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## **MEASURING DISABILITY AND INTERPRETING TRENDS IN DISABILITY-RELATED DISADVANTAGE**

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A measure of disability serves multiple purposes. It is needed to estimate demand for social care and welfare benefits, to track the proportion of the population protected under the Equality Act 2010, to calculate disability-related gaps in health, education and employment, and to measure the impact of policy interventions on the size of these gaps. Collecting and reporting on disability and disability-related outcomes at the national level also enables the UK government to meet its international monitoring obligations under the UN Convention on the Rights of Persons with Disabilities (2009) and the 2030 Agenda for Sustainable Development which includes 'Leaving no one behind'. The same data allow independent scrutiny of government commitments in relation to the employment of disabled people. Measures of disability are also central to organisational data collection and reporting which will be required by equality monitoring initiatives including the framework for [Voluntary Reporting on Disability, Mental Health and Wellbeing](#); proposals included in [Social Value in Government Procurement](#); Disability Confident; and the [Workplace Information Bill \[HL Bill 82\]](#). Underpinning these interventions the National Strategy for Disabled People (NSDP) aims to 'improve the quality of evidence and data and to use it to support policies and how we deliver them'.

However, disability is difficult to measure as it is a complex, multi-faceted and evolving concept. One manifestation of this difficulty is a continuing expansion of the disability prevalence rate in the working-age population observed in National Statistics. This is a confounding factor when tracking trends in indicators of disability disadvantage. Before extending disability data collection and reporting beyond the Central Statistical Office to organisations, it is important to examine some of the challenges to and the approaches available to ensure that claims of progress on disability equality made by governments and organisations based on the data they collect are robust.

This briefing note provides an updated summary of the care required in collecting and interpreting information on disability and complements early briefing notes on measurement.<sup>1</sup> It forms a timely contribution in the development of an inclusive and protective response to the impact of COVID-19 and its associated lockdown.

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<sup>1</sup> See disability@work Briefing Note [Defining Disability in Government Surveys](#) for details of question wording changes and Briefing Note [How can labour market information on disability be improved?](#) for recommendations for government and organisations on data collection.

## Measuring disability in government surveys

Disability is a complex and multi-faceted concept that has social (subjective) as well as medical (objective) components. It is often invisible and it is dynamic in nature. In the UK, the official measure and main disability indicator is collected by the Office for National Statistics (ONS) in the quarterly Labour Force Survey (LFS) and is published as a National Statistic for the working-age population. This preferred disability measure is based on the Government Statistical Service (GSS) harmonised standards and is designed to capture a core set of individuals covered by the equality legislation.<sup>2</sup> Through extensive testing, the 'harmonised' measure proved itself to be the best measure for this purpose. It is the measure used across government surveys and it is the measure that organisations should use in their data collection and reporting.

The harmonised measure is based on a socio-legal definition rather than a medical or functional definition. Respondents are defined as disabled on the basis of the following self-reported information: the first is the presence of a long-standing physical or mental health condition or illness; and the second is that this reduces the ability to carry out day-to-day activities, either 'a little' or 'a lot'. Disability in National Statistics is therefore a derived variable defined by a self-reported health condition which causes activity-limitation. Based on questions that do not include the word 'disability', it does not require self-identification as a disabled person. There is no guidance as to the nature or level of activity-limitation sufficient to answer in the affirmative, but the wording of the response options which define the threshold, 'not at all' and 'yes, a little', suggests that the threshold is low. Modest limitation is also consistent with legal judgements where the term substantial in relation to activity-limitation means anything which is not 'trivial' or 'insubstantial'.<sup>3</sup>

There have been two discontinuities in the LFS series since 1998 when it started to collect data consistent with a socio-legal definition. In 2010, the introductory narrative to the question module on disability changed and, in 2013, the question wording changed to reflect the harmonised definition. Disability reporting has proved to be sensitive to these apparently small changes in wording. There are thus three periods of consistent reporting in the LFS after 1998 over which it is possible to track trends: 1998-2009; 2010-2012; and 2013-date.

