

# Short-run effects of parental job loss on child health\*

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## Abstract

Recent research suggests that parental job loss has negative effects on children's outcomes, including their academic achievement and long-run educational and labor market outcomes. In this paper we turn our attention to the effects of parental job loss on children's health. We combine health data from 16 waves of the Medical Expenditure Panel Survey, which allows us to use a fixed effects specification and still have a large sample of parental job displacements. We find no evidence that children experience negative physical health effects of parental job displacement in the short run. Instead, we find that displacement is associated with statistically significant reductions in the incidence of otitis (ear infections) and infectious illnesses as well as reductions in diagnostic doctor visits and prescription drug utilization. These effects are stronger following maternal job displacement and are concentrated among children aged 0 to 4, which suggests that they may be driven by reductions in the use of out-of-home childcare. We do find evidence of negative mental health effects of displacement for some groups.

*JEL Codes:* I12, J13, J63, J65.

*Keywords:* Child health, Job loss, Displacement, Unemployment

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## 1 Introduction

During the Great Recession, millions of American workers lost jobs as firms restructured, relocated, downsized, and closed in response to changing demand conditions. From January 2007 through December 2009—a period encompassing the official beginning and end of the recession—nearly one in six US workers experienced job displacement (Farber, 2011). Not only was the rate of job loss significantly higher during this period than during previous postwar recessions, the rate of reemployment was lower and the average duration of unemployment was longer. The severity of the recent economic downturn has generated renewed interest among researchers in the consequences of job displacement for workers and their families.

Though a substantial literature documents the effects of displacement on outcomes such as earnings, employment, health, and fertility for displaced workers, less is known about the consequences of displacement for another group of potential victims—the children of displaced workers. Given that job displacement causes changes in family income, parental time use, and the physical and mental wellbeing of parents, it is likely to alter family dynamics and affect parental investments in children. Recent studies of the effects of job displacement on children’s academic and labor market outcomes suggest that this is the case, finding that parental job loss is associated with increased likelihood of grade repetition, worse performance on standardized tests, and reduced educational attainment and earnings in the long run (Ananat et al., 2011; Oreopolous et al., 2008; Stevens and Schaller, 2009).

In this paper, we turn our attention to the effects of parental job loss on children’s health. While previous work has shown that job loss is associated with increased mortality and worse physical and mental health among adults (see, e.g. Browning and Heinesen, 2012; Schaller and Stevens, 2014; Sullivan and von Wachter, 2009), research on the effects of displacement on children’s health is limited. Child health is an important outcome because it is both an indicator of current welfare and a predictor of future outcomes including adult health, educational attainment and earnings, and thus a potential mechanism for the intergenerational

transmission of economic shocks (Currie, 2009).

As parental job loss is likely to affect a number of important inputs to child health, including income, parental time use, and the quality of parental care, the predicted effects are unclear a priori. On one hand, a negative income shock may lead to reductions in medical care utilization and other health investments. On the other hand, an unanticipated period of unemployment may allow parents to take their children to the doctor more often or cause them to substitute parental care for market-based childcare, which may lead to changes in the quality of care and reduce exposure to contagious illness. Along these lines, the medical literature documents a correlation between daycare attendance and infectious illness (see, for example, Beijers et al., 2011; Bradley, 2003; Hardy and Fowler, 1993) and previous research in economics has produced evidence of deleterious effects of maternal employment on child health (Gennetian et al., 2010; Ruhm, 2000; Morrill, 2011). Other mechanisms are also possible. For example, a number of studies have found negative effects of job displacement on outcomes related to adult mental health (for example, Brand et al., 2008; Browning and Heinesen, 2012; Schaller and Stevens, 2014), which might have direct or indirect effects on children’s health. Additionally, changes in insurance status or the source of insurance coverage may alter the cost and availability of medical care.

In this study, we exploit unique data from the Medical Expenditure Panel Survey (MEPS) that allow us to examine the reduced-form effects of parental job displacement on several different measures of child health and to investigate the potential mechanisms behind these effects. The MEPS is a large-scale representative survey that collects detailed information on health outcomes, health insurance coverage, and health care utilization for families over a two-year period. To study the causal effects of parental job loss on children’s health, we use a large sample of children with displaced parents by combining data from 16 waves of the MEPS covering the period from 1996 through 2012. To limit the effects of endogenous selection and omitted variables bias, we focus on job losses that are plausibly exogenous, including only layoffs, job endings, and business closures, and include child fixed effects in

our main specification so that our estimates are identified by changes in health status after displacement for a given child rather than comparisons between the children of displaced workers and children of continually employed workers.

We find that children do not experience negative physical health effects from parental job displacement in the short run and, in fact, even experience *improvements* in some health measures immediately following parental job loss. In our full sample, we find no significant effects of job loss on children's reported general health or mental health status or on the incidence of events related to bronchitis, asthma, trauma, or mental disorders. Additionally, we find that displacement is associated with statistically significant *reductions* in the incidence of otitis (ear infections), and infectious illnesses.

The finding that parental displacement results in improvements in some health measures in the short run is perhaps surprising in light of existing literature showing that job loss is detrimental to adult health and has negative effects on other child outcomes, including academic achievement and future earnings. Additional analysis exploiting the detailed health information available in the MEPS provides insight into the mechanisms behind this finding. We find that the reductions in infections are stronger following maternal displacements and are concentrated among children aged zero to four. Moreover, for young children, the reductions in infections are accompanied by reductions in the likelihood of visiting a doctor for diagnostic purposes and reductions in prescription drug use. We posit that these results are consistent with a story in which young children are less likely to be placed in out-of-home childcare and thus less likely to be exposed to contagious illness following maternal displacement.

We separately investigate the role of changes in insurance coverage and stress in mediating the effects of parental job loss on child health. We find that increases in public insurance coverage for children largely counteract the loss of employer-provided insurance following displacement so that the overall change in coverage is small. Not surprisingly, given the minimal changes in insurance coverage, we find no significant effects on the use of routine

medical care. This suggests that our results are not a mechanical result of reduced utilization of care resulting in a lower likelihood of diagnosis. Turning to the stress mechanism, we do find suggestive evidence that paternal job loss and job loss due to business closure may have harmful effects on child mental health. We see especially-strong mental health effects of parental displacement following the displacement of a father that had at least three years of job tenure—a group for which the stress effects of job loss might be expected to be especially large. We also see significant increases in the incidence of mental disorders among black children and the children of less-educated parents.

Taken as a whole, the results from our paper suggest that, in the short-run, changes in parental time use may be more important than income shocks, changes in insurance status, and stress in determining children’s physical health status following job displacement. In fact, it appears that young children experience improvements in health, possibly resulting from less exposure to contagious illness, when a parent experiences a spell of joblessness. Our results also suggest that public insurance programs such as Medicaid and SCHIP work as a safety net for children, as we find very small changes in the likelihood of being covered by health insurance following displacement. Finally, our finding that parental job loss may be harmful to mental health for some groups of children provides some insight into why parental job loss has been found to have negative effects on children’s academic achievement and long-run outcomes.

The remainder of the paper is structured as follows. In Section 2, we discuss the theoretical background and possible mechanisms by which parental job loss might affect children’s health outcomes. This is followed by a review of related literature in Section 3. We discuss our data and methods in Sections 4 and 5, respectively, and present our main results in Section 6. Section 7 includes a series of robustness checks and extensions. Finally, we discuss our findings and next steps in Section 8.

## 2 Theoretical background

In the standard model of child health production in economics (Grossman, 2000; Currie, 2009), parents are assumed to maximize an inter-temporal utility function whose arguments in each period are the stock of child health, the consumption of other commodities, and leisure. The health stock in any given period is a function of the health stock of the previous period, its depreciation rate, and the health investments made in the previous period. The health production function depends on both exogenous productivity shifters and permanent individual productivity shifters. Finally, the investment inputs in this production function include material inputs (including health care) and parental time inputs.

Within this framework, there are a few ways in which parental job loss can affect a child's health stock. First, job loss implies an immediate decrease in current family income, and usually also a decrease in permanent family income. This reduction in income can affect consumption and health investments, such as nutritious food, preventive health care, and the practice of physical exercise.

