PEER REVIEW HISTORY

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ARTICLE DETAILS

| TITLE (PROVISIONAL) | Has the share of the working life expectancy that is spent receiving a partial or full disability pension changed in Finland over the period 2005–2018? |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AUTHORS             | Leinonen, Taina; Viikari-Juntura, Eira; Solovieva, Svetlana |

VERSION 1 – REVIEW

| REVIEWER | Schuring, Merel |
|----------|----------------|
|          | Erasmus MC, Public Health |
| REVIEW RETURNED | 01-Mar-2022 |

| GENERAL COMMENTS | This study uses large nationally representative register data to provide insight on trends in full-time equivalent (FTE) working life expectancy among persons receiving full disability pension, partial disability pension or no disability pension. The study is original, well-performed and the results of the study are relevant, clearly presented in the tables and described well in the manuscript. I have no suggestions to improve the paper and I recommmend this paper to be published in BMJ Open. |
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| REVIEWER | Burdorff, Alex |
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|          | Erasmus MC, Department of Public Health |
| REVIEW RETURNED | 14-Jun-2022 |

| GENERAL COMMENTS | 1. The first sentence of the objective is a bit difficult to grasp, as two different concepts are introduced (work participation and career length). Also, the word contribution is a bit odd, I would argue for a term like proportion of WLE while receiving benefits... 2. I would advise to define disability, esp full disability pension, in the abstract, as it is not common that a full disability pension contributes to working life expectancy. Also, the phrase pension can easily be misunderstood as in many countries a pensioner is someone in retirement. 3. Abstract, result: the first sentence reads a bit odd: this is the comparison between 2005 and 2018? 4. Introduction: the last sentence of the second para contains a crucial statement, that needs more detail. What is allowed for people with full disability benefit? What is defined as full? Is e.g. 50% worktime possible? Is the income from work taxed (differently)? 5. The order of the research questions does not seem the best, I would expect first a comparison on FTE-WLE of those without disability benefit and those with partial and full benefit, then how much FTE-WLE is realised during the period of receiving benefits, and then the trends..., 6. Methods: I think the term cohort in conjunction with the Sullivan |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
Methods is a bit misleading, as per definition the Sullivan method is a period table. Please explain why the period 2005-2007 etc are interpreted as cohorts?

7. Methods & Results: What is this group no pension? Does it include no income, early retirement, unemployment? If not, then I would suggest to give them a different label. If yes, then the cut-off value of 60% may be troublesome, and one may also question whether the no pension group is the best comparison group. Please provide a bit more detail

8. Results/discussion: I do not grasp the conclusion that FTE-WLE has increased more among those with a disability pension than the reference group. People may shift across these three states, and in fact many full-time disability people have changed to partial and even no pension. Thus, it is not about persons, but about periods that persons spend in particular states. Hence, a correct interpretation of table 2 would be that overall WLE in the Finnish population has increased (by 1.42 yrs among men), of which the majority (> 87% of the men in 2005) is due to working longer without a disability pension (roughly 1 yr), but that the periods for persons in partial benefits have increased more (but among those those in periods with full benefits, there is hardly any trend)...

**VERSION 1 – AUTHOR RESPONSE**

Reviewer: 1  
Dr. Merel Schuring, Erasmus MC

Comments to the Author:  
This study uses large nationally representative register data to provide insight on trends in full-time equivalent (FTE) working life expectancy among persons receiving full disability pension, partial disability pension or no disability pension. The study is original, well-performed and the results of the study are relevant, clearly presented in the tables and described well in the manuscript. I have no suggestions to improve the paper and I recommend this paper to be published in BMJ Open.

**Authors’ response:** Thank you for this positive feedback.

Reviewer: 2  
Prof. Alex Burdorf, Erasmus MC

Comments to the Author:  
1. The first sentence of the objective is a bit difficult to grasp, as two different concepts are introduced (work participation and career length). Also, the word contribution is a bit odd, I would argue for a term like proportion of WLE while receiving benefits...

**Authors’ response:** We appreciate this comment. We have revised the expression using the formulation “share of the FTE-WLE that is spent receiving a disability pension” here and other places of the manuscript, which we believe made the text more easily readable.

2. I would advise to define disability, esp full disability pension, in the abstract, as it is not common that a full disability pension contributes to working life expectancy. Also, the phrase pension can easily be misunderstood as in many countries a pensioner is someone in retirement.

**Authors’ response:** Thank you for this comment. We included only permanent pensions, so the benefits concerned are for those who are in fact retired. Combining work and pension receipt is nevertheless increasing and encouraged as a way of extending the working careers. We added to the abstract’s objectives that in Finland certain amounts of work are
allowed while receiving a full or partial disability pension to make this issue clearer. The Finnish system is described with more detail in the introduction.

3. Abstract, result: the first sentence reads a bit odd: this is the comparison between 2005 and 2018?

Authors’ response: Yes, we added to the abstract’s results that the comparison was between 2005 and 2018.

