Job Characteristics and Job Retention of Young Workers with Disabilities

Carrie L. Shandra
Department of Sociology
State University of New York at Stony Brook
carrie.shandra@stonybrook.edu

People with disabilities experience lower labor force participation than people without disabilities in the US. Despite the focus on work *promotion* among this population, less is known about factors increasing job *retention*. This study utilizes longitudinal employment histories from NLSY97 to evaluate: How job characteristics differ by adolescent disability status, what job characteristics associate with the hazard of separation, and if the characteristics associated with the hazard of separation differ by adolescent disability status.

Young workers with adolescent disabilities have a higher baseline hazard of separation than workers without disabilities. These results persist for involuntary separations (serious disability) and voluntary health-related separations (mild or serious disability), net of job characteristics. Employment benefits—medical, scheduling, leave, retirement—negatively associate with the hazard of separation for workers with disabilities. However, these effects persist for all workers, whereas job satisfaction, job sector, and work hours further condition the hazard of separation among workers with disabilities.

Draft 09/19/18

I gratefully acknowledge support from the Department of Labor Scholars Program, 2017-2018, the staff at Avar Consulting, and seminar attendees at the Department of Labor. All errors are my own. This paper was prepared for the U.S. Department of Labor (DOL), Chief Evaluation Office under contract number DOL-OPS-15-C-0060. The views expressed are those of the authors and should not be attributed to DOL or Avar Consulting, Inc., nor does mention of trade names, commercial products, or organizations imply endorsement of same by the U.S. Government.

Introduction

People with disabilities experience significantly lower levels of labor force participation than people without disabilities in the United States (Bureau of Labor Statistics [BLS] 2016). When they are employed, they work fewer hours and are more likely to hold temporary and nonstandard work arrangements (BLS 2013, Bureau of Labor Statistics 2016). Unemployment among individuals with disabilities is not only a primary contributor to poverty and social exclusion (Brucker et al. 2015, Schur 2002); it also drives billions of dollars in federal disability insurance payments.

Most unemployed people with disabilities want to work (Ali, Schur and Blanck 2011), and cite a lack of employer accommodations, a lack of job training, and accessibility as barriers to participation (BLS 2013). These findings suggest that—among individuals with disabilities who *are* employed—job characteristics are likely an important contributor to retention. Despite evidence of the importance of scheduling, benefits, flexibility, and employer policies for retention among other populations (Glass et al. 2013, Rangarajan, Schochet and Chu 1998), comparatively less is known about the association among workers with disabilities. This is particularly important to understand among individuals experiencing disability onset in adolescence and young adulthood, as early work experiences are predictive of subsequent employment (Alon, Donahoe and Tienda 2001, Mamun et al. 2017) and the passage of the Americans with Disabilities Act (ADA) has expanded employment protections.

This study uses data from the National Longitudinal Survey of Youth 1997 (NLSY97) to examine the following questions: How do job characteristics differ by disability status? What job characteristics associate with the hazard of job separation among young workers with

disabilities? And, do the characteristics associated with the hazard of job separation differ between young workers with and without disabilities?

Literature Review

Labor Market Entry among Young Workers with Disabilities

A sizeable percentage of young people in the United States report disability, with approximately one-quarter of the population reporting a disability by ages 22-30 (Mann and Honeycutt 2016). A disproportionate percentage of these individuals leave high school and neither work nor continue their education (Wagner et al. 2005, Wells, Hogan and Sandefur 2003)—despite the majority having transition goals to the contrary (Cameto, Levine and Wagner 2004). Significantly fewer youth with disabilities are employed than youth in the general population (BLS 2016), but many of their jobs do not include employer benefits such as paid vacation or sick leave, health insurance, or retirement (Shandra and Hogan 2008, Wagner et al. 2005).

Early work experience significantly increases the likelihood of later employment among this population, at least in the short term (Mamun et al. 2017). It is a period during which, like most young adults, unemployment can have longitudinal scarring effects (Bell and Blanchflower). It is also a cohort for whom the long-term effects of the recession could exacerbate unemployment, especially if people with disabilities are the "last hired" during periods of economic growth and the first fired during downtowns (Kaye 2010). The transition period from school to work is thus a critical juncture in the lives of millennial-aged youth with disabilities, with early jobs setting the stage for later work experiences.

Much of what is known about job characteristics among young people with disabilities comes from the National Longitudinal Transition Study-2 (NLTS2) (Newman et al. 2011).[1] The NLTS2 does not include detailed employment histories or a comparison group of young people without disabilities; however, results provide baseline information about employment in the eight years after leaving high school. Mean job duration of workers' current/most recent job was 24 months, with an average of four jobs held since high school. Thirteen percent reported food preparation and serving related jobs, with another 12% reporting sales jobs. Most of those who were employed reported full-time work (67%), with half of part-time workers preferring full-time. One-quarter reported their employers were aware of their disability, and 7% received accommodations. The majority (88%) reported they were satisfied with their jobs and they were treated well by others (90%). Most (68%) reported that they had opportunities for advancement. Over half left their most recent job because they quit, with 11% fired and 14% laid off.

Many patterns observed in NLTS2 varied by parental income, gender, and youths' level of education—sociodemographic characteristics that vary greatly by disability status and may condition employment success. Young people with disabilities are more likely than those without disabilities to live in poverty and less likely to live with college-educated and employed adults (Hogan, Rogers and Msall 2000, Shandra et al. 2012). And because employment relates to other transitions such as independent living and family formation among young people with disabilities (Janus 2009), job separations are likely to have longitudinal consequences for social inclusion more generally.

[1] The NLTS2 was funded by the National Center for Special Education Research at the U.S. Department of Education's Institute of Education Sciences. Students with disabilities were aged 13-16 in the 2000 school year, with approximately 5,000 students followed to the final data collection wave.

Despite these constraints, many young people with disabilities attain stable, full-time employment with benefits after high school (Shandra and Hogan 2008). However, the extent to which these job characteristics play a role in job retention among *young* workers entering the labor market after the passage of the ADA—the legislation mandating that reasonable accommodations be provided for workers with disabilities and prohibiting discriminatory hiring, firing, and compensation among most employers—remains underexplored.

Job Characteristics among Working-Aged Adults with Disabilities

Most of what is known about job characteristics for people with disabilities comes from studies of working-aged adults. For example, Pettinicchio and Maroto (2014) find that working-aged adults in the American Community Survey are overrepresented in lower paying occupations (such as food preparation and maintenance) and industries (including arts, entertainment, and recreation as well as accommodations and food services). Compared to similarly skilled workers without disabilities, they were less likely to work in occupations that required a college degree, five or more years of job experience, and additional on-the-job training. A similar analysis by Kaye (2009:115) concludes that, "Even after taking into account their lower average educational attainment, workers with disabilities appear to be disproportionately relegated to entry-level occupations that do not emphasize the better remunerated job skills".

Net of occupation and worker sociodemographic background, Schur and colleague's firm-level study (Schur et al. 2009) finds that disability negatively associates with reported job security, receipt of formal and informal training, and participation in workplace decision-making. Although the authors do not have data on job separations, they find that workers with disability report a greater likelihood of turnover, less loyalty, and lower job satisfaction than workers

without disabilities. These differences are partially mediated by characteristics such as pay, benefits, and characteristics of the work organization.

