

Final Report

WORKLONG

Table of contents

1	General Information.....	3
1.1	Acronym of the collaborative project	3
1.2	Full title of the project	3
1.3	Project duration.....	3
1.4	Project coordinator.....	3
1.5	Project Partners	3
1.6	Project budget.....	3
2	Plain English Abstract	4
3	Achievements.....	5
3.1	Summary of Work Packages	5
3.2	Achievements	5
3.3	Deviations from the original work plan	8
4	Key Findings and Recommendations	9
5	Milestones	11
6	Deliverables.....	12
7	Outputs	13
7.1	Publication list.....	13
7.2	Presentations at (scientific) conferences and symposia, including JPI MYBL activities	14
7.3	Communications, public engagement activities and knowledge exchange events.....	15
8	Impact.....	16
8.1	Scientific impact.....	16
8.2	Societal impact	16
9	Data Management and Data Sharing.....	18
10	Collaboration.....	19
10.1	Collaboration within the project	19
10.2	Collaboration with Stakeholders	19
10.3	Collaboration with Patients and the Public	19
10.4	Collaboration with other JPI MYBL projects	19
10.5	Collaboration with other European/national projects.....	19
10.6	Added value of the International Consortium	19
11	What can we do for you?.....	20
11.1	What can we do for you?.....	20
11.2	Feedback for JPI MYBL.....	20

1 General Information

1.1 Acronym of the collaborative project

WORKLONG

1.2 Full title of the project

Impact of interventions and policies on prolonging working life in good health: an international study

1.3 Project duration

Planned start date	1-3-2016
Actual start date (of earliest starting national partner)	1-3-2016
Planned end date	1-3-2019
Actual end date (of latest ending national partner)	1-8-2019

1.4 Project coordinator

Name	Prof. dr. A. Burdorf
Institution	Erasmus MC Rotterdam
Country	The Netherlands
Email	a.burdorf@erasmusmc.nl
Funding Organisation	ZonMw
Duration project participation	1/3/2016 – 1/7/2019

1.5 Project Partners

Partner 2

Name of Principal Investigator	Prof. Dr B. Järholm
Institution	Umeå University
Country	Sweden
Email	bengt.jarholm@umu.se
Funding Organisation	FORTE
Duration project participation	1/3/2016 – 1/7/2019

Partner 3

Name of Principal Investigator	Prof. Dr. M. Avendano
Institution	King's College London
Country	United Kingdom
Email	m.avendano-pabon@lse.ac.uk
Funding Organisation	ESRC
Duration project participation	1/3/2016 – 1/8/2019

1.6 Project budget

Please add the budget of the overall project (total budget) and the budget per partner in Euros.

	Funds awarded	Actual spend
Total Budget	€639,254	€643,897

	Funds awarded	Actual spend
Budget Partner 1	€196,363	€204,650
Budget Partner 2	€187,705	€188,463 (SEK1,713,304; 1SEK=0.11€)
Budget Partner 3	€255,186 (£193,357; 1£=1.3€)	€250,784 (£192,911; 1£=1.3€)

2 Plain English Abstract

WORKLONG examined the bidirectional relation between employment and health, and the health impact of policy changes on exit from paid employment. The impact of policy changes on health and participation in paid employment is studied, with specific attention for vulnerable groups. The study shows that vulnerable groups, such as lower educated workers, those with chronic diseases, and workers with unfavourable working conditions are less likely to maintain paid employment. They are more likely to become unemployed or to receive disability benefits. In addition, they are more susceptible for a negative impact of policy changes on sustainable employability and health. In the WORKLONG study we found for example that the UK pension reform increased depressive symptoms among women who's retirement age was postponed, in particular among women in lower occupations and with demanding jobs.

WORKLONG had - amongst others - the following results:

1. Lower-educated workers have higher risks of involuntary exit from paid employment than those with higher education, mainly due to a higher prevalence of chronic diseases.
2. Reduced employment protection increases early retirement in workers with permanent contracts and increases unemployment, early retirement, and disability benefit in workers with temporary contracts. This is slightly more the case among lower educated workers and workers with poor health.
3. The UK pension reform that increased women's state pension increased depressive symptoms among women who's retirement age was postponed, in particular among women in lower occupations and with demanding jobs.
4. Workers in physically demanding jobs (construction) that changed industry/job at ages around 55 years had lower likelihood of disability benefits after age 60.

3 Achievements

Please complete the tables below which are intended to capture details of the achievements of the project as a whole, as well as achievements of the individual work packages. There is also space to highlight where you have had to deviate from your original work plans and why. This information will help us in anticipating problems that may be experienced by award holders in future joint calls. This section is for internal use and the information you provide will not be published.

