The COVID-19 Pandemic's Contribution to "The Cult of Domesticity": An Investigation of Women's Labor Market Outcomes

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Abstract

The COVID-19 pandemic had various atypical effects on our society: specifically looking at labor markets, women's unemployment was found to be higher than men's during the 2020 recession (the opposite trend has occurred in the past). This result has been thought to be attributed to a couple of different reasons such as states mandating policies that restricted the operations of certain industries and businesses such as child care centers. This paper investigates the impact policies related to the closure and class size restrictions of child care centers have had on women's labor market outcomes at the state level. Using data from January 2019 to December 2021, we utilize baseline regression, triple-difference, and dynamic models to quantify the effects these closures had on women's labor supply outcomes, specifically employment, labor force participation, average number of hours worked per week, and weekly earnings. Overall, these models have uncovered that there was a negative effect for many labor supply outcomes for women of working age with children less than five years old— contributing to the age-old theory of "The Cult of Domesticity."

Motivation

While research has been previously conducted to see how the COVID-19 pandemic has affected labor supply, it has often been to study the early effects (using data from 2019 to 2020). The aim of this research paper is to use more recent data (from 2019 to 2021) in order to see if trends from early in the pandemic have evolved or still hold true. Seeing how the pandemic has affected women's labor force participation in a positive or negative manner can help investigate further questions and inform future policies implemented by the government and industries. For example, did the pandemic further the gender wage gap? How have industries that are not easily adaptable to operate virtually and provide the option for their employees to telework contributed to women's participation in the labor force? Studying these questions allows for a better understanding of gender labor markets.

Also, while there are many extensions that can be investigated with labor market outcomes of women impacted by child care, we have chosen to further study the effect on employment status along with other labor market outcomes. By analyzing alternative labor supply outcomes such as average weekly hours worked, weekly earnings, and ability to telecommute, our study provides a holistic understanding of the effects child care center closures during the COVID-19 pandemic have had on women's labor supply outcomes which past research has not been able to do as typically only employment status has been studied.

Our analysis also considers mothers with kids of different age groups along with mothers with no kids. We compare labor supply outcomes of women of working age with no kids, with kids less than a year old, and with kids who are between two and four years old. This allows us to compare control and treatment effects across various demographics and further provides us insight on the true effects of child care closures on women of working age.

References

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Data

This research paper utilizes data from the Current Population Survey (CPS), a monthly survey conducted by the U.S. Census Bureau and U.S. Bureau of Labor Statistics of about 60,000 households and data from "Persistent Effects of Temporary Policies: Long-Term Impacts of Forced Child Care Center Closures on Parental Labor Market Outcomes," which contains the start and end dates of policies enacted by each state relating to child care closures and class size restrictions (Russell and Sun 2022).

As the purpose of this paper is to see how the elimination of child care at the state level has affected women's labor force outcomes during the COVID-19 pandemic, we use monthly CPS data from 2019 to 2021. CPS data is based on a probability-based sample where households are surveyed for four consecutive months, leave the sample for eight months, and then are finally surveyed again for another four months before permanently leaving the sample. Because of this method of data collection, CPS data has cross-sectional observations with elements of longitudinal survey—making it have a panel design. The unit of observation is individuals from a household survey. The households are surveyed from all 50 states and Washington D.C. and are sent a computerized questionnaire consisting of more than 200 questions.

In "Persistent Effects of Temporary Policies: Long-Term Impacts of Forced Child Care Center Closures on Parental Labor Market Outcomes," the authors provided the specific dates of when states ordered child care center closures, class size restrictions, and reopened child care centers. This data was gathered from cross-referencing sources from the Hunt Institute, the Food Industry Association, and Child Care Aware of America along with government press releases.

We have taken the dates that these respective policies were implemented for each state and merged it with the CPS data to conduct our analysis. There are some limitations and assumptions we made with the data. The sample size has been limited to individuals who are between 18 and 64 years old to account for those of working age, and the majority of our analysis has been focused on individuals that have at least one child that is less than five years old (as these groups would be the ones most impacted by child care center closures and restrictions).

