

# Disability and trade union membership in the UK

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## Abstract

Using data from two national surveys, the Quarterly Labour Force Survey and the Workplace Employment Relations Survey, we establish evidence of a robust disability-related trade union membership differential in the UK. After controlling for differences in other personal and work-related characteristics, disabled employees are found to be 3.6 percentage points (12–14 per cent) more likely to be union members than non-disabled employees. While the differential is consistent with evidence that disabled employees have stronger preferences for union representation, we do not find evidence that union membership is associated with disproportionate benefits for disabled employees in terms of a reduction in disability-related labour market inequality.

## 1 | INTRODUCTION

Disability is associated with significant labour market disadvantage internationally (see Jones, 2021) but despite arguments that trade unions act as a ‘sword of justice’ and protect the most disadvantaged employees (Metcalf et al., 2001), the relationship between trade unions and disability-related labour inequality has been neglected.<sup>1</sup> Indeed, although Foster and Fosh (2010) argue that unions have a critical role in getting disability on the corporate agenda in the UK, Ameri et al. (2019:11) find ‘remarkably little evidence on either the prevalence or effects of unions for workers with disabilities’.<sup>2</sup> A membership differential might arise if disabled workers perceive and/or experience greater benefits to union membership aligned to arguments of enhanced

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voice (Freeman & Medoff, 1984) and support to exercise their rights (Budd & Mumford, 2004). Moreover, if unions are successful in promoting equality (Hoque & Bacon, 2014; Bacon & Hoque, 2015; Richards & Sang, 2016) and/or protecting low-wage workers (Metcalf et al., 2001; Blau & Kahn, 2003), unions should have a narrowing impact on disability-related inequality.

This article contributes to this dearth of evidence by providing the first analysis of the disability-related union membership differential, and the relationship between membership and disability-related inequality, in the UK. Using data from two complementary national surveys, including the largest household survey, the Quarterly Labour Force Survey (QLFS) (2013–2020) and linked employee-employer data from the Workplace Employment Relations Survey (WERS) (2011), which contain detailed information on union membership and labour market outcomes including pay, we explore the disability-related union membership differential, and consider its potential drivers. In terms of the latter, we consider worker composition effects, differences in preferences for union representation and evaluations of union performance, and whether unions are associated with lower disability-related labour market inequality. The findings, therefore, contribute to, and integrate a body of evidence on, the composition and impact of union membership (see Blanchflower & Bryson, 2010, 2022) with the literature relating to disability-related labour market inequality, including disability pay gap (DPG) (Jones et al., 2006; Longhi et al., 2012) and disability employment gap (DEG) (Baumberg et al., 2015). In doing so, this article provides timely and important new evidence for government policy which aims to reduce the DEG in the UK (HM Government, 2021).

Our evidence indicates a substantial disability-related union membership differential, with disabled employees 3.6 percentage points (12–14 per cent) more likely to be members than non-disabled employees after adjusting for differences in employee and work-related characteristics. We find this is consistent with disabled employees expressing stronger preferences for union representation than their non-disabled counterparts, but we find little evidence of disproportionate benefits of membership for disabled employees in terms of reducing disability-related inequality as measured by pay and job retention. While the raw DPG is smaller among union members, this differential is explained by differences in observable characteristics. Further, we find no evidence that disability-related gaps in employment retention are smaller for union members. Therefore, in contrast to previous evidence which suggests a role for unions in influencing employer equality practice in the UK (Hoque & Bacon, 2014) and disability inequality at work in the United States (Ameri et al., 2019), our evidence is not consistent with unions acting as a ‘sword of justice’ for their disabled members in the UK.

The remainder of this article is structured as follows. We explore the potential relationships between union membership, disability and disability-related inequality in Section 2. Section 3 introduces the data and measures from the QLFS and WERS. Section 4 provides details of the analysis and findings in relation to union membership, Section 5 considers perceived union effectiveness among employees and Section 6 provides an analysis of disability-related inequality in pay and employment retention. Section 7 briefly concludes.

## 2 | BACKGROUND

### 2.1 | Union membership

Booth (1986) applies a theoretical model based on utility maximization to explain the decision to become a union member. As she notes, membership probabilities will depend on personal tastes, and differences in the costs and benefits of membership. The costs of membership, in the form of fees, are unlikely to systematically differ between disabled and non-disabled workers, albeit they

are likely to be relatively higher among low-wage workers. In contrast, due to persistent labour market disadvantage, including in terms of employment (Baumberg et al., 2015), pay (Jones et al., 2006; Longhi et al., 2012) and reflected in job satisfaction and perceptions of management (Schur, et al., 2009; Jones, 2016), disabled employees may differ in their actual or perceived benefits from membership.

Greater benefits might arise for disabled employees from enhanced 'voice' in bargaining with management (Freeman & Medoff, 1984), with unions identifying and providing a collective expression of common concerns among disabled employees, and providing support in understanding and enforcing the existing rights of disabled employees under equalities legislation, so-called 'facilitation effects' (Budd & Mumford, 2004).<sup>3,4</sup> Consistent with this, trade union recognition (at least where it reflects a decision-making influence via negotiation or consultation) has been found to increase the adoption of disability-related workplace equality practices in Britain (Hoque & Bacon, 2014), including relating to pay, promotion and recruitment. Union equality representatives and Disability Champions, the latter being an initiative whereby a lay member offers guidance for employees and employers on disability issues, may provide one mechanism through which this is achieved. Indeed, albeit using self-assessed information, Bacon and Hoque (2012) and Bacon and Hoque (2015) report a positive influence of both roles on employer disability-related equality practice. Similarly, in their qualitative analysis of the 2012 UK's Transport Salaried Staffs' Association neurodiversity project, Richards and Sang (2016) find that disability champions are viewed positively by neurologically impaired employees and influence individual cases and union bargaining agendas.

More generally, and as highlighted in the context of migrants (Kranendonk & de Beer, 2016), higher rates of membership might exist among marginalized workers if they are more likely to join a union out of frustration (Klandermans, 1986), consistent with more negative views of the treatment of workers by managers among disabled employees (Jones, 2016). Such employees might also particularly value the network provided by, and consumption benefits relating to, membership.

There is an extensive literature on the determinants of union membership (for a recent example, see Blanchflower & Bryson, 2022), and observed differences in membership by disability may, therefore, simply be a function of composition effects, that is differences in personal and job-related characteristics between disabled and non-disabled employees. It is well-established that on average disabled employees are older and less highly qualified than their non-disabled counterparts, both characteristics related to union membership (Booth, 1986; Blanchflower & Bryson, 2022). Unionization is also strongly related to sector, industry and occupation and, in what follows, we control for both demographic and job-related characteristics to quantify and explore the disability-related differential among more comparable workers, which would be consistent with differential benefits of membership.

