_t + \delta_{j(i,2020)} + \sum_{s=-6}^{4} \beta_s M_{it} \times RTO_{j(i,2020)} \times \mathbf{1}\left[t = 2020+s\right] + \sum_{s=-6}^{4} \kappa_s RTO_{j(i,2020)} \times \mathbf{1}\left[t = 2020+s\right] + \varepsilon_{it} \tag{1}$$

where y is the outcome of interest for individual i in year t. γ_t and $\delta_{j(i,2020)}$ represent year and firm fixed-effects, respectively. When we include firm fixed-effects, we include them based on the firm in which individuals worked in 2020, when work-from-home policies were similar across firms. Individuals may move firms post-pandemic, potentially in response to RTO policies, so we think of this as a measure of intent to treat.[15] The main coefficients of interest are β_s which measure the effect of working in a firm which has an early RTO over time for mothers, indicated by M_{it}, relative to other workers.

We consider several outcomes of interest. First, we verify that usage of paid childcare responds to the ability to work remotely. Second, we evaluate the effect of RTO mandates on the careers of women by using (i) year-to-year earnings growth and (ii) pay rank within the firm as outcomes in regression (1) above. Finally, we check whether effects are heterogenous by youngest child age, grandparental care availability, and by occupation, as reported on IRS form 1040.

4.2 A Decomposition of the Decline in Paid Childcare

To understand the main causes of the decline in paid childcare, we consider the impact of each of our three candidate drivers. Our baseline statistical decomposition of the drivers of the decline in paid childcare since 2020 is given as follows::

$$PaidChildcare_{i,t} = \alpha + \sum_{k=1}^{K} \sum_{j=0}^{1} \beta_{k,j} Z_{i,t}^{k} \times \mathbf{1}\{Post = j\} + Controls + \epsilon_i \tag{2}$$

[15] We can also document the labor market churn associated with these policies, similar to Wright et al. (2024).

Where Z^k are indicators for each of our key candidate explanations, including whether a mother or father's job is "teleworkable," whether a mother is self-employed in the gig economy, and having grandparental care available, as described and defined above, in year t. The regression is estimated over 2017-2023, and we define $Post$ as being post 2020. We exclude 2020-2021 from the estimation given the unique disruptions such as school closures that occurred in these years. We can also consider interactions between our main explanatory variables of interest—i.e. to capture if grandparental availability becomes more important when a worker is in a teleworkable job or is self-employed. Our main estimation sample is all mothers with children under 13. In some specifications we will restrict to non-missing occupation and grandmother link (as discussed above, this requires the mother to have been born in 1983 or later). Since a mother will appear in the data in more than one year, we cluster standard errors on mother. We include flexible controls for mother's age, youngest child age, number of children, and, in specifications with grandmother, grandmother's age.

Note that while some of our measures of telework are available for most workers, e.g. our measure based on Dingel and Neiman (2020) is available for all mothers who listed interpretable occupations on their 1040s, the dispersion based measure is available for all mothers at large firms, and the RTO data are only available for the Fortune 100 companies.

Then the share of the decline in paid childcare in year t relative to 2019 that can be explained by factor Z can be decomposed in an Oaxaca-style manner into changes in levels and changes in β:

$$ZShare_t = \underbrace{\frac{\overline{Z}_{Pre} \cdot \beta_{z,Post}}{\Delta \overline{PaidChildcare}}}_{(1)} + \underbrace{\frac{\left(\beta_{z,pre} + \beta_{z,post}\right)\Delta \overline{Z}}{\Delta \overline{PaidChildcare}}}_{(2)} \tag{3}$$

Where $\overline{X}$ denotes the sample average. As this decomposition shows, there are two main ways (not mutually exclusive) that these factors may contribute to the decline in paid childcare. First, as indicated by term (1) on the left, the importance of any of these factors could be increasing in the post period. This change will be captured by our post coefficient. In

addition, the share of workers that these factors affect could be increasing over time, given by term (2) on the right. We will therefore describe trends in our factors of interest in the next section.

5 Summary Statistics and Trends

We begin with trends in maternal labor supply for mothers in the tax data. Figure 1(a) plots the share of mothers with any W-2 employment over the course of the year, against the share with paid childcare, as measured by Form 2441 and/or having a DCFSA. While employment of mothers was increasing between 2015-2019, the share with paid childcare was stagnant. Any paid childcare dramatically declined in 2020, likely due to closures associated with Covid. Paid childcare then bounced back in 2021, before declining again in 2022 and 2023. Following a decline in 2020-2021, employment on the other hand has continued to increase. Figure 1(a) presents the main "puzzle" at the heart of our paper: the labor supply of mothers is at an all-time high, while paid childcare usage is at an all-time low. Appendix Figure A.2 examines paid childcare usage back to 1999, showing trends were mostly stable, with a slight upward trend for moms of younger children.

Figure 1 Panel (b) examines the decline in paid childcare by mothers' earnings.[16] For the lowest earning mothers, paid childcare increases in 2021 (the year of the temporary expansion in generosity from ARPA), before returning to previous levels. For all other earnings levels, paid childcare drops. The largest drops in percentage point terms comes from higher earners, falling 10-15 percentage points. We further break out the decline in childcare out by age of the youngest child in Figure 1, panel (c). While paid childcare is down overall, the largest declines in paid childcare come from parents whose youngest child is aged 4-12.

Table 1 summarizes how paid childcare changed 2022-2023 versus 2018-2019, both in the general population and for our main estimation sample that can be linked to an ONET

[16] Appendix Figure A.3 examines employment by youngest child age and mothers' earnings. Employment is at an all time high across these groups.

occupation and who have a grandmother link. On average, the decline in paid childcare is around 2.3 percentage points, or 10 percent, among all mothers. The decline is larger among mothers with at least $25,000 in earnings, declining 6.8 percentage points, or approximately 16 percent.

Appendix Figure A.4 provides additional descriptive evidence on childcare usage in the United States, using data from 2019. Panel (a) shows how childcare varies with maternal income. For small earners, paid childcare usage is low, only around 10 percent. As maternal income rises, the share using paid childcare increases dramatically, reaching around 50 percent for earners of around $50,000, and 70 percent for earners above $100,000. Panels (b)-(c) examine the role of grandmother distance. Panel (b) examines the share with paid childcare, for those with at least $50,000 in earnings, by distance to a grandmother. The share rises from around 55 percent for those in the same zipcode, to 75 percent for grandmothers who are more than 1 hour away. The increase in paid childcare usage appears more or less linear in distance. Panel (c) shows that over 30 percent of mothers live in the same zipcode as their mother. Only 20 percent of mothers live more than 100 miles away. These facts highlight the importance of grandmothers for childcare in the United States.

