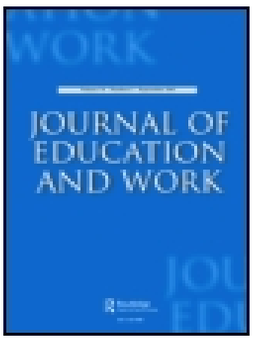

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Journal of Education and Work

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cjew20

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To cite this article: Megan Henly & Debra L. Brucker (2020): More than just lower wages: intrinsic job quality for college graduates with disabilities, Journal of Education and Work, DOI: 10.1080/13639080.2020.1842865

To link to this article: https://doi.org/10.1080/13639080.2020.1842865

JOURNAL OF EDUCATION AND WORK
https://doi.org/10.1080/13639080.2020.1842865

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More than just lower wages: intrinsic job quality for college graduates with disabilities

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ABSTRACT

Americans with a disability are substantially less likely to be employed than those without a disability. Among those with a disability who are employed, additional layers of inequality have been established, including wage differences and access to benefits. Education is generally viewed as a pathway to professional work with good wages, benefits, and work conditions. In this paper, we utilise data from the 2017 National Survey of College Graduates, a nationally-representative sample of college graduates in the United States, to examine job quality between workers with and without a disability (n = 64,998 between ages 20–64). In addition to economic characteristics where we observe a median wage gap of $6,400 USD by disability status among full-time workers, this paper examines intrinsic qualities of work: autonomy, powerfulness, self-fulfilment, and meaningfulness of work. While college graduates generally rank high on intrinsic work quality (75% or more possess each of these qualities regardless of disability), on three of these four measures, full-time workers with a college degree and a disability scored significantly lower than their counterparts with no disability. We also consider individual-level preferences for job attributes and, after controlling for demographic characteristics, found that differences in intrinsic job quality by disability status remain.

ARTICLE HISTORY
Received 12 August 2019
Accepted 22 October 2020

KEYWORDS
Disability; job quality; intrinsic quality of work; disability wage gap

1. Introduction

Job quality is a topic of importance to social scientists, policy makers, and politicians. A growth in so-called 'bad jobs' is often taken as an assessment of the health of the economy, of the qualifications of workers, or both (Green 2006; Kalleberg 2011). While education is generally seen as an equaliser of opportunities, extending to good-quality jobs, this may not hold for all populations. Those who are at risk of marginalisation in the workplace may experience greater disparities with respect to certain measures of job quality. While this paper examines the status of college-educated workers with a disability with respect to economic and intrinsic qualities of work, we first describe trends in employment for people with disabilities in the U.S. and summarise existing literature on job quality as it relates to different populations.

2. Background

Disability is generally measured in federal surveys in the U.S. as having 'serious difficulty' with sight, hearing, concentrating, walking, dressing, or carrying out errands independently (U.S. Census Bureau 2019). Using this definition, the gap in employment rates between people with and without

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disabilities in the U.S. is frequently used as an indicator of inequality between these populations. In part, this is because employment is a means of raising incomes and reducing rates of poverty. Participation in the workforce can also be considered an indicator of the level of inclusion or exclusion people with disabilities face in the community. Three-quarters (74.9%) of people in the U.S. without a disability aged 18 to 64 were employed in 2019, whereas the employment-to-population ratio for those with a disability is just 31.2% (as of July 2019, Kessler Foundation and UNH 2019).

In addition to employment rates as a method of evaluating occupational success, there are facets of working life that prior research has referred to as *job quality*. This topic is of importance in evaluating the economy, particularly because employment rates may decrease due to an increase in 'bad' jobs. Dooley (2003) addresses this topic, referring to such trends as 'disguised unemployment' or 'underemployment,' that is, working in a job that is either below one's skill set or in a job that has low wages. Identifying what counts as being underemployed, or working in a 'bad job,' has varied. Kalleberg (2011) divides the concept of job quality into two dimensions: economic benefits and control over work. The latter allows for the fact that some jobs may not pay well but may otherwise be rewarding and allow workers to balance work with other demands in life, providing benefits that are not easily quantifiable. Kohn and Schooler (1973) examined satisfaction with work across different categories of workers to identify the extent to which everyday work life is associated with psychological well-being. Their research identified a link between work demands and well-being, but also acknowledged that aspects of work – such as amount of supervision, occupational self-direction, and job security – are largely determined by the position of the occupation in the larger social structure. Later, Jencks and colleagues (1988) developed an Index of Job Desirability, which assesses the relative importance of wages and benefits with nonmonetary job characteristics. Among 48 job characteristics measured, they found that the desirability of a job encompasses both monetary and nonmonetary aspects of work and that, with respect to equalising labour market success (as Jencks et al. 1988 term it) equalising the nonmonetary characteristics of a job has a greater impact in reducing inequality compared to the effect of equalising a job's pay.