Second, the loss of a job can cause the loss of employer-provided health insurance for the worker and his/her dependents. This will affect both the price and the quality of health care. Loss of insurance coverage can lead to reduced use of health care, especially related to preventive care, treatment of chronic conditions, and purchase of prescription drugs, and may result in higher use of emergency room visits. However for children, the effects of job loss on health insurance coverage will be mediated by the availability of the other parents' employer provided health insurance, as well as the availability and take-up of public health insurance programs such as Medicaid and the State Children's Health Insurance Program (SCHIP). It could be the case that a child was enrolled in public insurance to begin with, or that upon losing private insurance coverage for their child, the family substitutes toward public coverage. Even if job loss does not imply a loss of coverage but a change towards a different source of coverage, it might still imply a change in the price of coverage and of specific health inputs, such as preventive care, or a change in the quality of health care. For

example, Medicaid's low out-of-pocket prices may imply that the transition from employer-provided to Medicaid insurance could actually increase the use of health care (Banthin and Selden, 2003). On the other hand, it could reduce the quality of health care, as some physicians refuse to accept Medicaid patients.

Third, job loss may change the availability of parental time and its allocation towards child health production. A parent who lost their job may spend more time caring for the child, increasing non-market time inputs to health production, which may also increase the amount of health care received by the child (doctor visits, for example). Additionally, increased availability of parental time, combined with a reduced income, may cause young children to spend less time in a daycare center or preschool, which may reduce their exposure to illness. If this is the case, the treatment effects of parental displacement might be different for younger children as opposed to school-age children. We might also expect the effects of job loss on the amount of parental time invested in child health to differ depending on the gender of the displaced parent, as mothers are more likely to take on home-production and caregiving roles, both outside of work and during periods of joblessness (Kalil and Ziolo-Guest, 2008).

A final avenue by which parental job loss might affect child health is increased parental stress caused by job loss and the associated income shock. Parental stress might affect child health directly by causing children to experience more stress themselves or it might affect the quality of care that children receive. This mechanism is often cited as a reason for the observed negative effects of parental job displacement on children's academic outcomes. Again, we might expect these effects to differ depending on whether the mother or the father is displaced. Research in psychology and sociology suggests that the stress effects of job loss may be greater when fathers experience involuntary displacement than when mothers are displaced (see Kalil and Ziolo-Guest, 2008 for a discussion of this literature). The stress mechanism may also be stronger in families for whom displacement is an especially large or sudden shock, and for disadvantaged families who have fewer resources to help them absorb

the shock.

Together, the many potential mechanisms by which parental job displacement might affect children’s health make it unclear whether we should expect job loss to lead to improvement or deterioration in child health. This theoretical ambiguity makes it especially important to examine multiple outcomes from a single data source including insurance coverage, health care utilization, and a variety of health measures. This discussion also highlights the importance of exploring potential differences in the health effects of displacement by child age and the gender of the displaced parent, as well as by family background characteristics.

### 3 Related Literature

The literature on job displacement has only recently started to look at the consequences on children. Previous papers discuss the effects of parental job displacements on children’s future earnings, finding different results for different countries and samples.<sup>1</sup> Some papers have looked at how parental job displacement affects educational outcomes of children, finding that it increases the likelihood of grade repetition (Stevens and Schaller, 2011; Kalil and Ziol-Guest, 2008), worsens school performance (Ananat et al., 2011; Rege et al., 2011), and reduces the likelihood of enrolling in post-secondary education (Coelli, 2011).

So far, the only paper that has looked at the effects of parental job loss on child health in the US is Lindo (2011). Using data from the Panel Survey of Income Dynamics (PSID), Lindo exploits the timing of job loss to look at the effects on the birth-weight of siblings born before and after the job loss, using mother fixed effects. The results indicate that job displacement of the husband reduces the birth-weight of subsequent children by 4.5%. Other papers have looked at child health effects of job displacements in other countries. Liu and Zhao (2011) look at job displacement in the context of mass layoffs from publicly owned

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<sup>1</sup>Oreopoulos et al. (2008) show that fathers’ job displacement has a large negative effect on children’s young adult earnings, using data for Canada. Page et al. (2009) only find significant effects for children that initially come from low income households in the U.S., but their sample is small. Bratberg et al. (2008) use administrative data from Norway, a country with a much lower intergenerational correlation of earnings, and find that job displacement reduces future earnings of the worker but not of their children.



firms in China following the reforms initiated in the 1990s. They find that the father's job loss has a large negative impact on height and weight of children, whereas they don't find evidence of an effect of mother's job loss. A recent working paper by Mork et al. (2013) looks at the effect of parental unemployment on child health outcomes using administrative data from Sweden. They find that children with unemployed parents are 1 percent more likely to be hospitalized in the same year as the job loss, and 5 percent more likely in the long run. However, due to data limitations they are not able to separately identify the effects of plausibly exogenous job displacement from all causes of job loss.

The evidence on the effects of job displacement on adult health is more abundant. Our paper is closest in methods to Schaller and Stevens (2014). Using data from the MEPS, they look at the effect of involuntary job loss (due to layoff or business sold or closed) on a worker's health outcomes in the short-run. They find that job loss increases the likelihood of fair or poor self-reported health and has a negative impact on self-reported mental health in the first two years following displacement. However, they find no effects on the likelihood of reporting a number of specific chronic health conditions, including arthritis, diabetes, high cholesterol, and hypertension. Other papers that look at job displacement and adult health have found significant effects on adult mortality, suicide risk, cardiovascular health, risky behaviors such as alcohol abuse and smoking, traffic accidents and mental illness (Sullivan and Von Wachter, 2009; Deb et al., 2011; Classen and Dunn, 2012; Browning and Heinesen, 2012; Black et al., 2012).

A second strand of literature related to this paper is that on the stability of health insurance coverage and the effects of unemployment on access to health care. The loss of insurance coverage following displacement could potentially lead directly to changes in health status if it causes individuals to reduce their utilization of medical care. Among adults, Gruber and Madrian (1997) find that job separations (including both layoffs and quits) have a large impact on the probability of having any insurance. Schaller and Stevens (2014) also find significant effects of involuntary job loss on insurance coverage in their study

of adults in the MEPS: a 10 percentage point reduction in insurance coverage following job loss among the full adult sample, and a 26 percentage point reduction in coverage among workers that were insured through their employer prior to displacement. They also find negative effects on health care utilization among workers who were insured through their employer prior to displacement.

For children, the effects of job loss on health insurance coverage are likely to be smaller than those for adults. While a majority of both adults and children are insured through an employer-provided policy,<sup>2</sup> there have been large expansions in the eligibility of children for public health insurance. Publicly provided child health insurance has the potential to insulate children from the consequences of job instability. Cawley and Simon (2005) and Cawley et al. (2013) study the effects of state unemployment rates on health insurance coverage for both adults and children, and find that an increase in the unemployment rate significantly decreases the probability of being insured for men, but not for women and children, who they argue are relatively insulated from these fluctuations due to public insurance policies. To our knowledge, the only paper that looks at the effects of parental job loss on child health insurance coverage is that of Fairbrother et al. (2010), which finds large increases in children’s likelihood of becoming uninsured in the three months after parental displacement. However, the authors categorize any job separation as a job loss, and they do not control for unobserved characteristics that may be correlated with both a job separation and loss of insurance.

Finally, as job displacement constitutes an arguably exogenous shock to both employment and income, studying its effects on child health can provide insight into the nature of the causal effects of parental employment and family income on child health. With regard to employment status, existing research has documented negative effects of maternal employment on child health outcomes (see, for example, Gennetian et al., 2010; Ruhm, 2000; Morrill, 2011), though none have used job displacement as a source of identifying variation.

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<sup>2</sup>In our sample, 62% of children whose parents were employed in the first round of the panel had an employer-provided health insurance.

With regard to income, though there is well documented evidence of a positive cross-sectional correlation between family income and child health (Currie, 2009 provides a review of these studies), it has proven difficult to identify causal effects. It could be that unobserved characteristics of the parents or the environment in which the child is raised are correlated with both family income and child health. So far, the few papers that do try to establish the causal effect of income on child health only look at health at birth.<sup>3</sup>

In our paper we are able to build on the existing literature by using a dataset that allows us to (i) identify plausibly exogenous sources of job separation, (ii) link parents to their children and follow them over several survey waves, and (iii) obtain information on health insurance coverage, health care utilization, health expenditures, and health outcomes from the same source. Though we cannot isolate each of the potential mechanisms driving the relationship between job displacement and health, we are able to provide suggestive evidence in support of some mechanisms (changes in time use resulting in reduced exposure to illness at daycare, stress) while showing that other mechanisms (negative income shocks, changes in insurance status) are unlikely to be driving short-run changes in child health following displacement.

