The Effects of Mandatory Child Care Center Closures on Women's Labor Market Outcomes During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has had a dramatic effect on women's labor market outcomes. We assess the effects of state-level policies that mandated the closure of child care centers or imposed class size restrictions using a triple-differences approach that exploits variation across states, across time, and across women who did and did not have young children who could have been affected. We find some evidence that these policies increase the unemployment rate of mothers of young children in the short term. In the long-term, the effects of mandated closures on unemployment become even larger and persist even after states discontinue closures, consistent with a permanent child care supply side effect.

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Keywords: COVID-19; coronavirus; pandemic; child care availability; women's labor supply; women's employment

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1 Introduction

The economic downturn ushered in by the COVID-19 pandemic stands in stark contrast to previous recessions because it has disproportionately affected women. Alon et al. (2020b) show that for every recession between 1948 and 2009, men's unemployment rates have increased more than women's or the effects have been relatively equal. The 2020 recession is the first recession where the unemployment rate for women has risen significantly more than the unemployment rate for men.

Many have hypothesized that two primary factors are responsible for the dramatic effects on women's employment rates in the US: the concentration of women in sectors and occupations disproportionately impacted by the pandemic and changes in child care availability (Alon et al., 2020b; Dingel et al., 2020; Collins et al., 2020). There are a prior reasons to believe that changes in child care availability will disproportionately affect mothers. Alon et al. (2020a) use time-use data to show that mothers spend more time on childcare than fathers in two-parent households. They also point out using US Census Bureau data that single mother households are much more common than single father households (Alon et al., 2020a). Dingel et al. (2020) document that 32 percent of the US workforce has a child under age 14 and 9.4 percent have a child under age 6. They conclude, therefore, that child care center closures will affect women's employment much more than men's employment but do not directly quantify the extent to which child care availability drives employment effects.

Estimating worker fixed effects models using US Current Population Survey data, Collins et al. (2020) show that mothers with children aged 13 or younger reduced their work hours by five times as much as father's between March and April 2020. However, it is not clear what portion of this decline is due to differences in the type of occupations chosen by mothers and fathers as opposed to child care responsibilities.

Heggeness (2020) provides some direct evidence on the effects of child care availability on mother's labor market outcomes. Using a differences-in-differences approach, she estimates effects of early public school closures and stay-at-home orders on women's unemployment, labor market attachment, and hours worked. She finds that mothers in early closure states

were significantly more likely to have a job but not be working as a result of early shutdowns but found no immediate impact on labor market detachment or unemployment. Because the analysis focuses on parents of school age children and the effect of school closures, the results do not shed light on loss of child care for parents of young children - those five and under.

Compared to school age children, very young children require more intensive care (Drago, 2009). While school age children may be capable of completing some tasks independently (such getting dressed, retrieving and eating a snack, or entertaining themselves), younger children require around-the-clock supervision and attention. Loss of child care for very young children during hours that would otherwise be used for paid work may have an even more dramatic effect on mothers' labor supply outcomes than loss of public school for a school-age child.

Prior to the pandemic, 24% of children aged 5 and younger received center-based care from a day care center, preschool, prekindergarten or other early childhood program, and 60% participated at least one weekly in some type of non-parental care arrangement including home-based day cares or care arrangements with a relative (U.S. Department of Education, 2016). By mid-March and early April, 16 states had mandated the closure of child care centers, potentially limiting the ability of parents to access child care. Another 15 states imposed class size restrictions, typically allowing classes to contain no more than 10 children.

In this paper, we assess the effects of these mandatory child care center closures and class size limits on mothers' labor supply outcomes, including unemployment, detachment from the labor force, shares of women who are employed but not working, and actual hours worked. In contrast to Heggeness (2020), we are able to estimate longer-term rather than just immediate effects of closures. Specifically, we are able to track employment outcomes up to twelve months after closures or class size restrictions were first implemented. Our triple-differences approach exploits variation across states, time, and motherhood status, and the panel structure of our data also allow us to control for worker fixed effects.

Ultimately, we find that state-level mandates that forced closure of child care centers or

imposed class size limits had important effects on unemployment rates of mothers of young children aged 0 to 5. In the short-term, we estimate class size restrictions increased unemployment rates of mothers of young children by 2.3 percentage points. We do not find a statistically significant effect of closures in the short-term, but our estimates are imprecise, and the confidence interval cannot rule out an unemployment effect as large as +4.7 percentage points. Post-closure, states that reopened child care centers and shifted to class size restrictions had unemployment rates that were 1.9 percentage points higher than they would have been had closures never been implemented, a marginally statistically significant effect. States that reopened child care centers without class size restrictions following closure had unemployment rates of mothers of young children that were 2.3 percentage points higher, an effect which is statistically significant at the 1% level.

Though we lack data to directly test how child care availability changed by state, it's likely that early financial pressures directly caused by mandated closure or class size restrictions caused some centers to close their doors permanently. The Center for American Progress has estimated that meeting pandemic-related state guidelines would increase operating expenses for child care providers by 47%, on average (Jessen-Howard and Workman, 2020b). Most of these increased costs would take the form of personnel costs to comply with reduced class size requirements as well as increased sanitation costs (Jessen-Howard and Workman, 2020a).

Anecdotally, some centers also continued paying staff even when centers were closed, a costly choice at a time when revenues were at best reduced, or at worst, nonexistent. A November survey of 6,000 childcare workers by the National Association for the Education of Young Children found that 56% of childcare centers were losing money, and 42% of workers surveyed reported taking on debt for their programs on their own personal credit cards (National Association for the Education of Young Children, 2020a). Even if programs could meet budget shortfalls for a month or two, it's unlikely they could do so in the long-term, leading to permanent closures and a contraction in the supply of child care.