To our knowledge, Ameri et al. (2019) provide the only prior empirical analysis of a disability-related differential in unionization.<sup>5</sup> Using the US Current Population Survey (CPS) 2009–2017, they find a small (but significant) raw differential in union coverage of 0.5 percentage points which is entirely explained by composition effects, suggesting no differential relating to disability per se.<sup>6</sup>

## 2.2 | Unions and disability-related inequality

Aligned to arguments relating to monopsony power, evidence supporting the existence of a union wage premium is well-established (Blanchflower & Bryson, 2010) and is often considered as a key measure of the benefit of membership (Bryson, 2005). A disability-related membership

differential may then arise if there is a disproportionate premium for disabled workers, which would give rise to a narrower DPG among members. The above arguments that unions enhance employee voice provide information and guidance to employers and employees on equality legislation, and enhance employer equality practice (Hoque & Bacon, 2014), as well as more general evidence in relation to unions compressing the wage distribution (Freeman, 1980, 1982; Card et al., 2020), including protecting low-paid workers (Blau & Kahn, 2003) and pursuing unequal pay claims for women (Conley, 2014) suggest a potential role for unions in narrowing disability-related earnings inequality. However, as Ameri et al. (2019) highlight in the context of the United States, there are potential opposing mechanisms in relation to disability, particularly arising from a conflict between the need for individual accommodations and the collective nature of union agreements (see Foster & Fosh, 2010 for similar arguments in the UK). While Ameri et al. (2019) found the probability of requesting workplace accommodations to increase with union coverage, the influence was similar between disabled and non-disabled workers.<sup>7</sup>

In their analysis in the United States, Ameri et al. (2019) find the DPG to be nearly 5 percentage points lower for employees covered by a union even after accounting for differences in observable employee and job characteristics, consistent with a narrowing union influence on pay inequality or larger union wage premium for disabled relative to non-disabled workers. Using the same CPS data 2009–2018, Pettinicchio and Maroto (2020) similarly find a considerably smaller unexplained DPG among unionized compared to non-unionized workers. They further find those with the most severe types of disability (cognitive impairments and independent living limitations), and the lowest earnings, benefit disproportionately from unionization. Previous analysis of the DPG in the UK, including using the QLFS (Jones et al., 2006; Longhi et al., 2012), finds a sizeable unexplained DPG but fails to consider the potential role of unions. While employee union membership and workplace unionization are controlled for by Jones and Latreille (2010) in their analysis of the DPG using WERS 2004, they too neglect their potential moderating role.<sup>8,9</sup>

In terms of other labour market outcomes, Ameri et al. (2019) consider the influence of unions on the relationship between disability and employment transitions, aligned to UK policy emphasis on the DEG (e.g. Baumberg et al., 2015). Distinguishing between disability onset, exit, and those disabled/non-disabled for two periods, they find that union coverage disproportionately increases job retention among disabled workers, but that the probability of hiring disabled people is lower in unionized jobs. This is consistent with recent qualitative evidence that, aligned to protecting current members, unions in the UK focus on addressing disability discrimination in job retention rather than recruitment (Foster & Fosh, 2010).

In relation to the motivation for, and benefits of, union membership, Bryson (2005) argues that employee perceptions of union effectiveness, such as in terms of improving work and working conditions, are useful in supplementing evidence on more objective measures, such as the union wage premium. Indeed, differences in perceived union effectiveness, as well as actual union-related differences in disability-related inequality, may drive disability-related differentials in membership. To our knowledge, however, and consistent with the broader lack of analysis of how disabled employees feel about their work and workplace (Schur, et al., 2009; Jones, 2016), there has been no previous analysis of differences in preferences for union representation or evaluations of union performance by disability, something we are able to consider given the rich information on unions collected in WERS.

In focusing on the intersection between disability-related inequality and unions, this article integrates and extends these largely distinct streams of literature to provide new evidence on disability-related differentials in union membership, the first consideration of differences in perceptions of unions by disability, and additional insights into existing evidence on disability-related inequality, including the DPG (Jones et al., 2006; Jones & Latreille, 2010; Longhi et al.,

2012), by considering the moderating role of unions. Moreover, in using two complementary sources of detailed and representative micro-data, including linked employee-employer data, our analysis can control for a range of personal, job and workplace characteristics, including workplace fixed effects, to better isolate the influence of disability per se.

### 3 | DATA AND MEASURES

Our data come from two national surveys, namely the QLFS and WERS, given the complementary insights they provide (see Blanchflower & Bryson, 2010 in the context of unions). The QLFS (ONS, 2022a) is the largest nationally representative household survey in the UK. It contains comprehensive information on personal and job-related characteristics and has been extensively used to analyse both disability inequality (e.g. Baumberg et al., 2015) and union membership (e.g. Blanchflower & Bryson, 2022). It has several advantages in this context, including that it collects information on disability defined by legislation, and for a large enough sample to perform robust analysis. It also forms the government official source of data for estimates of the DEG (ONS, 2019) and union prevalence (Department for Business, Energy & Industrial Strategy, 2021). Since union membership is only available in the October–December quarters, we pool data across 8 years (2013–2020), where the definition of disability is consistent.<sup>10,11</sup> Our sample is restricted to working-age employees (aged 16–64) throughout and we exclude full-time students and those who work outside the UK.<sup>12</sup> In an additional analysis, we utilize the five-quarter longitudinal LFS (LLFS) (2013–2020) (ONS, 2022b) (see Online Appendix [OA] B for further details) but keep variable definitions and sample restrictions as similar as possible to the QLFS.

We supplement the QLFS with matched employee-employer data from WERS 2011 (Department for Business, Innovation & Skills, Advisory Conciliation & Arbitration Service, National Institute of Economic & Social Research, 2021), a nationally representative survey of British workplaces with five or more employees (excluding those employed in agriculture, hunting, forestry and fishing, and mining and quarrying). In doing so, we explore the influence of a richer set of controls, particularly for the workplace, estimate within workplace differentials and consider employee preferences for union representation and evaluations of union performance absent in the QLFS. While our findings between the two surveys are not directly comparable due to the timing of data collection, differences in geographic coverage and the exclusion of the smallest workplaces within WERS, we nonetheless see value in the additional analysis facilitated by WERS, both in exploring the robustness of the QLFS results and in extending the analysis to consider additional drivers. The management questionnaire is completed by the person with responsibility for employment relations and, where he/she agrees, the employee questionnaire is sent to a random sample of up to 25 workers. Matched responses are available for a maximum of 21,401 working-age employees in 1919 workplaces. Employee-level weights, which account for both the selection of workplaces and employees within workplaces, are applied throughout to ensure the analysis is representative.

#### 3.1 | Disability

Both surveys collect information on disability according to a well-established definition aligned to the 2010 Equality Act where disability reflects a long-term health problem that substantially

limits day-to-day activities.<sup>13</sup> The official definition is provided in the QLFS where individuals are asked ‘*Do you have any physical or mental health conditions or illnesses lasting or expecting to last 12 months or more?*’. Those who respond positively are then asked ‘*Does your condition or illness reduce your ability to carry out day-to-day activities?*’ to which individuals can respond *Yes, a little*; *Yes, a lot*; and *Not at all*. As per guidance from the UK Government Statistical Service, those who respond *yes* to the first and second question (either *a little* or *a lot*) are defined as disabled (see ONS, 2021). Remaining individuals form the non-disabled group.