The balance between monetary and nonmonetary employment benefits has been well researched (e.g., most recently by Williams, Zhou, and Zou 2020). The theory of compensating wage differentials has been used to frame two potential outcomes: that workers with undesirable working conditions would receive a wage premium, or that workers would be willing to accept lower wages to have some non-monetary job benefit. Prior research has shown mixed results for the former statement (e.g., Bockerman and Ilmakunnas 2004) and some support for the latter, particularly in research examining the wages of parents and women for family-friendly workplace policies (Johnson and Provan 1995; Glauber 2012; Fuller and Hirsh 2019). This research has not included workers with a disability as a focus, though these prior findings on parenting and a need for temporal and spatial flexibility would also extend to other workers who have a need for such work arrangements, such as those whose disability requires regular medical appointments, challenges with transportation (Brucker and Rollins 2019), or a need for non-standard work environment or schedule.

Others have continued to quantify the impact of non-financial aspects of job quality. The Organisation for Economic Cooperation and Development (OECD) and the European Trade Union Institute (ETUI) are international organisations that have used economic and non-economic measures of job quality as a way to compare the status of workers across nations. This research is centred upon developing a full picture of labour cross-nationally, one that encompasses the employment rate, wages, and status of workers more broadly. Aspects of job quality under the OECD measure include earnings, labour market security, and qualities of the working environment (Cazes, Hijzen, and Saint-Martin 2015). The ETUI job quality measure includes wages, job security, work-life balance, working conditions (including work autonomy), skills and career development, and collective interest representation (Piasna 2017). These analyses have found that youth and low-skilled workers – groups that have the highest rates of unemployment – have the lowest ratings of job quality, indicating the precarious work situation for the most vulnerable workers.

These research institutions differ in how they compute their job quality measures and how they title similar constructs, but both include workers' individual assessments of work autonomy and use of skills or training at work. The work of Munoz de Bustillo et al. (2011) is heavily informed by these international approaches, considering data from three potential sources: macro-level analyses at the nation-level; micro-level analyses of individual worker experiences; and public opinion on the assessment of what qualities would make for a hypothetical 'good job,' with consideration given to cultural differences in opinion and variation across different demographic groups. Their analysis of existing job quality data results in a recommended job quality index (computed at the level of the individual worker) that has five components. Similar to Kalleberg (2011), Munoz de Bustillo et al. (2011) separates pay from what they term 'amenities' in forming a job quality index. Amenities of work consist of four dimensions, each which are weighted equally relative to the importance of wages in computing job quality. These amenities include employment quality, health and safety, work-life balance, and intrinsic qualities of work. 'Employment quality' here refers to a job's stability – that is, the expectation that employment will not be terminated unexpectedly and that there is opportunity for development and growth. The health and safety dimension assesses the physical and psychosocial risks of a job; work-life balance includes measures of flexibility and scheduling. The fourth amenity component of this index, 'intrinsic quality of work,' includes two objective measures (use of skills at work and autonomy of work) and four subjective measures (an assessment of the worker's powerfulness, the work's meaningfulness, the amount of social support at work, and the worker's self-fulfilment).

How do workers perform on these various measures of job quality? Pay and benefits are generally straightforward measures. By examining the wages and presence of benefits such as employer-sponsored health insurance, retirement contributions, and profit sharing, researchers can examine whether some groups are less likely to have 'good' jobs. Prior research using this approach has found certain demographic groups are less likely to have good jobs, including women (Day 2019), those with lower levels of education (Psacharopoulos and Patrinos 2004), racial minorities (Jones and Schmitt 2016), those with health conditions (Brucker and Henly 2019), and those with activity limitations due to health (Schur et al. 2009). These studies had focussed on objective wages and benefits and lacked any measures of worker preference, or of non-economic aspects of work.

For the general population, the relationship between education and employment is direct: The higher the educational attainment, the higher the probability of being employed and the higher the wages (Brown, Hesketh, and Wiliams 2003). Those with no college education are less likely to be employed than those with a college degree. In addition, earnings for those with no college education have dropped over the last 40 years in the U.S., while those with a college degree have risen (Binder and Bound 2019). While education increases employment and wages overall, it also tends to benefit already privileged groups more so than economically disadvantaged groups, widening the wage gap. This is true for college-educated men and women in the U.S. (Day 2019), as well as college-educated workers with disability and college educated workers with no disability (author's calculations of 2017 American Community Survey data; Ruggles et al. 2019) compared to the wage gap among those with less education.