3.1 Summary of Work Packages

WP	Title
WP 1	<p>The impact of legislation and policy measures on pathways to retirement among workers with health problems</p> <p>Objectives: To determine the impact of legislation and policy measures that have increased retirement ages across European countries in the past two decades on different pathways to retirement among workers with pre-existing health problems.</p>
WP2	<p>Influence of workplace and lifestyle interventions and policies on employment trajectories</p> <p>Objectives: To estimate the long-term impact of workplace and lifestyle interventions and policies to prolong employment trajectories for workers with chronic health conditions.</p>
WP3	<p>Impact of legislation and policy measures on the health of workers from different social groups before and after retirement</p> <p>Objectives: Impact of legislation and policy measures on the health of workers from different social groups before and after retirement.</p>
WP4	<p>Impact of timing of exit from labour market on morbidity and mortality</p> <p>Objectives: To examine the impact of legislation and policy measures on worker's health in different social groups before and after retirement, specifically in Swedish cohort with over 40 years follow-up.</p>
WP5	<p>Cost-effectiveness of successful policies and interventions</p> <p>Objectives: To conduct a cost-effectiveness analysis as well as a cost-benefit analysis on interventions and legislation and policy measures for a sustainable and inclusive workforce.</p>

3.2 Achievements

Achievements of the Project
<p>Please describe the achievements of the overall project. There is space to elaborate on the achievements of individual work packages separately afterwards. Please consider the main objective and aim of the call in your answer (the JPI MYBL secretariat can provide this if required). You should also explain whether the project is <i>finalised in line with</i> the work plan set out in your original application and if the project <i>achieved its expected results</i> as set out in your original work plan (max 3 pages).</p>
<p>As was stated in the call 'more years, better lives', research was needed into how different social and occupational groups are impacted by extending working life. In the WORKLONG project innovative and interdisciplinary research was performed, combining knowledge from social sciences, epidemiology and econometrics to investigate the bidirectional relation between health and employment, and the health impact of policy changes on exit from paid employment. The impact of</p>

policy changes on health and participation in paid employment is studied, with specific attention for vulnerable groups.

The project can be characterized as using state of the art analytical techniques. Econometric and policy evaluation techniques were used such as fixed effects analyses and regression discontinuity designs to get insight into the evaluation of legislation and policy measures. The combination of social sciences, epidemiology, and econometrics contributed to high-quality studies using state of the art techniques.

The project resulted in a list of publications on this topic. The main achievements will be presented separately for each per work package in the following paragraph. Overall, the WORKLONG study shows that vulnerable groups, such as lower educated workers, those with chronic diseases, and workers with unfavorable working conditions are less likely to maintain paid employment. They are more likely to become unemployed or to receive disability benefits. In addition, they are more susceptible for a negative impact of policy changes on sustainable employability and health.

Several activities were organized to disseminate the results, ranging from the worklong website, a project page on research gate, LinkedIn messages, presentations for patient groups, policy makers and a workshop for scientists at the European Public Health Conference. The results are also used in the educational programme for medical students of the Erasmus Medical Center in Rotterdam, the Netherlands.

Achievements WP 1

Please describe the achievements of work package 1 in relation to the initially planned objectives (max. 2 pages).

The impact of legislation and policy measures on pathways to retirement among workers with health problems

WP1 aimed to determine the impact of legislation and policy measures that have increased retirement ages across European countries in the past two decades on different pathways to retirement among workers with pre-existing health problems.

The following conclusions can be made based on our work in WP1:

- In 26 European countries among persons with a chronic illness, participation in paid employment was 10%-35% less within lower educated persons, and 5%-16% less within higher educated persons (Schram et al. 2019).
- In 5 European regions health-related exit from paid employment varied between 6%-21% among lower-educated workers and 3%-9% among higher-educated workers, primarily prompted by higher prevalence of poor health (Schuring et al. 2019).
- Employment protection legislation reforms aimed at flexibilization of the labour market increased early retirement among workers with permanent contracts, and increased unemployment, disability benefits, and early retirement among workers with temporary contracts. This affected lower educated workers and workers with a poor health slightly more (Schuring et al. submitted).
- Workers with one chronic disease had a higher risk to leave paid employment through disability benefits (SHR 4.60), and this risk further increased for multiple chronic diseases (SHR 9.14). As occurrence of chronic diseases was highest among low educated workers, the 7-year probabilities to leave paid employment through disability benefits were highest among low educated workers. Cardiovascular diseases, musculoskeletal, psychological and respiratory health problems were associated with disability benefits (SHRs ranging from 2.11 up to 3.33), whereas psychological health problems were also related to unemployment (SHR 1.77). (Oude Hengel et al. 2019)

Achievements WP 2

Please describe the achievements of work package 2 in relation to the initially planned objectives (max. 2 pages).

