



# The length of maternity leave and family health<sup>☆</sup>



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## HIGHLIGHTS

- We analyze the health effects of a reform of the parental leave scheme in Denmark.
- We use an IV strategy to estimate health effects on mothers, children and their siblings.
- We consider a range of health indicators including hospital admissions.
- We find some evidence that the policy change affected maternal and sibling outcomes.
- The benefits of extending maternity leave are greater for low-resource families.

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## ABSTRACT

We study the relationship between the length of paid maternity leave and the physical and psychological health of the family. Using a reform of the parental leave scheme in Denmark that increased the number of weeks of leave with full benefit compensation, we estimate the effect of the length of maternity leave on a range of health indicators including hospital admissions for both mother, child and siblings and the probability of the mother receiving antidepressants. The reform increased the average post-birth maternity leave by 32 days. We find some evidence that the increase in the length of paid maternity leave matters for maternal and sibling health outcomes, but only very limited evidence for the child health outcomes. This is in line with the existing evidence that tends to find limited effects of maternity leave on children's educational and labor market outcomes. Our results suggest that any beneficial effects of increasing the length of paid maternity leave are greater for low-resource families.

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## 1. Introduction

The amount of time a mother spends with her child versus on the labor market during the first years after birth is a source of much

debate, and the effects hereof the subject of extensive research. In this paper, we investigate the short-term effect of increasing the length of paid maternity leave on family health.<sup>1</sup> Maternity leave expansions are argued to have beneficial effects on everything from the length of breastfeeding to the cognitive ability of the child. While existing studies have found compelling evidence that increases in maternity leave increase the extent of breastfeeding, see e.g. Baker and Milligan (2008), and affect women's labor market behavior, see e.g. Lalive and Zweimüller (2009), there has been little evidence suggesting other substantial effects. Combining a reform of the Danish maternity leave scheme with rich administrative data allows us to complement the relatively sparse literature on short-term health

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<sup>1</sup> From now on we mean the length of paid maternity leave whenever we write length of maternity leave, since this is the variation used in the data.

effects of maternity leave. Detailed information about maternal and child characteristics and health histories implies that we can follow mothers and their children during the first five years after birth and focus on specific subgroups of mothers and children for whom we may expect larger beneficial effects of increasing the length of maternity leave. In comparison, existing studies tend to focus on perinatal outcomes or outcomes measured within the first year after birth.

To investigate the effects of the length of maternity leave on family health and well-being, we employ an identification strategy based on a reform of the Danish maternity leave scheme that changed the choice set and economic incentives for mothers' leave-taking. The reform increased the number of weeks with full benefit compensation, but decreased the maximum number of weeks with some benefit compensation. Theoretically, this reform would affect women who have preferences for relatively 'short' (less than or equal to 50 weeks) spells of maternity leave and who may have been incentivized to take shorter leave spells in the old regime due to the reduced benefit level. As a consequence of the reform, mothers on average increased the length of their maternity leave by about 32 days. Prior to the reform, the maternity leave scheme was already generous compared to many other countries: Average length of maternity leave prior to the reform was about 244 days. Since we have access to administrative data on the entire Danish population and exact birth dates, we can employ an instrumental variables strategy that uses the fact that the length of maternity leave jumps discontinuously at the date of implementation of the reform. The identification strategy is similar to those of many of the existing studies, but e.g. compared to Baker and Milligan (2008) who consider a window of 6 years around a reform, we have the advantage of data that allows for a narrow window (60 days) around the reform date. This potentially reduces selection bias and increases validity. We focus on a wide range of health outcomes for mothers and children: Inpatient hospital admissions, outpatient hospital visits, emergency department visits, and prescription drug purchases prescribed by general practitioners. We also consider potential effects on parental relationship dissolution and having an additional child.

Maternity leave schemes can be viewed as policies that improve family resources and investments. Increasing the length of maternity leave is expected to improve the possibilities of the mother to invest more resources in the well-being of herself and her newborn.<sup>2</sup> This may be by increasing the actual amount of time spent with the child or indirectly by improving the time allocation within the family. For example, if a mother is given more time to cope with her new role as a mother, it may also indirectly improve the quality of the time spent with the child. In this line of thinking, increasing the length of maternity leave may affect not only the health of the child, but also the physical and mental health of the mother. The length of maternity leave—or correspondingly, the mother's return to work—has been shown to be associated with depressive symptoms, parenting stress and self-rated overall health (Chatterji and Markowitz, 2005, Chatterji et al., 2013). In Denmark, the alternative to maternal care from the child perspective is to be placed in high-quality publicly provided childcare. Thus, an increase in the length of maternity leave will typically imply later enrollment in daycare where children are more likely to be exposed to infections and viruses.

