Understanding the Effects of California's Paid Family Leave Law on Maternal Health

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While the majority of American children are now raised by working parents, the US is the only developed country that does not guarantee a period of paid and job-protected leave for new parents. In 2004, California became the first state to enact a paid family leave (PFL) program, providing up to six weeks of paid leave to new parents. California's program has been extensively researched; while we know much about the labor market and employer effects of the law, its impact on health has been much less studied.

Accordingly, we use restricted data from the 2000 to 2010 National Health Interview Survey to conduct new analyses of the effects of the California law on an important health outcome: maternal postpartum psychological distress (PPD). We hypothesize that the availability of paid family leave improves maternal PPD, in particular, decreasing the severity of PPD, with fewer mothers reaching cut-offs for mild to moderate forms of PPD. We also predict that the effects will be most pronounced among women who typically do not have access to paid family leave (in the absence of a state program), leading to a reduction in inequalities. Our main identification strategy estimates synthetic control models, where changes in the outcomes in California before and after enactment of the PFL program are compared to corresponding changes over time in "synthetic California". We study both average effects of the law, and the impacts in mitigating (or aggravating) disparities by maternal and household characteristics. Results indicate that mothers of infants in California experienced a 27.6 percent reduction in mean PPD symptoms after the enactment of paid leave and were 9.0 percentage points less likely to experience mild forms of PPD. These results are robust to a variety of specifications.

It is critical to understand to what extent work-family policies, which allow parents to take care of their children while also managing their work responsibilities, improve population health and health equity. Our research provides evidence that publicly mandated work-family policies, such as PFL, promote improved maternal postpartum mental health and address maternal health disparities.

Background

The US is the only developed country that does not guarantee a period of paid and job-protected leave for new parents. As a result, coverage is both limited and highly unequal: availability is strongly skewed by family income, with low-income parents much less likely to be covered. Roughly half of employed new parents have access to unpaid leave through the federal FMLA (Klerman, Daley, & Pozniak, 2012), but low-income families are much less likely than their more advantaged peers to be able to take unpaid leave. Some employers provide paid leave voluntarily, but high-income workers are again most likely to be covered by such policies.

The situation in the US is slowly starting to change, as three states—California, New Jersey, and Rhode Island—now have paid family leave (PFL) programs that provide a period of paid leave to new parents (through expansions of state temporary disability programs that in five states provide paid leave to women who have given birth). Two additional states—New York and Washington— as well as the District of Columbia have enacted paid family leave programs that will take effect by or prior to 2020, Massachusetts has recently passed a program to start in 2021, and some cities, most notably San Francisco, are implementing expansions of paid family leave policies that extend beyond those established at the state level. Because California is a large state and the first to implement paid family leave, its program has been most extensively researched. However, while we know a fair bit about the labor market effects of the program (Bartel, Rossin-Slater, Ruhm, Stearns, & Waldfogel, 2015; Baum &

Ruhm, 2016; Rossin-Slater, Ruhm, & Waldfogel, 2013) and employer responses to it (Bartel, Baum, Rossin-Slater, Ruhm, & Waldfogel, 2014), research on health impacts has been much less studied.

An estimated 13 to 19 percent of new mothers will develop postpartum depression, including both major and minor clinical depression (O'Hara & McCabe, 2013). Maternal demographic factors, including age, poverty status, marital status, and education level, have all have been identified as associated with risk of postpartum depression (e.g., Rich-Edwards, 2006; Segre, O'Hara, Arndt, & Stuart, 2007; Wang, Wu, Anderson, & Florence, 2011). Both clinical depression and depressive symptoms postpartum are risk factors for adverse physical, cognitive, emotional, and behavioral development in young children (e.g., Beck, 1998; Gray, Indurkhya, & McCormick, 2004; O'Hara & McCabe, 2013; Petterson & Albers, 2001).