## 4 Data

We use data from the Medical Expenditure Panel Survey (MEPS), maintained by the Agency for Healthcare Research and Quality (AHRQ). Since 1996, each year the MEPS selects a new nationally representative subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. In each new panel the respondents are interviewed in five rounds spanning two

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<sup>3</sup>Conley and Bennett (2000, 2001) use mother fixed effects and find that income at time of birth does not have a significant effect on birth-weight in general, but they do find effects for children whose mothers had low birth-weight themselves. A caveat of these papers is that the data they use from the PSID has a relatively small sample. Hoynes et al. (2013) exploit variations caused by tax reforms in the generosity of the federal Earned Income Tax Credit (EITC) as a source of exogenous variations in family income. They find that an increase in the EITC income increases the mean birth-weight and reduces the incidence of low birth-weight. They also find that it increases the use of prenatal care and reduces smoking by pregnant women.

full calendar years. Round length varies across rounds and across households - in our sample, reference periods are between three and five months, with an average duration of 4.2 months. This survey provides information on health care use, expenditures, sources of payment, and health insurance coverage, as well as reported health status, demographic and socioeconomic characteristics, employment, access to care, and satisfaction with health care. The information provided by the household respondents is complemented with information collected from a sample of medical providers, which is primarily used by the MEPS as an imputation source to supplement or replace household reported information on visits, diagnosis, and expenditures. Our sample includes 16 waves of the MEPS, covering the period 1996-2012. We limit our sample to children who were 0 to 16 years old and had at least one parent employed at the time of the first interview (round) of the survey.<sup>4</sup>

The MEPS is ideally suited for this analysis for several reasons. First, it provides rich information on child health that includes parent-reported health status, health conditions, and health care and prescription drug utilization. This provides a broad picture of health while also allowing us to isolate changes in specific health conditions that are especially common and/or costly among children.<sup>5</sup> Second, it allows us to examine potential mechanisms using the same dataset, such as insurance coverage, health care utilization, and expenditures. Finally, by combining many short panels it provides a relatively large sample of children with displaced parents, which is unusual in studies of displacement that rely on survey data.

Our indicator for job displacement is based on whether a parent reports having changed their job since the last round of interviews due to one of the following reasons: job ended; business dissolved or sold; and laid off. In our sample there are 54,791 children, and 7,900

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<sup>4</sup>Because the panel is already very short, we trimmed 6.4% of the children in the sample because they did not have data for all five rounds of the survey. Another 4.4% of children were dropped from the sample because they had missing data on parental education, mother's marital status, or health outcomes. Finally, 9% of children did not have either parent employed in the first round of the survey, and are therefore not part of our main sample.

<sup>5</sup>Our choice of specific health conditions to include in our analysis is motivated in part by a statistical brief from the AHRQ (Soni, 2008) that ranks children's conditions in terms of total medical expenditures. According to this brief, the five most expensive conditions for children aged 0-17 in 2006 in terms of total expenditures were mental disorders, asthma, trauma-related disorders, acute bronchitis, and infectious diseases.

of them had at least one parent who lost their job after the first round of the survey.<sup>6</sup>

The outcome variables that we examine can be divided into the following categories:

- (i) *Health outcomes*: These include the following: *Reported health*: Respondents are asked to rate the health and mental health status of each child in the family according to the following categories: excellent, very good, good, fair, and poor. We create indicators for whether a child's health and mental health were reported to be fair or poor, and indicators for whether a child's health and mental health were reported to be excellent. *Health conditions*: Medical conditions are reported by respondents when there is an event related to this condition, such as a doctor visit, hospital stay, disability day, or prescription drug purchase. Conditions are reported verbatim by the interviewer and then coded to ICD-9-CM codes. We use these codes to identify the following specific conditions: otitis, bronchitis, a combination of infectious diseases, asthma and other respiratory conditions, trauma-related conditions, and mental health conditions.
- (ii) *Insurance status*: We look at whether the child is covered by any insurance, private insurance or public insurance. We also look at whether the child spent at least one month without insurance coverage in the current round.
- (iii) *Health care and prescription drug utilization and expenditures*: These include whether the child visited a doctor by place (office-based, outpatient, emergency room, and inpatient) and type of visit (checkup, diagnostic, psychotherapy, emergency). We also create indicators for the use of any prescription drug and the use of specific categories of drugs including antibiotics, asthma medications, and drugs for attention deficit disorder (ADD) or depression.

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<sup>6</sup>Although the three causes for job loss considered are clearly involuntary, it is possible that layoffs and jobs that end are correlated with unobservable individual or family shocks that are also related to child health. We also create a narrower definition of job displacement that only includes job losses due to the business being sold or closed and investigate the robustness of our findings to the use of this alternative definition. However this restriction results in a substantial decrease in the number of displacements that we observe (1,739). It is also difficult to interpret these results in light of possible heterogeneous treatment effects, as the baseline characteristics of individuals displaced in business closure events are quite different from those of the full sample of displaced workers.

Before proceeding, we emphasize that, as in most of the existing literature, our measures of child health are reported by household survey respondents. As such, it is possible that changes in these measures may result from changes in respondent awareness or perception of a child's health status rather than changes in the child's actual health. Moreover, because a medical condition is identified in the data when a health event related to the condition occurs, changes in the incidence of health conditions may be related to changes in the consumption of health care. We interpret our findings with these caveats in mind. We also explore the potential for changes in the frequency of medical care to influence reporting directly by looking for changes in the use of routine care after displacement.

Table 1 presents summary statistics by parental displacement status for all children in the sample, estimated in the first round of each panel. The first column includes variable means for children with at least one parent employed in round 1 who did not experience a parental displacement during the two year panel. The second column includes means for children who had at least one parent employed in round 1 and who experienced a parental displacement at some point after the first round of the survey. The third and fourth columns separate children whose mothers experienced a job displacement from children whose fathers were displaced. Like many other researchers studying job displacement, we find differences in observable characteristics between groups experiencing job loss and groups that do not experience job loss. On average, the children of displaced workers are slightly younger, are more likely to be either black or Hispanic, and are less likely to have parents with a college education than children whose parents were never displaced. Children of displaced parents are also less likely to have private insurance coverage, more likely to have public insurance, and more likely to have experienced a spell of unemployment, even prior to the displacement, than the children of continually employed workers. Despite these differences, however, there are not large differences in health status between the two groups. Comparing the children of displaced mothers with the children of displaced fathers, we see that children whose mothers are displaced are older, more likely to be black, less likely to have a parent with a

college education, and more likely to have public insurance coverage. These differences are not surprising; inclusion in this particular sample is contingent on maternal employment. The children of displaced mothers also seem to be in worse physical and mental health on average, which may reflect either selection into the “at risk” sample or negative causal effects of maternal employment (or both).

## 5 Empirical Approach

We estimate a series of fixed-effects models, each with a different health-related dependent variable. Our main regression equation is as follows:

$$Y_{it} = \alpha_i + \beta D_{it} + \gamma X_{it} + \delta_t + \varepsilon_{it} \quad (1)$$

where  $Y_{it}$  is the outcome variable for child  $i$  in round  $t$ ,  $\alpha_i$  is a child-specific fixed effect,  $D_{it}$  is an indicator for post-parental displacement periods,  $X_{it}$  is a vector of time-varying control variables, and  $\delta_t$  is a set of round dummies. Child fixed effects are included to account for permanent characteristics of children and families that may be related both with child health and the likelihood of parental displacement. The time-varying controls include dummies for child age and the calendar year in which the interview took place, month of interview dummies to control for seasonality in both health outcomes and the likelihood of parental displacement. We also control for the length of the round in days, which varies across individuals even within the same panel and round due to variation in interview dates across households. Observations are weighted by MEPS individual sample weights.<sup>7</sup> To

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<sup>7</sup>Following Solon et al. (2014), we have also conducted our analysis without using sample weights. Though there are some differences between the results from the unweighted analysis and our main results, the discrepancies between the two sets of results are consistent with the known oversampling of minority groups in the MEPS and the heterogeneity in treatment effects that we observe between groups. Specifically, we find smaller negative effects of parental displacement on the incidence of infectious disease and we see significant increases in mental disorders following displacement in the unweighted analysis—a pattern that is consistent with the treatment effects that we observe for blacks and less-educated parents in our main analysis. Meanwhile, the estimated treatment effects for whites and the children of college-educated parents in the unweighted analysis are almost identical to the treatment effects we observe in the weighted analysis. Unweighted results are available from the authors upon request.

adjust for correlations across children within families and correlation within families over time the standard errors are clustered at the household level.