To benchmark our numbers to an outside source, Appendix Figure A.5, panel (a), plots the total number of tax units reporting paid childcare in tax data, alongside the comparable measure in the CPS. Panel (b) reports the dollars spent, conditional on having paid childcare, which is available in the CPS since 2009. While the CPS counts are noisy compared to the tax data, the tax data appears to capture on average 88 percent of the number of households using paid childcare, and around 80 percent of the dollars spent. The second takeaway from this comparison is that in both the CPS and tax data, counts of paid childcare usage are down 10-15 percent since 2019. We view this as encouraging that our measure in the tax data picks up the majority of paid childcare usage in the United States.

5.1 Changes in the Way Mothers Work

We next discuss how key factors of interest, telework, gig/work and grandparental availability, have changed over time.

Figure 3, panel(a) examines the share of mothers with teleworkable jobs, according to the Dingel and Neiman (2020) measure. The share rises by around 1 percentage points post Covid for mothers with younger children, suggesting some sorting into occupations that are compatible with teleworking.

Even if the jobs are amenable to teleworking, this does not mean a firm allowed it. Figure 3, panel(b) shows that nearly all large firms switched to remote work for the first two years of the pandemic. Beginning in January 2022, many firms began to require workers back in the office at least some days. By the end of 2024, only around one quarter of firms have a full-time RTO policy.

Platform gig work has been rising dramatically since 2012, and experienced major growth during Covid. As shown in Figure 3, panel(c), platform gig work rose tripled from fewer than 1 percent of mothers in 2019 to over 3 percent by 2023. This was largely driven by growing demand for gig services during Covid, and demand has remained persistently higher since. Outside of platform gig work, other types of self-employment have been largely stable (or even declined) in recent years (Garin et al., Forthcoming, 2023). Given the unique characteristics of platform gig jobs and their dramatic growth, we can test whether paid childcare usage among platform gig workers differs from more traditional forms of self-employment. Table 2 summarizes how our key factors of interest changed 2022-2023 versus 2018-2019, in our estimation sample.

Lastly, we examine changes in fathers work arrangements. Table 3 examines changes in fathers probability of any work, and whether the father is working in a teleworkable job. If we look at all mothers, fathers are slightly more likely to be working, by around 0.4 percentage points. They are also somewhat more likely to be working in teleworkable jobs—even more so than mothers, by around 0.7 percentage points compared with an increase of 0.41 percentage

points for all mothers.

6 Main Results

6.1 RTO Estimates

What is the effect of being able to work at home on the propensity to pay for childcare? Figure 4 presents the average difference in the propensity to report paid childcare expenses among mothers in firms who are fully remote (as measured in 2024) compared to those who have had some post-Covid return to office requirements, by year relative to the omitted year 2019. The regressions are restricted to mothers working in teleworkable occupations, as defined in Dingel and Neiman (2020) and who are working at companies in the Fortune 100 as of 2024. Figure 4a reports the results of the regression restricted to mothers with youngest child between one and four years old, and Figure 4b reports the results for mothers with youngest child five and over.[17]

We find that mothers of school aged children working in fully remote firms are much less likely to report childcare expenses after the shift to remote work. Mothers of pre-kindergarten children working in fully remote firms remain relatively more likely to report paid childcare expenses even in post-Covid years where there are differences in the workplace policies of these firms. In contrast, the paid childcare usage of mothers of school-age children in fully-remote firms falls by nearly ten percentage points relative to firms which enacted return-to-work mandates in post-Covid years relative to pre-Covid years.[18]

[17] Additional controls include mother and youngest child age fixed effects, number of children fixed effects, and mother's earnings.

[18] We note that the overall propensity to use paid childcare is about ten percentage points higher in firms which eventually adopt a fully remote policy compared to firms which eventually have some return to work mandate.

6.2 Decomposition of the Decline in Paid Childcare

Table 4 implements specification (2) examining how our factors of interest are related to paid childcare over time. Columns (1)-(3) examine each factor separately in its applicable sample of mothers. Column (4) combines all factors together in one regression.

Similar to our findings for firms that had more generous RTO policies, we find that prior to 2020, teleworkable jobs were more likely to be associated with paid childcare. Most likely, this is because these are more likely to be full-time white collar jobs with substantial responsibility and in-office norms. The post effect indicates that by 2022-2023, however, teleworkable jobs among mothers are associated with a large 3.1 percentage point decline in paid childcare, and a -2.6 percentage point among fathers. However, we also see a decline even among fathers not working in a teleworkable job. The main effect on working fathers is an 8.5 percentage point increase in paid childcare, and this declines by 1.5 percentage points in the post period.

Platform gig work by mothers has a large negative main effect. The fact that more workers are engaged in platform gig work in the post period will contribute to a decline in paid childcare. While it becomes further negative in the post period column (2), the post effect is not significant in the model in Column (4).

Finally, we turn to factors associated with grandmothers. As we saw in Appendix Figure A.4, grandmother distance is positively associated with childcare. A retired grandmother has a large negative effect on paid childcare usage of -2 to -3 percentage points. However, this effect appears to become slightly less important in the post period.

Figure 5 reports the decomposition given by Equation 3.[19]. By far, the most important factor is teleworkable. Mothers jobs being teleworkable explains 46 percent of the decline in paid childcare overall. Teleworkable jobs among fathers explains another 20 percent, and changes among non-teleworkable jobs explains an additional 15 percent of the decline. The gig economy explains about only about 2 percent. Despite its meteoric rise, few mothers are

[19]We use the estimates from Column (4), but the calculations are similar using Columns (1)-(3)

ultimately engaged in this work.

The role of grandmothers is more complicated. While distance becomes somewhat less important, a grandmother being retired is also less important. The overall role of grandmothers for the decline in paid childcare goes in the opposite direction, predicting an increase in paid childcare. Thus, on average, these early retirements do not appear to be to assist mothers with caregiving.

7 Conclusions

We began with a puzzle: remarkable increases in the employment rates of mothers with young children, juxtaposed with a significant decline in the use of paid childcare services, down by 10-15 percent from pre-Covid levels. We probed three primary drivers behind these simultaneous trends: the rise of telework, the proliferation of gig work, and increases in the availability of grandparental care. Our decomposition analysis revealed the dominant role of the transition to telework, explaining 65 percent of the decline in paid childcare.

The differential effect of office policies in the propensity to pay for childcare by child age suggests that some mothers of older children who work from home rely on school hours for childcare, and do not purchase additional childcare. In years when all firms had the expectation of in-person work, families supplemented school care with paid childcare.

We interpret our findings as underscoring the importance of workplace flexibility for mothers. In future research, we intend to further investigate the impact that working while caring for school-age children after school has on women's long-run career trajectories.

