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Mackett, Odile

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The measurement of decent work in South Africa: A new attempt at studying quality of work

Odile Mackett

School of Governance, University of the Witwatersrand, 2 St David's Pl, Parktown, Johannesburg, South Africa

Email: odile.mackett@wits.ac.za

Abstract

The quality of work is central to the growing inequalities in Africa and the world. Central to concerns about the decline in 'labour share' is the notion of decent work. In 1999, the International Labour Organisation coined the term 'decent work'. The purpose of the Decent Work Agenda was not only to establish a definition of good work which can be used as a yardstick for workers, but also to create unity among workers, governments, and employers. Since the development of the term, numerous studies have been undertaken on the quantifiable aspects of the decent work framework, however, almost each study undertaken on the topic has measured different aspects of decent work or limited its enquiry to certain aspects of the definition of the term. As such, no study has measured decent work in a way which is reproducible without the resources which are required to undertake a survey. The purpose of this study is to construct a decent work index, using an iteration of the South African Labour Force Survey. This is useful firstly to identify measures which currently exist in secondary data and it is secondly beneficial in identifying shortcomings in relation to the use of the Labour Force Survey to measure decent work. Using sub-major (2-digit) occupation groups as units of analysis, the study found that there is an expected pattern around how occupations measure in relation to their degree of 'decency', meaning that higher paid professionals tend to have more decent occupations compared to low-skilled workers in elementary occupations. However, the higher up the occupational ladder the occupation is, the lower they score in terms of certain indicators, such as decent working time, and balancing work, family, and personal life. Furthermore, the study finds that occupation groups often score differently when the indicators which make up

the decent work index are viewed individually rather than as a composite index. These findings imply that operationalising the idea and practice of decent work to understand and address inequality is no easy matter, but that democratising work to highlight the needs and preferences of workers could be one step in the right direction. At the minimum, it requires some engagement with different aspects of decent work in relation to different occupations. Analytically, a more nuanced conceptualisation of decent work is preferable to simple wage-based approaches often utilised by organisations representing the interests of workers.

Keywords: Decent work; Labour; Labour Force Survey; Labour Market; ILO.

1. Introduction

Research on inequality has tended to focus on 'capital'. Most of the focus is on Western advanced capitalist states. Thomas Piketty's work has become the face of this body of work (Padayachee, 2015). Questions of labour have received relatively less attention (Lopes, 2015). The question of measurement could explain the difficulty in bridging this gap. In 1999, the International Labour Organisation (ILO) coined the term 'decent work'. The purpose of the Decent Work Agenda (DWA) was not only to establish a definition of good work which can be used as a yardstick for workers, but also to create unity among workers, governments, and employers (ILO, 1999). The DWA "is based on the understanding that work is not only a source of income but more importantly a source of personal dignity, family stability, peace in [the] community, and economic growth that expands opportunity for productive jobs and employment" (Cohen & Moodley, 2012, p. 320). Decent work is further defined as "an aspirational statement about the sort of work that ought to define the lives of all who work and who want to work" (Blustein, Olle, Connors-Kellgren, & Diamonti, 2016, p. 1). The growing popularity of the term also suggests the importance of moving labour market debates beyond the employment/unemployment discussion. This is especially important given that in many countries, labour market wages are the main source of income (Finn, 2015). Thus, indicating that inequality in the quality of jobs and the subsequent wages and opportunities derived from them will also translate to broader inequalities within society and over time (Stilwell, 2016).

Since the development of the term, numerous studies have been undertaken on the quantifiable aspects of the decent work framework, although many of these tend to be studies commissioned by the ILO or studies published in the ILO's official bulletin: *International Labour Review* (Chant & Pedwell, 2008; Fields,

2003; Floro & Meurs, 2009a; Ghai, 2006; Standing, 2002; Tomei & Belser, 2011). This is confirmed in a 2014 study which did a systematic review of papers on decent work (Burchell, Sehnbruch, Piasna, & Agloni, 2014). However, due to the broad focus of the term and the framework which the ILO has recommended, almost each study undertaken on the topic has measured different aspects of decent work or limited its enquiry to certain aspects of the definition of the term. As such, no study has measured decent work in a way which is reproducible without the resources which are required to undertake a survey.

Furthermore, though the ILO has followed the initial steps in developing a quantitative index[1], some steps are still missing from the process. For instance, Brown (2009) suggests establishing the purpose of the indicator, designing the conceptual framework, selecting and designing the indicators, reporting and interpreting the indicators, and maintaining and reviewing the indicators. The ILO has provided guidelines for the first three steps, although reporting and interpreting the indicators may need refinement, specifically in the context of the changing nature of work and the labour market. Secondly, maintaining and reviewing indicators can only take place once a widely accepted 'template' or guide has been provided and is being utilised for measurement.

As such, a gap exists in the literature which allows researchers and policy makers to easily reproduce results of other studies, which are nationally representative, and which can be used to assist statistical agencies to incorporate indicators into existing labour force surveys. This dilemma and possible reasons for this gap in the literature is ventilated by Anker *et al*. (2002, pp. 6–7):

> It would be possible to develop an ILO Decent Work Index (DWI), analogous to the HDI of UNDP. Such a flagship index could have considerable value to the ILO. It could help broaden the view of labour issues beyond the present focus on employment and unemployment. It would also be especially valuable for communication and advocacy purposes. On the other hand, there are major technical problems associated with composite indexes such as a DWI. These include the subjective judgement required to weight different indicators included in the DWI; how to handle situations when national data are missing for a specific indicator; [and] the need to maintain simplicity and transparency in the construction of a DWI while covering all aspects

[1] Important to note is that the ILO has provided both qualitative and quantitative elements for decent work measurement, although the focus here is on the quantitative elements of the concept. This will allow for comparability across and within national contexts, although this type of index can also be accompanied by an in-depth qualitative investigation for richer results and discussion.

of decent work. Failure to adequately address such problems could damage the credibility of the index and, possibly the ILO.

Though not all of these technical problems can be addressed here, the purpose of this paper is to provide a methodological *starting point* for measuring decent work using an existing nationally representative labour force survey and the variables currently available for such measurement. All the steps related to building the index is discussed, allowing for possible reproduction in further research. It is only once the measurement thereof at national level is possible that shortcomings can be addressed in how the framework is viewed and applied across and within national contexts.

This paper draws on the ILO's manual, which provides guidelines on how to measure decent work statistically (ILO, 2012, 2013), and a selected number of authors who have attempted to measure decent work quantitatively using various data sources (Nizami & Prasad, 2017; Standing, 2002; Webster, Budlender, & Orkin, 2015). Based on the index I develop, I argue that measuring the quality of occupations across the occupational spectrum is preferable to a narrow focus on occupations in which decent work deficits are expected, but also that such extensive measurement is only possible with the resources of governmental or international agencies. Thus, in the absence of such resources, researchers and scientists should find ways of using the (secondary) data provided by such agencies to undertake analyses on decent work. In order to do this, a set of indicators should be agreed upon which can be refined over time. That said, given that precarious labour market conditions have grown (Floro & Meurs, 2009b; Lopes, 2015), particularly over the last three decades, quality of work indicator(s) would be valuable if reported alongside other important statistics such as the unemployment rate and the labour force participation rate; even if only at the macroeconomic level. Perhaps, even more fundamentally, such indicators need to be qualified and reported in the context of careful, systematic research on informal economies because they dominate African (urban) economies, although by definition informal labour is often neglected or only narrowly accounted for in these formalised measures (Obeng-Odoom, 2011, 2016; Ojong, 2011).

In the rest of the paper, I first analyse the relationship between decent work and quality of work. Next, I review the 11 indicators recommended by the ILO with which to measure decent work. Then, I discuss how the decent work index (DWI) for the current study is calculated, using a nationally representative survey, along with the implications of using this new index.

2. Decent work and the quality of work

'Decent work' and 'quality of work' are closely related concepts. Though 'quality of work' is a concept which has been more widely cited in the literature than decent work, this concept has taken on different meanings depending on the discipline in which it has been studied. As Findlay, Kalleberg and Warhurst (2013) illustrate, in the psychology literature quality of work is typically related to job satisfaction, in the sociology literature to skills and autonomy, while in economics emphasis is traditionally placed on wages. They further iterate that even within these disciplines there are divergences in the definition of quality of work, depending on what aspect thereof is studied.

Perhaps, even more limiting in the study of 'decent work' is the lack of agreement around its meaning and measurement, one of its advantages though, is that it attempts to combine elements from the various disciplines which are concerned with quality of work, and thus provides a more holistic conception thereof by consolidating these elements. This makes decent work an inherently multidisciplinary concept.

To achieve this end, the ILO provides 11 indicators which should be considered when measuring decent work. These are the economic and social context for decent work, employment opportunities, adequate earnings and productive work, decent working time, balancing work, family and personal life, work that should be abolished, stability and security at work, equal opportunity and treatment by employers, a safe work environment, social security, and social dialogue, workers' and employers' representation (ILO, 2012).

Though the ILO has provided a framework which is seemingly appropriate, operationalising these conceptions of decent work for systematic and consistent analyses has been fiendishly difficult. As such, authors studying decent work have been left to define decent work in the particular context in which the study is undertaken, or according to what is available to them within the constraints of available data (see for instance Webster *et al*. (2015), Anker *et al.* (2002), Nizami and Prasad (2017), Standing (2002), Ostermeier *et al.* (2015), Bonnet et al. (2003), Bescond *et al*. (2003), and FAO (2015)). A limitation of these studies is that the case studies employed are often of workers and/or industries in which decent work deficits are expected, thus already assuming which types of jobs are 'decent'. Furthermore, only a few relate the measures they use directly to the 11 indicators proposed by the ILO (see for instance Anker *et al*. (2002) and Webster *et al.* (2015)). The results are thus presented as being an overall

measure of decent work, despite it only addressing one or a few aspects of decent work as defined by the ILO; regurgitating the challenges experienced with many quality of work studies.

3. The ILO's 11 decent work indicators

In this section, I draw upon the ILO's manual on DWIs (ILO, 2012, 2013), where each indicator is discussed as well as the suggestions on variables which can be utilised to measure them. This section also draws on literature which has previously attempted measuring decent work quantitatively and the indicators which they have used in their studies. This section does not provide an in-depth discussion on each indicator, but rather provides a brief overview of what each indicator entails.

3.1. The economic and social context for decent work

The economic and social context for decent work, according to the ILO (2012), is vital to determine the national context in which decent work is being studied and is interpreted separately from what is referred to as the 10 substantive elements of decent work. These elements simply consist of the 10 other DWIs discussed in this section. To measure this indicator, the ILO recommends using elements such as the country's GDP, inflation rate, and labour share in GDP. They also include the literacy rate, the percentage of the working population who are HIV positive, and employment by branch of economic activity, amongst others (discussed in ILO (2012)).