Our research question explores whether California's PFL program has effects on the mental health of new mothers, building on prior work which provides a strong basis for hypothesizing that California's paid family leave program should improve maternal health. In addition to therapeutic and pharmacological treatments for postpartum depression, evidence suggests that longer periods of parental leave may have positive effects on maternal PPD. In general, positive associations are shown between length of leave and postpartum mental health (e.g., Borrell et al., 2014; Chatterji & Markowitz, 2005; Staehelin, Bertea, & Stutz, 2007). Previous research has found that women who take longer leaves are less likely to experience PPD (Chatterji & Markowitz, 2005), and one would expect to find such effects in California, but this has not yet been examined. Further, most previous research on the relationship between leave-taking and maternal mental health is observational, comparing women who took longer leaves to those taking shorter leaves. The endogeneity of leave-taking and postpartum mental health may bias these studies. Our work, in contrast, leverages a natural experiment, allowing for causal inference.

Data

We use restricted data from the 2000 to 2010 National Health Interview Survey (NHIS). The NHIS is a cross-sectional survey conducted by the National Center for Health Statistics at the Centers for Disease Control and Prevention. It is representative of the civilian non-institutionalized population in the US on both the national and, with restricted-use variables, state levels. A multistage area probability design is used to draw household samples from every state and the District of Columbia. In addition to a core set of demographic and health items repeated each year, rotating modules on other health topics are changed and/or repeated.

Measures

Our primary dependent variable is obtained from the six-item Kessler Psychological Distress Scale (K6). This widely-used scale was developed for the NHIS to measure the severity of psychological distress (Kessler et al., 2002). The scale reflects responses to six questions indicating components of psychological distress occurring within the last 30 days. The questions focus on depression and anxiety and take the form: "How often in the last 30 days did you feel …": "so sad that nothing could cheer you up"; "nervous"; "restless or fidgety"; "hopeless"; "that everything was an effort"'; "worthless", with scores for each question ranging from 0 for responses of "none of the time", to 4 for responses of "all of the time. Answers to each item are summed, for a possible range of zero, or no psychological distress symptoms, to 24, or all six psychological distress symptoms all of the time. Amongst populations in the United States, the cut-point of 13 points is often recommended to indicate as the threshold for psychological distress (Kessler et al., 2003). The scale is both a valid and precise measure of serious

mental illness (SMI) in the general population of the United States, as well as in numerous other countries including Japan, Australia, India, Turkey, the Netherlands, and Morocco (Fassaert et al., 2009; T.A. Furukawa, Kessler, Slade, & Andrews, 2003; Toshi A. Furukawa et al., 2008; Kessler et al., 2002, 2010; Patel et al., 2008).

Since we are interested in both serious and more moderate levels of psychological distress, we use the scaled scores in a variety of ways. We conduct estimates with the dependent variable as continuous values of the scores (or more precisely, integer values between 0 and 24), a dichotomous variable indicating whether the score is greater than or equal to cutoffs of 3 points and 5 points. Though 13 points is the threshold for SMI, lower cutoffs may be used to assess more mild to moderate forms of psychological distress and NHIS sample sizes have insufficient power to detect severe distress (Cairney et al., 2007; Prochaska et al., 2012).

Methods

We compare mothers with infants (children under 12 months of age) in California to mothers with infants in the rest of the United States. Our initial identification strategy relied on a differences-in-differences (DD) model, where changes in the outcomes in California before and after enactment of CA-PFL are compared to analogous changes over time in control states. The basic DD model takes the form:

$$Y_{ijkt} = \alpha + \gamma(CA \times POST)_{ijkt} + \boldsymbol{\delta_1 X}_{ijkt} + \boldsymbol{\delta_2 T}_t + \boldsymbol{\delta_3 S}_j + \boldsymbol{\delta_4 C}_k + \varepsilon_{ijkt}, \qquad (1)$$

where Y is the dependent variable for child or mother i living in county k, in state j, in year t. CA is a dummy variable taking the value of one for California mothers or children and zero for their control state counterparts, POST is a dichotomous indicator set to one (zero) for births on or after (before) the July 1, 2004 enactment of CA-PFL, X is a vector of supplementary demographic covariates for the mother (race/ethnicity, education, age at child's birth, marital status, place of birth, and employment status) and child (parity, gender), T and S are vectors of year and state dummy variables, ε is an error term, and $\hat{\gamma}$ provides the DD estimate of primary interest.