Beyond pay and employment rates, other aspects of job quality are more prevalent for those with a college education, though it is not clear if, just as the gap in wages, there is an increased disparity by disability status once analysis is limited to the highly educated. Others have noted that flexible work hours and work from home opportunities are more common among those with higher education, particularly those with a postgraduate degree (Fuller and Hirsh 2019; Suleman and da Conceição Figueiredo 2019). With respect to intrinsic qualities of work, more highly educated and highly skilled workers are also more likely to have more discretion with job tasks, indicating that higher educational attainment is associated with higher intrinsic quality of work (Verhofstadt, De Witte, and Omey 2007).

The theory of compensating differentials would suggest that these good work qualities may be sought by workers even though such jobs may have drawbacks – either financial or

otherwise. For instance, flexibility in high-status professional occupations has been associated with increased stress due to work-related interference at home (Schieman, Milkie, and Glavin 2009) and in workers being viewed as less serious about their careers (as summarised by Williams, Blair-Loy, and Berdahl 2013). Research that identifies how workers rank their desired job characteristics and how their job compares to preferences provides context to this phenomenon. Flabbi and Moro (2012) show that college graduates and Devine et al. (2006) that parents value job flexibility more highly than high school graduates and non-parents, respectively. It is not clear the extent to which higher education benefits socio-demographic groups that are generally disadvantaged in the workforce with respect to intrinsic work quality, nor the extent to which disadvantaged groups prefer jobs with intrinsic job quality over other jobs. Drawing on the research cited above, we seek to measure differences in economic characteristics of jobs as well as whether intrinsic aspects of work life are qualitatively different for highly educated workers with disabilities in the U.S. by answering the following research questions:

Do college-educated workers with a disability have lower wages and fewer benefits at work compared to college-educated workers with no disability?

Do college-educated workers with a disability have lower scores of intrinsic measures of job quality compared to college-educated workers with no disability?

Do college-educated workers with a disability rate the relative importance of intrinsic aspects of work life differently from college-educated workers with no disability?

Is disability status associated with the odds that a college-educated worker will have a job high in the intrinsic qualities of work that are most important to the worker?

The European job quality indices standardise dimensions of work that measure objective and subjective outcomes of individual workers so that nations can compare employment measures in aspects separate from job quantity (that is, unemployment and under-employment rates). This analysis seeks a similar goal, though it focuses specifically on U.S. workers: We note extant literature on unemployment and under-employment of workers with disabilities; here we focus on describing job quality for college-educated workers and to evaluate whether there are differences by disability status and type.

This analysis focuses specifically on the *intrinsic quality of work* dimension of job quality that Munoz de Bustillo et al. (2011) asserts is just as important as pay. Later research confirms this finding (e.g., Pacheco and Webber 2016; Wood, Daniels, and Ogbonnaya 2020) We selected this component for both theoretical and methodological reasons. First, our population of interest is workers with a college education. For those with a college degree, the components of the *intrinsic quality of work* dimension – skills, autonomy, powerfulness, meaningfulness, social support, and self-fulfilment – are aspects of work that are prescient. Workers who invest time and money towards a four-year degree are more likely to expect these aspects of work than those with less education. Assessing differences in this dimension of job quality is a useful measure of inequality.

Methodologically, this dimension is of use because our data source has valid measures for five of the six components of intrinsic quality of work. The other dimensions on Munoz de Bustillo's index (including quality of work, workplace safety, and work-life balance) are not represented on this instrument (either in full or in part). The prior research in this area draws heavily from the European Working Conditions Survey (EWCS), but our data source differs from that instrument in several respects. First, it does not have the specific items used in the original intrinsic quality of work composite measure. However, the data we use has several measures that have high face validity as they relate to each component. These measures are described below.

3. Data and methodology

3.1 Data

The National Survey of College Graduates (NSCG) is a nationally-representative panel survey of people with college degrees (bachelor's or higher) living in the U.S. The 2017 sample includes a new panel selected from people reporting possession of a college degree in the 2015 American Community Survey (ACS), as well as returning panels from those originally selected for the 2015 and 2013 NSCG cycles. This sampling approach resulted in a weighted response rate of 71% after utilising Web, mail, and telephone-interviewing methods. The resulting number of respondents is 83,672 and initial analysis focuses on the n = 64,998 who are under age 65 and reported being employed during the week of 1 February 2017; regression models restrict the sample to n = 50,435 who are not self-employed and who work full-time (National Science Foundation 2018). Data are weighted to account for nonresponse and differential probabilities associated with sampling, and replicate weights using successive difference replication methods are applied to adjust standard errors to account for complex sampling design (National Science Foundation 2019). Consistent with the University of New Hampshire Institutional Review Board's policies, analysis of publicly available anonymised survey data does not require review (University of New Hampshire Research Office 2019). The authors analysed all data in the aggregate.

