

School is Out, Is the Doctor In? Gender Gaps in Holiday Work among Parent Physicians

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The desire to balance family and career has proved central to understanding the remaining gender gaps in labor force participation and work hours. For instance, recent evidence finds mothers are less likely to work, reduce their total work hours, and experience more work interruptions within a day and across months (e.g., Cortés and Pan, 2023; Cubas, Juhn and Silos, 2021; Price and Wasserman, forthcoming). This variation in work schedules appears to be partly driven by mothers' stronger labor responses to the availability of childcare. Could aligning workplace expectations with childcare schedules help reduce this gender gap in work?

National holidays, which create predictable disruptions in child care, provide a unique opportunity to explore this question. On the one hand, since mothers' and fathers' workplaces may also close, holidays could allow parents to split child care more equally or prioritize mothers' work. On the other hand, established child care patterns or greater flexibility in women's work schedules may lead mothers to be more likely to take this time off.

In this paper, we use daily data on the volume of physicians' work linked to information on physicians' parent status to provide new descriptive evidence on the gender gap in parental work. We find that women are 3 percentage points less likely than men to bill any claims on a typical weekday, a 10% decline from men's 30% likelihood of billing claims. We show that holidays systematically disrupt these usual

patterns. On minor holidays (e.g. Columbus Day or Veteran's Day) the gender gap in work grows and women are 6 percentage points less likely to bill any claims. However, on major holidays (e.g. Christmas and Labor Day), the gender gap closes, and women and men are equally likely to bill claims, although rates of work are very low for both genders. To reconcile these results, we show that holidays increase the gender gap more when offices are more likely to remain open. This suggests that mothers are more likely than fathers to step away from work when there is a misalignment between work and childcare schedules.

One interpretation of our findings is that differences in holiday schedules between childcare and other sectors exacerbate the gender gap in work output. Thus, aligning workplace expectations with predictable fluctuations in childcare may be necessary to close remaining gender gaps in careers (Goldin, 2014). While we focus on specific federal holidays, this misalignment in expectations could contribute to gender gaps in work on non-holidays, when idiosyncratic disruptions to childcare coverage (e.g. from child sickness) could also lead to scheduling conflicts for parents.

I. Data and Estimation

Our analysis uses two main data sources: (i) insurance claims records from the Medicaid program in California (Medi-Cal) and (ii) birth records from California. To our knowledge, we are the first to link these large-scale administrative sources together.¹

We obtain detailed information on physi-

¹These data were originally linked for complementary work on the impacts of physicians interruptions on patient outcomes — see Agha, Shenhav and Wagner (2025) for details on the data construction process.

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cians’ daily work volume from Medi-Cal insurance claims from 2012 to 2019. Our primary measure of work is the total number of outpatient evaluation and management (E&M) claims billed by a physician, which account for a substantial share of physicians’ services. We also create an indicator for whether a provider had any claims on that day. For our regression analysis, we average these measures of work volume at the specialty \times gender \times 5-year-bins of graduation cohort \times date level.²

We use Vital Statistics birth records from 2007 to 2017 to identify physicians who become parents. The birth records contain the date of birth, and the name and self-reported occupation of each parent for every child born in California. We identify physician parents based on their occupation, and perform a fuzzy match of parent names to two physician directories to obtain physician characteristics including their National Provider Identifier (NPI), field of specialization and year of medical school graduation. Our sample consists of all weekday claims for matched physician parents who specialize in primary care (internal medicine or family practice), pediatrics, or obstetrics and gynecology.

Finally, we merge on the observed dates of the federal holidays during our sample period (US Office of Personnel Management, 2024). Importantly, all public schools and many childcare centers are closed on these days. However, private businesses, such as medical clinics, may choose to remain open, which can create a conflict between childcare and work expectations for physicians who are parents.

Appendix Table A1 provides descriptive statistics for the sample, which contains data on 27,000 doctor-years. On average, parents in the sample have an eldest child who is 5 years old, many of whom may be in school or other formal childcare. Most doctors in the sample are in primary care specialties (81% of fathers, and 60% of mothers). There is a gender gap in volume

of work: mothers work 10 fewer weekdays per year, and have 80 fewer E&M claims, consistent with evidence on hours of work (Skinner et al., 2023).

