*Hacienda Pública Española/Review of Public Economics* 235-(4/2020): 61-86

https://dx.doi.org/10.7866/HPE-RPE.20.4.4

# European Part-time Workers' Health and Well-being in Times of Crisis. The Case of Female Part-timers

MARÍA CRUZ MERINO-LLORENTE*
MARÍA NOELIA SOMARRIBA ARECHAVALA**
*Universidad de Valladolid*

*Received: June, 2019*
*Accepted: February, 2020*

**Abstract**

The economic crisis, which started in late 2007, had a major impact on countries' labour markets, and triggered a rise in the number of non-standard contracts. Most European Union (EU) countries witnessed a significant increase in part-time jobs. This type of employment and its working conditions may have a negative impact on the health and well-being of workers, especially women. The aims of this paper are: 1) to determine whether there are differences in levels of part-time workers' health and well-being by gender for the EU as a whole as well as for each European country individually, and 2) to ascertain which determinants impact female part-time workers' health and well-being. A Synthetic Health and Well-being Indicator (SHWI) was designed using the measure of $P_2$ distance approach as a methodological tool. In order to explore the determinants for female part-timers, linear regressions were used adopting a multilevel analysis based on data from the 2010 European Working Conditions Survey.

The main results show that female part-time workers display lower levels of health and well-being than their male counterparts in the EU. Factors such as the nature of the work, difficulty making ends meet, perceived job insecurity, social support and work-life balance play an essential role in levels of female part-timers´ health and well-being. We may conclude that, in addition to greater institutional support for the inclusion of women in the labour market, changes in public policies designed to improve working conditions (better schedules and a greater presence of non-manual skilled jobs) coupled with changes in family policy, could play a key role in reducing gender differences.

*Keywords:* Health inequalities, well-being, part-time job, synthetic indicators, gender.

*JEL Classification:* C51, I14, J16.

## 1. Introduction

Many studies have found that, despite living longer, women report having worse health and suffering more illness, as well as having lower levels of well-being than men (Eurofound,

* ORCID ID: 0000-0002-6201-5190.

** ORCID ID: 0000-0001-7741-5050.

2013). The World Health Organization (WHO) has pointed out that there are gender inequalities in health, with such inequalities being understood as differences that are unfair and avoidable in health between women and men. The persistence of gender roles and stereotypes in society leads to gender inequalities in power and in the unequal division of paid and unpaid work (Borrell *et al.*, 2014). The combination of these factors puts women at a disadvantage vis-à-vis access to and control over the resources required to achieve a high level of health and well-being. Besides biological and genetic differences, the greater burden of health differences between men and women is related mainly to social, behavioural and psychosocial factors, and their interactions.

These inequalities in health between women and men can be explained by gender inequalities in key social and economic determinants such as income, education or employment (access to the labour market, horizontal and vertical segregation...). As such, working conditions and job status play a key role in understanding gender inequalities in health and well-being (Bambra, 2011; Barnay, 2016). In this paper, we study how working part-time influences these inequalities.

The financial and economic crisis which commenced in late 2007 affected European Union (EU) countries to differing degrees. It had a major impact on countries' labour markets, leading to a rise in the number of non-standard contracts, which were more precarious than those offered for full-time employment, and to a deterioration in the quality of employment (Benach *et al.*, 2014; Erhel *et al.*, 2012; Merino *et al.*, 2012). Most EU countries witnessed a significant increase in part-time jobs, with the number of those in part-time employment rising by over two percent between 2007 and 2010, both in countries where high levels of this type of work are common (such as Denmark, Sweden, Austria or the Netherlands), as well as in countries where it is less common (such as Latvia, Slovenia or Estonia).

Every type of part-time work has displayed an upward trend in the European Union (European Commission, 2009), with two distinguishable groups of part-time workers emerging. The first comprises those working part-time voluntarily, and is the option chosen for personal reasons (family obligations, training...). The second involves those doing this type of job because they cannot find a full-time job; that is, they work part-time involuntarily. This latter group grew significantly during the economic crisis in certain countries (Valleta and Van der List, 2015). It is worth highlighting that in some European countries (Bulgaria, Spain, Greece or Italy) most part-time workers do not take on such employment out of choice. Part-time jobs are unequally distributed by gender. Based on Eurostat data, women represented around 45% of total employment in the EU in 2010, yet accounted for about 75% of those working part-time (nearly three out of every four part-timers are women).

Part-time workers usually have less favourable working conditions than full-time workers. They earn lower wages and do low-skilled and more monotonous jobs (Muñoz de Bustillo *et al.*, 2008) which offer fewer opportunities for training or professional development (Gallie, 1998; Sandor, 2011; Fagan *et al.*, 2014). In addition to a reduction in income, part-time jobs are usually less stable than full-time employment (Buddelmeyer *et al.*, 2005) such that part-

time workers are also at greater risk of poverty. This type of employment and its working conditions may be important determinants of workers' health (Toch *et al.*, 2014), particularly in the case of women (Menendez *et al.*, 2007), since the latter constitute the majority of part-time workers.

Precarious employment and how it impacts workers' health and well-being has been the subject of research (Kawachi, 2008; Benavides *et al.*, 2000; Bartley *et al.*, 2009; Artacoz *et al*., 2005; Quinlan *et al*., 2001; Benach *et al*., 2002). Key findings include diminished levels of job satisfaction (Benach *et al.*, 2004), mental well-being (Van Aerden *et al.*, 2016; Caroli and Godard, 2016; Benavides *et al.*, 2000; Bartley *et al.*, 2009; Ferrie *et al.*, 2008; Waenerlund *et al*., 2011), self-perceived health (László *et al.*, 2010), and physical health (Kim *et al.*, 2012) as well as increased work stress (Vives *et al.*, 2013). In this sense, the present study aims to break new ground in both its subject matter and its approach. It offers an alternative to most studies, which have looked at health and well-being from an econometric perspective and which have used the individual's valuation of their own health status or job satisfaction as the dependent variables. In our case, a synthetic indicator is estimated to measure the health and well-being of part-time workers using the $P_2$ distance method, and includes information from a set of simple indicators, thus allowing us to examine the relationship between part-time work and workers' health and well-being.

