

# **Working life expectancy and working years lost among users of part- and full-time sickness absence in Finland**

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# Background

- Utilizing partial working capacity can be an important tool for increasing work participation and many countries have developed their work disability policies to promote part-time work during sickness absence (SA)
- Part-time sickness absence (pSA) has been developed to help persons with reduced work ability to remain in work at least part-time and to return to work full-time
- In Finland, pSA is a voluntary option for persons who are eligible for full-time SA (fSA), if based on medical assessment they can work without harm to their health and part-time work can be arranged by their employer

# Background

Previous research has suggested that the use of pSA instead of fSA..

- reduces the duration of SA, enhances return to work and increases overall work participation <sup>(1-6)</sup>
- increases the likelihood of partial disability retirement, i.e. the users of pSA transit to a more permanent partial work disability path <sup>(4,7)</sup>

However: the effect of the use of pSA instead of fSA on the total length of working lives remains unclear.

# Aim

To carry out a quasi-experiment to assess the impact of the use of pSA instead of fSA on the length of working lives.

# Strategy

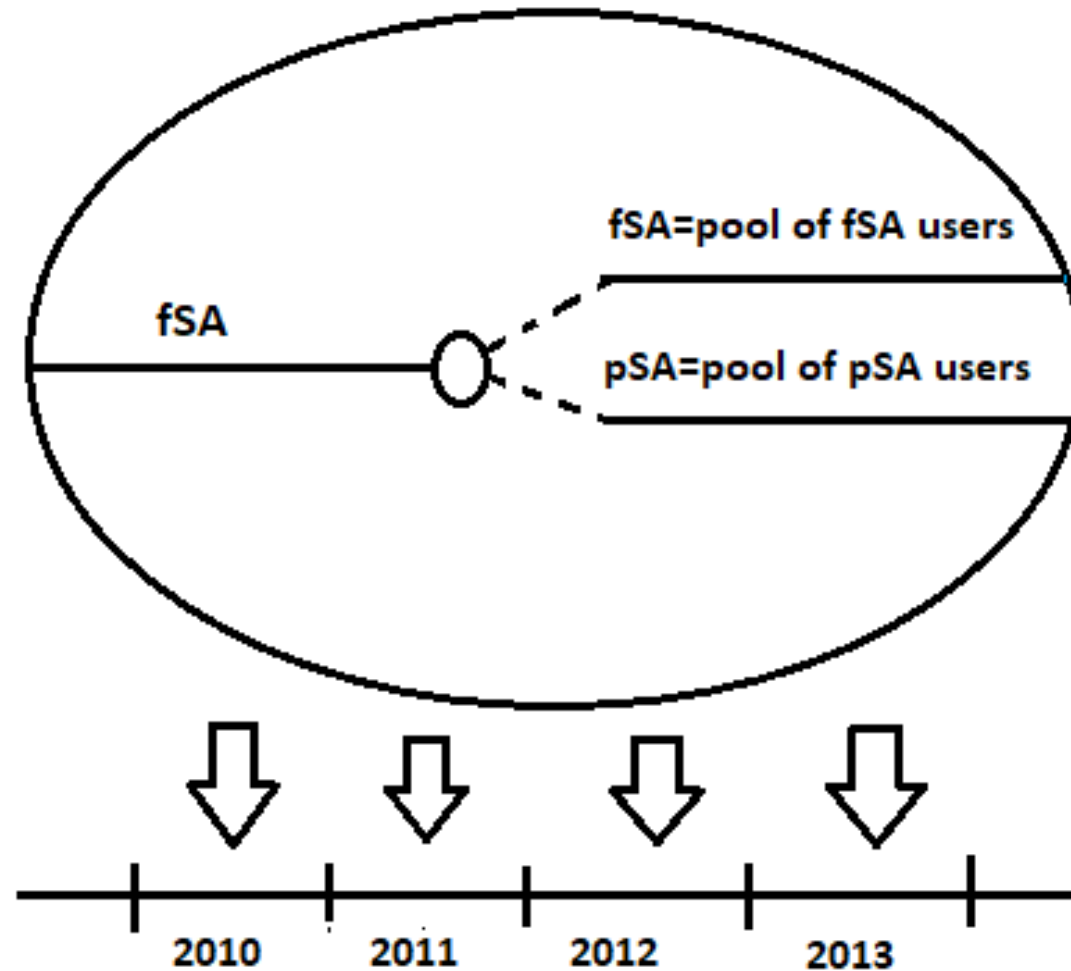
- 1) Form the pools of pSA and fSA users
- 2) Match the pools using propensity score matching
- 3) Calculate working life expectancies (WLE) and working years lost (WYL) with the Sullivan method