Employee information on disability in WERS is similar but collected via a single question: ‘Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?’ To which employees can respond: No; Yes, limited a little; Yes, limited a lot. As above, employees are defined as disabled if they are either limited a little or a lot. Rates of disability are higher among employees in the QLFS sample (13.6 per cent) than WERS (8.9 per cent) but, at least in part, this reflects a rising prevalence of disability in the QLFS over time.<sup>14</sup>

While widely used, there are well-established limitations of using self-reported information on disability for labour market analysis. First, given the individual nature of the threshold for defining a health condition as limiting, self-reported information will suffer from measurement error, likely downward biasing estimates. Second, and offsetting this, if disability is used to justify inferior economic outcomes, disability inequality will be overestimated (see Bound, 1991). The latter is, however, likely to be less important in this context given the focus on employees (Longhi et al., 2012) and, particularly when considering union membership. Ameri et al. (2019) further argue that bias arising from self-reported information is likely to be similar for union and non-union members thereby minimizing the impact on union disability-related differentials which are our focus. Indeed, neither of our self-reported measures require individuals to identify as disabled or disclose disability at work/to their union and so any potential influence of unions on encouraging disclosure at work will not directly affect our measures.

### 3.2 | Trade union membership

Both surveys collect information on union membership using a standard question ‘*Are you a member of a trade union or staff association?*’ (see Davies, 2016).<sup>15</sup> The QLFS response is a simple *yes/no*, whereas *No, but have been in the past* is distinguished from *No, have never been a member* in WERS. We focus on current membership in both surveys and distinguish *yes* from all other responses.<sup>16</sup> 25.5 per cent and 29.5 per cent of employees are union members in the QLFS and WERS, respectively. Both surveys also contain information on union presence at the workplace. In the QLFS, this refers to whether *other* employees in the workplace are union members, whereas in WERS, employees are directly asked about the trade union presence. The latter is subject to a higher rate of uncertainty and gives rise to greater missing information, but complementary information on union prevalence (in terms of rates of union membership among the workforce, what we refer to as union intensity) is provided by the manager.

Information on union coverage is also available in the QLFS, that is whether pay and conditions are covered by a union agreement. This might be thought of as a more direct measure of union influence but one that is likely to be subject to greater measurement error when reported by employees (Blanchflower & Bryson, 2010). The corresponding information in WERS, which is reported by the manager, is likely to be more reliable. Table OA.1 contains further details and definitions of all union variables.

### 3.3 | Perceived union effectiveness

WERS contains information on employee preferences for union representation. All employees are asked ‘*Ideally, who do you think would best represent you in dealing with managers here about the following?*’ Getting increases in your pay; If your employer wanted to reduce your hours or pay; Getting training; If you wanted to make a complaint about working here; If a manager wanted to discipline you. In relation to each, employees are asked to select one of the following five options: *myself; trade union; employee representative (non-union); line manager; another employee and trade union is distinguished from all other responses*. This measure captures overall preferences for union representation, regardless of membership or presence at the workplace and, while potentially informed by this, it is not designed to assess specific unions at the workplace. Where there is a union in the workplace, employees are, however, also asked to assess its performance on a 5-point scale based on the extent to which they agree or disagree with statements capturing union responsiveness to members (*...take notice of members’ problems and complaints*), opportunity to influence (*...are taken seriously by management*) and ability in securing objectives (*...make a difference to what it is like to work here*) (see Bryson & Forth, 2010). This measure is, therefore, designed to provide an employee evaluation of the effectiveness of local unions. Individual-level unobserved heterogeneity affecting both reporting disability and perceptions, for example personality, is of greater concern when using subjective measures (see Jones, 2016). In the absence of employee panel data in WERS, we cannot rule out this form of bias, but argue it is limited by the specific and focused nature of the measures.

### 3.4 | Pay

In line with existing evidence (Jones et al., 2006; Blanchflower & Bryson, 2010), our dependent variable is (log) gross hourly pay, which adjusts pay during the reference period for hours worked. The QLFS measure of hourly pay is derived from gross weekly pay in the last pay period in the respondent’s main job based on total usual hours worked (and includes paid overtime since this is not collected separately). In WERS, employees provide information on usual gross weekly pay in bands and, following Jones and Latreille (2010) and Blanchflower and Bryson (2010) among others, we adjust the mid-point of the band for usual weekly hours to create a continuous measure of hourly pay.<sup>17</sup> Outliers are eliminated in both surveys using the standard Office for National Statistics (ONS) recommended filter so that the maximum hourly wage is £99.<sup>18</sup>

### 3.5 | Employment retention

Given the importance of retaining disabled people in work to the DEG, we also consider the role of unions in supporting employment retention. Using data from the five-quarter LLFS (see OA B), we trace annual changes in employment status.<sup>19</sup> Employment retention is defined as being an employee 1 year later, relative to non-employment, conditional on initially being an employee. We form a similar measure of job retention measured as being with the same employer (minimum job tenure of 12 months), compared to being an employee who has changed employer or being non-employed.

### 3.6 | Descriptive statistics

Table 1 provides descriptive statistics documenting the relationship between disability and union membership, perceptions of unions and disability-related gaps in labour market outcomes, specifically the DPG and employment retention.<sup>20</sup> In the QLFS and WERS, disabled employees are considerably (19 per cent and 49 per cent, respectively) more likely to be trade union members than non-disabled employees. Regardless of the survey, the disability-related union membership differential is far larger than that in the United States between 2009 and 2017 (4 per cent) (Ameri et al., 2019). Smaller, but nevertheless sizable, differentials are evident in coverage and union presence at the workplace, with greater consistency between surveys in the latter, at about 10 per cent.<sup>21</sup> Analysis of WERS suggests that disabled employees have stronger preferences for union representation across all the dimensions relating to improving conditions, for example pay increase or training, as well as providing support at more difficult times, for example reductions in pay or being disciplined. In contrast, employee evaluations of union performance are similar between disabled and non-disabled employees, with disabled employees reporting a slightly more negative assessment of unions being taken seriously by management.

In terms of inequality, the data confirm a 4–9 per cent raw membership pay premium depending on the survey and a DPG which is larger in the QLFS (15 per cent) than WERS (11 per cent). Interestingly, the DPG is wider among non-members than members in both surveys, 17 per cent relative to 11 per cent in the QLFS and 19 per cent relative to 5 per cent in WERS. Annual rates of employment retention are relatively high at about 95 per cent and slightly greater for union relative to non-union members. There is evidence of a disability gap in retention with disabled employees less likely to remain in employment 1 year later. This differential is slightly wider among members. Initially, therefore, both surveys suggest a higher rate of union membership among disabled employees, consistent with the evidence of stronger preferences for union representation in WERS but, while disability-related gaps in labour market outcomes are evident, the relationship between these and union membership is less clear.