In addition, certain previous studies have explored gender inequalities in health in terms of the type of flexible employment (Bartoll *et al.*, 2014; Gash *et al*., 2006). However, very little research has addressed the impact of part-time work on people's health and well-being (Benavides *et al.*, 2000). The differing employment status between men and women should be the subject of in-depth inquiry given the key role it plays in gender health inequalities. The analysis proposed in the present study is interesting because the workplace provides an ideal scenario for promoting health and well-being and reducing socio-economic and gender inequalities, in line with the objectives of the Europe 2020 Strategy and the Sustainable Development Goals (SDG) of the 2030 Agenda.

The objectives of this paper are: firstly, to determine whether there are differences in levels of part-time workers' health and well-being by gender for the European Union as a whole as well as for each European country individually using a synthetic health and well-being indicator (SHWI), and to examine SHWI levels in this type of worker, according to job and individual features by gender in the EU28; and secondly, to ascertain which determinants (personal, family and job characteristics) impact female part-time workers' health and well-being.

The paper is structured as follows: in the opening section, the $P_2$ distance methodology, as well as the partial indicators that will be part of the SHWI, are described. The structure of the synthetic indicator is then presented and the behaviour of SHWI in European countries is examined by gender, as is the gender gap. We then look at how certain individual and work factors modify levels of health and well-being. In section 2, we analyse, only for female part-time workers, the determinants that most affect their levels of health and well-being, through an econometric multilevel analysis. Finally, we present some conclusions.

## 2. Methodology and construction of a Synthetic Health and Well-being Indicator (SHWI)

### 2.1. The $P_2$ distance method

The $P_2$ distance method has been used in numerous works when devising synthetic indicators of quality of life at the regional and country level (García *et al.*, 2010; Ray, 2014; Rodríguez *et al.*, 2012; Somarriba *et al.*, 2015; Somarriba and Pena, 2009; Zarzosa and Somarriba, 2013) and more recently at the individual level (Pinillos-Franco and Somarriba, 2018a, 2018b; Somarriba and Zarzosa, 2018). This technique is suitable for the goals pursued in this paper as it allows inter-spatial comparisons to be made and different information to be included regardless of its heterogeneity.

Pena's synthetic distance indicator ($DP_2$) (Pena, 1977) provides an ideal solution to the problems that arise when devising a synthetic indicator, particularly with regard to aggregation and weighting of simple indicators. Besides being based on the concept of distance, the $DP_2$ indicator belongs to a group of measures based on axiomatic derivations (Deutsch and Silber, 2005); in other words, created to meet a series of requirements deemed necessary to achieve the stated goal. For a comparison between the $DP_2$ indicator and other methodological approaches used to obtain synthetic welfare indicators and related concepts, see Somarriba and Pena (2009).

The $P_2$ distance from individual *j* is defined as follows:

$$DP_2 = \sum \left\{ \left( {}^{d_i}/_{\sigma_i} \right) \left( 1 - R^2_{i,i-1,\dots,1} \right) \right\} \tag{1}$$

with $R^2_1 = 0$; where $d_i = d_i\left(r^*\right) = |x_{ri} - x_{*i}|$ with the reference base $X_* = (x_{*1}, x_{*2}, \dots, x_{*n})$ where:

— $n$ is the number of variables

— $x_{ri}$ is the value of the variable $i$ in individual $r$

— $\sigma_i$ is the standard deviation of variable $i$

— $R^2_{i,i-1,\dots,1}$ is the coefficient of determination in the regression of $X_i$ over $X_{i-1}$, $X_{i-2}$,...,$X_1$, already included.

In order to ensure that the properties of the synthetic indicator are fulfilled, certain variables whose increase implies a worsening in health were multiplied by -1 such that an increase in the value of any variable might mean an improvement in health and well-being.

Defined thus, the synthetic indicator measures the distance with regard to the object studied between each individual and a fictitious base reference. In this instance, the base reference

comprises the results from an imaginary individual reflecting the worst possible scenario for all the simple indicators and would therefore be attributed a value of zero in the SHWI.

By dividing it by a standard deviation, the problem of heterogeneity of the measuring units of the variables is corrected showing all the partial indicators (quotients involved in the expression) in abstract units.

The coefficient $R^2_{i.i-1,\ldots,1}$, the coefficient of determination, measures the part of each simple indicator's variance that is explained by the linear regression carried out, using the preceding simple indicator. Thus ($1\text{-}R^2_{i.i-1,\ldots,1}$) is the "correction factor" (to use Pena's term), and prevents redundancy by removing the information already contained in the preceding indicators from the partial indicators. In this way, the synthetic indicator only includes the new information from each variable.

The absolute value of the linear correlation coefficient is the measure used to hierarchize the simple indicators into the various iterations of the synthetic indicator calculations. When constructing synthetic indicators, the $DP_2$ presents certain advantages compared to other methods, as is mentioned. Moreover, the $DP_2$ indicator fulfills the following properties: existence and determination, monotony, uniqueness, invariance to changes in origin and scale, homogeneity, transitivity, exhaustiveness, additivity, invariance to the reference base, conformity and neutrality. For more information about these properties, see Somarriba and Pena (2009) and Zarzosa and Somarriba (2013), and for the algorithm to estimate the synthetic indicator, see Somarriba and Zarzosa (2016). Moreover, the resulting synthetic indicator eliminates the problems of aggregation of variables expressed in different measurements and the duplication of information that these generate when synthesized in the same indicator.

### 2.2. Simple Indicators for the Synthetic Health and Well-being Indicator (SHWI)

When we wish to measure the health and well-being of the worker population, a wide array of approaches is available, particularly when seeking to gauge the impact of precarious work on workers' health and well-being. In this regard, compilation works such as Benach *et al.* (2014) and Joyce *et al.* (2010) prove extremely interesting.