# Data sources

For doing so, we...

- used a large, register-based 70% random sample of the working-age population (30-62 years old) living in Finland at the end of the year 2007
- restricted our study population to private and public sector employees with an onset of pSA or fSA due to mental disorders (F00-F99) or musculoskeletal diseases (M00-M99) between 1.1.2010-31.12.2013 and having a preceding fSA spell
- linked the data of labour market history (past two years), sociodemographic and work-related information, job exposures and labour market participation during the four-year follow-up

# 1. Forming the pools of pSA and fSA users



**N of fSA-fSA sequences: 20 734**  
**N of fSA-pSA sequences: 9515**

## 2. Matching

We used a **propensity score matching** to control for the confounding effect of observed background factors between the users of pSA and fSA.

- Used several covariates to calculate propensity scores:  
age, region of residence, industrial sector, physical heaviness of work, job control, income, number of preceding pSA, fSA, unemployment and employment days and having temporary disability retirement or vocational rehabilitation during two preceding years
- Matching within 192 strata by combinations of categories of calendar year, gender, age group, disease group of SA, education and employment sector
- N= 8560 (90.0%) matched pairs (2021 male and 6539 female pairs)



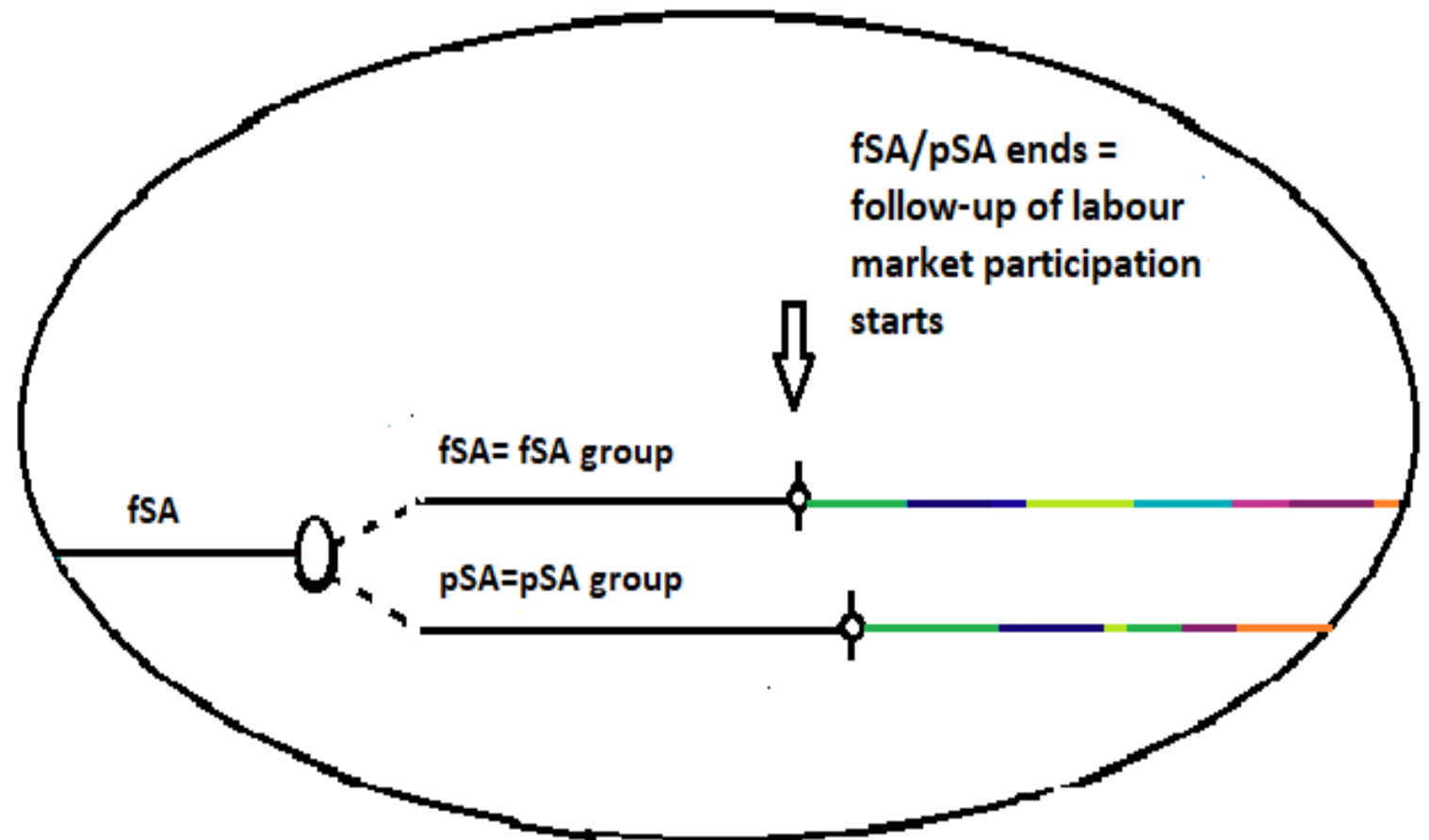
### 3. Calculating the WLEs and WYs

We applied the **Sullivan method** to calculate..