From a data availability perspective, the type of measures suggested by the ILO with which to measure this indicator should generally be available, with the exception of countries in which data scarcity is the norm. This indicator is useful, specifically in instances where decent work is being compared across national contexts, although these measures are seldom used in studies which consider decent work at the micro or individual level. Furthermore, the use of this indicator must be done in conjunction with the other indicators as this simply provides the backdrop in which decent work is undertaken in a country.

Anker *et al.* (2002) used this indicator in their study, which investigated decent work at the macroeconomic level for a number of countries, a similar analysis was also undertaken by Ostermeier *et al.* (2015). However, the latter study makes use of income related indicators due to a lack of data available on other work-related indicators, such as occupational health. Both studies faced the limitation that they were only able to include indicators for which data are

readily available for all the countries, and these included output per employed person, growth of output per employed person, inflation, education of the adult population, composition of employment by economic sector, income inequality, the working poverty rate, and the share of workers earning less than 60% of the median income. Though these indicators do not measure decent work directly, it does provide an overview of the context in which work takes place.

3.2. Employment opportunities

Similar to the first indicator, this indicator provides important information about the labour market conditions workers find themselves in, and is once again useful for comparability between countries. A number of macroeconomic measures are put forth by the ILO, such as the youth unemployment rate, the overall unemployment rate, the labour force participation rate and others (see ILO (2008) for more measures).

Anker *et al.* (2002) make use of these macroeconomic indicators to compare decent work between countries. However, in a study such as this one, which considers decent work at the microeconomic level, analyses are limited to those who are employed only, while unemployed and not economically active individuals are excluded from the analysis. Webster *et al.* (2015), who undertook a microanalysis, included a question in their survey where they asked workers how easy it was to get a job in their industry; although this question was asked in relation to the ease of finding work in other industries.

3.3. Adequate earnings and productive work

Quality of work, in the economics discipline, has traditionally been viewed in light of the type of earnings someone can derive from a job. The components included in this indicator is thus viewed as the source of inequality in economic labour market studies. However, the ILO also adds productive work to this indicator to emphasise the fact that work should not only be a source of earnings, but should also be productive. The inclusion of productive work thus serves to broaden the narrow economic view of inequality within the labour market.

In Standing's (2002) paper, this indicator forms part of the income security of workers, while Webster *et al*. (2015) simply probe whether a worker's earnings are above a certain level. Many of the other studies on decent work also include an indicator related to income, as this type of variable is traditionally included in work-related studies (Bonnet *et al*., 2003; Ostermeier *et al*., 2015). A shortcoming of this variable, however, is that determining whether work is productive is a

subjective variable, and may be dependent on the heterogeneous characteristics of individual participants. Though subjective variables can be measured quantitatively, defining what would constitute productive work may prove to be more challenging. The ILO also fails to adequately engage the meaning of 'productive' work, as all the indicators they suggest relate to adequate earnings only (ILO, 2012, 2013). However, moving up the occupational ladder in the occupational classifications (Stats SA, 2012) may indicate that tasks performed become less menial and routine and move towards what may be considered productive work.

3.4. Decent working time

Decent working time has a long history in relation to the industrial development in countries around the world, since it was acceptable for workers to work excessive hours for many decades (Boulin, Lallement, & Michon, 2006). Working time has become regulated and the details in relation to pay and the working of overtime has become quite technical, specifically in the South African context (RSA, 1997). This is an important component of quality of work as this not only has important implications for the physical energy of workers, but also their mental capacity to be productive in their work (Blustein *et al*., 2016).

In its manual, the ILO (2012) refers to excessive working time as working more than 48 hours per week (equivalent to about 9.5 hours each day for a 5 day week). Although, the converse to working excessive hours is being underemployed. Having a limit on working time is what Standing (2002) refers to as 'work security', while Webster *et al.* (2015) simply probe the extent to which workers are engaged in overtime. Bescond *et al*. (2003) used the ILO's measure at the macroeconomic level and found that workers in developing countries work more hours than those in developed countries. They also note that this could be a result of lower wages and productivity in developing countries. This demonstrates that some of the indicators are interrelated, as adequate earnings would have a direct impact on this indicator.

3.5. Balancing work, family and personal life

This indicator is represented by the 'work-life' balance which workers attempt to achieve in their work. The ILO's maternity leave convention forms a central part of this indicator, although like many of the measures provided by them (for instance, home-to-work commuting time or the proportion of workers on leave to take care of a child up until a certain age – many of which are not included in labour force surveys), maternity leave is not a benefit which can be taken up by

all workers and is often not included in labour force surveys. On the other hand, Webster *et al*. (2015) asks workers whether they feel they get to spend enough time with their families.

A shortcoming in the ILO's definition of this indicator, apart from a lack of commitment to providing suggestions on measures which are immediately useful, is that some of the indicators which have been suggested, but require future development, need to be disaggregated by sex. For instance, the percent of employed women aged 16 years and over with children up to 3 years old as a percent of total employed women and by frequency of childcare use. This could indicate that the differences between men and women in relation to certain variables become 'acceptable' or normalised as women are generally expected to take on certain roles such as working from home or caring for children, as well as sick and elderly family members.

3.6. Work that should be abolished

While generally excluded from studies, specifically where forced and child labour is not apparent in a particular country, this is a necessary indicator in some countries. In Botswana, for instance, the government started including individuals in the labour force survey from the age of 12 in order to gage the extent to which child labour was a problem in their labour market (Central Statistics Office, 1995).

A shortcoming of this indicator is that the ILO fails to provide a concrete definition of child labour in its manual, and simply refers to it "as work that deprives children of their childhood" (ILO, 2012, p. 110). In addition, the nature of the measures which the ILO suggests would likely result in inaccurate figures or underreporting of such measures. These include, the forced child labour rate, the forced labour rate, and the hazardous child labour rate. Consideration of these indicators are necessary nonetheless.

3.7. Stability and security at work

According to the ILO (2012, p. 113), the stability and security at work indicator allows for "the differentiation of workers between those whose jobs are characterised by a degree of relative permanence and reliability in terms of the absence of subsistence working conditions, from those whose jobs provide no expectation of a long standing employment relationship". The ILO's measures lean in the direction of determining to what degree someone's work could be considered precarious, such as considering job tenure and the proportion of casual workers in a particular occupation.

Standing (2002) uses the People's Security Survey (PSS) and employment security is most closely aligned with this indicator. He defines employment security as "protection against arbitrary dismissal, and employment stability compatible with economic dynamism" (Standing, 2002, p. 442). Webster et al. (2015) on the other hand, asked workers about the nature of their employment contract, whether it is formal or not, and whether they fear losing their jobs in the next 12 months.

While employment stability has been the domain of labour unions and labour legislation, work flexibility has become equally desirable for workers, under certain conditions. Workers who operate within the 'gig economy', for instance, have traded off their job stability and security in exchange for having the freedom to determine their own working hours and terms on which they wish to be employed (Gleim, Johnson, & Lawson, 2019; Lehdonvirta, 2018); though a degree of vulnerability is still present within these flexible arrangements. This stability indicator is thus strongly biased to traditional, formal types of employment, which is on the decrease in many countries.

3.8. Equal opportunity and treatment by employer

Equal opportunity and treatment in work not only reflects the equality goals which are relevant to the labour market, but also to broader society, as inequality in the labour market is often reflected by society – specifically in a capitalist economy. There are many forms of inequality which can exist in the labour market and these include gender discrimination, racial discrimination, and discrimination against foreign nationals, amongst others. The ILO includes measures such as the gender wage gap and the female share of employment in senior and middle management as variables with which to measure this indicator, while Webster *et al.* (2015) probe whether workers think that their employers treat men/women, South Africans/non-South Africans and different racial groups the same.

However, at an objective level, these measures cannot measure equal treatment by an employer. This would require probing from a subjective point of view, as a good representation of certain groups might not mean that there is necessarily good treatment of such groups. Although, having an objectively good measure of representation is a useful start to achieving qualitative transformation within organisations.

3.9. Safe work environment

A safe work environment relates to the workers' ability to work in a space in which there is no risk of being physically harmed. The ILO (2012, p. 135)

stipulates that this is a work environment in which "work-related hazards and risks [are] captured". In their study, Webster *et al*. (2015) ask workers if they feel safe in their work or if they have been injured or suffered a health problem in the last 12 months as a result of a work-related injury. This is also captured under the work security element which Standing (2002) includes in his study.

Although this indicator is specific to the actual work environment in which the workers operate, an additional element relating workers' safety outside of their place of work may also be useful. This might be related to the area in which a workplace is situated and the working hours of workers. Though these safety indicators are difficult to measure objectively and must be accompanied by subjective measures of safety.

3.10. Social security

Social security, which is the indicator most easily measured objectively, is measured in relation to protection in case of a loss of income, adequate healthcare protection, support for dependants, and exclusion through poverty (ILO, 2012). Studies have measured these by probing whether workers get a contribution to their pension funds, maternity benefits, a medical aid contribution, and income protection in case of unemployment or an inability to work, amongst others. Standing (2002) refers to this type of security as 'income security', while Webster *et al*. (2015) probe this in their questionnaire by asking workers about their paid annual leave, bonuses, transport allowances, housing subsidies, pensions, and medical aid funds.

While South Africa has a very comprehensive social security programme, this programme is not designed to support individuals who are of working age and have the ability to work. Thus, workers are entirely reliant on their wage employment for social security, although do qualify for a state old age pension at the age of 60 (Makiwane, Ndinda, & Botsis, 2012).

3.11. Social dialogue, workers' and employers' representation

According to the ILO's (2012, p. 163) manual, social dialogue, workers' and employers' representation covers "all types of negotiation, consultation and exchange of information between representatives of governments, employers and workers on issues of common interest. It covers both tripartite processes and institutions of social dialogue, such as social and economic councils; institutions, such as trade unions and employers' organizations; and processes, such as collective bargaining". This definition thus covers both processes and institutions, requiring a qualitative enquiry to adequately investigate whether

such institutions and processes are effective in their quest to ensuring decent work.

In its proposed measures, however, the ILO only provides measures related to the coverage and membership of trade unions and employers' organisations. Similarly, Standing (2002) includes a measure which he refers to as 'representation security' which probes membership related to workers' and employers' organisations, while Webster *et al*. (2015) only ask about workers' trade union membership.

Table 1: Summary of Decent Work Indices and Related References

Indicator	**References**
The economic and social context for decent work	Anker *et al*. (2002); Ostermeier *et al.* (2015)
Employment opportunities	Anker *et al*. (2002); Webster *et al.* (2015)
Adequate earnings and productive work	Bonnet *et al.* (2003); Ostermeier *et al*. (2015); Standing (2002); Webster *et al.* (2015)
Decent working time	Bescond *et al*. (2003); Standing (2002); Webster *et al.* (2015)
Balancing work, family and personal life	Webster *et al.* (2015)
Work that should be abolished	-
Stability and security at work	Gleim *et al.* (2019); Lehdonvirta (2018); Standing (2002); Webster *et al.* (2015)
Equal opportunity and treatment by employer	Webster *et al.* (2015)
Safe work environment	Standing (2002); Webster *et al.* (2015)
Social security	Standing (2002); Webster *et al.* (2015)
Social dialogue, workers' and employers' representation	Standing (2002); Webster *et al.*. (2015)

By definition the Decent Work Agenda implicitly acknowledges that inequalities do not only stem from the more traditional forms of labour market success which have been used in economic studies (i.e. wage levels), but also stems from inequality in well-being, health, social inclusion and other areas of people's lives (Darity, Hamilton, & Stewart, 2015). These are not only an important source of between-group inequalities, but also within-group inequalities. Being able to measure labour market outcomes in a more comprehensive way could shed light on these and allow for a more nuanced debate about inequality, its sources, and provide more suitable solutions to address it.