There are different conceptual models to understand the potential causal links and pathways between employment and health, such as the proposal by Benach *et al.* (2014), which relates precarious employment to health and quality of life, the model on psychosocial risks at work (Roozeboom *et al.*, 2008; Dhondt and Houtman, 1997; Dollard *et al.*, 2007) or the model of job stress and physical health (Cooper and Payne, 1988; Cooper *et al.*, 1994).

The proposed synthetic indicator seeks to measure workplace health and well-being from a broader perspective than the conventional self-perceived health and job satisfaction indicators by aiming to reflect to some extent workers' well-being. As a result, the Danna and Griffin (1999) model, although somewhat old, faithfully reflects the concept we are attempting to measure. These authors suggest that the term "health" should encompass both physiological

and psychological symptomology. The authors also point out that this concept includes work-related experiences such as job satisfaction. This model proposes a similar definition of well-being, where the latter is perceived as a broader concept than health. By embracing this conceptual model, the notion of health explored is not confined to a strictly clinical definition, but is closely connected to the notion of workplace well-being.

In all instances, the indicators used report on workers' health both from a physical as well as a mental perspective, since it is thus reflected in the model as a work-related experience. We consider job satisfaction as a typical measure that outlines feelings about how workers view their job and that reflects the psychosocial work environment (Benavides *et al.*, 2000), which acts as a determinant of workers' health and well-being. A large body of literature has already evolved on the relationship between employee job satisfaction and ill-health (Faragher *et al.*, 2005). Different authors have also explored the relation between job satisfaction and aspects such as psychosomatic problems (Piko, 2006), psychological stress (Lee *et al.*, 2009), mental health, depression and social action (Aazami *et al.*, 2015).

In this work, the indicators used are treated as health and well-being outcome measures, in line with Artazcoz *et al.* (2004b, 2007), Benavides *et al.* (2000) or Kalleberg (2000). Dollard *et al.* (2007) and Weiler (2007) include indicators related to physical health, job satisfaction, health complaints and so on in the category of health outcomes. To estimate our synthetic indicator, we use a set of five simple indicators:

— Self-perceived health status (*How is your health in general*? a single-item question inquiring about how respondents perceive their overall health by choosing from five response categories: very good, good, fair, bad, or very bad).

— Stress (*You experience stress in your work: always, most of the time, sometimes, rarely, or never*).

— Tiring or painful positions due to work (*Does your main paid job involve tiring or painful positions*? on a scale where 1 is all of the time and 7 is never).

— Health status (*Over the last 12 months, have you suffered from any health problems*?). The latter is calculated on a scale of 0 to 14 as the count of the total number of health problems[1].

— Job satisfaction (*On the whole, are you satisfied, fairly satisfied, not very satisfied, or not at all satisfied with your main job*?).

In order to examine the reliability of the proposed measure, Cronbach's Alpha (Labarere *et al.*, 2001; Steine *et al.*, 2001) is calculated together with McDonald's Omega. This latter measure is considered to be an adequate measure of reliability if the principle of such equivalence is not met, and which may not be met if the coefficients of the items that make up the factorial solution matrix evidence vastly differing values (McDonald, 1999). For a reliability value to be considered acceptable using the omega coefficient, said values should be between .70 and .90 (Campo-Arias and Oviedo, 2008), although in certain circumstances it

may be possible to accept values above .65 (Katz, 2006). In our study, McDonald's $\omega$ is 0.736 and Cronbach's $\alpha$ is 0.652, such that the values are acceptable.

The proposed synthetic indicator seeks to measure health and well-being from a broader perspective by aiming to reflect to some extent workers' physical, mental and social well-being, which may provide us with a comprehensive view of people's well-being, and which seems to improve on previous research into gender inequalities into health that has focused solely on one single indicator. Empirical evidence on the association between employment and employees' health and well-being has been related to indicators such as self-rated health, mental health, and job satisfaction (Van Aerden *et al.*, 2016). To measure health and well-being, some studies use a single indicator, such as self-rated health (Kim *et al.*, 2008; Ehlert and Schaffner, 2011). Yet gender differences may exist depending on the health and well-being measure being examined.

The idea of proposing a synthetic indicator involving other indicators, apart from the classical self-perceived health indicator, is by no means outlandish. Other studies that measure health in the area of work use several domains of health as health outcomes. For example, Robone *et al.* (2011) study the effects of contractual and working conditions on self-assessed health and psychological well-being. Benavides *et al.* (2000) associate types of employment with several health indicators –self-reported health related outcomes (such as job satisfaction or stress) and self-reported health problems–. Denton *et al*. (2004) consider the multidimensional nature of health, using physical and psychological health outcomes and self-rated health to measure gender differences in health. Our study differs in that we bring all of this information together.

### 2.3. Sample

The Fifth European Working Conditions Survey was based on a representative sample of the total active population aged 15 years and over in the 27 EU Member States and other European countries. In this study, we consider 28 countries, the 27 EU Member States and Croatia, a candidate member at the time (hereinafter, EU28). The survey was conducted in 2010 using multi-stage stratified random sampling. The target sample size in most countries was 1,000. The total number of interviews in 2010 was 43,816. The questionnaire covered information on types of contract, various health outcomes as well as several aspects of working conditions including the physical environment, psychosocial working conditions, job design, working hours, work organization and social support at work. In our study, we worked with a total of 35,751 individuals, after excluding people with missing data on variables considered in the study. In the present work, as in other studies (Kalleberg, 2000; Sparreboom, 2014), part-time workers are those who state that they work less than 30 hours a week.

### 2.4. The design and distribution of the SHWI

The statistical technique used in the present research to analyse workplace health and well-being allows us to explore the impact which each simple indicator has on determining

the outcomes when compared to the rest. Table 1 displays the SHWI structure, with the key elements: the degree of absolute correlation with the resulting synthetic indicator, which determines the order in which the simple indicators are ranked, and the correction factor, which indicates the amount of fresh information attributable to each simple indicator.