Figure III presents the average share of physicians that have any E&M claims (Panel A) and the average number of E&M claims (Panel B) for each holiday and pooled across all non-holidays. On non-holiday weekdays (shown in the top bar of each panel), around 28% of physicians have at least one Medicaid E&M claim, and physicians bill around 2.2 E&M claims per day. The bars below show work volume across holidays, ordered by the share of physicians with claims on each day, from highest to lowest.

Relative to non-holiday weekdays, work volume is lower on every holiday; however, there is substantial variation across occasions. In particular, there is a clear distinction between the level of work on more minor holidays and major holidays, which we define based on the volume of work in our data.³ For instance, on minor holidays, the share of doctors with claims varies between 13 and 26 percent, or roughly 43 to 93 percent of the non-holiday average. In contrast, on major holidays, the share of physicians with claims falls to 1-2 percent. Thus, many doctors appear to work on minor holidays, but not on major holidays.

Given these patterns, we estimate the gender difference in holiday work separately for minor and major holidays:

$$(1) \quad \begin{aligned} y_{dgsc} = & \alpha + \beta_1 \text{Minor}_d \times \text{Mother}_g \\ & + \beta_2 \text{Major}_d \times \text{Mother}_g \\ & + \beta_3 \text{Non-Holiday}_d \times \text{Mother}_g \\ & + X_{dgsc} \delta + \varepsilon_{dgsc} \end{aligned}$$

where y_{dgsc} is an averaged measure of the services performed on calendar date d by physicians of sex g in specialty s and graduation cohort c . The coefficients of interest are β_1 , β_2 , and β_3 which give the differ-

²To avoid including inactive physicians, we only include providers in the claims counts for a given calendar year if they ever had an E&M claim during the year.

³We define minor holidays to include Columbus Day, Veteran’s Day, Martin Luther King Jr. Day, and Washington’s Birthday, and major holidays to include the 4th of July, Memorial Day, New Year’s Day, Labor Day, Christmas Day, and Thanksgiving Day.

ence in mothers' work on minor holidays, major holidays, and non-holidays, respectively. We include a number of controls in X_{dgsc} for potential sources of differences in work volume, including two-way interactions between holiday type, specialty and 5-year graduation cohort, as well as fixed effects for day of week, month, and year. Since the regression outcomes represent averages within each $dgsc$ cell, we weight each observation by the number of active physicians that year with the same specialty, gender, and graduation cohort.

To provide transparency into these estimates, we also estimate the gender gap for each holiday. Specifically, we replace the main indicators for major and minor holidays with fixed effects for each of the ten federal holidays.

II. Results

Figure III presents estimates of the gender gap in work volume for each holiday. The figure follows the same format Figure III, with impacts on the share of physicians with any claims in Panel A, impacts on the average number of claims in Panel B, and with the holidays ordered from lowest to highest work volume.

We have two key results. First, the gender gap in work between mothers and fathers widens on every minor holiday. This suggests that mothers are more likely to be a "fallback" parent providing childcare on days when their colleagues mostly remain at work. Mothers are 4 to 7.5 percentage points (p.p) less likely than fathers to bill at least one claim on each minor holiday; these gender gaps on minor holidays are 38 to 159% larger in magnitude than the gender gap on non-holidays. We see similar widening of the gender gaps in the average number of claims per doctor, which rises from a 0.23 claim difference on non-holidays to as much as a 0.62 claim difference on Martin Luther King Day.

Second, mothers work *as much* as fathers on major holidays. As with minor holidays, this pattern is highly consistent across different holidays. The estimated gaps are small and statistically insignificant for both

outcomes, suggesting that mothers and fathers are equally likely to be caring for patients on these days.

Table 1 summarizes these patterns using Equation 1. To begin, in column 1 we first present the estimates from a simpler model that excludes interactions between our control variables. We find that on non-holiday weekdays, mothers are 3 p.p. less likely to work and have 0.25 fewer E&M claims, suggesting that mothers' Medicaid work volume is 10 percent lower than fathers' on regular work days.