Influence of workplace and lifestyle interventions and policies on employment trajectories

WP2 aimed to estimate the long-term impact of workplace and lifestyle interventions and policies to prolong employment trajectories for workers with chronic health conditions

The following conclusions can be made based on our work in WP2:

- In the Netherlands at age 30, working life expectancy was 7.3 (men) and 9.9 (women) less among lower vs higher educated persons, with large differences in years lost due to disability benefit (men: 3.4 vs 0.8 years, women: 3.0 vs 1.4 years). (Robroek et al. 2020).
- In Finland the working life expectancy at age 50 can be extended by approx. 1 year if poor physical work factors can be eliminated (Schram et al. submitted).
- Disability benefits for mental disorders has long-term consequences for mortality, and reforms with much more stringent criteria for receiving a disability benefit has not changed this finding (Söderberg et al. 2019).
- Workers in physically demanding jobs (construction) that changed industry/job at ages around 55 years had a lower likelihood of disability benefits after age 60 (Järvholm et al, to be submitted).

Achievements WP 3

Please describe the achievements of work package 3 in relation to the initially planned objectives (max. 2 pages).

Impact of legislation and policy measures on the health of workers from different social groups before and after retirement

WP3 aimed to examine the impact of legislation and policy measures on worker's health in different social groups before and after retirement.

The following conclusions can be made based on our work in WP3:

- The UK pension reform that gradually increased the female State pension eligibility age from 60 to 66 years old since 2010 has led to a clinically and economically relevant increase in depressive symptoms among affected women, and to worsening physical health among women in a lower occupational grade. Our results suggest that these effects are driven by prolonged exposure to high-strain jobs characterised by high demands and low control (Carrino, Glaser, Avendano 2018, Harvard working paper).
- Policies prolonging older women's labour market participation through an increase in the State Pension Age cause a reduction in the amount of care they provide to dependent parents, relatives or friends. Exploiting a recent UK pension reform, we show that these effects are concentrated among women working in physically and psychologically demanding jobs. (Carrino, Nafilyan, Avendano 2019, York working paper)
- Women who transition from working into retirement experience an immediate beneficial effect on their mental health and depression. However, time spent in retirement has a detrimental effect on both mental health and depression, which offset the initial health improvement within six-years from retirement. (Sochas et al, submitted)
- The introduction of non-contributory pension scheme for poor older individuals in Colombia (not dependent on working careers or pension contributions) led to small but significant reduction in the probability of reporting poor health and being hospitalized. However, it did not have an impact on the health of women.

Achievements WP 4

Please describe the achievements of work package 4 in relation to the initially planned objectives (max. 2 pages).

Impact of timing of exit from labour market on morbidity and mortality

WP4 aimed to examine the impact of legislation and policy measures on worker's health in different social groups before and after retirement, specifically in Swedish cohort with over 40 years follow-up

The following conclusions can be made based on our work in WP4:

- Eligibility for disability pension in Sweden has dropped dramatically, influenced both by administrative processes and legislation. Disability benefits for mental disorders has long-term consequences for mortality (far beyond retirement age), and reforms with much more stringent criteria for receiving a disability benefit have not changed this finding (Söderberg et al. Scand J Public Health, 2019)

Achievements WP 5

Please describe the achievements of work package 5 in relation to the initially planned objectives (max. 2 pages).

Cost-effectiveness of successful policies and interventions

WP5 aimed to conduct a cost-effectiveness analysis as well as a cost-benefit analysis on interventions and legislation and policy measures for a sustainable and inclusive workforce.

The following conclusions can be made based on our work in WP5:

- If the effect of ill health on working careers could be eliminated among 30-66 years old, the average duration of working life would increase by 15 to 53 months (Robroek et al, 2020).
- When valuing one working year lost at 60,000€, in the 40-year lifespan of a worker one could easily spend 1,500€ on effective workplace health promotion activities.

3.3 Deviations from the original work plan

Please describe any significant deviations from the original work plan at the level of the overall project and each individual work package. Describe how any deviations differ from the original plan and give clear reason(s) for the deviation(s) or anything not achieved to date.

We deviated from the original work plan concerning WP2 and WP5. In WP2 we aimed to investigate the working life expectancy in the Netherlands, the UK and Sweden. Due to the complexity, time needed and available data, we performed these analyses on data from the Netherlands and Finland. We did estimate the impact of physical working conditions, but did not have high quality data to estimate the impact of health behaviours on working life expectancy. Concerning the deliverables, we did not develop an open source spreadsheet, since the data (owned by statistics Netherlands) were not allowed to be shared, but we published a manuscript in open access, with all the necessary scripts to calculate working life expectancy as a supplementary file. An economic model on interventions and return-on-investment was unfortunately not feasible in a detailed way, due to lack of information of effectiveness of interventions on labour force participation, as documented in a Dutch report (Knowledge synthesis 'Werk)en) is gezond' [work(ing) is healthy]. We were however able to perform a crude cost benefit analysis as mentioned in the achievements under WP5.