**Table 1**
**STRUCTURE OF THE SYNTHETIC HEALTH AND WELL-BEING INDICATOR (SHWI)**

| Indicators | $\|r\|$ | $(1-R^2)$ |
|---|---|---|
| Health status | 0.75 | 1 |
| Self-perceived health | 0.64 | 0.78 |
| Job satisfaction | 0.63 | 0.88 |
| Tiring or painful positions | 0.62 | 0.85 |
| Stress | 0.56 | 0.91 |

*Note:* (a) $|r|$ is absolute linear correlation with the resulting synthetic indicator and the correction factor is $(1-R^2)$.
*Source:* Own.

These results evidence a good selection of indicators. Significant correlations with the SHWI were obtained for all of those analysed.

The results also reveal that health status is the most important factor when explaining disparities. Since this simple indicator is the one which most correlates with SHWI, it includes all of its information. The self-perceived health indicator is the second partial indicator involved in calculating the SHWI, given its absolute correlation. It incorporates 78% of its information, since the remaining 22% proves redundant with regard to the information contained in the previous indicator. The remaining indicators are discussed in the same way.

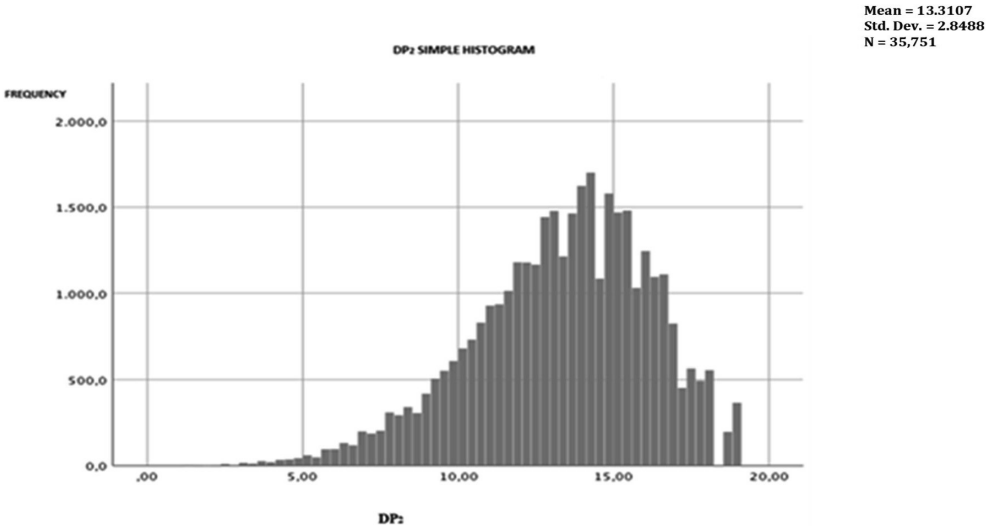
Table 2 lists main statistics of the SHWI and Graph 1 shows a $DP_2$ simple histogram displaying its distribution.

**Table 2**
**STATISTICS OF THE SYNTHETIC HEALTH AND WELL-BEING INDICATOR (SHWI)**

| **N** | **Valid** | **35,751** |
|---|---|---|
| | **Missing** | **0** |
| Mean | | 13.31 |
| Median | | 13.59 |
| Std. Deviation | | 2.85 |
| Variance | | 8.12 |
| Skewness | | -.524 |
| Std. Error of Skewness | | .013 |
| Kurtosis | | .096 |
| Std. Error of Kurtosis | | .026 |
| Range | | 17.77 |
| Minimum | | 1.19 |
| Maximum | | 18.96 |

*Source:* Own.

**Graph 1**
**$DP_2$ SIMPLE HISTOGRAM**




*Source:* Own.

Table 3 lists part-time rates, the average values by gender of the SHWI, and male and female part-timer workers, respectively, in the third and fourth columns by country. In the last column, the gap by gender (female-male) is calculated. As can be seen from the table, in 20 of the 28 EU countries, gaps favour male workers, with this difference proving significant in nine of the 20 countries. Only in the case of Cyprus, which shows a positive gap, is the difference significant. The negative gap is significant for the whole of the European Union (-0.34***). In other words, men show higher levels in health and well-being than women. Apart from Malta, countries with a high part-time rate (Denmark, Ireland, the United Kingdom, and the Netherlands) display the highest levels of health and well-being among both men and women. In contrast, Cyprus, Estonia, and Hungary display the lowest levels for men, and Hungary and Portugal for women (all of these countries have a low part-time rate).

**Table 3**
**SYNTHETIC HEALTH AND WELL-BEING INDICATOR (SHWI) BY GENDER AND COUNTRY AND PART-TIME RATES**

| Country | Part-time Rate[(a)] | SHWI | | | |
|---|---|---|---|---|---|
| | | Female | Male | Gap | [(b)] |
| France | 17.6 | 13.07 | 14.16 | -1.09 | *** |
| Slovenia | 10.3 | 13.01 | 14.04 | -1.03 | ** |
| Finland | 13.8 | 13.14 | 14.10 | -0.96 | ** |
| Denmark | 25.6 | 14.44 | 15.37 | -0.93 | *** |
| Poland | 7.7 | 12.77 | 13.62 | -0.85 | ** |
| Malta | 11.6 | 14.16 | 14.98 | -0.82 | ** |