Measurement of disability is further complicated because, even in the absence of a specific discontinuity, the concept of disability is subject to changes in legal interpretation and social understanding. The legal definition was made less prescriptive and restrictive in the Equality Act 2010 and in subsequent case law in 2013.<sup>4</sup> Over time social interpretation has broadened with increased public awareness and acceptance so that more individuals recognise and acknowledge that they have a health condition and/or that it is limiting. Both developments are particularly relevant to mental health conditions where the increase in reporting was particularly large (see Jones and Wass 2013). Reported disability will therefore change in ways which are not related to changes in underlying health and functional impairment and/or their

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<sup>2</sup> The harmonised definition identifies the core group covered by the Equality Act 2010 excluding those with a progressive illness who do not otherwise meet the definition and those whose limitations would only meet the definition without medication or treatment.

<sup>3</sup> See Langstaff J in *Aderemi v London and South Eastern Railway Ltd* [2013] ICR 591 which was endorsed by the Court of Appeal in *Billett v Ministry of Defence* [2015] EWCA Civ 773.

<sup>4</sup> See footnote 3.

impacts on activity-limitation because reporting also reflects changes in recognition, acceptance, law, policy and practice.

### **The disability prevalence rate and the disability employment gap**

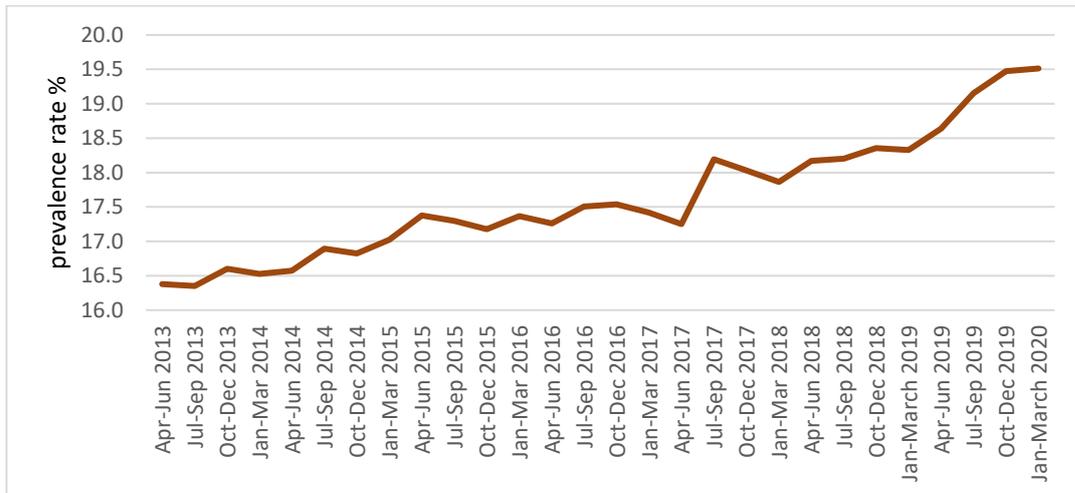
The disability prevalence rate measures the percentage of people in the working-age population who report a long-standing health condition and a related activity-limitation. The top panel in Figure 1 tracks the disability prevalence rate for the period 2013-2020 where the trend has been strongly upwards from 16.5% to 19.7%. In the absence of a change in question wording, there are three potential sources of this expansion: an increase in the incidence of underlying functional impairment leading to activity-limitation; an increase in activity-limitation arising from a fixed level of impairment because for example normal day-to-day activities (including work) are becoming more complex and more demanding; and/or an increase in the propensity of individuals to report a condition or impairment and that it is activity-limiting. This latter is the perhaps the most likely. Substantial deterioration in medical aspects of health and functioning in the working-age population is unlikely outside of war-time or pandemics. Foster and Wass (2013) report how some work activities have been become more complex including combing a greater number of tasks. Equally, assistive technology is likely to make some tasks more accessible. The increase in the disability prevalence rate most likely reflects a broadening in social understanding around disability and activity-limitation. As public awareness and recognition of disability continues to expand, individuals are increasingly likely to recognise and disclose a disability. In addition, individuals may have greater expectations regarding the availability of, and their entitlement to, adjustments and accommodations in relation to activity-limitations from both assistive technology and legal protection. Increased reporting is likely to continue if it is further encouraged by employers through the organisational reporting requirements in The Voluntary Reporting Framework and Disability Confident scheme. This expansion is a welcome feature of society and one which is rightly captured in this social measure: recognition signifies acceptance, which brings with it the potential for inclusion and integration.

