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## EMPLOYMENT RESEARCH

## ARTICLE HIGHLIGHTS

■ School-based mental health services (SBMH) are a promising way to provide children and adolescents with mental health support, but evidence about these programs' effectiveness is limited.

■ We study a program that placed mental health clinicians in over half the schools in Hennepin County, Minnesota. The staggered timing of the roll-out allowed us to estimate the program's effects.

■ The SBMH program increased students' access to mental health services by 8 percent and decreased rates of attempted suicide by 15 percent, averting approximately 260 self-reported suicide attempts a year by 2018.

■ With a program cost of about \$117 per pupil annually, our results suggest that SBMH could be a valuable investment in child and adolescent mental health.

## School-Based Mental Health Services Can Increase Access to Care and Decrease Suicide Attempts

*Ezra Golberstein, Irina Zainullina, Aaron Sojourner, and Mark A. Sander*

Young people's mental health was suffering even before the COVID-19 pandemic. Rates of anxiety, depression, and other problems are relatively high in the United States, and suicide is the second-leading cause of death among young people. Amid concerns that the pandemic made the situation worse, there is growing interest in finding ways to provide children and adolescents with the mental health support they need (White House 2021).

Schools may be able to help, especially if they offer a way to identify and treat children who otherwise might not be able to access mental health services. School-based mental health (SBMH) services are gaining traction across the United States, but causal evidence about their effects is limited. Better evidence could inform federal, state, and local policymakers who make decisions around financing these services, as well as educational professionals who make decisions about how best to serve students.

We study an intervention that placed mental health clinicians in Minnesota schools. Our analysis focuses on the implementation of the SBMH program in K–12 public schools in Hennepin County, which includes the city of Minneapolis and its suburbs. We use administrative data and survey data on nearly 500,000 students, together with new data we collected on the implementation of the program from 2001 to 2019.

Because poor mental health in childhood and adolescence can have long-term consequences for students' health, educational, and economic well-being, we estimate the effects of SBMH on a range of outcomes: not only students' access to mental health services and their mental health

status, but also outcomes related to academic performance, disciplinary actions, and juvenile justice involvement.

After SBMH was implemented in a school, rates of mental health service use rose, suggesting that the program enabled more students to access

**By 2018, the SBMH program we study was averting approximately 260 self-reported suicide attempts a year.**

mental health support. We also find that SBMH reduced self-reported rates of suicide attempts by 15 percent. We find weaker evidence that SBMH decreased suspensions and juvenile justice involvement. We do not find effects on attendance or on academic achievement test scores, in contrast to previous research that has linked mental health services to those outcomes.

Our findings suggest that SBMH services, while not a silver bullet for all behavioral and learning outcomes, are a valuable investment in child and adolescent mental health. Policymakers and educators looking for ways to improve young people's mental health could consider investing in those services.

### The School-Based Mental Health Model

Schools often provide some mental health supports via school social workers, counselors, or psychologists, but these resources are frequently limited. However, most schools say that they lack

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**School-Based Mental Health Services Can Increase Access to Care and Decrease Suicide Attempts**

the capacity to deliver mental health services successfully to all students in need of those services.

The SBMH model that we study aims to provide a higher level of

school psychologists, and school nurses. SBMH clinicians diagnose and treat mental health problems through individual, group, and family psychotherapy. They generally do not have the authority to prescribe drugs, but may refer students to physicians for prescription drugs.

Proponents argue that mental health services in schools have several advantages: school staff can identify potential problems quickly; students can connect with services more easily than if they and their families had to navigate services in the community; and students who are uninsured or face other barriers can access treatment, improving equity in access to care.

However, evidence of the causal effects of SBMH has been limited, even as policy interest has risen sharply. Some states are appropriating direct funding for SBMH services, some are creating subsidies to increase the

SBMH workforce, and others are changing their Medicaid policies to allow for more Medicaid financing of SBMH (Anderson 2021; Hill 2021). At the federal level, recent House and Senate bills have been proposed to enhance funding for SBMH. Every single witness in Senate Finance Committee hearings on child mental health in February 2022 testified to the importance of SBMH, and the Surgeon General called for greater investment in SBMH in a 2021 advisory (U.S. Surgeon General 2021). Better evidence of the effects of SBMH is needed to inform policy choices.