(*Continued*)

| Country | Part-time Rate[a] | SHWI | | | |
|---|---|---|---|---|---|
| | | Female | Male | Gap | [b] |
| Germany | 25.6 | 13.22 | 14.01 | -0.79 | *** |
| Hungary | 5.5 | 11.75 | 12.47 | -0.72 | |
| Belgium | 23.7 | 13.65 | 14.29 | -0.64 | *** |
| Portugal | 8.5 | 12.12 | 12.76 | -0.64 | |
| Lithuania | 7.8 | 12.74 | 13.35 | -0.61 | |
| Netherlands | 48.3 | 14.38 | 14.97 | -0.59 | ** |
| Latvia | 9.3 | 12.24 | 12.82 | -0.58 | |
| Luxembourg | 17.4 | 13.21 | 13.70 | -0.49 | |
| Sweden | 25.8 | 13.38 | 13.82 | -0.44 | |
| Italy | 14.8 | 13.15 | 13.40 | -0.25 | |
| Spain | 12.9 | 13.73 | 13.86 | -0.13 | |
| Slovakia | 3.8 | 13.83 | 13.95 | -0.12 | |
| United Kingdom | 25.6 | 14.99 | 15.08 | -0.09 | |
| Estonia | 9.8 | 12.45 | 12.53 | -0.08 | |
| Croatia | 7.0 | 13.78 | 13.75 | 0.03 | |
| Austria | 24.4 | 14.18 | 14.13 | 0.05 | |
| Czech Republic | 5.1 | 13.54 | 13.39 | 0.15 | |
| Greece | 6.3 | 13.47 | 13.25 | 0.22 | |
| Romania | 9.9 | 13.84 | 13.57 | 0.27 | |
| Ireland | 22.2 | 15.51 | 15.22 | 0.29 | |
| Bulgaria | 2.2 | 13.53 | 12.86 | 0.67 | |
| Cyprus | 8.3 | 13.60 | 12.43 | 1.17 | * |
| **EU28** | **18.5** | **13.64** | **13.98** | **-0.34** | *** |

*Notes:* [a] Annual data from EUROSTAT from 2010. Part-time rate is calculated as a quotient among part-time workers from 15 to 64 years between total employment.

[b] ***p<0.01; **p<0.05; *p<0.1.

*Source:* Own.

### 2.5. More results of the synthetic indicator by gender

In an effort to explore the SHWI results in greater depth, we seek to determine which variables might generate differences in worker health and well-being. We use the Student's t-test to compare the SHWI between different covariates, stratifying the results by gender. These variables are:

— *Age*: included as an individual-level variable and was dichotomised (≤45, >45).

— *Occupational social class*: designed according to the respondent's current occupation and was measured by ISCO (08). Dichotomised variable: manual (I to IV) and non-manual (VI to VIII) (Sociedad Española de Epidemiología y de la Sociedad Española de Medicina de Familia y Comunitaria, 2000).

— *Involuntary part-time*: if the part-time work is voluntary or involuntary, calculated by comparing q18. *How many hours do you usually work per week in your main paid job?* with q19. *How many hours per week would you prefer to work at present?*

— *Education*: dichotomised (primary and secondary; tertiary).

— *Family demands*: measured with two variables: marital status (married or cohabiting, others) and family responsibilities dichotomised (Yes/No) measured as the presence of children aged 15 or under or relatives aged 65 or older who live at home.

— *Risk of losing the job*: dichotomised variable (*I might lose my job in the next six months* (Yes/No)).

— *Work-life balance*: measured with the question: *In general, do your working hours fit in with your family or social commitments outside work?* (Yes (very well, well) /No (not very well or not at all well)).

As shown in Table 4, part-time female workers display lower levels than part-time male workers in the EU28, with the differences proving to be significant ($p<0.05$). Health and well-being levels vary depending on the factors analysed. In all cases, the behaviour is similar; that is, male part-time workers evidence higher levels than female part-timers, except when family responsibilities are involved, where the levels are seen to be higher for women.

**Table 4**
**STUDENT'S T-TEST TEST BY COVARIATES. EU28 PART-TIME WORKERS**

| | Men | Women |
|---|---|---|
| SHWI | 13.98 | 13.64 |
| Voluntary/ Involuntary part-time | 14.21/13.48 | 13.81/12.98 |
| Manual /Non-manual | 13.28/14.45 | 12.78/13.89 |
| Primary and Secondary/Tertiary | 13.73/14.55 | 13.45/13.83 |
| Family responsibilities Yes/No | 13.69/14.08 | 13.73/13.57 |
| Married or cohabiting/Single | 13.86/14.10 | 13.73/13.57 |
| Age <=45/>45 | 14.2/13.69 | 13.85/13.34 |
| Risk of losing the job (yes/no) | 13.13/14.29 | 12.6/13.7 |
| Conciliation of working hours (yes/no) | 13.82/11.89 | 13.54/11.41 |

*Note:* (a) The grey area is significant at $\alpha=0.05$.

*Source:* Own.

Contract preferences are a key determinant in inequalities in health and well-being. If part-time work is the option chosen by the worker, regardless of gender, it provides higher levels of health and well-being (Kauhanen and Nätti, 2015).

We observe different levels when distinguishing between manual and non-manual part-time workers; taking into account occupational social class, differences are more pronounced

for men (Artazcoz *et al.*, 2004a; Bartley, 1999). The study shows that at higher educational levels, health levels improve, especially in male workers (Zimmerman and Woolf, 2014; von dem Knesebeck *et al.*, 2006). Differences in health between workers with/without family responsibilities are significant. However, the results differ by gender: there are higher levels amongst men who do not have these responsibilities and amongst women who do have family obligations. Marital status does not prove to be a significant factor in our study. As for age, there are higher levels of health for those under 45 than for those over 45, which could be explained by biological factors. Perceived job insecurity leads to similar differences in health and well-being for part-time workers by gender in the EU28. Part-time worker health and well-being levels increase if their working schedule allows them to adjust both aspects of their lives; namely, work and private life.

## 3. Female part-time workers: a deeper analysis

Considering the SHWI as a dependent variable, regression models are estimated for female part-time workers for the EU28. For the empirical analysis, we used a linear regression, adopting a multilevel analysis due to the hierarchical nature of our data, with two levels: individual and country level, in order to analyse the possible relationship between women's workplace health and well-being and the particular characteristics of the country they live in. This perspective allows us to distinguish between the individual and environmental factors which affect health and well-being (Aparicio and Morera, 2007).

