Kids at Risk: Children's Employment In Hazardous Occupations in Brazil

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Policy and social trends have combined to greatly reduce the percentage of Brazil's children engaged in labor force work in recent years. Still, 4.3 million children ages 10 to 17 are estimated to be working in the labor force as of 2008 (15.5 %), according to Brazil's statistics ministry, the IBGE (PNAD 2008). While many employed children may be doing tasks that they can accomplish safely, and in work that does not conflict with school attendance, many others are found in types of work identified as "hazardous" by Brazil's Ministry of Labor and Employment. Indeed, in previous work which is discussed in the next section, we provide evidence of a variety of negative outcomes for children engaged in hazardous work in Brazil, in comparison to children who are not employed and children engaged in other types of work (DeGraff, Ferro, Levison 2012).

In this paper, we focus on those categories of work in which Brazilian children may be found in large numbers, yet which are likely to harm their "health, safety or morals" and, thus, are considered hazardous (ILO Convention 182, Article 3). Given the evidence of undesirable outcomes for children engaged in hazardous work in Brazil, enhancing our understanding of how children end up in such occupations is valuable for informing policy in this area. Yet little attention has been give to the question of how children come to enter such kinds of work, in Brazil or elsewhere. We speculate that characteristics of parents, especially those that influence their own labor force participation and type of work, play an important role in children's labor force entry and types of first jobs. Given that long-term panel studies that could parse out causal pathways do not exist, we use cross-sectional data to document associations between parental

characteristics and children's work that are suggestive of underlying behavioral relationships, using both descriptive summary statistics and multivariate statistical modeling to better understand which children engage in "hazardous" occupations.

Background and Previous Findings

There is a large literature on "child labor" in developing countries, including a number of review articles,[1] so it is surprising that little is known about how children find themselves in various labor force jobs. What are the pathways to particular types of occupations, in particular industries? The "weak ties" social networks literature in the United States suggests that connections to acquaintances outside one's immediate family and social circle are especially beneficial for job-seekers (Granovetter 1973). We speculate that in less developed countries, where the tradition of children following same-sex adults into particular types of work has eroded less than in industrialized countries, "strong ties" – in particular, parental ties – to informal work networks may be particularly important in determining the jobs of children and youth. Since most labor force and household surveys contain information on parents and children (age 10 or older in Brazil's surveys) but not on other networks, we do not attempt to compare the strengths of different types of connections to the labor market. Instead, we look for parental–child associations in the area of hazardous work among children.

Our interest here is not in the determinants of children's labor force participation in general, nor do we condemn all labor force work as inappropriate for children.[2] The child labor literature has focused broadly on characteristics associated with children doing labor market work, most often measured as a simple yes/no variable, and sometimes in conjunction with

[1] Overviews by Basu (1999), Basu and Tzannatos (2003), Dorman (2008), Edmonds (2008), and Edmonds and Pavcnik (2005) are among over 20 reviews of the child labor literature in recent years.
[2] See Bourdillon, Myers, Levison and White (2010) for an extended discussion of how many aspects of work may be to children's benefit, if accomplished safely.

analysis of household work and/or school enrollment. In contrast, we are interested in children's entry into "hazardous" work as opposed to other types of market work. We know of no other paper that focuses on children's pathways to particular types of work in poor countries, although case studies often speak to it indirectly (e.g., Madsian 2004). In some cases, of course, it is obvious, such as in some rural areas where all jobs are agriculture-related. In many parts of the world, however, children can be found in multiple industries and occupations. This is true in much of the more populated regions of Brazil. The question of how children end up working in particular occupations is, therefore, highly relevant for the case of Brazil.

In our previous research on relationships between children's and mothers' work in Brazil (DeGraff, Levison and Robison 2009; DeGraff and Levison 2009), we have found evidence of correlations between children's and mothers' labor force participation, measured as a simple yes/no variable, as well as in characteristics of their employment. For example, children in Brazil whose mothers are employed are more likely to be employed themselves. Moreover, children whose mothers work long hours are more likely to also work very long hours or, alternatively, to work very few hours. Looking at employed mother/child pairs, children are also more likely to be employed in the same industry as their mothers. Their work is more likely to be located at home (or, conversely, far away from home) if their mothers' work is so located. These and other findings from our previous research suggest an array of subtle connections between children's and mothers' work.

In additional previous analysis (DeGraff, Ferro and Levison 2012), we move beyond the simple dichotomous classification of labor force participation and consider various outcomes for children engaged in hazardous work, compared to children who are employed in other types of work and children not in the labor force. We find, for example, that children ages 10 to 17 who are engaged in hazardous work in Brazil (as we define it), are on average not only less likely to

be enrolled in school than children not in the labor force (73.1% vs. 92.1%), but are also less likely to be in school in comparison to children employed in other types of work (84.4%).[3] Among employed children, those engaged in hazardous work tend to work longer hours than their counterparts in other jobs (32.6 hours per week vs. 28.6), and are also less likely to be working with or near family (with the exception of family farms) or in places where they can be observed by the general public. These conditions are likely to render them more vulnerable to various forms of abuse and exploitation. Furthermore, to the limited extent that our data allow us to examine the physical conditions of work, we also see evidence of greater risk for children in jobs categorized as hazardous. Specifically, we find a greater incidence in the use of machinery or chemicals in the hazardous occupations, on average, and a lower incidence of providing safety equipment or training for children working with such inputs. In sum, even without ideal data for examining short-run consequences for children of working in hazardous occupations, and lacking data to assess potential longer terms effects, we see substantial evidence that is suggestive of negative consequences for children in Brazil.

In this paper, we explore the case of children engaged in "hazardous" work with the goal of better understanding how they come to work in these occupations. We seek in particular to identify systematic associations with characteristics of their parents that could be easily identified and, thus, help to better target interventions aimed at reducing children's participation in hazardous work. We focus on occupations and industries with known problematic aspects for young people. ILO Convention 182 defines the "worst forms" of child labor as including children under the age of 18 in (a) slavery, bondage, and other forms of forced or compulsory labor; (b) prostitution or the pornography industry; (c) illicit activities, such as the drug trade; and (d) "*work which, by its nature or the circumstances in which it is carried out, is likely to*

[3] Our method of identifying categories of hazardous work for children in Brazil is discussed in the next section.

harm the health, safety, or morals of children" (Article 3, emphasis added). Our concern is with the latter category of work, as defined – in accordance with the Convention's Article 4 – by the government of Brazil and/or child labor experts.[4]

Data and Methods

We focus in this paper on work that is defined as "labor force employment" under the United Nations' System of National Accounts (ILO 1982, 2002). While we realize that many children, especially girls, are engaged in time-consuming and valuable household chores, we do not consider such activities in this analysis. In addition to wage labor outside the family, children engaged in labor force employment may work for their own parents or other relatives and still be doing labor force work. Also, they need not be paid to be doing labor force work; to a great extent, working children are not paid wages but are reimbursed in kind, or share in the benefits of a family farm/business, or their families expect future benefits from their children's efforts. The word "work," in this paper, refers to labor force employment and, in keeping with standard practice, we use the week prior to the survey as the reference period for measuring whether any individual is engaged in labor force work.[5] Following the international definition, we consider engagement in such activity for any number of hours greater than zero to constitute participation in the labor force. We use the term "child" broadly, including persons less than 18 years of age, as defined in the United Nations Convention on the Rights of the Child. In this analysis, we focus on children ages 10 to 17.

[4] According to ILO Convention 182, Article 4, Section 3, these "worst forms" determinations by governments are to be periodically reviewed and revised.

[5] Levison et al. (2007) have shown that this reference period leads to substantial undercounts of the number of children who have engaged in labor force work in a 4-month period, but our goal in this paper is not to count child workers but to better understand the situations of those we can identify using the PNAD survey.

Our preparatory work for this study drew upon Brazil's population census of 2000. We used the 6 percent sample available from the IPUMS-International project, with a sample of over 10 million persons (Minnesota Population Center 2008). While the census does not have as many details about employment as we would like, it was very useful for identifying occupations and industries in which children are concentrated. Based on this information and the Brazilian government's list of "worst forms" jobs for children, as well as an understanding from the child labor literature about which types of jobs are likely to be problematic in various ways for children, we identified jobs on which it would be especially useful to focus. These include domestic services, street workers (such as ambulatory street vendors or shoe-shines), construction workers, and farm workers engaged in the cultivation and processing of particular crops: tobacco, coffee, sugar cane, and manioc. The characteristics of these jobs are discussed in greater length in the following section. All of these occupations are identified as hazardous for children by Brazil's Ministry of Labor and Employment and/or by child labor experts, can be identified in the PNAD data, and contain large numbers of children. We use these categories identified in the census to guide analysis of more detailed household-level data.

With these categories of hazardous work defined, we use Brazil's large household survey from the year following the population census to conduct detailed analysis. The data derive from Brazil's 2001 annual household survey, the *Pesquisa Nacional por Amostra de Domicílios* (PNAD-2001), which included a supplement on child work. The PNAD-2001 is a nationally representative sample survey including 126,898 households and 378,837 individuals. Our analysis focuses on children ages 10 to 17 (inclusive) and their parents (if present), with the children defining the analysis sample. The total number of 10 to 17 year-olds in the full sample

is 60,678.[6] We include all persons aged 10 to 17 in our analysis sample, regardless of their demographic circumstances. For example, children who are themselves identified as family or household heads, or children living with relatives with no parent present, are often excluded from analysis when the focus is on sons and daughters of household or family heads. We aim to be as comprehensive as possible in the representation of children in our sample and, therefore, do not make such sample exclusions. Over seventeen percent (17.6%) of those ages 10 to 17 in our sample are employed in labor force work in the reference week; of these, 24.8 percent are in the risky categories of interest to us (see Tables 1 and 2).[7]

This analysis is exploratory; we describe relationships but do not attempt to statistically identify causal pathways, although we speculate about them. We seek to better understand how children engaged in hazardous work enter this particular type of work and how this compares to the experience of other working children. We generate key descriptive statistics for children and their families according to whether they are employed in risky work (as defined here), employed in "other" types of work, or not employed.[8] Furthermore, we examine employment outcomes for children conditional on parental employment characteristics. All descriptive statistics are adjusted for sample weighting to make them representative of the population. Finally, we

[6] In the vast majority of the 60,678 cases, the biological mother of a sample child was in the household and coded as the family head or spouse. In such cases, we assumed the father to be the person married to the head/spouse, if such a person was present (fathers are not explicitly identified in the data). However, some children who, according to their age and family relationship information, should be included in the sample did not have a biological mother in the household either because she is deceased or no longer living in the household. Here, because fathers are not identified in the data, we used information about relationships to the family head and the ages of males in comparison to the child's age to assign a father. If a likely father could be identified, we then used information about relationships to the family head and the ages of women in comparison to the father to assign a step-mother. We assigned approximately 800 step-mothers in this manner. In addition, we also attempted to assign fathers in cases where, according to information about a child's biological mother and ages, it appeared that the mother was in the household but there were errors in the family relationship codes (e.g., the person identified as the child's biological mother and the child were both coded as children of the family head). In such cases, we assumed that the identity of the biological mother was correct, and used age information to try to identify a father. We assigned approximately 1,500 fathers in this manner. The algorithms used to assign step-mothers and fathers to children are available upon request.

[7] In this paper, we use the terms "hazardous" and "risky" interchangeably.

[8] We refer to all types of labor force work that are not categorized as risky (hazardous) for our purposes as "other" work.

estimate a multivariate model of children's employment which distinguishes between risky jobs versus other forms of work, in order to identify relationships between children engaging in risky work and parental characteristics while controlling for multiple factors.

