Mothers' Nonstandard Work Schedules and Children's Physical and Mental Health: Longitudinal Evidence from the United States

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Submitted to the *2026 European Population Conference* (Bologna, Italy)

Proposed Themes: *Family & Households* (Primary); *Health, Morbidity & Wellbeing* (Secondary)

1. Introduction and Objectives:

Nonstandard work schedules (i.e., evening, night, rotating, split, and irregular hours) are prevalent among millions of parents across Europe and North America (Han, Li & Gracia, 2025; Pilarz & Walther, 2025). Nonstandard work schedules often impose unsocial hours and lack of schedule control that conflict with family routines and children's daily rhythms, leading to unpredictability in ways that may undermine parental self-efficacy and resources to protect children's well-being (Presser, 2005). Previous studies have found that maternal nonstandard work is indeed associated with poorer academic and behavioural outcomes (Han & Fox, 2011; Strazdins et al., 2006; Schneider & Harknett, 2022).

To date, however, the literature on how maternal nonstandard work schedules shape child health presents some limitations. First, although there is some evidence of negative associations between nonstandard work schedules and children's overweight (Miller & Chang, 2015; Zilanawala et al., 2017), research addressing broader health outcomes is scarce. Second, while earlier research provided valuable evidence on developmental trajectories by using growth-curve or pooled models, very few studies (e.g., Han, 2008) have leveraged within-child fixed-effects approaches that compare children to themselves over time. There is therefore a need for empirical approaches that account for unobserved, time-invariant characteristics at the child and family levels to identify the causal effect of nonstandard work schedules on children's health outcomes. Third, the literature on maternal work schedules and child health has largely omitted a focus on heterogeneous effects across demographic groups, such as socioeconomic status (SES), gender and race/ethnicity. An intersectional approach is critical to understand underlying inequalities in how maternal work schedules impact children's health outcomes.

Our study contributes to the literature on maternal work and child health by using high-quality large-scale longitudinal data from the United States to examine how mothers' work schedules impact children's physical and mental health outcomes. Our study has two main aims: (1) to estimate within-child associations between maternal work schedules and children's physical and mental health, and (2) to establish how these effects differ across SES, gender and race.

2. Methodology:

We use the *National Longitudinal Survey of Youth 1979 Child and Young Adult* (NLSY79-CYA) with child-year records from 1986 to 2020. By tracking children's health from ages 5 to 14 as maternal work schedules change, our analysis sheds light on whether mothers' working arrangements have lasting effects on child health. We harmonise maternal schedules across survey years and classify them as standard schedule (reference), regular evening, regular night, irregular (rotating/split), and not employed. Our outcome variables capture variations in child physical and mental health through two scales: (1) the Physical Health Limitations Index (higher = more limiting conditions) and (2) the Behaviour Problems Index (higher = worse mental health). We first apply two-way fixed-effects (TWFE) models with clustered standard errors, and the conduct inverse probability weighting (IPW) to address selection into specific work schedules. Additionally, we interact maternal work schedules with child's gender, race, and SES background to examine heterogenous effects across population groups (in progress).

3. Preliminary Results:

We start by presenting descriptive analyses. **Figure 1** shows that, across the observation window, regular day work is the modal schedule, with not working and irregular shifts forming the next most frequent categories, while evening and night remain comparatively small. We observe a modest uptick in irregular and non-employment toward the end of the series, although the very last survey years have small number of cases and should be interpreted cautiously. **Figure 2** documents ample within-person schedule mobility, especially in the 1990s and early 2000s, providing the variation that TWFE models require. The absolute number of transition peaks in the 1990–2002 period and later declines as the panel thins. However, the share of individuals switching schedules per year hovers around a stable quarter of the observed sample for much of the series. This supports the credibility of within-child identification, even if the last years draw on relatively fewer changers.