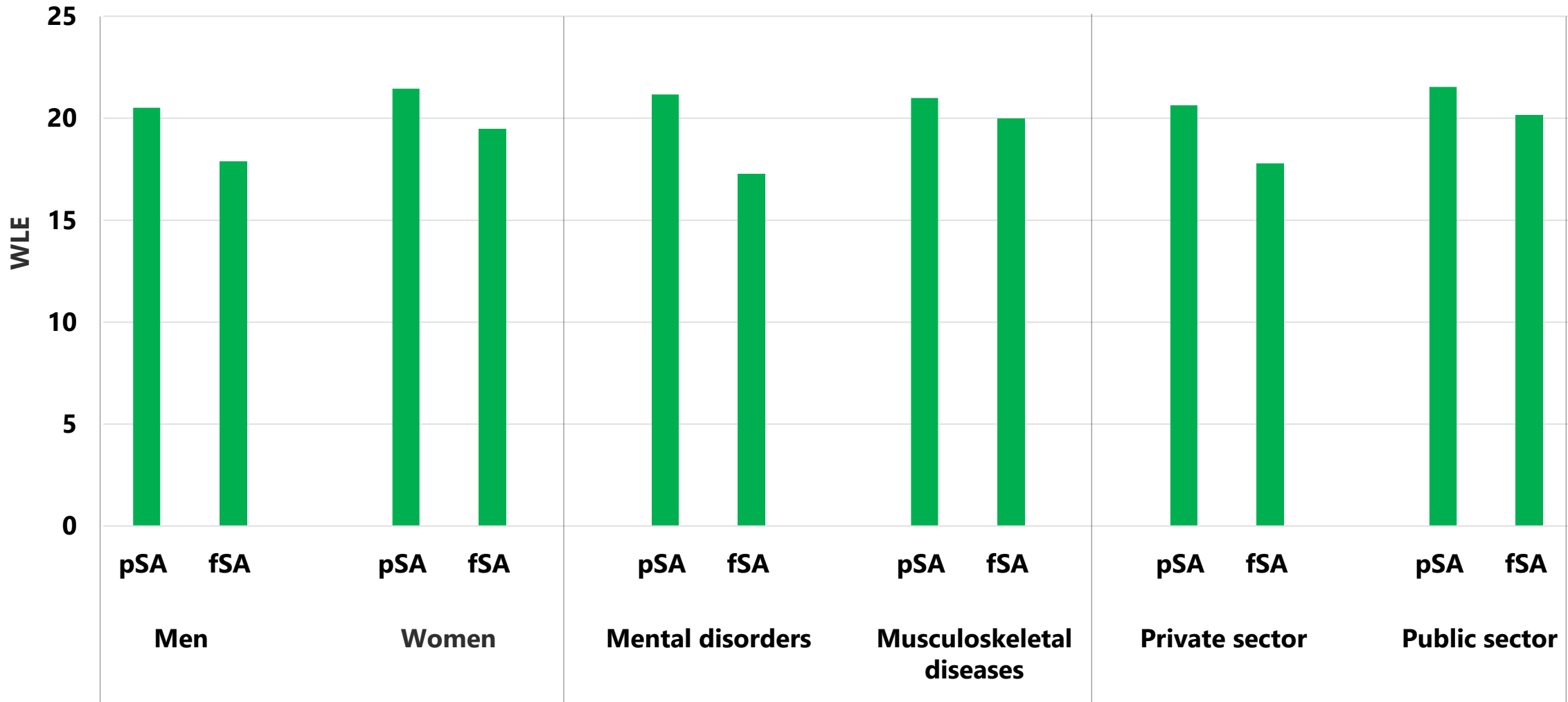
- Working life expectancy (WLE) = summary measurement that denotes the time that a person at a given age is expected to participate in working life until permanent withdrawal from the labour market
- and
- Working years lost (WYL)= summary measurement that denotes the time that a person at at a given age is expected to be out of work due to either health- or non-health-related reasons