We first estimate each model for the full sample, then separately by the gender of the displaced parent. As both the likelihood of removing a child from market-based childcare during a period of joblessness and the stress effects of displacement are likely to vary depending on the gender of the displaced parent, our results may differ depending on whether it is the child’s mother or father that is displaced.

We also estimate each model separately by age of child (0 to 4 versus 5 to 18). As discussed in Section 2, there is reason to believe that the health effects of displacement should be different for young children than for school-aged children. In particular, parents with young children may substitute home care for out-of-home childcare or preschool during periods of joblessness, while older children will be in school regardless of parental employment status. Thus if the observed reduction in infections following parental displacement is due to changes in childcare arrangements, we should only see this effect for the younger age group. Summary statistics (in Appendix Table 1) show that there are also differences in the frequencies of different ailments and the use of healthcare by the age of the child. For example, young children are more likely to have otitis (ear infections) and other infectious diseases and they visit the doctor more often than school-aged children. Meanwhile, they are less likely to be reported to have mental disorders and do not take prescription drugs for ADD or depression, as these drugs are not recommended for young children.

In addition to these main specifications, we estimate models in which we limit our sample to parents with at least three years of job tenure prior to displacement—a group for which the effects of displacement may be more severe or unexpected. In Section 7, we also conduct a number of robustness checks and extensions, including specifications with health-specific time trends and specifications in which we limit the definition of job loss to include only displacements resulting from firm closures. Finally, we explore heterogeneity in the response of child health to parental job loss by race/ethnicity, parental educational attainment, and



child gender, and test whether the effects of parental displacement vary depending on local labor market conditions.

## 6 Results

We begin by estimating the effects of parental job displacement on child health outcomes. The first row of Table 2 includes regression coefficients on parental displacement for the full sample. These estimates suggest that parental job loss has no significant effects on reported general health and mental health status, or on the incidence of events related to bronchitis, asthma, trauma, or mental disorders for the full sample. However, we do see reductions in the incidence of otitis and infectious diseases following displacement. The coefficients suggest that parental displacement results in a -0.008 percentage-point reduction in the likelihood of events related to otitis (a 10.8 percent decline relative to the baseline incidence of 7.4 percent) and a -0.017 percentage-point reduction in the likelihood of events related to infectious disease (a 4.5 percent decline).

The coefficients for the full sample provide no evidence that parental job displacement results in worse health or mental health for children in the short run. Instead, they suggest that job loss results in *improved* health outcomes through a reduction in the incidence of infectious illness. As discussed above, one possible explanation for this finding is that displaced parents are removing their children from market-based childcare and preschool programs and choosing to provide in-home care instead. If this is the case, then we should see stronger effects for young children, who are not required to be in school during the day. We also might see stronger effects for maternal job loss, if women are more likely than men to care for their children when they are unemployed. The remaining rows of Table 2 display coefficients for mother's job loss and father's job loss and for young children (aged 0 to 4) and older children (aged 5 to 18) separately. These results are consistent with the story that reduction in the use of daycare or preschool reduces exposure to contagious illness. In particular, we only see significant effects of maternal displacement on otitis and infectious

diseases and we see that these effects are concentrated among the youngest age group. When we split the sample by age, a large significant negative effect of parental displacement on the incidence of asthma also emerges for the youngest age group.

To further investigate the mechanisms behind the observed health effects, we next explore the effects of parental job loss on health insurance coverage and healthcare utilization in Table 3. If parents forego treatment for the conditions in question as a result of a lack of insurance coverage or a change in the source of coverage, these results have potentially important implications for the interpretation of our main results. While we believe that the acute nature of most infectious diseases makes it is unlikely that parents would not seek treatment for these conditions even in the absence of health insurance, we acknowledge the possibility that the observed reduction in the incidence of events related to infectious diseases may reflect reductions in the likelihood of diagnosis and treatment. If reduced diagnosis masks increase incidence of illness for other health conditions as well, it could also result in our finding of no effects on general reported health and the other health conditions. If we find significant decreases in health insurance coverage and routine healthcare use following displacement, then we have reason to be concerned about this issue.

The effects of parental job loss on children's health insurance status are shown in the top panel of Table 4. They suggest that parental job loss results in an increase in the likelihood of experiencing an uninsurance spell of at least a month during the survey round of 4 percentage points, or 21.7 percent. However, the effects on insurance coverage at the time of the interview are relatively small; while parental job loss does result in a significant decline in private insurance coverage (around 14.4 percent for the full sample), this effect is largely counteracted by a substantial increase (12.4 percent) in the likelihood of public coverage, so that the likelihood of having insurance coverage from any source following displacement is reduced by only four percent. The results also show that children are more likely to experience spells of uninsurance, lose private insurance, and gain public insurance coverage following a father's job loss and that older children are more likely to lose private coverage

and less likely to gain public coverage than younger children. However, even for these groups, the effects on insurance coverage are substantially smaller than the effects found by Schaller and Stevens (2014), who use the MEPS to study the effects of job displacement on adult health outcomes, insurance, and utilization.<sup>8</sup>

In the bottom panel of Table 3 we explore whether parental job loss results in changes in children’s medical care utilization. We acknowledge that these changes in utilization may be driven simultaneously by changes in family income, changes in insurance status and source of coverage, and changes in health status, and interpret our findings with caution. First, we find no significant effects of parental displacement on the likelihood of receiving a checkup or well-child visit during the survey round, for any subgroup. Thus, it appears that family income shocks and changes in insurance coverage do not substantially affect the use of routine medical care. This finding is reassuring, as it suggests that our health effects are unlikely to be driven by changes in the likelihood of diagnosis.<sup>9</sup> Meanwhile, we find a significant reduction in the likelihood of a diagnostic doctor visit for children aged 0 to 4, which may reflect the reduction in the incidence of infectious illnesses for this age group. We also find reductions in prescription drug use that mirror the declines in infectious diseases seen in Table 2: we see reductions in overall drug use and the use of antibiotics that are larger following maternal displacements and are larger for the younger age group. In Table 3, the

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<sup>8</sup>Schaller and Stevens (2014) find that job displacement results in a 14.4 percent reduction in the likelihood of having any insurance and a 36.8 percent increase in the likelihood of experiencing a one-month spell of uninsurance during the survey round for adults in the MEPS sample. Part of this difference can be explained by differences in the availability of public insurance coverage to adults; only 8 percent of displaced adults in their sample had public coverage in round 1.

<sup>9</sup>To further alleviate the concern that sick children might be less likely to visit the doctor and thus less likely to be diagnosed with a particular medical condition following parental displacement, we additionally investigated the raw and regression-adjusted correlations between parent-reported general health ratings, which are not mechanically related to specific medical events, and the likelihood of checkup or diagnostic visits. We wanted to see if these correlations are different for children whose parents were recently displaced than for other children. The idea behind this exercise is that parents’ ratings of their child’s overall health status should reflect not only conditions for which the child visited a doctor, but also conditions that the family chose to treat at home or opted not to treat. If the relationship between reported general health and doctor visits is weaker following displacement, we might worry that some conditions are not being officially ”diagnosed” in our data. We find that the correlations seen immediately following parental displacement are very similar to those for the rest of our sample. Though they do not necessarily reflect causal relationships, the fact that these correlations don’t change following parental displacement suggests that the likelihood of getting treated for a particular health condition also does not change dramatically.

only evidence that income loss or changes in insurance coverage may result in less healthcare utilization is the negative effects of job displacement on the use of asthma medication, which are significant for both age groups and are actually larger following father’s job losses.