We follow with the longitudinal models. **Table 1** presents the TWFE results with age and child fixed effects. The physical limitations models show small and not statistically significant within-child increases when mothers are on irregular shifts ($\beta = 0.014$) with null effects for the other nonstandard schedule categories, relative to standard day shifts. For behaviour problems, most schedules have a null effect with a single salient exception: regular evening is associated with a decrease of about 1.01 points (SE = 0.390, $p < .01$). However, when accounting for selection, results differ markedly. **Table 2** shows that, after adjusting for selection into work schedules through IPW, the associations between maternal nonstandard schedules and children's outcomes become much stronger. Children whose mothers work irregular hours ($\beta = 0.117$, $p < .001$) or do not work ($\beta = 0.297$, $p < .001$) show notably higher physical health limitations, with similar though smaller increases appear for evening and night shifts. Likewise, again contrary to the TWFE results, all nonstandard work categories predict worse behavioural outcomes (i.e., + 3.78 to + 8.04 points, all $p < .05$). Overall, our findings indicate that, once we are accounting for selection, nonstandard schedules and non-employment are consistently associated with poorer child physical and mental health outcomes.

4. Conclusions and Future Steps:

This study advances the debate on maternal NSWS and child well-being by (i) leveraging three decades of NLSY-CYA to examine both physical and mental health outcomes; (ii) prioritizing within-child designs; and (iii) showing the important of accounting for selection into parental work schedules to estimate how nonstandard work impacts child health across population groups. Our preliminary findings showcase the persistent and long-term impact of maternal NSWS on child health, carrying critical implications for how parental work might serve as an important social determinant of intergenerational health disparities. Our study indicates that, accounting for selection into transitions, which is rarely adopted in this literature, provides robust estimates of how maternal non-standard work schedules affect children's health outcomes. Future steps will include (1) analyses stratified by child's gender, race and SES background, and (2) mediation models to disentangle explanatory mechanisms.