**The SBMH Program in Hennepin County**

During the first two decades of the 2000s, the state of Minnesota made a series of increasing grant investments that substantially expanded SBMH, including in Hennepin County, as Figure 1 shows. Of 263 schools that operated between 2001 and 2019 in Hennepin County, which includes Minneapolis and 45 suburbs, 123 schools eventually implemented SBMH. The staggered timing of the rollout allows us to use a difference-in-differences approach to make causal estimates of the program's effects.

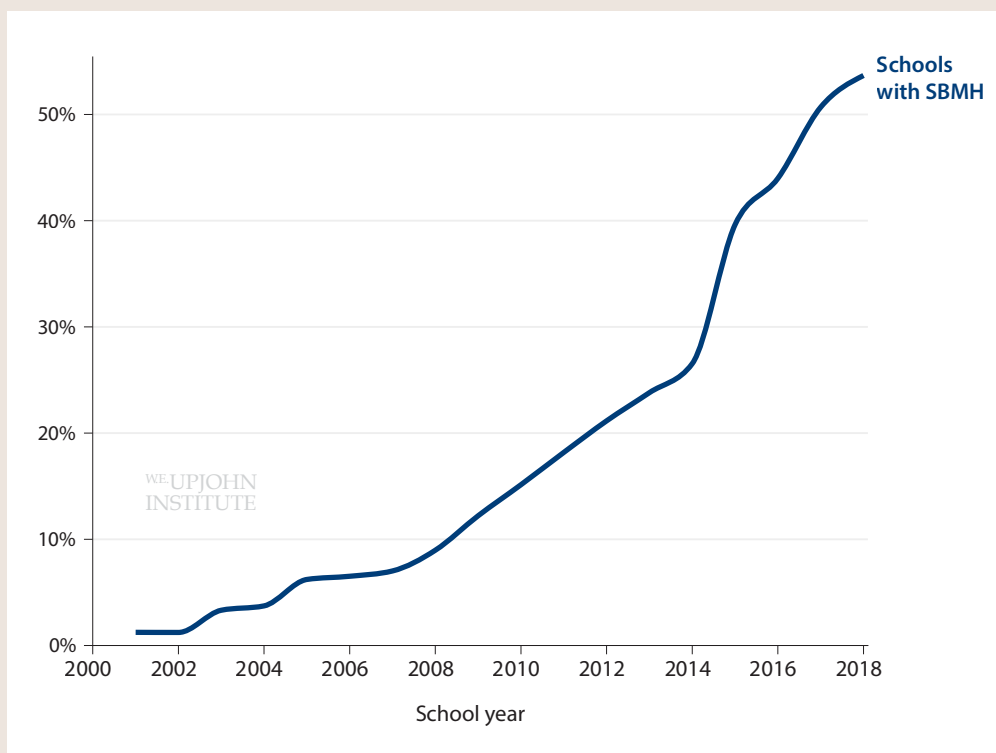
We estimate that SBMH, as implemented in Hennepin County over the study period, costs about \$100,000 per year for the typical school, or about \$117 per pupil. The typical school participating in SBMH has 0.75 full-time-equivalent clinical staff, along with some additional off-site support by the agency. We estimate that approximately 5 percent of students use services in a year if their school has SBMH.

We pulled together data from 2001 to 2019 from several sources. We had linked student-level administrative data on which schools were attended in each year, along with outcomes related to academic performance, disciplinary actions, mental health services use, and juvenile justice involvement. We

**School-based mental health is not a silver bullet for all behavioral and learning outcomes. But it can be a valuable investment in children and adolescents' well-being.**

support by placing licensed mental health clinicians directly in schools, complementing the existing capacity of school counselors and social workers. Students are referred to SBMH services by teachers, who receive training on identifying mental health problems among students, as well as by school counselors, social workers,

**Figure 1 Growth in School-Based Mental Health Implementation across Hennepin County Schools, 2001–2018**



SOURCE: Authors' original data collection.

also had seven waves of the large-scale triennial Minnesota Student Survey data with information on mental health status and substance use. We linked both those data sources with our own data on the implementation of SBMH services across Hennepin County K-12 schools from 2001 to 2019.