3.2 Measures

3.2.1 Job quality assessment

3.2.1.1 Economic qualities of work. We examine several economic measures of job quality, including annual salary; the availability of a pension or retirement plan; profit-sharing; paid days off for illness, vacation, or personal reasons; and employer-sponsored health insurance. This last benefit is particularly important to American workers, as purchasing health insurance in the private market is expensive in the U.S. and most people who do not qualify for government health insurance programmes obtain their health insurance through their employer or a family member's employer.

3.2.1.2 Intrinsic qualities of work. The NSCG instrument asks about both satisfaction with and the relative importance of various job factors. Following the method used by Frisch (1992; and described in; Wu and Yao 2006), we weight each respondent's job satisfaction by their self-reported rating of how important that aspect of work is. This method considers that some aspects of work may be more important to a worker's overall job quality based on individual or group preference. Based on the compensating differentials theory and knowing that workers with a disability tend to earn less than those with no disability, we wish to measure the role of importance rating by disability status to assess the subjective experience of intrinsic work quality. The four measures we use include: **autonomy** ('degree of independence' on the questionnaire), **powerfulness** ('level of responsibility'), **meaningfulness** ('contribution to society'), and **self-fulfilment** ('intellectual challenge'). For each aspect of work, respondents were asked to 'rate your satisfaction with [your principal job]' and later were asked 'When thinking about a job, how important is each of the following factors to you?' Both question sets provide a 4-point response scale.

Following the algorithm used by Frisch (1992), we rescaled the satisfaction scores so that 'very dissatisfied' is −2, 'somewhat dissatisfied' is −1, 'somewhat satisfied' is 1, and 'very satisfied' is 2. Importance is rescaled so that 'not important at all' is scored as 0, 'somewhat unimportant' is 1, 'somewhat important' is 2 and 'very important' is 3. These importance weights are then multiplied by satisfaction scores to create a weighted satisfaction score for each aspect of job quality, ranging from −6 to +6. The overall intrinsic job quality measure is calculated by summing together each of the four weighted intrinsic quality types (autonomy, powerfulness, meaningfulness, and self-fulfilment), which ranges from −24 to +24. We consider a score in the top quartile of the distribution (20 to 24) as a job with high intrinsic job quality.

3.2.3 Disability status

The NSCG has five questions that ask about functional limitations with sight, hearing, ambulation, lifting, and cognition. Respondents are counted as having a disability if they self-report having a degree of difficulty rated as moderate, severe, or unable to do on any of these five items, with the disability variable coded as 1. Other response options include none or slight, and respondents reporting these values are coded as zero, or not having a disability. This is the default coding of the disability indicator in the NSCG and it is also consistent with the ways in which other surveys using a five-point response scale count disability (Lauer, Henly, and Coleman 2018). This operational approach has been developed as the result of the efforts of the Washington Group on Disability Statistics, a group of survey experts tasked with developing a standardised measure of disability in government surveys collected by UN member states (Madans, Loeb, and Altman 2011).

3.2.4 Other demographic and employment indicators

This survey includes a number of standard demographic variables that we include in our models due to their theoretical relevance to employment. These include gender (in our models, being male is coded as 1, female as 0), race and ethnicity (in our models, any non-white or Hispanic is coded as 0, white as 1), age (ranging from 20 to 64), having a minor child (1 if yes, 0 if not), and marital status (married as 1, other household relationships as 0).

With respect to education, we also have an indicator of educational attainment. Everyone in the sample has at least a bachelor's degree as a result of the sampling frame. A complete educational history was collected from respondents on the instrument, including high school diploma through all additional degrees conferred by the reference date of 1 February 2017. Some have earned advanced degrees and we include a measure of postgraduate education in our models (1 if master's degree or higher; 0 if not).

We also note how many years have passed since the worker's highest degree was received and take this as a measure of years of experience. This value ranged from 0 (highest degree received in 2017) to a high of 47, with an average of 15 years among full-time workers. This measure is used as a more meaningful substitute for age in our regression models, though the two measures are strongly correlated ($r = 0.78$).

We also include four measures related to type of employment: employment sector, field of work, supervisory responsibilities, and the extent to which one's highest degree is used at work. For sector, workers identified whether they worked for a private sector for-profit employer, a non-profit agency, federal or local government, or are self-employed. We display the distribution of workers within each of these categories by disability status, but for our job quality analyses, we exclude the self-employed category due to these workers' unique situation with respect to control over their work environment.