### 3. Calculating the WLEs and WYLs

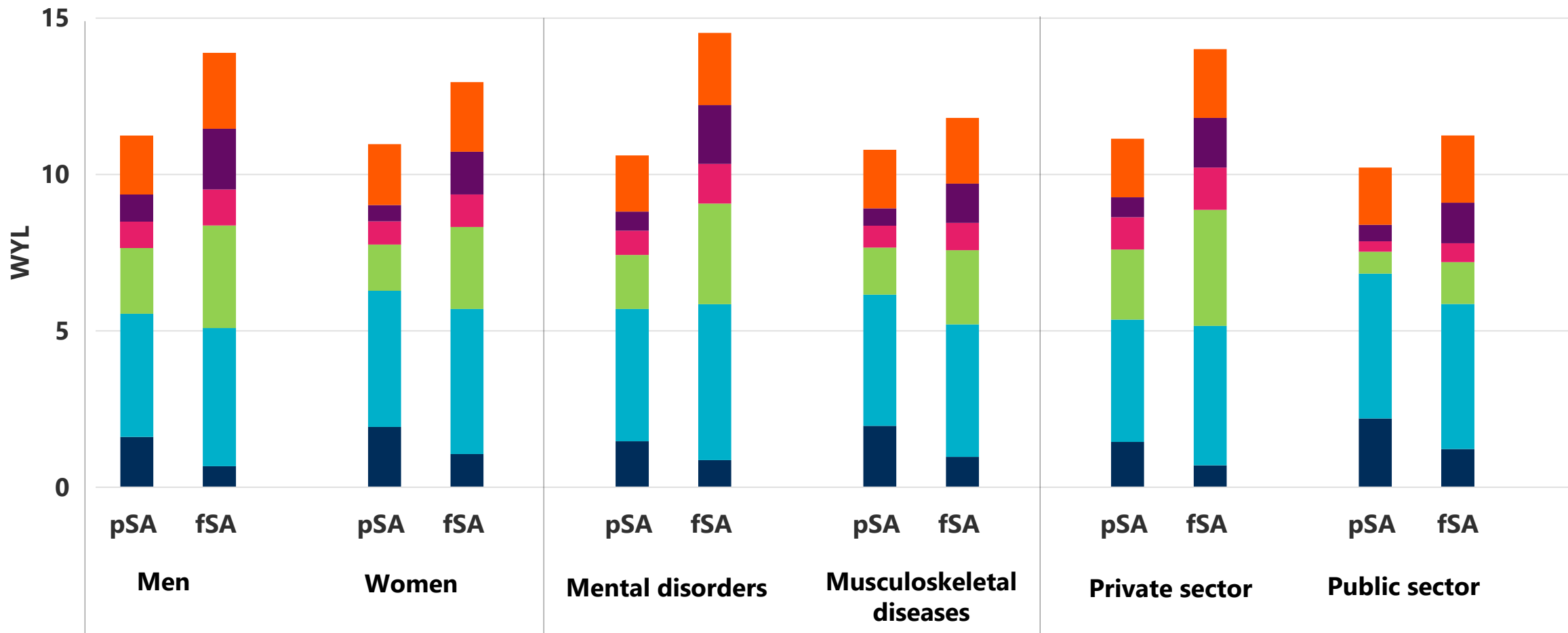
- Four-year follow up
- Seven daily measured labour market statuses:
  1. work
  2. work with partial work disability
  3. time-restricted work disability
  4. unemployment
  5. other non-employment
  6. disability retirement
  7. other permanent retirement