**Effects of SBMH on Student Outcomes**

The estimates suggest that SBMH services raised the likelihood of a student using any mental health services by 7.6 percent compared to the sample average. As Figure 2 shows, this effect represents a rise in access to 19.4 percent from a sample mean of 18.1 percent. The overall increase in use of mental health services was driven by increases in psychotherapy use rather than prescription medication use.

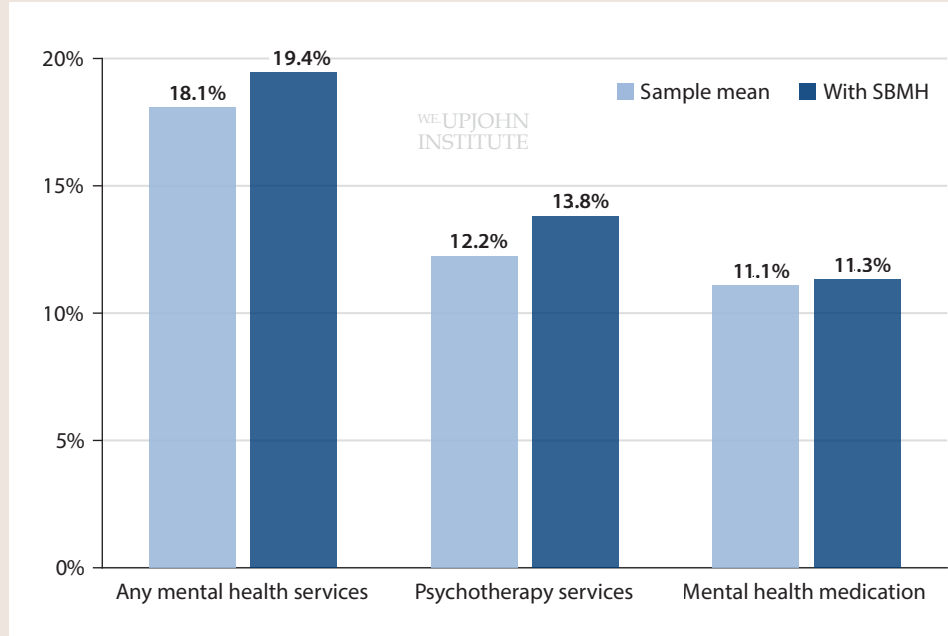
We find that SBMH reduced rates of self-reported attempted suicide by 15 percent. As Figure 3 shows, SBMH reduced the proportion of students who reported a suicide attempt in the past 12 months by nearly 1 percentage point in the first year after implementation, and rates remained fairly steady during the first five years. On average, about 3.7 percent of Hennepin County students in sixth grade and higher reported a suicide attempt in the past year. These estimates suggest that by 2018, SBMH was preventing approximately 260 suicide attempts a year.<sup>1</sup>

We find weaker evidence that SBMH services decreased suspensions and juvenile justice involvement. We do not find effects on attendance and test scores.

**Conclusions**

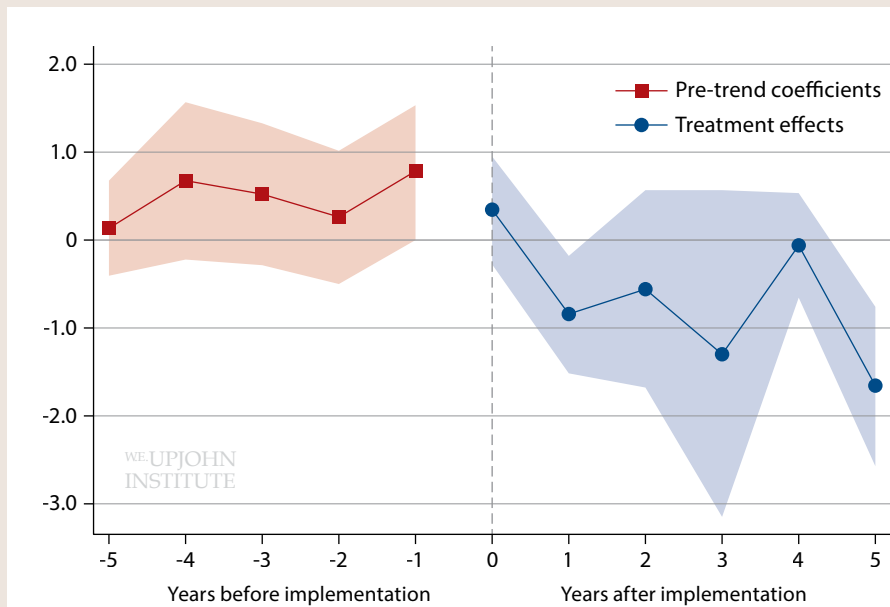
Our research provides new evidence on the impact of school-based mental health services on the well-being of children and adolescents. SBMH, as implemented in this study, increased rates of mental health services use by 7.6 percent. The program also