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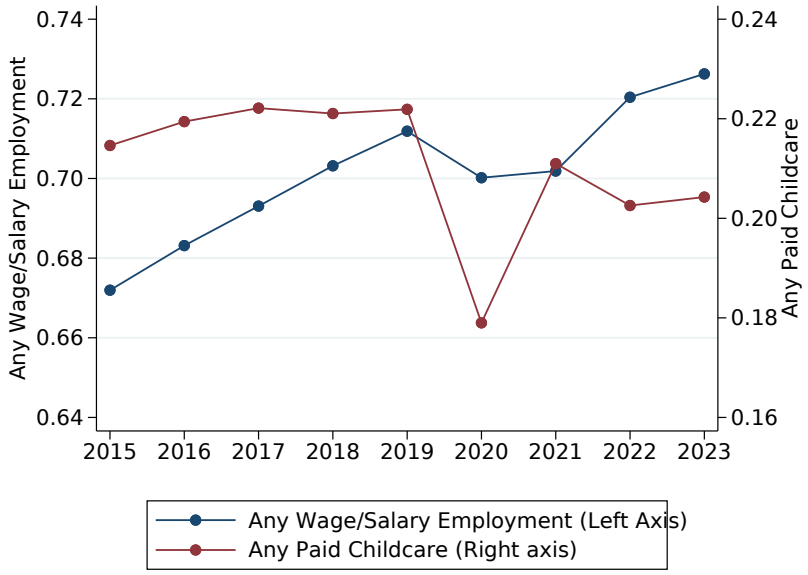
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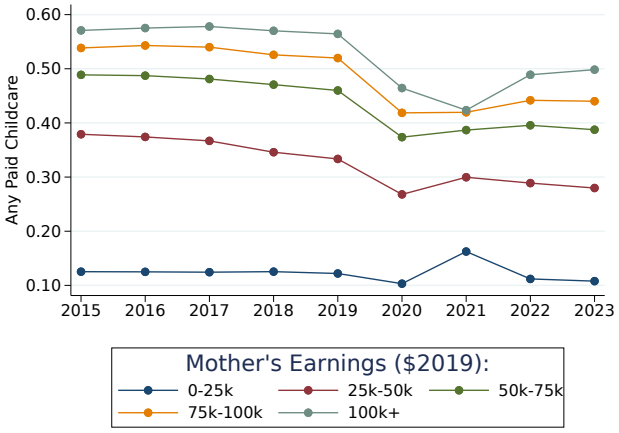
Figures

Figure 1: Employment and Paid Childcare Usage Among Mothers, 2015-2023

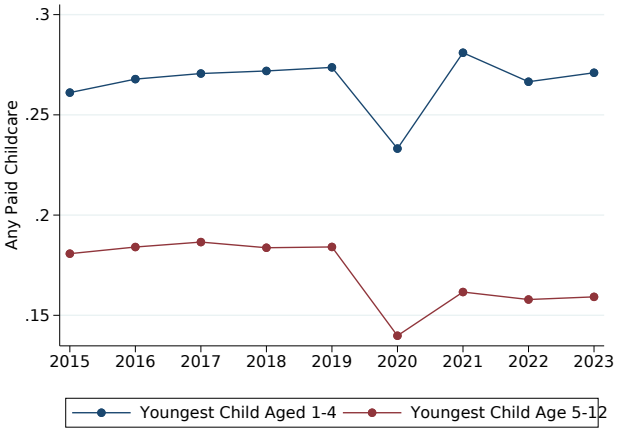
(a) Share of Mothers Working versus Using Paid Childcare



(b) Paid Childcare by Mothers' Earnings



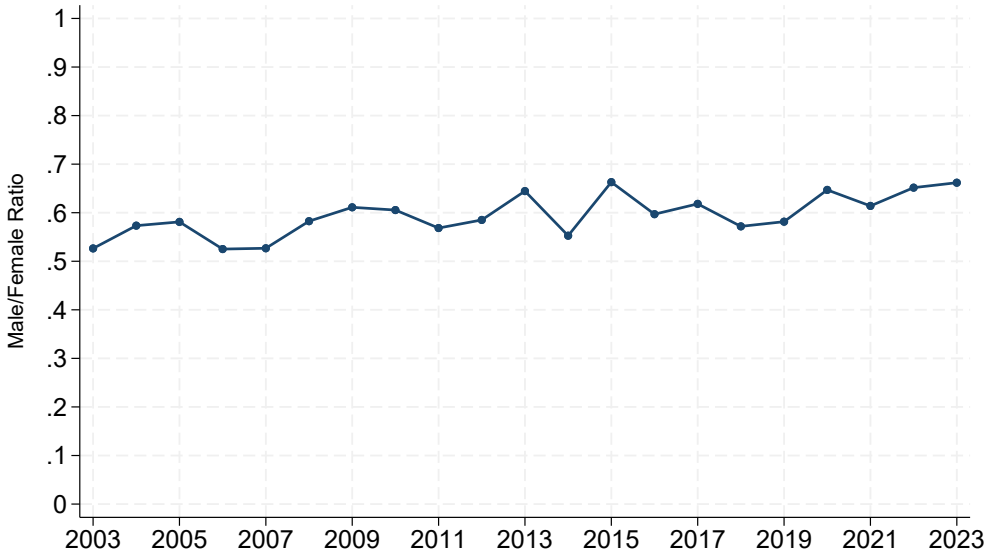
(c) Paid Childcare by Age of Youngest Child



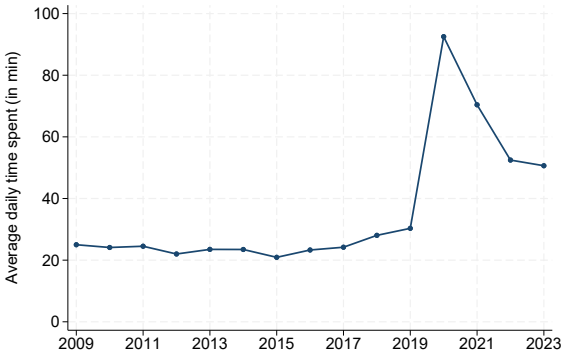
Notes: Mothers with children under 13. Earnings includes wage/salary plus reported self-employment profits.