Another survey by the National Association for the Education of Young Children found that nationally, 18% of child care centers were closed in July 2020 as a result of the pandemic,

even though all states had officially allowed child care centers to reopen by that time, which is consistent with this type of permanent supply side response (National Association for the Education of Young Children, 2020b). The survey also predicted that closures would become more widespread in the months that followed. Forty percent of respondents said they were certain that they would close permanently within the year without additional public assistance (National Association for the Education of Young Children, 2020b). Corroborating these predictions, Bureau of Labor Statistics data indicate that there were 166,800 fewer childcare workers in December 2020 compared to December 2019 (Mongeau, 2021).

All of this evidence suggests that as the pandemic stretches on, the supply of child care has became more constrained. Our evidence indicates that this has had the notable downstream effect of increasing unemployment rates for women of young children.

2 Mandatory Child Care Center Closures

A prominent aspect of the COVID-19 crisis is that it has involved stay-at-home orders, some of which forced the closure of child care facilities. In March-April 2020, 16 states issued orders that forced child care businesses to close, though most included an exemption which allowed centers to stay open if they served the children of essential workers.

The other 34 states (plus DC) allowed childcare businesses to stay open. However, among these 34 states, 15 imposed class size limits designed to increase social distancing and reduce the risk of COVID transmission without a classroom. For the purposes of our analysis, we classify a state as imposing class size limits if it required classes to consist of 15 or fewer students. Notably, many states imposed more restrictive requirements. Some required 10 or fewer even if the classrooms for the oldest age groups and/or included staff in the count.

Figure 1 identifies the states that ordered the closure of child care businesses, states that allowed child care centers to remain open without class size limits, and states that allowed child care centers to remain open but imposed class size limits. Even though Alabama initially ordered child care centers to close, this closure remained in effect only for one week

between March 19, 2020 and March 27, 2020 at which point the state allowed centers to reopen with a class size limit of 11. Therefore, in our analysis we classify Alabama as a class size limit state rather than a mandated closure state.

Even in states that did not officially mandate stay-at-home orders or class size limits, child care centers were deeply affected. Some centers voluntarily closed their doors due to health concerns, and others voluntarily decreased class sizes in accordance with state recommendations to allow for more social distancing. Some parents decided not to send children to child care centers, even if centers were open in their area (Quinton, 2020). Therefore, even the states where childcare businesses technically had the ability to operate as normal during the early months of the pandemic, parents may have experienced decreased child care access.

Between March 21 and April 2020, the Bipartisan Policy Center and Morning Consult conducted a national survey of 800 parents with children under age 5. They found that 60% of child care programs were fully closed (Bipartisan Policy Center, 2020). Unfortunately, these aggregate data do not report data separately by state, so it is impossible to directly compare the share of child care centers closed in states that mandated closure versus those that did not during the earliest months of the pandemic. The aggregate statistics reported by the the aforementioned National Association for the Education of Young Children survey, which found that 18% of child care centers were closed in July 2020, suggests that some but not all of these centers had reopened once states relaxed their closure policies in April, May, and June.

Though many mandates to close child care centers were sometimes part of a more general stay-at-home order, state-imposed child care center closures are not perfectly correlated with other types of closures such as public school closures (Heggeness, 2020). Some states that closed public schools explicitly allowed child care centers to remain open (Hunt Institute, 2020; Food Industry Association, 2020; Child Care Aware of America, 2020). In the analysis that follows, we investigate the independent effect of mandatory child care center closure policies and class size limit policies on the labor market outcomes of mothers of young

children.

3   Data Description

We use three data sources for our analysis: state-level information on child care center closure policies, the Household Pulse Survey, and the Current Population Survey. Our data on child care center closure policies, including dates of announcement/implementation and dates of reopenings, come primarily from government press releases, but we also used information from the

The Household Pulse Survey, a survey launched in April 2020 specifically to shed light on COVID-19 related issues, is administered by the US Census Bureau. The short 20-minute survey consists of questions related to employment status, spending patterns, food security, housing, physical and mental health, access to health care, and educational disruptions (US Census Bureau, 2020; Centers for Disease Control and Prevention, 2020). The weekly survey provides a "near real-time snapshot" of COVID-19 experiences because there is only an 8 day lag between when respondents fill out the questionnaire and when the results are reported Centers for Disease Control and Prevention (2020). Although the survey has the advantage of asking questions most relevant to effects of the COVID-19 pandemic, data were first collected only after state-level mandates for child care center closures. Therefore, we are unable to use the Pulse Survey data for our main triple-differences analysis. The data also fail to identify specific ages of children for respondents, so we cannot isolate reporting to parents of children aged 0 to 5, the population for whom child care is relevant.

Instead, we rely on the basic monthly files from the Current Population Survey, a monthly survey of about 60,000 households sponsored by the US Census Bureau and the US Bureau of Labor Statistics (Flood, Sarah and King, Miriam and Rodgers, Renae and Ruggles, Steven and Warren, J. Robert, 2020). Sampled households are in the survey for four consecutive months, are out for eight months, and then return for another four consecutive months before leaving the sample permanently. A new group of respondents starts in each calendar month

at the same time another group completes its rotation.

Our microdata correspond to September 2019 to March 2021. We limit the sample to people aged 18-64, inclusive, to focus analysis on the working-age population. We drop anyone living in group quarters or working in the armed forces. We drop New York from our sample because New York City had a child care center closure policy while the rest of the state did not, so it is impossible to assign either treatment or control status to the state. We also drop any individuals whose reporting of age, sex, and race is inconsistent across the months where they report data to the CPS. Our triple-differences analysis uses the subset of data corresponding to women with children aged 0 to 5 and women without any children.

4 Aggregate Effects of the Pandemic on Women's Employment and the Importance of Child Care

Before presenting our analysis of the causal effects of state-level child care closure policies, we begin by presenting descriptive statistics on women's unemployment and the reported importance of child care access across all states during the pandemic period. Figure 2 uses CPS data to show unemployment rates of men and women pre and post-pandemic. Prior to the pandemic, unemployment rates of both men and women aged 18-64 hovered around 3-4%. Then unemployment rates increased dramatically between February 2020 and April 2020, peaking at 15.4% for women and 13.1% for men. Consistent with Alon et al. (2020b)'s analysis, we find the increase is much larger for women – an 11.2 percentage point increase – compared to 8.5 percentage points for men between February and April. Unemployment rates for both men and women declined between April 2020 and September 2020, but the female unemployment rate remained above the main unemployment rate until October 2020.