4. Introduction: the last sentence of the second para contains a crucial statement, that needs more detail. What is allowed for people with full disability benefit? What is defined as full? Is e.g. 50% worktime possible? Is the income from work taxed (differently) ?

Authors’ response: We did not refer (only) to the Finnish system here, but to full disability pensions more generally. We have revised this previously unclear sentence (p. 4): “Among full disability pensioners, i.e. those with the maximum grade of work disability that can be assigned in a country’s pension system, some work participation may still be allowed, work incentives provided within the system playing an important role [14, 15].” We describe the Finnish system later in the introduction (p. 5): “Promoting work participation among people with partial work ability – enhancing the possibilities to combine work and disability pension receipt being one way of doing so – has been an important societal goal in Finland [26]. Currently, partial disability pensioners are allowed to earn up to 60% and full disability pensioners up to 40% of their past earnings, and among the former work participation is very common [15].”

5. The order of the research questions does not seem the best, I would expect first a comparison on FTE-WLE of those without disability benefit and those with partial and full benefit, then how much FTE-WLE is realised during the period of receiving benefits, and then the trends. .

Authors’ response: We have revised the research questions according to the suggested ordering (p. 5-6).

6. Methods: I think the term cohort in conjunction with the Sullivan methods is a bit misleading, as per definition the Sullivan method is a period table. Please explain why the period 2005-2007 etc are interpreted as cohorts?

Authors’ response: We understand that this was a confusing choice of terminology. We replaced the word “cohort” with “sample” clarifying that a sample derived from a particular year (e.g. 2004) was used for the calculations of different periods (in the example case 2005, 2006 and 2007) (p. 6).

7. Methods & Results: What is this group no pension? Does it include no income, early retirement, unemployment? If not, then I would suggest to give them a different label. If yes, then the cut-off value of 60% may be troublesome, and one may also question whether the no pension group is the best comparison group. Please provide a bit more detail

Authors’ response: We were previously unclear with describing this group and have now provided examples in the description (p. 7): “3) no disability pension (everyone who did not receive a disability pension, e.g. employed, unemployed, early retired or otherwise outside the labour force at the turn of the study year)”. We believe this to be an appropriate comparison group, as this way the groups together sum up to the total population, which is necessary especially in the calculations of Table 5. Those who were e.g. unemployed or outside the labour force at the turn of the study year could have returned to work later during the year. We examined work income only in relation to the months that the people were actually employed during the year. Moreover, even though we considered over 60% as full work contribution, any value below this was used to determine that specific value of work contribution (e.g. 25%), thereby capturing well partial work of e.g. early retirees.

8. Results/discussion: I do not grasp the conclusion that FTE-WLE has increased more among those with a disability pension than the reference group. People may shift across these three states, and in fact many fulltime disability people have changed to partial and even no pension. Thus, it is not about
persons, but about periods that persons spend in particular states. Hence, a correct interpretation of table 2 would be that overall WLE in the Finnish population has increased (by 1.42 yrs among men), of which the majority (> 87% of the men in 2005) is due to working longer without a disability pension (roughly 1 yr), but that the periods for persons in partial benefits have increased more (but among those who have period benefits with full benefits, there is hardly any trend)... Authors’ response: Thank you for this comment. We understand this concern, which is why we did not include temporary disability pensioners in the investigated group of pensioners. People who are granted a permanent disability pension, however, would not be expected to return to the group of non-pensioners. We have now clarified this in the methods (p. 7): “Permanent disability pensioners are retirees who are unlikely to transition back to a non-retired state.”

Table 2 shows the FTE-WLE calculations separately for the different disability pension groups reflecting the remaining working career of a hypothetical 45-year old cohort with a particular disability pension status that would remain the same until age 63. We have now clarified in the table heading that these are stratified analyses. We also address the interpretation of the calculations in the discussion (p. 20): “It should, however, be noted that the findings stratified by disability pension status reflect the remaining working career of a hypothetical 45-year-old cohort who will experience the same age-specific work participation and mortality rates that occurred for this group in the period in question and whose disability pension status at each year of age will remain the same until turning 63. Such a hypothetical working career would not have been realistic for temporary disability pensioners. The analyses were therefore restricted to permanent disability pensioners, the conclusions only applying to this group.” In table 2 and the text in the results and discussion, we address both absolute and proportional increases in the FTE-WLE, the latter being particularly large among disability pensioners. We have, however, now specified in further places of the discussion (p. 16) and conclusions (p. 20) that we talk about a “relative” increase.

The calculations in Table 5 show the share of the FTE-WLE that is spent with or without receiving a permanent full or partial disability pension, therefore reflecting time spent in particular disability pension states. We revised also the heading of table 5 based on comment 1.

**VERSION 2 – REVIEW**

| REVIEWER         | Burdorf, Alex  |
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| Erasmus MC, Department of Public Health |
| REVIEW RETURNED  | 24-Jun-2022    |
| GENERAL COMMENTS | i have no more issues to be addressed, the response to my remarks was very appropriate |