Practically, we deviated from the original work plan concerning the time schedule and the impact group. Concerning the time schedule, the deadline of the project was extended to July 2019. The main reason was the time lost due to waiting for data. Concerning the impact group, member were

consulted on an individual basis instead of in group meetings. During the project we decided to discuss findings bilaterally with persons from the impact group instead of meetings with the full group. A first attempt to get the impact group together did not succeed. In other projects we also experienced that members of an impact group can have different interests what might hamper the added value of the impact group as a collective. Individual contacts were sometimes very fruitful.

4 Key Findings and Recommendations

Please describe the key high-level findings of the research for each work package (max. four key findings per work package) and highlight recommendations associated with each key finding (e.g., recommendations for policy or practice).

WP 1	
Key findings	Recommendations
<p>In 26 European countries among persons with a chronic illness, participation in paid employment was 10%-35% less within lower educated persons, and 5%-16% less within higher educated persons (Schram et al. BMJ Open 2019;9:e024823)</p> <p>In 5 European regions health-related exit from paid employment varied between 6%-21% among lower-educated workers and 3%-9% among higher-educated workers, primarily prompted by higher prevalence of poor health (Schuring et al SJWEH 2019;45:346-55)</p>	<p>Policy measures are needed to reduce educational inequalities in exit from paid employment due to poor health. Target areas in these policies should be: (1) favourable working conditions [to prevent drop out due to imbalance between job demands and capabilities], and (2) supportive schemes for workers with chronic health problems.</p>
<p>Employment protection legislation reforms aimed at flexibilization of the labour market increased early retirement among workers with permanent contracts, and increased unemployment, disability benefits, and early retirement among workers with temporary contracts. This affected lower educated workers and workers with a poor health slightly more (Schuring et al. submitted)</p>	<p>The flexibilisation of labour contracts in many European countries has increased inequalities in labour market access. New policies are needed that support access to the labour market of vulnerable groups, such as temporary workers, and workers with health problems. This reflects the conclusions in the just published WRR report in the Netherlands.</p>

WP 2	
Key findings	Recommendations
<p>In the Netherlands at age 30, working life expectancy was 7.3 (men) and 9.9 (women) less among lower vs higher educated persons, with large differences in years lost due to disability benefit (men: 3.4 vs 0.8 years, women: 3.0 vs 1.4 years) (Robroek et al. SJWEH 2020)</p>	<p>The health-related loss in working years is much larger among lower than higher educated persons, even in early working careers. This prompts for: (1) large scale implementation of workplace health promotion programmes, and (2) workplace interventions to reduce physical work load [and most likely also psychosocial work-related factors]. Flexible arrangement for retirement are needed [One size fits nobody]</p>
<p>In Finland the working life expectancy at age 50 can be extended by approx. 1 year if poor</p>	<p>Effective workplace interventions to reduce physical work load [and most likely also</p>

physical work factors can be eliminated (Schram et al. to be submitted soon)	psychosocial work-related factors] are needed to extend working lives.
Workers in physically demanding jobs (construction) that changed industry/job at ages around 55 years had lower likelihood of disability benefits after age 60 (Järvholm et al, in progress)	Society should increase resources for workers in heavy jobs to change job, e.g. by stimulating retraining or support to employers to hire older workers

WP 3	
Key findings	Recommendations
The UK women's State Pension reform (sudden increase up to 6 years) has increased probability of depressive symptoms by 14%. These effects are concentrated among women with lower educations and physically or psychosocially demanding jobs (Carrino et al, submitted).	The UK women's State Pension reform has increased educational inequalities in mental health. Flexible arrangement for retirement are needed.
Working longer as result of not being eligible for State pension significantly reduces the time devoted to offer help outside the household. (Carrino et al, submitted)	Our results suggest that policy makers should account for the unintended consequences on informal care supply when regulating labour markets and social and health services for older people.

WP 4	
Key findings	Recommendations
Eligibility for disability pension in Sweden has dropped dramatically, influenced both by administrative processes and legislation. Disability benefits for mental disorders has long-term consequences for mortality (far beyond retirement age), and reforms with much more stringent criteria for receiving a disability benefit have not changed this finding (Söderberg et al. Scand J Public Health, 2019)	The sharp drop in eligibility for disability pension in Sweden, influenced by administrative anticipation on tougher legislation and legislation itself, raises questions whether the welfare system fulfils its legal certainty.