4. Methodology

Using data from the February 2000 Labour Force Survey (LFS)[2], this study built a DWI with what is available in the LFS questionnaire. Here an attempt was made to study decent work using a nationally representative survey not just to compare DWIs across occupations, but also to construct a DWI using readily available secondary data.

However, just as studies using primary data have their limitations, so limitations have come about in the use of secondary data. Firstly, given that decent work measurement has not been taken up by organisations measuring work (such as central statistical agencies) readily available nationally representative surveys (such as labour force surveys) do not contain an adequate number of variables to measure *all* the aspects of decent work proposed by the ILO. Secondly, these surveys often do not include workers' subjective views in relation to their work, which is required for some of the indicators.

This research considers decent work at the micro (individual/occupational) level and builds on one of the recommendations made by Anker *et al*. (2002, p. 67), who states that "the Office [ILO] should move quickly to settle on a core set of ILO decent work indicators for immediate measurement".

This analysis involved studying the patterns of decent work as a composite index, as well as the individual components thereof; similar to the analysis undertaken by Webster (2015).

4.1. Constructing the DWI

When constructing a quantitative DWI, a number of issues come to the fore. The first is that a quantitative measure will rarely be able to capture people's subjective experiences – unless an opinion survey is undertaken. Although even with an opinion survey, a qualitative tool would be most appropriate to capture the subjective experiences of workers. The importance of subjective experiences are clearly identified in the numerous definitions of decent work which have been put forth. However, strict quantitative measures would require a move away from subjective probing to 'deciding' on behalf of workers what would be the best value-add in relation to their work circumstances. A practical example

[2] The indicators included in this study are available for all waves of the Biannual Labour Force Surveys as well as the Quarterly Labour Force Surveys. The first wave of the LFS is thus used as a demonstration of how decent work can be measured, rather than with the purpose of doing a complete analysis of current decent work circumstances in the South African labour market.

relates to flexibility in the workplace. Flexibility has often been accompanied by insecure working conditions and a lower degree of commitment from the employer. Labour unions have historically advocated against these types of work arrangements, although it has now been found that in some countries, workers in the 'gig economy' prefer flexible work arrangements to permanent arrangements, as it gives them the freedom to decide working hours and how many tasks they are willing to take on (Lehdonvirta, 2018; Skelton, 2019).

Using an objective, quantitative measure would require that a decision be made about which of the two experiences are more 'desirable'. Based on the guidelines provided by the ILO, they have chosen the route where workers are more 'secure' in their work arrangements and in which social safety nets provided by the government and other workers' organisations are not put under unnecessary pressure (ILO, 2012).

The second is that, to ensure consistent measurement, the design of indicators requires some degree of objectivity, and a design of questions in such a way which does not leave them open to interpretation. Thus, many aspects of decent work cannot fully be measured using quantitative measures, such as whether a worker feels secure in their work, although many objectively measured indicators have such shortcomings. The GDP, for instance, cannot measure development adequately, nor can measuring employment adequately consider the existence of underemployment.

Lastly, though most of the indicators used in this study are generic, some are unique and appropriate for the measurement of decent work in the South African labour market. The design of the indicators would thus need to be adjusted to suit the context in which they are being utilised.

Bearing these limitations in mind, a DWI was constructed for each individual and then aggregated to the occupation level (taking the average scores of all individuals within an occupation group). The occupation groups are ranked according to skill level in the South African Standard Classification of Occupations (SASCO) which is based on the United Nations' International Standard Classification of Occupations (ISCO). This framework, which is used across surveys by Stats SA allows for international comparability, as well as ranking occupations according to their required skill levels; where skill is defined by Stats SA as "a function of the range and complexity of the set of tasks or duties involved. A skill is measured by means of formal education and experience" (Stats SA, 2012, p. 6). In this study, occupation groups are ranked,

according to their ranking in the SASCO and 2-digit occupation levels are utilised (Stats SA, 2012).

The DWI was constructed using 8 of the 11 indicators identified by the ILO (2012) due to the availability of indicators within the dataset. These include employment opportunities, adequate earnings and productive work, decent working time, balancing work, family and personal life, stability and security at work, equal opportunity and treatment by employer, social security, and social dialogue, workers' and employers' representation. They were then further aggregated to 4 indicators, as some of the indicators overlapped in their respective components. For instance, getting paid leave could be considered a component of 'decent working time' as well as 'balancing work, family, and personal life'. Rather than spreading one element over the two indicators, the two indicators were combined and the element only used once.

Webster *et al.* (2015) similarly included two to three questions in their self-administered survey for each of the indicators, and then normalised the value for each individual; similar to the method employed by Standing (2002) and Nizami and Prasad (2017):

$$X_i = (X_{actual} - X_{min})/(X_{max} - X_{min}) \quad (1)$$

where X_i is the index for individual i, X_{actual} is the actual value assigned to individual i, X_{min} is the smallest value for any individual in the sample, and X_{min} is the largest value for any individual in the sample.

The values were determined based on the questions which are available in the LFS. For each question, the individual was assigned a certain value and this value was then included for the individual or aggregated to the occupational level. The Appendix provides a discussion of the components used to construct the indicators.

5. Results

Table 1 depicts the occupation groups according to its share in the labour market. Not all 2-digit occupation groups are included here as the 2000/1 LFS sample did not have individuals from every single occupation group.

From Table 1 it is clear that in the year 2000, cleaners and helpers made up the largest occupation group in the economy, with 16.75% of workers being listed in that category. The second largest category was made up of skilled forestry, fishery and hunting workers, which made up 10.9% of the overall occupational

distribution. Workers in this category's tasks generally include "renting or investing [in] equipment or machinery and purchasing supplies; planning and undertaking forestry, aquaculture, fishery and hunting operations; maintaining buildings, tanks, machinery and other equipment; delivering or marketing products; supervising or training other workers" (Stats SA, 2012, p. 475). The activities from this group of workers are distinct from workers who primarily produce for own consumption, as these workers largely produce to supply goods to the market.

The third largest occupation group was personal care workers, who made up almost 7% of the occupation groups. These individuals included workers like hairdressers, waitresses, transport conductors, child care workers, and police officers. Other occupation groups which made up notable shares in the overall occupational distribution include drivers and mobile plant operators (6.1%), agriculture, forestry and fishery labourers (5%), and labourers in mining, construction, manufacturing and transport (4.5%).

Looking at the gender distribution within each occupation group in Table 2, cleaners and helpers, which made up the most concentrated occupation group in the economy in the previous table, largely consisted of female workers. Females made up 81% of this occupation group, while they also made up significant shares of health associate professionals (78.55%) and customer service clerks (72.04%).

Males, on the other hand, made up the bulk of building and related trades workers (94.85%), metal, machinery and related trade workers (96.74%), science and engineering professionals (88.21%), and administrative commercial managers (79.04%). Building and related trades workers include workers who are primarily concentrated within the construction industry and are responsible for constructing, maintaining, and repairing buildings and other brick structures. Metals, machinery and related trades workers "form metal, erect, maintain and repair heavy metal structures" (Stats SA, 2012, p. 513). Both these occupation groups as well as those in the construction industry require physical effort in carrying out the work, thus the high concentration of males in these jobs.

Table 2: Occupation Group Distribution within the Labour Market, LFS 2000/1

Occupation	**Total**
Chief executives, senior officials and legislators	0.084
Administrative commercial managers	2.392
Production and specialised services	2.811
Science and engineering professionals	0.500
Health professionals	0.436
Teaching professionals	1.305
Business and administration professionals	1.418
Science and engineering associate professionals	1.532
Health associate professionals	1.810
Business and administration associate professionals	2.906
Legal, social, cultural and related associate professionals	2.519
Information and communications (ICT) technicians	0.128
General and keyboard clerks	5.843
Customer service clerks	2.972
Personal service workers	6.966
Sales workers	4.210
Personal care workers	0.192
Skilled agricultural workers	3.022
Skilled forestry, fishery and hunting workers	10.90
Building and related trades workers, excl. electricians	6.230
Metal, machinery and related trades workers	3.490
Handicraft and printing workers	0.551
Electrical and electronic trades workers	1.924
Stationary plant machine operators	3.485
Drivers and mobile plant operators	6.066
Cleaners and helpers	16.75
Agriculture, forestry and fishery labourers	4.943
Labourers in mining, construction, manufacturing and transport	4.532
Underground economy and related activities	0.086
Total (%)	100

Note: Data are weighted.

Source: Derived from February 2000 LFS.

Most professions within the science and engineering sub major group require competency of a fourth level skill according to the ISCO standard (Stats SA, 2012). This includes anything from an undergraduate degree to a doctoral degree. Administrative commercial managers, which also generally require

competence at the fourth ISCO skill level, are individuals who in a number of business areas plan, implement, direct, control, and coordinate within their respective business areas.

Table 3: Gender Distribution within Occupation Groups, LFS 2000/1

Occupation	Male	Female
Chief executives, senior officials and legislators	46.81	53.19
Administrative commercial managers	79.04	20.96
Production and specialised services	69.14	30.86
Science and engineering professionals	88.21	11.79
Health professionals	48.39	51.61
Teaching professionals	45.11	54.89
Business and administration professionals	56.43	43.57
Science and engineering associate professionals	72.98	27.02
Health associate professionals	21.45	78.55
Business and administration associate professionals	36.22	63.78
Legal, social, cultural and related associate professionals	50.79	49.21
Information and communications (ICT) technicians	72.58	27.42
General and keyboard clerks	31.73	68.27
Customer service clerks	27.96	72.04
Personal service workers	53.78	46.22
Sales workers	53.71	46.29
Personal care workers	83.36	16.64
Skilled agricultural workers	82.56	17.44
Skilled forestry, fishery and hunting workers	37.86	62.14
Building and related trades workers, excl. electricians	94.85	5.152
Metal, machinery and related trades workers	96.74	3.263
Handicraft and printing workers	75.17	24.83
Electrical and electronic trades workers	37.75	62.25
Stationary plant machine operators	61.85	38.15
Drivers and mobile plant operators	98.00	2.00
Cleaners and helpers	19.33	80.67
Agriculture, forestry and fishery labourers	60.37	39.63
Labourers in mining, construction, manufacturing and transport	65.11	34.89
Underground economy and related activities	51.55	48.45
Total (%)	53.06	46.94