Job Characteristics and Job Separation

Research using other populations suggests that job characteristics have implications for job stability and retention. For example, Holzer et al. (2004) uses Cox Proportional Hazards modeling to find that promotional opportunities (but not health insurance) decrease the likelihood of job exit for women welfare recipients. Likewise, Taniguchi and Rosenfeld (2004) analyze older NLSY cohort to find that type of occupation, type of industry, union membership, part-time status, number of jobs, and cumulative work experience predict the transition to non-employment among working women. Looze (2017) similarly uses NLSY79 data to find that holding a public sector job and holding a greater number of previous jobs positively associates with the hazard of involuntary exits.

Workers with disabilities may be particularly sensitive to "job lock"—the concept that workers are locked into jobs because leaving would terminate their benefits. Madrian (1994) finds that men workers with employer-provided health insurance have a lower likelihood of exit than men who do not receive this benefit. Chute and Wunnava (2015) find that health insurance—along with parental leave, retirement benefits, and union status—negatively associate with the odds of voluntary job switching.

Disability and Type of Job Separation

People with disabilities may experience job exits for different reasons. Baldwin and Schumacher (2002) were among the first to evaluate the association between disability status and voluntary (worker-initiated) and involuntary (employer-initiated) job separations in response to the passage of the ADA in 1990. Using data from the Survey of Income and Program

Participation (SIPP), they found that workers with disabilities were more likely than those without disabilities to experience involuntary (pre- and post-ADA) and voluntary (post-ADA only) separations over a 20-month period. Pension coverage, health insurance, and unionization reduced the likelihood of both types of changes. Mitra and Kruse (2016) follow up on this analysis using more recent data, finding that men and women with disabilities are more likely to experience involuntary job loss over a 24-month period than men and women without disabilities. This pattern exists across types of occupations and for workers with and without college degrees.

In sum, people with disabilities are at greater risk of job separation—especially involuntary separation (but see Fogg et al (2010))—than workers without disabilities. Certain types of job characteristics may attenuate these effects. However; people with disabilities are employed in significantly different jobs than people without disabilities.

Heterogeneity by Disability Type

People with disabilities are a heterogeneous population, and employees with more severely limiting impairments may experience less access to workplace benefits and a higher risk of job separation than workers with mild limitations. Workers with more severe disabilities, for example, report more structural barriers to employment and less positive evaluations of their workplaces (Lindsay 2011).

Likewise, people with learning disabilities, sensory disabilities, physical disabilities, and chronic illness may face unique constraints. Broadly, people with sensory disabilities look most similar to those without disabilities in their rate of paid employment, followed by those with cognitive, then physical, disabilities (Brault 2012). They also report the most similar work hours, but are overrepresented in construction and repair occupations. Conversely, those with

cognitive limitations disproportionately hold food preparation, maintenance, and moving occupations and are underrepresented in management and business occupations (Maroto and Pettinicchio 2014). According to the NLTS2, employees with cognitive and physical disabilities are also less likely than those with sensory disabilities to report paid vacation or sick leave, health insurance, and retirement benefits. Job satisfaction is lowest among those with hearing impairments but highest among those with visual impairment (Newman et al. 2011).

Working-aged adult employees with cognitive and physical disabilities have higher rates of job loss than those with sensory disabilities (Mitra and Kruse 2016). Among youth, those with hearing impairment and traumatic brain injury were most likely—and those with physical disabilities least likely—to have reported leaving their most recent job voluntarily. Those with cognitive or emotional limitations were the most likely to be fired, and those with hearing impairment were the least likely. Differences in job duration by type of disability were less clear, but those with learning and cognitive disabilities tended to remain in jobs the longest (Newman et al. 2011).

Data

These analyses contribute to the literature on disability and employment by using population-based data to evaluate three questions: How do job characteristics differ by disability status? What job characteristics associate with the hazard of job separation among young workers with disabilities? And, do the characteristics associated with the hazard of job separation differ between young workers with and without disabilities? This project adds to the limited number of studies examining job separations among people with disabilities in the United States (Baldwin and Schumacher 2002, Mitra and Kruse 2016) in multiple ways: by utilizing a

longitudinal data source that can account for a longer observation period[2] and by tracking job changes since labor market entry to construct complete employment histories through early adulthood.

The NLSY97 (Bureau of Labor Statistics 2017) is a nationally representative household-based sample of the non-institutional population of young persons in the United States. It is funded by the Bureau of Labor Statistics and documents the transition from school to work among an age cohort of approximately 9,000 children aged 12-16 as of December 31, 1996. Data was first collected in 1997, with youth re-interviewed annually from 1997-2011 and biennially thereafter. Data are currently available through 2015, when all youth are aged 30-36.

The NLSY97 is ideal for the examination of employment histories, as each survey collects information on start and stop dates for all jobs, the reason for leaving each employer, and various job-specific characteristics. This means that data are collected for multiple years and for multiple employers within each year (for example, respondents report up to 7 unique employers in 1997 and up to 13 unique employers in 2011). Employer identification numbers allow for the linking of job characteristics with each employer within and across each wave.

Sample

Each respondent contributes multiple and overlapping employment events, which are used to construct a person-employment spell data file that is defined by each unique employer identification number. Respondents are excluded if they are missing valid disability information at wave 1. Employment spells are excluded if they are missing valid job characteristic information. Reasons for job separation are only asked of certain types of jobs, including those

[2] The results presented here focus on the association between childhood disability and job retention. Future analyses will integrate individual-level time-varying characteristics (including disability as well as educational, marital, and parental status).

that are not military jobs, are with an employer (not self-employed), last more than 13 weeks, and end after the respondent is at least 16 years old. All spells are included that have complete information on the number of weeks of employment, job status as of the last recorded employment event, and all relevant job characteristic covariates. No other sample restrictions are imposed. A total of 7,154 respondents report at least one valid employment spell, with 40,510 employment spells across all respondents.

Dependent Measures

The events of interest in these analyses are employment separations. These events are defined in two ways: any separation, and type of separation. The latter differentiates between involuntary separations (including layoffs, closures, discharges/firings, and job endings, as commonly defined in earlier cohorts of the NLSY [Looze 2017; Park and Sandefur 2003]), voluntary separations due to disability or illness, and voluntary separations for all other reasons. Information about tenure is defined according to a variable created by the NLSY that tallies the number of weeks of total tenure at each employee-type job as of the survey date. This information—in tandem with a job status variable included in each wave of the data—is used to define if employment spells are current at each wave and how long they lasted.[3]

Job Characteristics

Job characteristics are defined for each employment spell according to the first valid record.[4] Broad occupation and industry are defined as categorical indicators from 2002 Census codes. Job sector is a categorical measure that differentiates between private for profit

[3] Spells are currently defined by employer, such that a respondent could leave an employer and return and all weeks would contribute to the employment spell (with only the last reason for separation recorded). Future analyses will examine the robustness of results to *job* spells, defining each separation independently.

[4] For instance, if a job was not of ample duration to loop through the job characteristics questions in the first year or was otherwise skipped, information was filled in from the next valid interview.

companies (reference), government, and other types of jobs (including non-profits and family businesses). Job satisfaction is a 5-category measure ranging from "like it very much" to "dislike it very much", included categorically. Union status is a dichotomous indicator of whether or not respondents are covered by a contract negotiated by a union or employee association. Fulltime work is taken from an NLSY-constructed measure of hours worked per week, and included dichotomously here as less than 35 (reference) versus 35 or more.[5] Work schedule contrasts a regular day shift (reference) to a regular other shift (evening or night), an irregular schedule, or another arrangement.

Respondents are also asked if the following benefits were possible to receive as part of their job with each employer: medical, surgical, or hospitalization insurance which covers injuries or major illnesses off the job; life insurance that would cover death for reasons not connected with the job; dental benefits; paid maternity or paternity leave; unpaid maternity or paternity leave; retirement plan other than Social Security; flexible work schedule; tuition reimbursement for certain types of schooling; company provided or subsidized childcare; and employee stock ownership plans.[6] All benefits indicators are dichotomous.