Throughout the descriptive analysis, we not only look for differences between children employed in risky work and their counterparts who are employed in other work or are not employed, we also look for differences across the types of risky work – domestic service, street work, construction work and hazardous farming. In order to keep the presentation of results manageable, these more detailed results are not included in the tables and figures, but are noted in the text when they provide additional insights. In addition, the multivariate analysis, as well as some of the descriptive analysis, is disaggregated by whether the child is female or male in order to allow for the possibility of gender differences. Details on the multivariate methods are provided following the descriptive analysis.

Categories of Risky Work

As indicated above, the four categories of risky work on which we focus are domestic service, street work, construction work and farming of selected crops: tobacco, coffee, sugar cane and manioc. Following is a brief description of each of these types of work in Brazil.

Domestic service. A large majority of Brazil's 440 thousand child domestic servants (as of 2000) – over 94 percent of them – were girls. Domestic service is one of the most common jobs for girls: in 2000, 25.7 percent of employed 10 to 14 year-old girls worked as domestics, as did 32.2 percent of employed 15 to 17 year-old girls. While most (382 thousand) female and male child domestics lived with their own families and worked in the homes of other families, about 58 thousand were "live-in" servants (Levison and Langer 2010). Domestic service is considered risky because of the isolation of domestic workers from other workers; child domestics,

especially, are vulnerable to overwork, physical abuse, sexual abuse, and verbal abuse (Alberto et al. 2006; ILO 2003). Live-in domestics, who often do not have regular contact with family or friends, may not even have anyone to tell about abuse. The literature is full of horror stories about the lives of child domestics – although domestic service, for some, is a welcome escape from rural or slum poverty and may provide the only possibility for some children to go to school.[9]

Street work. Working in "the street" implies a different, although related, set of hazards for children. Regardless of whether young people work at a fixed location or move about (for example, peddling wares), being in the street exposes them to abusive language and/or behavior from passersby, customers, and even the police. In Brazil's major cities, the police have a particularly bad reputation with respect to children working (and living) in the street, with documented behavior ranging from the extortion of bribes all the way to physical violence. Young people are also exposed to and offered illicit drugs, glue for sniffing, and the services of prostitutes, as well as being propositioned themselves. Yet street work has low costs of entry insofar as a street vendor need only have a small inventory to go into business, and children's occasional or part-time work on the street may be a fall-back source of income to poor families in times of financial stress.

Construction work. A great deal of building in urban areas takes place at sites located away from where workers live yet near busy streets, so many of the dangers for children of street work also apply to construction work. In addition, construction work more generally has its own set of hazards. These include carrying heavy building materials, using or being near potentially dangerous equipment or hazardous materials without proper training or oversight, and working at

[9] See Bourdillon et al (2010), Chapter 8, for a discussion of both serious problems with domestic service, and the substantial advantages it provides to some children.

unsafe heights without safety precautions. Also, in Brazil, children working in construction are likely to be employed in the informal sector where hazardous conditions are relatively more common than in the formal sector.

Farm work – tobacco, coffee, sugar cane, manioc. Substantial numbers of young farm workers are engaged in the cultivation or processing of these four particular crops. Farm work in general poses hard-to-quantify threats to the health of workers, as relatively little is known about long-term effects of exposure to the many different chemical combinations used in herbicides, pesticides, and fertilizer. It is clear, however, that there are at least short-term problems. Herbicides and pesticides explicitly contain toxins (to kill weeds and insect pests). Children, because they are still growing, are thought to be particularly vulnerable to exposure to various chemicals, which could stunt or harm their development. In addition, children may use farm machinery without adequate training or protection. We focus on these four crops as they are singled out by the Brazilian government as being more likely than other crops to involve production processes that could expose children to hazardous conditions.

It is important to note, however, that when we speak of categories of "hazardous" or "risky" work, we are speaking of possibilities rather than facts. Neither the census nor the PNAD survey reveals to us what children *actually do* when they engage in farm work. They may handle crops newly sprayed with pesticides, or they may water plants never touched by a chemical. It is possible that, even among those crops where farm labor is labeled risky for children, they do nothing that puts them at risk. Similar arguments can be made about the other categories of risky work focused on here. Conversely, some children employed in occupations that are not considered risky, might actually be exposed to unhealthy working conditions of some form. The way that data about occupations and industries are typically collected does not permit us to separate child workers by tasks, only by economic products. More detailed information

about specific tasks that children perform at work would greatly facilitate research on children's employment in hazardous work.

Descriptive Analysis: Children in Risky Work and Their Families

Using descriptive statistics, we first examine characteristics of the children and their families to identify simple bivariate patterns in relationships to children's employment situation (i.e., not employed, employed in risky work, employed in other work). There is no appreciable difference in the average age of those employed in risky work and those employed in other work (14.9 years vs. 14.7 years) but, as expected, both groups are somewhat older on average than those who are not employed (13.3 years). Of greater interest are the results by gender and urban/rural residence. [10] In Table 2 we see that a slightly higher percentage of girls than boys overall is employed in risky work (4.5% vs. 4.2%, significantly different at 10%), and a much higher percentage of female than male child employment is in the hazardous occupations (36.4% vs. 18.6%). These dynamics are importantly driven by the very high representation of girls among children employed in domestic service, making up more than 90 percent of this category of risky work. In contrast, boys dominate in the construction industry, but this is a much smaller employment category for children and thus does not as greatly impact the overall statistics.

Table 2 also makes clear that the percentage of 10 to 17 year-old children employed in risky occupations in Brazil is more than twice as high in rural areas than in urban areas (8.9% vs. 3.3%). This result is owing to the role of hazardous farming, which is primarily located in rural areas. The other three categories of hazardous work (domestic service, street work and construction) are more common among urban children than rural children. Even though risky

[10] In the discussion of descriptive results based on Tables 2 and 3 and Figures 1 and 2, all differences mentioned are statistically significant at a five percent level or less unless otherwise noted.

work considered as a whole is more common for children in rural areas, the percentage of all child employment that is hazardous is still slightly greater in urban areas (25.8% vs. 23.4%). In other words, while the percentage of children employed in risky work is greater in rural areas than in urban areas, so is the percentage of children employed in other work (29.1% for rural areas vs. 9.6% for urban areas).

Consistent with Table 2, we see in Table 3 that children who are employed in risky work are much more likely to be female than are children engaged in other types of employment. The representation of girls ages 10 to 17 in risky work is comparable to that for the full sample, whereas girls are under-represented in the other work category. We also see in Table 3 that children employed in risky work tend to come from larger families (2.8 siblings) than children in other work (2.4 siblings) or children who are not employed (1.9 siblings). Table 3 further shows that children who are employed in hazardous occupations are less likely to have a mother in the household (82.2%), and are less likely to have a father in the household (68.3%), than are children employed in other work (88.3% and 76.3%, respectively) or children who are not employed (89.7% and 73.9%, respectively). Additional analysis (not shown) reveals that children employed in domestic service are particularly likely to be lacking a parent, while those engaged in hazardous farming (again, most often on a family farm) are less likely to be without a parent in the home.

Among children with either or both mother and father in the household, the parents of children in risky work have lower levels of education on average than do the parents of other children, especially when compared to the parents of children who are not employed. The education levels of the latter (just shy of six years, which corresponds to completion of primary school) are approximately twice that of the former, for both mothers and fathers. The average years of schooling are particularly low for parents of children engaged in hazardous farming, at

2.1 years for mothers and 1.8 years for fathers. This, of course, is partly a by-product of these families being concentrated in rural areas where schools were less available when the parents were young. Overall, the results regarding parental presence and education suggest that children whose family circumstances are likely to be associated with greater economic vulnerability (lacking a parent and/or having less educated parents) are more likely to end up working in hazardous occupations.

A similar picture emerges when looking at income data. Children employed in hazardous work come from families with a substantially lower total family income per capita (0.58 minimum salaries) than for the families of children engaged in other work (0.92 minimum salaries) or the families of children who are not engaged in labor market work (1.26 minimum salaries).[11] Again, these differences are most pronounced for children engaged in hazardous farming. However, among employed children who are paid, those employed in hazardous occupations and those employed in other types of paid work contribute a substantial (approximately 25%) and similar proportion to family income (the difference is not statistically significant, even at a 10% level). Thus it does not appear to be the case that families with children engaged in risky work are especially reliant on children for income in comparison to other families with employed kids. The percentage contribution to family income also does not vary substantially across types of risky work, ranging from about 23 to 25 percent for domestic service, street work and hazardous farming, to a high of about 30 percent for construction work.

In Figures 1 and 2 we examine the probability of children being employed in a hazardous occupation conditional on their mother's and father's employment situations, by demographic sub-group. Consistent with the "strong ties" hypothesis, we see that children are more likely to

[11] As is customary in Brazil, per capita family income is measured in monthly minimum salaries. A monthly minimum salary in October 2001 was 180 Reals, or about US$75.

be employed in risky work if their mothers are so employed, in comparison to those whose mothers are employed in other work or who are not employed (11.2% vs. 3.0% and 2.5%).[12] This holds for each of the demographic sub-groups shown, and is especially strong in rural areas owing to the influence of the hazardous farming categories. It is interesting that this positive association between children's and mother's employment in risky work is just as pronounced for boys as for girls, if not more so. In other words, this relationship does not seem to be gender specific or same-sex dominant vis-à-vis mothers. The results conditional on father's employment situation are highly similar overall (13.2% vs. 4.8% and 2.1%).[13] Here though, we find a same-sex dominant relationship in that the positive association between children and fathers being employed in hazardous occupations is much stronger for boys than for girls. We also see in both figures, but especially for fathers, that children whose parents are employed in other work are even less likely to be in risky work themselves than if the parent is missing or not employed. This further supports the strong ties hypothesis of the parent "pulling" the child into risky work or other types of work through their own work experience.

Multivariate Analysis

Model and Estimation Issues

To explore more fully possible relationships between parental characteristics and children engaging in risky work, we estimate a multivariate model of children's employment, using multinomial logistic regression to distinguish between three outcomes: not employed, employed in other work, or employed in risky work. We adopt this approach rather than using a selection

[12] Children without a mother present are not included in Figure 1. For such children, the probability of being employed in risky work is 7.4 percent.

[13] For fathers, the category of no father present is combined with father not employed, given that non-employment of adult males in Brazil is a signal of serious incapacity (e.g., due to physical or mental illness or lack of responsibility).

model owing to the lack of exogenous variables that could be used to statistically identify the employment decision from the hazardous work vs. other work outcome. The analysis sample consists of all children aged 10 to 17 (inclusive). The model is estimated using the cluster option to correct estimated standard errors for intra-family correlation because some families contribute more than one child to the sample.

The explanatory variables are based on our past research on children's labor force participation in Brazil (DeGraff and Levison 2009) and the descriptive statistics above, as well as the broader child labor literature. The model assumes that households act to maximize well-being subject to income and time constraints, in part by choosing how to allocate children's time, including whether or not children engage in hazardous work. We further assume that decisions regarding the time allocation of other children and all women in the household are endogenous to decisions about children's labor force participation. Such decisions pertaining to the father and other adult males in the household are assumed exogenous to decisions about the children, however, their participation in hazardous employment is considered endogenous. While we only model the labor force outcome for children ages 10 to 17, these endogeneity assumptions have implications for the specification of explanatory variables. In general terms, the explanatory variables fall into distinct conceptual sets: characteristics of the children (age, gender), characteristics of parents (presence, age, education, mother's predicted wage), economic characteristics of the family (business or farm ownership, exogenous income, wealth), household demographic characteristics, and locational characteristics. The model is estimated for the full sample and also separately for boys and girls. We turn now to selected estimation issues before presenting the empirical results.