Treatment Status
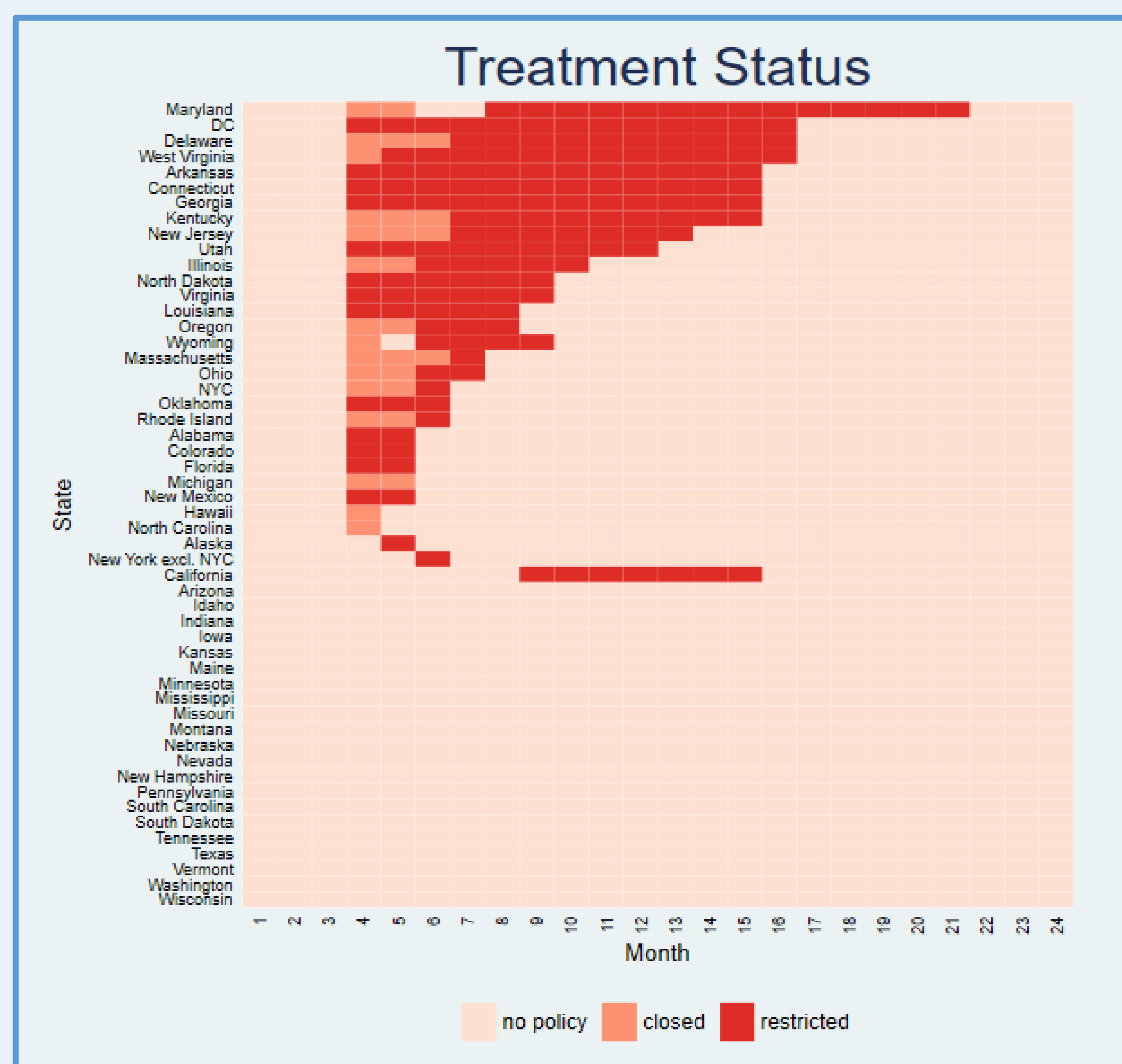
Theoretical Model

The theoretical framework for this paper derives from the standard Neoclassical labor supply model where the economic agent represents an individual–a female of working age with at least one child less than five years old.

$$\max U = U\,(C, L, Q)$$

s.t

$$Q = Q(t_Q, t_{cc}\,q)$$
$$u^m = \theta_1 \log(c^m) + \theta_2 \log(l^m) + \theta_3 \log(q^m)$$
$$u^c = \pi_1 \log(c^c) + \pi_2 \log(l^c) + \pi_3 \log(q^c)$$
$$t_h * w + V = C + P_{cc} * t_{cc}$$
$$16 = t_h + t_l + t_Q$$

where

q is the quality of child care centers (open, closed, or restricted)
^{m} refers to mother
^{c} refers to child
t_Q is the time spent with children
t_{cc} is the time children spend in child care centers
t_h is the time spent working
w is the wage
V is the non-labor income
P_{cc} is the price of child care centers

Based on the model above, we can derive the first ordered condition using the Lagrangian method to be:

$$w = \frac{Marginal\ Utility\ of\ Leisure}{Marginal\ Utility\ of\ Consumption} = \frac{Marginal\ Utility\ of\ child\ care}{Marginal\ Utility\ of\ Consumption}\,(Q) + P_{cc}$$

The theoretical framework reveals that women adjust t_h and t_Q until their wage is equal to the time they dedicate to child care.