**Figure 2 School-Based Mental Health Increased Access to Mental Health Services**  
Predicted probabilities of access to services



NOTE: Mental health services use data from administrative data available on Medicaid-enrolled students. Results are from models with individual-level covariates (age, race/ethnicity, sex, free/reduced-price lunch status), and include grade-level by year fixed effects. Predicted probabilities are based on our estimates of the average treatment effects on the treated in the full sample. See Table 2 in the full paper for details.

**Figure 3 School-Based Mental Health Reduced Self-Reported Suicide Attempts**  
Difference in the probability of a suicide attempt between students at schools with SBMH and students at schools without SBMH (percentage points)



NOTE: Suicide attempt = having any self-reported suicide attempt during the past 12 months. Data are from Minnesota Student Surveys. Results are from an event study model with individual-level covariates (age, race/ethnicity, sex), and grade-level by year fixed effects. Significance of test of pre-intervention trends:  $p = 0.173$ . Shaded areas show 95% confidence intervals.

## School-Based Mental Health Services Can Increase Access to Care and Decrease Suicide Attempts

decreased self-reported suicide attempts—perhaps one of the most critical outcomes—by 15 percent.

The value of SBMH in a given context will likely depend on how high the need is and how accessible mental

### Policymakers and educators looking for ways to improve young people’s mental health could consider investing in school-based mental health.

health services are outside of school. Although we cannot tell from our data how many students in these particular schools need or would benefit from mental health services, recent estimates suggest that in 2021 approximately one in five U.S. adolescents had major depressive disorder and that fewer than half of adolescents who needed treatment had any mental health treatment (Flores et al. 2023). Data on patterns of mental health service use suggest that there is substantial unmet need.

As policymakers grapple with how to address the crisis of child and adolescent mental health, information on the costs and benefits of different interventions is critical. The annual cost of this SBMH program was about \$117 per student. These costs were shared by state grant funds and health insurers (to the extent children had insurance). The evidence of reductions in self-reported suicide attempts and the suggestive evidence of improvements in disciplinary behavior and juvenile justice involvement indicate the potential for important benefits. As schools continue to be an important place for identifying and treating mental health problems, additional research that further quantifies costs, benefits, and optimal size of school-based services will be valuable.

#### Note

1. Our data do not allow us to make precise estimates of the number of suicide attempts averted by SBMH. However, we can make some approximate calculations. In the 2017–2018 school year, when a little more than half of Hennepin County schools were using SBMH, there were 93,214 students enrolled in grades 6–12. Given a 3.7 percent base rate of self-reported suicide attempts, if half of Hennepin County students were at schools using SBMH, the estimates that the program reduced self-reported suicide attempts by 15 percent suggest that SBMH averted approximately 260 attempts that year.

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For more details, see the full paper: Ezra Golberstein, Irina Zainullina, Aaron Sojourner, and Mark A. Sander. 2023. “Effects of School-Based Mental Health Services on Youth Outcomes.” *Journal of Human Resources* 1222-12703R2; DOI: 10.3368/jhr.1222-12703R2. <https://jhr.uwpress.org/content/early/2023/10/02/jhr.1222-12703R2.abstract>.

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# Gender Gaps in Employment and Earnings after Job Loss

*Ria Ivandić and Anne Sophie Lassen*

Research has long established that job loss leads to lower earnings and a higher risk of unemployment. However, we know little about how recovery from a job loss differs for women and men. Many job-loss studies exclude women from the analysis or pay scant attention to gender differences. To fill this gap, we directly investigate gender gaps following job losses and disentangle the roles of child care and human capital.