4.1 Importance of Child Care Access

Figure 3 uses the Pulse data to investigate how many women are reporting that child care issues are a significant driver of their unemployment.[1] For this figure, we limit our sample to parents with children aged 18 and under because the data do not distinguish between the ages of children. Throughout the data collection period of April 23 to September 28, a significant number of parents are reporting that they are not working and that this is due to child care issues. The fraction of mothers reporting not working due to COVID-19 related child care issues is significantly higher than for fathers. For example, in the July 16-July 21 survey, 11% of mothers versus only 3% of fathers were not working due to COVID-19 related child care issues.

We also extend previous descriptive work by investigating differences by characteristics of these mothers. Appendix Figure A.1 reports the percent of single and married mothers not working who cited COVID-19 child care issues as the cause. In April and May, single mothers were more likely than married mothers to report not working due to COVID-19 related child care issues. By May and June, single and married mothers were reporting similar rates. By July and beyond, married mothers were usually more likely than single mothers to report not working due to COVID-19 related child care issues.

We also investigated heterogeneity in child care issues as a driver of unemployment by race/ethnicity. We find in Appendix Figure A.2 that race/ethnicity is not a strong and consistent predictor of which mothers report that they are not working due to child care issues.

5 Effects of Mandatory Child Care Center Closures

Though these descriptive statistics reveal that in the aggregate child care access is important for mothers' labor supply, it is not known whether state-level child care closures or class size restrictions, as opposed to voluntary closures of child care centers or loss of home-based care

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[1]For more analysis of these data, see Heggeness and Fields (2020).

provided by acquaintances, friends, or relatives, had an independent impact on mothers' labor market outcomes.

5.1 Triple-Differences Empirical Strategy

To study the effects of state mandated child care center closures and class size restrictions on the employment of women during the pandemic, we use a triple-differences strategy.[2] Our empirical strategy uses three dimensions of variation: cross-state variation in which states implemented mandates, cross-time variation in when mandates were implemented, and cross-worker variation in whether a woman had young children who would potentially need child care.

One challenge in estimating the effect of child care center closures is the decision to close all child care centers may not be quasi-random. While we find evidence that women's employment was on parallel trends prior to the start of the pandemic for states that did and did not implement closures, it is possible that states that mandated the closure of child care centers were hit harder by the pandemic at the time the decision was made to close child care centers. Thus, women's employment could decline more in these states for reasons unrelated to child care availability. For example, prior work has shown that women tend to be over-represented in sectors and occupations that were impacted most severely by the pandemic (Alon et al., 2020a).

If these child care closure mandates are correlated with pandemic severity, a differences-in-differences analysis may conflate impacts of the pandemic on job availability with impacts through child care availability. Including women without children in the analysis allow us to isolate the child care availability effect. We omit women with only older children from the analysis because these mothers also experienced changing family obligations as many schools and universities were closed or switched to remote learning formats.

We start by estimating triple-differences event study models with leads and lags 6 months before and 12 months after closure and class size restrictions implementation:

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[2]For a derivation of the triple-differences estimator and a complete discussion of its identifying assumptions, we refer readers to Olden and Møen (2020).

$$y_{ipst} = \gamma_{st} + \theta_{pt} + \mu_{ps} + \sum_{j=-6}^{12} \beta_j Closure_{pst}^j + \sum_{j=-6}^{12} \Delta_j Restriction_{pst}^j + X_{ipst}\delta + \omega_i + \varepsilon_{iast} \quad (1)$$

In this regression equation, y_{ipst} is a labor market outcome for woman i in state s and month t who either is or is not a parent (p) of a child aged 0 to 5. Recall that because we omit parents of older children from the analysis sample, any observation that is not a parent of a child aged 0 to 5 is a non-parent. We control for state-specific shocks that vary over time γ_{st} and include interactions for parent and time effects θ_{pt} and parent and state effects μ_{ps}. The matrix X_{ipst} includes a rich set of controls including age, marital status, education, industry fixed effects and a control for whether there is another adult in the household. The panel structure of the CPS also allows us to include person fixed effects (ω_i). We cluster standard errors at the state level.

The CPS survey is conducted on the 19th of each month and asks respondents questions about the previous week. Because all of our closure and restriction policies were effective after March 12, April 2020 is the first month where labor market outcomes in the CPS could have been directly affected by these mandates, absent any anticipatory effects. Accordingly, for our event studies, the omitted month is March 2020, a month prior to when closures or restrictions could have first impacted labor market outcomes.

It is important to keep in mind that closures were rescinded after one month in Hawaii, North Carolina, West Virginia, and Wyoming, after two months in Illinois, Maryland, Michigan, Ohio, Oregon, Pennsylvania, Rhode Island, and Vermont, and after three months in Delaware, Kentucky, Massachusetts, and New Jersey. Therefore, no state in the +4 to +12 months still had closures in effect, though we still plot these coefficients to investigate whether there were longer-term effects on labor market outcomes that persisted after policies were relaxed.

To account for potentially different effects in months where closures or class size restrictions were in effect vs. time periods where they had been relaxed, our triple-differences

regression takes the following form:

$$y_{ipst} = \gamma_{st} + \theta_{pt} + \mu_{ps} + \beta ClosureInEffect_{pst}$$

$$+\Psi ClosureDiscontLimitImposed_{pst} + \Lambda ClosureDiscontNoLimit_{pst}$$

$$+\Delta LimitInEffect_{pst} + \Pi LimitDiscont_{pst}+$$

$$X_{ipst}\delta + \omega_i + \varepsilon_{iast}$$

$$(2)$$

Our set of five treatment indicators captures every possible treatment status in the post-policy period. $ClosureInEffect_{pst}$ equals 1 if person i was a parent of a young child in state s where child care center closures were mandated in month t. $ClosureDiscontLimitImposed_{pst}$ equals 1 for post-closure months once centers were allowed to reopen if class size limits were imposed at that time. $ClosureDiscontNoLimit_{pst}$ equals 1 in post-closure months once the closure policy was discontinued if no class size limits were imposed. Similarly, $LimitInEffect_{pst}$ equals 1 if person i was a parent of a young child in state s where child care centers were subject to class size limits in month t. $LimitDiscont_{pst}$ equals 1 in months after class size limits were discontinued.

