Happiness and life expectancy by main occupational position among older workers: Who will live longer and happy?

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ABSTRACT

Current concerns about aging populations are being translated into legislations to postpone the statutory age at retirement. However, if this is done without considering inequalities in longevity across occupational groups, some may face higher vulnerabilities than others. We examine differences in life expectancy and happiness by occupational position for the Spanish population aged 50 and over. We use happiness as a measure of subjective wellbeing, and compute life expectancy and happy life expectancy by sex and main occupation. Age-specific death rates are calculated using administrative data, and happiness prevalence comes from the European Social Survey. We show that both men and women in managerial positions were advantaged in terms of life expectancy, but only men record more years with happiness. In addition, women in routine jobs were the ones who could expect to live shorter and unhappier. Postponing the statutory age at retirement without considering these differences could be detrimental to women's wellbeing and health.

1. Introduction

Population aging has posed pressure in the public finances of most European countries, and most governments are opting for increasing the average age at retirement. However, lower socioeconomic groups are living shorter and arriving at retirement in unhealthier states (Cambois et al., 2011).

Nonetheless, most of the studies assessing differences in life expectancy and wellbeing across social groups have used educational background, which cannot capture either the differences in job training or other career investments, nor the volatility in economic status during adulthood that may adversely affect the quality of life (Duncan et al., 2002). Hence, when dealing with the debate on the consequences of longer working lives, occupational position seems to be a more relevant criterion to classify populations. In general, it has been found that those who work live healthier and happier than those who are inactive (Rosenthal et al., 2012; Zabkiewicz, 2010).

Happiness is a subjective indicator of the quality of life and denotes individual and social wellbeing. It also influences longevity, and happier people tend to live healthier and longer (Koopmans et al., 2010). Happiness can be used to complement other objectives measures of individuals' wellbeing, such as economic living conditions, and it allows

comparisons across countries, age groups, and sexes. However, there are important differences in how happiness is reported by sex and main occupational position. For example, manual and routine jobs have been associated with lower levels of health (Trudel et al., 2016) and women are more likely to work in poorer quality jobs (Siegrist et al., 2007).

This work explores differences in longevity and happiness according to main occupational position for men and women over 50 years old in Spain. This country is an interesting case of study because it recently recorded one of the highest life expectancies in Europe (Eurostat, 2019), particularly among women. However, longer life expectancy is not translated into healthier and more satisfying lives for all social groups (Solé-Auró & Lozano, 2019). Until very recently data on socioeconomic differences in mortality were not available for this country. Therefore, it was not possible to compute life and healthy life expectancies by occupational position. Recent studies in this direction showed that more advantaged socioeconomic groups had a higher life expectancy (Martin et al., 2017; Solé-Auró & Lozano, 2019). However, these few studies have used educational background, and we aim to estimate social differences according to occupation. At the same time, gender inequalities in the labor market aggravate differences in life expectancy and wellbeing. In Spain, women tend to be less attached to the labor market than men (Sánchez-Mira, 2016), and their working trajectories are less secure

and more precarious (Lozano & Rentería, 2019), which might contribute to increase their stress and reduce their happiness. Nonetheless, no calculations on life expectancy (LE) and happy life expectancy (HappyLE) by main occupational positions are available for Spain. Even though life expectancy is increasing in this country, we do not know yet which of these years gained are spent in a happy state, and which differences across gender and occupational groups exist.

2. Background

2.1. Occupation and life expectancy

Past studies have pointed at the double advantage of higher socioeconomic groups in terms of longer, more active and healthier lives (Arpino & Solé-Auró, 2019; Cambois et al., 2011; Majer et al., 2010). Education, income, and occupation have been extensively used to depict socioeconomic groups because these indicators show systems of social stratification in high-income countries, and are associated with health resources that individuals can access during their lives (Cambois et al., 2020).

Lyu and colleagues (2015) analyzed life expectancy by education, income, and occupation in Germany and found substantial differences between socioeconomic groups. Regarding occupation, their results pointed to a 7-year difference between the lowest and the highest position, and the gap was larger at the age of 40 than at 65 years old and larger among men than women. Cambois et al. (2011) calculated life expectancies in France by occupational category after the age of 50. They found that manual workers suffered from a double disadvantage having the lowest and unhealthiest life expectancy for both sexes. In addition, women displayed larger differences in health according to occupation, despite recording smaller gaps in life expectancy. Head et al. (2019) estimated healthy life expectancy from ages 50 to 75 according to occupational groups in Europe, and they found significant gaps between the higher and lower positions. The largest gap was found in Finland, where both men and women in higher occupational groups could expect to live 75 percent of their remaining life in good health. However, this percentage decreased to 47 for men and 50 for women in lower categories. Zaniotti et al. (2020) also used occupational groups to assess socioeconomic inequalities in disability-free life expectancy in the United States and the United Kingdom. They concluded that in both countries, people in the lowest occupational group could expect to live seven to nine fewer years without disability than those in the highest group at the age of 50. Finally, Brønnum-Hansen et al. (2020) studied occupational disparities in healthy life expectancy in Denmark and found that high skilled white-collar workers were the ones who were expected to live longer and healthier.