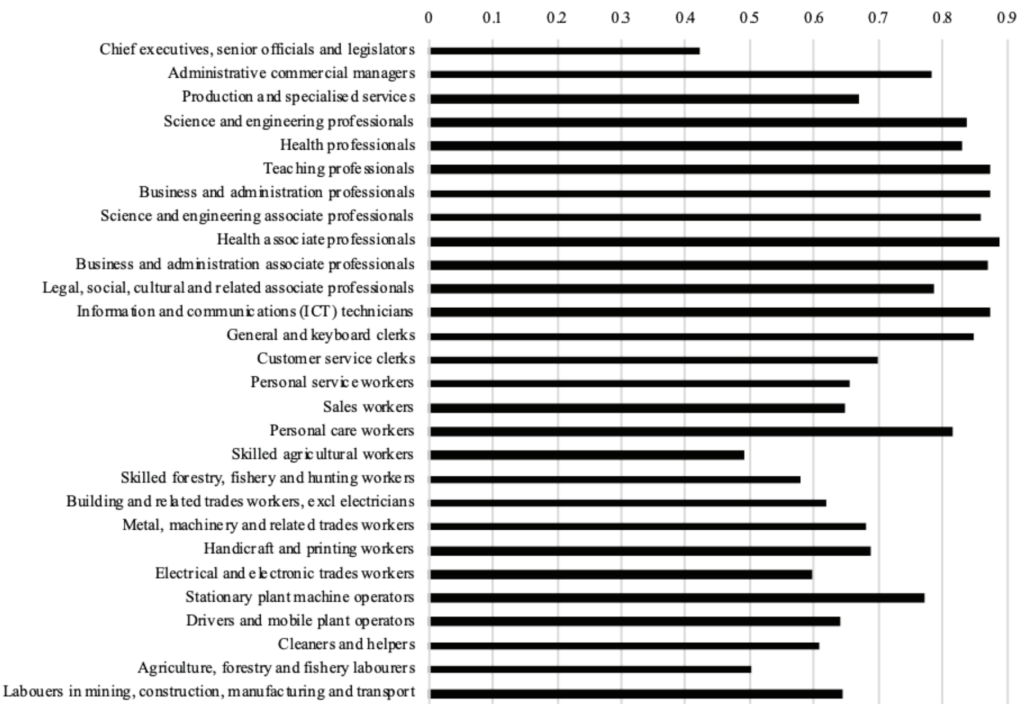
Note: Data are weighted. Rows add up to 100.

Source: Derived from February 2000 LFS.

5.1. Decent working time and balancing work, family and personal life

Figure 1, which depicts decent working time and balancing work, family and personal life, indicates that occupations in which workers perform the best in relation to this indicator are teaching professionals, health associate professionals, business and administrative professionals, and ICT technicians. These workers scored particularly well in the paid leave and longer hours elements. Indicating that they receive the stipulated paid leave by law and do not have a desire to work longer hours; an indication of underemployment.

FIGURE 1: DECENT WORKING TIME AND BALANCING WORK, FAMILY AND PERSONAL LIFE



Note: Data are weighted.

Source: Derived from February 2000 LFS.

The workers who were worst off in relation to decent time and maintaining a work-life balance were chief executives, senior officials and legislators, skilled agricultural workers, and agriculture, forestry and fishery workers. Chief executives, senior officials and legislators, for instance, scored poorly on the excess hours element, indicating that most workers in this occupation group work more than what would be considered a healthy number of hours each week (see Table 3). Skilled agricultural workers and agriculture, forestry and fishery

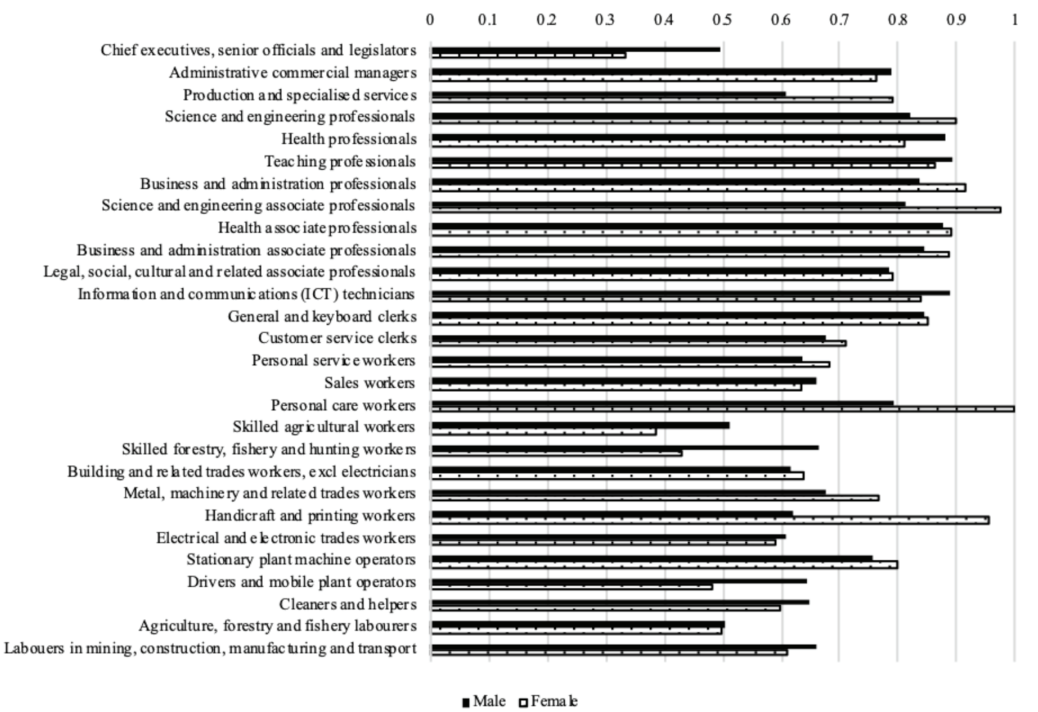
labourers scored low on the paid leave element. The poor result for agricultural workers can likely be attributed to the precarious work arrangements of these workers. Many of whom do not have written contracts or permanent positions in their places of work (discussed in the next section).

Looking at the data, disaggregated by gender in Figure 2 shows that women working as science and engineering professionals and personal care workers scored well in this indicator. While male teaching and health professionals as well as ICT technicians scored well in this indicator.

Personal care workers, for instance, scored high on paid leave and did not have a high proportion of workers wanting to work longer hours. The same was true of teaching and health professionals, ICT technicians, and science and engineering professionals. Although these occupation scores varied in relation to the excess hours component.

Those occupation groups which scored poorly included skilled agricultural workers and chief executives, senior officials and legislators for both males and females. Again, these occupation groups scored poorly in the paid leave and excess working hours elements.

Figure 2: Decent Working Time and Balancing Work, Family and personal Life, Disaggregated by Gender



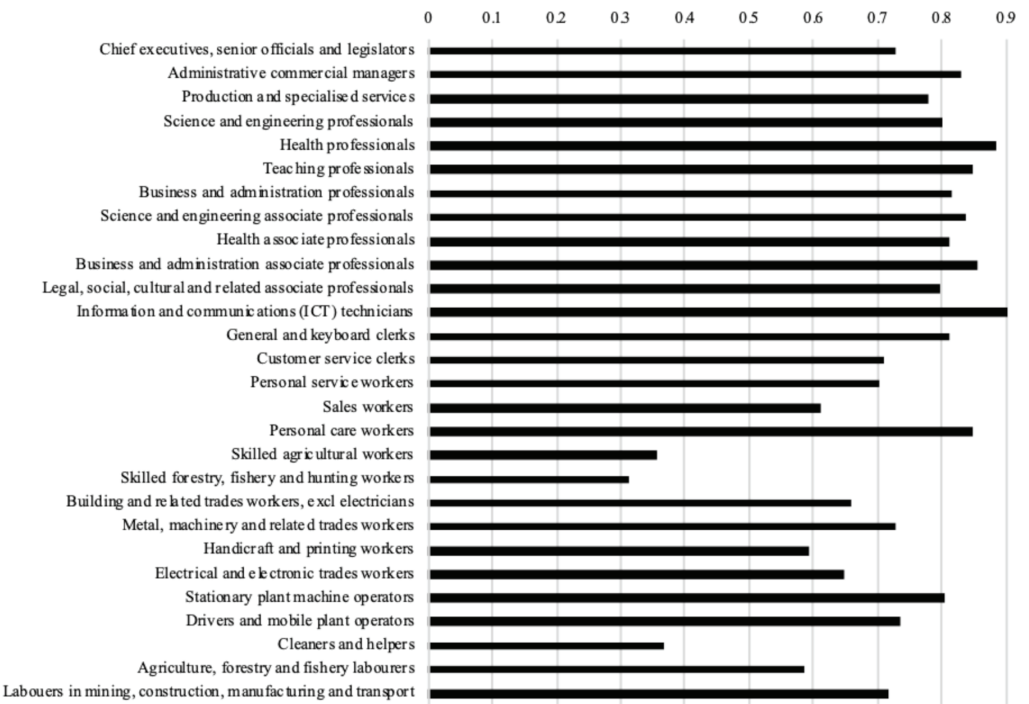
Note: Data are weighted.
Source: Derived from February 2000 LFS.

5.2. Employment opportunity, stability and security at work

The next indicator, which was largely a security index for the workers, indicates that the occupation groups which performed the worst in this category were workers who are skilled agricultural workers, skilled forestry, fishery and hunting workers, and cleaners and helpers (Figure 3). The best performing occupation groups were health professionals, business and administration associate professionals, and ICT technicians.

In all three the worst categories, workers did not report long tenures in their jobs and many did not have written contracts (see Table 4). These two elements are likely related as a lack of a written contract creates an environment in which workers can easily be 'disposed' of. While in the best performing occupation groups workers also scored low in their employment tenure element, although they did markedly better with the written contract element, providing some security in their work. In addition to this, very few workers reported working in the informal sector, with none of the workers in the health professional and ICT occupation groups having reported working in the informal sector.