The identifying assumption for our triple-differences estimator is that there is no contemporaneous shock that differentially affects the outcomes of the treatment group (mothers with young children) compared to the control group (women without children) in the same state-months as state-mandated child care center closures or child care class size limits.

5.2 Results

Figures 4 and 5 show the results of the event study specification for four labor market outcomes: labor force detachment, unemployment, being employed but not working, and reducing hours worked last week. The plots show evidence of parallel trends, lending credence to the identifying assumption. There are no obvious effects of closures on labor force detachment, being employed but not working, or actual hours worked last week. By contrast, there is an obvious jump in unemployment after closures are implemented, and this effect persists in months four and beyond, the period after all closure policies were rescinded.

The results for class size limits in Figure 5 show a similar pattern. There are no discernible effects on labor force detachment, being employed but not working, or reducing hours worked last week, but there is a statistically significant increase in unemployment at the time class size limits go into effect. Unlike for closures, the negative employment effects seem to dissipate over time and are not statistically significant by three months after implementation.

Table 1 shows the triple-differences estimates. The first point estimate in column 2 indicates that closures increased unemployment rates of mothers with young children by 2.0 percentage points in months when a closure was actually in effect, but this effect is not statistically significant. The second point estimate indicates that in post-closure months where closures were discontinued but class size limits were imposed (later months of the pandemic), unemployment rates were 1.9 percentage points higher than they otherwise would have been. The third point estimate indicates that in post-closure months where closures were discontinued and no class size limits were imposed, unemployment rates were 3.3 percentage points higher than they would have otherwise been, an effect that is statistically significant at the 1% level.

The estimates also show an effect of class size limits on unemployment rates of mothers of young children: +2.0 percentage points in months where limits were in effect with this effect statistically significant at the 1% level. There is no statistically significant effect in post-class limit months once limits were discontinued, though the confidence interval cannot rule out effects as large as during months where the limits were actually in place.

5.3 Robustness

Because mothers of very young infants may have taken maternity leave and been unaffected by changes in child care center availability, we assessed the robustness of our results to defining mothers of young children as those with children aged 1-5 rather than 0 to 5. Table 2 shows that our results are robust to this change in the young mothers definition.

We would have liked to directly examine the number of women reporting that they are

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unemployed because of child care issues, but the CPS does not ask a question with response choices that would allow us to investigate this. The only reasons respondents can cite for being unemployed include (1) looking for first jobs, (2) re-entering after an extended work absence, (3) have left a job, (4) temporary job ended, (5) laid off, or (6) left job for another reason. None of these has a definitive link with child care issues. The Pulse survey is also poorly suited to investigating whether mothers of young children in states with closures or mandates were more likely to report being unemployed due to child care issues as the data cannot be disaggregated to include only mothers with young children.

Instead, we take advantage of a child care question asked on the March 2020 Annual Social and Economic Supplement (ASEC). Specifically, the question asked whether paid child care was needed for each child in the household. We define a mother has requiring paid child care for a child aged 0 to 5 if there is any child in her household aged 0 to 5 for whom "paid child care is needed." We have 4,550 mothers with a child aged 0 to 5 who responded to both the ASEC and appear in the March basic monthly file. Among those mothers, 34% have at least one child who needs child care which is consistent with estimates from the U.S. Department of Education (2016).

A challenge of using this question for our analysis is that it is only asked once per year. We impute whether a mother needs child care in other months where she participates in the CPS panel by carrying this March response forward and backwards in time. Recall that sampled households are in the survey for four consecutive months, so if this household appeared in the CPS in February, March, April, and May, we use the March response and assign that same value to this household (mother) in February, April, and May. Then, we re-estimate our triple differences model, redefining the treatment group as mothers of children aged 0 to 5 who expressed a need for paid child care. The control group is the same as before - women without any children.

We would expect this analysis to be somewhat less informative than our preferred analysis previously presented. We are not able to look at effects of the closure and limitation policies past June 2020 because we do not have any treatment group coverage in August

or September (more than four months after March). Moreover, though it is reasonable to assume that if a mother required paid child care in March, she also required it in other months, that assumption could be incorrect if there were changes in her outside options (availability of informal child care arrangements). We also have less statistical power due to smaller sample sizes. Nevertheless, if the results are truly driven by child care access, labor market effects of child care policies should be somewhat larger when estimating the triple differences specification on this sample.

In fact, this is generally what we find in Table 3. Though we lose statistical significance of some estimates due to larger standard errors, the point estimates, especially for the effects of class size limits, are larger than in the main specification. Interestingly, many of them are approximately three times as large, which is consistent with our finding that among the whole sample of women who have a child aged 0 to 5, about 1/3 report needing paid child care. In contrast to the results before, we also now find a statistically significant effect on a woman being employed but not working when class size limits are in place and an increase in the probability of being employed but not working. These results are consistent with the effects we found for the full sample being driven by women who need paid child care in order to work.

6   Conclusion

In the aggregate, the COVID-19 pandemic has had a substantial effect on women's labor supply outcomes, especially relative to men's. In this paper, we examine whether state-level policies that forced the closure of child care centers or regulated class sizes specifically had a discernible impact on labor supply outcomes for mothers of young children. We find that these policies did, in fact, increase unemployment rates of mothers of young children in these states. Unfortunately, the negative effects did not dissipate once states reopen child care centers, consistent with permanent effects on child care supply in these states. These results underscore the importance of access to reliable child care in promoting equitable labor

market outcomes for men and women.