So far, studies on health and mortality differentials in Spain used the educational level as an indicator of socioeconomic status (Reques et al., 2014; Solé-Auró et al., 2020). A recent study in this line covered the period from 1960 to 2015 (Permanyer et al., 2018), and it found significant diverging trends in life expectancy according to educational level. The gap between low and highly educated was particularly large among men. Regidor et al. (2019) focused on employment status (active or inactive) over the period 2002–2011 and pointed out that mortality rates decreased after the 2008 Great Recession in Spain for men who were active in the labor market. For active women, mortality rates were stable before and after the economic crisis. However, for economically inactive Spaniards, mortality rates decreased throughout the period under study.

Moreover, older workers in Spain are characterized by lower levels of education compared to younger cohorts, especially among women. Female educational expansions in Spain did not occur until the 1980s (Ortiz & Rodríguez-Menés, 2015). Since then, labor force participation and employment rates of women have also been increasing (Lozano & Rentería, 2019), and the reduction of the share of low-educated individuals at older ages occurred especially since the mid-1990s

(Felgueroso & Jiménez Martín, 2009). These may have had strong implications for the employment rates of older workers, and the type of jobs they have accessed, and it should be considered when interpreting our results.

2.2. Happiness, occupation and age

Population wellbeing has been largely examined using different measures of health. In this study, we use happiness as a measure of subjective wellbeing following the World Happiness Report recommendations.[1] Happiness has proved to be a relevant indicator that summarizes the degree to which individuals judge the overall quality of their own lives as a whole (Solé-Auró, 2020). It encompasses several health-related constructs, such as subjective wellbeing, physical activity, dietary choices, and other biological processes (Steptoe, 2019). Although people may define happiness in their own terms, in general, we mention similar things that make us happy (Easterlin, 2001).

Life circumstances, meaningful relationships, family, work and employment status, income, and health conditions have been found to be associated with happiness (Crimmins & Easterlin, 2000). The happiest people are characterized by having strong social relationships and being able to meet basic needs (Denier & Seligman, 2002). In addition, Denier et al. (2018) also found a correlation between subjective happiness and learning new things or choosing how to spend one's time. Both characteristics are more common in managerial and professional occupations than routine jobs. Furthermore, previous literature in Spain found that political perception, economic situation, and socio-demographic characteristics strongly influenced levels of happiness (Núñez-Barriopedro et al., 2020), as well as climate variables (Cuñado & Pérez, 2013) and educational level (Cuñado & Pérez, 2012).

In addition, labor market participation has also been studied as a factor that correlates with happiness (Xiang et al., 2016; Oswald et al., 2015; Argyle, 2001). Occupational position, the focus of this paper, is a multidisciplinary social indicator that consistently reflects an individual's income, level of education, and lifestyle (Xiang et al., 2016), and has been found to correlate with happiness (Oswald et al., 2015). Most of the literature pointed to social participation and engagement provided by employment and the workplace as the main mechanisms through which occupation correlates to happiness. For example, Knabe and Rätzel (2010) found that, especially among men, bringing home their own-earned income boosted their happiness. Argyle (2001) underlined that social relationships at work increased individuals' happiness. Xiang et al. (2016) investigated whether occupational position influenced happiness. They found that occupations with higher levels of social prestige and power were strongly associated with higher levels of happiness. In general, the higher the occupational status was, the greater the reported level of happiness. Finally, Steptoe and Lassale (2018) investigated various employment factors that affected subjective wellbeing, measured through life satisfaction, among older people, including retirement. They did not find any difference in perceived life satisfaction between those who remained in employment and those who were retired. However, their data source did not have information on the type of job.

Finally, there is evidence that men tend to record higher levels of happiness and life satisfaction than women, although this can vary with age (Solé-Auró & Lozano, 2019; Steptoe & Lassale, 2018). Research on happiness levels across the life span has found support for two alternative hypotheses. On the one hand, the positivity effect hypothesis supports that as people get older, they attend more to positive information and positive memories, therefore a positive appreciation of life. As a result, perceived levels of happiness remain stable or increase across the lifespan, despite the physical and cognitive declines linked to age

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[1] United Nations Sustainable Development Solutions Network in partnership with Ernesto Illy Foundation.

(Carstensen et al., 2011). On the other hand, the U-shaped hypothesis suggests a curvilinear relationship between happiness and age resulting from a dip in happiness during midlife (35–50), followed by a new rise after the late 50s (Blanchflower & Oswald, 2009; Cheng et al., 2014).

In this study, we focus our analysis on those aged 50 and over, and hence both hypotheses would predict a positive increase, or a plateau, of happiness levels. Overall, given the associations between occupational positions and happiness, we aim to explore which groups are expected to live more years of happiness. Several studies have used life satisfaction and happiness to measure differentials in the length and the quality of life (Solé-Auró & Lozano, 2019; Veenhoven, 1996; Yang, 2008.), and, hence, we use the concept of HappyLE to study population health and wellbeing.

3. Data and method

3.1. Data

We used the 2016 Continuous Working Life Sample (CWLS) to compute LE and HappyLE for men and women according to main occupational positions. The CWLS is an administrative dataset that contains information on all individuals having a formal relationship with the Spanish Social Security system. Happiness prevalence came from the 2016 wave of the European Social Survey (ESS), which is a cross-national survey that measures attitudes, beliefs, and behavior patterns in Europe.