More specifically, we use administrative data from Denmark to track the employment and earnings of individual workers following plant closures that triggered job losses. We compare workers who lose their job to matched control workers of the same gender. We find that both men and women face an increased risk of unemployment and substantial earnings losses after their job had been displaced. However, in the first

two years, women's unemployment risk and earnings losses are 45 percent greater than men's. Gender gaps are particularly large among parents and among workers with little formal education.

Prior to losing their job, women and men have different labor market histories and sociodemographic characteristics. We therefore estimate conditional gender gaps in which we match men and women who look similar on these characteristics. We find that the conditional gaps are smaller, but never fully close. Digging deeper, we examine which characteristics can explain the gender gaps. Education and predisplacement earnings are important drivers. Additionally, while men and women are almost equally likely to be parents, the impact of children is strikingly different. If men and women were equally affected by small children, the gender gap in

earnings would be halved, and the employment gap would shrink by one-third.

Our research points to two relevant implications. First, excluding women from analyses of job loss (or other disruptions) can lead to an incomplete picture of its economic effects. Second, the gender gap after job loss is large, and a likely mechanism is that child care responsibility prevents women's adjustment to labor market shocks.

## Background

Many workers become unemployed at some point during their lifetime, and research has shown that such job loss can lead to persistently lower earnings and higher unemployment (Jacobson, LaLonde, and Sullivan 1993)—at least for men. With more women working today than in the past, their risk of job loss has increased, yet we know little about gender differences in labor market recovery following job loss.

We address this shortcoming by investigating the effects of job loss on future labor market outcomes for both women and men. To do so, we use high-quality administrative data from Denmark that covers all employment relationships, including information matching workers to firms. We also observe background information on each individual, such as their labor market experience, education, and family characteristics. This allows us not only to estimate gender gaps following displacement, but also to attribute how much of the gender gap is associated with child-related factors and how much is connected to differences in labor market experience.

We focus on job losses from manufacturing plant closures, which reflect circumstances beyond the individual worker's control. We study men and women who were employed at a plant that closed between 1995

## ARTICLE HIGHLIGHTS

- *Job loss leads to persistently lower earnings and higher unemployment, but little is known about gender differences.*
- *Focusing on workers who lost their job due to a plant closure, we examine gender gaps and disentangle the role of child care responsibilities, experience, and education.*
- *We find that women face a 40–45 percent greater risk of unemployment and lower earnings in the first two years after job loss.*
- *The majority of the gap remains even when we compare men and women with similar labor market experience and socioeconomic characteristics.*
- *The gender gap for unemployment risk is more than twice as large when the workers have children.*
- *If these differences by presence of children did not exist, the earnings gender gap would be half as large, and the employment gender gap would be one-third smaller.*

**Gender Gaps in Employment and Earnings after Job Loss**

and 2006 and that had been employed at that plant at least one year before its closure. We compare the evolution in these displaced workers' earnings, risk of unemployment, and nonparticipation to similar workers, matched on sociodemographic characteristics, who were employed in a plant that did not close. These latter workers represent the trajectories that the displaced workers would have experienced if their plants had not closed. We compute the gender gap as the difference between displaced men and women compared to nondisplaced individuals of the same gender.

**The Gender Gap after Job Loss**

As Figure 1 shows, we find substantial gender gaps in the risk of unemployment and earnings loss following job loss (visualized as the difference between the blue and black lines). For both men and women, job loss leads to an increase in unemployment (panel a) and a reduction in earnings (panel b) for several years. Women on average experience a 14.2 percentage point increase in the probability of unemployment over the first two years, while for men this increase is smaller, 9.8 percentage points.