5. References:

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Figure 1

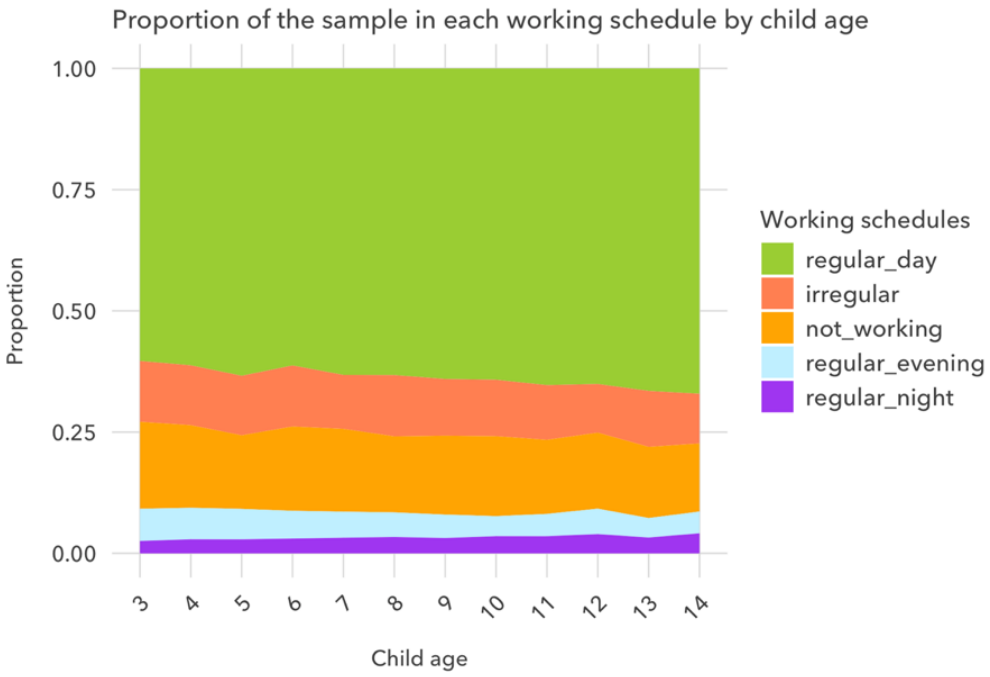

Figure 2

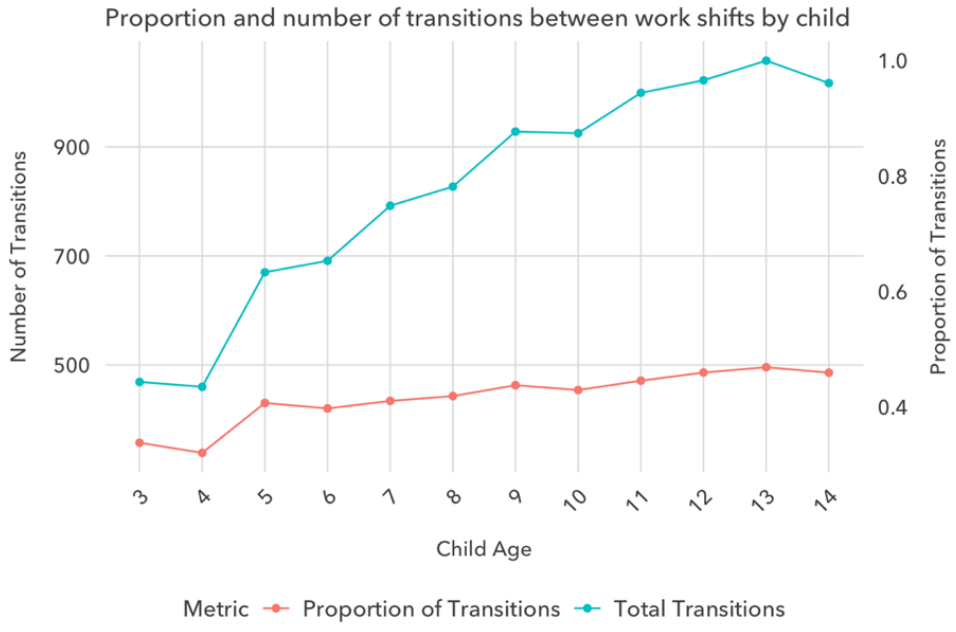

Table 1. Two-Way Fixed-Effects (TWFE) Models

	Physical Health Limitation Index	Behavioural Problems Index
Irregular Shift	0.014	-0.058
	(0.013)	(0.266)
Not Working	-0.013	0.369
	(0.011)	(0.243)
Regular Evening	-0.005	-1.012**
	(0.017)	(0.390)
Regular Night	-0.011	-0.517
	(0.024)	(0.539)
Number of Observations	30919	23609
Standard Errors	Child level	Child level
Fixed Effect: Child ID	Yes	Yes
Fixed Effect: Child Age	Yes	Yes

Note: *p < 0.05, ** p < 0.01, *** p < 0.001. Reference category is regular day shift. Standard errors (in parentheses) are clustered at the level of the mother.

Table 2. Two-Way Fixed-Effects (TWFE) with Inverse Probability Weighting (IPW)

	Physical Health Limitation Index	Behavioural Problems Index
Irregular Shift	0.117***	3.782***
	(0.014)	(0.291)
Not Working	0.297***	8.045***
	(0.011)	(0.216)
Regular Evening	0.083***	2.666***
	(0.022)	(0.457)
Regular Night	0.104***	1.078
	(0.028)	(0.580)
Number of Observations	21963	18665

Note: *p < 0.05, ** p < 0.01, *** p < 0.001. Ref category is regular day shift. We construct the weights based on a set of observed confounders related to family sociodemographic characteristics, maternal employment, and child characteristics, to balance treated and control observations on pre-treatment covariates. Standard errors (in parentheses) are clustered at the level of the mother.