The multi-country data sets potentially provide information about 'country effects' as well as 'individual effects', and also about interactions between them ('cross-level effects') (Bryan and Jenkin, 2016:3). Their use is common in the field of health (Catalán-Reyes and Galindo-Villardón, 2003).

The sample we used contained 5,270 women working part-time, of whom over 77% chose this type of working day. Table 5 reports the independent variables used in the multilevel model and their description.

**Table 5**
**LIST OF VARIABLES AND DESCRIPTION**

| Variable | Description |
|---|---|
| *Individual characteristics* | |
| Secondary Education | Highest level of studies you have completed: secondary (1). |
| Tertiary Education | Highest level of studies you have completed: tertiary (1). |
| Age | Age of respondent (years). |
| *Family demands* | |
| Difficulty making ends meet | Respondent has difficulty making ends meet (0 very easily, easily, and fairly easily, 1 with some difficulty, with difficulty, and with great difficulty). |

(*Continued*)

| Variable | Description |
|---|---|
| *Family demands* | |
| Marital status | Married or with a registered partner 1, not married or without a registered partner 0. |
| Children | Number of children aged 15 or under. |
| Parents | Number of relatives aged 65 or older who live at home. |
| *Job characteristics* | |
| Occupational social class | Respondent's current occupation is manual (yes 1, 0 no). |
| Working day | Weekly working hours (0-30). |
| Risk of losing the job | Respondent might lose their job in the next six months (strongly agree, agree 1, 0 no). |
| Work-life balance | Respondent says their working hours fit in with their family or social commitments outside work (yes 1, 0 no). |
| Manager support | Respondent says their manager helps and support them (yes 1, 0 no). |
| Health risk | Respondent considers their health or safety to be at risk because of the work (yes 1, 0 no). |
| Firm size | Less than 50 workers; equal to or more than 50 workers. |

*Source:* Own.

The selected variables were organized in three blocks: personal characteristics (age and educational attainment), family demands (marital status, presence of children or relatives aged 65 or older who live at home, difficulty making ends meet...) and job features (i.e., occupational social class, firm size, manager support, health risk...). The principal statistics of the variables are described in Table 6.

**Table 6**
**DESCRIPTIVE VARIABLES OF MULTILEVEL MODEL**

| Variables | N | Mean/Percentage | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| Secondary Education | 5,253 | 0.65 | 0.48 | 0 | 1 |
| Terciary Education | 5,253 | 0.30 | 0.46 | 0 | 1 |
| Age | 5,239 | 42.34 | 13.22 | 15 | 89 |
| Some Difficulty making ends meet | 5,191 | 0.43 | 0.50 | 0 | 1 |
| Marital Status | 5,270 | 0.63 | 0.48 | 0 | 1 |
| Children | 5,270 | 0.65 | 0.95 | 0 | 7 |
| Parents | 5,270 | 0.04 | 0.22 | 0 | 2 |
| Manager Support | 4,139 | 0.81 | 0.39 | 0 | 1 |
| Risk of losing the job | 4,812 | 0.20 | 0.40 | 0 | 1 |
| HealthRisk_1 | 5,205 | 0.17 | 0.38 | 0 | 1 |

(*Continued*)

| Variables | N | Mean/Percentage | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| Working day | 5,270 | 20.76 | 7.67 | 1 | 30 |
| Firm Size | 5,059 | 0.23 | 0.42 | 0 | 1 |
| Occupational social class | 5,245 | 0.23 | 0.42 | 0 | 1 |
| Work-life balance | 5,245 | 0.91 | 0.29 | 0 | 1 |

*Source:* Own.

In order to see what effect each block of variables has when explaining female part-time worker health and well-being, different models were gathered using the SHWI as a dependent variable. In Table 6, the blocks of variables have been added successively, commencing with personal characteristics. Family demands were then added, and finally those related to job features. When this last block of variables was incorporated, we achieve a better fit of the model. Table 7 shows the coefficients of these regression models.

**Table 7**
**MULTILEVEL MODELS**

| | Empty model | Adjusted personal characteristics | Adjusted personal characteristics +Family demands | Adjusted personal characteristics +Family demands +Labour characteristics |
|---|---|---|---|---|
| Secondary Education | | 0.66*** | 0.49** | 0.49** |
| Tertiary Education | | 1.1*** | 0.70*** | 0.54** |
| Age | | -0.15*** | -0.16*** | -0.09*** |
| Age^2 | | 0.00*** | 0.00*** | 0.00*** |
| Difficulty making ends meet | | | -1.29*** | -0.85*** |
| Marital status | | | 0.15** | 0.09 |
| Children | | | 0.16*** | 0.15** |
| Parents | | | -0.19 | -0.02 |
| Occupational social class | | | | -0.33*** |
| Working day (hours) | | | | -0.2*** |
| Risk of losing the job | | | | -0.70*** |
| Work-life balance | | | | 1.30*** |
| Manager support | | | | 0.91*** |
| Health risk | | | | -2.6*** |
| Firm Size | | | | -0.37*** |
| _cons | 13.47*** | 16.08*** | 17.06*** | 14.54*** |
| Random-effects parameters | | | | |
| Var (cons) | 0.62 | 0.42 | 0.40 | 0.23 |
| Var (Residual) | 7.71 | 7.5 | 7.16 | 5.49 |

(*Continued*)

| | Empty model | Adjusted personal characteristics | Adjusted personal characteristics + Family demands | Adjusted personal characteristics + Family demands + Labour characteristics |
|---|---|---|---|---|
| -log likehood | -12,898.637 | -12,715.922 | -12,398.962 | -8,243.2886 |
| ICC | .076 | .075 | .053 | .039 |
| AIC | 25,805.12 | 25,445.84 | 24,819.92 | 16,522.58 |
| BIC | 25,824.83 | 25,491.77 | 24,891.93 | 16,634.08 |
| N | 5,270 | 5,223 | 5,145 | 3,621 |

*Note:* (a) *** p<0.001; ** p<0.01; * p<0.05.

*Source:* Own.