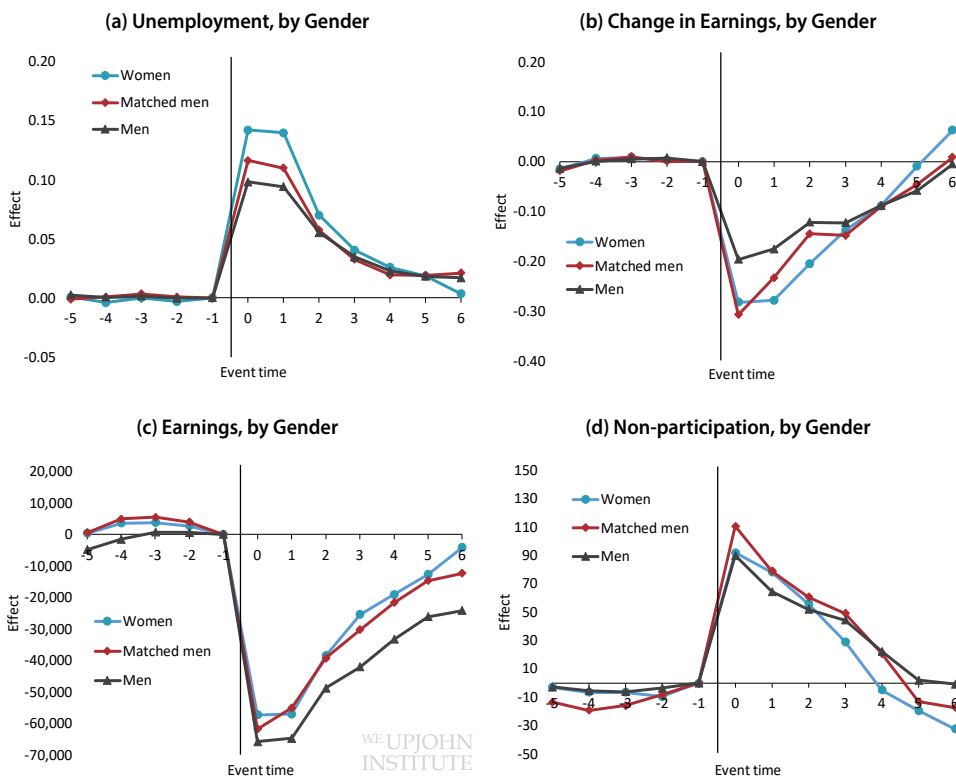
This difference amounts to a relative gender gap of 5.4 percentage points, or 45 percent (14.2 / 9.8), in the risk of unemployment. This gap shrinks over time and closes four years after job displacement.

Women also experience a larger relative loss in earnings (panel b). In the first year after job displacement, the gender gap in earnings loss is 44 percent, as men lose on average 19.6 percent of their earnings while women lose 28.2 percent of theirs. In the fourth year following displacement, the gender gap disappears. As shown in panel (d), we do not find a gender gap in labor force participation after a plant closing.

A potential source of these gender gaps could be differences in human capital, broadly defined to include education, experience, occupation, and other types of sorting in the labor market (Goldin 2014). Men and women might be different along these characteristics, which could in turn affect their labor market recovery beyond the role of gender, per se. To account for gender differences in these characteristics, we construct a new sample of men who are similar to the women along these lines. This allows us to compute the gender gap taking these factors into consideration. When we compare men and women with similar characteristics, shown as the red line in Figure 1, we find that gender gaps are smaller, but the majority of the gaps remain.

We also document which workers' characteristics correlate to worse labor market outcomes after job loss. Workers with little formal training face the most adverse labor market trajectories after job loss, with a large relative gender gap. Meanwhile, there is little or no gender gap among workers with vocational training or higher education. While women are worse off across all age groups, older women face the greatest absolute risk

**Figure 1 Following Job Displacement, Workers See a Rise in Unemployment and a Fall in Earnings, and a Gender Gap Emerges**



NOTE: Job displacement occurs between -1 and 0, marked by the vertical black line. Black triangles denote displaced men while blue circles denote displaced women, each relative to a control group of workers of the same gender who are not displaced. The red diamonds show effects for displaced men that on average have similar observable characteristics as the sample of women. The outcome in panel (a) represents the likelihood of claiming unemployment benefits for at least three months in a calendar year. The outcome in panel (b) represents the proportional change in earnings relative to the period 2-4 years before job displacement, while the outcome in panel (c) represents the change in absolute earnings (Danish krone) relative to the year before job displacement. Panel (d) reports a measure of the fraction of the year spent neither working nor registered as unemployed.

of unemployment and the biggest drop in earnings. The relative gender gaps, however, are greatest among workers between ages 35 and 50.