Disability

The present analysis categorizes disability according to the severity of the limitation (mild or severe), to be extended with analyses of type of limitation (physical, emotional/cognitive, sensory). More specifically, parents/guardians[7] of respondents are asked the following four questions about the respondents in wave 1: Have you ever had trouble seeing,

[5] NLSY constructed this measure as of either the job's stop date or the interview date for on-going jobs.
[6] Future analyses can explore indicators of employer size, wages, paid vacation, and paid sick days.
[7] Respondents were also asked these questions in Round 6 and once in Round 11-13 (dependent on which survey round they first participated). Future analyses will integrate these changes in disability status into employment spells, based on respondents' reports of age of onset for each limiting condition.

hearing or speaking? Have you ever had a part of your body that was deformed or missing? Have you ever been diagnosed with any other chronic health condition or life threatening disease such as [asthma, cardiovascular or heart condition, anemia, diabetes, cancer, epilepsy, HIV/AIDS, sexually transmitted disease other than HIV/AIDS, other]? Have you ever had an eating disorder, a learning or emotional problem or a mental condition that has limited your ability to attend school regularly, do regular school work, or work at a job for pay?

Those who respond affirmatively are branched into questions that clarify—for each limiting condition—the severity of the condition as not currently limited, limited a little, or limited a lot. The use of this measure as type or severity of disability in the NLSY97 is well-established in research literature (Hogan, Shandra and Msall 2007, Mann and Honeycutt 2014, Mann and Wittenburg 2015, Shandra and Hogan 2008, Shandra, Shameem and Ghori 2016). A full methodological discussion of the disability measure in the NLSY97 can be found in Mann and Honeycutt (2016).

The severity measure is constructed to be mutually exclusive, such that respondents with multiple conditions are classified according to their most limiting condition as of the 1997 survey date. Here, 1,174 respondents were mildly limited by childhood disability and 194 were severely limited. The condition type measures are not mutually exclusive, such that respondents whose parents reported any learning disability (N = 718), physical disability (N = 105), sensory disability (N = 1180), or chronic illness (N = 779) are classified as such. Models control for sex, race/ethnicity, the respondent's age at first interview, and their parents' education (a 20-category ordinal measure measuring highest completed grade).

Methodology

Job separations are modeled using a Cox-based regression model—specifically, the Prentice, Williams, and Peterson gap time (PWP-GT) approach—where each employment spell is considered a separate event. The advantage of a Cox model to understand time to event data is twofold: the normality assumption is often violated in traditional linear modeling approaches, and Cox has the advantage of being able to account for censored cases when the event of interest (job separation) occurs outside of the study window (Allison 2010, Cleves, Gould and Marchenko 2016).

Recurrent event data such as these can be modeled with a variety of approaches; Kelly and Lim (2000) suggest using four components to determine the most appropriate specification. First, the risk interval, which defines when subjects are at risk of an event. Here, time spent in each unique spell is the central focus. In PWP-GT, the clock is reset to 0 weeks of employment for each recurrence. This approach is ideal for examining event-specific estimates (i.e., time since beginning each employment spell), versus other approaches that use time since the beginning of the study (i.e., time since age 18) to define risk intervals.

Second, the baseline hazard can either be common (allowing the same hazard for each event) or event-specific (which allows the hazard to differ for each event). PWP-GT utilizes the latter, which is implemented by stratifying the model based on event number—here, job count as defined by the month and year a respondent first began each employment spell. Third, the risk set, which is dependent upon who and when respondents are at risk. PWP-GT utilizes a restricted risk set, such that contributions to the *k*th risk set only include the *k*th event risk intervals for respondents experiencing *k*-1 events (versus all risk intervals contributing to the risk set for all events). Finally, within-subject correlation. PWP-GT specifies clustered robust standard errors by respondent to adjust for the dependence among respondents who contribute

more than one employment spell to the analyses. The Breslow approximation is used to treat tied failures. The hazard function can be defined as:

$$\lambda_{ik}(t; Z_{ik}) = \lambda_{0k}(t - t_{k-1})e^{\beta' Z_{ik}(t)}$$

where $\lambda_{ik}(t)$ denotes the hazard function for the *k*th event of the *i*th respondent at time *t*, given covariate vector Z_{ik} for the *i*th respondent's *k*th event. Additionally, $\lambda_{0k}(t)$ is the event-specific baseline hazard for the *k*th event, $(t - t_{k-1})$ is the gap time in which the $k - 1$th event occurs, and β is a regression coefficient vector.

PWP-GT can accommodate one type of event failure at a time, but can be extended to a competing risks framework that differentiates between types of failure. The risks here—involuntary, voluntary due to disability or health, and voluntary due to other reasons—are "competing" because only one event can happen first. In this extension, all events not being estimated are treated as censored, and the hazard function becomes cause-specific (Cleves, Gould and Marchenko 2016).

Approach

These analyses evaluate three questions: How do job characteristics differ by disability status? What job characteristics associate with the hazard of job separation among young workers with disabilities? And, do the characteristics associated with the hazard of job separation differ between young workers with and without disabilities?

Two broad approaches explore these research questions. First, bivariate tests will be utilized to evaluate differences in job characteristics for workers with and without disabilities. Second, I will utilize PWP-GT to estimate job separation models among people who have a disability as of 1997, before labor market entry. Stratifying by disability status will allow me to identify which job characteristics increase or decrease the hazard of separation for workers with

mild limitations, serious limitations, learning disabilities, sensory disabilities, physical disabilities, and chronic illness. Such an approach follows analyses of job separations stratified by race/ethnicity (Taniguchi and Rosenfeld 2002). This approach is first applied to the consideration of *any* job separation. I then use the competing risks framework described above to disaggregate the *type* of job separation as involuntary, voluntary because of disability or health reasons, and voluntary for other reasons.

Finally, I will examine job separations among the entire sample of workers with and without disabilities. I begin by assessing if the hazard of separations varies by disability status. I then test for interaction effects between the presence of a (mutually exclusive) mild or serious childhood disability and specific job characteristics. Significant interaction effects are then explored using Stata's *margins* command to assess differences in predicted relative hazards between groups. All analyses are unweighted, as per NLSY97 documentation on sample weights and design effects (U.S. Bureau of Labor Statistics n.d.).

Results

1. *Univariate and Bivariate Descriptive Statistics: How Do Job Characteristics Differ by Disability Status?*

Table 1 presents descriptive statistics for job spell-level characteristics for the total sample, by disability severity. Each percentage is pooled over all relevant job spells. Respondents reported an average of 6.7 spells, total, with the number of spells increasing with the severity of disability (from 6.6 for respondents without disability to 7.4 for respondents with seriously limiting adolescent disability). Overall, 87% of spells ended in a separation—also increasing by disability status. The median spell duration was 58, overall, with the shortest durations among respondents with seriously limiting disabilities.

The next three panels present job spell characteristics by type of separation. Approximately one-quarter of separations were involuntary, 73% were voluntary for non-health reasons, and only 2% were voluntary for health reasons. A greater percentage of job spells among those with serious disabilities were involuntary (30.5%) than for those without disabilities (25%), and the opposite was true for health-related voluntary separations (3.4% versus 1.7%). The duration of spells was shorter across all types of separations among those with serious disabilities, compared to those without disabilities.