The proposed predictors are useful for explaining the health and well-being of female part-time workers in the EU28. Having one's health at risk because of work, difficulty making ends meet, the risk of losing their job, together with firm size, engaging in manual work and age, have a negative and significant impact on their health and well-being, as expected. Work-life balance is also added to the previous significant predictors; in this case, female part-timers display a positive sign, and are important in the model. Women whose job allows them to strike the right balance can experience an increase of 1.30 points in their synthetic health and well-being indicator compared to those who are unable to do so, *ceteris paribus* the remaining variables in the model.

Women who attach greater importance to family considerations (Virtanen *et al.*, 2003) tend to choose non-standard jobs in an effort to achieve the right work-life balance (Menéndez *et al.*, 2007). Positive and significant coefficients are also obtained for manager support and number of children. Educational attainment is also seen to have a positive impact and to be statistically significant.

Valuable information is obtained when we look at the change undergone by the non-explained dispersion attributed to the aggregate level. If the standard deviation of the random effects associated to the constant of the empty model was 0.62, in the final model it is 0.23, implying that the explanatory variables make a key contribution when accounting for heterogeneity in countries. In addition, the component of the variance of the individual level is clearly reduced when including the independent variables, since it goes from 7.71 to 5.49. The variance explained at the individual level is the result of calculating the change in the variance of the empty model compared to the final model, which in this case is 28%.

Beyond the coefficients of the model, if we wish to study the explanatory capacity of the various specifications in the models, we can compare the development of the variance components and analyse the changes in the values of some statistic. The table also includes the Intraclass Correlation Coefficient (ICC), which represents the degree of variability between different countries compared to the variability between female part-time workers belonging

to the same country. Values close to one indicate that all of the variability is due to the factor; that is, to the difference between countries. In this case, if we look at the empty model, we see how this coefficient adopts a value of 0.76, which justifies applying this methodology by countries. Table 7 offers several global adjustment statistics, a Bayesian Information Criterion (BIC), and Akaike Information Criteria (AIC) that indicate the extent to which the proposed model is capable of representing the variability observed in the data (the lower the value of these statistics, the better the model fits the data).

## 4. Discussion

The last economic crisis led to an increase in part-time jobs in most European countries. If we add job insecurity and poorer working conditions to the low number of hours worked, part-time jobs would seem to have had a negative impact on workers' health and wellbeing at the workplace. Examining the effect of this type of employment on women is of vital importance due to their high part-time rate. Our hypothesis concerning whether there are differences in levels of health and well-being by gender is confirmed: women do indeed display lower levels than men.

The voluntary and involuntary nature of part-time work plays a key role. Women who choose this type of working day have greater differences in SHWI levels than male workers in the EU28. People who work part-time because they have not found a full-time job tend to be more dissatisfied and to seek a safer job which has longer hours and higher income. However, other studies find no significant differences in the self-perceived health of those who work part-time involuntarily (Scott-Marshall and Tompa, 2011; Bardasi and Francesconi, 2004).

Our results also show that the main factors involved in the greater differences in levels of health and well-being amongst European part-timer workers were found when analysing social class, possibility of work-life balance, and perceived risk of losing the job, both for men and women alike.

With regard to social class, we observe different levels when distinguishing between manual and non-manual workers (Campos-Serna *et al.*, 2012). This is in line with previous studies (Arcas *et al.*, 2012; Case and Deaton, 2005) which found that differences increase when work is non-manual, which may be related to a greater precariousness of manual occupations.

Differences in SHWI levels between workers with/without family obligations are significant. In general, female part-time workers who have family responsibilities enjoy higher levels in the synthetic indicator than those who do not have such responsibilities, unlike their male counterparts. Female part-time workers with children are at less risk of poor health compared to mothers in full-time employment (Bartley *et al*., 2009), since female part-time work is related to family demands. The association between family responsibilities and health and well-being may vary depending on the socio-economic, cultural and political context. As previous research has shown (Lennon and Rosenfield, 1992; Artazcoz *et al.*, 2001), family demands have a greater impact in low social class female workers than in middle and upper classes. Depending on the

reconciliation policies implemented in different welfare states (Crompton and Lyonette, 2006), measures such as child care services or parental leave may facilitate work-family life balance (Lunau *et al.*, 2014; Pfau-Effinger, 2005). For example, in Scandinavian countries there is a better work-life balance than in Southern and Eastern European countries (Artazcoz *et al.*, 2014). Improving such policies cannot only help more women to find work but can also help women to work more. Furthermore, there are different patterns depending on the cultural setting, such as the importance of family support in Southern European countries.

There is no general consensus concerning the possible set of measures that facilitate the work-life balance and whether there are gender inequalities with regard to this issue (Artazcoz *et al.*, 2014; Campos-Serna *et al.*, 2012; Lunau *et al.*, 2014). Different studies have explored the link between a poor work-life balance and the presence of health problems. As shown by Bartoll *et al.* (2014), the inverse association between part-time workers and psychosocial problems might stem from an ability to balance work and family life. Some women work part-time in order to achieve such a work-family balance and, as a result, display higher levels of health. Based on the data analysed, differences in the SHWI levels of women who work part-time in the EU28 are higher than men, if their working schedule allows them to adjust private life and work. As shown in the multilevel model, the possibility of achieving a work-life balance has an important effect in the levels of health and well-being of female part-time workers (Artazcoz *et al.*, 2004a).

Perceived job insecurity is likely to be a key determinant in workers' health status and well-being, and indeed even more important than the type of working day (Caroli and Godard, 2016). The threat of job loss has adverse health and well-being effects (Ferrie *et al.*, 1998) and is also linked to poorer physical and psychological health (Burgard, 2010). Perceived job insecurity leads to greater differences in health and well-being for part-time workers in the EU28, and has a negative and significant effect on female workers. This could be explained by the greater difficulty involved in finding a job in a context of economic recession.

Another factor which affects women's health and well-being is the working day, with a greater number of working hours being more likely to negatively affect their health and well-being (Artazcoz *et al.*, 2004a).