WP 5	
Key findings	Recommendations
If the effect of ill health on working careers could be eliminated among 30-66 years old, the average duration of working life would increase by 15 to 53 months (Robroek et al, 2020). When valuing one working year lost at 60,000€, in the 40-year lifespan of a worker one could easily spend 1,500€ on effective workplace health promotion activities.	There is an urgent need for developing effective interventions on adverse working conditions and unhealthy behaviours, and, above all, large-scale implementation thereof.

5 Milestones

Please describe the milestone(s) for each work package and indicate when you achieved each milestone, leaving the final column blank if the milestone was not achieved.

WP	Milestone	Date achieved
WP 1	Novel analytical method (fixed effects model) allows causal interpretation of how a reduction of employment protection reduces labour force participation in vulnerable groups, such as workers with chronic diseases	Sept 2019
WP 2	Multistate models, as documented by our scripts in R software, facilitate the calculation of working life expectancy, and can be used in cohort data as well as register-based data,	Jan 2019
WP 3	The UK women's State Pension reform (sudden increase up to 6 years) fulfils the criteria for a natural experiment to be analysed with econometric methods for its effects on health	Feb 2019
WP 4	Register-based information on disability in Sweden was useful to determine long-term trends in disability benefits and its effect on mortality	Nov 2018
WP 5	Valuation of one working year lost is feasible, but requires more validation	Jan 2020

6 Deliverables

Please describe the deliverable(s) for each work package and indicate when you achieved each deliverable, leaving the column blank if the deliverable was not achieved. In addition, please report the dissemination level (i.e., public, confidential) and the format of the deliverable (e.g., report, video). Please collate copies of all the deliverables in a ZIP-file and submit the file along with this report. Please name the individual items in the ZIP-file identically to the deliverable names in the table below to enable easy identification.

WP	Deliverable name	Date achieved	Dissemination level	Format	Attached
WP 1	Report on influence of legislation and policy measures on different pathways to retirement	2019-2020	Public	Publications	Yes
WP 2	Report on benefits of workplace and health interventions and legislation and policy measures on working life and extension	To be submitted soon	Confidential	Publication	No
	A toolbox to calculate the beneficial effects of these interventions and legislation and policies on working life expectancy (See 3.3)	July 2019	Public	Publication	Yes
WP 3	Report the consequences of retirement at older age for health and health disparities in the years before and after retirement.	In submission	Confidential	Publication	No
WP 4	Report on changes in retirement and disability policies on morbidity and mortality	Dec 2019	Public	Publication	Yes
WP 5	Report on cost-effectiveness of interventions and policies	October 2019	Only in final report	Report	In this report
	An economic model on interventions and return-on-investment (See 3.3)	Not achieved			

7 Outputs

7.1 Publication list

Please list the publications that resulted from the funded project and indicate which type of publication (e.g., peer reviewed article, book/book chapter, review, communication in scientific congress, dissertation, other).

Title	Type
Söderberg M, Mannelqvist R, Järholm B, Schiöler L, Stattin M. Impact of changes in welfare legislation on the incidence of disability pension. A cohort study of construction workers. Scand J Public Health 2018 [Online First] DOI 10.1177/1403494818754747	Peer reviewed article
Hessel P, Avendano M, Rodríguez-Castelán C, Pfitze T. Social Pension Income Associated With Small Improvements In Self-Reported Health Of Poor Older Men In Colombia. Health Affairs 2018;37:456-463. DOI 10.1377/hlthaff.2017.1284	Peer reviewed article
Carrino L, Glaser K, Avendano M. 'Later pension, poorer health? Evidence from the new State Pension age in the UK', Harvard Center for Population and Development Studies Working Paper Series 2018, 17. LINK	Working paper
Schuring M, Schram KL, Robroek SJ, Burdorf A. The contribution of health to educational inequalities in exit from paid employment in five European regions. Scand J Work Environ Health 2019;45:346-355. DOI 10.5271/sjweh.3796	Peer reviewed article
Carrino L, Nafilyan V, Pabon, AO. Should I Care or Should I Work? The Impact of Working in Older Age on Caregiving (No. 19/23). HEDG, c/o Department of Economics, University of York, 2019. LINK	Working paper
Schram JLD, Schuring M, Oude Hengel K, Burdorf A. Health-related educational inequalities in paid employment across 26 European countries in 2005-2014: repeated cross-sectional study. BMJ Open 2019;9:e024823. DOI 10.1136/bmjopen-2018-024823	Peer reviewed article
Söderberg M, Järholm B, Burdorf A, Schiöler L, Stattin M. Mortality in disability pensioners with common mental disorders – A cohort study of Swedish construction workers. Scand J Public Health 2019 [Online First] DOI 10.1177/1403494819884440	Peer reviewed article
Oude Hengel K, Robroek SJW, Eekhout I, Van der Beek AJ, Burdorf A. Educational inequalities in the impact of chronic diseases on exit from paid employment among older workers: a 7-year prospective study in the Netherlands. Occup Environ Med 2019;76:718-725. DOI 10.1136/oemed-2019-105788	Peer reviewed article
Robroek SJW, Nieboer D, Järholm B, Burdorf A. Educational differences in duration of working life and loss of paid employment: working life expectancy in the Netherlands. Scand J Work Environ Health 2020;46:77-84. DOI 10.5271/sjweh.3843	Peer reviewed article
Schuring M, Robroek SJW, Carrino L, O'Prinsen AC, Oude Hengel K, Avendano M, Burdorf A. Do employment protection legislation reforms aiming at flexibilization of the labour market increase	Article under review