Population and age-specific mortality rates by occupational position were calculated with the CWLS. It is a random sample of around 1.2 million people, which represents 4% of the total Spanish population, and contains administrative information of individuals who either pay contributions through taxes or receive social benefits such as unemployment or retiring pensions. The dataset has a longitudinal design and it contains extensive information on each individual's working life, namely employment and unemployment spells, occupational category, public pensions, and year of death, if deceased.

In the CWLS, occupational positions were derived from the original variable "Tax Group", which was reported by the employer. Originally, the variable had 10 possible options: (1) Engineers, graduates, and senior management, (2) technical engineers, experts and assistants, (3) administrative and workshop managers, (4) non-qualified assistants, (5) administrative officers, (6) subordinates, (7) administrative assistants, (8) first and second officers, (9) third-party officers and specialists, (10) unskilled workers. We used the International Standard Classification of Occupations criteria in its most current version (ISCO-08[2]) to recode original categories into three bigger categories. Groups 1, 2 and 3 were classified as *Managerial and Professional occupations*, groups 4 to 7 were pooled into *Intermediate jobs*, and groups 8, 9 and 10 were considered *Routine jobs*.

We included individuals that were either employed, self-employed, unemployed (receiving unemployment benefits), or retired (receiving pension benefits) in 2016. Employed (i.e. salaried workers) were assigned the occupational category they had in 2016. For those cases where two, or more, jobs were recorded (2.3% of the employed population), we classified them according to the longest spell and highest position. For example, if a 50 years old man had three jobs at the same time, we classified him into the one that lasted longer. However, if he had two jobs that lasted the same, we considered the one with the highest position. "Highest" was determined assuming that managerial positions are higher than intermediate, and intermediate jobs are higher than routine. Those in unemployment or retirement were assigned the longest position they had during their last employment spell. Cases without labor-related information were dropped from the analysis (1.49%).

Happiness prevalence came from the 2016 ESS. The questionnaire asked respondents to evaluate their level of happiness with the following question: "Taking all things together, how happy would you say you are?" Responses were coded from 0 to 10, where 0 was extremely unhappy and 10 extremely happy. Spain has participated in all waves of the ESS, and the Spanish sample is representative of the entire population.[3] As no standard criteria on happiness are available on international basis, we used three levels of happiness to test for remarkable differences in our results according to the cutoff considered[4]: (1) Moderately happiness, those who rated their happiness at the 7th decile and above; (2) Reasonably happy, at the 8th decile or more, and (3) Strongly happy, at the 9th decile which comprised only those who rated their happiness as nine or ten. 76.2 percent of our sample were comprised between the 7th and the 10th decile, 57.7 percent between 8 and 10, and 28.8 percent were above the 9th decile.

In the ESS, we also used ISCO-08 to estimate happiness prevalence according to main occupation. In this survey, all respondents were asked which was their main occupation, which referred to either their current or past main occupational position for those who were retired or unemployed at the time of the survey. The original variable in the ESS questionnaire contained 10 groups,[5] which were later reduced to three main positions: Managerial occupations and professionals (groups 1 to 3), Intermediate Jobs (groups 4 to 7), and Routine Jobs (group 8 and 9).[6] The ESS size sample for Spain in 2016 was 1958 respondents, and we computed happiness prevalence for those aged 50 and over accounting for 970 observations, which was later reduced to 881 after excluding those individuals who never had a paid job.

Happiness prevalence obtained from the ESS were lately use to compute abridged life tables by main occupational position using mortality information contained in the CWSL for 5,568,433 individuals (3,327,225 men and 2,2241,218 women) aged 50 and over. We used the three levels of happiness described: *Moderately, Reasonably and Strongly happy*.

3.2. Method

We estimated LE and HappyLE by main occupational position for men and women in 2016 using population data from the CWLS. Age was top-coded in a big group at 80-plus years, and our abridged life tables closed up to this age. Happiness prevalence and their standard errors by age, sex, and occupation were obtained from the ESS. We used a five-year age group, except for the final open-ended group of 80-plus.

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[2] ISCO-08 was developed by the International Labor Organization (ILO).

[3] The ESS sample is representative of all persons aged 15 and over residents within private households in each country participating in the survey. The dataset contains design weights to adjust for different selection probabilities, and post-stratification weights to adjust for sampling error and non-response bias as well as different selection probabilities. In addition, population size weights were used in combination with the previous ones to aggregate groups.

[4] In initial phases of the study, we dichotomized the variable happiness to calculate our results. We used the happiness distribution to justify our choice, and set the cut-off at the 7th decile. Those who reported a happiness level below 7 were considered unhappy, and values 8–10 were classified as happy. However, we used other cut-offs, at the 8th and 9th decile, in order to test the robustness of our results. The observed patterns of inequality remained similar, regardless of the cut-off, and we identified the same advantaged and disadvantaged groups. However, we opted for showing the results for the three levels because the proportion of time lived happily and unhappily varied considerably depending on the specific choice.