On holidays, the gender gap in work either expands or shrinks, inversely to the work expectations around the holiday. On minor holidays, the gender gap in work widens: mothers are 5.7 p.p. less likely to see patients and have 0.51 fewer E&M claims. Thus, on minor holidays, mothers are 25% less likely than fathers to bill any claims and have 28% fewer claims per physician. In contrast, on major holidays, the gender gap in work closes: mothers are just 0.8 p.p. less likely to see patients, and bill as many E&M claims as fathers. Further, in our expanded model with more flexible control variables (column 2), these effects become close to zero and insignificant. Thus, we can not reject that mothers and fathers work equally on major holidays (although the point estimates are imprecise).

Columns 3–4 of Table 1 examine heterogeneity in our results by whether the oldest child in the household was under or over 5 years old. The predicted effects across these groups are unclear: the gender gap on holidays may be larger when children are in school due to closures; or smaller because parents learn how to access alternative care. Importantly, we find that our main pattern of results is present for both groups. However, we find that gender gaps in work – both at baseline and on minor holidays – are slightly larger for parents with school-aged children. This suggests that mothers may have difficulty navigating childcare closures, even as their children move into the school system.

III. Conclusion

This paper provides descriptive evidence of the gender gap in parental work during holidays, leveraging a novel linkage between physicians' parenthood status and their daily medical claims. Holidays vary in the demands they create for parents' time because they potentially affect both demand for labor in the workplace and the availability of childcare outside the home (e.g., in school). We find that minor holidays — when schools close but workplaces are often open — exacerbate an existing gender gap in physician work. However, on major holidays when physicians' offices are less likely to be open, the gender gap closes. Our results add to evidence that mismatches between workplace expectations and mothers' demand for flexibility contribute to the gender gap in work.

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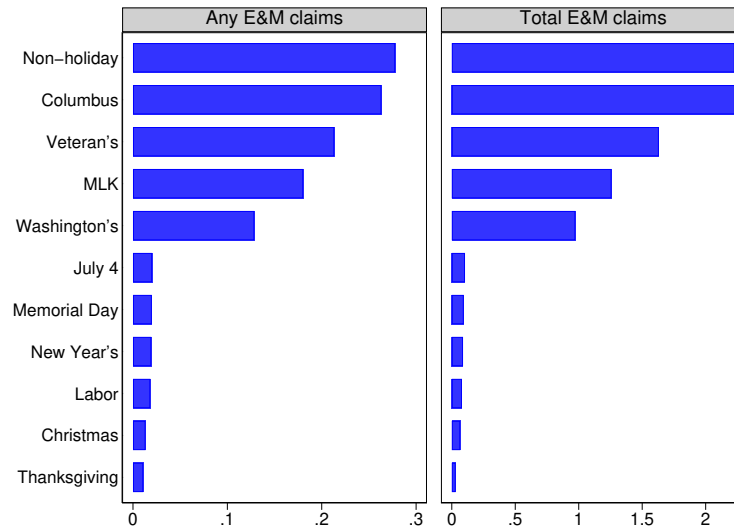


FIGURE 1. AVERAGE WORK VOLUME IS HIGH ON MINOR HOLIDAYS; LOW ON MAJOR HOLIDAYS

Note: This figure reports the average work volume on non-holiday weekdays and each of the federal holidays. The left panel reports the gap in the share of physicians with any E&M claims, while the right panel reports the gap in the average E&M claims per doctor.