Missing parents. One of our primary interests is to examine how the characteristics of parents relate to whether children are engaged in risky work. However, some children in the sample do

not have a mother and/or a father in the household. As discussed above, we do not want to exclude such children from the analysis as they may be particularly vulnerable. Therefore, for this subset of children, we set the measures of parental characteristics equal to zero, and control for their absence with dummy variables.

Wage proxy. In view of the possible close connections between mother's and children's time allocation, we control for mother's wage earning potential in the model of children's employment. Because some of the mothers do not work in the labor market, and some of those who do are unpaid, we are able to observe wages for only a subset of the mothers.[14] The percentage of women with observed wages is large enough that we can impute wages for all women. We first estimate wage equations separately for rural and urban areas, controlling for selection into paid employment using a full information maximum likelihood Heckman procedure, for a sample of women in an age range to potentially have children ages 10 to 17. From the resulting estimated coefficients, we impute wages for the mothers of children in the analysis sample.[15] As mentioned above, some children in the sample are without a mother, thus, mother's wage can not be imputed. For these children, we adopt an approach similar to that described above for missing parents, adjusted to take into account that we use the natural log of mothers' wages.[16]

[14] For those with observed earnings from labor, the observed hourly wage is calculated as follows: hourly wage = monthly labor earnings / (usual *paid* hours worked per week * 4.2).

[15] The variables used to identify the selection equation from the wage equation are the husband's presence and his education and skin color if present, exogenous measures of family income and wealth, and state-level wage proxies. Each of these variables can be argued to affect a woman's likelihood of participation in paid employment, but should have no effect on her wage offer as they do not reflect her own labor market potential or local labor market conditions. The majority of these variables are statistically significant as desired for purposes of identification. The variables used to identify the wage equation from the children's employment equation are the standard higher order variables: mother's education-squared and age interacted with education. Both are statistically significant.

[16] Because we convert wages to natural logs, we can not simply set the wage to zero as its natural log would be undefined. Instead, for those cases with no mother, we set the estimated natural log of wage to a value clearly below the minimum predicted for the sample of mothers. The model presented here uses a value of -3.0, but results are not sensitive to using a value as low as -10.0 (the lowest predicted value is about -2.5).

Income and wealth measures. Although we include three measures of "exogenous" income – total labor income of males ages 25 and older in the family, receipt of employment benefits by any male age 25 and older, and non-labor family income – income is generally not considered to be reliably measured in the PNAD surveys. To get a better understanding of a family's long-term resources, we follow the example of Filmer and Pritchett (2001), DeGraff and Levison (2009), and Assaad, Levison and Zibani (2010), and construct a proxy for household wealth. First, we create a linear index for wealth from information on asset ownership, using factor analysis methodology.[17] The factor analysis is conducted separately for urban and rural residents, and the results scored to derive a continuous variable representing wealth for each sub-sample, with higher wealth associated with higher scores.[18] To facilitate interpretation of the wealth variable, we divide the urban and rural wealth indices into approximate quintiles (heaping precludes exact quintiles) and create five dummy variables for each index corresponding to wealth quintile. The appropriate (urban or rural) set of wealth quintile variables is then assigned to each child.

Multivariate Analysis of Children's Employment: Who Does Risky Work?

Variable definitions, sample statistics, and the full set of regression results for children aged 10 to 17, and separately for boys and girls, are included in the appendix. While our interest lies primarily with the results for the risky work outcome, we briefly discuss the results for participation in other work, the much more common work outcome for employed children. Looking at the first page of Table A3, which presents results for other work vs. not employed for the full sample, we see that the model as a whole performs well and is consistent with our

[17] Information on assets is based on details about the residence – materials of walls and roof, access to piped water, private toilet, garbage collection, lighting – as well the household's possession of a telephone, refrigerator, freezer, washing machine, gas or electric stove, radio, color TV, black and white TV, or computer.

[18] The analysis was conducted using maximum likelihood estimation without rotation. Only one factor was retained, as in the sources cited previously.

previous research on Brazil. The pseudo R-squared value is greater than 20 percent and many variables are statistically significant in the expected direction. Boys are more likely to be employed in other work than girls, as are older children with each progressive year of age. Children of more highly educated parents are less likely to be employed, and children from families with greater income potential, as measured by mother's predicted wage and the exogenous income measures, are less likely to be engaged in other work. Ownership of a family farm or business, which can generate demand for family labor as well as provide easy access to employment for children, positively affects employment among children. The wealth indices also behave as expected, with children from wealthier families being less likely to engage in other work than those in the lowest wealth quintile. The controls for household demographic composition, taken as a whole, suggest a pattern in which the presence of a larger number of children increases the likelihood of children engaging in other work, whereas a greater number of adults decreases children's employment. The locational characteristics indicate that children in rural and non-metropolitan areas are more likely to be employed in other work, with results for the regional dummy variables being consistent with regional differences in level of economic development in Brazil.

Turning to children's employment in hazardous jobs, the second and third pages of Tables A3, A4, and A5 present results for risky work vs. not employed, and for risky work vs. other work, respectively, for the full sample of children aged 10 to 17, for boys aged 10 to 17, and for girls aged 10 to 17, respectively. Rather than discussing the detailed results, we summarize in Table 4 the relative risk (odds) ratios for the explanatory variables of greatest interest to us. The upper panel of the table pertains to risky work vs. not employed, and the lower panel pertains to risky work vs. other work. All numerical results in the table are derived from statistically significant coefficients at a five percent level of significance or lower, unless

otherwise noted. Relative risk ratios allow for direct comparison of the magnitude of effects, as well as the direction. Based on a standardized reference point of 1.00, values between 0 and 1.00 correspond to a negative relationship, while values greater than 1.00 correspond to a positive relationship, with the distance from 1.00 indicating the magnitude of the estimated effect.

The first evidence of gender differences in the multivariate analysis can be seen in the results for the female dummy variable in the full sample. Girls are much less likely than boys to be employed in risky work relative to not being employed (.76). However, girls are much more likely than boys to be employed in risky work relative to being employed in other work (2.25). Thus, the result from the descriptive analysis that employed girls are over-represented in risky work holds, even when controlling for all other explanatory variables.

We also see that higher levels of parental education, as expected, are associated with a reduced likelihood that children engage in risky work, either when compared to the not employed category or to the other work category. What is of greater interest is that this negative effect of parental education is generally stronger for mother's education than for father's education, and for girls than for boys. Indeed, the effects of parental education on boys are very small and of the same magnitude for mothers and fathers in the comparison between risky work and not employed (.95 and .95), while in the comparison between risky work and other work are not even statistically significant. Overall, whether girls end up working in hazardous jobs is more strongly associated with parental education, especially mother's education, than is the case for boys (.89 vs. .95 and .88 vs. not significant). This result is likely driven, at least in part, by the preponderance of females in domestic service work, the ease of entry into domestic service for women with little or no formal education, and the relatively easy entry of girls into domestic service when their mothers are so employed.

The results for exogenous family labor income are highly similar for girls and boys. We see a negative income effect, as expected, on the likelihood that children from higher income families participate in risky employment, however, the effects are very small, both when compared to the not employed category and to the other work category (.98 for both in the full sample and, in one case, not statistically significant). Note that the small magnitude of the estimated effects is not an artifact of units of measurement, as income is measured in hundreds of Reals with a mean value of about five. Parental education seems to be a more important influence on whether children engage in risky work than is family income as measured in the PNAD.

In contrast, the results for the mother's wage are strikingly different for boys and girls. The wage effect is more complicated because in addition to traditional income effects, it potentially embodies traditional substitution effects as well as less well recognized effects such as through networks and access to employment. Overall, boys experience a substantial negative association with a higher maternal wage, both for risky work relative to not employed and relative to other work (.75 and .82). This suggests dominance of a sizeable income effect of mother's wage on the likelihood of risky work among boys. For girls, however, the relationship of mother's wage to participation in risky work versus not employed is not statistically significant, but is positive with respect to participation in other work (1.41). In other words, among girls who are employed, those whose mothers have higher wage earning potential are more likely to be engaged in risky work (after controlling for other factors, mother's education in particular). This result is consistent with dominance of a networks/access effect for girls, whereby mothers in comparatively well-paid but risky work pull their daughters into similar work.

Ownership of a family business and especially of a family farm, have strong positive effects (1.97 and 3.23) on the likelihood that boys are engaged in risky work relative to not being employed. The demand for family labor combined with ease of entry into employment seems to encourage the participation of boys in these family enterprises, even if the work is in the risky category. This effect is much less pronounced for boys when comparing risky work to other work (1.24 and not significant), suggesting that the practice of boys joining the family enterprise is almost as likely in the context of other work as for risky work. For girls, the pattern is less clear. The presence of a family business has no effect on their participation in risky work relative to non-employment, whereas a family farm has a modest positive effect (1.47). In contrast, both forms of family enterprise substantially decrease the likelihood of risky work relative to other work among girls (.69 and .58). Taken as a whole, these results suggest that girls are less likely than boys to work in a family enterprise if the production activity is in the hazardous category.

The results for the set of dummy variables representing wealth quintiles are largely as expected. In general, being in a family with greater wealth holdings substantially decreases the likelihood that children are employed in risky jobs. These associations appear to be stronger in distinguishing risky work from not being employed than from other work, and are more consistent for girls than for boys, although, note that boys from households in the highest wealth category have very low odds of engaging in risky work relative to not being employed (.37). These findings regarding longer term economic status are consistent with the positive current income effects already discussed. Similarly, at the aggregate level, we see a sizeable negative relationship between residing in the more economically developed urban areas and employment in risky work, especially for boys (.21 for boys, .77 for girls). The one exception here is that girls who reside in urban areas are much more likely to be employed in risky work relative to

being employed in other work (1.62). This finding is consistent with the high concentration of females in domestic service in urban areas.

Finally, returning to one of the striking results from the descriptive analysis, we see that once we control for a variety of parental and family characteristics, the presence of a mother or a father generally does not have a statistically significant association with children's employment in risky work. The one exception is the large positive association of mother's presence (i.e., negative association of mother's absence) with the likelihood that boys are employed in risky work relative to not being employed at all. Other than this exception, which itself runs counter to the vulnerability hypothesis, the greater vulnerability of children without a mother or father is well captured by family income and wealth measures, parental education, and other explanatory variables. This, of course, does not imply that children missing a parent are not particularly likely to engage in hazardous work, as lacking a parent tends to be fairly highly correlated with those characteristics that are statistically significant. It does suggest, though, that the absence of a parent as a catalyst for children engaging in risky work can to some degree be offset, for example, by a better education or income potential of the remaining parent, if present. It also suggests that even children from two-parent households are particularly vulnerable to risky work if their parents rank low on certain social and economic indicators.

Discussion

One important purpose of exploratory analyses such as this is to point to directions for future research and policy. Funding aimed at the social protection of children is limited, and there are many different – and worthy – purposes to which it could be put. In the child labor arena, ILO Convention 182 has already established that children in convention-defined "worst forms" and country-defined "hazardous" work should be targeted. Our analysis documents that,

in the case of Brazil at least, children engaged in such risky occupations are, on average, less likely than even other employed children to be enrolled in school, and more likely to work long hours and experience a variety of working conditions that may be unsafe. We also see that there are likely to be vast differences between girls and boys in their experience working in hazardous occupations, and that girls are over-represented in risky jobs in Brazil. Moreover, we believe that more generally some children doing hazardous work are more vulnerable than others, and this should also be a criterion for targeting.