Empirical Model

Baseline Regression:

$$Y_{ist} = B_0 + B_1 * C_{ist-1} + B_2 * R_{ist-1} + B_3 * P_{ist-1} + B_4 * X_{ist} + \theta_s + u_t + \varepsilon_{ist}$$

Triple-Differences Regression:

$$Y_{ist} = B_0 + B_1 * P_{ist} + B_2 * A_{ist} + B_3(P_{ist} * A_{ist}) + B_4 * X_{ist} + \theta_s + u_t + \varepsilon_{ist}$$

Dynamic Model:

$$\ln\left(\frac{P(Out\ of\ LF)}{P(Employed)}\right) = B_0 + B_1 * P_{ist} + B_2 * A_{ist} + B_3(P_{ist} * A_{ist}) + B_4 * X_{ist} + \theta_s + u_t + \varepsilon_{ist}$$

$$\ln\left(\frac{P(Unemployed)}{P(Employed)}\right) = B_0 + B_1 * P_{ist} + B_2 * A_{ist} + B_3(P_{ist} * A_{ist}) + B_4 * X_{ist} + \theta_s + u_t + \varepsilon_{ist}$$

- P = Policy Outcome (N = no policy, C = closed CCC, R = restricted CCC)
- A = Kid Age Group
- i = women
- s = State
- t = month
- X = Age, Marital Status, Education Status, etc.

In studying the policies enacted related to child care centers, we are trying to evaluate their influence on women's labor supply outcomes during the COVID-19 pandemic. We investigate labor outcomes by controlling for individual characteristics like age, race, marital status, and education status and for state characteristics like the number of current COVID-19 hospitalizations. It should also be noted that the models are focusing on women of working age who have at least one child less than five years old (as per the purpose of this study and our assumption that child care centers take care of children less than five years old). The key variable of interest influencing the outcome is the policy implemented in child care centers and is measured as a categorical variable.
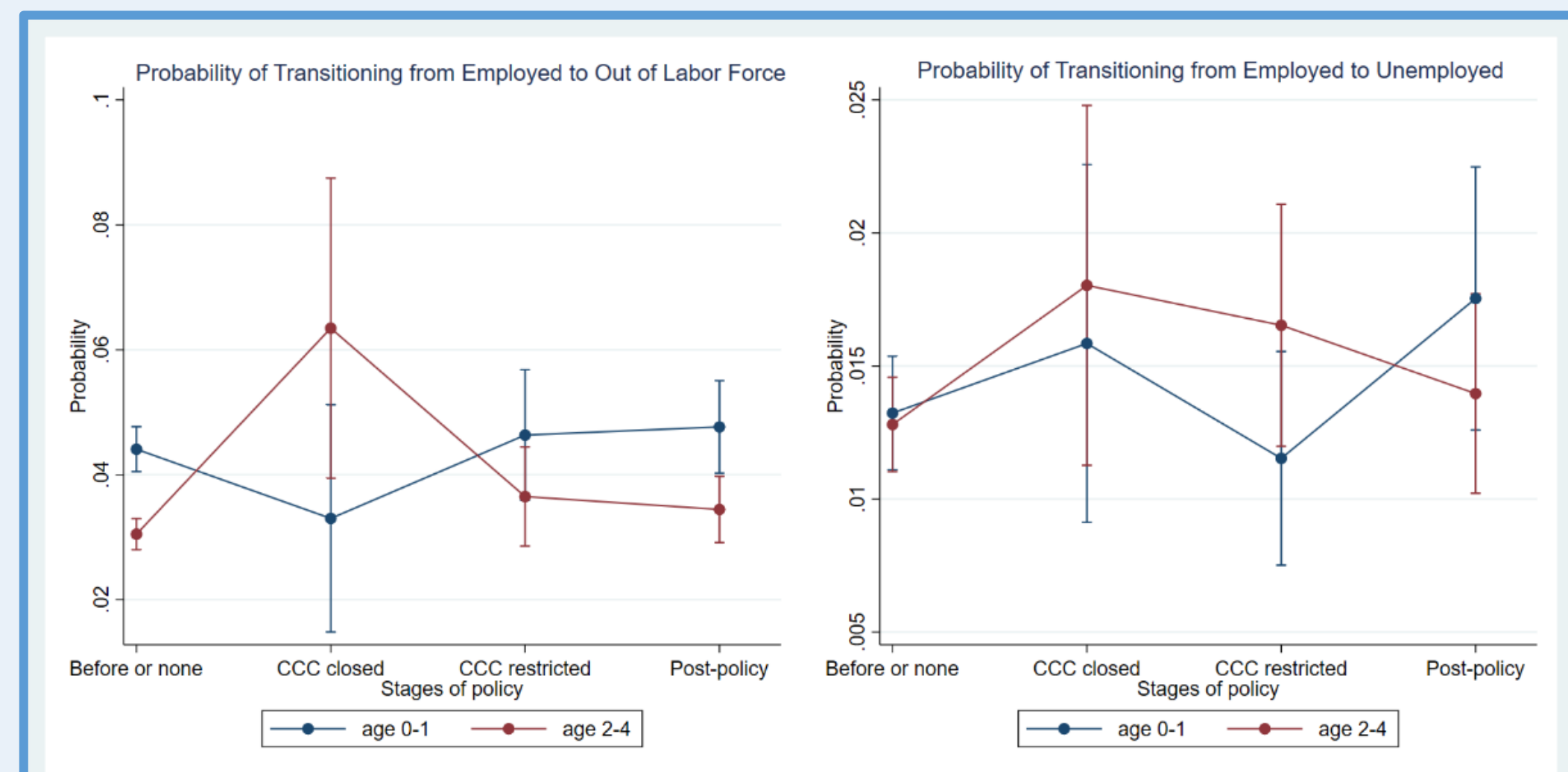
Results