Socioeconomic status is a key protective determinant of health, and could be measured through income indicators. The relationship between income and health is well known, and there are various ways in which to consider this link. It is not only important in absolute terms but also in relative terms. Given that income, measured as net monthly earnings from the main job, does not prove significant, we include another socioeconomic variable: difficulty making ends meet. Experiencing difficulty making ends meet can prove stressful and may be related to receiving little help in overcoming difficult situations. In our study, it is a significant variable and indicates a greater likelihood of being less healthy and of enjoying a lower standard of well-being.

Social support in the workplace, through colleagues and manager support, is a key factor and could be considered a psychosocial dimension of the work environment. According to

Marmot and Wilkinson (2005), a psychosocial work environment can produce favourable effects on well-being. Connecting with other people, such as through manager support, can influence a worker's mental well-being, and might imply feelings of belonging to a firm.

Our results show that firm size is inversely related to health and well-being. This might indicate that social relationships at the workplace are more satisfactory in small firms than in large firms, which might lead to higher levels of job satisfaction (Tansel and Gazîoğlu, 2014). However, there is some evidence to show that small companies have a higher rate of workplace accidents and a poorer level of occupational health and safety performance (this might be linked to having fewer financial and human resources available) compared to large sized firms.

Finally, for all female workers, the dummy variable "type of working day" has been incorporated into the regression model to estimate what effect doing part-time work has on the level of health and well-being. Having a part-time job displays a slightly negative (0.22) and statistically significant coefficient; that is, when the other variables remain constant, women doing part-time work have lower levels of health and well-being.

One limitation evident in our study is that since it is a cross-sectional survey we cannot establish causal relations, and reverse causation cannot be ruled out (Chandola *et al.*, 2003). Moreover, it is necessary to consider that different definitions and characteristics of part-time work may vary between countries.

In addition, the use of self-reported subjective variables might be affected by social features and by individual health status (Bound, 2017). Preferences may also lie behind differences in levels of health and well-being in part-time workers, especially in women. Said topic might be addressed in greater depth in future research by undertaking a comparative analysis between countries from a temporal perspective, as well as by exploring the impact of different welfare states, given the strong influence on the relation between employment, family and health (von der Lippe *et al.*, 2015).

## 5. Conclusions

Exploring the impact of part-time employment on workers' health and well-being is of vital importance given its upward trend, and is particularly important among female workers, who are overrepresented in this type of job.

The present study provides an original approach that offers a new perspective for measuring health and well-being inequalities. It makes an original contribution by examining the relationship between part-time work and health and well-being, considering the latter as a synthetic indicator that reflects information from several partial indicators.

Our results show the highest levels of health and well-being in Anglo-Saxon countries, Denmark and the Netherlands, with the results being similar to Artazcoz *et al.* (2014). We also find that men have higher levels than women in the EU28. On the other hand, women

present better levels than men in Central and Eastern European countries as well as in Ireland, although gender differences were not statistically significant, with the exception of Cyprus.

Governments should design policies aimed at enhancing the working conditions of part-time jobs so as to make this type of contract more attractive and appealing, and thus reduce the high level of involuntariness, particularly in Southern European countries. In order to achieve this, governments should offer part-time jobs that provide better working hours as well as more part-time jobs in non-manual skilled positions.

Institutional support acts as an important factor behind the incorporation of women into part-time jobs as in the case of Nordic countries (Orloff, 2009), and which distinguishes them from their Southern European counterparts. The availability of affordable public care services plays a prominent role in meaningful job participation in the case of women. It has been shown that women who leave the labour market to take care of their family have lower levels of health and well-being than those who are in the labour market (Eurofound, 2013)

The presence of significant gaps that favour men in many EU countries should lead us to rethink policies aimed at achieving equality for EU citizens. Additionally, changes in public policies that improve working conditions and in family policy could be a key determinant in reducing gender differences.

## Note

1. Health problems are: hearing problems, skin problems, backache, muscular pains in shoulders, neck and/or upper limbs, muscular pains in lower limbs, headaches/eyestrain, stomachache, respiratory difficulties, cardiovascular diseases, injury(ies), depression or anxiety, overall fatigue, insomnia or general sleep difficulties and others.

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## Resumen

La crisis económica iniciada a finales de 2007 repercutió notablemente en los mercados laborales, con un aumento de los contratos atípicos. En la mayoría de los países de la Unión Europea (UE) creció significativamente el empleo a tiempo parcial. Este tipo de empleo y sus condiciones laborales pueden tener un impacto negativo en la salud y en el bienestar de los trabajadores, especialmente de las mujeres. Con datos de la Encuesta Europea de Condiciones de Trabajo de 2010, los objetivos de este trabajo son, en primer lugar, determinar la existencia de diferencias en los niveles de salud y bienestar de los trabajadores a tiempo parcial por género en la UE y en los distintos Estados miembros, mediante la estimación de un indicador sintético de salud y bienestar (SHWI) utilizando la medida de distancia

$P_2$ y, en segundo lugar, establecer los factores determinantes de los niveles de salud y bienestar de las trabajadoras a tiempo parcial, a través de regresiones lineales adoptando un análisis multinivel.

Los resultados revelan que las trabajadoras a tiempo parcial en la UE muestran niveles más bajos que sus homólogos. La naturaleza del trabajo, la dificultad para llegar a fin de mes, la inseguridad laboral percibida, el apoyo social y el equilibrio entre la vida laboral y familiar son factores fundamentales en los niveles de salud y bienestar de las trabajadoras. Cambios en las políticas públicas orientadas a mejorar las condiciones laborales (mejores horarios y mayor presencia de empleos cualificados no manuales) y en la política familiar, junto a un mayor apoyo institucional para la inclusión laboral femenina, podrían ser relevantes en la reducción de las diferencias de género.

*Palabras clave:* desigualdades en salud, bienestar, empleo a tiempo parcial, indicadores sintéticos, género.

*Clasificación JEL:* C51, I14, J16.