Secondly, the survey asks respondents to select the job category or field of work from a list of over one hundred choices. These were collapsed into seven main categories: computer and mathematical sciences; biological, agricultural, and life sciences; physical sciences; social sciences; engineering; science and engineering-related; and non-science and engineering occupations. Thirdly, there is an indicator to measure whether the respondent had to supervise the work of others as part of their job (1 if they have supervisory responsibilities and 0 if not).

Finally, we include the respondent's assessment as to the 'extent … your work on your principal job related to your highest degree?' Those who indicated that their work was closely related or somewhat related are counted as using their degree at work (a value of 1) and those who said 'not related' have a value of 0. This could also be taken as a measure of intrinsic job quality on its own, but as it is not measured in a similar way without asking about relative importance, we include it as a control.

3.3 Analytical approach

We begin by presenting descriptive statistics to show the representation of people with disabilities among the college-educated population. Then, we present bivariate analyses to compare those

employed full-time by disability status, testing for statistical significance for differences between proportions using a t-test. Finally, we control for a variety of covariates previously shown to be relevant to job quality in a regression model predicting the intrinsic job quality score using the Frisch calculation, predicting the odds that a worker is in the top quartile of overall weighted job quality scores. All analyses were run in Stata version 15.1.

4. Results

4.1 Demographics

Descriptive statistics suggest that, of all working-age college graduates (aged 21 to 64), those with a disability are significantly less likely to be employed (76.9% versus 87.6%, $p < 0.001$). Table 1 shows that 11.1% of full-time employed college graduates have a disability. Bivariate analyses show that 85.6% of college-educated workers are employed full-time and that work type (full-time versus part-time) does not vary significantly by disability status. Workers with a disability are overrepresented among the self-employed (22.2% versus 17.5%, $p < 0.01$) and under-represented among those in private, for-profit companies (37.2% versus 42.7% for those with no disability, $p < 0.01$).

Those with a disability are slightly underrepresented among those with an advanced degree (33.7% compared to 37.1% among those with no disability, $p < 0.01$). While the college-educated employed population has slightly more women (52.8%) than men (47.2%) overall, there is a slightly higher representation of men (49.6%) among those with a disability. Workers with a disability are also significantly older (46.3 years old compared to 42.4 years for those with no disability) among college-educated workers.

4.2 Earnings and benefits

We begin by providing information to answer our first research question ('Do college-educated workers with a disability have lower wages and fewer benefits at work compared to college-educated workers with no disability?') in Table 2. Full-time workers with a disability have significantly lower median salaries than those with no disability ($63,600 compared to 70,000, USD $p < 0.001$). Full-time employed workers with a disability have similar rates of fringe benefits at work, with the

Table 1. Demographic profile of employed NSCG sample, under age 65 (weighted).

		Without disability	With Disability	Overall	p
Employment type	Full-time	85.8%	83.5%	85.6%	*
	Part-time	14.2%	16.5%	14.4%	
Employment sector	Private, for-profit	42.7%	37.2%	42.1%	***
	Non-profit	14.2%	11.4%	13.8%	**
	Federal Government	4.1%	5.7%	4.2%	*
	Local/State Government	21.6%	23.6%	21.8%	
	Self-employed	17.5%	22.2%	18.0%	**
Highest degree	Bachelors	62.9%	66.3%	63.3%	*
	Masters	27.4%	27.1%	27.3%	
	Doctorate	3.5%	2.7%	3.4%	*
	Other Professional Degree	6.2%	3.9%	6.0%	***
Race/Ethnicity	White, non-Hispanic	71.7%	70.3%	71.6%	
	Black, non-Hispanic	8.6%	10.7%	8.8%	*
	Asian, non-Hispanic	10.7%	7.9%	10.4%	***
	Hispanic	9.0%	11.1%	9.3%	
Gender	Female	53.1%	50.4%	52.8%	
	Male	46.9%	49.6%	47.2%	
Age	(Mean)	42.4	46.3	42.8	***
Number of respondents (unweighted)		*58,707*	*6,291*	*64,998*	
Percentage of respondents (weighted)		88.9%	11.1%	100.0%	

* $p < 0.05$, **$p < 0.01$, ***$p < 0.001$, with Bonferroni adjustments for multiple comparisons when applicable. Note that part-time and self-employed workers are not included in subsequent tables.

exception of profit-sharing, where those with a disability are significantly less likely to have this benefit (22.9%) than those with no disability (26.1%, $p < 0.05$). Most full-time workers have employer-based health insurance, retirement savings benefits, and paid days off work.