However, a measure of disability which is expanding, or is otherwise unstable, confounds the analysis of trends in disability disadvantage. The problem is illustrated below in the context of the disability employment gap (DEG) tracked in Panel 2 of Figure 1. The DEG measures the percentage point difference in employment rates for non-disabled and disabled people of working age. Following the *Black Review* (Black 2008), the DEG became the key indicator of disability-related labour market disadvantage and was subsequently targeted for reduction in the Conservative Party Manifestos of 2015 and 2016. The commitment was revised in 2017 to getting 1 million more disabled people in employment and was included in the Manifesto of 2019.<sup>5</sup>

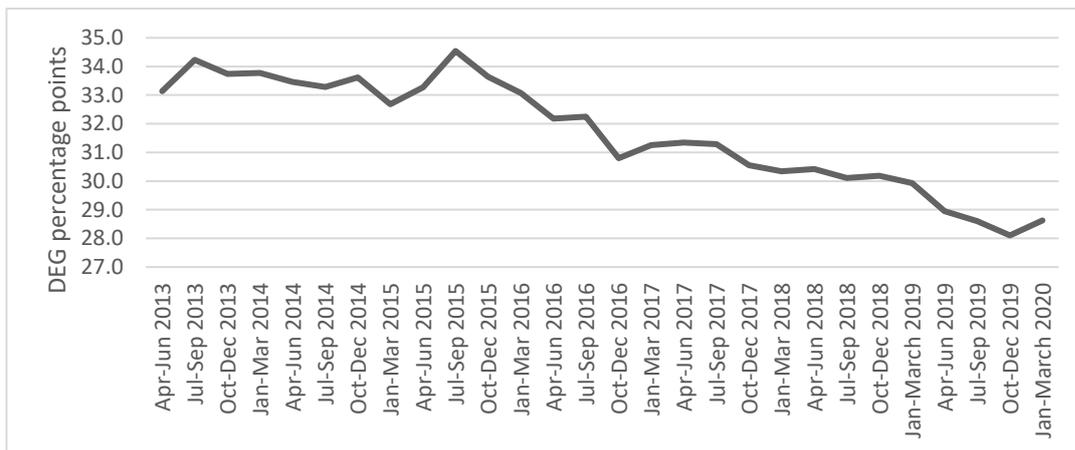
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<sup>5</sup> This later commitment was easier to achieve while employment levels generally were rising. It does not measure inequality or disadvantage. For further discussion of the merits of a relative measure to track inequality see Wass and Jones (2017).

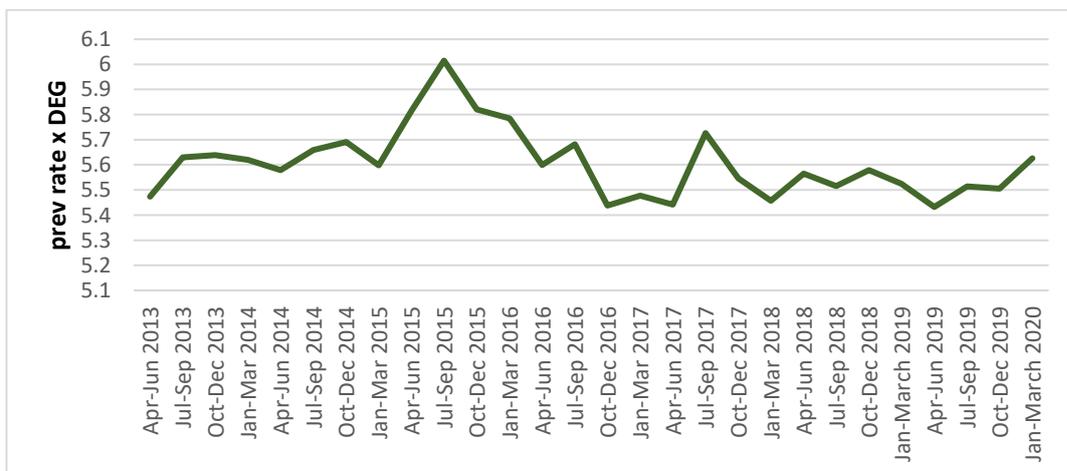
**Figure 1 Trends in disability prevalence and disability employment disadvantage 2013-2020**