But in a context where much child labor is already illegal, how can children in these situations be identified? Such children's work will tend to be hidden from authorities. One approach suggested by our research is by targeting adults working in occupation / industry categories that are thought to be hazardous for children. The daughters and sons of such adults have been shown to be at increased risk of following their parents' footsteps into hazardous work. In particular, daughters of women engaged in higher wage work are more likely to be employed in risky work than in other types of work. Furthermore, the ownership of a family farm is strongly associated with children, especially boys, engaging in hazardous work relative to not participating in the labor force. Reducing hazardous child farm work is a challenge around the world, as much child farm labor is legal because it takes place in a family enterprise. However, certain tasks – those that are hazardous to children – are forbidden for children. Targeting interventions in regions where the most problematic crops are grown, both to educate parents about steps of the production process that are especially harmful for children, as well as providing alternative non-hazardous work alternatives for youth, could prove especially beneficial.

In addition, low levels of parental education, especially of mothers, show a strong relationship to children engaging in risky work. Similarly, a very low level of wealth, as

indicated by structural features of the home and ownership of basic material assets, is fairly strongly associated with children's employment in hazardous work. Such characteristics are relatively easily identifiable and could therefore aid in targeting households. The absence of parents is also a potentially important targeting mechanism. We have shown that, when not controlling for more detailed socioeconomics characteristics, such children are especially vulnerable. This could be a useful condition to target as it may be even more easily identified than some of the underlying socioeconomic characteristics highlighted in the multivariate analysis.

In sum we argue, and believe most would agree, that programs should aim to protect the most vulnerable children from the most problematic work. Our research suggests ways in which existing information about parents and families can be used to help target intervention. In addition, our work points to a number of areas in which information tends to be lacking, especially those pertaining to what children actually do during the course of their labor force work. It is our hope that this study of kids in risky work in Brazil will encourage further thinking along these lines. Finally, next steps in our research include estimating bivariate models of children's employment in risky work determined jointly with mothers' or fathers' employment in risky work, respectively, in order to further identify systematic associations between children and their parents.

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Table 1: Distribution of Children 10 to 17 by Employment Situation

	%	n
Not Employed	**82.43**	**50,544**
Employed in Risky Work	**4.36**	**2608**
Domestic Service	1.82	1129
Street Work	0.44	281
Construction	0.65	399
Hazardous Farming	1.45	799
Employed in Other Work	**13.21**	**7,536**
Total, Children 10-17	**100.00**	**60,678**

Table 2: Children's Employment in Risky Work, by Demographic Group

	% Employed in Risky Work	% of Employment in Risky Category
All 10 to 17	4.36	24.82
Female	4.52	36.42
Male	4.20	18.56
Urban	3.33	25.75
Rural	8.87	23.35

Table 3: Characteristics of Children and Families, by Child's Employment Situation

	Child Not Employed	Child Employed in Other Work	Child Employed in Risky Work
% of Children Female	52.64	29.58	51.36
# of Siblings (mean)	1.91	2.42	2.79
% with Mother	89.70	88.32	82.22
Education of Mother (mean years of school)	5.96	4.07	3.04
% with Father	73.86	76.31	68.34
Education of Father (mean years of school)	5.74	3.55	2.68
Family Income per Capita (m.s.)	1.26	0.92	0.58
% of Family Income from Child (if paid)	--	23.94	24.78

Note: Family income includes earned and unearned income of all family members.

Table 4: Relative Risk Ratios from Multinomial Logit Models of Children's Employment

Employment Outcome Explanatory Variables	Full Sample	Boys	Girls
Risky Work vs. Not Employed[a]			
Female	.76	NA	NA
Mother present	1.82	2.27	NS
Father present	NS	NS	NS
Mother's education	.92	.95	.89
Father's education	.95	.95	.95
Exogenous labor income	.98	.97	.98
Mother's predicted wage	NS	.75	NS
Family business	1.42	1.97	NS
Family farm	2.22	3.23	1.47
Wealth quintile (ref: poorest)			
Second	.84	NS	.73
Third	.65	.70	.59
Fourth	.63	.63	.63
Fifth (wealthiest)	.45	.37	.54
Urban	.39	.21	.67
Risky Work vs. Other Work			
Female	2.25	NA	NA
Mother present	NS	NS	NS
Father present	NS	NS	NS
Mother's education	.93	NS	.88
Father's education	.98*	NS	.96
Exogenous labor income	.98	.97	NS
Mother's predicted wage	NS	.82*	1.41
Family business	NS	1.24	.69
Family farm	.80	NS	.58
Wealth quintile (ref: poorest)			
Second	NS	1.26	NS
Third	.83	NS	.69
Fourth	.77	NS	.66
Fifth (wealthiest)	.65	.62	.61
Urban	1.16	.77	1.62

[a] All results reported in Table 4 are statistically significant at ≤ 5% unless indicated otherwise as follows: NA -- not applicable; NS -- not statistically significant; * -- significant at 10%.
Full regression results are reported in Appendix Tables A.3, A.4 and A.5.

Figure 1: Probability of Children being in Risky Work Conditional on Mother's Employment Situation, by Demographic Group

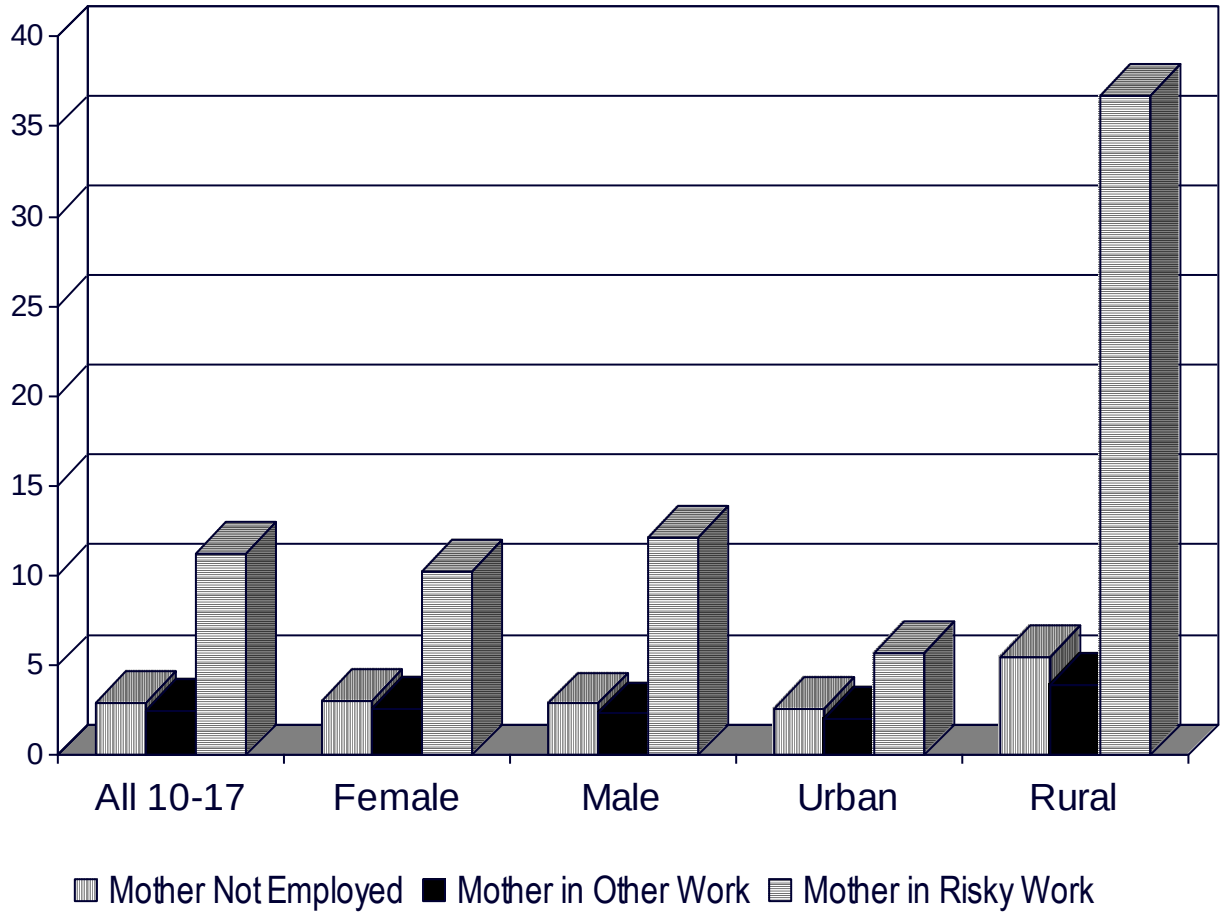
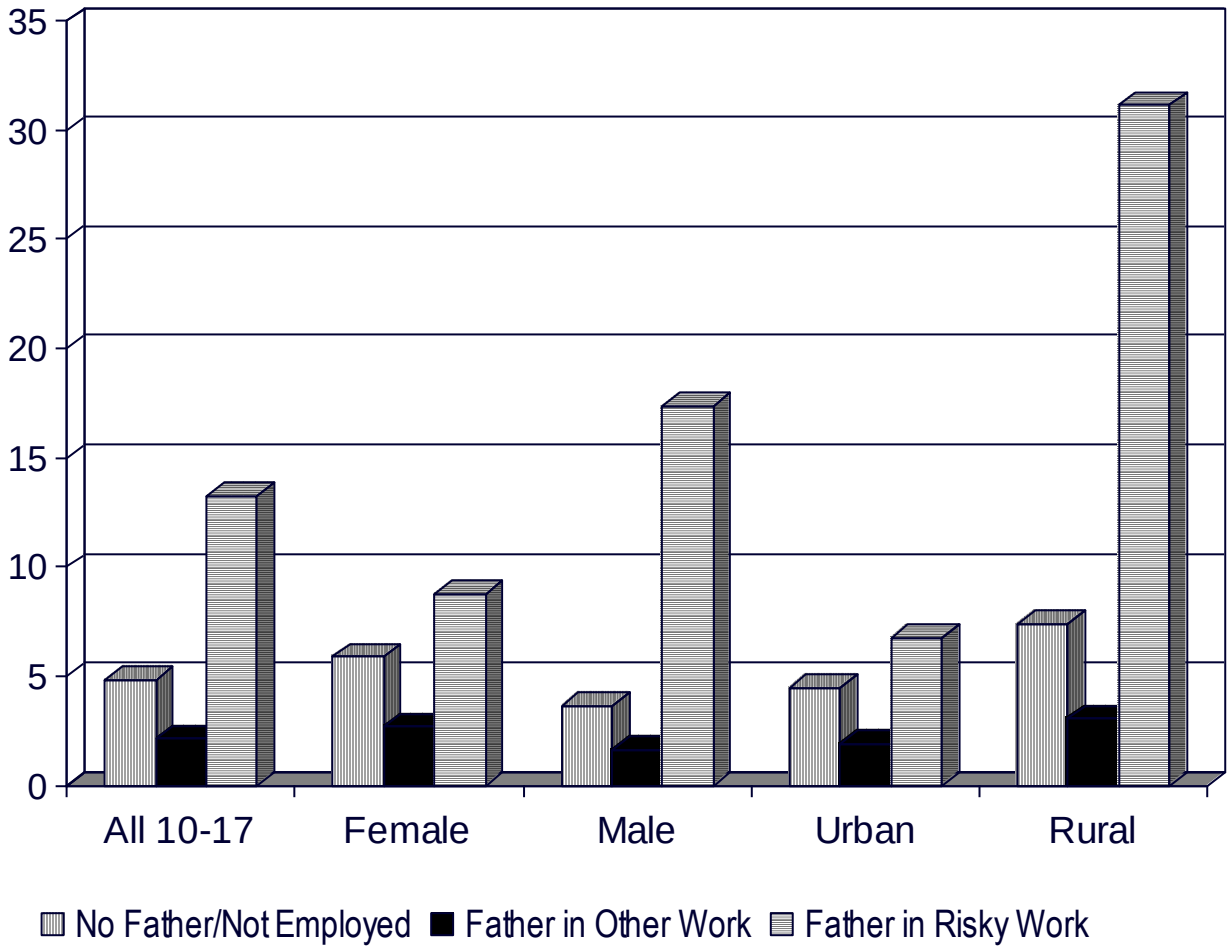