Finally, in Table 4, we estimate the effects of mother’s and father’s job losses separately for children whose parents had at least three years of job tenure prior to displacement. There are several potential reasons why the effects of job displacement might differ for this sample. First, the stability of parental employment is likely to be correlated with other unobserved characteristics of parents that may be related to the magnitude of the treatment effects in question. Second, it may be that tenured parents are less likely to substitute toward in-home childcare during periods of joblessness as they anticipate becoming reemployed quickly. Third, displacement may lead to a larger income loss in this sample. Fourth, tenured workers are more likely to be insured through their employer so the loss of private insurance may be larger. Fifth, displacement may be more likely to be unanticipated. Lastly, the displacement of a parent with stable employment history may cause a disruption of well-established familial roles leading to larger increases in parental stress following displacement.

The results in Table 4 show that the displacement of a father who had at least three years of job tenure results in significant increases in the likelihood of a mental disorder (panel 1) and of visiting a doctor for psychotherapy or mental health counseling (panel 3). As these outcomes are relatively rare for children, the magnitude of these increases is quite large; the coefficients suggest that parental displacement results in almost a 50 percent increase in the likelihood of mental disorder and a 90 percent increase in the likelihood of a mental health visit.

## **7 Robustness and Extensions**

In addition to our main specification, we conduct a number of robustness checks and extensions, including several alternative model specifications, results that control for local macroeconomic conditions, and an exploration of heterogeneity across subgroups. The re-

sults for these analyses are presented in Tables 5-7. For comparison with these alternative specifications, results from our baseline specification are provided in the top panel of the table of Table 5.

### **7.1 OLS Regressions**

First, for comparison with our main fixed effects specification, we also present results from regressions that do not include child fixed effects but instead include controls for child age, gender, race/ethnicity, an indicator for single-parent household, parental educational attainment, calendar year, round, and an indicator for fair or poor baseline health - an approach that has commonly been used in the literature examining the effects of displacement on health outcomes. Rather than relying exclusively on within-child variation for the children of displaced workers, these estimates also exploit differences in outcomes between the children of displaced workers and children whose parents were never displaced.

Results from these OLS regression are in the second panel of Table 5. Despite exploiting an entirely different source of variation, the OLS results are largely consistent with our story. They additionally suggest that parental displacement may have negative effects on child mental health, though these estimates will be biased if unobservable characteristics of families are correlated both with the parents' likelihood of job displacement and reported child mental health status.

### **7.2 Including Trends**

Next, we estimate our model including shared health-specific time trends. With our fixed effects specification, the identifying assumption is that there are no time-varying shocks that are correlated both with our outcome variable (health outcomes or inputs) and with parental job displacement. Our estimates would be biased if there was an unobserved shock to a child's health (or health care utilization) that causes it to deteriorate throughout the survey and at the same time leads to increased likelihood of parental job loss. An example of this would be

a pre-existing trend in the child’s health that requires the attention of the parents and causes them to be less productive and more vulnerable to job loss. To account for this, we estimate a specification that includes a separate linear time trend for each category of baseline health status (excellent, very good, good, fair, and poor). Results from this specification, reported in the third panel of Table 5, are similar to those from our main specification.

### **7.3 Restricted Definition of Job Displacement**

We also estimate our model with a more restricted definition of job displacement. Our main definition of job displacement includes laid-off workers to allow for a larger sample of job displacements. Although they are not fired for cause, it is plausible that laid-off workers are selected among a firm’s group of workers because they are less productive than others, and this could be correlated with their children’s health. Even though the fixed effects control for the permanent characteristics of the parents, it could be the case that there is a transitory negative shock in the productivity of the worker (e.g. due to worse physical or mental health). As is common in the job displacement literature, we estimate the model using a definition of job displacement that includes only separations that occurred because a business was dissolved or sold, as jobs that end for these reasons are unlikely to be related to the worker’s characteristics. We interpret these results carefully, as doing this changes the composition of displaced workers substantially (for example, by reducing the share of displaced workers that are female) and significantly reduces the number of job displacements in our sample.

In this specification, reported in the fourth panel of Table 5, the statistical significance of the effects of displacement on otitis and infectious diseases disappears. However, it is unclear whether this is due to decreased precision resulting from the smaller number of displacements or because of heterogeneity in the effects across worker types or in the effects of different types of displacements. The positive effect of parental displacement due to business closures on mental disorders and the much larger (though still insignificant) negative effects on the

likelihood of reporting excellent mental health suggest that there may be something different about this sample or this type of displacement.

#### **7.4 Timing of the Effects**

As a final alternative specification, we estimate models that include indicators both for displacement in the current round and displacement one or more periods ago. Because our primary displacement indicator lumps both of these two periods together, the estimated effects on the likelihood of health visits, the use of prescription drugs, and the occurrence of events related to specific medical conditions may be confounded by the fact that a portion of the displacement round includes a period prior to the job displacement. Meanwhile, the health effects themselves may either compound or diminish over time as changes in income, time use, and health insurance status have time to take effect or are reversed when parents become reemployed. Results from this specification are reported in the bottom panel of Table 5. Based on coefficient size, the effects of parental displacement on otitis and infectious disease are distributed relatively evenly across the different time periods, with the otitis effects slightly stronger in the round of displacement and the effects on infections slightly stronger in the rounds following displacement. These results also show an immediate increase in the incidence of child mental disorders following parental job loss that disappears after the round of displacement.

#### **7.5 Controlling for Local Economic Conditions**

One potential confounding factor in our main regression specification is the independent effects of local economic conditions. A large literature has shown that macroeconomic conditions are associated with health, mental health, time use, and other outcomes for adults. As displacements are more likely to occur when macroeconomic conditions are bad, it is possible that our displacement indicator is picking up the effects of experiencing an economic downturn, rather than the direct effects of involuntary job loss. To test for this, we obtained

access to restricted information on the geographic location of the MEPS respondents and ran our health, insurance, and health care regressions with an additional control for the state monthly unemployment rate.

Results, presented in Table 6, show that controlling for the local unemployment rate has almost no effect on our displacement coefficients. Meanwhile, we find that increases in the state unemployment rate are independently associated with reductions in the likelihood that parents report that a child is in excellent physical or mental health and increases in the likelihood of experiencing asthma and infectious disease. Higher unemployment is also associated with increases in children’s likelihood of being covered by public health insurance and increases in preventative care. These effects may be due either to increases in eligibility or increases in awareness of public programs during economic downturns.<sup>10</sup> We additionally test for interactions between parental displacement and the unemployment rate to see if the effects of parental job loss are magnified or dampened when displacement is experienced during an economic downturn. These results, available upon request, show no significant interactions between the two variables, with one notable exception: increases in the local unemployment rate increase the likelihood that the children of displaced parents will gain public insurance following displacement.

## 7.6 Other Subgroups

In Table 7 we explore heterogeneity in the effects of parental job loss on children’s health by race, parental educational attainment, and child gender. The results show some interesting differences across groups. For example, there are positive and marginally-significant effects of parental displacement on the likelihood of mental disorders among black children and among the children of less advantaged parents - two groups that, on average, have

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<sup>10</sup>Perhaps surprisingly, the estimated effects of the local unemployment rate are similar whether an indicator for parental displacement is included in the regression or not, which suggests that the effects of economic downturns on child health operate through mechanisms other than changes in parental employment status. This is consistent with the findings of Ananat et al. (2011) and Gassman-Pines et al. (2014) that even children from families that do not directly experience layoffs are negatively affected by local economic downturns.



fewer resources with which to buffer the negative effects of job loss - but not among white or Hispanic children or the children of college-educated parents. Meanwhile, the effects of parental displacement on infectious disease seem to be stronger among white children with college educated parents, and the effects on asthma are greater for Hispanic children with less-educated parents. Overall, the results show no statistically significant differences in the effects of parental displacement by child gender.

## 8 Discussion and Conclusion

This study examines the short-run effects of parental job loss on children's health. Our results suggest that parental job loss does not have negative effects on children's health. Instead job loss is associated with a reduction in the incidence of otitis and other infectious diseases. We find that these effects are only significant for maternal job losses and for children aged 0-4, which suggests that they may be related to reduction in daycare attendance following job loss. A large medical literature documenting a link between daycare attendance the incidence of infectious illness supports this hypothesis. We find that the declines in infectious illness are accompanied by corresponding decreases in diagnostic health visits and prescription drug use. Our results are robust to the inclusion of controls for local economic conditions and we find no evidence of interactions between parental displacement and the state of the local economy. We separately find evidence that parental job loss may have detrimental effects on children's mental health. In particular, we find decreases in mental health following the displacement of a tenured father and among black children and the children of less-educated parents.