[5] 1. Legislators, senior officials and managers. 2. Professionals. 3. Technicians and associate professionals. 4. Office clerks. 5. Service workers, shops and market sales workers. 6. Skilled agricultural and fishery workers. 7. Craft and related trades workers. 8. Plant and machine operators and assemblers. 9. Elementary occupations. 10. Armed forces.

[6] We excluded groups 10 (forced army) since it is very heterogeneous, with a diversity of occupations, and therefore it was difficult to be classified in our three groups.

We used *Sullivan*'s method ([Jagger et al., 2014](); [Sullivan, 1971]()) to estimate life expectancy in happy and unhappy states, for the three levels of happiness previously defined. This method is prevalence-based and we broke down the five-year age group into years lived with and without happiness. We constructed occupational life tables using CWLS, and combined happiness prevalence from ESS with life-table from CWLS to estimate HappyLE by type of occupation. Expected years lived with happiness at age 'x' were computed by summing the years lived with happiness from age x-plus. We computed HappyLE and unhappy LE for each occupational position and the three levels of happiness.

4. Results

[Table 1]() displays the distribution of occupational positions in our main study sample.[7] The large majority of men aged from 50 to 64 were in intermediate (45.5%) and routine (39%) positions, and only 15.4 percent had a managerial or professional job. A similar distribution was found among older workers over 65 years old. Among women, only a few of them at the ages of 50–64 (6.4%), and at 65 years old and over (1.4%) were in managerial positions. The vast majority of women were found in the two other groups.

[Fig. 1]() shows the prevalence of happiness according to main occupational position in five-year groups for men and women. We calculated the smoothed age-specific prevalence of happiness to show the change in the three occupational groups. Happiness is displayed at the 9th decile (Strongly happy), the 8th (Reasonably), and at the 7th (Moderately). Regarding strongly happy, around 40 percent of men in intermediate positions reported being happy at all ages. Among women, 30 percent of those in managerial positions reported being strongly happy, while only 15 percent in intermediate categories were strongly happy. However, this was only for women aged between 50 and 64. After 65 years old, strongly happy women were those women in intermediate positions, with a peak around 35 percent between the ages of 75–79.

When we measure happiness at the 8th decile, on average between 60 and 70 percent of men reported being reasonably happy, and this was between 50 and 65 percent among women. Managerial men were the happiest until the age of 75. After that age, more men in intermediate positions reported being reasonably happy than the two other occupational groups. A larger proportion of women in intermediate positions also reported being reasonably happy compared to the other occupational groups.

Finally, when considering moderate levels of happiness, at the 7th decile, the majority of men and women at all ages reported being happy. For both sexes, those in managerial and intermediate positions showed an advantage over routine workers.

LE by occupation and gender is displayed in [Table 2](). We found remarkable differences when stratifying LE according to main occupational position. Among males, there was a notable gap in LE between those occupational positions at the top and those at the bottom of the

employment scale at all ages. Those in managerial positions recorded a LE of 35.3 years at the age of 50, whereas men in routine categories recorded 24.8 years of LE. This was a 10-year life difference. This gap remained stable at the age of 60, and slightly decreased at the age of 70 (8.7-year gap). Men in intermediate positions were expected to live 3 years less than managerial workers at all ages, and 7 years more than those in routine position at 50 and 60 years old. This decreased to 6 years after the age of 70.

We observed a similar pattern among women, and those in managerial positions recorded the highest LE. The gap between positions at the top and at the bottom accounted for 11 years until the age of 70. Then, it increased up to 12 years of difference. Women in intermediate positions were expected to live between 3 and 4 years less than those at the top of the employment scale, and 8 years more than those at the bottom. Routine female workers recorded the lowest LE at all ages.

Finally, our interest lies in examining the quality of life using happiness as a subjective indicator of wellbeing among different occupational groups. [Figs. 2 and 3]() show LE estimates decomposed into the number of years lived in happy states (HappyLE) by main occupational position according to three studied levels of happiness. [Fig. 2]() shows results for men at the ages of 50, 60, and 70, and [Fig. 3]() displays the estimates for women. To ease the comparison, we will only report the percentage of total LE lived happily by occupational position, displayed at the top of each bar in the figures.

At all ages, men in intermediate positions were the ones who could expect to live a higher percentage of their remaining life being happy, regardless of the happiness decile. For example, at 50 years old, men working in intermediate positions recorded 42.5 percent of their remaining life to be strongly happy, 66.5 percent reasonably happy and 89.7 percent moderately happy. These percentages were 32.2, 64.5, and 84.2 for managerial positions, and 34.9, 60.2, and 76.5 percent for male routine workers. When measuring happiness at the 9th decile, managerial men at 50 years old recoded the lowest percentage of life being strongly happy. These patterns were similar at older ages. In addition, men in intermediate positions experienced an increase in the percentage of life being happy between the ages of 50 and 60. This happened for the three deciles of happiness. Finally, at 70 years old, those who had mainly worked in routine jobs increased their percentage of HappyLE when considering reasonable and moderate happiness, but this percentage decreased when considering strong happiness. On the other hand, those who had mainly worked in managerial positions experienced a decline in the percentage of the remaining life being reasonably and moderately happy, and it slightly increased (0.3%) when measuring happiness at the 9th decile.