Figures 1, 2, and 3 present differences in job benefits, other job characteristics, and occupation/industry (respectively) by severity of disability. Figure 1 indicates that job spells held by workers with serious disabilities were significantly less likely to include medical insurance, dental insurance, flexible scheduling, life insurance, retirement, paid leave, tuition, unpaid leave, and stocks. There were no differences in child care. Figure 2 indicates significant differences by disability status by job type, work scheduling, and job satisfaction, such that job spells held by people with disabilities are less likely than those held by people without disabilities to be in the government sector, less likely to be classified as an irregular schedule, and more likely to be classified as disliked very much. Figure 3 indicates that job spells held by people with disabilities are less likely to be in sales and management occupations and more likely in service, production, and construction occupations. They are more likely to be in construction and transportation industries and less likely to be in finance.

2. *Cox Results: What Job Characteristics Associate with the Hazard of Job Separation among Young Workers with Disabilities?*

Table 2 presents PWP-GT results for any job separation for individuals with disabilities only, stratified by mild and seriously limiting disability. The first two columns (1 and 2) present results from any type of job separation. The remaining columns (3 through 8) present results from competing risks results.

Model 1 indicates that medical benefits, flexible scheduling, unpaid leave, retirement, and tuition negatively associate with the hazard of any job separation among workers with mild disabilities—as did being in "other" job sectors (versus private) and reporting an irregular work schedule (versus regular day). Having lower levels of job satisfaction positively associated with the risk of any job separation. Only tuition benefits and "other" job sector negatively associated with the hazard of separation in Model 2, with fulltime work status and lower job satisfaction positively associating.

Comparing across the competing risks models, medical benefits, flexible scheduling, unpaid leave, and retirement negatively associate with the risk of both involuntary (Model 3) and Voluntary non-health (Model 4) separation. Life insurance negatively associates with the hazard of involuntary separations and working in a government sector job has the opposite effect among those with mild disabilities (Model 3). Among those with serious disabilities, only retirement and tuition benefits negatively associate with the risk of voluntary non-health separations (Model 6). Interestingly, among those with serious disabilities, job dissatisfaction negatively associates with the risk of involuntary separation (Model 4) and positively associates with the risk of voluntary non-health association (Model 6). Retirement and tuition benefits positively associate with the risk of voluntary non-health separation among those with serious disabilities, as does holding a government sector position.

Disaggregating by health-related voluntary separations results in small cell sizes, so results should be interpreted with caution. However, removing health-related voluntary separations from non-health related suggests that that patterns observed in Models 5 and 6 cannot be attributed primarily to health reasons.

3. Cox results: Do the Job Characteristics Associated with Retention Differ Between Young Workers with and without Disabilities?

Figure 4 plots results from models including all workers, with and without disabilities. The hazard ratios for mild and serious disabilities are presented for baseline (bivariate) and adjusted (including all covariates in Table 2) models. Results follow the same format as Table 2, first presented for any separation and then for competing risks disaggregated by separation type. Both coefficients are positive and significant in the baseline results of the first panel; however, only serious disability remains significant after adjustment. In other words, those with serious disabilities have a higher hazard of overall job separation than those without disabilities—even after controlling for job benefits and other characteristics.

Considering type of separation, both mild and serious disability positively associate with the hazard of involuntary job separation in baseline models, but only serious disability remains significant after adjustment. Neither disability type is significant in predicting voluntary non-health separations after adjustment, but both positively associate with the hazard of voluntary health-related separations after controls.

These results are used to inform results from models interacting disability status by job characteristics in Figure 5, which presents predicted hazards of overall job separation from fully adjusted models. Asterisks indicate significant contrasts between "no disability" and each disability status. Results indicate that those with mild and serious disability who report liking

their job very much have a significantly higher hazard of separation than those without disabilities. The same is true for individuals with serious disabilities in for-profit work, as well as those in full-time positions.

Conclusions and Future Directions

In sum, results indicate that both the characteristics of job spells and of jobs vary by disability status over the early life course. Workers with disabilities have more job spells, and of shorter duration. They also are in spells that are less likely to provide benefits than those held by workers without disabilities.

These results indicate that young workers with disabilities have a higher baseline hazard of separation than workers with disabilities—both overall and when considering voluntary and involuntary reasons for employment exit. These results persist for involuntary separations (among those with serious disability) and voluntary health-related separations (among those with mild or serious disability) even after controlling for job characteristics. Employment benefits—including medical benefits, flexible scheduling, unpaid leave, and retirement—negatively associate with the hazard of separation for workers with disabilities. However, these effects persist for all workers, regardless of disability status, whereas job satisfaction, job sector, and work hours further condition the hazard of separation among workers with disabilities.

Future results should build upon these analyses in several ways. First, by fully exploiting repeat disability measures by considering changes in disability status over time. Second, by integrating measures of previous job tenure—a common approach in Cox-based analyses of recurrent employment spells (Trevor 2001). Third, by evaluating additional job characteristics that may affect employer compliance with ADA such as employer size. Fourth, by differentiating between employment exits and employment transitions (e.g., leaving a job for an

unemployment spell versus another employer) can further elucidate employment trajectories. Finally, by considering heterogeneity by disability status that can further differentiate between workers with physical, sensory, and cognitive conditions.

References

Ali, Mohammad, Lisa Schur and Peter Blanck. 2011. "What Types of Jobs Do People with Disabilities Want?". *Journal of occupational rehabilitation* 21(2):199-210.

Allison, Paul D. 2010. *Survival Analysis Using Sas: A Practical Guide*: Sas Institute.

Alon, Sigal, Debra Donahoe and Marta Tienda. 2001. "The Effects of Early Work Experience on Young Women's Labor Force Attachment." *Social forces* 79(3):1005-34.

Baldwin, Marjorie L and Edward J Schumacher. 2002. "A Note on Job Mobility among Workers with Disabilities." *Industrial Relations: A Journal of Economy and Society* 41(3):430-41.

Bell, David NF and David G Blanchflower. "Youth Unemployment: Déjà Vu?".

Brault, Matthew W. 2012. "Americans with Disabilities: 2010." *Current population reports* 7:0-131.

Brucker, Debra L, Sophie Mitra, Navena Chaitoo and Joseph Mauro. 2015. "More Likely to Be Poor Whatever the Measure: Working-Age Persons with Disabilities in the United States." *Social Science Quarterly* 96(1):273-96.

Bureau of Labor Statistics. 2013. "Persons with a Disability: Barriers to Employment, Types of Assistance, and Other Labor-Related Issues--May 2012." Vol. Washington, DC: US Department of Labor.

Bureau of Labor Statistics. 2016. "Persons with a Disability: Labor Force Characteristics – 2015." Vol. Washington, DC: US Department of Labor.

Bureau of Labor Statistics. 2017. "National Longitudinal Survey of Youth 1997 Cohort, 1997-2015 (Rounds 1-17)." edited by National Opinion Research Center. Columbus, OH: Center for Human Resource Research, The Ohio State University,.

Cameto, Renée, Phyllis Levine and Mary Wagner. 2004. "Transition Planning for Students with Disabilities." *A Special Topic Report from the national Longitudinal Transition Study-2 (NTS2). Menlo Park, CA: SRI International*.

Chute, Benjamin and Phani V Wunnava. 2015. "Is There a Link between Employer-Provided Health Insurance and Job Mobility? Evidence from Recent Micro Data."

Cleves, Mario, William W Gould and Yulia V Marchenko. 2016. *An Introduction to Survival Analysis Using Stata*. College Station, TX: Stata Press.

Fogg, Neeta P, Paul E Harrington and Brian T McMahon. 2010. "The Impact of the Great Recession Upon the Unemployment of Americans with Disabilities." *Journal of Vocational Rehabilitation* 33(3):193-202.