### 3.7 | Explanatory variables

Building on extensive literature exploring the determinants of union membership (Kranendonk & de Beer, 2016; Ameri et al., 2019 among others) and disability-related inequality (Schur et al., 2009; Jones et al., 2006; Jones, 2016), we control for a comprehensive set of personal and work-related characteristics. We adopt a similar specification between surveys, recognizing that some job-related characteristics are reported by the manager in WERS and, that the precise definitions of some variables differ between surveys. Personal characteristics include gender, age band, educational attainment and ethnicity. In the QLFS, we also control for proxy interviews given previous evidence that proxy respondents underestimate union membership (Davies, 2016). Our job-related characteristics common across surveys include public/private sector, workplace size, work region (UK NUTS level-1 regions), tenure (and tenure-squared), permanent/temporary contract and part-time employment.<sup>22</sup> In additional specifications, we also control for occupation (Standard Occupational Classification [SOC] 2010 major groups) and industry (Standard Industrial Classification [SIC] 2007 Sectors). The latter controls for potential of differences in membership by industry which might otherwise be captured by disability, for example due to variation in health and safety risks. These measures are supplemented with additional workplace-related



TABLE 1 Descriptive statistics on disability and trade unions.

	QLFS				WERS			
	All	Disabled	Non-disabled	Disability gap	All	Disabled	Non-disabled	Disability gap
<i>Union (%)</i>								
Member	25.52	29.58	24.87	18.94	29.51	42.14	28.25	49.17
Covered	31.56	33.80	31.21	8.30	48.67	59.87	47.54	25.94
Presence	48.82	52.70	48.21	9.31	57.31	63.05	56.67	11.26
<i>Preferences for union representation</i>								
Trade union best represents employee in dealing with managers about (%)								
Pay increase	-	-	-	-	30.55	45.52	29.07	56.59
Reduction in hours or pay	-	-	-	-	35.32	48.42	34.02	42.33
Training	-	-	-	-	3.89	8.55	3.44	148.55
Complaint	-	-	-	-	16.61	27.82	15.51	79.37
Discipline	-	-	-	-	29.37	41.79	28.14	48.51
<i>Evaluations of union performance in the workplace</i>								
Unions/staff associations at this workplace. (Average of 1–5 point scale that increases in agreement)								
Take notice of members' problems and complaints	-	-	-	-	3.76	3.81	3.76	1.33
Are taken seriously by management	-	-	-	-	3.48	3.35	3.50	-4.29
Make a difference to what it is like to work here	-	-	-	-	3.29	3.30	3.28	0.61
<i>Pay</i>								
Average hourly earnings (£)	14.74 (9.50)	12.87 (7.96)	15.05 (9.70)	-14.49	13.05 (9.72)	11.73 (9.01)	13.18 (9.77)	-11.00
Union member	15.65 (7.97)	14.24 (7.07)	15.93 (8.11)	-10.61	13.41 (9.66)	12.87 (10.59)	13.50 (9.52)	-4.67
Non-member	14.41 (9.96)	12.27 (8.24)	14.74 (10.16)	-16.76	12.91 (9.75)	10.59 (7.63)	13.07 (9.87)	-18.97
<i>Employment retention (%)</i>								
All	95.32	92.70	95.77	-3.21	-	-	-	-
Union member	96.05	92.65	96.78	-4.27	-	-	-	-
Non-member	94.81	92.73	95.16	-2.55	-	-	-	-

Notes: (i) Standard deviations of hourly pay are presented in parenthesis. (ii) Disability gaps are measured in percent relative to the non-disabled figure in each case. (iii) Figures for employment retention are from the LLFS. (iv) WERS data are weighted.

Source: Authors calculations based on the QLFS 2013–2020, LLFS 2013–2020 and WERS 2011.

characteristics in specifications based on WERS, including ownership, single establishment and workplace age. A full set of summary statistics for the explanatory variables by disability and union membership is included in Table OA.2 (OA.3) for the QLFS (WERS). These confirm established differences between union and non-union members, including that, members are on average older, have longer tenure and, are more likely to work in large workplaces, in professional occupations, in the public administration, education and health industry, and in the public sector. They also exhibit known patterns by disability, including that disabled employees are on average older, have fewer educational qualifications and are more likely to work part-time.

## 4 | UNION MEMBERSHIP BY DISABILITY

Ameri et al. (2019) argue that higher rates of union membership among disabled employees arise due to differences in other observable characteristics correlated with disability, including older average age and concentration in blue-collar occupations. We explore whether the disability-related union membership differentials in Table 1 can be explained by other personal and work-related characteristics by modelling membership using the following linear probability model (LPM):<sup>23</sup>

$$U_i = \alpha D_i + Z_i \beta + \varepsilon_i, \quad (1)$$

where the dependent variable  $U_i$  represents a binary variable taking the value of one if employee  $i$  is a union member and zero otherwise;  $D_i$  is a disability indicator;  $Z_i$  is a vector of observed personal and job-related characteristics that could affect union membership.<sup>24,25</sup> Our focus is whether there is an adjusted disability-related union membership differential ( $\alpha$ ), or whether observationally comparable disabled employees have higher rates of membership. Using WERS, we are additionally able to explore the role of workplace characteristics, as well as estimating models with workplace fixed effects to control for unobserved workplace heterogeneity.

Table 2 shows the coefficient estimates on disability from successively more comprehensive specifications Equation (1).<sup>26</sup> Estimates from the QLFS (WERS) are presented in the upper (lower) panels. We first present results from a specification that only controls for disability (and, in the QLFS, year fixed effects) (column 1). In column (2), we additionally control for other personal characteristics (gender, age band, highest education and ethnicity and, in the QLFS proxy responses) established to influence union membership. Column (3) further adds job-related characteristics, including full-time, temporary, workplace size and sector. Broad classifications for occupation and industry are included in columns (4) and (5), respectively.<sup>27</sup> In columns (6) and (7), we present additional specifications from WERS which facilitate the inclusion of workplace characteristics, including ownership, single establishment and workplace age and, alternatively, workplace fixed effects.<sup>28</sup>

Consistent with Table 1, the coefficient estimates in Table 2 indicate that, in the absence of controls (column (1)), disabled employees have a significantly higher probability of being a union member. The raw disability differential is considerably greater in WERS at 14.0 percentage points, compared to 4.7 percentage points in the QLFS. In both surveys, the differential is reduced by the inclusion of personal characteristics (column (2)), particularly age. The introduction of job characteristics (column (3)) has a further narrowing influence in WERS and leads to a convergence in the adjusted disability differential across surveys. The introduction of occupation and industry further narrows the disability-related differential to

TABLE 2 Disability-related union membership differentials.

QLFS	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Disability	0.047*** (0.005)	0.034*** (0.005)	0.039*** (0.005)	0.038*** (0.005)	0.036*** (0.005)	–	–
Personal characteristics	No	Yes	Yes	Yes	Yes	–	–
Job-related characteristics	No	No	Yes	Yes	Yes	–	–
Occupation	No	No	No	Yes	Yes	–	–
Industry	No	No	No	No	Yes	–	–
Adj- $R^2$	0.00	0.05	0.25	0.26	0.27	–	–
$N$	58,636	57,247	54,122	54,078	53,952	–	–
WERS	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Disability	0.139*** (0.017)	0.093*** (0.017)	0.056*** (0.015)	0.052*** (0.015)	0.049** (0.015)	0.045** (0.016)	0.036* (0.015)
Personal characteristics	No	Yes	Yes	Yes	Yes	Yes	Yes
Job-related characteristics	No	No	Yes	Yes	Yes	Yes	Yes <sup>a</sup>
Occupation	No	No	No	Yes	Yes	Yes	Yes
Industry	No	No	No	No	Yes	No	No
Workplace characteristics	No	No	No	No	No	Yes	No
Workplace fixed effects	No	No	No	No	No	No	Yes
Adj- $R^2$	0.01	0.05	0.26	0.29	0.30	0.30	0.46
$N$	21,276	20,124	19,418	19,055	19,055	18,162	19,055

Notes: (i) Coefficient estimates are from the LPM specified in Equation (1). (ii) Standard errors are presented in parenthesis. (iii) WERS data are weighted and standard errors are clustered at the workplace level. (iv) \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . (v) All models include a constant term, the specifications for the QLFS additionally include year fixed effects.