Among women, the percentages of HappyLE were similar for managerial and intermediate positions when measuring happiness at the 7th decile. At all ages, these women could expect to live more than 80 percent of their lives moderately happy. This was remarkably lower for routine jobs. If we turn to reasonably happy, women in intermediate position were advantaged at all ages. However, if we considered strong happiness, women in managerial positions were the ones who recorded a higher percentage of their remaining life being happy. At the 9th decile, women in managerial positions were also the only ones for whom the percentage of HappyLE increased with age. Women in intermediate positions, on the other hand, experienced an increase when measuring happiness at the 8th and 7th decile. Finally, women in routine jobs were the most disadvantaged group regardless of the happiness decile, but especially when considering moderate happiness. In this case, the percentage of HappyLE was around 16 points percent lower than the other two positions at the age of 50, and the gap increased with age. At 70 years old, women who had mainly worked in routine jobs could expect to live 57.1 percent of their life moderately happy, while this was 83.5 and 92.1 percent for those who had worked in managerial and intermediate positions respectively.

Finally, [Table 3]() reports the men-women difference in the percentage of HappyLE according to occupation and happiness decile. Although this
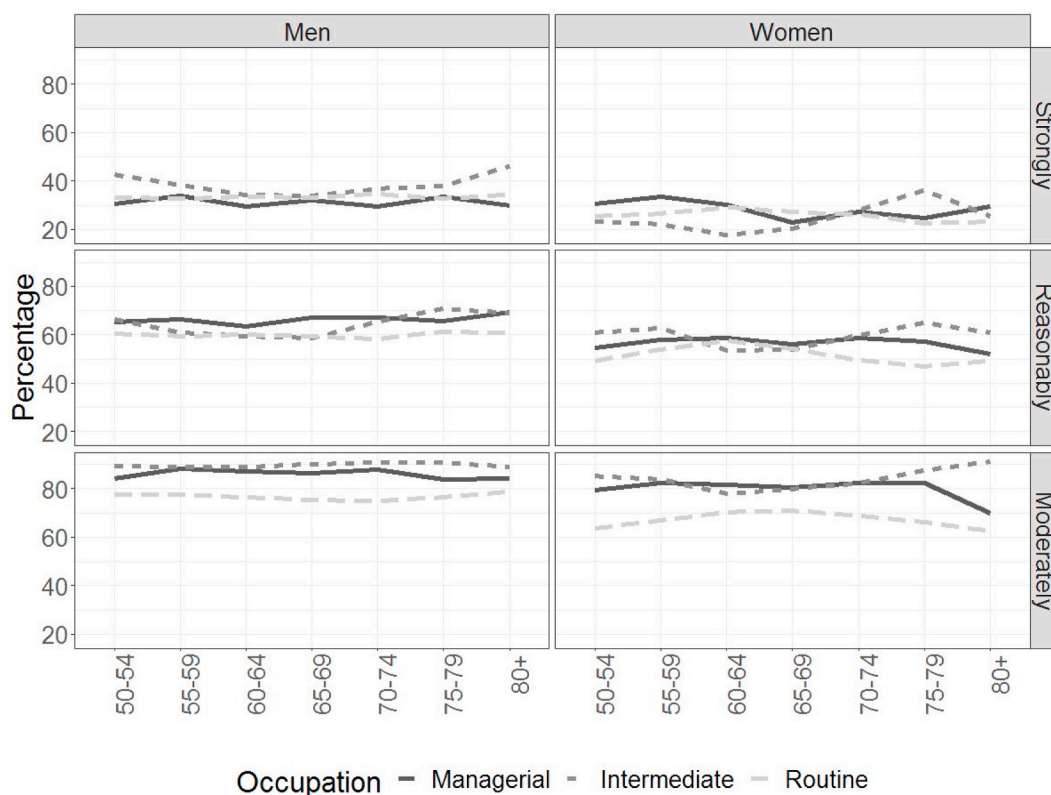
Table 1
Distribution of occupational positions by age and gender in the main study sample (%).

Occupation	Age 50-64		Age 65 and over	
	Men	Women	Men	Women
Managerial	15.41	6.36	17.71	1.37
Intermediate	45.54	50.29	39.34	42.17
Routine	39.05	43.35	42.95	56.45
Total	100	100	100	100

Source: 2016 Continuous Working Life Sample (CWSL)

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[7] A table displaying the distribution of occupational position in the ESS can be found in the Supplementary materials.

Fig. 1. Smoothed age-specific prevalence of happiness by gender and occupation, Spain 2016
Source: European Social Survey. 2016 Spanish sample.

Table 2
Life expectancy by occupational position, age and gender, Spain 2016.

	Men			Women		
	Managerial	*Intermediate*	*Routine*	*Managerial*	*Intermediate*	*Routine*
Age 50	35.3	32.0	24.8	39.7	36.6	28.5
Age 60	25.3	22.1	15.0	29.8	26.7	18.6
Age 70	15.7	13.0	7.0	21.3	17.2	8.7

Source: 2016 Continuous Working Life Sample (CWSL).

information was also available in Figs. 2 and 3, the table eases the interpretation of the results.