FIGURE 3: EMPLOYMENT OPPORTUNITY, STABILITY AND SECURITY AT WORK

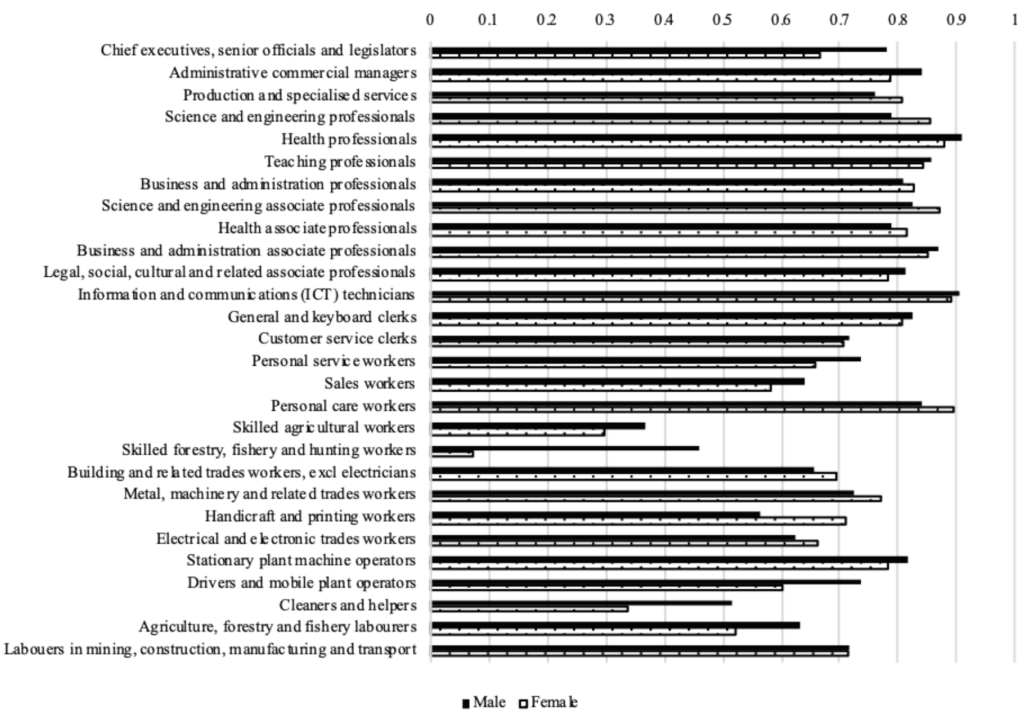


Note: Data are weighted.
Source: Derived from February 2000 LFS.

Looking at employment opportunity, stability and security at work disaggregated by gender (Figure 4) shows that for women the best performing occupation groups were personal care workers, health professionals and ICT technicians. Production and specialised service workers include general managers in a range of industries. ICT technicians and health professionals scored 1 for three out of the five components which made up this indicator, while personal care workers scored 1 for two of the five. The only areas where these occupation groups were lacking were in the tenure component.

The worst performing occupation groups for women using this indicator included skilled agricultural workers, skilled forestry, fishery and hunting workers, and cleaners and helpers. These jobs would be closely associated with seasonal work, which indicates low security, and precarious work agreements amongst cleaners and helpers.

Figure 4: Employment Opportunity, Stability and Security at Work, Disaggregated by Gender



Note: Data are weighted.

Source: Derived from February 2000 LFS.

The worst performing occupations for men also included skilled agricultural workers and skilled forestry, fishery and hunting workers, and cleaners and helpers. Cleaners and helpers only scored a 0.276 for the informal employment rate component, again indicating the lack of security experienced by workers in this occupation group. A study on the education and income levels of domestic workers in the South African labour market found that domestic workers had lower education levels and earnings compared to other workers, but also that difficulties existed in enforcing conditions of employment as stipulated by labour laws (Gama & Willemse, 2015). Another study, albeit in a different context (in Singapore), found that if these workers were migrants they tended to become particularly vulnerable (Islam, Cojocaru, Rahman, Siti Hajar, & Arnakim, 2016). These findings are consistent with recent research in South Africa (Blaauw, Pretorius, & Schenck, 2019). Thus cleaners and helpers, often migrants, tend to face many challenges in the labour market. The best performing occupation groups for men were ICT technicians and health professionals. These fields provide regular employment opportunity, stability and security at work, as Figure 4 shows.

5.3. Equal opportunity and treatment, adequate and productive earnings

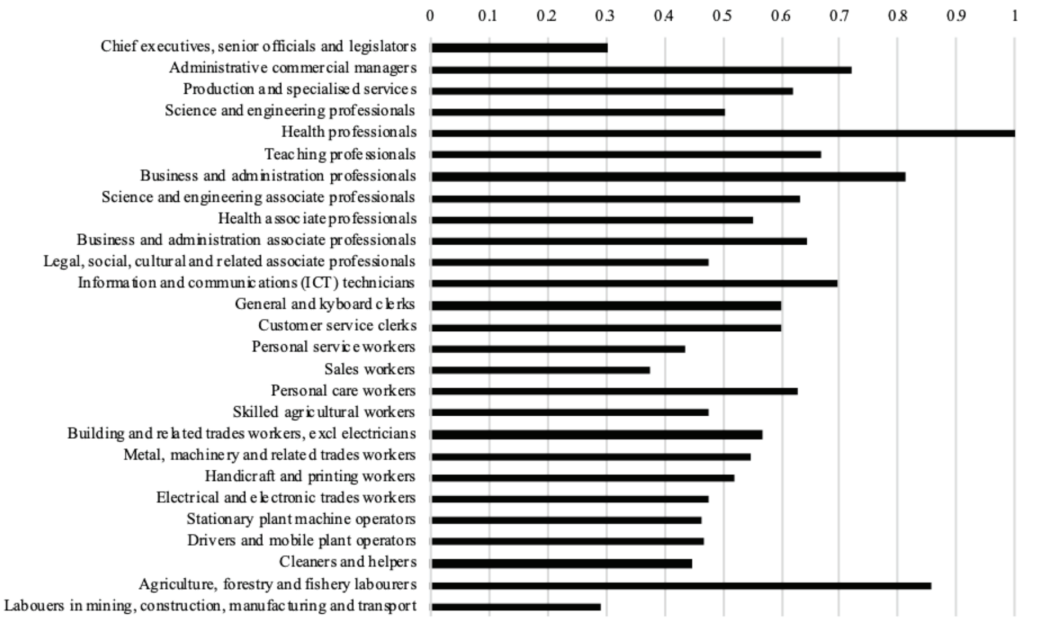
The DWIs for the equal opportunity and treatment, adequate and productive earnings indicator are displayed in Figure 5. This indicator was made up of the low pay rate, average earnings of workers in the occupation group, gender occupational segregation, racial occupational segregation, and the gender pay gap. This indicator is meant to measure the extent to which (objective) discrimination is present in an occupation, but also to the extent that workers are paid low wages. This indicator can thus be viewed as the main source of inequality within the labour market as well as the instances of inequality which stem from the labour market in broader society.

From Figure 5, it is evident that the occupation groups which performed best in this indicator included health professionals, agriculture, forestry, and fishery workers, and business and administrative professionals. Health professionals and business and administrative professionals scored well in all the components which made up this indicator. Agriculture, forestry, and fishery workers scored well in three of the five components and lagged in the low pay rate and average earnings components.

The occupation groups which scored the worst were sales workers, labourers in mining, construction, manufacturing and transport, and chief executives, senior officials, and legislators. Though these occupation groups scored well

in relation to the gender and racial segregation measures, they scored poorly in the gender pay gap and average earnings components. Interestingly, however, was that these occupation groups scored relatively well in the low pay rate component. Indicating that these occupation groups did not have an issue with low pay rates, though the earnings in these occupations groups were low on average, compared to the other occupation groups in the sample.

Figure 5: Employment Opportunity and Treatment, Adequate and Productive Earnings[3]



Note: Data are weighted; skilled forestry, fishery and hunting workers omitted due to limited wage data.

Source: Derived from February 2000 LFS.

5.4. Social security, dialogue, and workers' and employers' representation

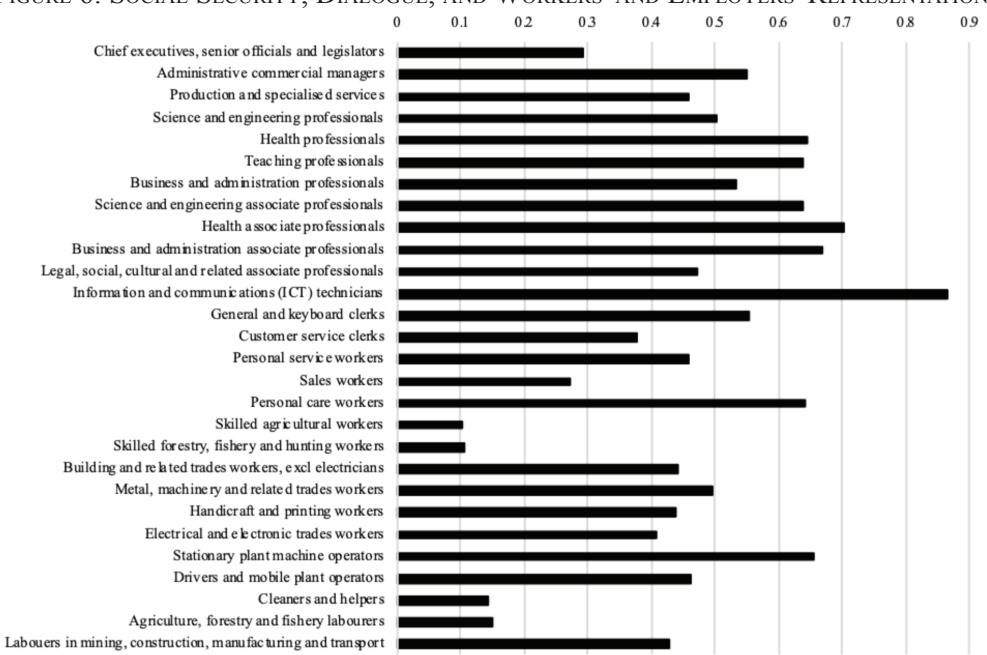
The social security, dialogue, and workers' and employers' representation indicator, which consists of medical aid payments, the number of workers employed in an organisation, pension benefits, union density and membership, and UIF payments, is depicted in Figure 6.

[3] No gender disaggregated graph is included for the equal opportunity and treatment, adequate earnings and productive earnings indicator as all the elements which constitute this indicator are occupation level indicators, and thus no individual, and by extension, gender differences would be forthcoming in a gender disaggregated graph.

In this figure, skilled (and unskilled) agricultural workers, skilled forestry, fishery, and hunting workers, and cleaners and helpers, performed the worst in relation to these indicators. The first three groups of workers are likely to consist of many seasonal workers. This is also evident in the low union density and union membership amongst individuals in these occupations. Though there are a number of organisations which represent the interests of both farmers and workers, these types of workers will still be difficult to organise, specifically due to the spatial segregation in their places of work (Freund, 2013). It has also been noted in previous literature that the agricultural industry in South Africa is weakly unionised, and this is evident not only in the scores for this index, but also the previously discussed indices (Pons-Vignon & Anseeuw, 2009).

The best performing occupation groups included ICT technicians, health professionals, personal care workers, and stationary plant machine operators. With the exception of the medical aid element, stationary plant machine operators performed relatively well in all the elements which made up this indicator. ICT technicians, health professionals, and personal care workers, on the other hand, scored well in all of the elements which made up this indicator, with the exception of their duration of employment.

Figure 6: Social Security, Dialogue, and Workers' and Employers' Representation



Note: Data are weighted.