inequalities in exit from paid employment? – a longitudinal study among 23 European countries (2003-2014). Submitted	
Schram JLD, Solovieva S, Leinonen T, Viikari-Juntura E, Burdorf A, Robroek SJW. Working life expectancy in Finland: the influence of occupational class and physical workload among older employees. Will be submitted in Q1 2020.	Draft manuscript

7.2 Presentations at (scientific) conferences and symposia, including JPI MYBL activities

Please list the presentations at (scientific) conferences and symposia that resulted from the funded project.

Presentation	Date
Worklong presentation at JPI MYBL conference by Merel Schuring	Dec 2016
The impact of policies to extend working lives: The case of the UK pension reform. At the Royal Society of Medicine by Mauricio Avendano	April 2017
How healthy is it to work? The complex interplay between health and paid employment. At NFA, Copenhagen, DK by Alex Burdorf	May 2017
The poison in the gift: Can social policies affect mental health? At Society for Epidemiological Research Conference by Mauricio Avendano	June 2017
Frailty: policy vs clinical perspectives. At Summer Institute on Ageing, Venezia, Italy by Ludovico Carrino	June 2017
Health consequences of higher Retirement Age in the UK. At International Health Economics Association Conference by Ludovico Carrino	June 2017
Later pension, poorer health? Evidence from the UK State Pension age reform. At WPEG Conference, Sheffield by Ludovico Carrino	July 2017
Working longer in good health: inequalities and consequences. At WAP conference, Nijmegen, NL by Alex Burdorf	Nov 2017
Networking meeting JPI MYBL Conference joined by Merel Schuring and Ludovico Carrino	Feb 2018
PhD course 'Interplay between working life and health'. At PhD Education Aarhus, DK by Alex Burdorf and Suzan Robroek	May 2018
Trends in health-related educational inequalities in labour force participation across 26 European countries 2005-2014. Dutch epidemiology conference WEON by Jolinda Schram	June 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At European Association for Population Studies Conference by Ludovico Carrino	June 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At Microeconomics Seminar Series at DIW Berlin by Ludovico Carrino	June 2018
Educational inequalities in the contribution of poor health to different pathways out of employment in five European countries. Dutch epidemiology conference WEON by Merel Schuring	June 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At Summer Institute of Ageing, Venezia by Mauricio Avendano	June 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At International Association for Applied Econometrics Conference by Ludovico Carrino	June 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At Annual conference - British Society of Gerontology by Ludovico Carrino	July 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At Italian Health Economics Association Conference by Ludovico Carrino	September 2018

Work ability in old workers. At Seminar, Dept. Law, Umeå University, SE by Bengt Järholm	Nov 2018
Trends in health-related educational inequalities in labour force participation across 26 European countries 2005-2014. European Public Health Conference by Jolinda Schram	Nov 2018
Later pension, poorer health? Evidence from the UK State Pension age reform. At Institute of Education seminar series by Mauricio Avendano	Nov 2018
A joint workshop representing 4 JPI MYBL projects at the 2018 European Public Health Conference in Ljubljana Slovenia. Do European policies to work longer contribute to health inequalities? By Merel Schuring and Suzan Robroek	Nov 2018
Work ability in old workers. At Seminar, Swedish Society of Medicine, Stockholm, SE by Bengt Järholm	Dec 2018
Vulnerability and Long Term Care in Europe: an economics perspectives. At European Centre for Social Policy and Research, Wien, AUS, invited seminar, by Ludovico Carrino	Jan 2019
How do social policies influence health? At Porto Institute of Public Health, Porto University by Mauricio Avendano	March 2019
Should I care or should I work? The Impact Of Working In Older Age On Caregiving. At Population Association of America Conference by Ludovico Carrino	April 2019
A prolonged worklife: facts and fiction. At Congress Occupational Medicine Göteborg, SE by Alex Burdorf	May 2019
Educational differences in working life expectancy in the Netherlands. At Congress Occupational Medicine Göteborg, SE by Alex Burdorf	May 2019
Educational differences in working life expectancy in the Netherlands. At Work Disability Prevention and Integration Conference, Odense, DK by Suzan Robroek	June 2019
Should I care or should I work? The Impact Of Working In Older Age On Caregiving. At International Health Economics Association Conference by Ludovico Carrino	July 2019
Working life expectancy in Finland. The influence of occupational class and physical workload factors for older employees at Finnish Institute for Occupational Health, Helsinki, FI, by Jolinda Schram.	Sept 2019
Educational differences in working life expectancy in the Netherlands t Finnish Institute for Occupational Health, Helsinki, FI, by Alex Burdorf.	Sept 2019
Should I care or should I work? The Impact Of Working In Older Age On Caregiving. At European Association of Labour Economists by Ludovico Carrino	Sept 2019
Worklong presentation at final seminar JPI MYBL by Alex Burdorf	Oct 2019
Working life expectancy workshop, Stockholm, SW by Alex Burdorf and Jolinda Schram.	Dec 2019