Glass, Jennifer L, Sharon Sassler, Yael Levitte and Katherine M Michelmore. 2013. "What's So Special About Stem? A Comparison of Women's Retention in Stem and Professional Occupations." *Social forces* 92(2):723-56.

Hogan, Dennis P, Michael L Rogers and Michael E Msall. 2000. "Children with Disability: Functional Limitations and Key Indicators of Well-Being." *Archives of Pediatrics & Adolescent Medicine* 154:1042-48.

Hogan, Dennis P, Carrie L Shandra and Michael E Msall. 2007. "Family Developmental Risk Factors among Adolescents with Disabilities and Children of Parents with Disabilities." *Journal of Adolescence* 30(6):1001-19.

Holzer, Harry J, Michael A Stoll and Douglas Wissoker. 2004. "Job Performance and Retention among Welfare Recipients." *Social Service Review* 78(3):343-69.

Janus, Alexander L. 2009. "Disability and the Transition to Adulthood." *Social forces* 88(1):99-120.

Kaye, H Stephen. 2009. "Stuck at the Bottom Rung: Occupational Characteristics of Workers with Disabilities." *Journal of occupational rehabilitation* 19(2):115.

Kaye, H Stephen. 2010. "The Impact of the 2007–09 Recession on Workers with Disabilities." *Monthly Labor Review* 133(10):19-30.

Kelly, Patrick J and Lynette L-Y Lim. 2000. "Survival Analysis for Recurrent Event Data: An Application to Childhood Infectious Diseases." *Statistics in medicine* 19(1):13-33.

Lindsay, Sally. 2011. "Discrimination and Other Barriers to Employment for Teens and Young Adults with Disabilities." *Disability and rehabilitation* 33(15-16):1340-50.

Looze, Jessica. 2017. "Why Do (N't) They Leave?: Motherhood and Women's Job Mobility." *Social Science Research* 65:47-59.

Madrian, Brigitte C. 1994. "Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?". *The Quarterly Journal of Economics* 109(1):27-54.

Mamun, Arif A, Erik W Carter, Thomas M Fraker and Lori L Timmins. 2017. "Impact of Early Work Experiences on Subsequent Paid Employment for Young Adults with Disabilities." *Career Development and Transition for Exceptional Individuals*:2165143417726302.

Mann, David R and Todd C Honeycutt. 2014. "Is Timing Everything? Disability Onset of Youth and Their Outcomes as Young Adults." *Journal of Disability Policy Studies* 25(2):117-29.

Mann, David R and David C Wittenburg. 2015. "Starting Behind: Wage and Employment Differentials between Young Adults with and without Disabilities." *Journal of Disability Policy Studies* 26(2):89-99.

Mann, David R and Todd Honeycutt. 2016. "Understanding the Disability Dynamics of Youth: Health Condition and Limitation Changes for Youth and Their Influence on Longitudinal Survey Attrition." *Demography* 53(3):749-76.

Maroto, Michelle and David Pettinicchio. 2014. "Disability, Structural Inequality, and Work: The Influence of Occupational Segregation on Earnings for People with Different Disabilities." *Research in Social Stratification and Mobility* 38:76-92.

Mitra, Sophie and Douglas Kruse. 2016. "Are Workers with Disabilities More Likely to Be Displaced?". *The International Journal of Human Resource Management* 27(14):1550-79.

Newman, Lynn, Mary Wagner, Anne-Marie Knokey, Camille Marder, Katherine Nagle, Debra Shaver and Xin Wei. 2011. "The Post-High School Outcomes of Young Adults with Disabilities up to 8 Years after High School: A Report from the National Longitudinal Transition Study-2 (Nlts2). Ncser 2011-3005." *National Center for Special Education Research*.

Rangarajan, Anu, Peter Z Schochet and Dexter Chu. 1998. *Employment Experiences of Welfare Recipients Who Find Jobs: Is Targeting Possible?*: Mathematica Policy Research Princeton, NJ.

Schur, Lisa. 2002. "The Difference a Job Makes: The Effects of Employment among People with Disabilities." *Journal of Economic Issues* 36(2):339-47.

Schur, Lisa, Douglas Kruse, Joseph Blasi and Peter Blanck. 2009. "Is Disability Disabling in All Workplaces? Workplace Disparities and Corporate Culture." *Industrial Relations: A Journal of Economy and Society* 48(3):381-410.

Shandra, Carrie L and Dennis P Hogan. 2008. "School-to-Work Program Participation and the Post-High School Employment of Young Adults with Disabilities." *Journal of Vocational Rehabilitation* 29(2):117-30.

Shandra, Carrie L, Roger C Avery, Dennis P Hogan and Michael E Msall. 2012. "Child and Adult Disability in the 2000 Census: Disability Is a Household Affair." *Disability and health journal* 5(4):241-48.

Shandra, Carrie L, Masra Shameem and Sadaf J Ghori. 2016. "Disability and the Context of Boys' First Sexual Intercourse." *Journal of Adolescent Health* 58(3):302-09.

Taniguchi, Hiromi and Rachel A Rosenfeld. 2002. "Women's Employment Exit and Reentry: Differences among Whites, Blacks, and Hispanics." *Social Science Research* 31(3):432-71.

U.S. Bureau of Labor Statistics. n.d., "Sample Weights and Design Effects". Retrieved August 18, 2018 (https://www.nlsinfo.org/content/cohorts/nlsy97/using-and-understanding-the-data/sample-weights-design-effects).

Wagner, Mary, Lynn Newman, Renee Cameto, Nicolle Garza and Phyllis Levine. 2005. "After High School: A First Look at the Postschool Experiences of Youth with Disabilities. A Report from the National Longitudinal Transition Study-2 (Nlts2)." Vol. Menlo Park, CA: SRI International.

Wells, Thomas, Dennis P Hogan and Gary D Sandefur. 2003. "What Happens after the High School Years among Young Persons with Disabilities?". *Social forces* 82(2):803-32.

Table 1. Job spell characteristics, by disability status

		Severity of Disability		
	Total	None	Mild	Serious
Total				
Number of spells (mean)	6.71	6.63	7	7.42
% failure	87.03	86.83	87.57	89.86
Duration of spells (median)	58	59	55	47
Duration of spells (restricted mean)	138.03	139.88	130.05	104.27
Involuntary				
% of total failures	25.09	24.78	25.74	30.5
Duration of spells (median)	45	45	44	43
Duration of spells (restricted mean)	76.32	77.35	72.6	70.49
Voluntary: Non-health related				
% of total failures	73.11	73.55	72.06	66.12
Duration of spells (median)	50	51	49	39
Duration of spells (restricted mean)	79.43	80.48	76.7	62.13
Voluntary: Health-related				
% of total failures	1.8	1.66	2.2	3.38
Duration of spells (median)	48	49	36	47
Duration of spells (restricted mean)	78.09	80.95	68.02	76.1

Table 2. Cox regression predicting job separation, stratified by severity of disability