<sup>a</sup> Sector, workplace size and work region are excluded in the fixed effects specification since they are constant within workplaces.

3.6 (4.9) percentage points in the QLFS (WERS) (column (5)). The addition of workplace characteristics in WERS has an additional narrowing influence and the inclusion of workplace fixed effects in column (7) results in a residual 3.6 percentage point differential, meaning comparable disabled workers are more likely to be union members even within the same workplace. The adjusted or unexplained differential of 3.6 percentage points (12–14 per cent of the non-disabled membership rate), across two surveys, contrasts with US evidence which suggests the raw disability differential was simply a reflection of composition effects (Ameri et al., 2019). Importantly, it is consistent with differences in preferences for, or benefits from, membership for disabled employees.<sup>29</sup>

We subject our core finding to a series of robustness tests in Table OA.5. These confirm that the adjusted differential in the QLFS is evident for all workers (including the self-employed), full-time employees, for males and females (albeit it is larger for females) and across the public and private sector. While the within-workplace disability membership differential remains positive in WERS, it only reaches significance at conventional levels for females and private-sector employees. We also show that our findings are not sensitive to excluding 2020 in the QLFS given the potential impact of COVID-19 or to including more detailed controls for occupation (WERS) and, occupation and industry (QLFS). In terms of measures of unionization, the disability-related differential is more pronounced when considering current *and* past membership (WERS). In the QLFS, it also extends to measures of union presence and coverage, albeit

it is smaller in relation to the latter at 1.3 percentage points. In contrast, in WERS, the additional measures of unionization present a less consistent picture with no adjusted disability differential in union presence (and actually evidence of a weakly significant negative differential, albeit the smaller sample is likely to signal uncertainty in employee measurement) or coverage as measured by the manager, suggesting higher rates of membership might not be reflected in enhanced protection from unions in terms of negotiation over terms and conditions. Nevertheless, there is a disability-related differential in manager-reported intensity as measured by the proportion of the workforce who are members. Conditioning the sample only on workplaces with at least one disabled employee in the sample (WERS) and adjusting for potential selection bias given the focus on employees (QLFS) also leaves our core result unchanged.<sup>30</sup>

Despite the comprehensive nature of our specifications, one potential concern is that disability-related differentials might reflect reverse causality if there are unobserved features of more heavily unionized jobs which influence health and disability, for example risk. Given disability-related differentials exist within workplaces/industries after accounting for detailed occupations, such factors would need to exist within workplaces and occupations. Nevertheless, we utilize the LLFS to explore annual changes in union membership and ask whether disabled employees are more likely to join, or less likely to leave a union. To do this, we condition our sample on those who are employees at both points and estimate a multinomial logit model where the dependent variable is join, leave, remain member or remain non-member. Following Ameri et al. (2019), we also distinguish between disability onset, exit and continuous disability/non-disability to further explore whether transitions in disability status, particularly the additional support required at disability onset, drive changes in union membership. We find that disabled employees and those experiencing disability onset are more likely to remain union members (see Table OB.1), but while onset is also positively associated with joining a union, the difference is not statistically significant.<sup>31</sup>

## 5 | EMPLOYEE PERCEPTIONS OF UNION EFFECTIVENESS

One potential explanation for the disability union membership differential is differences in the perceived benefits of unions in improving working conditions, including those arising from efforts to address disability-related inequality. WERS is unusual in providing information on preferences for union representation among *all employees* and, in a similar manner to Equation (1), we model the disability differential in preferences using a LPM. The coefficients for disability are presented in Table 3, where the upper panel presents raw differentials and, in the lower panel, the estimates are adjusted for personal and job characteristics, and workplace fixed effects. Regardless of the specific dimension of representation, we find a disability-related differential, whereby disabled employees are more likely to prefer union relative to other forms of representation.<sup>32</sup> This is true both before and after accounting for observable characteristics, albeit the inclusion of a comprehensive range of characteristics narrows the disability differential considerably in some cases. The adjusted estimates in the lower panel suggest that disability-related differences in preferences of between 4 and 8 percentage points (depending on the measure) exist among otherwise comparable workers in the same workplace. This is consistent with differences in preferences not simply being a function of the distribution of employees across workplaces and managers but reflecting mechanisms such as enhanced voice for disabled employees.<sup>33,34</sup>

**TABLE 3** Disability-related differentials in employee preferences for union representation, WERS.

	<b>Trade union best represents you in dealing with managers about..</b>				
	<b>Pay increase</b>	<b>Reduction in hours or pay</b>	<b>Training</b>	<b>Complaint</b>	<b>Discipline</b>
Disability (Raw)	0.165*** (0.018)	0.144*** (0.017)	0.051*** (0.011)	0.123*** (0.017)	0.137*** (0.016)
Adj-R <sup>2</sup>	0.01	0.01	0.01	0.01	0.01
N	20,809	20,841	20,895	20,935	20,870
Disability (Adjusted)	0.060** (0.018)	0.053** (0.017)	0.036*** (0.011)	0.080*** (0.018)	0.053*** (0.016)
Adj-R <sup>2</sup>	0.37	0.32	0.11	0.15	0.29
N	18,692	18,731	18,769	18,808	18,738

Note: (i) Coefficient estimates are from an LPM similar to Equation (1). (ii) WERS data are weighted and clustered standard errors are presented in parentheses. (iii) \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . (iv) All models include a constant term. (v) Adjusted differentials control for personal and job-related characteristics (including occupation) described above plus workplace fixed effects.

**TABLE 4** Disability-related differentials in employee evaluations of union performance in the workplace, WERS.

	<b>Unions/staff associations at this workplace..</b>		
	<b>Take notice of members' problems and complaints</b>	<b>Are taken seriously by management</b>	<b>Make a difference to what it is like to work here</b>
Disability (Raw)	0.052 (0.054)	-0.151* (0.062)	0.015 (0.056)
Adj-R <sup>2</sup>	0.00	0.00	0.00
N	8972	8892	8910
Disability (Adjusted)	0.083 (0.062)	-0.084 (0.079)	0.024 (0.063)
Adj-R <sup>2</sup>	0.09	0.12	0.10
N	8125	8068	8077

Note: (i) Coefficient estimates are from an OLS model similar to Equation (1). (ii) WERS data are weighted and clustered standard errors are presented in parentheses. (iii) \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . (iv) All models include a constant term. (v) Adjusted differentials control for personal and job-related characteristics (including occupation) described above plus workplace fixed effects.