Support for the childcare sector in the early months of the pandemic was relatively limited. Less than 7% of childcare centers received a Paycheck Protection Program Loan (Smith et al., 2021), and the March Coronavirus Aid, Relief, and Economic Security (CARES) Act provided $3.5 billion in emergency funding for the child care sector, an industry with estimated revenues of $47 billion in 2019 (Schmit, 2020; Committee on Economic Development of The Conference Board, 2019). However, by December, recovery legislation provided another $10 billion (Smith and McHenry, 2021). The largest injection of funding came on April 15, 2021 when President Joe Biden announced that as part of the American Rescue Plan, $24 billion in Child Care Stabilization Grants and $15 billion in supplemental Child Care and Development Fund money would be made available (Administration for Children and Families, 2021). Time will tell whether this funding will be sufficient to keep the child care sector afloat. Even if this funding prevents additional child care centers from closing, unless new programs open, mothers of young children may continue to experience persistent and permanent employment losses in the future.

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Figure 1: State Policy Timeline

State-level Childcare Policy Timelines

Event Dates

Enacted Closure Orders   Implemented Class Sizes Restrictions

Notes: Information comes from government press releases, the Hunt Institute (2020), the Food Industry Association (2020), and Child Care Aware of America (2020). For more details, see full data appendix.
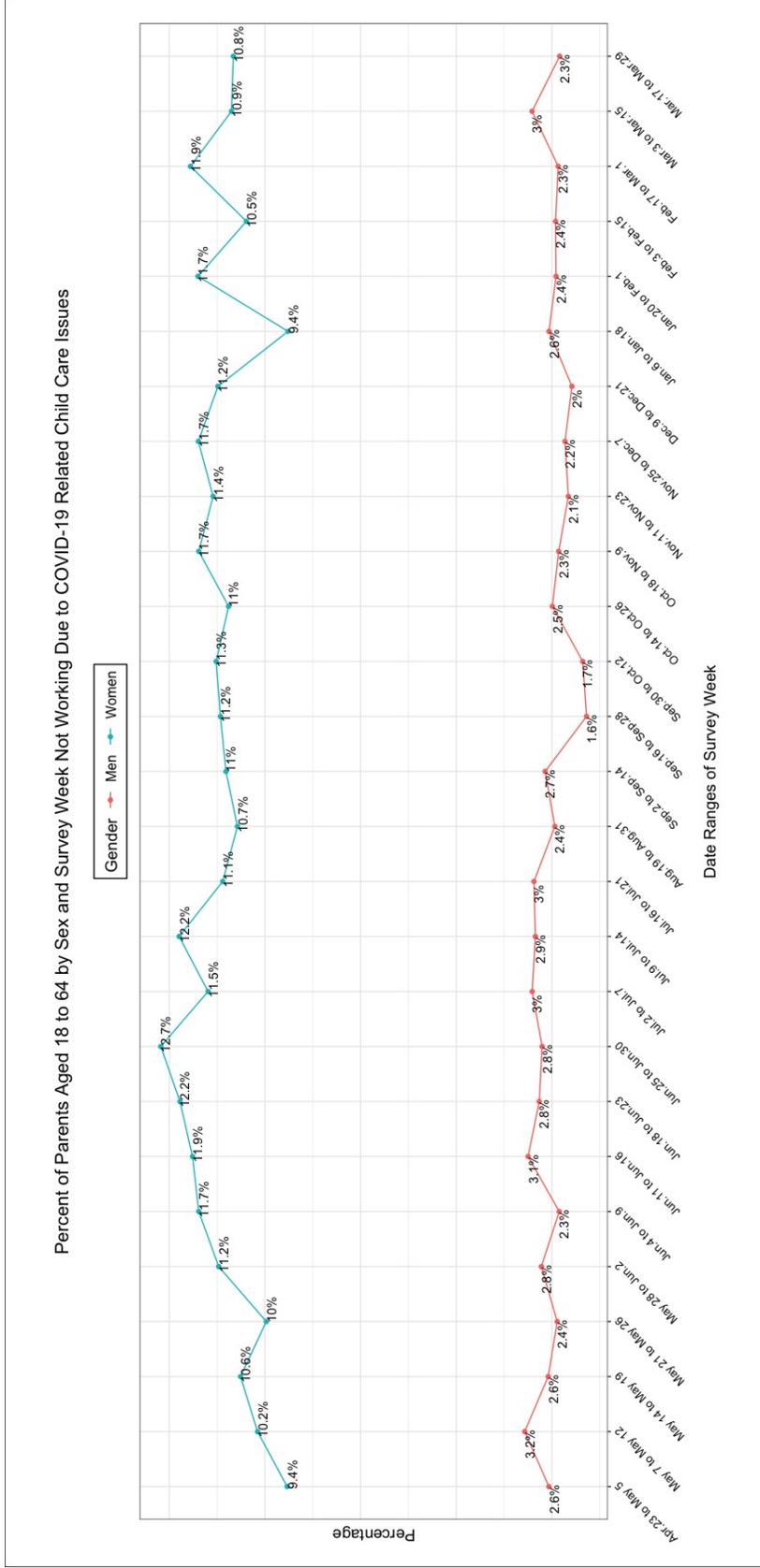
Figure 2: Men and Women's Unemployment Pre and Post COVID-19