Figure 2: Childcare in the ATUS

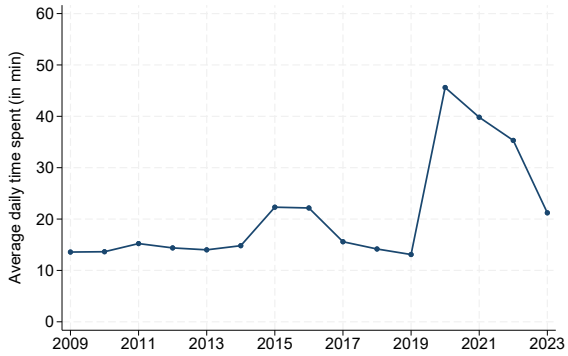
(a) Male to Female Ratio of Time Spent on Primary Care



(b) Secondary Childcare (Mothers)



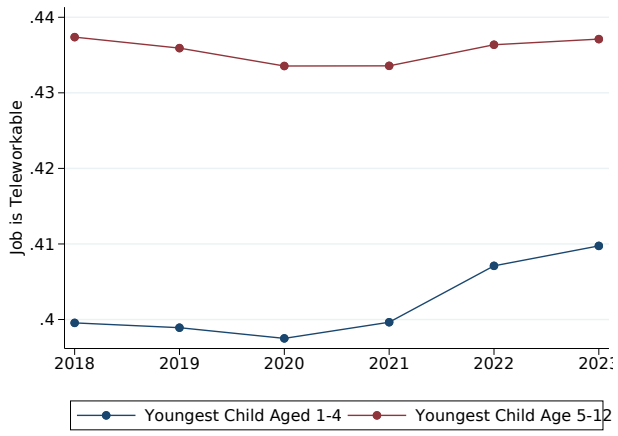
(c) Secondary Childcare (Fathers)



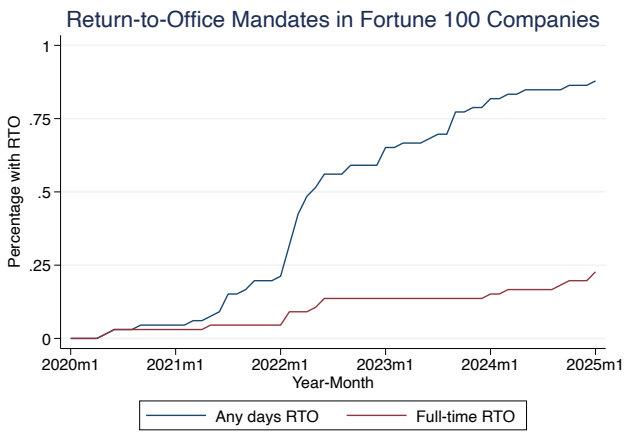
Notes: Our sample is restricted to parents who have a child under 14 in the household and who worked any number of hours on diary day. Primary childcare includes the following activity groups: "Caring for and Helping Household Children", "Activities Related to Household Children's Education", and "Activities Related to Household Children's Health". Secondary childcare here refers to time spent supervising a child under 13 while performing the following activities: "Work, main job" and "Work, other job(s)".

Figure 3: Changes in the Nature of Work

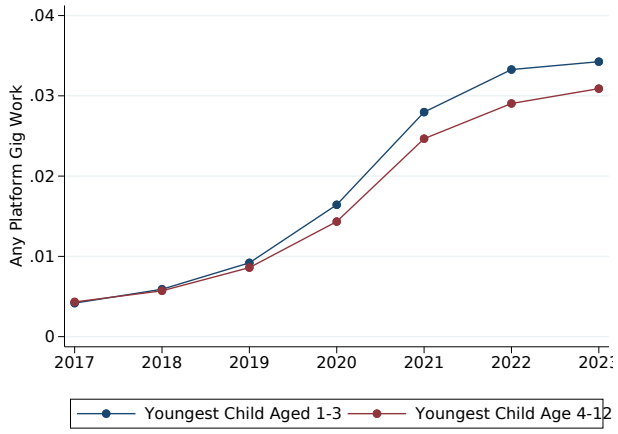
(a) Teleworkable



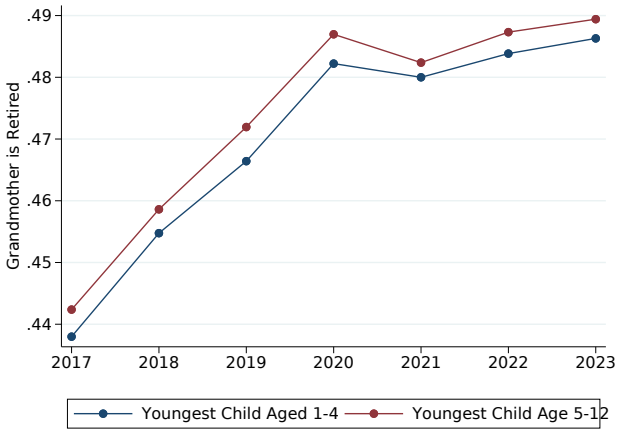
(b) RTO Policies, Fortune 100



(c) Any Platform Gig Work

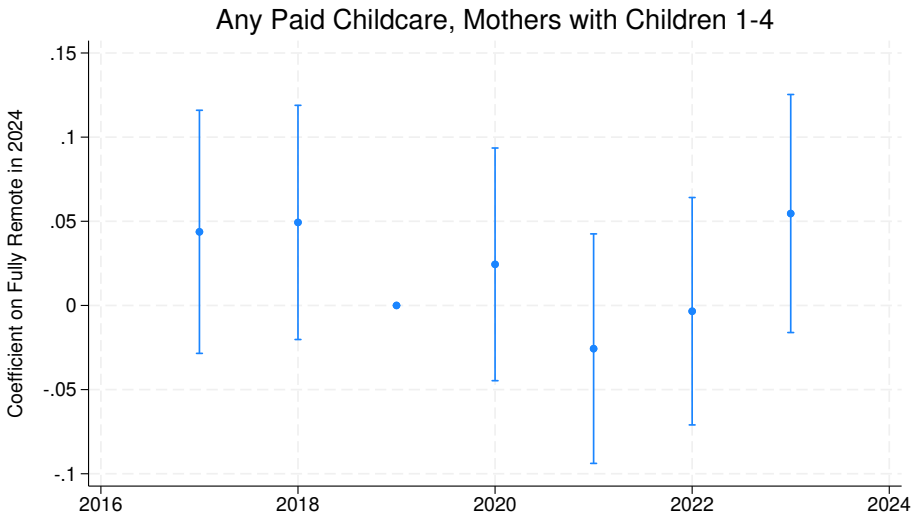


(d) Grandmother Retired

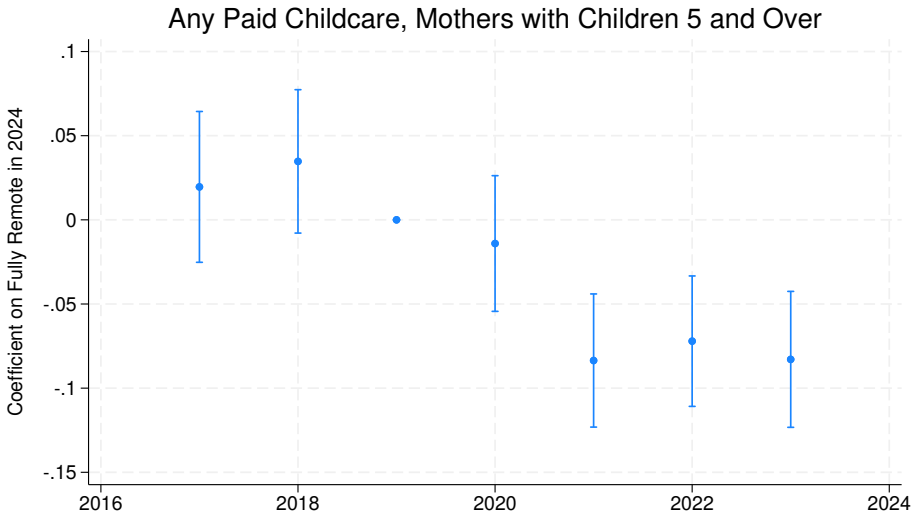


Notes: Mothers with children under 13. Teleworkable refers to a job being classified as teleworkable according to the (Dingel and Neiman, 2020) measure. Platform gig work refers to receiving a 1099-NEC or 1099-K from a platform-gig company. Grandmother retired refers to a grandmother who is alive and either not working or receiving Social Security, pension or IRA withdrawals.