4.3 Intrinsic qualities of work

Table 3 displays information in response to our second and third research questions:

> Do college-educated workers with a disability have lower scores of intrinsic measures of job quality compared to college-educated workers with no disability?

Do college-educated workers with a disability rate the relative importance of intrinsic aspects of work-life differently from college-educated workers with no disability?

Table 3 shows the percentage of full-time college-educated workers who reported that they agree (either strongly or somewhat) with each of four statements related to intrinsic quality of work: autonomy, powerfulness, meaningfulness, and self-fulfilment, as well as the percentage who reported that each aspect of work was important (either very or somewhat). The final column displays the percentage who agreed with all four statements. Across all aspects of intrinsic qualities of work, we note that the vast majority indicated that each aspect was important to them when thinking about a job, with modest differences by disability status.

Looking indicator by indicator, at least 82% of workers report satisfaction with each measure of intrinsic job quality, yet only 69.4% have jobs that are satisfactory on all measures. At the bivariate level, we see that workers with a disability rate the intrinsic quality of their work significantly lower than workers with no disability on three of the four dimensions included. Workers with a disability are less likely to agree that they have autonomy, power, or self-fulfilment compared to workers with no disability. There was no significant difference by disability status in the satisfaction with the meaningfulness of work. In sum, just over half of workers with a disability (63.1%) are satisfied with all four dimensions of intrinsic qualities of work present compared to 70.1% of those with no disability ($p < 0.001$).

Table 4 displays the results of a logistic regression model predicting the odds of having a job high in intrinsic job quality, or in the top quartile of weighted satisfaction with the four components of intrinsic job quality. These results address our final research question: 'Is disability status associated with the odds that a college-educated worker will have a job high in the intrinsic qualities of work that are most important to the worker?' In this analysis, we find that full-time college-educated workers with a disability have 29% lower odds of having a good job than similar workers with no disability. Workers who are white (OR = 1.13, $p < 0.01$) or married (OR = 1.17, $p < 0.001$) have significantly higher odds of having a job with intrinsic job quality compared to those who are non-white or are unmarried, holding all other demographic and job characteristics constant. Having children is not significantly associated with job quality for full-time workers. Men have significantly lower odds of having a job high in intrinsic quality compared to women (OR = 0.84, $p < 0.05$).

Table 2. Characteristics of employment benefits for full-time workers (excludes self-employed), by disability status (95% confidence intervals indicated in parentheses).

	No Disability	Disability	p
Salary (median)	$70,000	$63,600	***
Health insurance	93.5% (93.0%, 94.1%)	91.2% (88.7%, 93.7%)	
Retirement plan	84.1% (83.4%, 84.8)	81.7% (79.0%, 84.3%)	
Profit-sharing	26.1% (25.3%, 26.9%)	22.9% (20.1%, 25.6%)	*
Paid days off	94.4% (94.0%, 94.8%)	94.2% (93.0%, 95.4%)	

Differences between those with and with no disability *$p < 0.05$, ** $p < 0.01$, ***$p < 0.001$

Table 3. Intrinsic qualities of work for full-time workers, by disability status (excluding self-employed).

	Dimension	Autonomy	Powerfulness	Meaningfulness	Self-fulfillment	
	Measure	Degree of independence	Level of responsibility	Contribution to society	Intellectual challenge	**All 4 dimensions are present**
Overall	% Important	97.1%	94.3%	91.0%	97.1%	85.6%
	% Satisfied	90.6%	88.0%	84.8%	82.1%	69.4%
	Average weighted satisfaction	*3.61*	*2.98*	*3.03*	*2.70*	*12.32*
No Disability	% Important	97.2%	94.5%	91.2%	97.3%	85.9%
	% Satisfied	91.1%	88.3%	85.0%	82.7%	70.1%
	Average weighted satisfaction	*3.66*	*3.02*	*3.05*	*2.76*	*12.49*
Disability	% Important	95.9%	92.2%	89.9%	95.8%	82.7%
	% Satisfied	86.4%	85.1%	83.1%	77.0%	63.1%
	Average weighted satisfaction	*3.19*	*2.63*	*2.91*	*2.20*	*10.92*

The values indicate the percentage reporting being very or somewhat important and very or somewhat satisfied (versus very or somewhat unimportant/dissatisfied) with each aspect of work. The weighted scores multiply the importance by the satisfaction. Differences between those with and without a disability are statistically significant ($p < 0.01$) for all but meaningfulness, for which there was no significant difference for importance or satisfaction.

Table 4. Odds ratios predicting high intrinsic job quality (weighted job satisfaction), full-time workers who are not self employed.