	Any separation		Competing risks					
			Involuntary		Voluntary (not health)		Voluntary (health)	
	Mild	Serious	Mild	Serious	Mild	Serious	Mild	Serious
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Worker characteristics								
Female	1.043	0.912	0.885	0.790	1.087 *	0.899	1.504	9.024 ***
Race/Ethnicity								
Black	0.949	0.960	1.299 ***	1.053	0.855 **	0.906	0.701	1.479
Hispanic	0.976	0.794	1.013	0.436 **	0.952	1.025	1.273	0.682
Multiple	0.993	1.743	0.884	1.220	1.059	1.372	0.673	0.000
Parental Education	1.002	0.973	0.993	0.930 *	1.008	0.994	0.931 *	0.868
Job benefits								
Medical	0.815 ***	0.861	0.802 *	0.890	0.825 **	0.869	0.524	0.776
Flexible schedule	0.898 ***	0.902	0.778 ***	0.745	0.933 *	0.956	1.242	1.995
Dental	1.007	0.947	0.916	0.599	1.043	1.126	1.396	2.203
Paid Leave	0.928	1.153	1.012	1.001	0.913	1.114	0.459	0.934
Unpaid Leave	0.783 ***	0.958	0.664 ***	0.727	0.839 **	1.184	0.638	0.000
Retirement	0.778 ***	0.778	0.768 *	0.895	0.772 ***	0.662 *	1.050	1.067
Tuition	0.878 *	0.647 *	0.909	0.835	0.867 *	0.584 *	0.938	1.025
Child care	1.145	1.270	1.156	1.409	1.154	1.350	0.940	0.000
Stocks	1.016	0.933	1.092	1.358	0.974	0.806	1.422	2.038
Life insurance	0.929	0.844	0.804 *	1.078	0.982	0.768	0.981	0.441
Job characteristics								
Unionized	0.984	1.040	1.161	1.316	0.890	0.840	1.093	4.298
Job Satisfaction								
Fairly well	1.112 **	1.122	0.907	0.666 *	1.225 ***	1.457 **	0.860	2.952
Ok	1.414 ***	1.320 **	1.012	0.662 *	1.611 ***	1.815 ***	1.316	5.741 *
Dislike somewhat	1.769 ***	2.107 ***	1.200	0.882	2.058 ***	3.179 ***	1.556	10.875
Dislike very much	2.247 ***	1.757 ***	1.358 *	0.583 *	2.679 ***	2.607 ***	2.150 *	3.758
Job type								

Government	1.050	0.728	1.360 *	1.044	0.933	0.629 *	1.337	0.490
Other	0.769 ***	0.752 *	0.990	0.683	0.699 ***	0.679	0.536	3.537
Fulltime status	0.942	1.162 *	1.018	1.128	0.906 *	1.150	1.487 *	1.923
Work schedule								
Regular other	1.038	1.180	0.980	0.994	1.067	1.319 **	1.182	0.643
Irregular	0.905 *	1.128	0.804 *	0.772	0.938	1.337	0.698	0.809
Other	0.992	1.015	0.863	0.772	1.033	1.074	1.069	1.234
N job spells	6670	1035	6670	1035	6670	1035	6670	1035
N job separation	5841	930	1487	280	4163	607	127	31
N individuals	1174	194	1174	194	1174	194	1174	194

Source: National Longitudinal Survey of Youth 1997. Models also include controls for age, occupation, and industry. ***p < .001; **p < .01; *p < .05
Data shown are hazard ratios.