When measuring happiness at the 9th decile, managerial women had an advantage over men that increased with age. However, in the highest occupational position, the proportion of females was very small (see Table 1) at all ages, but particularly after 65 years old. Hence, these women were a very selective group. For the other two occupational positions, where most of our sample is found, men had an advantage in the percentage of the remaining life being strongly happy. Particularly, men at the age of 70 who had mainly worked in intermediate positions could expect to live strongly happy 32.8 percent more than women in the same group.

If we consider happiness at the 8th decile, men were advantaged over women regardless of the occupational position. At the 7th decile, women seemed to have a slight advantage when working in managerial positions, however, as we already mentioned, these women accounted for less than 7 percent of our sample. Females in routine positions were expected to live a lower percentage of their life being happy than their male counterparts either when considering reasonably or moderately happy. These women were the ones who performed worse in all our measures, and they accounted for half of our female sample, showing the magnitude of the problem. Women in lower occupational positions lived shorter and recorded unhappier levels than the rest of the groups studied

here. They were the ones at a greater disadvantage, not only compared to females in the other two groups, but also compared to men in all groups.

5. Conclusion and discussion

This paper aimed to study occupational differences in longevity and wellbeing among older populations. To do so, we studied inequalities in LE and HappyLE by main occupational position and gender. For Spain, this is the first work estimating HappyLE according to occupation.

Regarding the gender gap in LE, our results highlighted that Spanish women could expect to live longer LE than men, regardless of the occupational position. This goes in line with past findings. Head et al. (2019) studied healthy LE by occupation in the UK, France, and Finland, and Cambois et al. (2011) estimated it for France. Both studies found that women had higher LE than men, and that those in higher occupational groups had the highest LE. In addition, we also found larger differences between occupational groups among women than men. The gap between managerial and routine jobs was 10 years for men and 11 years for women at the age of 50. This gap decreased after retirement among men but increased among women. At the age of 70, the gap was 8.7 years for men and 12.6 for women. This interesting finding can be explained by the demographic composition of the cohorts studied, and gender
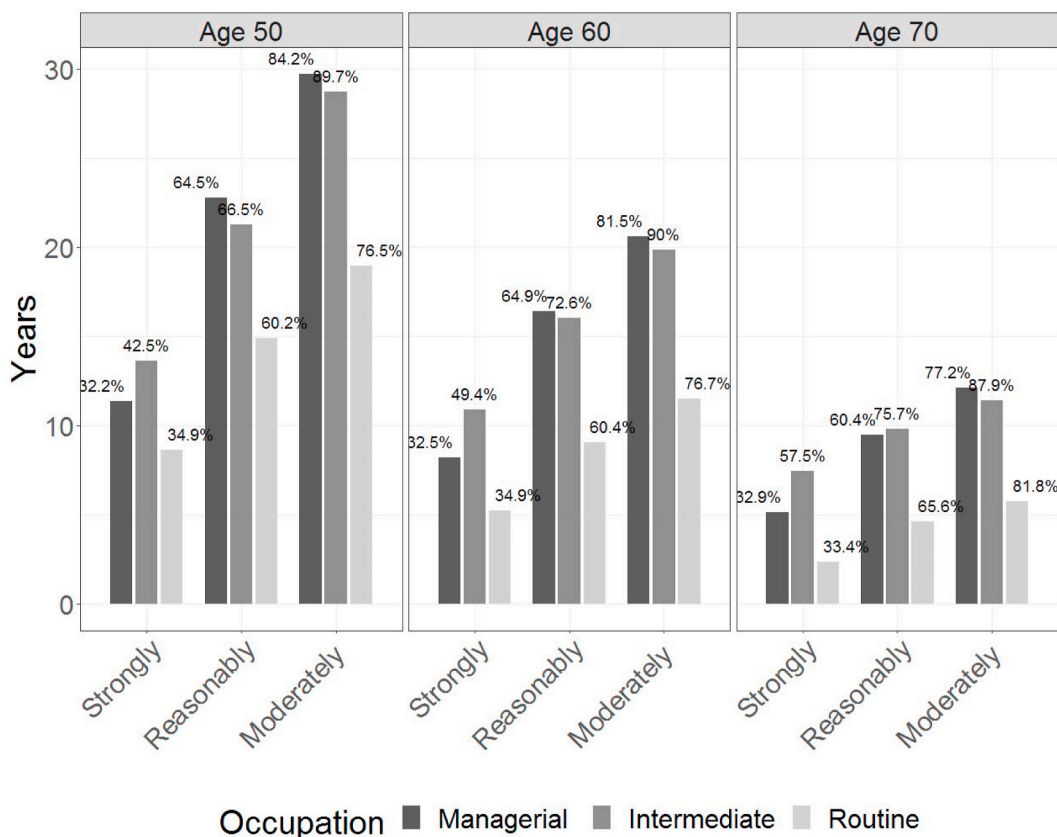
Fig. 2. Years of Life Expectancy and Proportion of total Life Expectancy (%) spent in happy state according to occupational position, age, gender and happiness level. among **MEN Source:** 2016 CWSL and ESS, 2016 Spanish Sample.

inequalities in the labor market. First, female generations in Spain aged 50-plus had lower levels of education compared to men and were mostly employed in routine jobs. Women in intermediate and managerial jobs were fewer and more selected since they had probably enjoyed higher levels of wellbeing during their working life, which translated into a longer LE after retirement.