Figure 2: Probability of Children being in Risky Work Conditional on Father's Employment Situation, by Demographic Group



Appendix

Table A1: Variable Definitions for Multinomial Regressions

Variable Name	Variable Definition
empgoodbad	Dependent variable: child is not employed=0, employed in "other" work=1, employed in "risky" work=2
female	Child is Female
age	Age of child
age10	Child is age 10 (omitted category)
age11	Child is age 11
age12	Child is age 12
age13	Child is age 13
age14	Child is age 14
age15	Child is age 15
age16	Child is age 16
age17	Child is age 17
anymomin	Child's mother (or step-mother) is present
mage	Mother's age (=0 if no mother)
momeduc	Mother's years of schooling (=0 if no mother)
mlwghatall	Mother's predicted log wage (=-3 if no mother)
anydadin	Child's Father (or step-father) is present
dage	Father's age (=0 if no father)
deduc	Father's education (=0 if no father)
fambus2	Family owns a business
famfarm2	Family owns a farm
fmexlby100	Exogenous family labor income/100
fmnonlby100	Family non-labor income/100 (unadjusted for missing values)
nonlby	Family non-labor income/100 (with missing adjusted to 0)
nonlbymiss	Indicator for non-labor income missing
famexben	Exogenous family employment benefits
wealth1	Family is in lowest wealth quintile (omitted category)
wealth2	Family is in second wealth quintile
wealth3	Family is in third wealth quintile
wealth4	Family is in fourth wealth quintile
wealth5	Family is in fifth wealth quintile
sibs0_3	# of siblings age 0-3 in household
sibs4_5	# of siblings age 4-5 in household
sibs6_9	# of siblings age 6-9 in household
gsb10_14	# of female siblings age 10-14 in household
gsb15_17	# of female siblings age 15-17 in household
bsb10_14	# of male siblings age 10-14 in household
bsb15_17	# of male siblings age 15-17 in household
kidrl0_3	# of relatives age 0-3 in household
kidr14_5	# of relatives age 4-5 in household
kidr16_9	# of relatives age 6-9 in household
gr110_14	# of female relatives age 10-14 in household
gr115_17	# of female relatives age 15-17 in household
br110_14	# of male relatives age 10-14 in household
br115_17	# of male relatives age 15-17 in household
fhh18_59	# of females 18-59 in household

Table A1 (continued): Variable Definitions for Multinomial Regressions

Variable Name	Variable Definition
fhh60_up	# of females 60+ in household
mhh18_59	# of males 18-59 in household
mhh60_up	# of males 60+ in household
urban	Urban residence (rural is omitted category)
metro2	Metropolitan area residence (non-metropolitan is omitted category)
regionne	Region – Northeast (omitted category)
regionn	Region – North
regionse	Region – Southeast
regions	Region – South
regioncw	Region – Central West

Table A2: Descriptive Statistics For Full Sample 10-17

Variable	Obs	Mean	Std. Dev.	Min	Max
empgoodbad	60678	.2258314	.5106837	0	2
female	60678	.4966215	.4999927	0	1
age	60678	13.55681	2.268915	10	17
age10	60678	.1183625	.3230395	0	1
age11	60678	.1184614	.3231563	0	1
age12	60678	.1240318	.3296205	0	1
age13	60678	.126817	.3327706	0	1
age14	60678	.1287452	.3349204	0	1
age15	60678	.130146	.3364668	0	1
age16	60678	.1299318	.3362311	0	1
age17	60678	.1235044	.329018	0	1
anymomin	60678	.8870596	.3165226	0	1
mage	60678	35.33109	14.33077	0	95
momeduc	60678	5.000692	4.455204	0	18
mlwghatall	60508	-.3668119	1.163977	-3	2.89822
anydadin	60678	.7291275	.444414	0	1
dage	60678	31.7858	20.7544	0	98
deduc	60678	3.878473	4.485251	0	18
fambus2	60678	.2024457	.401826	0	1
famfarm2	60678	.0940044	.2918373	0	1
fmexlby100	60678	4.84955	11.10332	0	500
fmnonlby100	60511	1.314066	4.055418	0	124.4
nonlby	60678	1.310449	4.050418	0	124.4
nonlbymiss	60678	.0027522	.0523899	0	1
famexben	60678	.2205412	.414615	0	1
wealth1	60578	.2323616	.4223418	0	1
wealth2	60578	.2069893	.4051512	0	1
wealth3	60578	.2291591	.4202953	0	1
wealth4	60578	.1650269	.3712079	0	1
wealth5	60578	.1664631	.3724989	0	1
sibs0_3	60678	.1510103	.4192905	0	4
sibs4_5	60678	.1150005	.3422048	0	3
sibs6_9	60678	.3499951	.6124031	0	5
gsb10_14	60678	.2620554	.5123531	0	5
gsb15_17	60678	.1428854	.3760638	0	4
bsb10_14	60678	.2693068	.5220118	0	4
bsb15_17	60678	.1683147	.406654	0	4
kidrl0_3	60678	.0885494	.3501481	0	6
kidrl4_5	60678	.033686	.1973482	0	4
kidrl6_9	60678	.047612	.2522032	0	5
grl10_14	60678	.0550941	.2677156	0	4
grl15_17	60678	.0653614	.2662946	0	4
brl10_14	60678	.0524902	.2590491	0	4
brl15_17	60678	.0371469	.2033177	0	3
fhh18_59	60678	.3365141	.6478373	0	7
fhh60_up	60678	.0830944	.2824602	0	3
mhh18_59	60678	.4230364	.7358611	0	7
mhh60_up	60678	.0446455	.2089851	0	2
urban	60678	.8357724	.370485	0	1
metro2	60678	.3568839	.4790841	0	1
regionne	60678	.3523682	.4777119	0	1
regionn	60678	.1216751	.3269128	0	1
regionse	60678	.2765912	.4473162	0	1
regions	60678	.1427371	.3498074	0	1
regioncw	60678	.1066284	.3086428	0	1

Table A3: Regression Results For Full Sample 10-17
Employed in Other Work vs. Not Employed

Multinomial logistic regression — Number of obs = 60408
Wald chi2(98) = 8935.83
Prob > chi2 = 0.0000
Log pseudolikelihood = -27735.108 — Pseudo R2 = 0.2021

(Std. Err. adjusted for 40043 clusters in fam_id)

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
female	-1.080331	.0313435	-34.47	0.000	-1.141763	-1.018898
age11	.2161095	.0749086	2.88	0.004	.0692913	.3629278
age12	.6772572	.0691271	9.80	0.000	.5417706	.8127437
age13	.9868213	.0669304	14.74	0.000	.8556402	1.118002
age14	1.343751	.0667219	20.14	0.000	1.212978	1.474523
age15	1.847375	.0666364	27.72	0.000	1.71677	1.97798
age16	2.285534	.0666016	34.32	0.000	2.154997	2.41607
age17	2.620705	.0671584	39.02	0.000	2.489077	2.752333
anymomin	.2805418	.1584802	1.77	0.077	-.0300736	.5911573
mage	.0011428	.0029307	0.39	0.697	-.0046013	.0068869
momeduc	-.0168439	.0072573	-2.32	0.020	-.0310679	-.0026198
mlwghatall	-.1119132	.0418759	-2.67	0.008	-.1939884	-.0298379
anydadin	.0242035	.1289639	0.19	0.851	-.2285611	.2769681
dage	.000258	.0024944	0.10	0.918	-.0046308	.0051469
deduc	-.0299905	.0060123	-4.99	0.000	-.0417743	-.0182066
fambus2	.4147899	.0444805	9.33	0.000	.3276097	.5019701
famfarm2	1.013934	.0548699	18.48	0.000	.9063914	1.121477
fmexlby100	-.0042754	.0019692	-2.17	0.030	-.0081349	-.0004159
nonlby	-.0351805	.0062464	-5.63	0.000	-.0474231	-.0229379
nonlbymiss	2.635606	.4765232	5.53	0.000	1.701638	3.569574
famexben	-.2493633	.0465156	-5.36	0.000	-.3405322	-.1581943
wealth2	-.2503689	.046219	-5.42	0.000	-.3409565	-.1597812
wealth3	-.2513408	.04688	-5.36	0.000	-.343224	-.1594576
wealth4	-.1984744	.0541317	-3.67	0.000	-.3045707	-.0923781
wealth5	-.3612586	.0662964	-5.45	0.000	-.4911972	-.23132
sibs0_3	.0523059	.0406096	1.29	0.198	-.0272874	.1318992
sibs4_5	.0352935	.048523	0.73	0.467	-.0598099	.1303969
sibs6_9	.0543988	.0283205	1.92	0.055	-.0011083	.1099058
gsb10_14	.135672	.0290826	4.67	0.000	.0786711	.1926728
gsb15_17	.0957455	.0421946	2.27	0.023	.0130455	.1784455
bsb10_14	.0892486	.0294888	3.03	0.002	.0314516	.1470457
bsb15_17	.1359575	.0379631	3.58	0.000	.0615512	.2103639
kidrl0_3	.0884654	.046417	1.91	0.057	-.0025102	.179441
kidrl4_5	-.0863756	.0869135	-0.99	0.320	-.256723	.0839718
kidrl6_9	-.0902765	.0670738	-1.35	0.178	-.2217388	.0411859
grl10_14	-.0586189	.0722668	-0.81	0.417	-.2002592	.0830214
grl15_17	-.0972315	.0644307	-1.51	0.131	-.2235134	.0290503
brl10_14	.0566595	.0690783	0.82	0.412	-.0787315	.1920506
brl15_17	.2821552	.06354	4.44	0.000	.157619	.4066914
fhh18_59	-.0118166	.0264616	-0.45	0.655	-.0636804	.0400473
fhh60_up	-.1885433	.0625368	-3.01	0.003	-.3111131	-.0659735
mhh18_59	-.0547788	.0224389	-2.44	0.015	-.0987582	-.0107994
mhh60_up	-.1393808	.0822204	-1.70	0.090	-.3005299	.0217683
urban	-1.091951	.0466362	-23.41	0.000	-1.183356	-1.000545
metro2	-.3580047	.0366907	-9.76	0.000	-.4299172	-.2860922
regionn	-.2675537	.0568452	-4.71	0.000	-.3789682	-.1561391
regionse	.1269221	.0437904	2.90	0.004	.0410946	.2127497
regions	.5697659	.049103	11.60	0.000	.4735258	.6660061
regioncw	.1798727	.0538079	3.34	0.001	.0744111	.2853343
_cons	-2.159384	.1543374	-13.99	0.000	-2.46188	-1.856888