Figure 4: Effects of RTO Policies on Paid Childcare



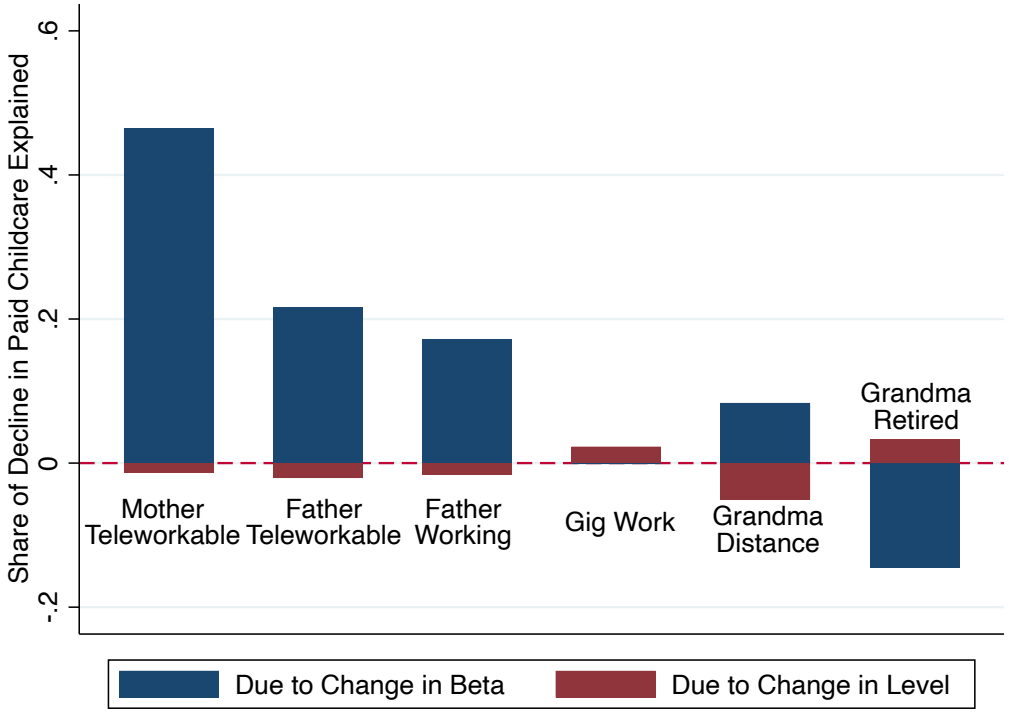
(a)



(b)

Notes: This figure presents the average difference in the propensity to report paid childcare expenses among mothers in firms who are fully remote (as measured in 2024) compared to those who have had some post-Covid return to office requirements, by year, relative to 2019. Panel (a) reports the results of the regression restricted to mothers with youngest child between one and four years old, and panel (b) reports the results for mothers with youngest child five and over. Additional controls include mother and youngest child age fixed effects, number of children fixed effects, and mother's earnings all fully interacted with calendar year. Standard errors are clustered at the firm level.

Figure 5: Decomposition of Decline in Paid Childcare, 2022-2023 v 2018-2019



Notes: This figure shows the contribution from each factor to the decline in paid childcare, following equation 3 in the text.

Tables

Table 1: Usage of Paid Childcare, 2022-2023 v. 2018-2019

	(1)	(2)	(3)	(4)	(5)	(6)
	All Mothers			Earnings≥$25,000 ($2019)		
Youngest Child Ages:	1-12	1-4	5-12	1-12	1-4	5-12
			a. All Mothers			
1{Post}	-0.0230	-0.0097	-0.0298	-0.0683	-0.0580	-0.0720
	(0.0003)	(0.0005)	(0.0003)	(0.0005)	(0.0008)	(0.0006)
Pre Mean	0.229	0.280	0.192	0.424	0.556	0.344
Observations	10,533,187	4,375,626	6,157,561	4,651,668	1,740,881	2,910,787
			b. Occupation and Grandmother Linked			
1{Post}	-0.0176	0.0032	-0.0264	-0.0551	-0.0270	-0.0606
	(0.0007)	(0.0010)	(0.0011)	(0.0011)	(0.0015)	(0.0016)
Pre Mean	0.306	0.350	0.237	0.465	0.542	0.355
Observations	1,877,992	1,076,496	801,496	1,025,155	566,326	458,867

Notes: Table reports the post coefficient identifying the mean change in any paid childcare over the period 2022-2023, compared with 2018-2019. "Pre-mean" refers to 2018-2019. 2020-2021 are omitted from the regression due to Covid-related disruptions in these years. Panel (a) refers to all mothers, while Panel (b) is restricted to mothers that have an occupation linked to an ONET occupation that can be identified as "teleworkable" according to the (Dingel and Neiman, 2020) measure, and mothers born since 1983 for whom three-generation child-mother-grandmother links are possible. A mother can appear in the data for multiple years so long as the child age falls within the ranges indicated. Standard errors clustered on mother.