	Odds Ratio	Std Err	p>|t|
Disability	0.71	0.06	***
White	1.13	0.06	*
Male	0.84	0.04	***
Married	1.17	0.07	**
Has children under 19[1]	1.03	0.05	
Yrs since degree (experience)	1.01	0.00	***
Has postgrad deg	1.36	0.06	***
Has supervisory resp.	1.39	0.06	***
Uses degree at work	2.18	0.16	***
Job category (ref = For profit company)			
Non-profit	1.78	0.10	***
Fed Govt	1.62	0.14	***
Local/State Gov	1.55	0.09	***
Job code (ref = non S&E[2] occupation)			
Computer & maths science	0.83	0.05	**
Bio., agricultural, life science	1.30	0.11	**
Physical science	1.17	0.10	
Social science	1.23	0.15	
Engineers	0.97	0.06	
S&E-related	1.25	0.07	***
Constant	0.08	0.01	***

Note: Weighted job satisfaction scores account for self-reported importance of each of the four facets of work, then adds these values together to calculate overall intrinsic job quality. High job quality includes values in the top quartile of scores.

Having an advanced degree (OR = 1.36, $p < 0.001$), supervisory responsibility (OR = 1.39, $p < 0.001$), and more work experience (OR = 1.01 for each year since degree; $p < 0.001$) are all also associated with increased odds of having a good job. With respect to characteristics of the job, there are also significant differences in intrinsic job quality by employer type and field of work. Those working in for-profit corporations had lower odds of intrinsic job quality compared to workers in non-profit (OR = 1.78, $p < 0.001$), federal government (OR = 1.62, $p < 0.001$), or local and state government (OR = 1.55, $p < 0.001$). In addition, those employed in biological, agricultural and life sciences had higher odds of good job quality (OR = 1.30, $p < 0.01$) than those in non-Science & Engineering (S&E) fields (Non-S&E fields includes work such as management, social services, non-S&E education, and arts & humanities). Computer and maths scientists had significantly lower intrinsic job quality than those in non-S&E fields (OR = 0.83, $p < 0.01$).

5. Discussion

Consistent with previous findings on employment trends, we found college-educated persons with disabilities are less likely to work than college-educated persons without disabilities. However, we note that this employment gap is smaller than among the general working-age population. In 2017, the general employment rate for those 18–64 was 77.2% for those with no disability and just 37.0% for those with a disability (Lauer and Houtenville 2019). This 40-point gap in percentage rate is much larger than the 10.7-point gap we observed among college graduates. This suggests that education may be somewhat of an equaliser, at least with respect to obtaining employment, but that other factors continue to limit the employment participation of persons with disabilities in full-time work.

Looking to economic aspects of work, college-educated workers generally receive benefits such as paid time off and insurance and retirement at similar rates, regardless of disability status. However, workers with no disability report median wages that are 10% higher than the median wages of workers with a disability. In this respect education appears to decrease the disability wage gap, as the median earnings for workers of all education levels is 50% higher for those with no disability (Lauer and Houtenville 2019). This is opposite of the impact of education on the gender wage gap, where

the difference in pay between college-educated women and men is larger than the gap between male and female workers with less education (Day 2019).

The reason for this remaining disability pay gap among the college-educated is not clear. We did not find support that workers with disabilities are sacrificing higher pay for jobs with more intrinsic work quality, consistent with the theory of compensating differentials (Fuller and Hirsh 2019). If this were the case, then we would expect to find higher reports of intrinsic quality of work among those with a disability. In fact, workers with disabilities fared significantly worse than workers with no disability in three of four of the intrinsic quality of work dimensions – autonomy, powerfulness, and self-fulfilment. This holds even after accounting for individual preferences by weighting for relative importance of various aspects of work. Compensating differentials may be an explanation for both the lower pay and the lower intrinsic quality of work if workers with disabilities are trading off both of these dimensions of work for some other job quality that we did not measure, such as job flexibility in hours or location. Having control over start and stop times and having the ability to work from home are job characteristics that may be particularly beneficial to some demographic groups (e.g., parents, namely mothers who are more likely to manage childcare responsibilities; and workers with disabilities or chronic health conditions). However, utilising workplace policies on flexible work arrangements in order to accommodate family or health demands may stigmatise the worker by highlighting their status as parent or person with a disability, which deviates from the norm of the ideal worker (Foster and Wass 2012; Porter 2014). The workplace as an institution is not gender neutral and it is not disability neutral. Worker characteristics are valued based on expectations that are informed by stereotypes of gender and disability. This is evidenced by the underrepresentation of women and people with disabilities in the labour force. Examining the role that workplace flexibility plays in shaping job opportunities in relation to pay and intrinsic job quality is a consideration for future research.