Table A3 (continued): Employed in Risky Work vs. Not Employed

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
female	-.2697825	.0483525	-5.58	0.000	-.3645517	-.1750133
age11	.4241087	.1481475	2.86	0.004	.1337449	.7144724
age12	.8276061	.1378667	6.00	0.000	.5573923	1.09782
age13	1.26924	.132578	9.57	0.000	1.009392	1.529088
age14	1.788285	.1282077	13.95	0.000	1.537003	2.039568
age15	2.113002	.1296787	16.29	0.000	1.858837	2.367168
age16	2.587099	.1297452	19.94	0.000	2.332803	2.841395
age17	2.937204	.1300578	22.58	0.000	2.682296	3.192113
anymomin	.5967152	.2722252	2.19	0.028	.0631636	1.130267
mage	-.0074516	.0049478	-1.51	0.132	-.0171491	.002246
momeduc	-.0865243	.0127429	-6.79	0.000	-.1115	-.0615487
mlwghatall	-.0437967	.0783276	-0.56	0.576	-.197316	.1097226
anydadin	.1501391	.2186234	0.69	0.492	-.278355	.5786331
dage	-.0027765	.0043117	-0.64	0.520	-.0112273	.0056744
deduc	-.0504326	.0109508	-4.61	0.000	-.0718958	-.0289695
fambus2	.3481102	.0750332	4.64	0.000	.2010478	.4951726
famfarm2	.7964319	.0854494	9.32	0.000	.6289541	.9639096
fmexlby100	-.0236733	.0060841	-3.89	0.000	-.0355979	-.0117488
nonlby	-.0688369	.0171056	-4.02	0.000	-.1023633	-.0353105
nonlbymiss	6.755072	.4283165	15.77	0.000	5.915587	7.594556
famexben	-.3734954	.0850082	-4.39	0.000	-.5401084	-.2068825
wealth2	-.1733057	.0684748	-2.53	0.011	-.3075139	-.0390975
wealth3	-.4324407	.0760583	-5.69	0.000	-.5815122	-.2833692
wealth4	-.4581059	.0928451	-4.93	0.000	-.640079	-.2761329
wealth5	-.7924009	.1218563	-6.50	0.000	-1.031235	-.5535668
sibs0_3	.0588114	.0597717	0.98	0.325	-.058339	.1759619
sibs4_5	.1175005	.0767732	1.53	0.126	-.0329722	.2679732
sibs6_9	.1564403	.0439953	3.56	0.000	.0702111	.2426694
gsb10_14	.1426064	.0450267	3.17	0.002	.0543557	.2308571
gsb15_17	.111189	.0693483	1.60	0.109	-.0247312	.2471092
bsb10_14	.2018847	.0441543	4.57	0.000	.115344	.2884255
bsb15_17	.1884838	.059739	3.16	0.002	.0713975	.3055702
kidrl0_3	.1680429	.0614526	2.73	0.006	.047598	.2884878
kidrl4_5	.0314821	.1112086	0.28	0.777	-.1864827	.2494469
kidrl6_9	-.0021015	.0845611	-0.02	0.980	-.1678382	.1636352
grl10_14	.1266575	.0920534	1.38	0.169	-.053764	.3070789
grl15_17	-.0263758	.0916371	-0.29	0.773	-.2059813	.1532297
brl10_14	.0386132	.1054331	0.37	0.714	-.168032	.2452583
brl15_17	.1329539	.1024283	1.30	0.194	-.067802	.3337097
fhh18_59	.0508915	.0409026	1.24	0.213	-.029276	.1310591
fhh60_up	-.0932959	.1047366	-0.89	0.373	-.2985758	.1119841
mhh18_59	.0440249	.0351377	1.25	0.210	-.0248437	.1128935
mhh60_up	-.217729	.136607	-1.59	0.111	-.4854737	.0500157
urban	-.9407296	.0710358	-13.24	0.000	-1.079957	-.801502
metro2	-.5256682	.0629851	-8.35	0.000	-.6491168	-.4022196
regionn	.1082562	.0866223	1.25	0.211	-.0615203	.2780327
regionse	.4445797	.073835	6.02	0.000	.2998656	.5892937
regions	.7445371	.0856942	8.69	0.000	.5765796	.9124947
regioncw	.4787061	.0906528	5.28	0.000	.3010298	.6563824
_cons	-3.851326	.2857106	-13.48	0.000	-4.411309	-3.291344

(empgoodbad==0 is the base outcome)

Table A3 (continued): Employed in Risky Work vs. Other Work

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
female	.8105481	.0532051	15.23	0.000	.706268	.9148281
age11	.2079991	.163086	1.28	0.202	-.1116435	.5276418
age12	.150349	.1501271	1.00	0.317	-.1438947	.4445927
age13	.2824188	.1446429	1.95	0.051	-.001076	.5659137
age14	.4445346	.1403339	3.17	0.002	.1694852	.7195841
age15	.2656272	.1418003	1.87	0.061	-.0122962	.5435506
age16	.3015655	.1408735	2.14	0.032	.0254585	.5776724
age17	.3164994	.1410764	2.24	0.025	.0399948	.5930039
anymomin	.3161733	.2940159	1.08	0.282	-.2600871	.8924338
mage	-.0085944	.0052986	-1.62	0.105	-.0189795	.0017907
momeduc	-.0696805	.0136143	-5.12	0.000	-.0963641	-.0429969
mlwghatall	.0681165	.0838165	0.81	0.416	-.0961608	.2323937
anydadin	.1259356	.2371902	0.53	0.595	-.3389486	.5908197
dage	-.0030345	.0046512	-0.65	0.514	-.0121507	.0060816
deduc	-.0204422	.0118293	-1.73	0.084	-.0436271	.0027428
fambus2	-.0666797	.080877	-0.82	0.410	-.2251957	.0918364
famfarm2	-.2175025	.0901762	-2.41	0.016	-.3942446	-.0407604
fmexlby100	-.0193979	.006158	-3.15	0.002	-.0314673	-.0073285
nonlby	-.0336564	.0177694	-1.89	0.058	-.0684839	.001171
nonlbymiss	4.119466	.4227371	9.74	0.000	3.290916	4.948015
famexben	-.1241322	.0918614	-1.35	0.177	-.3041772	.0559128
wealth2	.0770632	.0748275	1.03	0.303	-.069596	.2237225
wealth3	-.1810999	.0824673	-2.20	0.028	-.3427327	-.019467
wealth4	-.2596315	.09986	-2.60	0.009	-.4553535	-.0639096
wealth5	-.4311422	.1299123	-3.32	0.001	-.6857658	-.1765187
sibs0_3	.0065055	.0675428	0.10	0.923	-.1258759	.1388869
sibs4_5	.082207	.0832794	0.99	0.324	-.0810176	.2454316
sibs6_9	.1020415	.0477858	2.14	0.033	.0083831	.1956999
gsb10_14	.0069344	.0476866	0.15	0.884	-.0865296	.1003985
gsb15_17	.0154435	.0730536	0.21	0.833	-.127739	.158626
bsb10_14	.1126361	.0473646	2.38	0.017	.0198032	.205469
bsb15_17	.0525263	.0651446	0.81	0.420	-.0751548	.1802075
kidrl0_3	.0795775	.0687742	1.16	0.247	-.0552175	.2143725
kidrl4_5	.1178577	.1301117	0.91	0.365	-.1371566	.372872
kidrl6_9	.088175	.0943397	0.93	0.350	-.0967274	.2730774
grl10_14	.1852764	.1070321	1.73	0.083	-.0245027	.3950555
grl15_17	.0708558	.1011103	0.70	0.483	-.1273168	.2690283
brl10_14	-.0180464	.1149624	-0.16	0.875	-.2433685	.2072758
brl15_17	-.1492014	.1077023	-1.39	0.166	-.3602939	.0618912
fhh18_59	.0627081	.044369	1.41	0.158	-.0242535	.1496697
fhh60_up	.0952474	.1124411	0.85	0.397	-.125133	.3156279
mhh18_59	.0988037	.0370565	2.67	0.008	.0261742	.1714331
mhh60_up	-.0783482	.1489472	-0.53	0.599	-.3702794	.213583
urban	.151221	.0752348	2.01	0.044	.0037635	.2986786
metro2	-.1676635	.0684445	-2.45	0.014	-.3018123	-.0335147
regionn	.3758099	.0934878	4.02	0.000	.1925771	.5590427
regionse	.3176575	.080014	3.97	0.000	.160833	.474482
regions	.1747712	.0925786	1.89	0.059	-.0066795	.3562219
regioncw	.2988334	.097218	3.07	0.002	.1082896	.4893772
_cons	-1.691942	.3075628	-5.50	0.000	-2.294754	-1.08913

(empgoodbad==1 is the base outcome)

Table A4: Regression Results For Boys 10-17
Employed in Other Work vs. Not Employed

Multinomial logistic regression — Number of obs = 30400
Wald chi2(94) = 5283.87
Prob > chi2 = 0.0000
Log pseudolikelihood = -15685.856 — Pseudo R2 = 0.2114

(Std. Err. adjusted for 24124 clusters in fam_id)

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
age11	.2286063	.0942855	2.42	0.015	.0438101	.4134025
age12	.770767	.0867214	8.89	0.000	.6007962	.9407377
age13	1.05773	.0855904	12.36	0.000	.8899754	1.225484
age14	1.486309	.0838459	17.73	0.000	1.321975	1.650644
age15	2.05022	.0838528	24.45	0.000	1.885872	2.214568
age16	2.479961	.0836394	29.65	0.000	2.316031	2.643891
age17	2.834858	.0844367	33.57	0.000	2.669365	3.000351
anymomin	.2264856	.1943249	1.17	0.244	-.1543842	.6073554
mage	-.0013124	.0035812	-0.37	0.714	-.0083315	.0057067
momeduc	-.0231088	.0090509	-2.55	0.011	-.0408483	-.0053692
mlwghatall	-.0934992	.0535039	-1.75	0.081	-.1983649	.0113665
anydadin	-.0985812	.1547535	-0.64	0.524	-.4018926	.2047302
dage	.0035012	.0029715	1.18	0.239	-.0023229	.0093253
deduc	-.0380756	.007248	-5.25	0.000	-.0522815	-.0238697
fambus2	.4655378	.053789	8.65	0.000	.3601133	.5709623
famfarm2	1.15749	.0672541	17.21	0.000	1.025674	1.289305
fmexlby100	-.0043315	.0025467	-1.70	0.089	-.009323	.00066
nonlby	-.0406449	.0085188	-4.77	0.000	-.0573414	-.0239484
famexben	-.238197	.0568096	-4.19	0.000	-.3495419	-.1268522
wealth2	-.2657033	.055972	-4.75	0.000	-.3754064	-.1560002
wealth3	-.2910452	.05676	-5.13	0.000	-.4022927	-.1797976
wealth4	-.2755753	.0669564	-4.12	0.000	-.4068073	-.1443432
wealth5	-.520134	.0822448	-6.32	0.000	-.6813308	-.3589371
sibs0_3	.1273404	.0507123	2.51	0.012	.0279462	.2267346
sibs4_5	.0802519	.059289	1.35	0.176	-.0359524	.1964562
sibs6_9	.0469019	.0344821	1.36	0.174	-.0206818	.1144856
gsb10_14	.1220238	.0356735	3.42	0.001	.0521049	.1919427
gsb15_17	.0565689	.0488746	1.16	0.247	-.0392236	.1523614
bsb10_14	.0971197	.0367424	2.64	0.008	.025106	.1691334
bsb15_17	.1603519	.047294	3.39	0.001	.0676573	.2530465
kidrl0_3	.0629135	.0589248	1.07	0.286	-.052577	.178404
kidrl4_5	-.1728253	.0992823	-1.74	0.082	-.367415	.0217645
kidrl6_9	-.15122	.0862469	-1.75	0.080	-.3202609	.0178209
grl10_14	-.0429624	.1023939	-0.42	0.675	-.2436508	.157726
grl15_17	.1916417	.1026512	1.87	0.062	-.0095509	.3928344
brl10_14	.0803033	.0772433	1.04	0.299	-.0710907	.2316974
brl15_17	.2787554	.0795073	3.51	0.000	.1229239	.4345868
fhh18_59	-.0346354	.0329425	-1.05	0.293	-.0992014	.0299307
fhh60_up	-.2681135	.0769498	-3.48	0.000	-.4189324	-.1172946
mhh18_59	-.0162602	.0272755	-0.60	0.551	-.0697192	.0371989
mhh60_up	-.2263059	.0979351	-2.31	0.021	-.4182552	-.0343566
urban	-1.293188	.0587817	-22.00	0.000	-1.408398	-1.177978
metro2	-.47591	.0446695	-10.65	0.000	-.5634607	-.3883594
regionn	-.1883808	.0683319	-2.76	0.006	-.3223088	-.0544527
regionse	.1039683	.0541452	1.92	0.055	-.0021544	.210091
regions	.4715927	.0605935	7.78	0.000	.3528316	.5903538
regioncw	.2473015	.0659945	3.75	0.000	.1179547	.3766484
_cons	-1.920009	.1934285	-9.93	0.000	-2.299122	-1.540896