In Table 4, we present corresponding ordinary least squares (OLS) analysis of measures which evaluate union performance in the workplace. Interestingly, here the evaluation by disabled employees is far more similar to their non-disabled counterparts with no significant differences evident after controlling for employee, job and workplace characteristics. In this respect, we find a preference for unions in addressing issues at work among disabled employees (Table 3) but no difference in the evaluation of union performance in the workplace (Table 4). While this might reflect the different dimensions of union effectiveness being captured across measures, or the presence of other unobserved benefits of union membership, it also potentially suggests that preferences for union representation among disabled workers are misplaced.<sup>35</sup>

## 6 | DISABILITY-RELATED LABOUR MARKET INEQUALITY AND UNION MEMBERSHIP

### 6.1 | The DPG

Turning our attention to disability-related inequality, we explore whether there is a relationship between union membership and the DPG and/or disability gaps in employment retention. In terms of the DPG, unions might influence pay directly through pay bargaining but also by promoting equality in promotion and training, and via facilitating workplace accommodations. To investigate this, we estimate a wage equation which pools observations from disabled and non-disabled employees and explores whether there is a difference in the DPG by union membership using an interaction term between disability and union membership as follows:

$$\ln W_i = \mu D_i + \delta U_i + \gamma D_i U_i + X_i \beta + \varepsilon_i, \quad (2)$$

where  $i$  indexes the individual.<sup>36</sup> The log of hourly pay ( $\ln W_i$ ) is regressed on disability, union membership, and the interaction between disability and membership. The DPG among non-members is given by  $\mu$ , the non-disabled union wage premium is given by  $\delta$  and  $\gamma$  measures the difference in the DPG between members and non-members or, variation in the union wage premium by disability. We present estimates both before and after accounting for other employee, job and (in WERS) workplace characteristics ( $X_i$ ), and interpret adjusted pay gaps as closer to a measure of pay inequality.

These results are presented in Table 5, where the upper (lower) panel refers to estimates based on QLFS (WERS). Column (1) includes only disability, membership and their interaction (and for the QLFS, year fixed effects). The coefficients in this model provide a measure of the raw or unadjusted differences. Column (2) controls for personal characteristics, job-related characteristics, occupation and industry. In the lower panel, we supplement these estimates by including workplace fixed effects (column (3)).

The results in Table 5 suggest the average raw DPG among non-members is approximately 16.7 per cent (QLFS) and 13.0 per cent (WERS) and wider than that among members at 11.3 per cent (QLFS) and 5.7 per cent (WERS) (column (1)), albeit the difference in WERS is only significant at the 10 per cent level. An alternative interpretation is that the raw union membership pay premium is greater for disabled employees than their non-disabled counterparts. In both surveys, the inclusion of employee and job characteristics narrow the DPG, but it remains significant (column (2)). The union pay premium also narrows extensively, with evidence of a small positive premium for more comparable employees in comparable jobs, which is statistically significant in the QLFS. Importantly, after accounting for composition effects, the differential DPG by union status is not significantly different from zero in either survey.<sup>37</sup> Similar conclusions are evident after additionally controlling for workplace fixed effects in WERS (column (3)), where interestingly a within-workplace DPG (see Jones & Latreille, 2010 for similar evidence based on WERS 2004) remains. Overall, this suggests that the union differential in the raw DPG reflects more favourable characteristics of disabled compared to non-disabled union members relative to their non-union counterparts, rather than underlying differences in pay equality. In contrast to Ameri et al. (2019), who find a nearly 50 per cent smaller adjusted DPG among union members compared to non-members in the United States,

TABLE 5 The DPG by union membership.

<b>QLFS</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Disability	-0.167*** (0.009)	-0.072*** (0.007)	-
Union member	0.148*** (0.006)	0.015** (0.005)	-
Disability × union member	0.054*** (0.016)	0.010 (0.012)	-
Personal characteristics	No	Yes	-
Job-related characteristics	No	Yes	-
Occupation	No	Yes	-
Industry	No	Yes	-
Adj-R <sup>2</sup>	0.05	0.49	-
N	46,780	44,174	-
<b>WERS</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Disability	-0.130*** (0.026)	-0.077*** (0.020)	-0.050** (0.019)
Union member	0.086*** (0.024)	0.017 (0.012)	0.009 (0.012)
Disability × union member	0.073 (0.038)	0.038 (0.027)	0.009 (0.027)
Personal characteristics	No	Yes	Yes
Job-related characteristics	No	Yes	Yes <sup>a</sup>
Occupation	No	Yes	Yes
Industry	No	Yes	No
Workplace fixed effects	No	No	Yes
Adj-R <sup>2</sup>	0.01	0.50	0.60
N	19,398	18,128	18,128

Notes: (i) Coefficients are from the OLS earnings equation in Equation (2). Reference category is non-disabled non-union members. (ii) Standard errors in parentheses. (iii) WERS data are weighted and standard errors are clustered at the workplace level. (iv) \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . (v) All models include a constant term. Specifications using the QLFS additionally control for year fixed effects.

Abbreviation: DPG, disability pay gap.

<sup>a</sup>Sector, workplace size and work region are excluded in the fixed effects specification since they are constant within workplaces.

our analysis provides little evidence that unions reduce disability-related pay inequality in the UK.<sup>38</sup>

We present a series of robustness tests in Table OA.8, including replacing union membership with coverage, workplace presence or intensity (WERS) since unions might influence the pay of non-members, as well as workplace equality practices. Regardless of the precise measure or survey, the DPG does not vary with any of the measures of unionization, although there is weak evidence (significant at the 10 per cent level) of a narrowing DPG with union coverage in the QLFS. While the inclusion of more detailed controls for occupation and industry strengthen the union premium in the LFS, there remains no union-related differential in the DPG. The results are also robust to restricting the WERS sample to workplaces with at least one disabled employee and to accounting for selection into employment in the QLFS.<sup>39</sup>

Although organizational DPGs are unlikely to be known, anticipated large DPGs could be a motivation for joining a union. This would result in the potential for reverse causality, widening the DPG among union members, and thereby downward bias estimates of any pro-equality mechanisms of unions. However, further analysis using the LLFS also shows no differential

TABLE 6 Disability gaps in employment retention by union membership, LLFS.

	Employment retention		Job retention	
	Raw	Adjusted	Raw	Adjusted
Disability	-0.024** (0.007)	-0.016* (0.007)	-0.018 (0.011)	-0.011 (0.011)
Union member	0.016*** (0.005)	0.011* (0.006)	0.065*** (0.008)	0.019* (0.009)
Disability × union member	-0.017 (0.012)	-0.020 (0.012)	-0.025 (0.019)	-0.034 (0.019)
Adj-R <sup>2</sup>	0.00	0.04	0.01	0.06
N	11,465	11,194	11,457	11,192

Notes: (i) Coefficient estimates are from an LPM where retention refers to being an employee 5 quarters later, compared to non-employment, conditional on initially being an employee. Reference category is non-disabled non-union members. (ii) Standard errors in parentheses. (iii) \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . (iv) All models include a constant term and year fixed effects. Adjusted specifications also include controls for personal and job-related characteristics, including occupation and industry.

Abbreviation: LLFS, longitudinal LFS.

relationship between disability and pay growth measured 1 year subsequently, by union membership, consistent with the absence of a protective role for unions (see Table OB.3).