Fig 1. Job benefits for workers with **serious**, mild, and **no** disabilities

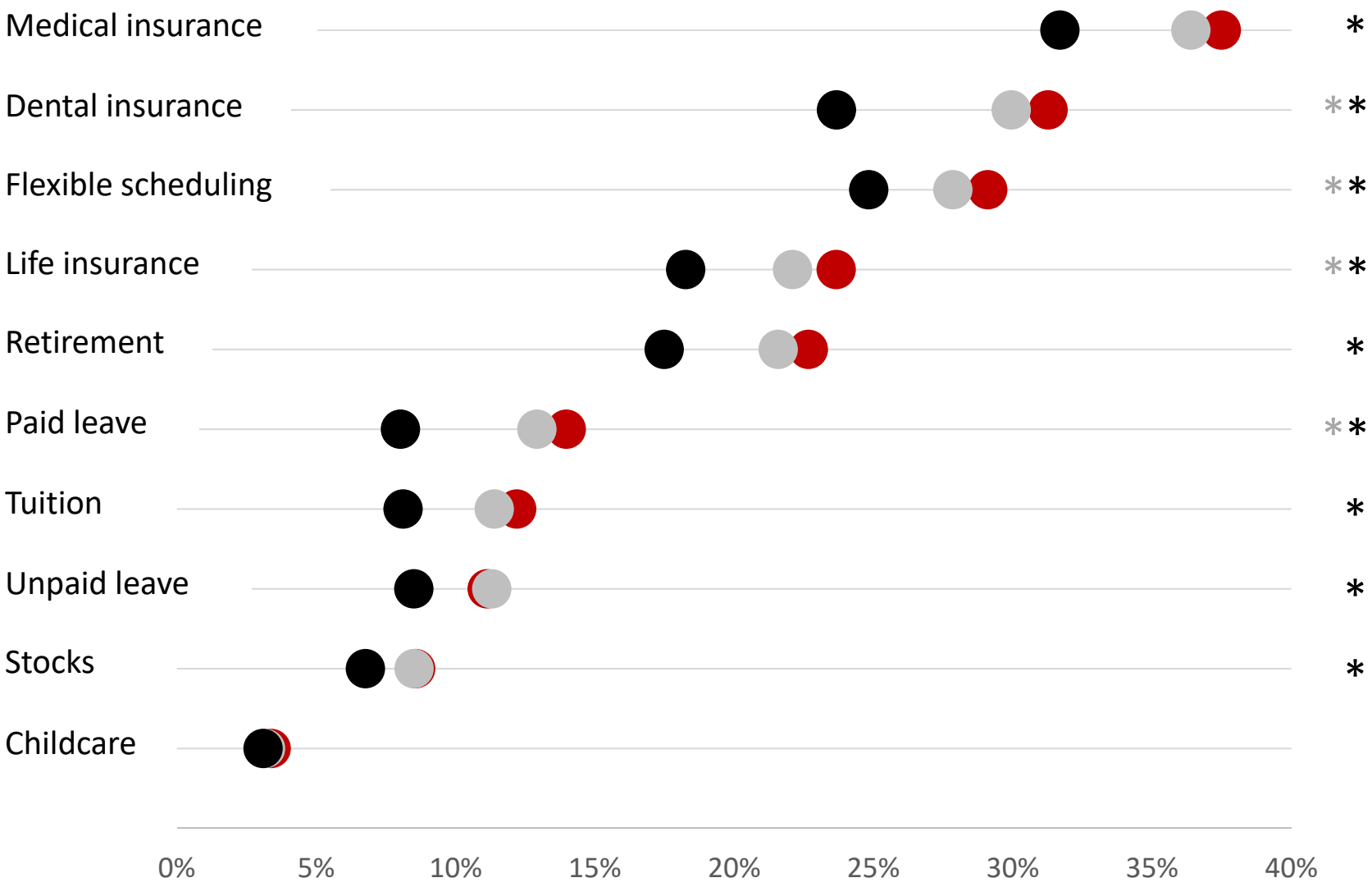
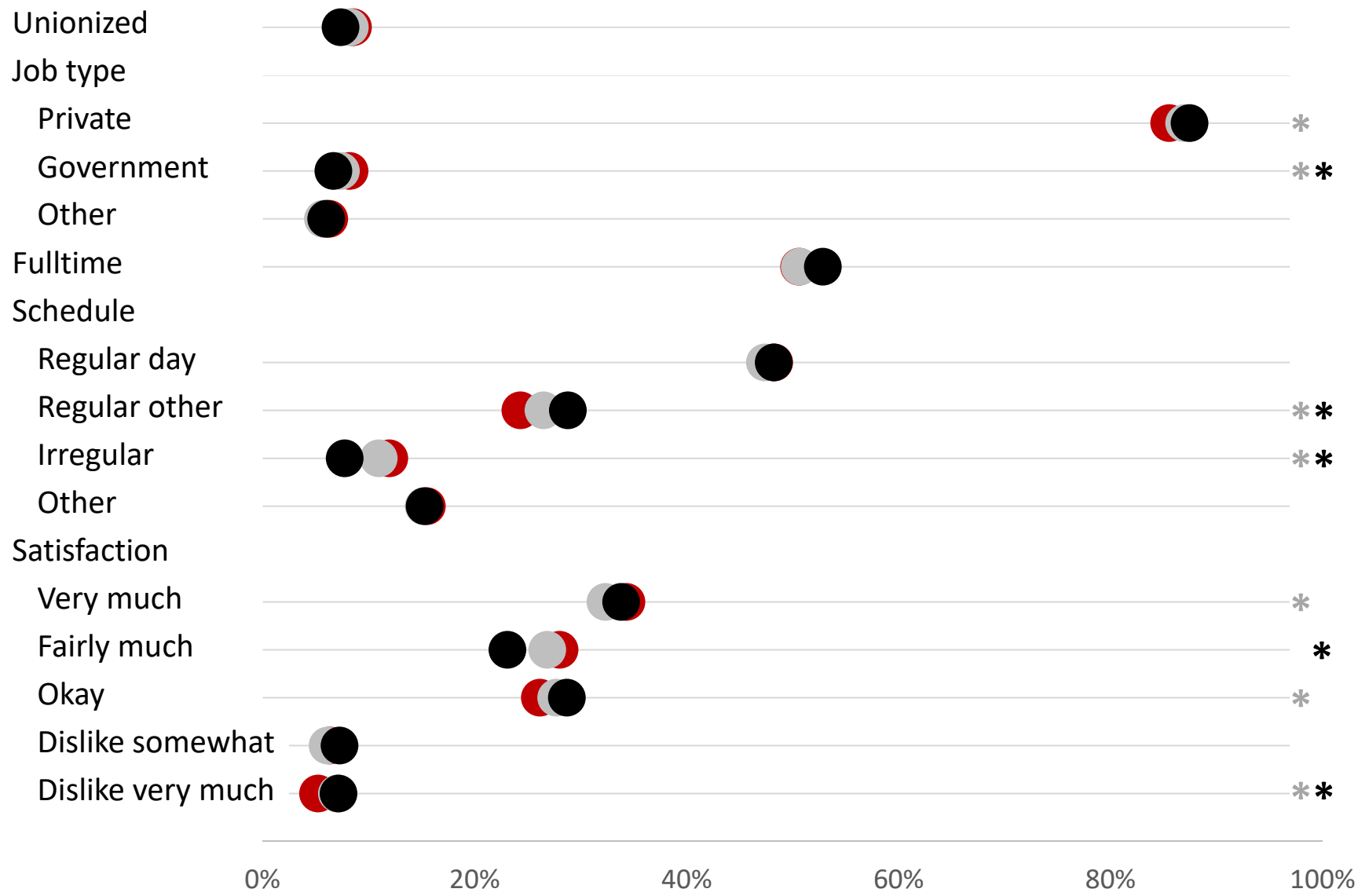
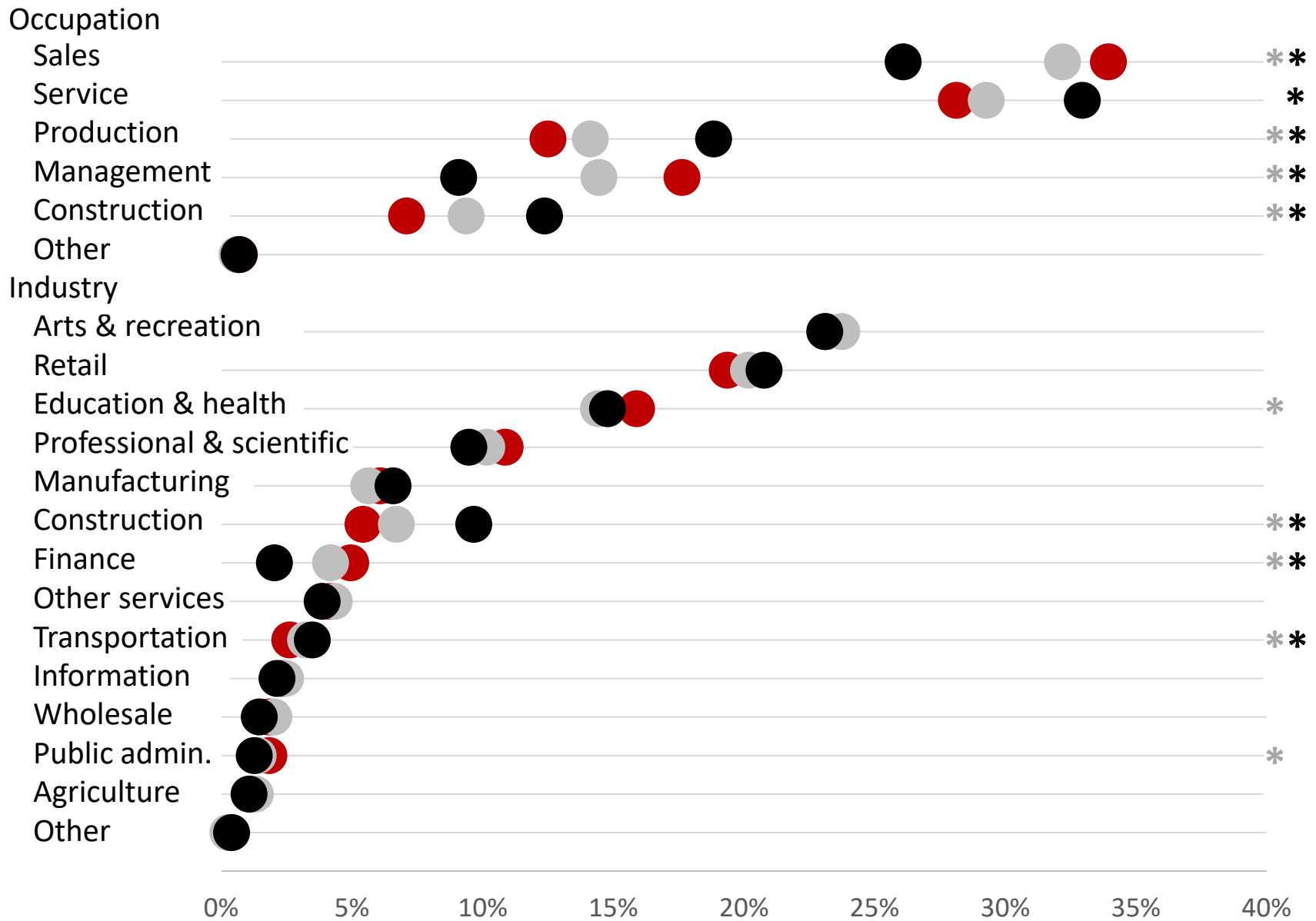


Fig 2. Job characteristics for workers with **serious**, mild, and **no** disabilities



* p < .05 between **no disability** and **mild disability**; ***** p < .05 between **no disability** and **serious disability**

Fig 3. Job type among workers with **serious**, mild, and **no** disabilities



* p < .05 between **no disability** and **mild disability**; * p < .05 between **no disability** and **serious disability**