Our findings run counter to the existing literature on the effects of parental displacement on children's outcomes, which has found that displacement is harmful to children in both the short and long run, increasing the likelihood of grade repetition, reducing test scores, and negatively impacting educational attainment and labor market outcomes in the long run. To our knowledge, we are the first researchers to find *positive* effects of parental job loss on

children's outcomes. Our findings suggest that changes in parental time use outweigh the predicted negative effects of income shocks, insurance loss, and stress, in generating effects on child health in the short-run.

Another important implication of our findings is that it appears that public health insurance programs such as Medicaid and the SCHIP are providing an effective safety net for children. It does not appear that the reductions in the observed incidence of specific health conditions that we observe are due to reduced diagnosis resulting from changes in insurance coverage, as we find only limited effects of job loss on children's health insurance coverage and no effects on the utilization of routine medical care. When we look at health insurance coverage by source, we find a substantial increase in the probability of having public insurance coverage following displacement, which largely counteracts the decrease in private coverage. As a result, our estimated effects of job displacement on the likelihood of children having coverage from any source are substantially smaller than the corresponding estimates for adults using the MEPS data (Schaller and Stevens, 2014). As the share of the population eligible for Medicaid is expanded in some states through the Affordable Care Act, this safety net may become larger still.

One limitation of our study is that we cannot extend our observation period beyond the scope of the MEPS panel, which is only two years in length. As a substantial fraction of displaced workers are likely to regain employment soon after displacement, it is likely that the reductions in contagious illness that we observe will disappear over time. It is also possible that the effects of job displacement related to income loss and stress will become larger over time. Job displacement is associated with permanent decreases in earnings and increased likelihood of future displacement (Jacobson et al., 1993, Stevens 1997) so an initial displacement may be only the beginning of a tumultuous period for a family. Increased stress in the period immediately following displacement may also take time to translate into worse physical health.

Finally, it is difficult to foresee whether temporary reductions in contagious illness in

childhood translate into any changes in longer-term health, human capital, or labor market outcomes. According to the “cohort morbidity phenotype” theory of Finch and Crimmins (2004), the inflammatory processes that result from early life exposure to infectious illness persist from early age into adulthood and may ultimately be related to old-age mortality. Along these lines, Luca (2014) finds evidence that reductions in childhood exposure to infectious disease induced by the introduction of mandatory vaccination laws resulted in positive effects on educational attainment, wages, and labor force participation in adulthood. On the other hand, a substantial literature in medicine and public health is dedicated to exploring the hypothesis that daycare attendance and early exposure to infectious disease in fact protect against the development of asthma, allergy, and other diseases later in life (see, e.g. Ball et al. (2000), Nafstad et al. (2005)).

Though we acknowledge that we cannot draw any conclusions about the long-term welfare effects of parental job displacement from our findings due to these limitations, we emphasize that the results from this study highlight the importance of parental time use for child outcomes. In particular, they suggest that when considering the effects of treatments that affect family income through changes in parental labor force participation on children’s outcomes, it is necessary to consider not only the effect of the income shock, but also the effects of the changes in parental time use and the nature of childcare arrangements.

Table 1: First Round Summary Statistics by Parental Displacement Status

	Never Displaced	Either Displaced	Mom Displaced	Dad Displaced
<i>Demographics</i>				
Male	0.513	0.504	0.511	0.499
Age	8.061	7.813	8.145	7.496
White, Non-Hispanic	0.643	0.542	0.526	0.564
Black, Non-Hispanic	0.120	0.157	0.204	0.107
Hispanic	0.171	0.239	0.216	0.261
<i>Parents' Educational Attainment</i>				
High School or Less	0.361	0.472	0.493	0.451
Any College	0.639	0.528	0.507	0.549
<i>Health Outcomes</i>				
Health Status Fair/Poor	0.026	0.031	0.035	0.027
Health Status Excellent	0.574	0.538	0.539	0.537
Mental Health Status Fair/Poor	0.018	0.020	0.025	0.016
Mental Health Status Excellent	0.636	0.610	0.603	0.613
Otitis Reported/Event	0.073	0.074	0.079	0.068
Bronchitis Reported/Event	0.200	0.191	0.193	0.189
Any Infection Reported/Event	0.385	0.377	0.392	0.363
Asthma Reported/Event	0.110	0.114	0.112	0.113
Trauma Reported/Event	0.054	0.049	0.046	0.051
Mental Disorder Reported/Event	0.046	0.039	0.047	0.031
<i>Health Insurance Coverage</i>				
Any Insurance	0.888	0.838	0.837	0.833
Private Insurance	0.697	0.541	0.508	0.568
Public Insurance	0.213	0.321	0.352	0.290
Uninsured	0.126	0.184	0.184	0.191
<i>Healthcare Utilization</i>				
Any Doctor Visit	0.446	0.440	0.430	0.447
Any Checkup Visit	0.173	0.177	0.162	0.188
Any Diagnostic Visit	0.285	0.271	0.270	0.271
Any Emergency Visit	0.029	0.032	0.034	0.032
Any Inpatient Visit	0.009	0.009	0.007	0.011
Any Mental Health Visit	0.012	0.010	0.013	0.006
<i>Prescription Drug Utilization</i>				
Any Prescription Drug	0.330	0.320	0.330	0.309
Any Antibiotic Prescription	0.157	0.154	0.156	0.152
Any Asthma Prescription	0.065	0.073	0.074	0.074
Any Prescription for ADD/Depr	0.027	0.020	0.023	0.017
Observations	46891	7900	3989	4294

*Notes:* Data are from the first round of the 1996-2012 waves of the MEPS. Means are estimated with MEPS sample weights. The reported number of observations is unweighted. The full sample includes all children who were 0-16 years old and had at least one parent employed in round 1. Displacement is defined as a job loss due to layoff, job ending, or business closure after the first round of the survey. Round 1 summary statistics by child age, child race and ethnicity, child gender, parental education, and for business closures are available in the Appendix.

Table 2: Job Displacement and Health Outcomes

	Health Status			Mental Health			Condition Events				
	Fair/Poor	Excellent	Fair/Poor	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental
<i>Full Sample</i>											
Post Displ.	-0.000 (0.002)	0.004 (0.007)	0.002 (0.002)	0.004 (0.008)	-0.008** (0.004)	-0.017** (0.007)	-0.003 (0.006)	-0.017** (0.007)	-0.006 (0.004)	-0.000 (0.004)	0.003 (0.002)
<i>Mother's Job Loss</i>											
Post Displ.	-0.003 (0.003)	0.003 (0.010)	0.001 (0.003)	0.007 (0.010)	-0.009* (0.005)	-0.024** (0.010)	-0.001 (0.008)	-0.024** (0.010)	-0.007 (0.006)	-0.002 (0.005)	0.003 (0.004)
<i>Father's Job Loss</i>											
Post Displ.	0.001 (0.003)	0.003 (0.010)	0.003 (0.002)	0.006 (0.011)	-0.002 (0.005)	-0.003 (0.010)	-0.002 (0.008)	-0.003 (0.010)	-0.005 (0.006)	0.001 (0.005)	0.004 (0.003)
<i>Children Under 4</i>											
Post Displ.	0.001 (0.005)	-0.003 (0.013)	0.003 (0.002)	0.008 (0.014)	-0.019* (0.010)	-0.003 (0.012)	-0.003 (0.012)	-0.025* (0.014)	-0.031*** (0.010)	-0.005 (0.007)	0.003 (0.003)
<i>Children Aged 5 and older</i>											
Post Displ.	-0.001 (0.002)	0.006 (0.009)	0.002 (0.003)	0.003 (0.009)	-0.004 (0.003)	-0.013 (0.008)	-0.003 (0.007)	-0.013 (0.008)	0.002 (0.005)	0.000 (0.004)	0.003 (0.003)

*Notes:* Standard errors (in parentheses) are clustered at the household level (\*  $p < .10$ , \*\*  $p < .05$ , and \*\*\*  $p < .01$ ). Estimates are weighted using MEPS sampling weights. The full sample includes only children with at least one parent employed in round 1. The *Mother's Job Loss* and *Father's Job Loss* samples include only children with a mother (in row 2) or a father (in row 3) employed in the first round. All dependent variables are dummy variables. Displacement is defined as a job loss due to layoff, job ending, or business closure. All regressions include individual fixed effects, dummies for age, calendar year of interview, month, and survey round, and a control for the length of the round in days.