Table 2: Changes in Work and Grandmaternal Availability, 2022-2023 v. 2018-2019

	(1)	(2)	(3)	(4)	(5)	(6)
	1{Any W2}	1{Any Gig Work}	1{Schedule SE}	1{Teleworkable}	Grandmother Distance (Miles)	1{Grandmother Retired}
a. All Mothers with Children under 13						
1{Post}	0.0157	0.0239	0.0075	0.0041	0.967	0.0240
	(0.0003)	(0.0001)	(0.0002)	(0.0004)	(0.0561)	(0.0005)
Pre Mean	0.708	0.007	0.102	0.421	48.035	0.462
Observations	10,053,187	10,053,187	10,053,187	4,464,496	3,275,998	3,506,622
b. Earnings≥$25,000 ($2019)						
1{Post}	0.0028	0.0146	-0.0021	-0.0053	0.8492	0.0229
	(0.0001)	(0.0001)	(0.0002)	(0.0006)	(0.0803)	(0.0009)
Pre Mean	0.978	0.005	0.072	0.491	33.04	0.476
Observations	4,651,668	4,651,668	4,651,668	2,562,872	1,335,322	1,409,552

Notes: Table reports the post coefficient identifying the mean change in the specified outcome over the period 2022-2023, compared with 2018-2019. "Pre-mean" refers to 2018-2019. 2020-2021 are omitted from the regression due to Covid-related disruptions in these years. Panel (a) refers to all mothers, while Panel (b) is restricted to mothers with earnings of at least $25,000, defined as the sum of wage/salary plus reported self-employment profits. Teleworkable refers to a job being classified as teleworkable according to the (Dingel and Neiman, 2020) measure. Platform gig work refers to receiving a 1099-NEC or 1099-K from a platform-gig company. Grandmother distance is the Haversine distance in miles between zipcode centroids of the mother and grandmother. Grandmother retired refers to a grandmother who is alive and either not working or receiving Social Security, pension or IRA withdrawals. A mother can appear in the data for multiple years so long as the youngest child's age is between 1-12. Standard errors clustered on mother.

Table 3: Changes in Fathers' Work Arrangements

	(1)	(2)
	1{Any W2}	1{Teleworkable}
a. All Mothers with Children under 13		
1{Post}	0.0042	0.0068
	(0.0003)	(0.0003)
Pre Mean	0.789	0.245
Observations	9,172,504	5,519,522
b. Earnings≥$25,000 ($2019)		
1{Post}	0.0003	0.0041
Pre Mean	0.839	0.309
Observations	4,201,403	2,474,067

Notes: Table reports the post coefficient identifying the mean change in the specified outcome for fathers, over the period 2022-2023, compared with 2018-2019. "Pre-mean" refers to 2018-2019. 2020-2021 are omitted from the regression due to Covid-related disruptions in these years. Panel (a) refers to all mothers, while Panel (b) is restricted to mothers with earnings of at least $25,000, defined as the sum of wage/salary plus reported self-employment profits. Teleworkable refers to a job being classified as teleworkable according to the (Dingel and Neiman, 2020) measure. A mother can appear in the data for multiple years so long as the youngest child's age is between 1-12. Standard errors clustered on mother.

Table 4: Factors Contributing to Change in Any Paid Childcare Among Working Mothers, 2022-2023 v. 2018-2019

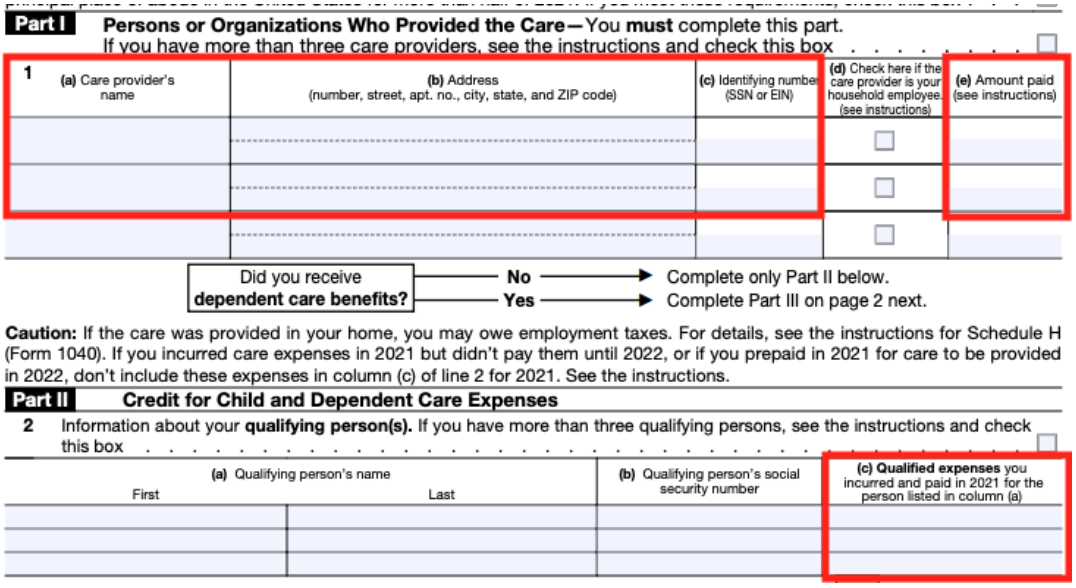
	(1)	(2)	(3)	(4)
Post Effects:				
1{Post}	-0.0041	-0.0213	-0.450	-0.0254
	(0.0010)	(0.0003)	(0.0008)	(0.0022)
×Teleworkable	-0.0311			-0.0311
	(0.0864)			(0.0019)
×Father Any W2	-0.0151			-0.0050
	(0.0013)			(0.0021)
×Father Teleworkable	-0.0255			-0.0203
	(0.0015)			(0.0025)
×Any Platform Gig		-0.0116		0.0141
		(0.00230)		(0.0085)
×Grandma Distance * 10			0.00136	-0.0003
			(0.0001)	(0.0002)
×Grandma Retired			0.00691	0.0087
			(0.0009)	(0.0019)
Main Effects:				
Teleworkable	0.0864			0.0720
	(0.0010)			(0.0016)
Father Any W2	0.1069			0.0876
	(0.0010)			(0.0017)
Father Teleworkable	0.0850			0.0701
	(0.0013)			(0.0021)
Any Platform Gig		-0.0206		-0.0304
		(0.0022)		(0.0080)
Grandma Distance * 10			0.0103	0.0111
			(0.0002)	(0.0004)
Grandma Retired			-0.0212	-0.0311
			(0.0007)	(0.0015)
Pre-Mean	0.312	0.229	0.254	0.325
Observations	2,565,588	10,533,175	4,103,352	1,021,578
Controls	X	X	X	X

Notes: Table shows results from running Specification 2 in the text. Post coefficient identifies the mean change in any paid childcare over the period 2022-2023, compared with 2018-2019. "Pre-mean" refers to 2018-2019. 2020-2021 are omitted from the regression due to Covid-related disruptions in these years. Teleworkable refers to a job being classified as teleworkable

according to the (Dingel and Neiman, 2020) measure. Platform gig work refers to receiving a 1099-NEC or 1099-K from a platform-gig company. Grandmother distance is the Haversine distance in miles between zipcode centroids of the mother and grandmother. Grandmother retired refers to a grandmother who is alive and either not working or receiving Social Security, pension or IRA withdrawals. A mother can appear in the data for multiple years so long as the youngest child's age is between 1-12. Controls for mother's age, age of youngest child, number of children and earnings. Columns (3) and (4) control for grandmother age. Standard errors clustered on mother.