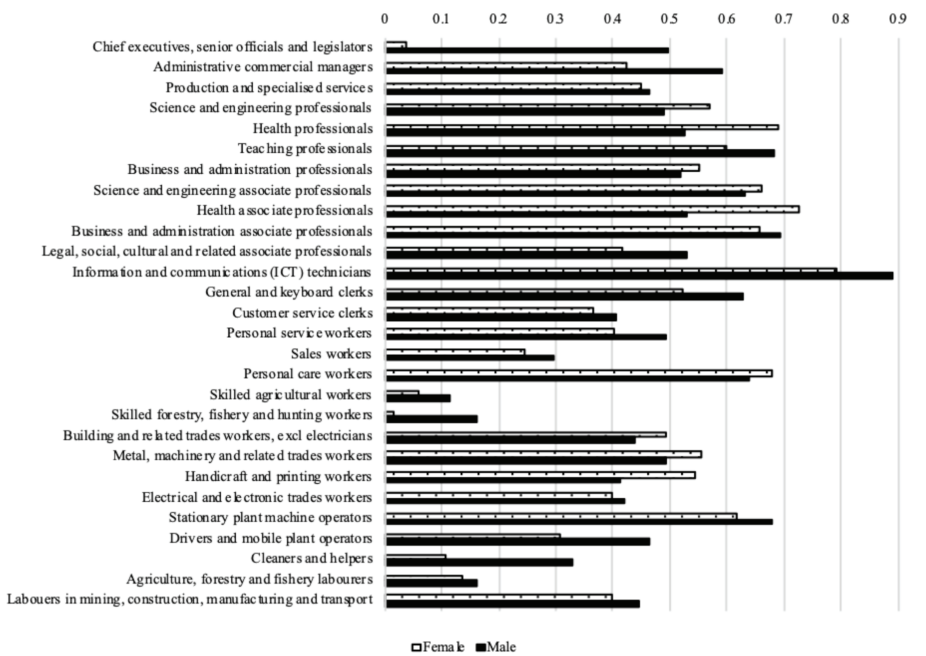
Source: Derived from February 2000 LFS.

Disaggregating the social security, dialogue, and workers' and employers' representation indicator by gender (Figure 7) shows that for women, the best performing occupation groups in relation to this indicator were health professionals and associate professionals, ICT technicians, and personal care workers. The list of workers here do not differ much from the pooled result for this indicator. For men, the best performing occupation groups included teaching professionals, ICT technicians, business and administration professionals, and stationary plant machine operators.

Amongst the worst performing occupation groups for women were skilled agricultural workers, skilled forestry, fishery and hunting workers, and cleaners and helpers. Female workers in these occupation groups performed poorly in relation to all the elements which made up this indicator.

The worst performing male occupation groups did not differ much from the female groups and included skilled agricultural workers, skilled forestry, fishery and hunting workers, and agriculture, forestry and fishery labourers. Again, these occupations tend to employ workers on a seasonal basis, making it difficult to provide workers not only with social security in their work, but also a degree of stability and continuity.

Figure 7: Social Security, Dialogue, and Workers' and Employers' Representation, Disaggregated by Gender

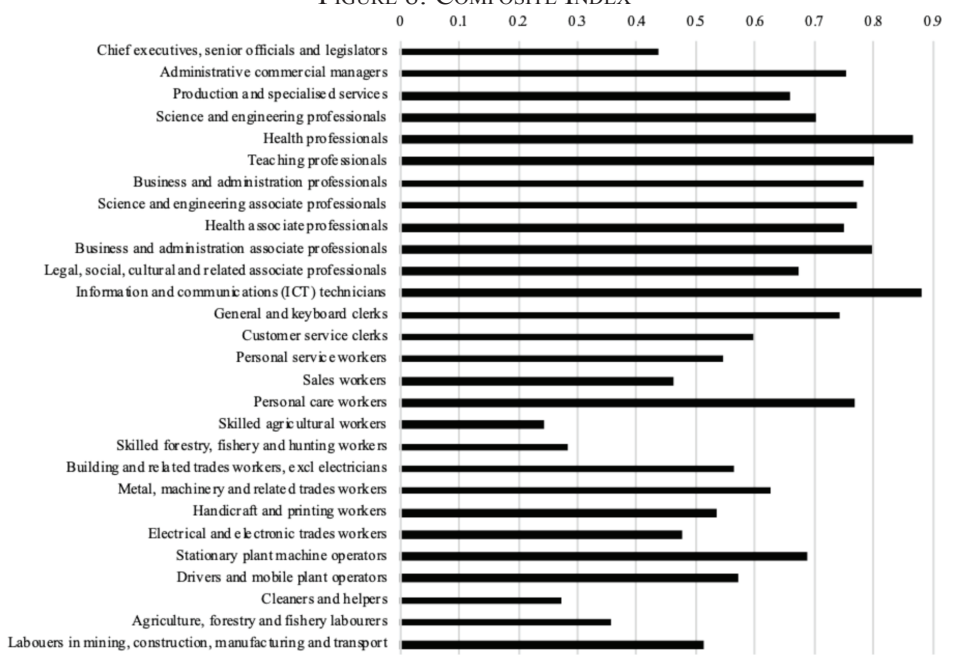


Note: Data are weighted. *Source:* Derived from February 2000 LFS.

5.5. Composite Index

Lastly, Figure 8 depicts the combined indicators or the composite index. The worst performing occupations were skilled agricultural workers, agriculture, forestry and fishery workers, and cleaners and helpers. Workers in agriculture, forestry, and fishing performed poorly in relation to most of the indicators. Again, the lack of strong unions within the agriculture industry is emphasised by this result (Pons-Vignon & Anseeuw, 2009). Having a strong voice and collective is central to the ILO's notion of decent work and the lack thereof is clearly visible for this occupation group. Without the ability to negotiate through dialogue, other areas of decent work, such a working hours, leave, discrimination, and others are also likely to suffer.

FIGURE 8: COMPOSITE INDEX



Note: Data are weighted.
Source: Derived from February 2000 LFS.

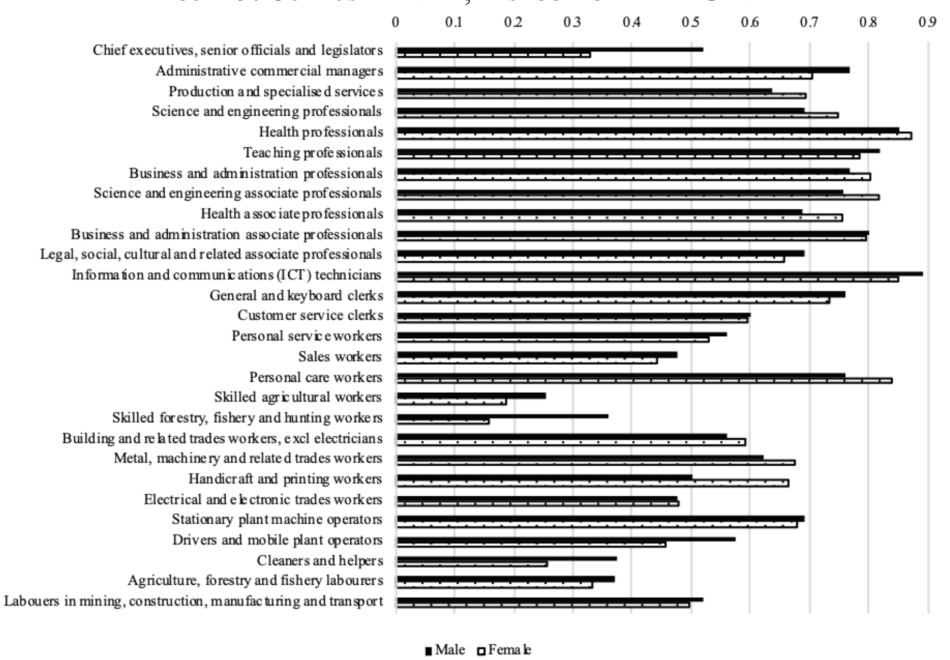
However, the performance of the cleaners and helpers occupation group indicates that there is a need to study decent work according to its constituent components rather than just a composite indicator. As the index develops further, debates around which conditions of work might be most desirable can be incorporated into the analyses. For instance, would workers prefer more family time or are higher wages more desirable? In such an instance, occupations

such as those of chief executives and senior officials, which ranked as the fifth worst occupation group overall, may be more desirable than other low ranking occupations. Furthering debate on this issue may well result in the eventual weighting of indicators, though a qualitative analysis of workers' views on this may be required.

The best performing occupation groups were health professionals, teaching professionals and ICT technicians. Given that these occupation groups ranked amongst the best in most of the individual indicators, it is not surprising that the overall index tips in the direction of these occupation groups. All of these occupation groups are listed as requiring a level three or four skill level. In terms of formal education this indicates at least some post-schooling education, or the equivalent thereof in work experience which complements the literature where education has been cited as one of the most important variables in determining labour market outcomes (McCord & Bhorat, 2001; Mlatsheni & Rospabé, 2002).

Looking at the composite index disaggregated by gender (Figure 9) shows that women who were health professionals, ICT technicians, and personal care workers performed the best in terms of their overall DWIs. Men performed best as ICT technicians, teaching, and health professionals.

FIGURE 9: COMPOSITE INDEX, DISAGGREGATED BY GENDER



Note: Data are weighted.

Source: Derived from February 2000 LFS.

For men, the worst performing occupation groups included, skilled agricultural workers, skilled forestry, fishery and hunting workers, and agriculture, forestry and fishery workers. For women, this list included skilled agricultural workers, skilled forestry, fishery and hunting workers, and cleaners and helpers. Given the previously discussed challenges related to these occupation groups, it is not surprising that these occupation groups rank the worst overall. Furthermore, as noted, the literature on the agricultural industry as well as the plight of domestic workers in the South African labour market, in particular, has already been highlighted.

6. Discussion and conclusion

The purpose of this paper was to provide a methodological starting point for measuring decent work using a nationally representative survey and the variables currently available for such measurement. Doing so is important as inequality is a serious problem, specifically in the South African context where it has the potential to have social ramifications. These complexities tend to be neglected in mainstream development economics. One way of redressing the problem is to carefully identify its nature, for example, through measuring decent work. In doing so, I accommodate the paucity of variables by merging some of the indicators and establish that some indicators could be traded off against one another, while the one directional nature of other variables (for instance, the gender wage gap) provided a challenge in the design of the composite index.

The study also importantly found decent work deficits amongst occupation groups which would traditionally have been thought to be 'good' work. This finding would not be forthcoming in studies undertaken in industries of workers who are considered to be in 'indecent' jobs or jobs which have historically been viewed as being of a poor quality. Furthermore, the hierarchy of occupations do not perform in their DWIs as they are ranked in the occupational classifications. The higher up the occupational ladder the occupation is, the lower they will score in terms of certain indicators, such as decent working time, and balancing work, family, and personal life. In addition, the study found that occupation groups often perform differently when the indicators which make up the DWI are viewed individually rather than as a composite index.

The results indicate that ICT technicians, health professionals, and teaching professionals ranked amongst the best quality jobs in the South African economy, though the results varied across the indicators and components. The value in having this knowledge lies in the fact that in the South African context, these

jobs could now be viewed as 'best practice' models for good work. (Though caution must be taken in this interpretation given that further investigation is needed, specifically a study of decent work over time.) Furthermore, cleaners and helpers ranked amongst the worst occupation groups, as well as occupation groups in the agriculture industry. This should be worrying, specifically because these make up some of the largest occupation groups in the South African labour market, and thus a major source of inequality within the labour market and society.