**Panel 1 Disability prevalence rate (%)**



**Panel 2 Disability employment gap (DEG) (percentage points)**



**Panel 3 Prevalence-corrected DEG (prevalence rate x DEG) (%)**

Source: ONS [Table A08](#) GSS Harmonised definition for working-age population

The way in which disability is measured and defined is critical to the quantitative understanding of the size of the DEG, and all other disability-related indicators. Allocation of individuals as disabled or non-disabled in measuring these gaps depends quite closely on how disability is defined and measured. A more restrictive, tighter measure of disability generates a larger DEG as a result of the increasing severity of limitation amongst those captured by the definition. Conversely a broader looser measure generates a smaller DEG due to the inclusion of disabled people with less severe limitations who are more likely to be in employment. A broadening in the perception of disability, even as the wording of the legislation and the survey questions remain unchanged, will affect the trend in the DEG. The narrowing trend in the DEG in panel 2 is consistent with the effects of the broadening understanding of disability highlighted in the panel above it. This confounding effect undermines the ability of indicators of disability disadvantage to measure progress on disability equality and the measured response to policy interventions.

The important question from the point of view of both monitoring disability disadvantage and evaluating the effectiveness of policy intervention in reducing this disadvantage is:

***What part of this narrowing is due to a reduction in underlying disability-related disadvantage and what part is the consequence of an expanding socially-constructed disability prevalence?***

For this, a second measure of disability is needed, a measure which displays greater stability in the face of changing social values and norms. An unfortunate consequence of the [harmonisation strategy](#) is that government socio-economic surveys have increasingly adopted the socio-legal measure defined above. While there are good reasons for harmonisation, there are costs too and one of these is the absence of alternative measures, including more function-based definitions, which might provide a more stable prevalence rate and through this the ability to separate the trends in the DEG from the social trends in prevalence. There are three studies which shed light on this separation. That each suggests that the observed narrowing trend in the DEG is dominated by the expanding socially-constructed element of disability casts doubt on government claims of progress on reducing disability employment disadvantage.

### **Studies which separate trends in employment disadvantage from trends in prevalence rates**

1. The first study makes use of two measures of disability in relation to visual impairment: a primarily social definition (the LFS) and a primarily functional definition based on examination for registration as blind and partially-sighted. In research undertaken for the RNIB (Slade and Edwards 2015), 26% of a sample of working-age registered blind and partially sighted people were in employment in 2015. Measured at the same point in the LFS, the employment rate for those who report disability and where a long-term condition adversely affects their vision, was 57% (ibid). The difference is most likely explained by the difference in definition of disability. Compared to the socially-constructed activity-limitation definition in the LFS, registration is more tightly and medically-determined with assessment undertaken by an ophthalmologist. The trends in the employment rate for the differently defined disabled groups with visual impairment are of particular interest here.

On the LFS social definition, the employment rate for individuals with visual impairments increased from 39% to 48% between 2005 and 2012.<sup>6</sup> On the medical definition, the employment rate for individuals with visual impairments fell from 33% in 2005 to 26% in 2015.

2. A second study compares trends in the disability prevalence rate and DEG in the LFS with those in two other government surveys, the General Household Survey (GHS) and the Health Survey for England (HSE) for the period 1998 to 2012. Each uses the limiting long-standing impairment (LLSI) definition of disability. The increasing trend in disability prevalence measured in the LFS is not found in the other two surveys and the narrowing trend in the DEG is also absent. Baumberg *et al.* (2015) conclude that the LFS trend is the outlier in terms of both the prevalence rate and the DEG.
3. In a third study, using only the LFS, Jones and Wass (2013) calculate a composite measure (prevalence rate x DEG) for the period 1998 to 2011. Following Berthoud 2011, this can be thought of as the proportion of people disadvantaged in their employment by disability.<sup>7</sup> It can also be thought of as a ‘prevalence-corrected’ measure because as the DEG reduces it is ‘corrected’ for that part which reflects an increase in the prevalence rate. In this way it isolates the trend in the underlying disability-related employment disadvantage and provides a means of answering the question posed above. They find a narrowing trend in the prevalence-corrected DEG but the narrowing in the prevalence-corrected DEG is less than the narrowing trend in the DEG.

### **Managing the confounding effects of increasing prevalence**

We present two approaches to managing the confounding effects of an expanding socially-constructed definition of disability on trends of indicators of disability disadvantage. The first is the use of the ‘prevalence-corrected’ DEG described above as an interim check on trends in indicators of disability-related disadvantage. The second and preferred approach is longer term and is based on investment in an alternative measure of disability.

The prevalence corrected approach is replicated for the period 2013-2020 in the lower panel of Figure 1. On this measure there has been no improvement in disability employment disadvantage. Progress on disability employment disadvantage apparent in panel 2 was all due to the expansion in the disability prevalence rate in panel 1. This expansion is a confounding factor which means that it not appropriate to automatically interpret the narrowing trend in the DEG in panel 2 as a reduction in disability-related disadvantage in the labour market. This confounding effect applies to all disability-related measures: the DEG (as shown above), the number of disabled people in employment and the disability pay gap.