When estimating the effects of increasing the length of maternity leave, the level of leave is likely to be important. One hypothesis is that there are decreasing returns to the length of leave, i.e. going from no leave to one month of leave will have larger effects than going from 8 months of leave to 9 months of leave. As such, one can think of the estimates in this paper as representing a lower bound on the effects of increasing the length of maternity leave.

We find limited effects of increasing the length of maternity leave on short-term health outcomes of the child. This corresponds well with most of the literature on child outcomes where several existing empirical studies have used policy reforms to estimate the effect of maternity leave on short- and long-term outcomes of children. Most of the literature on long-term outcomes has focused on scholastic performance and labor market outcomes of the child (see e.g. Rasmussen (2010), Liu and Skans (2010), Dustmann and Schönberg (2012), Dahl et al. (2013), Danzer and Lavy (2013) and Carneiro et al. (2015)). Overall, little conclusive evidence exists that increasing maternity leave generally has substantial long-term effects on children. On the other hand there is some evidence of the effect of maternity leave on children's short-term health outcomes. However, due to data limitations these studies mainly consider perinatal health or health within the first year after birth. Baker and Milligan (2008) find significant effects on the duration of breastfeeding and some evidence of beneficial effects on child health at age 7–12 months. Rossin (2011) finds that mandating that new mothers receive 12 weeks of unpaid leave with guaranteed health insurance coverage<sup>3</sup> has positive effects on child health in the form of increases in birth weight, decreases in the likelihood of a premature birth, and substantial decreases in infant mortality for children of college-educated and married mothers. Liu and Skans (2010) are able to analyze the effect on child hospitalizations within 3, 6 and 16 years after birth, but find no effects of increasing maternity leave. As concluded by Björklund and Salvanes (2011) in a recent review, the research on maternity leave and health is inconclusive. They particularly point out that the research on short-term effects on child health is scarce and that this should be the subject of further investigation.

When it comes to mothers, existing research of the effects of the length of maternity leave has focused on labor market outcomes (Dahl et al., 2013, Lalive and Zweimüller, 2009, Rasmussen, 2010), fertility and to some extent mental health (Chatterji and Markowitz, 2005, Chatterji et al., 2013, Liu and Skans, 2010). Especially for health, the results are again mixed with the former study finding no effect on maternal mental health and the two latter finding some effects on depressive symptoms, parenting stress and self-rated overall health. For maternal health, we find some evidence that mothers benefit from increasing the length of maternity leave in terms of fewer hospital admissions (both inpatient and outpatient) within one to five years after childbirth. In addition, we show that there is some heterogeneity in the responses of mothers to the increase in the length of maternity leave suggesting that if there are beneficial effects of increasing the length of maternity leave, then they are higher for low-resource families. For example, we find that for mothers with less than 10 years of education, increasing the length of maternity leave by 100 days decreases the probability of being hospitalized with a depression and receiving antidepressants within three years after birth by 8.1 and 19.7 percentage points, respectively.

In an extension of the usual type of analysis, we also analyze whether the health of the siblings of the newborn children is potentially affected by the length of maternity leave. To our knowledge none of the existing studies on maternity leave have considered potential effects on sibling health. We find that in the short run, sibling health in terms of inpatient hospital admissions is indeed positively affected by an increase in the length of maternity leave suggesting that the benefits of maternity leave are not constrained to the mother and newborn child.

The structure of the paper is as follows. The institutional settings regarding maternity leave and the specific reform we use as part of our identification strategy are described in Section 2. In Section 3, we describe our empirical approach. Section 4 describes the data used, and in Section 5 we present the estimation results. Section 6 concludes.

<sup>2</sup> Recent research suggests that births increase the time stress of the mother and to a smaller extent financial stress, see Buddelmeyer et al. (2015).

<sup>3</sup> Women were free to take the leave during their pregnancy and/or after childbirth.

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