Table 3: Job Displacement, Insurance Coverage, and Healthcare Utilization

HEALTH INSURANCE COVERAGE										
	Any Insurance	Private	Public	Uninsured						
<i>Full Sample</i>										
Post Displ.	-0.034*** (0.007)	-0.078*** (0.007)	0.041*** (0.006)	0.040*** (0.007)						
<i>Mother's Job Loss</i>										
Post Displ.	-0.029*** (0.009)	-0.067*** (0.009)	0.033*** (0.008)	0.036*** (0.010)						
<i>Father's Job Loss</i>										
Post Displ.	-0.034*** (0.010)	-0.084*** (0.010)	0.047*** (0.008)	0.041*** (0.010)						
<i>Children Under 4</i>										
Post Displ.	-0.028** (0.012)	-0.077*** (0.012)	0.043*** (0.011)	0.037*** (0.012)						
<i>Children Aged 5 and older</i>										
Post Displ.	-0.038*** (0.008)	-0.080*** (0.008)	0.038*** (0.006)	0.044*** (0.008)						
HEALTHCARE UTILIZATION										
	Doctor Visits				Prescription Drug Use					
	Any Visit	Checkup	Diagnosis	Emergency	Inpatient	Psych	Any Rx	Antibiotics	Asthma	ADD/Depr
<i>Full Sample</i>										
Post Displ.	-0.009 (0.007)	-0.010 (0.006)	-0.003 (0.007)	-0.006* (0.003)	0.000 (0.001)	0.002 (0.002)	-0.014** (0.007)	-0.008 (0.005)	-0.012*** (0.003)	0.001 (0.002)
<i>Mother's Job Loss</i>										
Post Displ.	-0.013 (0.010)	-0.008 (0.008)	-0.002 (0.009)	-0.005 (0.004)	0.001 (0.002)	-0.002 (0.003)	-0.025*** (0.009)	-0.007 (0.007)	-0.009* (0.005)	0.000 (0.003)
<i>Father's Job Loss</i>										
Post Displ.	-0.006 (0.010)	-0.011 (0.008)	-0.004 (0.009)	-0.005 (0.004)	-0.001 (0.002)	0.005** (0.002)	-0.003 (0.009)	-0.004 (0.007)	-0.016*** (0.005)	0.000 (0.002)
<i>Children Under 4</i>										
Post Displ.	-0.030** (0.014)	-0.010 (0.014)	-0.029** (0.014)	-0.008 (0.007)	-0.000 (0.004)	0.001 (0.001)	-0.034** (0.014)	-0.023* (0.012)	-0.028*** (0.008)	-0.001 (0.000)
<i>Children Aged 5 and older</i>										
Post Displ.	-0.001 (0.008)	-0.008 (0.006)	0.006 (0.007)	-0.005* (0.003)	0.000 (0.001)	0.002 (0.003)	-0.008 (0.007)	-0.003 (0.006)	-0.008** (0.004)	0.002 (0.002)

Notes: See Table 2 notes.

Table 4: Workers with at Least Three Years Job Tenure Prior to Displacement

	Health Status			Mental Health			Condition Events				
	Fair/Poor	Excellent	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental	
<b>HEALTH OUTCOMES</b>											
<i>Mother's Job Loss</i>											
Post Displ.	-0.002 (0.006)	-0.004 (0.020)	0.002 (0.006)	-0.021 (0.022)	-0.010 (0.008)	-0.011 (0.017)	-0.027 (0.020)	-0.004 (0.011)	0.003 (0.009)	0.007 (0.008)	
<i>Father's Job Loss</i>											
Post Displ.	0.006 (0.004)	-0.021 (0.018)	0.005 (0.004)	0.002 (0.019)	-0.009 (0.009)	-0.016 (0.014)	-0.006 (0.018)	-0.006 (0.011)	-0.005 (0.009)	0.017*** (0.005)	
<b>HEALTH INSURANCE COVERAGE</b>											
Any Insurance											
Private											
Public											
Uninsured											
<i>Mother's Job Loss</i>											
Post Displ.	-0.061*** (0.017)	-0.104*** (0.020)	0.040*** (0.014)	0.077*** (0.018)							
<i>Father's Job Loss</i>											
Post Displ.	-0.062*** (0.015)	-0.111*** (0.016)	0.057*** (0.014)	0.067*** (0.015)							
<b>HEALTHCARE UTILIZATION</b>											
Doctor Visits											
Any											
Checkup											
Diagnosis											
Emergency											
Inpatient											
Psych											
Any Rx											
Antibiotics											
Asthma											
ADD/Depr											
<i>Mother's Job Loss</i>											
Post Displ.	-0.020 (0.019)	0.022 (0.018)	-0.026 (0.018)	-0.002 (0.009)	-0.006 (0.005)	0.001 (0.007)	-0.027 (0.018)	-0.023 (0.015)	-0.014 (0.011)	0.006 (0.006)	
<i>Father's Job Loss</i>											
Post Displ.	-0.000 (0.017)	0.007 (0.014)	-0.015 (0.017)	-0.010 (0.007)	0.005 (0.003)	0.009** (0.004)	-0.010 (0.018)	-0.019 (0.013)	-0.023*** (0.008)	0.006 (0.004)	

Notes: See Table 2 notes.

Table 5: Job Displacement and Health Outcomes: Alternative Specifications

	Health Status			Mental Health			Condition Events				
	Fair/Poor	Excellent		Fair/Poor	Excellent		Infections	Asthma	Trauma	Mental	
<i>Main Specification</i>											
Post Displ.	-0.000 (0.002)	0.004 (0.007)		0.002 (0.002)	0.004 (0.008)		-0.017** (0.007)	-0.006 (0.004)	-0.000 (0.004)	0.003 (0.002)	
<i>Ordinary Least Squares</i>											
Post Displ.	0.002 (0.002)	-0.008 (0.008)		0.005** (0.002)	-0.015* (0.008)		-0.013** (0.005)	-0.005 (0.004)	0.003 (0.002)	0.001 (0.003)	
<i>Including Trends</i>											
Post Displ.	0.002 (0.002)	-0.010 (0.007)		0.002 (0.002)	-0.003 (0.008)		-0.015** (0.007)	-0.004 (0.004)	-0.000 (0.004)	0.003 (0.002)	
<i>Business Closed</i>											
Post Displ.	0.002 (0.004)	-0.015 (0.015)		0.004 (0.004)	-0.022 (0.016)		0.002 (0.015)	-0.010 (0.009)	0.000 (0.007)	0.010** (0.004)	
<i>Effect Timing</i>											
Round of Parental Displacement	0.001 (0.002)	0.009 (0.009)		0.001 (0.002)	0.003 (0.009)		-0.014* (0.009)	-0.001 (0.005)	0.003 (0.004)	0.006** (0.003)	
After Parental Displacement	-0.001 (0.002)	-0.000 (0.009)		0.003 (0.002)	0.006 (0.009)		-0.019** (0.008)	-0.010* (0.005)	-0.003 (0.004)	0.001 (0.003)	

*Notes:* Standard errors (in parentheses) are clustered at the household level (\*  $p < .10$ , \*\*  $p < .05$ , and \*\*\*  $p < .01$ ). Estimates are weighted using MEPS sampling weights. Displacement is defined as a job loss due to layoff, job ending, or business closure, except in the *Business Closure* specification, where it is limited to job loss due to business closure. All regressions include controls for age, year, month, round, and round length, and all but the OLS regression include individual fixed effects. The OLS specification additionally includes controls for child gender, race/ethnicity, an indicator for single-parent household, parental educational attainment, and an indicator for fair or poor baseline health. The *Including Trends* specification includes a separate linear time trend for each category of baseline health status (excellent, very good, good, fair, and poor).