7.3 Communications, public engagement activities and knowledge exchange events

Please list the communications, public engagement activities and knowledge exchange events where results from the funded project were shared with specific audiences, including the general public.

Activity or event	Date
Ab Harrewijn Lecture: Work, participation and health: more than only euros! National Client Council by Alex Burdorf	April 2017
Chronic disease and work Dutch Social and Economic Council (SER) by Suzan Robroek	October 2017
Invited dissemination seminar at the Department for Work and Pension, UK by Mauricio Avendano, Ludovico Carrino, Karen Glaser.	July 2018

Workshop with policy experts from Pension and Economics ministries and large Social care organisations in the UK., London by Mauricio Avendano, Ludovico Carrino and Alex Burdorf	Feb 2019
Video-presentation social and economic council of the Netherlands: Work and health: How to increase labour force participation Dutch Social and Economic Council (SER) by Alex Burdorf	March 2019
Interview in ESRC magazine "Society Now" by Mauricio Avendano, Ludovico Carrino, Karen Glaser	April 2019
Presentation committee for health in construction workers with representatives from unions and employers. Stockholm Sweden by Bengt Järholm	May 2019
Discussion paper (1 page, DN debatt) in the largest Swedish Newspaper about work capacity (or lack of) and the social security system in Sweden by Bengt Järholm, Mia Söderberg, Mikael Stattin, Ruth Mannelqvist.	July 2019
Interview in Swedish public broadcasting about social security for workers with heavy jobs. Sveriges radio (Radio Sweden) by Bengt Järholm	July 2019.
Interview in journal for safety representatives in Sweden about work capacity and insurance in workers with heavy jobs Journal (Arbetarskydd) by Bengt Järholm	August 2019

8 Impact

8.1 Scientific impact

Describe the nature of the major scientific impacts of your results, i.e. the addition to the current state of knowledge (new data, new methods, new perspective, confirmation of theses, first transnational approach). Describe to what extent the scientific impact has been promoted through the international and comparative perspective of the various members of the consortium (max. 2 page).

The project can be characterized as using state of the art analytical techniques. Econometric and policy evaluation techniques were used such as fixed effects analyses and regression discontinuity designs to get insight into the evaluation of legislation and policy measures.

Working life expectancy, as novel summary measure of length of working life, as well as working years lost were used to study work and health from a life course perspective using a multistate Markov model. These measures capture the total working years expected for specific groups of workers (educational level, and groups with physically heavy jobs), as well as the relative impact of educational level and physically demanding jobs on the total loss of working years in paid employment. Detailed scripts have been made available in an open access publication for any researcher to be used.

The multidisciplinary collaboration is a clear success factor in this project. The combination of social sciences, epidemiology, and econometrics contributed to high-quality studies using state of the art techniques and the research findings. Every half year a meeting was organized (mostly face to face) to discuss the challenges we faced and the progress of the different manuscripts and work packages. It was a productive collaboration concerning the number and quality of the publications.

8.2 Societal impact

Describe the impact of the results on different target groups (e.g., health professionals, policy makers, patients), including the pathway to reaching this impact. Describe how the results have been or will be used, disseminated and implemented by each target group, including beyond the lifetime of the project (max. 2 page).

The results show that that vulnerable groups, such as lower educated workers, those with chronic diseases, and workers with unfavorable working conditions are less likely to maintain paid employment. They are more likely to become unemployed or to receive disability benefits. In addition, they are more susceptible for a negative impact of policy changes on sustainable employability and health. Policy recommendations are formulated (as mentioned under 4).