Though previous studies (Anker *et al*., 2002; Bescond *et al*., 2003; Bonnet *et al*., 2003; FAO, 2015; Nizami & Prasad, 2017; Ostermeier *et al*., 2015; Standing, 2002; Webster *et al*., 2015) on the topic have provided valuable insights into decent work, the data, methodologies, choice of indicators and other factors are too divergent to allow for a common set of principles to be employed when measuring decent work. The most notable of these limitations include the fact that none use existing data, unless decent work is being measured using macroeconomic, country-level variables.

Having a starting point with which decent work can be measured, using existing data, not only provides a basis which other researchers can use to undertake studies on the measurement of decent work, but will also allow for the maintenance and review of the ILO's DWI, through a growing body of literature. Furthermore, statistical agencies might be encouraged to include additional variables which may be needed to more accurately study decent work.

Though the study was aimed at addressing some of the limitations of the existing decent work literature, a number of limitations are evident in this study too. Firstly, the DWI in this study was assessed using one survey period only, the February wave of the 2000 LFS. A more comprehensive study of decent work will thus study how decent work has evolved over time making use of the occupation groups, as these are common across all the survey periods. Secondly, a trade-off exists between the different indicators, with some occupation groups scoring well for some and poorly for others. This indicated that though a job may pay well in wages, it could be time consuming, leaving workers with little time to manage a reasonable work-life balance. This trade-off highlights the need for some subjective measurement of decent work. This could either be achieved through the inclusion of subjective questions in the LFS or by using a mixed methods methodology to shed light on this phenomenon. Ideally these approaches need to be used together, along with careful analyses of urban informal economies (Obeng-Odoom, 2011, 2016; Ojong, 2011), which dominate most of the economies in

Africa. Beyond technical questions of measurement, the findings also point to the need for the 'democratisation of work'. This would entail "more participatory workplaces and strengthened representative participation" by workers (Lopes, 2015, p. 25). This goes to the heart of the purpose and definition of decent work which is viewed as an agreement between government, business and workers. It is thus vital that workers' needs and preferences are treated with the same gravity as the goals of government and business.

Biographical notes

Odile Mackett is a Lecturer in Economics and a Ph.D. candidate in the School of Governance at the University of the Witwatersrand, South Africa. She holds an M.Com. in Development Theory and Policy from the School of Economics and Business Sciences at the University of the Witwatersrand and a BCom (Hons) and BA International Studies from the University of Johannesburg. Her Ph.D. focuses on gender inequality in the ILO's Decent Work Agenda and other research interests include youth unemployment, social security, and trade and gender.

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Appendix A: Individual decent work components

The formulas which were used to construct the decent work components and the indicators they form part of are described in this section. Some of the components below are measured at the individual level (i) while others are measured at the occupational level (o). However, the indicators are studied at the 2-digit occupation level in the paper, and individual level indicators are thus aggregated to the occupational level.

Most of the indicators are derived from the ILO's manual on the construction of Decent Work Indicators, although many are excluded due to data availability, some are not appropriate for quantitative measurement, or are still in the process of being developed (ILO, 2013). Others, are included based on their availability in the survey data, but also as a result of their potential to contribute to a meaningful overall DWI.

To build the index, the positive aspects of an answer to a question were coded 1 or close to 1, while the negative aspects of a component were coded 0 or close to 0. Binary response questions were thus either coded as 1 or 0, while variables with more than one response or continuous variables were coded with values between 0 and 1.

Indicator (combined)	Components
Decent working time and balancing work, family and personal life	Longer hours (i) Paid leave (i) Excess hours (i)
Employment opportunity, stability and security at work	Employed sector (i) Informal employment rate (o) Contract type (i) Duration of employment (i) Written contract (i)
Equal opportunity and treatment, adequate and productive earnings	Low pay rate (o) Average earnings (o) Gender occupational segregation (o) Racial occupational segregation (o) Gender pay gap (o)
Social security, dialogue, and workers' and employers' representation	Medical aid (i) Number of workers in company (i) Pension contribution (i) UIF contribution (i) Union membership (i) Union density (o)

Indicator 1: Decent working time and balancing work, family and personal life

Longer hours

This indicator is included on the basis of it representing some form of underemployment. In the LFS, respondents are asked whether they want to work longer hours. While not wanting to work longer hours could represent a negative aspect of work, it could also mean that an individual is satisfied with the number of hours they are required to work. This variable was thus coded 0 for those wanting to work longer hours and 1 for everyone else.

Paid leave

Individuals were asked whether they receive paid leave (vacation leave) at their work, and those who answered yes, were coded as 1, while those who answered no were coded as 0.

Excess hours

In the LFS questionnaire, workers are asked "how many hours, including overtime" they usually work. In their manual, the ILO (2012) provides a guideline to measuring excessive working time. While their indicator aims to measure excessive working time at a macrolevel, as the share of workers working excessive working time, this indicator is included as an individual indicator here. As per their guide, everyone who reported working more than

48 hours per week were coded as 0 while those who worked less than 48 hours were coded as 1. Though working less than 48 hours should not be inferred to constitute decent work, as there may be those who wish to work longer hours, due to having to undertake part time work or working in a workplace which can only provide work for a limited number of hours per week or day, the purpose of this indicator is simply to measure work time in excess.

Indicator 2: Employment opportunity, stability and security at work

Employed sector

Employed sector distinguished between workers working in the formal and informal sectors. Those working in the informal sector were coded 0, while those working in the formal sector were coded 1.

Informal employment rate

The informal employment rate (IER) was calculated at the occupation level and expresses the proportion of workers in a particular occupation group who are employed in the informal sector.

The following formula was used, as per the ILO's (2012) guide:

$$IER = \frac{Number\ of\ employed\ persons\ employed\ in\ informal\ sector\ in\ occupation\ j}{Total\ number\ of\ persons\ employed\ in\ occupation\ j} \quad (2)$$

The inverse of the results were then calculated in order for occupations with smaller shares of individuals in the informal sector to rank closer to 1.

Contract type

Workers were asked about the nature of their employment contracts in the LFS. They could choose from three options; permanent, temporary, or casual. The ILO (2012, p. 61) defines employees with stable contracts as "those employees who have had, and continue to have an explicit (written or oral) or implicit contract of employment, or a succession of such contracts, with the same employer on a continuous basis". Though this question does not probe the duration of the contract or whether such a contract is oral or written (measured by subsequent variables), a permanent contract provides for the most continuity amongst the three options available. Furthermore, a temporary (or fixed term) contract provides greater certainty to workers than a casual contract, which is unlikely to provide a commitment to workers in relation to ongoing continuous employment or for a fixed period of time, as the employment agreement can be terminated at short notice.

Workers who reported having permanent contracts were coded as 1, while temporary workers were coded as 0.5 and casual workers as 0.

Duration of employment

This variable reflects the job tenure of the worker and represents stability and security in one's work. As per the logic behind the contract type, this variable represents some degree of continuity in one's job, even if job contracts are continuously renewed with the same employer over time. Though workers may be at the start of their employment duration of a relatively stable job, this could be accompanied by conditions of service which must be met within the first few months or years in order to secure employment in the longer term.

This variable thus represents the time a worker has been employed in their current occupation (in months), normalised to reflect a value between 0 and 1. Where workers with longer tenure have values closer to 1.

Written contract

This variable, also linked to the logic of contract type asks of workers whether their employment contracts are written or verbal. While both written and verbal contracts are acknowledged by the ILO, written contracts provide workers with an additional layer of security in their jobs, specifically in the case of a dispute. Workers with written contracts were coded 1, while those with verbal contracts were coded 0.

Indicator 3: Equal opportunity and treatment, adequate and productive earnings

Low pay rate

The low pay rate (LPR), which is calculated at the occupation level, considers the proportion of employees working for low wages. The ILO defines this as those workers working for less than two thirds of the median wage rate, and the following formula was used in the calculation of this variable:

$$LPR = \frac{Number\ of\ persons\ in\ occupation\ j\ paid\ less\ than\ \frac{2}{3}\ the\ median\ wage}{Total\ number\ of\ persons\ employed\ in\ occupation\ j} \quad (3)$$

The inverse of the results were then calculated in order for occupations with smaller shares of low paid workers to rank closer to 1.

Average earnings

Average earnings, also measured at the occupational level, calculates the average earnings by occupation and then normalises the value to provide each worker with a value between 0 and 1.

This variable, according to the ILO (2012, p. 75), is "more informative for targeted policy making". The average earnings for worker *i* employed in

occupation j were calculated as follows:

$$Average\ E_{ij} = \frac{Mean\ E\ in\ occupation\ j - E_{min}}{E_{max} - E_{min}} \quad (4)$$

Where E_{min} represents the average earnings for the occupation which has the lowest average and E_{max} represents the average earnings for the occupation which has the highest average earnings. The mean earnings in occupation were calculated using the following formula:

$$Mean\ E\ in\ occupation\ j = \frac{\sum Wages_i}{n} \quad (5)$$

Where $Wages_i$ refers to the earnings of individual i employed in occupation j, and n refers to the number of workers employed in occupation j.

Gender occupational segregation

Occupational segregation refers to the "tendency for men and women to be employed in different occupations" (Siltanen, Jarman, & Blackburn, 1995, p. 4). While the concentration of men and women in different occupations are often associated with the quality of those jobs. For instance, men tend to have a high concentration in occupations which pay high wages and confer a high degree of responsibility on them, while women tend to have a high concentration in jobs in which responsibilities are limited and in which wages are relatively low. In this paper, it is used as a measure for equal opportunity and treatment in the workplace. Thus, highly segregated occupations are interpreted as occupations in which equal treatment and opportunity are not immediately forthcoming.

There are a number of indices which are available for the measurement of occupational segregation, however, the most commonly used index, the Index of Dissimilarity, is utilised here. Though the index has shortcomings, these shortcomings are forthcoming in most other segregation indices as well, and the index is also suitable for measurement at the occupational level; this is not necessarily the case for all segregation measures[4]. The Index of Dissimilarity (ID), developed by Duncan and Duncan (1955) is defined by Bertaux (1991, p. 436) as "the proportion of all men or women who would have to change occupations for the sexes to have the same occupational distributions. An index of 0 indicates that men and women are present in each occupation in the same proportion they are present in the labor force – e.g. if women represent 40% of

[4] For a discussion of the shortcomings of this index as well as other suitable indices for the measurement of gender occupational segregation, see Karmel and Maclachlan (1988), Siltanen *et al*. (1995), and Blackburn *et al.* (1995).

the labour force, they will also represent 40% of each and every occupation". The formula is specified as:

$$ID = \frac{1}{2}\sum\left|\frac{F_i}{F} - \frac{M_i}{M}\right| \quad (6)$$

Where F_i are the number of females employed in occupation *i*, and *F* the number of females in the workforce (Siltanen *et al*., 1995). Similarly, M_i is the number of males employed in occupation *i*, and *M* the number of males in the workforce.