**Figure 1. Working life expectancy (years) among matched part-time (pSA) and full-time (fSA) sickness absence groups at age 30 by gender, main diagnostic group and employment sector**



**Figure 2. Working years lost due to different reasons among matched part-time (pSA) and full-time (fSA) sickness absence groups at age 30 by gender, main diagnostic group and employment sector**



- Partial work disability
- Time-restricted work disability
- Unemployment
- Other non-employment
- Disability retirement
- Other permanent retirement

## Discussion

- The use of pSA instead of fSA showed positive effects on the expected remaining length of working lives.
- The longer working lives were due to less time spent especially in unemployment and disability retirement.
- Particularly for persons having mental problems or working in the private sector pSA appears to increase the working years by enhancing return to full duties.
- For persons with musculoskeletal diseases the gain in working years is more modest, yet at the population level still considerable, since musculoskeletal diseases are one of the leading causes of work disability.
- Using pSA instead of fSA leads to a notable increase in time spent working while receiving partial work disability benefits.

# Strengths

- Large and nationally representative register-based sample
- No problem of non-response or loss to follow-up
- Detailed information on various labour market statuses
- Rich information on sociodemographic factors and labour market history
- The four-year follow-up time enabled to capture long-term patterns in labour market participation

# Limitations

- Potential confounding factors that cannot be taken into account using register data
- Matching was based on main diagnostic groups only
- WLE estimates are prognostic in nature
- The findings only apply to *a repeated* use of pSA instead of fSA

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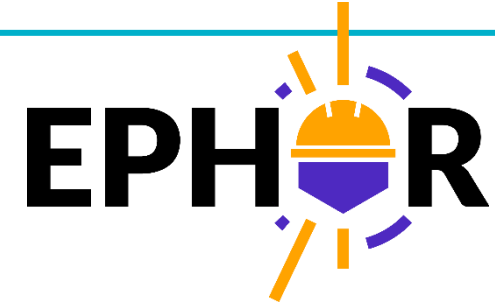
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# Thank You!

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Table 1.