A necessary condition for the DD models to generate causal estimates is that changes over time in the outcomes (but not their levels) would have been similar between California and the control states in the absence of the program effects. One requirement for this is that there were similar trends in the outcomes in California versus the rest of the US prior to the enactment of CA-PFL. Our analysis of pre-trends indicates no statistically significant differences between California and control states in the 2000 to 2004 period. However, point estimates suggest that maternal PPD may worsen faster for mothers in control states as compared to in California, which may lead to an overestimation of the impact of CA-PFL on maternal PPD.

To correct our estimation methods for the differential pre-trends between California and the rest of the nation, we use synthetic control models as our primary estimating equations (Abadie & Cattaneo, 2018; Abadie, Diamond, & Hainmueller, 2010). In creating a synthetic control, or a "synthetic California," we use a weighted average of 48 other states[1] to most closely match the trends in K6 score in California prior to the enactment of the 2004 PFL law. This synthetic California provides a more appropriate control unit for comparison in the post-treatment period than any one state on its own or the combination of all other states, as in the DD model.

[1] We do not include New Jersey in this weighted average, as New Jersey adopted PFL in 2009 and therefore does not provide an appropriate counterfactual to California during the study period.

We compare California to synthetic California by collapsing the data into state-year cells and estimating regression models using the two-step Donald and Lang (2007) process. The effect of CA-PFL on maternal PPD is estimated as the difference in pre-law vs. post-law maternal PPD levels in California, relative to synthetic California. We use ordinary least squares to estimate the continuous overall K6 score outcome. For ease of interpretation, we also estimate linear probability models for the binary dependent variables indicating the probability of a K6 score over 3 points and over 5 points; results are similar when we estimate marginal effects from probit models instead.

Throughout our investigation, we are interested in both average effects of CA-PFL, as well as heterogeneous effects of the program across groups of mothers. Our primary strategy for examining potential heterogeneity involves estimating models for subsamples stratified by maternal education, marital status, maternal country of birth, household income, child parity, and race/ethnicity. Thus, for example, we consider as "advantaged" groups, children of mothers who are married, college-educated, or non-Hispanic white, as compared to "disadvantaged" groups of children born to mothers who are unmarried at birth, black or Hispanic, or non-college educated.

Results

Primary synthetic control models indicate that CA-PFL reduces maternal PPD for mothers with children under one year old. When using the continuous K6 score as the outcome variable, we find a decrease in K6 score of 0.636 points (on a scale of 0 to 24 points) amongst mothers with infants in California after the enactment of the law. As the mean K6 score for mothers with infants in California prior to the enactment of the law was 2.307 points, this effect represents a 27.6 percent decrease in maternal PPD.

When examining the effect on the K6 score using cutoffs of 3 points (mild PDD) and 5 points (moderate PPD), we find that CA-PFL reduces the likelihood of mild PPD by 9.05 percentage points and of moderate PPD by 6.50 percentage points amongst mothers of infants. We find suggestive evidence that CA-PFL also reduces the likelihood of moderate maternal PPD, but results are not statistically significant.

Stratified synthetic control models suggest that mothers who benefit most from CA-PFL are the ones who typically have less access to paid parental leave through an employer. On the continuous K6 scale, mothers with a high school degree or less see a decrease of 1.358 points after the enactment of the law. Single mothers see a 1.011-point decrease after the enactment of CA-PFL. Though not significant, the point estimates also suggest that CA-PFL may address additional disparities: black and Hispanic mothers may see a greater decrease in maternal PPD than white mothers; younger mothers (under age 30) see a greater decrease than older mothers; and mothers in households with income under $35,000 annually see a decrease that is approximately double that of mothers in richer households.

Conclusion

The number of states passing, enacting, and considering PFL continues to grow, with Massachusetts most recently passing PFL legislation in June 2018. It is important to understand whether these policies improve maternal health, which is closely linked to child development and labor market outcomes. Our results indicate that CA-PFL is both effective at decreasing maternal PPD of mothers with infants and is equalizing, in that mothers who traditionally lack access to PFL through an employer benefit the most from this policy.

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