Regarding years of happiness, they varied depending on the decile at which we measure it. Hence, the proportion of time gained in happy states was sensitive to the specific measure used. However, regardless of the specific cutoff, the most disadvantaged groups in terms of HappyLE were women in routine jobs. In addition, the difference in the percentage of years lived happily between females in routine positions compared to the other groups increased with age. Contrary to Xiang et al. (2016), who found that those in higher occupational position reported higher levels of happiness, we observed that those in intermediate positions could expect to live a larger proportion of life in a happy state compared to those in managerial positions. Therefore, being in managerial positions did not necessarily translate into a higher percentage of life in a happy state and this finding could be explained by the health-specific outcomes of highly-skilled occupations such as long working hours or stress associated with supervisory roles. This result complements previous research in Spain that explored differences in subjective well-being according to education (Solé-Auró et al., 2020; Solé-Auró & Lozano, 2019). These studies have found that the highly educated groups consistently recorded a higher percentage of their lives feeling satisfied and happy. Nonetheless, past research has shown that those in lower occupational position are more vulnerable to stress and burnout (Tsutsumi et al., 2011), which goes in line with our findings because we found that, overall, those in routine jobs were expected to live fewer years in a happy state. This result may be also linked to the *Healthy Worker Effect* where workers usually exhibit lower overall death rates than the general population because those with chronic illnesses or

disabilities are not into employment (Shah, 2009). In our results, we could argue that those in managerial positions were the ones with better health, which had allowed them to access supervising roles in the first place. This could also explain the differences we found between occupational categories, assuming the idea that there is a selection effect of those with poor health into lower occupational positions.

Finally, we did not observe relevant variations of HappyLE with age. As expected, happiness seemed to remain stable across the age range we considered. However, we observed remarkable differences by gender. Women reported lower levels of happiness regardless of the decile measured. It is worth mentioning that not only occupation is associated with happiness. Social relationships, family life, and marriage play an important role (Diener & Diener McGavran, 2008). Nonetheless, our findings showed that even though women were expected to live longer lives than men, these gains in life expectancy were not translated into a higher percentage of life in a happy state, regardless of the level of happiness used. Causes of unhappiness among women by occupational category may include work-family conflict and caring responsibilities. Before retiring, women tend to be responsible for the bulk of domestic work at home, experiencing a double shift (Baxter & Tai, 2016), and once in retirement, past studies showed that an important number of women keep providing care for grandchildren or their own partners (Lumsdaine & Vermeer, 2015) which perpetuates sex-roles in later life. Unfortunately, we were not able to test this relationship with our data.

In addition, our study has some limitations. The CWLS do not gather information on those who did not have a formal relationship with the Social Security System, and therefore we cannot measure workers in the informal economy, or those who never worked or received any type of contributory pension. In addition, civil servants are also not included, and this group (15.3% of the total active population) may be very advantaged in their HappyLE because, in general, public employment offers better working conditions, family-friendly working environments,
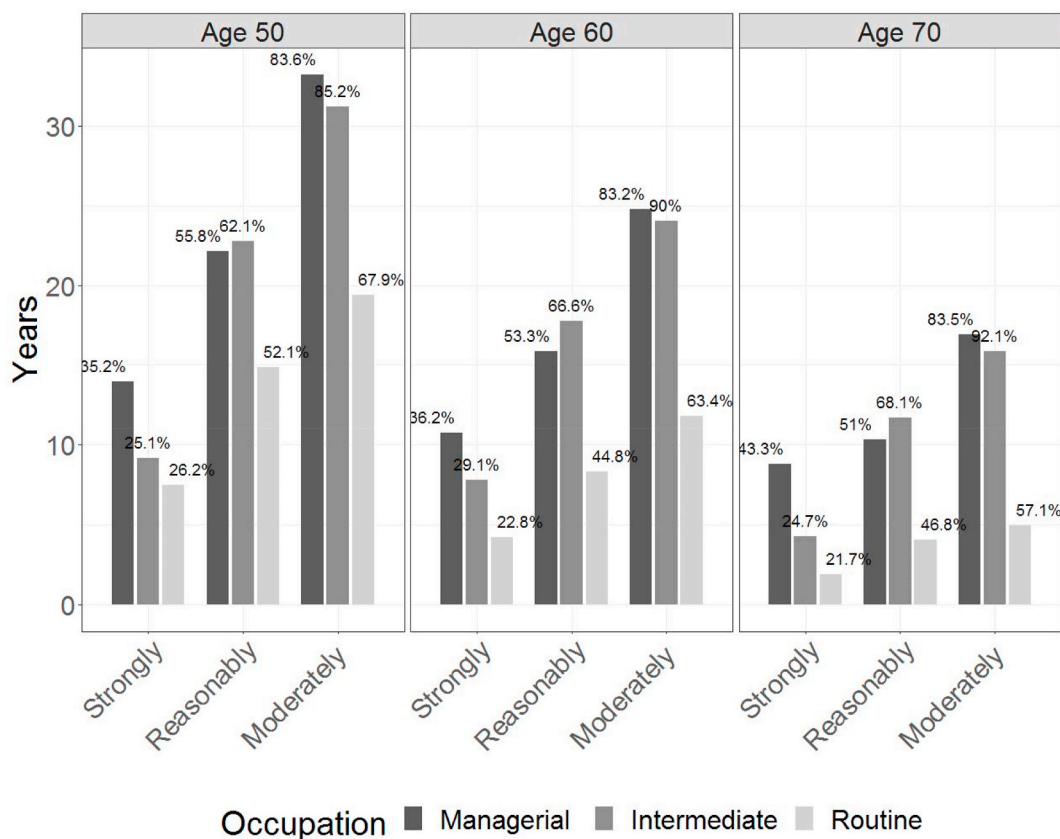
Fig. 3. Years of Life Expectancy and Proportion of total Life Expectancy (%) spent in happy state according to occupational position, age, gender and happiness level among **WOMEN Source:** 2016 CWSL and ESS, 2016 Spanish Sample.