		Distributions of the matched part-time (pSA) and full-time (fSA) sickness absence groups by gender																	
		Men				Women						Men				Women			
		pSA group		fSA group		pSA group		fSA group				pSA group		fSA group		pSA group		fSA group	
		N	%	N	%	N	%	N	%			N	%	N	%	N	%	N	%
Index Year	2010	323	16.0	323	16.0	1146	17.5	1146	17.5	Physically heavy work <sup>b</sup>	<40% exposed	1163	57.6	1187	58.7	4547	69.5	4563	69.8
	2011	444	22.0	444	22.0	1467	22.4	1467	22.4		>=40 % exposed	858	42.4	834	41.3	1992	30.5	1976	30.2
	2012	540	26.7	540	26.7	1803	27.6	1803	27.6	Job control score <sup>b</sup>	>median(high)	1264	62.5	1185	58.6	3173	48.5	3099	47.4
	2013	714	35.3	714	35.3	2123	32.5	2123	32.5		<=median(low)	757	37.5	836	41.4	3366	51.5	3440	52.6
Age group (years)	30–44	795	39.3	795	39.3	2280	34.9	2280	34.9	Employment days <sup>b,c</sup>	<365	20	1.0	16	0.8	54	0.8	51	0.8
	45–62	1226	60.7	1226	60.7	4259	65.1	4259	65.1		365–730	2001	99.0	2005	99.2	6485	99.2	6488	99.2
	Mean (years)	46.6		46.9		47.5		47.8		Unemployment days <sup>b,c</sup>	0	1783	88.2	1770	87.6	6106	93.4	6105	93.4
Disease Group	Mental	747	37.0	747	37.0	2628	40.2	2628	40.2		1–30	88	4.4	104	5.2	193	3.0	158	2.4
	Musculoskeletal	1274	63.0	1274	63.0	3911	59.8	3911	59.8	31–180	111	5.5	114	5.6	164	2.5	203	3.1	
Employment sector	Private	1696	83.9	1696	83.9	3253	49.8	3253	49.8	181–730	39	1.9	33	1.6	76	1.2	73	1.1	
	Public	325	16.1	325	16.1	3286	50.2	3286	50.3	pSA days <sup>b,c</sup>	0	1999	98.9	2016	99.8	6451	98.7	6499	99.4
Education	Primary	353	17.5	342	16.9	707	10.8	725	11.1		1–42	22	1.1	5	0.2	88	1.3	40	0.6
	Secondary	1080	53.4	1108	54.8	3201	49.0	3213	49.1	fSA days <sup>b,c</sup>	1–30	322	15.9	433	21.4	1109	16.9	1452	22.2
	Tertiary	588	29.1	571	28.3	2631	40.2	2601	39.8		31–90	923	45.7	708	35.0	2979	45.6	2427	37.1
Industrial sector <sup>a</sup>	Manufacturing	627	31.0	642	31.8	577	8.8	571	8.7	91–175	776	38.4	880	43.5	2451	37.5	2660	40.7	
	Construction	153	7.6	157	7.8	48	0.7	57	0.9	Temporary disability retirement <sup>c</sup>	No	1976	97.8	1980	97.97	6447	98.6	6469	98.9
Wholesale and retail trade	182	9.0	193	9.6	653	10.0	647	9.9	Yes		45	2.2	41	2.03	92	1.4	70	1.1	
Transportation and storage	245	12.1	245	12.1	207	3.2	203	3.1	Vocational rehabilitation <sup>c</sup>	No	2011	99.5	2014	99.65	6476	99.0	6478	99.1	
Accommodation and food service activities	44	2.2	39	1.9	303	4.6	292	4.5		Yes	10	0.5	7	0.35	63	1.0	61	0.9	
Professional, scientific and technical activities etc.	421	20.8	379	18.8	1506	23.0	1540	23.6	Total										
Education	72	3.6	75	3.7	359	5.5	333	5.1		2021	100.0	2021	100.0	6539	100.0	6539	100.0		
Human health and social work activities	116	5.7	127	6.3	2548	39.0	2570	39.3	<sup>a</sup> Largest groups are shown separately										
Arts, entertainment and recreation etc.	69	3.4	72	3.6	240	3.6	228	3.5	<sup>b</sup> Income, physically heavy work, job control score, employment days, unemployment days, pSA days and fSA										
Other	61	3.0	63	3.1	53	0.8	62	1.00	<sup>c</sup> During the preceding two years										
Missing	31	1.5	29	1.4	45	0.7	36	0.5											
Income (€/year) <sup>b</sup>	<=30 000	489	24.2	530	26.3	3232	49.4	3510	53.7										
	30 001–60 000	1338	66.2	1288	63.7	3130	47.9	2772	42.4										
	>60 000	194	9.6	203	10.0	177	2.7	257	3.9										
Region	Southern	756	37.4	747	37.0	2400	36.7	2351	36.0										
	Western	468	23.2	462	22.9	1558	23.8	1593	24.4										
	Eastern	450	22.3	438	21.7	1310	20.0	1303	19.9										
	Northern	347	17.2	374	18.5	1271	19.4	1292	19.8										
<b>Total</b>	<b>2021</b>	<b>100.0</b>	<b>2021</b>	<b>100.0</b>	<b>6539</b>	<b>100.0</b>	<b>6539</b>	<b>100.0</b>											