## 6.2 | Employment retention

To explore employment retention, we utilize the five-quarter LLFS and trace employment status over 1 year for those who are initially employees.<sup>40</sup> In a similar manner to Equation (2), we control for disability and union membership (measured in the initial wave), and their interaction. The coefficients are presented in Table 6, where in the first set of columns, our focus is employment retention (more specifically, remaining as an employee), whereas in the second panel, we explore job retention. Coefficients are presented for raw disability gaps (column (1)) and after adjusting for initial personal and job-related characteristics, including occupation and industry (column (2)). Among non-union members, disabled employees are less likely to retain employment than non-disabled employees, but this is partially explained by differences in personal and job-related characteristics. Union members are more likely to retain employment or the same job, and this is again partially the result of composition effects. The difference in the disability gap in employment or job retention between union and non-union members is, however, never significant at the 5 per cent level, consistent with unions offering no protection in this regard.<sup>41</sup> Once again, therefore, our findings in the UK context contrast to evidence of a protective role of unions in the United States (Ameri et al., 2019).<sup>42</sup>

It is worth briefly reflecting on the contrasting findings between this analysis and Ameri et al. (2019), despite not being able to explore such differences more formally in the absence of detailed cross-country data. We present evidence of an unexplained disability gap in union membership in the UK, which is not evident in the United States. Further, Ameri et al. (2019) find a moderating role of unions on disability-related gaps in pay and job retention in the United States, which is not evident in the UK. In this respect, the evidence does not suggest the moderating role of unions on disability-related inequality as being a driver of a disability gap in union representation in *either* country.<sup>43</sup>

The similarity in disability-related equality legislation between the 1990 Americans with Disabilities Act and 2010 UK Equality Act, and evidence of substantial disability-related labour market inequality in both countries seem to point to differences in the nature, role or impact of



unions across countries explaining the differences observed. This is despite the *fully decentralized* (OECD, 2019) collective bargaining systems in both countries. Indeed, a comparison between our analysis and Ameri et al. (2019) suggests higher rates of union membership in the UK (at between 25 per cent and 30 per cent) compared to the United States (at about 11 per cent) which possibly reflects, as well as determines, differences in the influence and functioning of unions. Consistent with the latter, the adjusted (non-disabled) union wage premium in Ameri et al. (2019) of 24 per cent is considerably larger than we find in the UK (7 per cent).

However, there is a need to be cautious when comparing the analysis of disability across countries due to international differences in its measurement. Indeed, in the United States, disability is typically identified using a functional measure, which asks people to report 'serious difficulty' in relation to specific impairments, for example hearing and vision (see Ameri et al., 2019). In contrast, in the UK, disability is frequently measured using a global question which seeks to identify those with a long-term health problem which affects daily activities (which are not specified) at least 'a little'. In this respect, it seems likely that the UK measure of disability will be broader than that in the United States and, as such, will capture less severely disabled people on average. Consistent with this, we observe much higher rates of disability among employees in the UK (9–14 per cent) than reported for the United States by Ameri et al. (2019) (4 per cent). While this would be consistent with the evidence of a greater impact of union representation on reducing disability inequality in the United States if there are potential additional benefits of supporting those with more severe disabilities (aligned to the evidence of Pettinicchio & Maroto, 2020), it is more difficult to suggest why this does not also result in a disability-related gap in union coverage, although restrictions in information and job mobility may play a role, particularly given union coverage is lower in the United States than in the UK.

## 7 | CONCLUSION

Using nationally representative data from household and matched employer–employee surveys in the UK, we provide a comprehensive analysis of the relationship between disability and union membership. Consistent with arguments that disabled employees disproportionately benefit from union membership, including through voice and facilitation effects, and previous evidence that unions increase employer equality practices (Hoque & Bacon, 2014), we find that disabled employees are significantly more likely to be union members. After accounting for observable personal, job-related and workplace characteristics, a consistent unexplained disability membership differential remains. At 3.6 percentage points (12–14 per cent), it is sizeable and suggests disability is a potentially important but neglected determinant in research on union membership in the UK.

We explore two potential reasons for this. We find disabled employees express stronger preferences for union representation, even after accounting for other personal, job and workplace characteristics. In contrast, in terms of labour market outcomes, we find little evidence that measures of disability inequality in pay and employment retention vary by union membership. Albeit selective, they represent two core dimensions of disability inequality in the labour market and, while future work should explore the role of unions using a broader set of measures, our evidence tentatively suggests that the previous evidence of unions enhancing organizational equality practice (Hoque & Bacon, 2014; Bacon & Hoque, 2015; Richards & Sang, 2016) might feed into membership without improving equality in outcomes. In this respect, it is consistent with questions as to whether such practices enhance equality among workers (Hoque & Bacon, 2014) and might prompt unions in the UK to consider the effectiveness of their strategies in relation to

disability inclusion.<sup>44</sup> It is, however, important to acknowledge that our focus on membership (and even broader measures of presence or coverage) does not preclude a more general influence of unions, for example through national campaigns which have the potential to affect *all* disabled employees.<sup>45</sup> The contrast between evidence of stronger preferences for union representation among disabled employees and the absence of a relationship between unions and disability-related inequality might suggest disabled employees over-estimate the impact of unions and is consistent with the absence of disability-related differentials in employee evaluations of union effectiveness in the workplace. Indeed, understanding the drivers of this unexplained disability gap in preferences for union representation remains an important question for future research.

In contrast to recent conclusions in relation to age (Blanchflower & Bryson, 2022), differences in our findings relative to Ameri et al. (2019), who find no significant unexplained differential in union coverage but lower disability-related wage inequality and lower disability gaps in job retention among union members in the United States, are suggestive of an influence of institutional context on the relationship between disability and unions. Albeit recognizing the importance of international differences in disability measurement, this is something future research across countries would be well placed to assess.

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### CONFLICT OF INTEREST STATEMENT

The author reports no conflict of interest.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the UK Data Archive. Restrictions apply to the availability of these data, which were used under license for this study.

### ETHICS APPROVAL

The project received ethical approval from Cardiff Business School.