Men and Women's Unemployment Pre and Post COVID-19
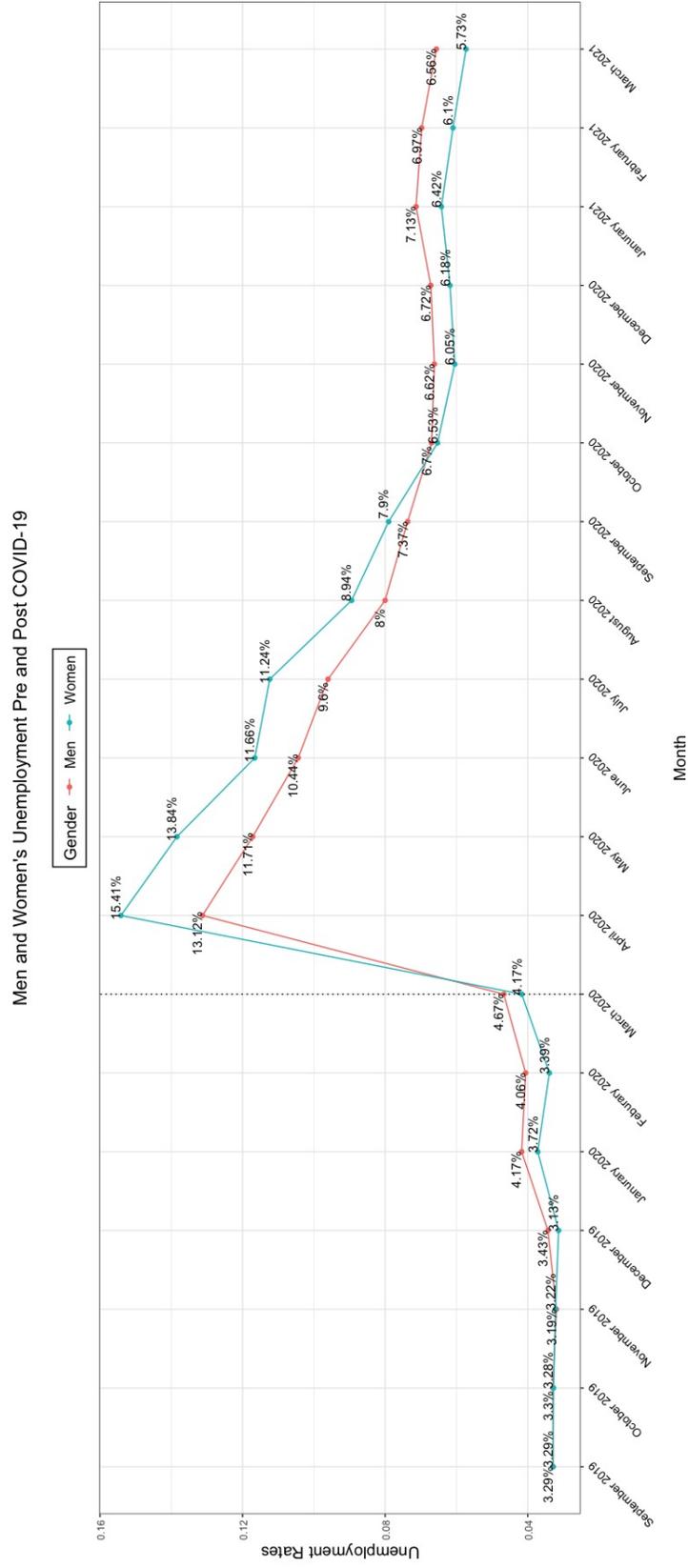
Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Notes: Authors' tabulations. The sample consists of people aged 18-64 in the labor force.
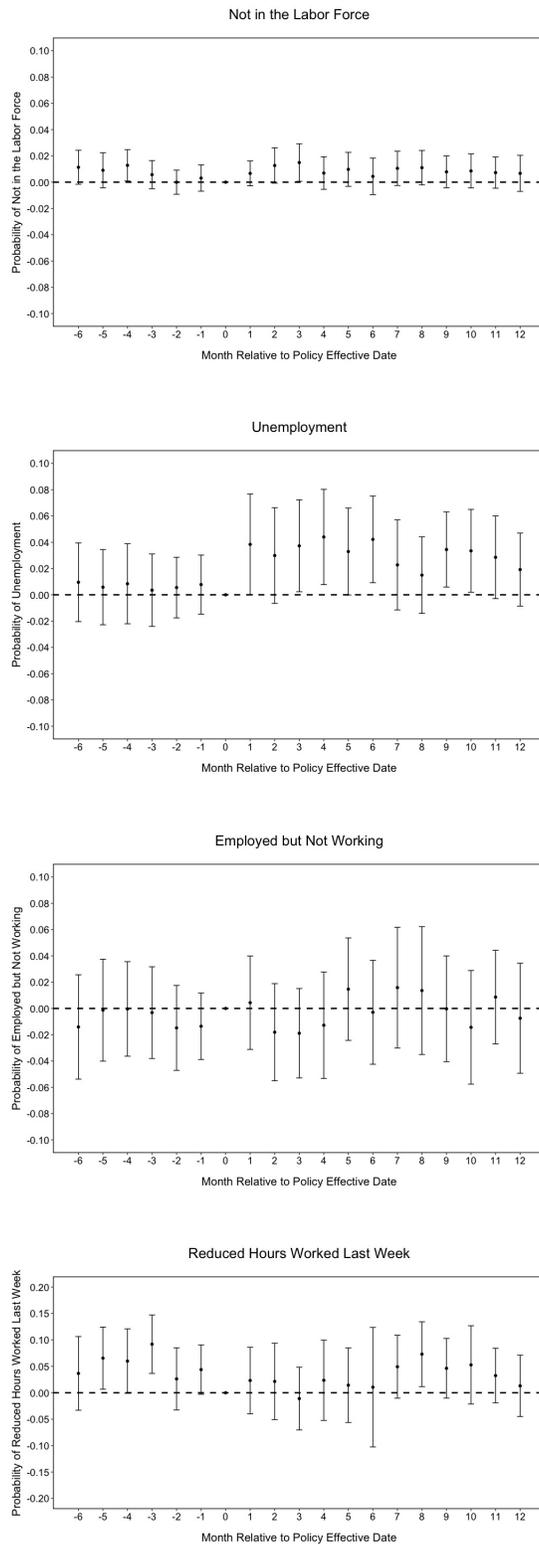
Figure 3: Percent of Parents Not Working Due to COVID-19 Related Child Care Issues

Percent of Parents Aged 18 to 64 by Sex and Survey Week Not Working Due to COVID-19 Related Child Care Issues

Figure 4: Triple-Differences Event Studies for Child Care Center Closure Policies

Not in the Labor Force

Unemployment

Employed but Not Working

Reduced Hours Worked Last Week

Notes: Results from estimating equation 1 as described in text and then plotting the coefficients on the closure policy time relative to implementation indicators: β_j.