Table A4 (continued): Employed in Risky Work vs. Not Employed

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
age11	.3192619	.1874184	1.70	0.088	-.0480714	.6865953
age12	.7375162	.177911	4.15	0.000	.3888171	1.086215
age13	1.158503	.1696139	6.83	0.000	.826066	1.49094
age14	1.693973	.1630906	10.39	0.000	1.374321	2.013625
age15	2.116356	.1637781	12.92	0.000	1.795357	2.437355
age16	2.679473	.1639619	16.34	0.000	2.358114	3.000832
age17	3.035533	.1649866	18.40	0.000	2.712165	3.3589
anymomin	.8208559	.3554969	2.31	0.021	.1240948	1.517617
mage	-.0070509	.0066945	-1.05	0.292	-.0201719	.0060702
momeduc	-.0466367	.0169056	-2.76	0.006	-.0797711	-.0135023
mlwghatall	-.2892138	.0989731	-2.92	0.003	-.4831975	-.09523
anydadin	.1240891	.3015145	0.41	0.681	-.4668684	.7150466
dage	-.0010734	.0058811	-0.18	0.855	-.0126	.0104533
deduc	-.047409	.0151561	-3.13	0.002	-.0771144	-.0177035
fambus2	.6787827	.1018309	6.67	0.000	.4791978	.8783675
famfarm2	1.172449	.1125047	10.42	0.000	.9519442	1.392954
fmexlby100	-.0322168	.0115169	-2.80	0.005	-.0547894	-.0096441
nonlby	-.0498405	.0237709	-2.10	0.036	-.0964307	-.0032503
famexben	-.3810021	.1278193	-2.98	0.003	-.6315233	-.1304809
wealth2	-.0317775	.0950578	-0.33	0.738	-.2180873	.1545323
wealth3	-.3547228	.1072929	-3.31	0.001	-.565013	-.1444325
wealth4	-.4594879	.1311432	-3.50	0.000	-.7165237	-.202452
wealth5	-.9949552	.1739208	-5.72	0.000	-1.335834	-.6540766
sibs0_3	.1956919	.0847339	2.31	0.021	.0296166	.3617672
sibs4_5	.1271196	.1069647	1.19	0.235	-.0825274	.3367666
sibs6_9	.1854527	.0573874	3.23	0.001	.0729754	.2979299
gsb10_14	.0756729	.0616692	1.23	0.220	-.0451965	.1965423
gsb15_17	-.0589785	.0921386	-0.64	0.522	-.2395668	.1216098
bsb10_14	.1408318	.0651207	2.16	0.031	.0131975	.268466
bsb15_17	.1753985	.0818832	2.14	0.032	.0149103	.3358867
kidrl0_3	.2280991	.0949428	2.40	0.016	.0420147	.4141835
kidrl4_5	.0843792	.1624626	0.52	0.603	-.2340416	.4028001
kidrl6_9	-.2546465	.1477393	-1.72	0.085	-.5442103	.0349173
grl10_14	.0757185	.1618594	0.47	0.640	-.2415202	.3929571
grl15_17	.2923858	.1802857	1.62	0.105	-.0609676	.6457392
brl10_14	.0447427	.1442987	0.31	0.757	-.2380776	.3275629
brl15_17	.1025679	.1414009	0.73	0.468	-.1745729	.3797086
fhh18_59	-.0825229	.0636355	-1.30	0.195	-.2072463	.0422005
fhh60_up	-.4991836	.1581825	-3.16	0.002	-.8092155	-.1891517
mhh18_59	.0653527	.0489227	1.34	0.182	-.0305341	.1612394
mhh60_up	-.0928552	.1840266	-0.50	0.614	-.4535406	.2678302
urban	-1.558475	.100023	-15.58	0.000	-1.754517	-1.362433
metro2	-.4354114	.0909335	-4.79	0.000	-.6136378	-.2571851
regionn	.0746723	.1231556	0.61	0.544	-.1667083	.3160529
regionse	.5107774	.1020344	5.01	0.000	.3107936	.7107612
regions	.6998353	.1186456	5.90	0.000	.4672943	.9323764
regioncw	.388205	.1351612	2.87	0.004	.1232938	.6531161
_cons	-4.010139	.3607043	-11.12	0.000	-4.717106	-3.303171

(empgoodbad==0 is the base outcome)

Table A4 (continued): Employed in Risky Work vs. Other Work

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
age11	.0906557	.2006291	0.45	0.651	-.3025701	.4838814
age12	-.0332508	.1874505	-0.18	0.859	-.400647	.3341454
age13	.1007736	.180369	0.56	0.576	-.2527431	.4542903
age14	.2076635	.172573	1.20	0.229	-.1305733	.5459004
age15	.0661361	.1736354	0.38	0.703	-.2741831	.4064552
age16	.1995121	.1720894	1.16	0.246	-.1377769	.5368011
age17	.2006743	.1728777	1.16	0.246	-.1381597	.5395082
anymomin	.5943703	.3684613	1.61	0.107	-.1278006	1.316541
mage	-.0057385	.0068409	-0.84	0.402	-.0191465	.0076695
momeduc	-.0235279	.0175362	-1.34	0.180	-.0578983	.0108425
mlwghatall	-.1957145	.1030566	-1.90	0.058	-.3977017	.0062726
anydadin	.2226703	.309753	0.72	0.472	-.3844345	.8297751
dage	-.0045745	.0060004	-0.76	0.446	-.016335	.0071859
deduc	-.0093334	.0157924	-0.59	0.555	-.040286	.0216191
fambus2	.2132449	.1049429	2.03	0.042	.0075605	.4189292
famfarm2	.0149598	.1111089	0.13	0.893	-.2028097	.2327294
fmexlby100	-.0278853	.0115751	-2.41	0.016	-.0505721	-.0051984
nonlby	-.0091956	.0243657	-0.38	0.706	-.0569514	.0385603
famexben	-.1428051	.1325057	-1.08	0.281	-.4025115	.1169013
wealth2	.2339258	.0978894	2.39	0.017	.0420661	.4257856
wealth3	-.0636776	.1105471	-0.58	0.565	-.2803459	.1529906
wealth4	-.1839126	.1347483	-1.36	0.172	-.4480143	.0801891
wealth5	-.4748213	.1778444	-2.67	0.008	-.8233898	-.1262527
sibs0_3	.0683515	.087638	0.78	0.435	-.1034158	.2401189
sibs4_5	.0468677	.1098758	0.43	0.670	-.168485	.2622204
sibs6_9	.1385508	.0597942	2.32	0.020	.0213563	.2557453
gsb10_14	-.0463509	.0625013	-0.74	0.458	-.1688512	.0761493
gsb15_17	-.1155474	.0944398	-1.22	0.221	-.300646	.0695513
bsb10_14	.0437121	.0644544	0.68	0.498	-.0826161	.1700404
bsb15_17	.0150467	.0839144	0.18	0.858	-.1494226	.1795159
kidrl0_3	.1651856	.1002494	1.65	0.099	-.0312997	.3616709
kidrl4_5	.2572045	.1770146	1.45	0.146	-.0897377	.6041467
kidrl6_9	-.1034265	.1475377	-0.70	0.483	-.3925951	.1857421
grl10_14	.1186809	.168933	0.70	0.482	-.2124216	.4497834
grl15_17	.1007441	.1791586	0.56	0.574	-.2504003	.4518884
brl10_14	-.0355606	.1524578	-0.23	0.816	-.3343724	.2632511
brl15_17	-.1761875	.143512	-1.23	0.220	-.4574658	.1050908
fhh18_59	-.0478875	.0653765	-0.73	0.464	-.1760231	.080248
fhh60_up	-.2310701	.1627589	-1.42	0.156	-.5500717	.0879316
mhh18_59	.0816128	.0488693	1.67	0.095	-.0141693	.177395
mhh60_up	.1334507	.1882073	0.71	0.478	-.2354289	.5023303
urban	-.2652875	.0995343	-2.67	0.008	-.4603712	-.0702038
metro2	.0404986	.0955198	0.42	0.672	-.1467168	.227714
regionn	.263053	.1265086	2.08	0.038	.0151008	.5110053
regionse	.4068091	.1068027	3.81	0.000	.1974797	.6161385
regions	.2282427	.1225934	1.86	0.063	-.012036	.4685213
regioncw	.1409034	.1386103	1.02	0.309	-.1307678	.4125747
_cons	-2.090129	.3764707	-5.55	0.000	-2.827998	-1.35226

(empgoodbad==1 is the base outcome)

Table A5: Regression Results For Girls 10-17
Employed in Other Work vs. Not Employed

Multinomial logistic regression — Number of obs = 30008
Wald chi2(96) = 3332.62
Prob > chi2 = 0.0000
Log pseudolikelihood = -11730.392 — Pseudo R2 = 0.1668

(Std. Err. adjusted for 24474 clusters in fam_id)