Table 6: Controlling for Local Economic Conditions

HEALTH OUTCOMES	Health Status			Mental Health			Condition Events				
	Fair/Poor	Excellent	Fair/Poor	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental
Post Displ.	-0.000 (0.002)	0.004 (0.007)	0.002 (0.002)	0.005 (0.008)	-0.008** (0.004)	-0.003 (0.006)	-0.017** (0.007)	-0.006 (0.005)	0.000 (0.004)	0.003 (0.002)	
Unemp. Rate	0.001 (0.001)	-0.010*** (0.003)	0.001 (0.001)	-0.008*** (0.003)	0.002 (0.001)	0.003 (0.002)	0.006** (0.003)	0.005*** (0.001)	0.000 (0.001)	0.001 (0.001)	
HEALTH INSURANCE COVERAGE											
	Any Insurance			Private	Public	Uninsured					
Post Displ.	-0.034*** (0.007)	-0.078*** (0.007)	0.040*** (0.006)	0.041*** (0.007)							
Unemp. Rate	0.004*** (0.002)	0.001 (0.002)	0.004** (0.002)	-0.004** (0.002)							
HEALTHCARE UTILIZATION											
	Any			Doctor Visits			Prescription Drug Use				
	Any	Checkup	Diagnosis	Emergency	Inpatient	Psych	Any Rx	Antibiotics	Asthma	ADD/Depr	
Post Displ.	-0.010 (0.007)	-0.010 (0.006)	-0.003 (0.007)	-0.006* (0.003)	0.000 (0.001)	0.002 (0.002)	-0.014** (0.007)	-0.008 (0.005)	-0.012*** (0.003)	0.001 (0.002)	
Unemp. Rate	0.006** (0.003)	0.005** (0.002)	0.001 (0.002)	0.000 (0.001)	-0.001 (0.000)	0.001 (0.001)	0.001 (0.002)	-0.003 (0.002)	0.001 (0.001)	0.000 (0.001)	

Notes: See Table 2 notes. The unemployment rate is from the Bureau of Labor Statistics and is measured at the state level.

Table 7: Job Displacement and Health Outcomes: By Race, Parental Education, and Child Gender

BY CHILD RACE/ETHNICITY												
	Health Status			Mental Health			Condition Events					
	Fair/Poor	Excellent	Fair/Poor	Excellent	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental
<i>White</i>												
Post Displ.	-0.001 (0.003)	-0.002 (0.011)	0.002 (0.003)	0.002 (0.011)	0.002 (0.011)	0.002 (0.011)	-0.014*** (0.005)	-0.012 (0.009)	-0.040*** (0.011)	-0.003 (0.007)	-0.000 (0.006)	0.003 (0.004)
<i>Black</i>												
Post Displ.	0.005 (0.004)	0.015 (0.017)	0.005 (0.004)	0.010 (0.018)	0.010 (0.018)	0.010 (0.018)	-0.013** (0.006)	-0.005 (0.012)	-0.005 (0.015)	-0.003 (0.010)	0.007 (0.006)	0.009* (0.005)
<i>Hispanic</i>												
Post Displ.	0.002 (0.004)	0.010 (0.012)	0.001 (0.003)	0.003 (0.013)	0.003 (0.013)	0.003 (0.013)	0.000 (0.006)	0.010 (0.009)	0.009 (0.012)	-0.021*** (0.007)	0.000 (0.006)	0.002 (0.003)
BY PARENTS' EDUCATION												
	Health Status			Mental Health			Condition Events					
	Fair/Poor	Excellent	Fair/Poor	Excellent	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental
<i>High School or Less</i>												
Post Displ.	-0.003 (0.003)	-0.004 (0.011)	0.003 (0.003)	0.006 (0.011)	0.003 (0.011)	0.006 (0.011)	-0.008* (0.005)	-0.001 (0.008)	-0.009 (0.009)	-0.014** (0.006)	0.007 (0.005)	0.006* (0.003)
<i>College</i>												
Post Displ.	0.004 (0.002)	0.009 (0.010)	0.001 (0.002)	0.001 (0.011)	0.001 (0.011)	0.001 (0.011)	-0.010* (0.005)	-0.005 (0.009)	-0.024** (0.011)	0.002 (0.006)	-0.007 (0.005)	0.002 (0.004)
BY CHILD GENDER												
	Health Status			Mental Health			Condition Events					
	Fair/Poor	Excellent	Fair/Poor	Excellent	Fair/Poor	Excellent	Otitis	Bronchitis	Infections	Asthma	Trauma	Mental
<i>Male</i>												
Post Displ.	-0.000 (0.003)	0.006 (0.009)	0.002 (0.003)	0.009 (0.010)	0.002 (0.003)	0.009 (0.010)	-0.011** (0.005)	-0.005 (0.008)	-0.017* (0.010)	-0.003 (0.006)	-0.006 (0.005)	0.005 (0.004)
<i>Female</i>												
Post Displ.	0.000 (0.003)	0.002 (0.010)	0.002 (0.003)	-0.000 (0.010)	0.002 (0.003)	-0.000 (0.010)	-0.006 (0.004)	-0.001 (0.008)	-0.018* (0.010)	-0.008 (0.006)	0.006 (0.005)	0.001 (0.003)

Notes: See Table 2 notes.

## 9 References

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Table A1: Round 1 Means by Subgroup, Children of Displaced Workers

	Child Age		Race/Ethnicity			Parents' Education		Child Gender		Displacement Type
	Age 0-4	Age 5-17	White	Black	Hispanic	High School	College	Male	Female	
<i>Health Outcomes</i>										
Health Status Fair/Poor	0.032	0.030	0.024	0.032	0.047	0.044	0.019	0.034	0.027	0.029
Health Status Excellent	0.560	0.528	0.580	0.512	0.463	0.473	0.595	0.539	0.536	0.543
Mental Health Status Fair/Poor	0.002	0.028	0.020	0.023	0.019	0.025	0.016	0.024	0.016	0.018
Mental Health Status Excellent	0.695	0.570	0.634	0.596	0.549	0.550	0.663	0.601	0.618	0.622
Otitis Reported/Event	0.145	0.041	0.093	0.049	0.052	0.067	0.080	0.080	0.068	0.089
Bronchitis Reported/Event	0.209	0.183	0.213	0.178	0.148	0.173	0.206	0.184	0.198	0.196
Any Infection Reported/Event	0.415	0.360	0.444	0.287	0.287	0.341	0.410	0.367	0.387	0.374
Asthma Reported/Event	0.124	0.109	0.111	0.107	0.132	0.119	0.109	0.129	0.098	0.109
Trauma Reported/Event	0.032	0.057	0.059	0.032	0.034	0.037	0.060	0.056	0.042	0.051
Mental Disorder Reported/Event	0.004	0.055	0.054	0.018	0.024	0.033	0.044	0.050	0.027	0.033
<i>Health Insurance Coverage</i>										
Any Insurance	0.869	0.825	0.859	0.888	0.747	0.794	0.878	0.836	0.840	0.851
Private Insurance	0.495	0.563	0.672	0.427	0.304	0.359	0.704	0.542	0.541	0.633
Public Insurance	0.403	0.284	0.209	0.506	0.461	0.452	0.204	0.317	0.325	0.236
Uninsured	0.155	0.197	0.159	0.144	0.275	0.231	0.142	0.182	0.185	0.178
<i>Healthcare Utilization</i>										
Any Doctor Visit	0.613	0.362	0.470	0.399	0.400	0.415	0.463	0.443	0.437	0.444
Any Checkup Visit	0.324	0.110	0.173	0.177	0.191	0.163	0.190	0.176	0.178	0.178
Any Diagnostic Visit	0.374	0.224	0.311	0.212	0.214	0.250	0.289	0.276	0.265	0.284
Any Emergency Visit	0.042	0.028	0.033	0.034	0.028	0.031	0.033	0.037	0.028	0.027
Any Inpatient Visit	0.021	0.004	0.010	0.011	0.007	0.008	0.010	0.010	0.008	0.009
Any Mental Health Visit	0.001	0.013	0.012	0.008	0.005	0.008	0.011	0.012	0.007	0.010
<i>Prescription Drug Utilization</i>										
Any Prescription Drug	0.395	0.285	0.366	0.260	0.263	0.308	0.330	0.341	0.298	0.332
Any Antibiotic Prescription	0.235	0.116	0.193	0.101	0.105	0.147	0.159	0.156	0.151	0.165
Any Asthma Prescription	0.095	0.064	0.080	0.072	0.063	0.070	0.076	0.084	0.063	0.080
Any Prescription for ADD/Depr	0.000	0.029	0.027	0.013	0.009	0.016	0.023	0.028	0.012	0.018
Individuals	2415	5485	2800	1422	3223	4528	3372	3997	3903	1739

Notes: Data from round 1 of the 1996-2012 waves of the MEPS.