The inverse of the results were then calculated so that occupations with less segregation rank closer to 1.

Racial occupational segregation

Racial occupational segregation was interpreted in a similar fashion as gender occupational segregation, although the races were collapsed to create a binary variable of 'white' workers and 'non-white' workers.

Given South Africa's complicated history with racial segregation and the different degrees to which individuals in the non-white category of workers were discriminated against at different periods in time, the simplest way in which to calculate this variable is to segregate it according to the race group which has historically been higher up the occupational hierarchy (white workers).

The Index of Dissimilarity was used again, calculating the proportion of white and non-white workers in each occupation.

Gender pay gap

The gender pay gap (calculated at the occupational level), which is also a measure of equality in an occupation, was calculated using the following formula (ILO, 2012):

$$Gender\ pay\ gap_j = \frac{E_{mj} - E_{wj}}{E_{mj}} \quad (7)$$

Where E_{mj} represents the average earnings of men employed in occupation *j* while E_{wj} represents the average earnings of women in occupation *j*.

An assumption made in this formula is that the earnings of men will always be higher than the earnings of women, although there are instances in which the mean earnings of women can be higher than the mean earnings of men, specifically in occupations where there is a higher concentration of women. To remedy this, the absolute values of the results from the above formula were calculated to remove negative values from the dataset and obtain a value between 0 and 1 for all observations.

Using this method thus means that the closer to 1 the value is, the higher the pay disparity between men and women. This indicates that an unequal pay distribution, regardless of whether the distribution is in favour of men or women, would be interpreted as a negative aspect in relation to equality in the occupation.

As a last step, the inverse of the values obtained were calculated in order to allow occupations with more equal pay distributions to contribute positively to the overall DWI (have values closer to 1) and occupations with more unequal pay distributions to contribute negatively to the overall decent work index (have values closer to 0).

Indicator 4: Social security, dialogue, and workers' and employers' representation

Medical aid

Workers were asked whether they receive a medical aid benefit and those who answered 'yes' were coded as 1, while those who answered 'no' were coded as 0.

Number of workers in company

According to South African legislation, companies employing more than 50 employees are subject to the conditions set out in the Employment Equity Act No. 55 of 1998 (Thomas, 2002). The purpose of this Act is to redress labour market injustices in the South African labour market and by doing so contribute positively to the inequality within society.

These companies are thus compelled by law to adhere to certain conditions meant to provide a more level playing field for workers. Workers who reported having more than 50 employees in their workplaces were thus coded as 1, while the rest were coded as 0.

Pension contribution

Workers were asked whether they receive a pension fund contribution and those who answered 'yes', were coded as 1, while those who answered 'no' were coded as 0.

UIF contribution

Workers were asked whether their employer contributes to the Unemployment Insurance Fund (UIF) on their behalf, and those who answered 'yes', were coded as 1, while those who answered 'no' were coded as 0.

Union membership

Workers were asked whether they belonged to a union, and those who answered 'yes' were coded as 1, while those who answered 'no' were coded as 0.

Union density

Union density, according to the ILO (2012, p. 165), "provides a proxy measure of workers' representation and the influence of trade unions. It gives some indication of the extent of freedom of association and it can help in assessing and monitoring the development of industrial relations". High union density within an occupation should thus be interpreted as a positive aspect for decent work.

Though a variable had already been included for union membership in the index, even workers who do not have individual union membership can gain from the benefits of working in a highly unionised occupation, as they cannot be excluded from the benefits which come about as a result of negotiations unions have with employers, such as wage increases.

This variable was calculated at the occupation level, using the following formula:

$$Union\ density = \frac{Number\ of\ workers\ in\ occupation\ j\ with\ union\ membership}{Total\ number\ of\ workers\ in\ occupation\ j} \quad (8)$$

Appendix B: Descriptive statistics for individual elements

Occupation groups	Decent working time and balancing work, family and personal life			Employment opportunity, stability and security at work				
	Longer hours	Paid leave	Excess hours	Sector	IER	Contract Type	Duration of employment	Written contract
Chief executives, senior officials and legislators	0.904	0.266	0.096	0.676	0.778	0.931	0.073	0.904
Administrative commercial managers	0.813	0.899	0.638	0.942	0.968	0.966	0.165	0.775
Production and specialised services	0.777	0.816	0.419	0.955	0.806	0.933	0.145	0.747
Science and engineering professionals	0.87	0.892	0.745	1	0.977	0.89	0.111	0.71
Health professionals	0.881	0.958	0.653	1	1	1	0.194	0.889
Teaching professionals	0.797	0.933	0.897	0.992	0.992	0.972	0.176	0.775
Business and administration professionals	0.911	0.897	0.817	0.983	0.883	0.977	0.103	0.818
Science and engineering associate professionals	0.901	0.882	0.795	1	0.947	0.941	0.132	0.838
Health associate professionals	0.909	0.958	0.796	1	0.803	0.969	0.129	0.843
Business and administration associate professionals	0.825	0.899	0.89	0.991	0.969	0.973	0.164	0.853
Legal, social, cultural and related associate professionals	0.86	0.792	0.705	0.933	0.911	0.93	0.137	0.769
Information and communications (ICT) technicians	0.881	1	0.745	1	1	1	0.151	1
General and keyboard clerks	0.866	0.889	0.791	0.976	0.97	0.944	0.112	0.747
Customer service clerks	0.772	0.63	0.698	0.937	0.925	0.782	0.088	0.548
Personal service workers	0.836	0.685	0.444	0.912	0.73	0.894	0.097	0.616
Sales workers	0.813	0.562	0.568	0.882	0.597	0.804	0.086	0.464
Personal care workers	0.912	0.93	0.601	1	1	0.983	0.151	0.77
Skilled agricultural workers	0.714	0.225	0.531	0.38	0.461	0.591	0.076	0.155
Skilled forestry, fishery and hunting workers	0.596	0.419	0.715	0.479	0.025	0.539	0.071	0.354
Building and related trades workers, excl. electricians	0.717	0.572	0.563	0.82	0.718	0.809	0.116	0.578
Metal, machinery and related trades workers	0.773	0.677	0.596	0.92	0.777	0.893	0.123	0.641
Handicraft and printing workers	0.718	0.615	0.735	0.691	0.651	0.844	0.11	0.451
Electrical and electronic trades workers	0.743	0.445	0.601	0.954	0.587	0.855	0.09	0.5
Stationary plant machine operators	0.842	0.813	0.658	0.983	0.94	0.932	0.125	0.728
Drivers and mobile plant operators	0.837	0.641	0.443	0.894	0.871	0.904	0.136	0.58
Cleaners and helpers	0.783	0.37	0.665	0.339	0.276	0.752	0.09	0.251
Agriculture, forestry and fishery labourers	0.823	0.293	0.389	0.848	0.776	0.69	0.088	0.298
Labourers in mining, construction, manufacturing and transport	0.735	0.56	0.633	0.958	0.934	0.769	0.094	0.549

Occupation groups	Equal opportunity and treatment, adequate and productive earnings					Social security, dialogue, and workers' and employers' representation					
	Low Pay Rate	Average earnings	Gender OS	Gender pay gap	Racial OS	Medical aid	No of workers	Pension	UIF	Union member	Union density
Chief executives, senior officials and legislators	0.778	0.5	1	0.098	1	0.266	0.266	0.397	0.266	0.266	0.222
Administrative commercial managers	0.978	0.928	0.993	0.514	0.966	0.63	0.555	0.791	0.58	0.347	0.283
Production and specialised services	0.938	0.57	0.992	0.694	0.96	0.633	0.296	0.719	0.67	0.216	0.117
Science and engineering professionals	0.956	0.767	0.998	0.308	0.991	0.635	0.771	0.74	0.503	0.111	0.156
Health professionals	1	1	1	0.838	0.993	0.804	0.475	0.855	0.722	0.514	0.356
Teaching professionals	0.992	0.608	0.998	0.746	0.99	0.691	0.293	0.88	0.466	0.651	0.702
Business and administration professionals	0.962	0.65	0.998	0.893	0.98	0.664	0.485	0.835	0.634	0.284	0.185
Science and engineering associate professionals	0.939	0.442	0.996	0.806	0.991	0.662	0.617	0.808	0.809	0.421	0.379
Health associate professionals	0.831	0.31	0.993	0.707	0.997	0.642	0.608	0.901	0.666	0.719	0.528
Business and administration associate professionals	0.956	0.42	0.993	0.862	0.997	0.673	0.079	0.904	0.578	0.851	0.782
Legal, social, cultural and related associate professionals	0.958	0.435	0.999	0.621	0.968	0.582	0.397	0.694	0.544	0.282	0.225
Information and communications (ICT) technicians	1	0.823	1	0.568	0.999	0.814	1	1	0.756	0.881	0.545
General and keyboard clerks	0.957	0.338	0.986	0.941	0.941	0.493	0.474	0.755	0.773	0.362	0.351
Customer service clerks	0.834	0.206	0.991	0.901	0.985	0.281	0.351	0.438	0.659	0.234	0.22
Personal service workers	0.735	0.194	0.999	0.566	0.989	0.321	0.39	0.532	0.588	0.474	0.34
Sales workers	0.732	0.174	0.999	0.486	0.998	0.174	0.145	0.434	0.533	0.183	0.112
Personal care workers	0.957	0.436	0.999	0.812	0.998	0.832	0.78	1	0.33	0.419	0.348
Skilled agricultural workers	0.41	0.126	0.984	0.372	0.998	0.051	0.121	0.118	0.179	0.07	0.063
Skilled forestry, fishery and hunting workers	0.868	0.036	0.977	0.276	0.956	0	0.063	0.241	0.27	0.032	0.001
Building and related trades workers, excl. electricians	0.795	0.193	0.96	0.847	0.996	0.272	0.43	0.528	0.595	0.427	0.336
Metal, machinery and related trades workers	0.872	0.246	0.978	0.843	0.981	0.361	0.456	0.638	0.701	0.395	0.297
Handicraft and printing workers	0.727	0.181	0.998	0.68	1	0.333	0.414	0.531	0.498	0.438	0.318
Electrical and electronic trades workers	0.604	0.087	0.995	0.593	0.996	0.152	0.446	0.47	0.609	0.444	0.242
Stationary plant machine operators	0.838	0.167	0.995	0.737	0.99	0.325	0.657	0.737	0.81	0.664	0.6
Drivers and mobile plant operators	0.792	0.163	0.957	0.742	0.986	0.237	0.417	0.539	0.602	0.485	0.392
Cleaners and helpers	0.384	0.051	0.912	0.515	0.933	0.066	0.111	0.198	0.206	0.141	0.107
Agriculture, forestry and fishery labourers	0.278	0.038	0.992	0.89	0.98	0.045	0.194	0.195	0.286	0.075	0.073
Labourers in mining, construction, manufacturing and transport	0.737	0.221	0.99	0.341	0.986	0.141	0.526	0.489	0.625	0.395	0.307