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
age11	.2163005	.1319161	1.64	0.101	-.0422503	.4748513
age12	.5281448	.1254436	4.21	0.000	.2822799	.7740098
age13	.9165448	.118129	7.76	0.000	.6850163	1.148073
age14	1.156671	.1188171	9.73	0.000	.9237942	1.389549
age15	1.56591	.1174326	13.33	0.000	1.335746	1.796074
age16	2.067458	.1162233	17.79	0.000	1.839665	2.295252
age17	2.368536	.1162577	20.37	0.000	2.140676	2.596397
anymomin	.2691756	.2532397	1.06	0.288	-.227165	.7655162
mage	.0063681	.0046989	1.36	0.175	-.0028416	.0155779
momeduc	.0027174	.0115073	0.24	0.813	-.0198364	.0252712
mlwghatall	-.1836549	.0642779	-2.86	0.004	-.3096372	-.0576726
anydadin	.2740607	.2189066	1.25	0.211	-.1549884	.7031097
dage	-.0072607	.0043064	-1.69	0.092	-.015701	.0011796
deduc	-.0118162	.0096904	-1.22	0.223	-.0308092	.0071767
fambus2	.3595346	.0718685	5.00	0.000	.2186749	.5003943
famfarm2	.9271158	.0890214	10.41	0.000	.7526371	1.101595
fmexlby100	-.0040481	.0027963	-1.45	0.148	-.0095288	.0014326
nonlby	-.0269556	.0080181	-3.36	0.001	-.0426708	-.0112403
nonlbymiss	1.89589	.7260196	2.61	0.009	.4729176	3.318862
famexben	-.2728316	.0754693	-3.62	0.000	-.4207487	-.1249144
wealth2	-.1771398	.0766103	-2.31	0.021	-.3272932	-.0269864
wealth3	-.1602245	.0773374	-2.07	0.038	-.311803	-.0086459
wealth4	-.0424082	.0861948	-0.49	0.623	-.2113468	.1265305
wealth5	-.1220003	.1035999	-1.18	0.239	-.3250523	.0810517
sibs0_3	.0043554	.0651286	0.07	0.947	-.1232943	.1320051
sibs4_5	-.0674864	.0767194	-0.88	0.379	-.2178537	.0828808
sibs6_9	.0638519	.0445076	1.43	0.151	-.0233813	.1510851
gsb10_14	.1447644	.047713	3.03	0.002	.0512487	.2382801
gsb15_17	.149913	.0700853	2.14	0.032	.0125483	.2872777
bsb10_14	.0673364	.0480427	1.40	0.161	-.0268255	.1614984
bsb15_17	.0972837	.0607298	1.60	0.109	-.0217445	.2163119
kidrl0_3	.1142845	.0716134	1.60	0.111	-.0260752	.2546441
kidrl4_5	.0740314	.1318997	0.56	0.575	-.1844872	.3325501
kidrl6_9	-.0208651	.1001085	-0.21	0.835	-.2170741	.1753439
grl10_14	-.0836321	.1137081	-0.74	0.462	-.3064959	.1392318
grl15_17	-.0542086	.0990188	-0.55	0.584	-.2482818	.1398646
brl10_14	-.0238737	.1304326	-0.18	0.855	-.2795169	.2317695
brl15_17	-.1127166	.160982	-0.70	0.484	-.4282354	.2028023
fhh18_59	.0059324	.0416689	0.14	0.887	-.0757372	.087602
fhh60_up	-.18132	.1029214	-1.76	0.078	-.3830422	.0204023
mhh18_59	-.1219889	.0376205	-3.24	0.001	-.1957237	-.0482541
mhh60_up	-.0121123	.1328584	-0.09	0.927	-.27251	.2482854
urban	-.8861722	.0738814	-11.99	0.000	-1.030977	-.7413674
metro2	-.1377471	.0572181	-2.41	0.016	-.2498925	-.0256016
regionn	-.5109174	.1004105	-5.09	0.000	-.7077184	-.3141164
regionse	.1659468	.0680948	2.44	0.015	.0324834	.2994102
regions	.722208	.0743898	9.71	0.000	.5764066	.8680094
regioncw	.0148128	.0917633	0.16	0.872	-.16504	.1946656
_cons	-3.580756	.2424773	-14.77	0.000	-4.056003	-3.105509

Table A5 (continued): Employed in Risky Work vs. Not Employed

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
age11	.6311107	.2540746	2.48	0.013	.1331336	1.129088
age12	1.032715	.2398445	4.31	0.000	.5626282	1.502802
age13	1.552328	.2314796	6.71	0.000	1.098637	2.00602
age14	2.054921	.2234798	9.20	0.000	1.616909	2.492934
age15	2.321334	.2259191	10.28	0.000	1.87854	2.764127
age16	2.726865	.2252759	12.10	0.000	2.285333	3.168398
age17	3.10247	.2249507	13.79	0.000	2.661574	3.543365
anymomin	.3160145	.3924971	0.81	0.421	-.4532656	1.085295
mage	-.0068978	.0068575	-1.01	0.314	-.0203382	.0065426
momeduc	-.1216347	.0176472	-6.89	0.000	-.1562225	-.0870468
mlwghatall	.1575463	.1138384	1.38	0.166	-.0655729	.3806656
anydadin	.1850455	.2986733	0.62	0.536	-.4003435	.7704345
dage	-.0049906	.0059189	-0.84	0.399	-.0165915	.0066103
deduc	-.0550996	.0149232	-3.69	0.000	-.0843486	-.0258506
fambus2	-.0170794	.1088842	-0.16	0.875	-.2304886	.1963297
famfarm2	.3859665	.1188789	3.25	0.001	.1529682	.6189648
fmexlby100	-.016384	.0081862	-2.00	0.045	-.0324288	-.0003393
nonlby	-.1012114	.0242328	-4.18	0.000	-.1487069	-.053716
nonlbymiss	6.8561	.4806939	14.26	0.000	5.913957	7.798243
famexben	-.3761713	.1108322	-3.39	0.001	-.5933983	-.1589442
wealth2	-.3180385	.0904391	-3.52	0.000	-.4952959	-.1407811
wealth3	-.5274882	.0975373	-5.41	0.000	-.7186577	-.3363186
wealth4	-.464707	.1184975	-3.92	0.000	-.6969579	-.2324562
wealth5	-.6193372	.1544924	-4.01	0.000	-.9221367	-.3165377
sibs0_3	-.0578808	.0742575	-0.78	0.436	-.2034229	.0876612
sibs4_5	.0975015	.094763	1.03	0.304	-.0882305	.2832336
sibs6_9	.0969626	.060485	1.60	0.109	-.0215858	.2155111
gsb10_14	.2103627	.0616698	3.41	0.001	.0894922	.3312333
gsb15_17	.2773842	.0924279	3.00	0.003	.0962287	.4585396
bsb10_14	.2623858	.0582417	4.51	0.000	.1482342	.3765374
bsb15_17	.2091353	.0790862	2.64	0.008	.0541292	.3641415
kidrl0_3	.1004429	.0758839	1.32	0.186	-.0482867	.2491726
kidrl4_5	-.0018222	.1454679	-0.01	0.990	-.2869341	.2832897
kidrl6_9	.1492927	.0992785	1.50	0.133	-.0452896	.3438751
grl10_14	.1526332	.1084604	1.41	0.159	-.0599452	.3652117
grl15_17	-.0119341	.1117929	-0.11	0.915	-.2310442	.2071759
brl10_14	-.0026747	.1513679	-0.02	0.986	-.2993503	.2940008
brl15_17	-.0435063	.1969037	-0.22	0.825	-.4294306	.3424179
fhh18_59	.1375693	.04923	2.79	0.005	.0410803	.2340584
fhh60_up	.18839	.1341339	1.40	0.160	-.0745077	.4512876
mhh18_59	.0317413	.0451255	0.70	0.482	-.0567031	.1201857
mhh60_up	-.4042874	.203358	-1.99	0.047	-.8028618	-.0057131
urban	-.4024879	.0966729	-4.16	0.000	-.5919632	-.2130125
metro2	-.6031281	.0837013	-7.21	0.000	-.7671797	-.4390764
regionn	.1482245	.1142124	1.30	0.194	-.0756278	.3720767
regionse	.3910078	.0989387	3.95	0.000	.1970915	.5849241
regions	.8210217	.1121587	7.32	0.000	.6011947	1.040849
regioncw	.582901	.1147582	5.08	0.000	.3579791	.8078229
_cons	-4.098142	.4233501	-9.68	0.000	-4.927893	-3.268391

(empgoodbad==0 is the base outcome)

Table A5 (continued): Employed in Risky Work vs. Other Work

empgoodbad	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
2						
age11	.4148102	.2842514	1.46	0.144	-.1423123	.9719327
age12	.50457	.2683803	1.88	0.060	-.0214457	1.030586
age13	.6357835	.2569244	2.47	0.013	.132221	1.139346
age14	.8982499	.2501184	3.59	0.000	.4080268	1.388473
age15	.7554236	.2512515	3.01	0.003	.2629796	1.247868
age16	.6594072	.249616	2.64	0.008	.1701689	1.148646
age17	.7339333	.2486032	2.95	0.003	.2466799	1.221187
anymomin	.0468389	.4456464	0.11	0.916	-.8266119	.9202897
mage	-.0132659	.0078347	-1.69	0.090	-.0286216	.0020898
momeduc	-.1243521	.0199333	-6.24	0.000	-.1634207	-.0852835
mlwghatall	.3412013	.1249367	2.73	0.006	.0963299	.5860726
anydadin	-.0890152	.3512421	-0.25	0.800	-.7774371	.5994068
dage	.0022701	.0069214	0.33	0.743	-.0112957	.0158359
deduc	-.0432834	.0171407	-2.53	0.012	-.0768786	-.0096881
fambus2	-.3766141	.1238671	-3.04	0.002	-.6193892	-.1338389
famfarm2	-.5411494	.1350195	-4.01	0.000	-.8057827	-.276516
fmexlby100	-.0123359	.0085104	-1.45	0.147	-.0290159	.0043441
nonlby	-.0742559	.0252074	-2.95	0.003	-.1236615	-.0248502
nonlbymiss	4.96021	.6433362	7.71	0.000	3.699294	6.221126
famexben	-.1033397	.1285299	-0.80	0.421	-.3552537	.1485743
wealth2	-.1408987	.1089836	-1.29	0.196	-.3545027	.0727053
wealth3	-.3672637	.1158946	-3.17	0.002	-.5944129	-.1401145
wealth4	-.4222988	.1380272	-3.06	0.002	-.6928272	-.1517705
wealth5	-.4973369	.1758046	-2.83	0.005	-.8419077	-.1527661
sibs0_3	-.0622363	.091981	-0.68	0.499	-.2425156	.1180431
sibs4_5	.164988	.1127433	1.46	0.143	-.0559848	.3859608
sibs6_9	.0331107	.0704386	0.47	0.638	-.1049464	.1711679
gsb10_14	.0655983	.071318	0.92	0.358	-.0741825	.2053791
gsb15_17	.1274711	.1071175	1.19	0.234	-.0824753	.3374176
bsb10_14	.1950494	.0692411	2.82	0.005	.0593394	.3307593
bsb15_17	.1118516	.0923462	1.21	0.226	-.0691437	.2928469
kidrl0_3	-.0138415	.0945638	-0.15	0.884	-.1991832	.1715001
kidrl4_5	-.0758536	.1753398	-0.43	0.665	-.4195133	.267806
kidrl6_9	.1701578	.1270644	1.34	0.181	-.0788838	.4191995
grl10_14	.2362653	.1476788	1.60	0.110	-.0531798	.5257104
grl15_17	.0422745	.1392243	0.30	0.761	-.2306002	.3151492
brl10_14	.021199	.1793484	0.12	0.906	-.3303173	.3727154
brl15_17	.0692102	.2355665	0.29	0.769	-.3924917	.5309121
fhh18_59	.1316369	.0595828	2.21	0.027	.0148568	.2484171
fhh60_up	.3697099	.1581273	2.34	0.019	.0597861	.6796337
mhh18_59	.1537302	.0537907	2.86	0.004	.0483023	.2591581
mhh60_up	-.3921751	.2291906	-1.71	0.087	-.8413805	.0570303
urban	.4836844	.1104769	4.38	0.000	.2671536	.7002151
metro2	-.465381	.0969066	-4.80	0.000	-.6553145	-.2754475
regionn	.6591419	.1427112	4.62	0.000	.379433	.9388507
regionse	.225061	.1124082	2.00	0.045	.004745	.4453771
regions	.0988137	.1271182	0.78	0.437	-.1503333	.3479607
regioncw	.5680882	.1381772	4.11	0.000	.2972659	.8389104
_cons	-.5173862	.4722753	-1.10	0.273	-1.443029	.4082563

(empgoodbad==1 is the base outcome)