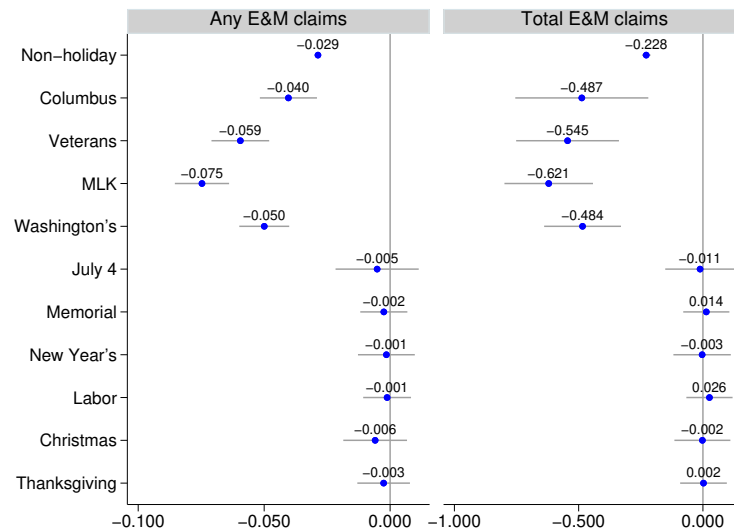


FIGURE 2. GENDER GAPS IN PHYSICIAN WORK ARE LARGEST ON MINOR HOLIDAYS

Note: This figure reports estimates of the gender gap in work volume on non-holiday weekdays and each of the federal holidays, net of the controls in Equation 1. The left panel reports the gap in the share of physicians with any E&M claims, while the right panel reports the gap in the average E&M claims per doctor. We show 95% confidence intervals in the grey bars around the estimates.

TABLE 1—MOTHERS WORK LESS ON MINOR HOLIDAYS; EQUALLY ON MAJOR HOLIDAYS

	(1) Simple controls	(2) Baseline model	(3) Youngest child under 5	(4) Youngest child 5 or older
A. Dependent variable: Share of doctors with Medicaid claims				
Non-holiday x Mother	-0.030*** (0.001)	-0.029*** (0.001)	-0.021*** (0.001)	-0.036*** (0.001)
Minor Holiday x Mother	-0.057*** (0.006)	-0.056*** (0.007)	-0.052*** (0.007)	-0.057*** (0.008)
Major Holiday x Mother	-0.008** (0.003)	-0.003 (0.003)	-0.001 (0.003)	-0.004 (0.003)
Non-holiday mean for fathers	0.297	0.297	0.299	0.313
Minor holiday mean for fathers	0.225	0.225	0.230	0.241
Major holiday mean for fathers	0.019	0.019	0.020	0.021
B. Dependent variable: Average Medicaid claims per doctor				
Non-holiday x Mother	-0.245*** (0.009)	-0.228*** (0.009)	0.044*** (0.014)	-0.514*** (0.009)
Minor Holiday x Mother	-0.508*** (0.069)	-0.533*** (0.072)	-0.375*** (0.100)	-0.692*** (0.080)
Major Holiday x Mother	0.015 (0.047)	0.004 (0.027)	0.024 (0.033)	-0.011 (0.037)
Non-holiday mean for fathers	2.378	2.378	2.409	2.413
Minor holiday mean for fathers	1.769	1.769	1.795	1.855
Major holiday mean for fathers	0.077	0.077	0.090	0.077

Note: These regression results estimate the relationship between two measures of daily work volume (the dependent variable) and physician gender, allowing the impact of gender to depend on whether it is a holiday. Column 1 reports results from a simpler version of Equation 1 that excludes the interactions between the control variables. Columns 2-4 include the full controls in Equation 1. Column 3 and 4 limit the sample to doctors whose youngest child is under the age of 5, or age 5 or older, respectively. The regressions are estimated on data that has been collapsed and averaged at the level of: gender \times day \times specialty \times graduation cohort, resulting in 65,779 observations. Regressions are weighted by the number of doctors in each cell. Heteroskedasticity-robust standard errors are reported in parentheses.

SUPPLEMENTAL APPENDIX:
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TABLE A1—SUMMARY STATISTICS: PHYSICIAN PARENTS

	(1)	(2)
	Mothers	Fathers
Age of First Child (Yrs)	5.336 (2.582)	5.406 (2.542)
Specialty: Primary Care	0.599 (0.490)	0.810 (0.392)
Specialty: Pediatrician	0.239 (0.426)	0.123 (0.328)
Specialty: Ob-Gyn	0.162 (0.369)	0.067 (0.250)
Years Since Med. School. Grad.	13.976 (4.884)	15.874 (6.251)
Weekdays w/ E&M Claim (Yrly)	71.201 (70.76)	80.987 (80.40)
Total E&M Claims (Yrly)	553.794 (2347.1)	634.397 (2095.3)
Physician-Years	13,849	13,775

Note: This table reports summary statistics for our sample of physician parents. Column 1 shows summary statistics for mothers, and column 2 shows summary statistics for fathers. Each physician-year is a single observation.