While continuing to use the harmonised disability definition as the main indicator of disability in the UK, an alternative measure, based on primarily medical/functional criteria, would provide the information needed to periodically calibrate prevalence on the harmonised

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<sup>6</sup> Author estimates from LFS April to June 2012 to avoid the LFS discontinuity in 2013. Effects of the 2010 discontinuity are included and will tend to overstate the difference between 2005 and 2012 figures.

<sup>7</sup> pp. 33-34

measure collected in the LFS against an alternative more stable functional definition collected elsewhere. The purpose of the supplementary measure, which is more stable in the presence of changing perceptions, and which is not constrained to follow the legislation, is needed to gauge the extent to which trends in prevalence are accounted for by the broadening in socio-legal understanding of disability rather than changes in a more medically-focused definition based on functional impairment and as a means of correcting for the effects of social expansion in trends in indicators of disability disadvantage. Its collection could be less frequent than for the quarterly LFS, annually or every two years, as it is not intended to be a short-term indicator. Two recommendations for such a measure follow.

1. *The Heath Survey for England (HSE)* collected supplementary information on disability using the more function-based questions reported below in 1996, 2000 and 2001. There are 13 questions on functional limitation with follow up questions on each to assess the use and impact of assistive aids (see below). This is in addition to the LLSI question. Repeating the supplementary module in a future sweep of the HSE would provide for a twenty-five year calibration against a more stable measure. In common with disability measurement in the 1990s, the focus is on physical impairments with inadequate coverage of mental ill-health. For this reason, the repeat of the HSE module might be regarded as a ‘staging post’ during the development and collection of an alternative function-based disability measure.

If you have a long-standing activity limiting condition, which of the following apply to you (taking into account assistive aids if normally used)? (yes/no)

1. Cannot walk 200 yards or more on own without stopping for discomfort
2. Cannot walk up and down a flight of 12 stairs without resting
3. Cannot follow a TV programme at a volume others find acceptable
4. Cannot see well enough to recognise a friend across the road
5. Cannot speak without difficulty
6. Cannot get in and out of bed on own without difficulty
7. Cannot get in and out of a chair on own without difficulty
8. Cannot bend down and pick up a shoe from the floor when standing
9. Cannot dress and undress without difficulty
10. Cannot wash hands and face without difficulty
11. Cannot feed, including cutting up food, without difficulty
12. Cannot get to and use the toilet on own without difficulty
13. Have problem communicating with other people – that is, have problem understanding them or being understood by them

2. [\*The Washington Group extended short set\*](#). The Washington Group sets originate in the United Nations and are becoming established as an international standard for measuring disability in functional terms. Modules of questions of differing length offer alternative ‘tried-and-tested’ measures with opportunities for international comparison. The ONS trialled the Washington Group sets in the Omnibus Survey (ONS 2019) and the results provide a potential baseline for assessing trends on these questions. There are six core questions in the ‘short set’ and six further questions in the extended short set which provide a comprehensive function-based approach. Clearly such detailed data collection is not suitable for regular government surveys or for organisational monitoring but the intention is to use them in a single government survey infrequently and for the purpose of periodic calibrations of trends in the harmonised definition used in government and organisational data collection.

The next questions ask about difficulties you may have doing certain activities because of a HEALTH PROBLEM. The response set for Q1 to Q8 is No - no difficulty; Yes – some difficulty; Yes- a lot of difficulty; and Cannot do at all. The response set for or Q9 and Q11 is daily, weekly, monthly, a few times a year and never and for Q10 and Q12 is a little, some, or a lot.

1. Do you have difficulty seeing, even if wearing glasses?
2. Do you have difficulty hearing, even if using a hearing aid?
3. Do you have difficulty walking or climbing steps?
4. Do you have difficulty remembering or concentrating?
5. Do you have difficulty (with self-care such as) washing all over or dressing?
6. Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood?
7. Do you have difficulty raising a two-litre bottle of water from waist to eye level?
8. Do you have difficulty using your hands and fingers, such as picking up small objects like a button or pencil, or opening or closing containers or bottles?
9. How often do you feel worried, nervous or anxious?
10. And thinking about the last time you felt worried, nervous or anxious, how would you describe the level of these feelings?
11. May I ask, how often do you feel depressed?
12. And thinking about the last time you felt depressed, how depressed did you feel?