Figure 4: Hazard Ratios, by Disability Status

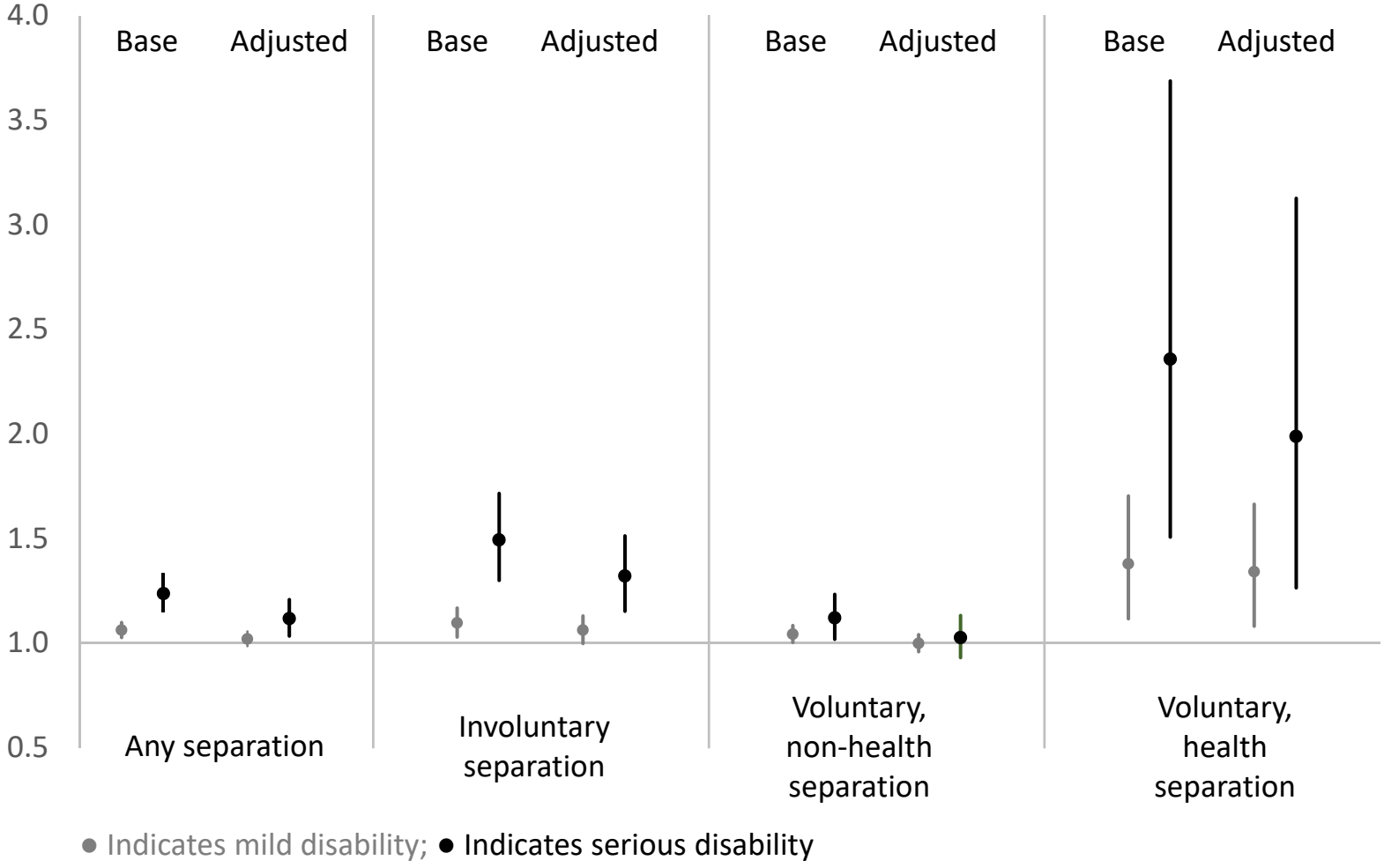
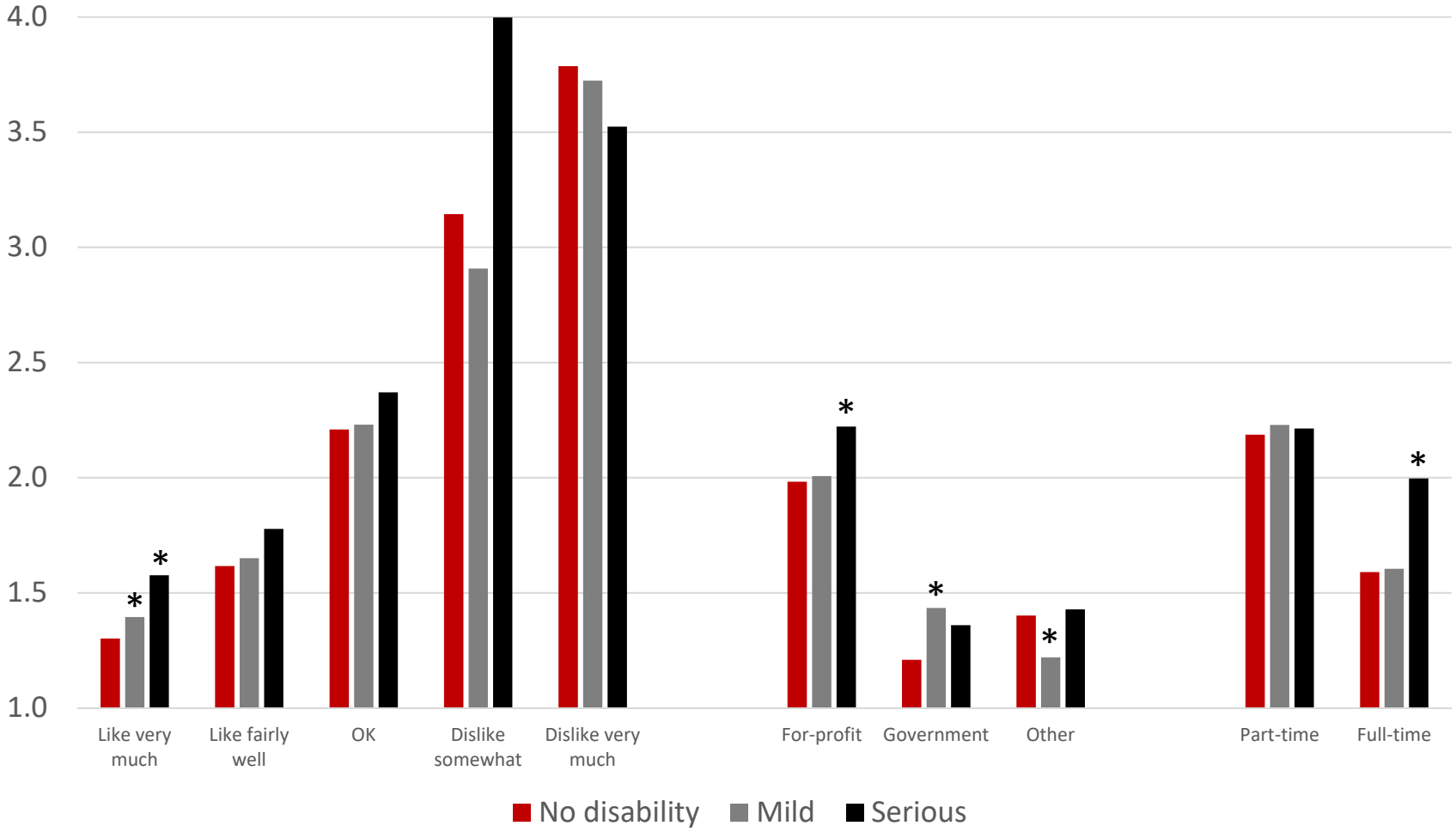


Figure 5. Predicted Hazard, Any Job Separation



* Significant contrast from "no disability" $p < .05$