Table 3

Men-Women difference in the Proportion of total life Expectancy spent happy according to happiness level and occupational position, Spain 2016 (%).

Age	Strongly Happy			Reasonably Happy			Moderately Happy		
	Manag	Interm.	Routine	Manag.	Interm.	Routine	Manag.	Interm.	Routine
50	-2.9	17.5	8.7	8.8	4.4	8.2	0.6	4.5	8.6
60	-3.6	20.2	12.2	11.7	6.1	15.6	-1.7	0.0	13.4
70	-10.4	32.8	11.8	9.4	7.6	18.8	-6.4	-4.2	24.7

Note: "Manag." refers to managerial occupation position; "Interm." refers to intermediate occupation position.

Source: 2016 Continuous Working Life Sample (CWSL) and European Social Survey, 2016 Spanish Sample

and more secure job contracts. Moreover, the ESS is a household survey that may have excluded more people of low socioeconomic status with low levels of wellbeing, thereby artificially lowering the prevalence of those who report low happiness. Moreover, the happiness prevalence among older workers in Spain, calculated using the ESS, has a limited number of observations (881), which is an additional limitation to our results. Future research with higher sample sizes is needed to better estimate HappyLE. Nonetheless, our results are consistent with previous literature, pointing at the double disadvantage in terms of LE and Healthy LE for the lower occupation groups (Head et al., 2019) and lower levels of well-being among women in Spain (Solé & Lozano, 2019).

Finally, even though our data is limited to the Spanish case, several conclusions can be drawn beyond this particular context. First, health disadvantage of routine and manual occupations found in the past (i.e. Cambois et al., 2011; Head et al., 2019) remains when studying happiness. These workers have a lower life expectancy and they will live fewer years in happiness as well. Hence, sources of socioeconomic disadvantages seem to pile up. Second, women consistently live longer lives than men and they seem to be less happy. Causes of unhappiness among

women should be further explored, and we suggest that work-life imbalances and caring responsibilities need to be addressed when studying inequalities in longevity. Third, based on our findings, it could be argued that extending the statutory retirement age being the age of 65 would be especially detrimental for women's health and happiness in lower occupational position. However, past studies have found mixed results on the effects of retirement on health. Some found improvements in health after exiting the labor market (Eibich, 2015; Insler, 2015), while others found that retirement increases the risk of certain diseases, such as cardiovascular illnesses (Behncke, 2012), or affects mental health (Heller-Sahlgren, 2012).

Our findings suggest that those at higher occupational position had longer and happier lives, but those at the bottom suffered from a double disadvantage living shorter and unhappier lives. Even tough, there is a large heterogeneity that can explain the relationship between retirement and wellbeing (Amorim & França, 2019), we argue that, in the light of our findings, postponing the average age at retirement for all occupational groups, without considering differences in LE, would be detrimental to those who are already disadvantaged. Hence, increases in the length of working lives should be accompanied by the growth of

better-quality jobs, which may, in turn, increase people's level of happiness in the labor market and their wellbeing after retirement.

Acknowledgments

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2021.100735.

Author contributions

All authors contributed to the study conception and design. Material preparation, data analysis, interpretation of the results, and writing of the manuscript was performed by Mariona Lozano.. **Authors declare that they have no conflict of interest.**

Author statement

We the undersigned declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We understand that the Corresponding Author is the sole contact for the Editorial process. She is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs Signed by all authors as follows:

Ethical Statement

Hereby, I Mariona Lozano consciously assure that for the manuscript "Happiness and life expectancy by main occupational position among older workers: who will live long and happy?" the following is fulfilled:

1) This material is the authors' own original work, which has not been previously published elsewhere.
2) The paper is not currently being considered for publication elsewhere.
3) The paper reflects the authors' own research and analysis in a truthful and complete manner.
4) The paper properly credits the meaningful contributions of co-authors and co-researchers.
5) The results are appropriately placed in the context of prior and existing research.
6) All sources used are properly disclosed.
7) All authors have been personally and actively involved in substantial work leading to the paper, and will take public responsibility for its content.

I agree with the above statements and declare that this submission follows the policies outlined in the Guide for Authors and in the Ethical Statement.

Date: October 19, 2020.

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