### **An application of the prevalence corrected DEG to the examination of disability employment disadvantage 1998-2020**

Table 1 unpicks the underlying trends in the prevalence-corrected DEG trend over two periods of consistent data, between 1998 and 2009, and between 2013 and 2020. The purpose is to answer the question posed on page 5. Table 1 reports trends in all three variables (the prevalence rate, the DEG and the prevalence rate x DEG) for the start and end date of each period. For the first period (1998-2009), the disability prevalence rate increased from 14.5% to 16.3% and the DEG narrowed from 41.1 percentage points to 31.1 percentage points. The narrowing trend in the DEG was more important than the increasing trend in the prevalence rate and the prevalence-corrected DEG narrowed from 6.0% to 5.1% (a narrowing of 15% overall). In the second period (2013-2020), the disability prevalence rate increased from 16.5% to 19.7% and the DEG narrowed from 33.1 percentage points to 28.6 percentage points. The reducing trend in the DEG was less important than the increasing trend in the prevalence rate and the prevalence-corrected DEG increased from 5.5% to 5.6% (a widening of 2.8% overall).

**Table 1 The prevalence-corrected DEG**

	Prevalence rate %	DEG percentage points	prev*DEG %
1998 Q2	14.5	41.1	6.0
2009 Q4	16.3	31.1	5.1
% change	12.5	-24.4	-15.0
2013 Q2	16.5	33.1	5.5
2020 Q1	19.7	28.6	5.6
% change	19.0	-13.6	2.8

Source: See Figure 1

Notes: Start and end dates reflect data availability

The final column of Table 1, the prevalence-corrected DEG, is tracked across the entire period in Figure 2, ignoring data discontinuities on the basis that changes in the disability prevalence rate arising from question changes provides a correction in the composite measure. The narrowing trend in the prevalence corrected DEG from 1998 reported in Jones and Wass (2013) is evident. Ignoring the step change between 2009 and 2010 (see footnote 8), there is a distinct stalling in the narrowing trend from 2010 and this persists until 2020. If we stylise the two periods as broadly representative of economic prosperity and growth (1998-2009) and of recession, austerity and low growth (2010-2020), then this could be interpreted as an indication of the sensitivity of disability employment disadvantage to economic prosperity which was previously obscured by the expanding disability prevalence rate. This stalling in the narrowing trend from 2010 should be of concern to a government committed to ‘levelling up’ for vulnerable groups in the face of a Covid-induced recession which is widely predicted to be large and long.

**Figure 2 Trends in the prevalence-corrected DEG 1998-2020**



Notes: The discontinuities associated with changes in question wording in 2010 and 2013 and the extension of the working age population for women in 2010 are marked as vertical lines.<sup>8</sup>

<sup>8</sup> The step change in 2010 appears to be largely explained by the expansion in the working-age population of women from 55 to 60 in the published statistics. There is no step change here when the analysis is confined to men.

## Conclusion

Measuring and reporting on disability is recognised in the NSDP as an important and beneficial activity. The UK has a long history in collecting high-quality information in the field. This briefing note has explored some of the challenges in measuring a complex and multifaceted concept and the implications of using a single socio-legal measure to analyse trends in underlying disability-related disadvantage. Disability cannot be captured in a single measure. Using a socio-legal measure, an expanding prevalence rate confounds trends in disability indicators and potentially undermines claims of a reduction in labour market inequality from a narrowing trend in the DEG from 2010. The prevalence-corrected measure suggests all the narrowing in the DEG from 2010 is accounted for by the expansion in disability prevalence and not by any reduction in underlying disability employment disadvantage. Understanding more clearly the impact of disability prevalence on indicators of disability disadvantage will be particularly important in the aftermath of Covid-19 and its associated lockdown which may be expected to adversely affect the health of the working-age population as well as their employment prospects.

The UK has a high-quality measure of disability on a socially-focused definition. It lacks a similarly high-quality measure of disability on a medically/functionally focused definition. Both measures are needed to understand trends in disability-related outcomes. Such a measure will enhance the value of the main harmonised definition in understanding trends in disability indicators. The collection of new data is a long-term endeavour and our recommendation is that, until an additional measure is available, interpretation of trends in the DEG (and all other disability-related indicators) are tempered by trends in their 'prevalence-corrected' versions.

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