Figure 5: Triple-Differences Event Studies for Class Size Limits
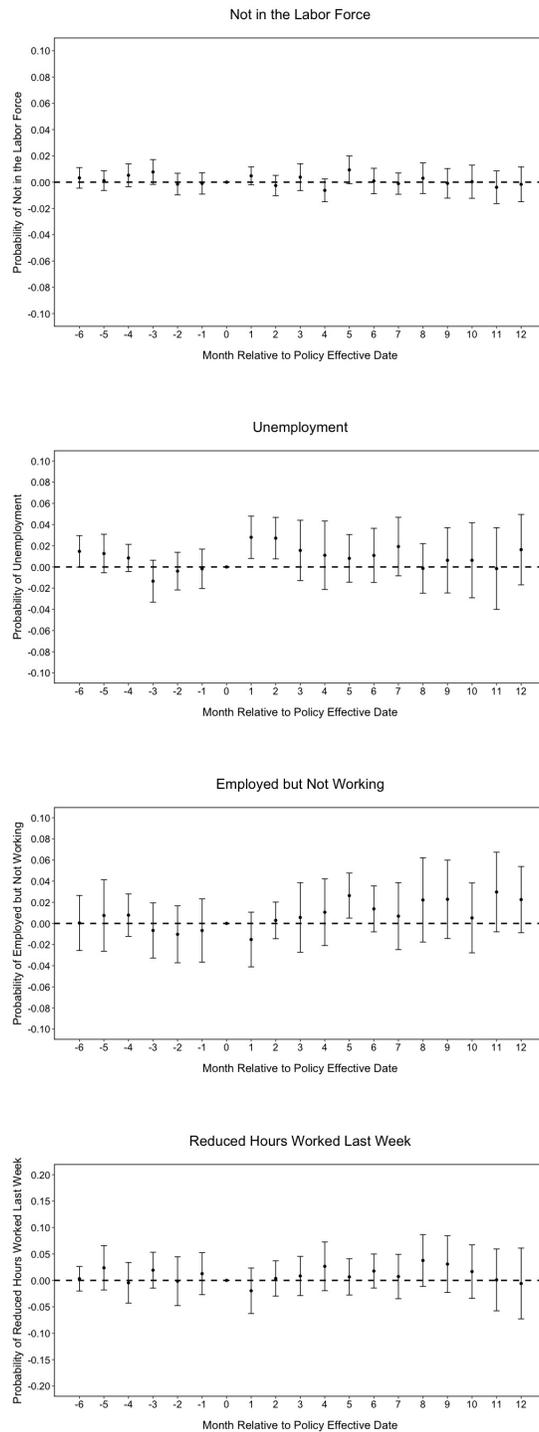
Not in the Labor Force

Unemployment

Employed but Not Working

Reduced Hours Worked Last Week

Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Notes: Results from estimating equation 1 as described in text and then plotting the coefficients on the class limit policy time relative to implementation indicators: Δ_j.

Table 1: Effect of Mandated Child Care Center Closures and Class Size Limits on Women's Labor Market Outcomes

| | Labor Market Outcome | | | |
| | (1) | (2) | (3) | (4) |
	Not In the Labor Force	Unemployed	Employed But Not Working	Reduced Hours Worked Last Week
Post Closure with Closure in Effect x Mother of Child 0-5	0.006 (0.005)	0.020 (0.014)	0.010 (0.013)	0.015 (0.022)
Post Closure with Closure Discontinued But Class Limits x Mother of Child 0-5	-0.001 (0.010)	0.019* (0.011)	0.002 (0.022)	0.013
Post Closure with Closure Discontinued & No Limits x Mother of Child 0-5	0.004 (0.002)	0.033*** (0.011)	0.007 (0.011)	-0.024 0.016
Post Class Size Limits with Limits in Effect x Mother of Child 0-5	0.001 (0.003)	0.023*** (0.006)	0.002 (0.010)	-0.003 0.001
Post Class Size Limits x Limits Discontinued x Mother of Child 0-5	-0.002 (0.003)	0.005 (0.011)	0.018* (0.010)	0.003 0.012
Number of Individuals	117,774	87,002	82,405	78,155
Number of Observations	401,393	277,346	260,211	233,490

Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Notes: Results from estimation of equation (2) as described in the text. All regressions include industry fixed effects, age fixed effects, marriage status fixed effects, control for at least one other adult in the household, person fixed effects, and all the double interactions (state by month fixed effects, mother of young child x month fixed effects, and state x mother of young child fixed effects). Standard errors are clustered at the state level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Robustness Check Dropping Mothers of Infants

	Labor Market Outcome			
	(1) Not In the Labor Force	(2) Unemployed	(3) Employed But Not Working	(4) Actual Hours Worked Last Week
Post Closure with Closure in Effect x Mother of Child 1-5	0.004 (0.04)	0.017 (0.016)	0.009 (0.015)	0.004 (0.020)
Post Closure with Closure Discontinued But Class Limits x Mother of Child 1-5	-0.003 (0.004)	0.024** (0.012)	0.009 (0.013)	0.000 (0.019)
Post Closure with Closure Discontinued & No Limits x Mother of Child 1-5	0.003 (0.003)	0.031** (0.012)	0.010 (0.011)	-0.034** (0.014)
Post Class Size Limits with Limits in Effect x Mother of Child 1-5	0.003 (0.002)	0.025*** (0.008)	-0.008 (0.007)	-0.013 (0.012)
Post Class Size Limits x Limits Discontinued x Mother of Child 1-5	-0.001 (0.003)	0.001 (0.012)	0.004 (0.008)	-0.002 (0.013)
Number of Individuals	114,682	84,823	80,350	76,367
Number of Observations	386,400	268,029	251,459	226,868

Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Notes: Results from estimation of equation (2) as described in the text except parents (mothers of young children) are defined as those with a child aged 1 to 5. All regressions include industry fixed effects, age fixed effects, marriage status fixed effects, control for at least one other adult in the household, person fixed effects, and all the double interactions (state by month fixed effects, mother of young child x month fixed effects, and state x mother of young child fixed effects). Standard errors are clustered at the state level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Robustness Check With Mothers Who Need Paid Child Care as of March 2020

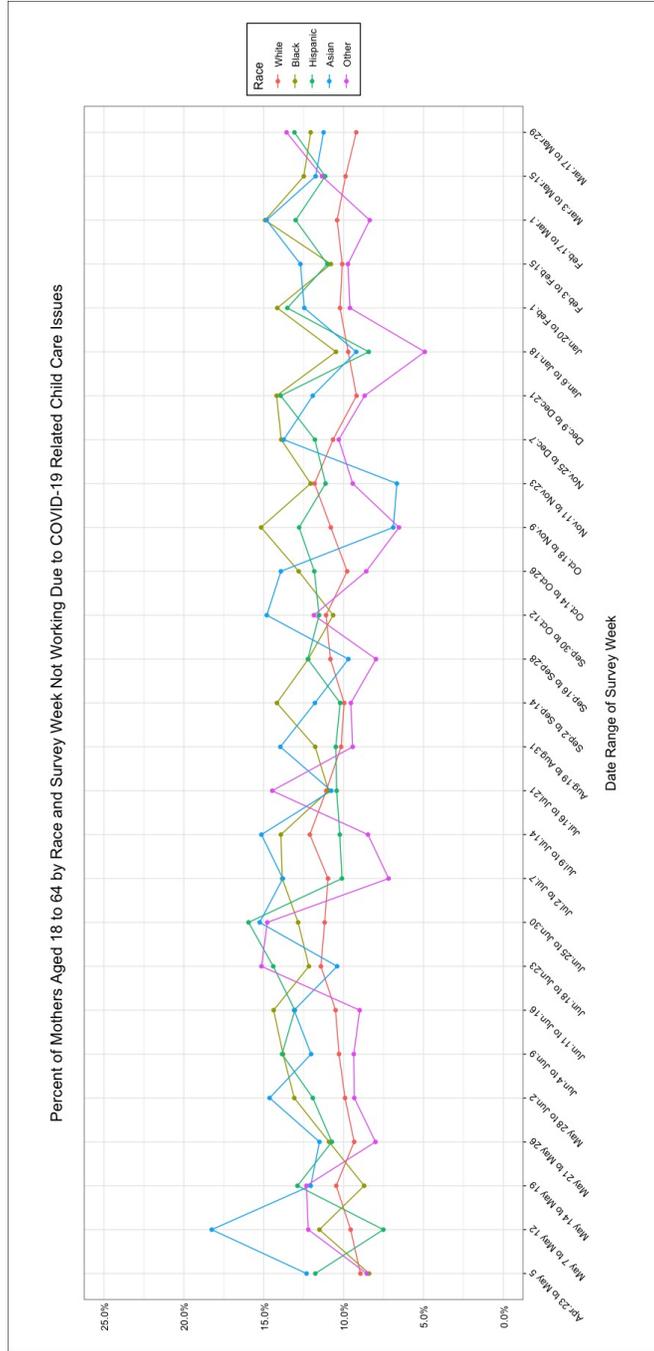|	Labor Market Outcome			
	(1) Not In the Labor Force	(2) Unemployed	(3) Employed But Not Working	(4) Reduced Hours Worked Last Week
Post Closure with Closure in Effect x Mother of Child 0-5	0.001 (0.007)	0.021 (0.030)	0.010 (0.027)	0.035 (0.051)
Post Closure with Closure Discontinued But Class Limits x Mother of Child 0-5	0.028 (0.038)	0.053 (0.034)	-0.041 (0.028)	-0.108 (0.057)
Post Closure with Closure Discontinued & No Limits x Mother of Child 0-5	0.026 (0.023)	0.111 (0.068)	0.002 (0.024)	0.068 (0.092)
Post Class Size Limits with Limits in Effect x Mother of Child 0-5	0.023* (0.013)	0.059** (0.028)	0.044** (0.021)	0.037 (0.039)
Post Class Size Limits x Limits Discontinued x Mother of Child 0-5	0.055 (0.036)	0.064 (0.041)	0.044 (0.037)	-0.061 (0.048)
Number of Individuals	94,543	70,342	66,678	63,431
Number of Observations	320,551	223,874	209,965	189,515

Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Notes: Results from estimation of equation (2) as described in the text except parents (mothers of young children) are defined as those with a child aged 0 to 5 who needed paid child care in March 2020. All regressions include industry fixed effects, age fixed effects, marriage status fixed effects, control for at least one other adult in the household, person fixed effects, and all the double interactions (state by month fixed effects, mother of young child x month fixed effects, and state x mother of young child fixed effects). Standard errors are clustered at the state level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix Figures

Figure A.1: Percent of Mothers Not Working Due to COVID-19 Related Child Care Issues

Source: Household Pulse Survey Public Use File, United States Census Bureau, www.census.gov/programs-surveys/household-pulse-survey/

Notes: Sample includes mothers who have at least one child under 18. Group quarter observations are dropped, and composite weights are used.

Figure A.2: Percent of Mothers Not Working Due to COVID-19 Related Child Care Issues

Percent of Mothers Aged 18 to 64 by Race and Survey Week Not Working Due to COVID-19 Related Child Care Issues

Source: Household Pulse Survey Public Use File, United States Census Bureau, www.census.gov/programs-surveys/household-pulse-survey/

Notes: Sample includes mothers who have at least one child under 18. Group quarter observations are dropped, and composite weights are used.