A Appendix Figures and Tables

Figure A.1: Form 2441 Child and Dependent Care Expenses



Part I **Persons or Organizations Who Provided the Care**—You **must** complete this part.
If you have more than three care providers, see the instructions and check this box

1 (a) Care provider's name	(b) Address (number, street, apt. no., city, state, and ZIP code)	(c) Identifying number (SSN or EIN)	(d) Check here if the care provider is your household employee (see instructions)	(e) Amount paid (see instructions)
			☐	
			☐	
			☐	

Did you receive **dependent care benefits?** — **No** → Complete only Part II below.
— **Yes** → Complete Part III on page 2 next.

Caution: If the care was provided in your home, you may owe employment taxes. For details, see the instructions for Schedule H (Form 1040). If you incurred care expenses in 2021 but didn't pay them until 2022, or if you prepaid in 2021 for care to be provided in 2022, don't include these expenses in column (c) of line 2 for 2021. See the instructions.

Part II **Credit for Child and Dependent Care Expenses**

2 Information about your **qualifying person(s).** If you have more than three qualifying persons, see the instructions and check this box

(a) Qualifying person's name First	Last	(b) Qualifying person's social security number	(c) **Qualified expenses** you incurred and paid in 2021 for the person listed in column (a)

Figure A.2: Paid Childcare Usage Among Mothers, 2000-2023

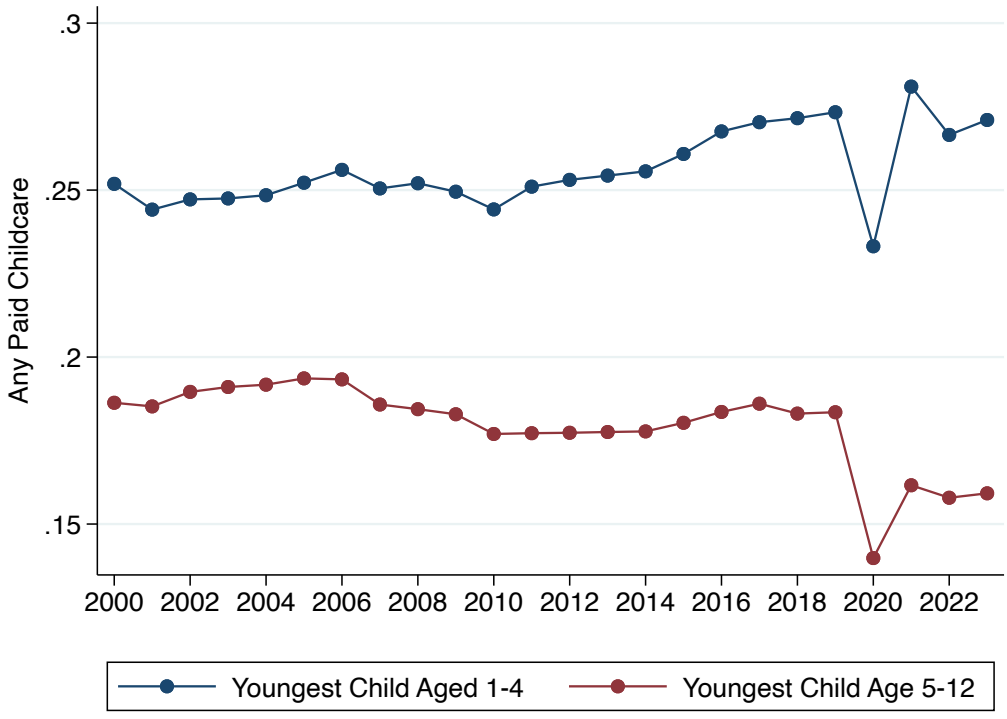
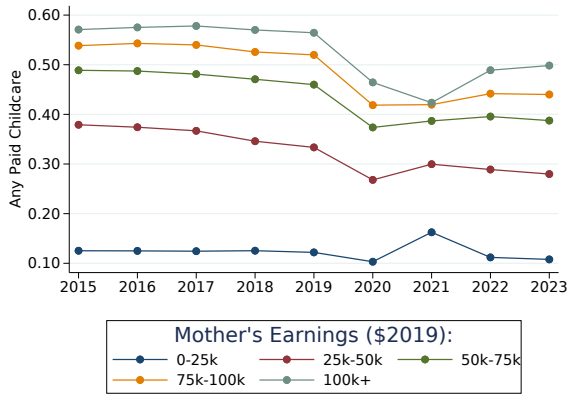
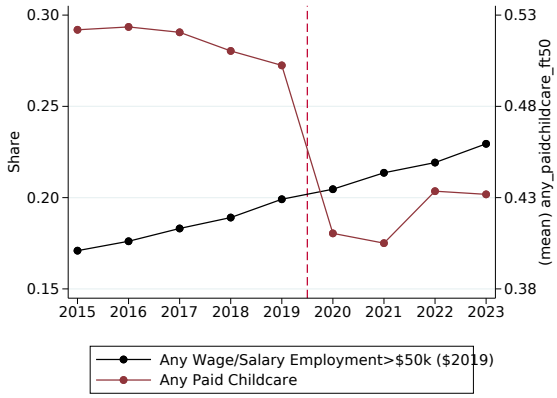


Figure A.3: Employment and Paid Childcare Usage Among Mothers, 2015-2023

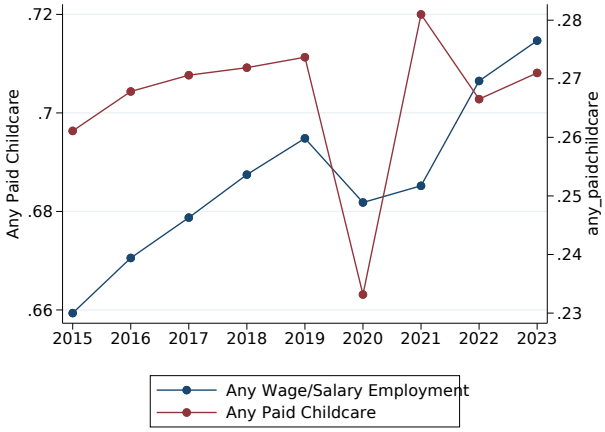
(a) Earnings ≥25,000 ($2019)



(b) Earnings ≥50,000 ($2019)