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## ENDNOTES

- <sup>1</sup>This also contrasts with union initiatives to reduce disability inequality in the UK. For example, a recent Trade Union Congress campaign to raise the profile of the Disability Pay Gap <https://www.tuc.org.uk/news/disability-pay-gap-day-disabled-people-work-2-months-year-free-says-tuc>.
- <sup>2</sup>This contrasts with evidence on the relationship between union membership and other protected characteristics, including gender (Booth, 1986; Bryson et al., 2020) and age (Blanchflower & Bryson, 2022).
- <sup>3</sup>In the UK, disabled workers are protected from discrimination under the 2010 Equality Act which requires employers make reasonable adjustments for disabled people.
- <sup>4</sup>Of course, it is possible that individuals may instead free-ride where the benefits are collective.
- <sup>5</sup>While they explore union coverage, they note the similarity in the findings from membership.
- <sup>6</sup>However, they find different trends in union coverage by disability over the period.
- <sup>7</sup>We have no information from which to assess workplace accommodations in our analysis.
- <sup>8</sup>Their focus is the moderating role of workplace equality practices.
- <sup>9</sup>In contrast, differences in the union wage premium by other protected characteristics such as gender have been explored (e.g. Bryson et al., 2020).
- <sup>10</sup>The QLFS has a rotational panel design such that, in every quarter, 20 per cent of individuals are in their first wave and 20 per cent are in their fifth and final waves. To create a cross-sectional dataset, we utilize individuals in wave 1.
- <sup>11</sup>In sensitivity analysis, we exclude 2020 given the potential influence of COVID-19. Data from 2021 are also available at the time of writing but are not included due to a change in occupational classification.
- <sup>12</sup>In sensitivity analysis, we explore union membership among all workers (including the self-employed).
- <sup>13</sup>The QLFS also collects information on work-limiting disability (see Table OA.5 for sensitivity analysis).
- <sup>14</sup>As is typical in the literature, we predominately focus on the binary measure of disability. However, since in the QLFS individuals are asked to indicate the nature of their health problem(s) from a list of 17 (18 in 2020) responses, in a similar manner to Jones (2022), we construct a measure of severity based on multiple health problems and use information on the main health problem to create a measure of impairment type. In both surveys, we also utilize the distinction between being limited *a lot* and *a little* as a measure of severity. No information on disability type is collected in WERS.
- <sup>15</sup>Both surveys refer to trade unions or staff associations. We refer to these collectively as unions throughout for conciseness.
- <sup>16</sup>We explore ever members in Table OA.5.
- <sup>17</sup>Those in the top band (which has no upper limit) are coded as 1.5 times the lower bound. Bryson et al. (2018) have previously demonstrated the validity of this approach using hourly wage data based on employer payroll records in the UK Annual Survey of Hours and Earnings.
- <sup>18</sup>This results in about 0.1 per cent (1.3 per cent) of observations being removed from the QLFS (WERS), respectively.
- <sup>19</sup>Given the balanced panel nature of the data, the sample size is restricted considerably relative to the QLFS.
- <sup>20</sup>WERS also contains information about job satisfaction and wellbeing at work which confirm a negative disability gap. However, since it is well established that union members report lower job satisfaction than their non-union counterparts, which is often attributed to a selection effect (see Bryson et al., 2004), it is less intuitive to explore the moderating role of unions on these outcomes. Nevertheless, we find unions to have no moderating influence on the disability gap in job satisfaction or wellbeing at work (results available upon request).
- <sup>21</sup>Davies (2016) explores differences in union presence and coverage across surveys.
- <sup>22</sup>Since tenure can be affected by union membership, we estimate additional specifications excluding tenure, but the results are not sensitive to this.
- <sup>23</sup>This facilitates the inclusion of workplace fixed effects in WERS. Marginal effects from the corresponding probit models are, however, similar.
- <sup>24</sup>Throughout, for consistency, we adopt a common notation and suppress indices for year (QLFS) and workplace (WERS).
- <sup>25</sup>In this specification, we constrain the coefficients on  $Z_i$  to be common between disabled and non-disabled employees. Similar unexplained disability membership differentials are, however, also evident using a Blinder–Oaxaca decomposition (results available upon request).

- <sup>26</sup> A full set of estimation results are available upon request and confirm established patterns. Membership is higher among non-managerial occupations, in larger workplaces and in the public sector.
- <sup>27</sup> In sensitivity analysis in Table OA.5, we control for more detailed information on occupation (3-digit SOC2010 groups) and industry (2-digit SIC2007 groups).
- <sup>28</sup> The latter would control for the workplace presence/recognition of unions.
- <sup>29</sup> In Table OA.4, we explore variation in membership among disabled employees, based on the nature and severity of impairment. Based on our most comprehensive specifications, we find modest variation in membership by type of impairment, albeit impairments relating to sight/hearing, perhaps because of their smaller sample size, are not statistically significant. The probability of membership is higher among disabled employees with multiple impairments and, in WERS, is restricted to those limited *a lot*. In contrast, there is no variation by self-reported severity in the QLFS.
- <sup>30</sup> Controls for marriage and children form exclusion restrictions. While typically used in analysis of wages, and insignificant when included in our model of membership, we recognize the potential incentives in terms of protection and flexibility of parents (especially mothers) which mean they are imperfect in this context.
- <sup>31</sup> Conditional on initial membership status, disability onset (but not ongoing disability) is weakly associated with joining and retaining membership (see Table OB.2). Disabled employees are also significantly more likely to leave a union, consistent with higher rates of membership (Table OB.1) but there are no significant differences in remaining, conditional on initial union membership (see Table OB.2).
- <sup>32</sup> Disabled employees are consistently less likely to prefer to represent themselves or have representation from their line manager.
- <sup>33</sup> In Table OA.6, we show this is robust to more detailed controls for occupation and, restricting the sample to workplaces with at least one disabled employee. In further analysis, we find that disability gaps in preferences also tend to be larger for those with more severe disabilities (results available upon request).
- <sup>34</sup> Including a summary measure of preferences into the model of union membership (outlined in Section 4) appears to mediate the influence of disability. It would be interesting to understand to what extent differences in preferences for union representation precede and, therefore, might causally affect union membership. However, this is not possible to explore given the cross-sectional nature of the WERS data.
- <sup>35</sup> Consistent with this, significant disability-related differentials in preferences for union representation in Table 3 remain evident where a union is present at the workplace.
- <sup>36</sup> While OLS estimates of the union premium have been criticized given the potential endogeneity of membership, concerns that estimates based on an instrumental variable strategy might be equally biased in the absence of suitable instruments have meant that OLS estimates are still routinely utilized (see Blanchflower & Bryson, 2010). We follow this literature and present OLS estimates conditional on extensive control variables.
- <sup>37</sup> There is, however, evidence of a significant moderating role of union membership on the DPG adjusted for personal and work-related characteristics in WERS when the log of weekly pay bands is modelled using interval regression with a control for hours (results available upon request).
- <sup>38</sup> The same is true if we separate disability by severity. We do, however, find evidence of a moderating role of unions on disability pay inequality relating to sight/hearing and breathing/organs (see Table OA.7).
- <sup>39</sup> The absence of a relationship between the DPG and union membership is also evident in both sectors and for males and females when estimated separately (results available upon request).
- <sup>40</sup> While unions might also act to influence the DEG through recruitment, this is more difficult to measure given our focus on membership and, therefore, consistent with Foster and Fosh (2010), we focus on retention as where unions have most potential influence.
- <sup>41</sup> In fact, the disability gap is actually wider among union members. This difference is also statistically significant for those with severe disability (results available upon request).
- <sup>42</sup> In Table OA.9, we show there to be no union differential in the impact of disability on job retention when controlling for more detailed occupation and industry, or focusing on disability onset during the year, where employment retention might be expected to be most affected. Unfortunately, the LLFS contains no information on union coverage or presence in the workplace.
- <sup>43</sup> Of course, this does not imply that disabled workers in the United States do not have a preference for union coverage, simply that higher coverage is not observed, perhaps, in part, reflecting employers hiring decisions (see Ameri et al., 2019).

<sup>44</sup>While important, our analysis is unable to distinguish whether this is the result of a lack of union equality action, or limited employer response to such action.

<sup>45</sup>It similarly does not preclude the effectiveness of individual unions but suggests no relationship on aggregate.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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