- From the OLS regressions, employment decreased, the average weekly hours worked is not significant, and weekly earnings increased with child care center closures for females.

- From the triple difference regressions, women with children in age group from two to four years old and of women with no kids, coefficients were found to be significant for employment status, being able to telework, and labor force status

- From the dynamic model, we also saw that the labor force outcomes of women with children in the age group from two to four were disrupted during the pandemic and once facilities began opening back up again, their transition probabilities slowly reverted to what it was when there were no policies emplaced

Table 4: Triple DID Model Results

VARIABLES	Employed	COVID-19 Telework	COVID-19 Unable to Work	Labor Force Status
Policy				
CCC closed	0.0146	-0.0172	-0.0379***	0.00923
	(0.0156)	(0.0272)	(0.0125)	(0.0151)
CCC restricted	-0.000498	0.00197	-0.0267***	-0.00925
	(0.00657)	(0.0104)	(0.00493)	(0.00635)
Post-policy	-0.00174	0.00810	-0.0111**	0.00254
	(0.00452)	(0.00909)	(0.00434)	(0.00437)
Children Age Groups				
Age 2-4	0.0564***	0.0201***	0.00339	0.0577***
	(0.00276)	(0.00544)	(0.00266)	(0.00267)
No Kids	0.107***	0.0115***	0.00130	0.109***
	(0.00229)	(0.00445)	(0.00217)	(0.00221)
Interaction				
CCC closed # age 2-4	-0.0768***	0.0849***	0.0601***	-0.0473**
	(0.0204)	(0.0351)	(0.0160)	(0.0197)
CCC closed # no kids	-0.0531***	0.0292	0.0302**	-0.0246
	(0.0162)	(0.0276)	(0.0127)	(0.0156)
CCC restricted # age 2-4	-0.0151*	0.00960	0.0160***	-0.00414
	(0.00833)	(0.0106)	(0.00507)	(0.00805)
CCC restricted # no kids	-0.0124*	0.00447	0.0142***	0.00127
	(0.00663)	(0.00855)	(0.00404)	(0.00641)
Post-policy # age 2-4	-0.00639	-0.00548	-0.00389	-0.00788
	(0.00544)	(0.00750)	(0.00364)	(0.00526)
Post-policy # no kids	-0.00475	0.00994	-0.00387	-0.00652
	(0.00434)	(0.00603)	(0.00290)	(0.00419)
Age	0.000984***	0.000986***	0.000274***	0.000527***
	(4.48e-05)	(6.64e-05)	(3.27e-05)	(4.33e-05)
Married	-0.0253***	0.00318*	-0.0107***	-0.0395***
	(0.00123)	(0.00175)	(0.000900)	(0.00119)
Race				
Black	-0.0159***	-0.00415	0.0121***	0.00580***
	(0.00176)	(0.00263)	(0.00128)	(0.00170)
American Indian	-0.0807***	-0.00270	0.00711***	-0.0564***
	(0.00464)	(0.00737)	(0.00340)	(0.00449)
Asian	-0.0624***	0.0680***	-0.00700***	-0.0633***
	(0.00244)	(0.00360)	(0.00176)	(0.00235)
Other/Mixed	0.0127***	0.0186***	0.0123***	0.0250***
	(0.00371)	(0.00535)	(0.00268)	(0.00359)
Hispanic	0.00246	-0.0223***	0.00938***	0.00825***
	(0.00171)	(0.00255)	(0.00124)	(0.00166)
Education				

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