(c) Youngest Child Under 5



(d) Youngest Child 5-12

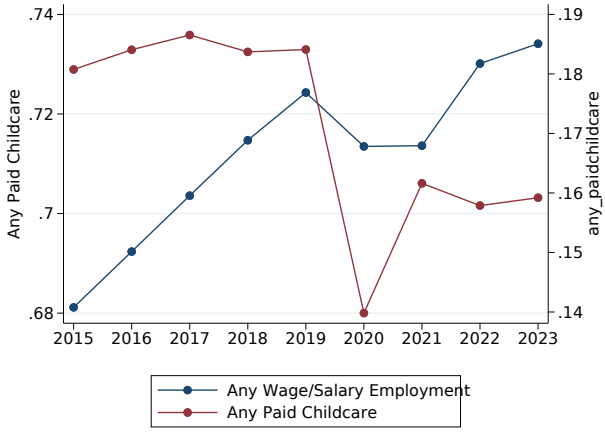
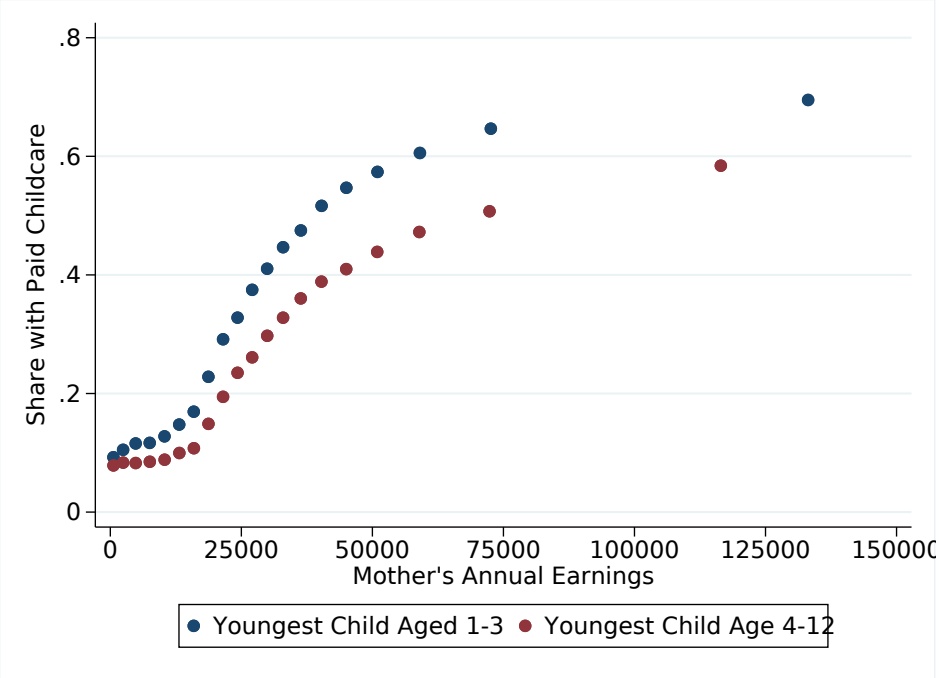
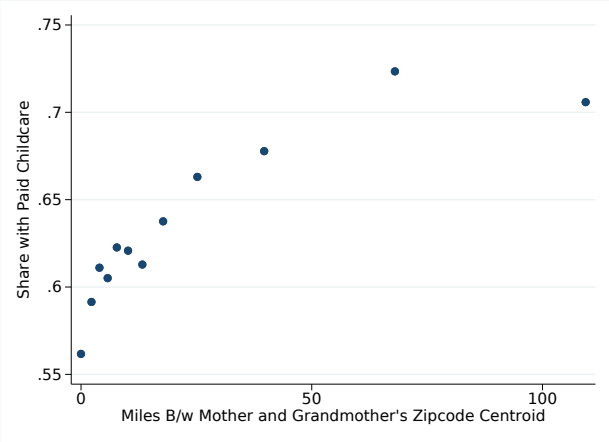


Figure A.4: Childcare Usage by Mothers' Earnings and Grandmother Distance, 2019

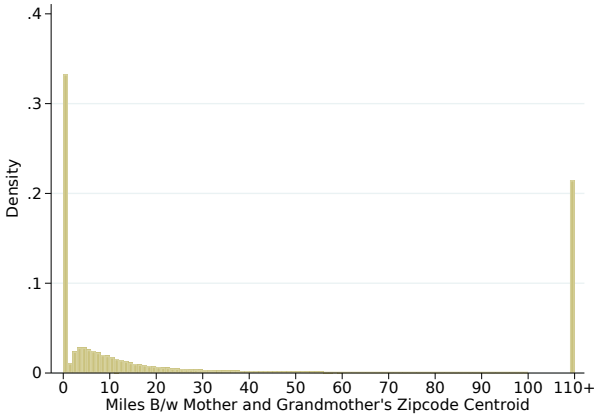
(a) Usage of paid childcare by mother's income



(b) Usage of paid childcare by grandmother distance



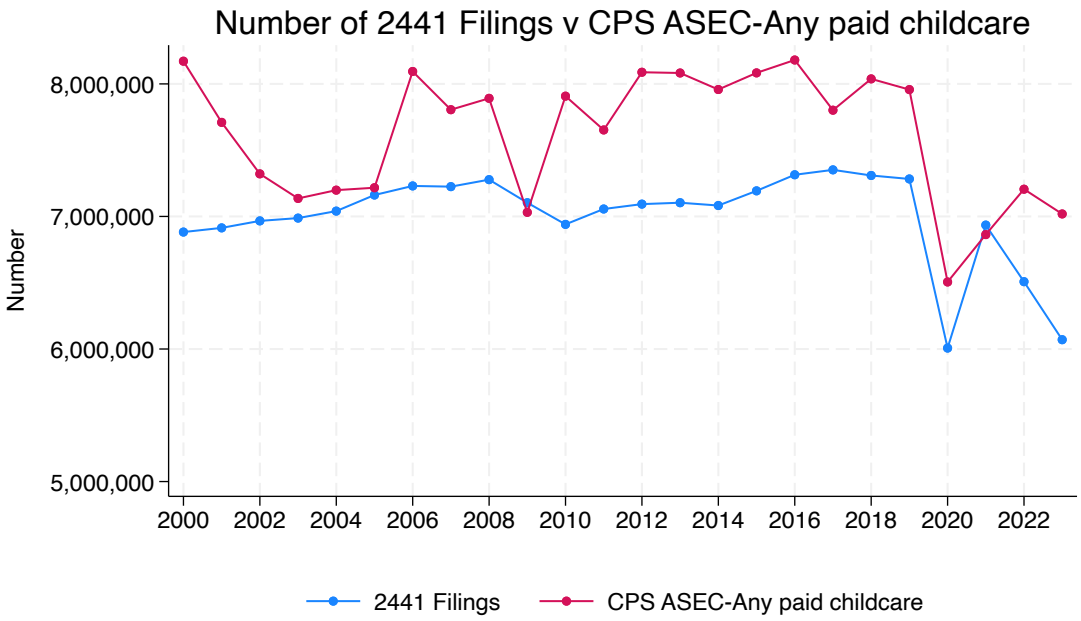
(c) Distance to Grandmother



Note: Panel (b) is restricted to earnings≥$50,000.

Figure A.5: Use of Paid Childcare: IRS data v Current Population Survey

(a) Counts



(b) Dollars