		Table 2. Working life expectancy (WLE) and working years lost (WYL) among the matched part-time (pSA) and full-time (fSA) sickness absence groups at age 30 by gender					
		Men					
		pSA group	95% CI	fSA group	95% CI	Diff.	95% CI
	<b>WLE</b>	20.51	19.81–21.20	17.88	17.22–18.55	2.63	1.26–3.98
<b>W Y L</b>	<b>Partial work disability</b>	1.61	1.32–1.91	0.67	0.48–0.86	0.94	0.46–1.43
	<b>Time-restricted work disability</b>	3.94	3.47–4.41	4.42	3.93–4.90	-0.48	-1.43–0.48
	<b>Unemployment</b>	2.10	1.76–2.45	3.28	2.85–3.71	-1.18	-1.95– -0.40
	<b>Other non-employment</b>	0.85	0.62–1.07	1.15	0.89–1.41	-0.30	-0.79–0.18
	<b>Disability retirement</b>	0.87	0.67–1.08	1.94	1.65–2.23	-1.07	-1.56– -0.57
	<b>Other permanent retirement</b>	1.88	1.47–2.29	2.43	2.16–2.69	-0.55	-1.22–0.13
		Women					
		pSA group	95% CI	fSA group	95% CI	Diff.	95% CI
	<b>WLE</b>	21.45	21.06–21.84	19.47	19.09–19.85	1.98	1.21–2.75
<b>W Y L</b>	<b>Partial work disability</b>	1.93	1.75–2.11	1.06	0.93–1.19	0.87	0.56–1.18
	<b>Time-restricted work disability</b>	4.35	4.07–4.63	4.64	4.35–4.92	-0.29	-0.85–0.28
	<b>Unemployment</b>	1.48	1.31–1.66	2.62	2.39–2.84	-1.14	-1.53– -0.73
	<b>Other non-employment</b>	0.74	0.61–0.87	1.04	0.89–1.19	-0.30	-0.58– -0.02
	<b>Disability retirement</b>	0.52	0.43–0.62	1.37	1.24–1.51	-0.85	-1.08– -0.62
	<b>Other permanent retirement</b>	1.95	1.73–2.16	2.22	2.08–2.36	-0.27	-0.63–0.08