**The Presence of Children Helps Explain the Gender Gap**

In Figure 2 we also show that the gender gap in unemployment risk is more than twice as large when the worker has children, from 33 percent in households without children to 80 percent in households with children. Because other characteristics also might influence the gender gap, we use a decomposition technique to understand how much individual and household factors matter. Specifically, we examine the importance of human capital, such as formal education and cumulative work experience, as well as the presence of different ages of children, from preschool to primary school age to teenagers. We find that gender differences in human capital can explain one-third of the gap in unemployment and two-thirds of the gap in earnings, with differences in predisplacement earnings and education being the most important factors. However, this exercise also shows that having children increases the gender gap following the job loss, regardless of mothers’ experience, earnings, and education.

While men and women are equally likely to be parents, we show that the impact of children on unemployment and earnings after job displacement is different. The presence of children in the household especially decreases women’s earnings and increases their risk of unemployment following a job loss. Preschool children have the biggest impact on the gender gap, while the presence of teenagers does not matter much. If men and women were equally affected by the presence of young children, we find that the gender gap in earnings would be half as large, and the

gender gap in employment would be one-third smaller. In contrast, gender differences in occupations and industries do not affect the gender gap in unemployment following displacement.

**Conclusion**

Our findings suggest that women suffer greater risks of unemployment and earnings loss after job displacement than do men, creating a gender gap in their recovery. In the full paper, we discuss how certain aspects of the Danish labor market may cause these patterns to generalize and create even larger gender gaps in other settings. Our analysis also provides insight into the persistent gender inequality associated with children. When the responsibility of child care falls disproportionately on women, it

likely imposes a barrier to labor market recovery.

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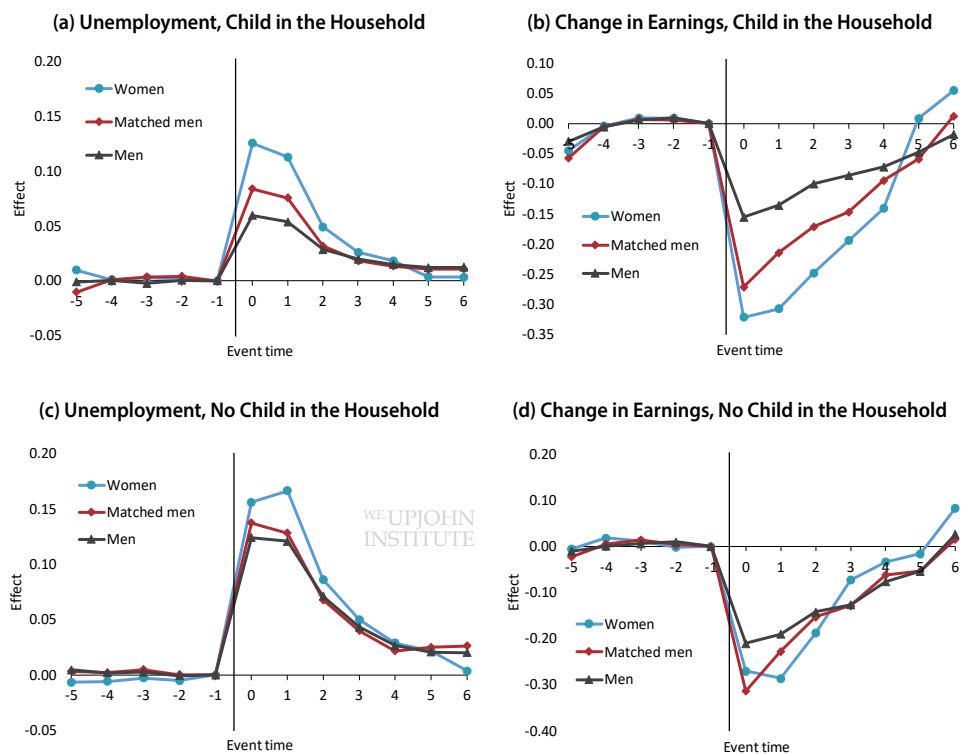
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For additional details, see the full working paper at [https://research.upjohn.org/up\\_workingpapers/387/](https://research.upjohn.org/up_workingpapers/387/).

*Ria Ivandić is a lecturer in comparative politics and quantitative methods at the University of Oxford. Anne Sophie Lassen is a postdoctoral researcher at the Copenhagen Business School. This article is based on “Gender Gaps from Labor Market Shocks,” which is forthcoming at the journal Labour Economics.*

**Figure 2 Gender Gaps Following Job Displacement Are Larger When Children Are in the Household**



NOTE: See note to Figure 1.



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