The main focus for dissemination was on researchers and policymakers. However, there were also activities for patient groups with opportunities for discussion (see 7.3). The results were presented to and discussed with policymakers (see 7.3). The results of the WORKLONG project are amongst others disseminated to the Social Economic Council (SER). The SER communicated in a letter to the Dutch Minister of Health, Welfare and Sport (Mr. Blokhuis) and the director of the Netherlands Bureau for Economic Policy Analysis (Ms. Van Geest) the insights concerning the importance of paid work for health. In the UK a workshop was organized with policy experts from Pension and Economics ministries and large Social care organizations, and in Sweden there was a presentation in a committee for health in construction workers with representatives from unions and employers.

No specific other actions have been taken [yet] based on the results. In the future we will keep disseminating the results to policymakers using presentations and discussion meetings.

A specific project page on Researchgate will be used as a platform to secure the legacy of the WORKLONG project.

9 Data Management and Data Sharing

Describe how this project contributes to sustainable data and research infrastructures; including a description of the sustainability of the research results within the wider research community. Please take into account the [FAIR data Principles](#) and indicate if your project (partly) contributes to these principles (max. 1 page).

Available data were used for secondary analyses (EU-SILC, information from the construction cohort in Sweden, and Understanding Society from the UK). In addition register data were used, which are not allowed to be openly shared.

Publicly-funded research data are valuable, long-term resources that, where practical, should be made available for secondary scientific research. Some funders expect that all data created or repurposed during the lifetime of a grant will be made available for re-use or archiving, recognising that some research data are more sensitive than others. If you have created or repurposed data as part of your project and it has been made available for re-use or archiving, please use the table below to indicate where it can be accessed and who it can be accessed by.

Dataset	Available for	Available at
No original data collected	n/a	n/a

10 Collaboration

10.1 Collaboration within the project

Are the academic collaborations within this project new or were these existing collaborations? How did you involve the different academic partners in the project?

The collaborations among Erasmus MC, King's College London, and Umea University were new, as these research groups have not worked together previously on this topic. However, for other topics completely unrelated to this call some collaborations in the past have led to a few joint publications. Twice a year there were project meetings, face-to-face or online, with representatives of all partners. Plans for analyses and publications were discussed, as well as the overall results and ways to disseminate the results.

10.2 Collaboration with Stakeholders

Are the collaborations with stakeholders within this project new or were these existing collaborations? How did you involve the different stakeholders in the project?

Existing collaborations with stakeholders were used. They were involved by presentations, seminars and bilateral meetings.

10.3 Collaboration with Patients and the Public

How did you involve patients and/or the public in the project? Were patients and the public actively involved in research design and delivery? Did decisions about the research include the patient and public perspective Note, when we refer to patient and public involvement in research we mean research being carried out with and by patients and the public, not to, for or about them (see, www.invo.org.uk). We do not mean patient and public engagement, where research information is presented or disseminated to patients and the public.

Policy makers instead of patients or the public are the main target group for our results. We did however also present the results in newspapers and discussions with patient groups, but they were not actively involved in the research design and delivery.

10.4 Collaboration with other JPI MYBL projects

Please describe any connections, bilateral meetings, knowledge exchange etc. between your project and other JTC projects funded by the JPI MYBL.

There were bilateral meetings with the researchers of the EXTEND project. We also organized a workshop at the European Public Health conference in Slovenia. Researchers of the other JPI MYBL projects were invited to collaborate in this workshop. Four of the five projects joined in this workshop.

10.5 Collaboration with other European/national projects

Please describe actual and intended collaborations with other European/national projects (e.g. collaboration with related projects not funded by JPI MYBL).

There was a collaboration with the Finnish Institute for Occupational Health, their data were used for the WORKLONG project. There were no other collaborations with regards the WORKLONG project.

10.6 Added value of the International Consortium

Please describe the added value of working as an international consortium, compared to project partners each working separately at the national level. In what way and to what extent did the

international cooperation in the project help to broaden your perspective on demographic change in Europe and beyond?

It is of added value to discuss the different systems and place the results in the particular context. It helped to broaden the knowledge on the different social systems, the definitions, and the inclusion criteria to enter for example early retirement or to receive disability benefits. In addition to the cross-national character of WORKLONG, the multidisciplinary character was also of added value.

11 What can we do for you?

11.1 What can we do for you?

What can we do to help you to amplify your message? How can we help you to connect to the right people/stakeholders (e.g. to share your research results)? How can we help you to add value to your results?

It could be helpful to further share the results with other policy makers. In addition, we noticed that attention via LinkedIn messages reached many individuals, both the general public, policy makers and scientists.

11.2 Feedback for JPI MYBL

Please provide any feedback arising from this project so we can improve our procedure for any future joint calls.

The JPI meetings with the other researchers were relevant and interesting. The process concerning the advisory board could be clearer. There were also initiatives from JPI for dissemination, but no follow-up information was provided.