Table 3. Working life expectancy (WLE) and working years lost (WYL) among the matched part-time (pSA) and full-time (fSA) sickness absence groups at age 30 by main diagnostic group						
Mental disorders						
	pSA group	95% CI	fSA group	95% CI	Diff.	95% CI
<b>WLE</b>	21.17	20.46–21.88	17.25	16.58–17.91	3.92	2.55–5.30
<b>Partial work disability</b>	1.47	1.17–1.77	0.87	0.65–1.08	0.60	0.09–1.12
<b>Time-restricted work disability</b>	4.23	3.73–4.72	4.98	4.47–5.48	-0.75	-1.75–0.25
<b>Unemployment</b>	1.73	1.41–2.05	3.22	2.79–3.64	-1.49	-2.23– -0.79
<b>Other non-employment</b>	0.77	0.55–0.98	1.27	0.99–1.55	-0.50	-1.00– -0.01
<b>Disability retirement</b>	0.61	0.43–0.80	1.88	1.61–2.16	-1.27	-1.73– -0.81
<b>Other permanent retirement</b>	1.80	1.36–2.23	2.31	2.05–2.57	-0.51	-1.21–0.18
Musculoskeletal diseases						
	pSA group	95%CI	fSA group	95% CI	Diff.	95% CI
<b>WLE</b>	20.99	20.60–21.37	19.97	19.60–20.34	1.02	0.26–1.77
<b>Partial work disability</b>	1.96	1.78–2.15	0.97	0.84–1.09	0.99	0.69–1.31
<b>Time-restricted work disability</b>	4.20	3.93–4.48	4.24	3.97–4.52	-0.04	-0.59–0.51
<b>Unemployment</b>	1.50	1.32–1.68	2.37	2.16–2.59	-0.87	-1.27– -0.48
<b>Other non-employment</b>	0.70	0.57–0.83	0.87	0.74–1.01	-0.17	-0.44–0.09
<b>Disability retirement</b>	0.56	0.74–0.65	1.26	1.13–1.39	-0.70	-0.93– -0.48
<b>Other permanent retirement</b>	1.87	1.66–2.08	2.10	1.96–2.23	-0.23	-0.57–0.12

		Table 4. Working life expectancy (WLE) and working years lost (WYL) among the matched part-time (pSA) and full-time (fSA) sickness absence groups at age 30 by employment sector					
		Private sector					
		pSA group	95% CI	fSA group	95% CI	Diff.	95% CI
	<b>WLE</b>	20.63	19.95–21.32	17.77	17.10–18.43	2.86	1.52–4.22
<b>WYL</b>	<b>Partial work disability</b>	1.45	1.16–1.73	0.70	0.51–0.90	0.75	0.26–1.22
	<b>Time-restricted work disability</b>	3.91	3.44–4.38	4.46	3.98–4.95	-0.55	-1.51–0.4
	<b>Unemployment</b>	2.24	1.88–2.61	3.71	3.26–4.16	-1.47	-2.28– -0.65
	<b>Other non-employment</b>	1.03	0.76–1.31	1.35	1.07–1.64	-0.32	-0.88–0.24
	<b>Disability retirement</b>	0.64	0.45–0.82	1.59	1.33–1.85	-0.95	-1.40– -0.51
	<b>Other permanent retirement</b>	1.87	1.48–2.27	2.20	1.95–2.44	-0.33	-0.96–0.32
		Public sector					
		pSA group	95% CI	fSA group	95% CI	Diff.	95% CI
	<b>WLE</b>	21.54	21.16–21.93	20.51	20.15–20.88	1.03	0.28–1.78
<b>WYL</b>	<b>Partial work disability</b>	2.20	2.01–2.40	1.22	1.08–1.36	0.98	0.65–1.32
	<b>Time-restricted work disability</b>	4.63	4.35–4.92	4.64	4.35–4.93	-0.01	-0.58–0.57
	<b>Unemployment</b>	0.70	0.58–0.83	1.34	1.17–1.51	-0.64	-0.93– -0.34
	<b>Other non-employment</b>	0.33	0.25–0.42	0.60	0.49–0.72	-0.27	-0.47– -0.07
	<b>Disability retirement</b>	0.53	0.43–0.63	1.30	1.17–1.43	-0.77	-1.00– -0.54
	<b>Other permanent retirement</b>	1.83	1.60–2.05	2.15	2.00–2.30	-0.32	-0.70–0.05