Contrary to the compensating differentials paradigm, it may be that jobs counted as 'good' on one measure are likely to be good no matter how job quality is defined. Prior research on job quality that operationalised a good job as one with above average pay and benefits identified demographic differences in who has a good-quality job, including gender, race, parent status, marital status, and disability status. Most of these characteristics (excepting parent status) also are predictors of workers who have a job high in intrinsic quality according to our model. This suggests that certain demographic groups are more advantaged than others with respect to obtaining employment. While there are significant demographic differences between workers with and without a disability, the size of the differences is slight. Most college-educated workers are employed full-time, regardless of disability status, and a similar proportion have an advanced degree (33.7% among those with a disability, 37.1% for those with no disability).

Employers in professional and technical occupations could do more to ensure intrinsically rewarding work for those with disabilities by asking all employees what they value about their work and setting goals to meet these dimensions of work. Recognising that different qualities of work are important to different populations is an important first step. Even though we observed differences by disability status, college graduates overwhelmingly value job autonomy, responsibility, challenges, and doing work that contributes to society. Creating workplace methods of assessing success in these dimensions could help to increase satisfaction even further.

6. Limitations

The OECD Job Quality Framework recommends measures of job quality that focus on individual workers (as we do), giving preference to objective job attributes (Cazes, Hijzen, and Saint-Martin 2015). Our analysis relies on a worker's assessment of their satisfaction with various dimensions of intrinsic quality of their work, components of work life, which are subjective and not externally verifiable. The OECD favours an objective approach because their goals are to promote policy interventions that could improve job quality. Our subjective measures are designed to identify

inequalities in work life between workers with and without a disability. The one subjective component of intrinsic job quality that Munoz de Bustillo includes but that we omit is social support. This includes having friends at work and receiving assistance from colleagues when needed. This component is excluded because our instrument has no reasonable proxy for it.

7. Conclusion

This paper examined job quality for workers with a college degree as a way of understanding differences by disability status among the most advantaged of workers. By focusing our analyses on only those with high educational attainment, we can begin to more finely examine differences in job quality between workers with and without disabilities. This includes those who generally earn good wages, providing space to balance other considerations with choosing a job. Education is designed to be an equaliser in the workplace; advanced training in a specialised field should bring about relatively good opportunities, all else equal. By not only controlling for level of education as in prior studies, but by limiting our analyses to those with a college degree or higher, these findings highlight substantial differences in employment quality, both with respect to financially- and intrinsically-rewarding dimensions.

We found that education appears to help with equalising job opportunities for people with disabilities, with respect to wages, benefits, and employment more generally. The disability employment gap and disability wage gap are both substantially narrower among the college-educated than among the general working-age (18 to 64) population. However, even among the college-educated, workers with a disability earn less and have lower reports of intrinsic job quality compared to those with no disability. The gap in intrinsic job quality remained even after accounting for individual-level preferences in job attributes.

Additional research that identifies other components of the job quality index would allow for a more complete picture of work life for people with disabilities. There are few large-scale data sets that capture this information for U.S. workers. This area of research could benefit from additional data collection efforts that assess both job quality and disability status. Qualitative research in this area would also offer great insight about the reasons for the disparity in intrinsic quality of work between those with and without disability, just as Cooke et al. (2019) used in-depth interviews to understand the relationship between job quality and remote rural living. College-educated workers with disabilities may place a higher value on unmeasured aspects of work-life that have not been identified in prior research. Alternatively, a theory other than competing differentials may work to guide this narrative. Patterns in detailed first-person accounts could provide insight to further explain our findings. Such work would also demonstrate if, as this research suggests, education initiatives targeting people with disabilities are beneficial at reducing employment barriers. Examining disability onset, disability type, education history, and work history would provide additional context with respect to the link between a college degree and employment opportunities for people with disabilities.

Notes

1. We also investigated the impact of the interaction between gender and presence of children, and of gender, marital status, and presence of children. However, those findings yielded patterns that were similar for men and women so for simplicity of presentation, the model without interaction effects is shown.
2. S&E is Science & Engineering.

Acknowledgements

The authors wish to thank attendees and fellow panellists for their feedback during the 2019 Annual Meeting of the Eastern Sociological Society in Boston, MA, USA where an early draft of this paper was presented.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

Funding for this study was provided by the Research and Training Center on Employment Policy and Measurement at the University of New Hampshire, which is funded by the National Institute for Disability, Independent Living, and Rehabilitation Research, in the Administration for Community Living, at the U.S. Department of Health and Human Services (DHHS) under grant number [9ORT5037-02-00]. The contents do not necessarily represent the policy of DHHS and you should not assume endorsement by the federal government (EDGAR, 75.620 (b)).

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