

# **Sick leave and occupational status. A decomposition analysis from Norway.**

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# Background

- / Inequality in sick leave is an important research topic
- / A social gradient in health or sickness absence could be related to work and non-work factors, and different work demands may be related to socioeconomic status (SES) and/or sickness absence in different ways
- / Empirical work on SES-health often stop at description. Attempts at explaining social gradients are rare, but can be fruitful for understanding complex relationships

# Data and methods

- / Survey data on employees' working conditions (LKU-A 2022) coupled with register data on sickness absence
- / Calculate concentration indices (Kakwani et al 1997) for different measures of sickness absence and different ranking variables
- / Calculate relative contribution of work environment factors and work-related health problems to inequality in sick leave, by means of regression-based decomposition analysis (O'Donnell et al 2008)

Figure 1: Concentration curves for medically certified sick leave in Norway 2022

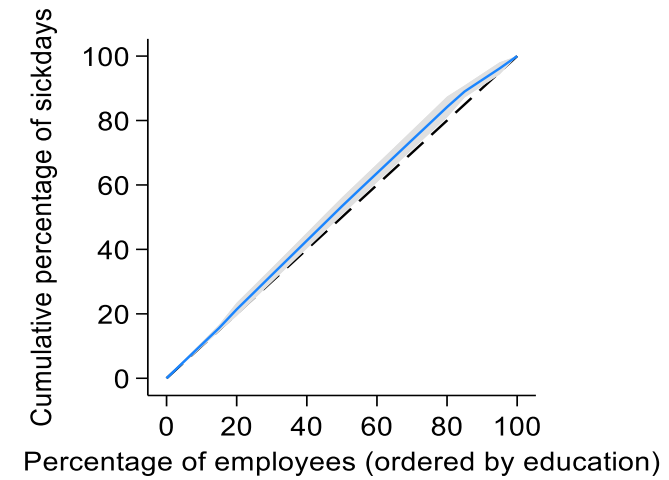
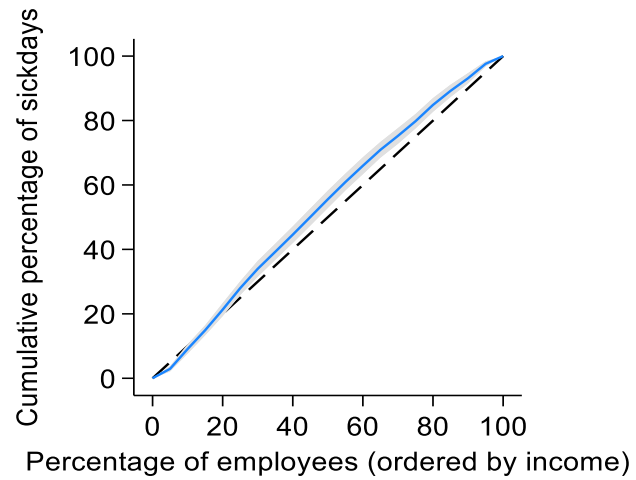
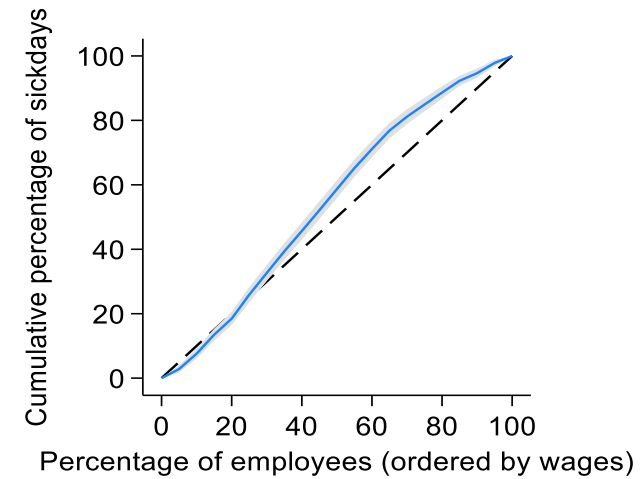
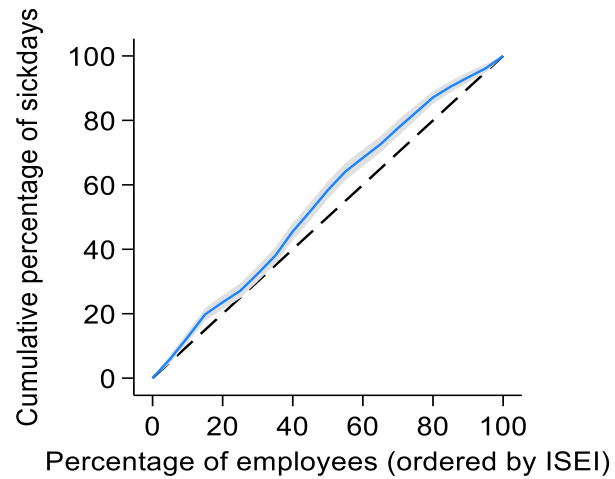


Figure 2: Concentration curves for self-reported sickness absence in Norway 2022

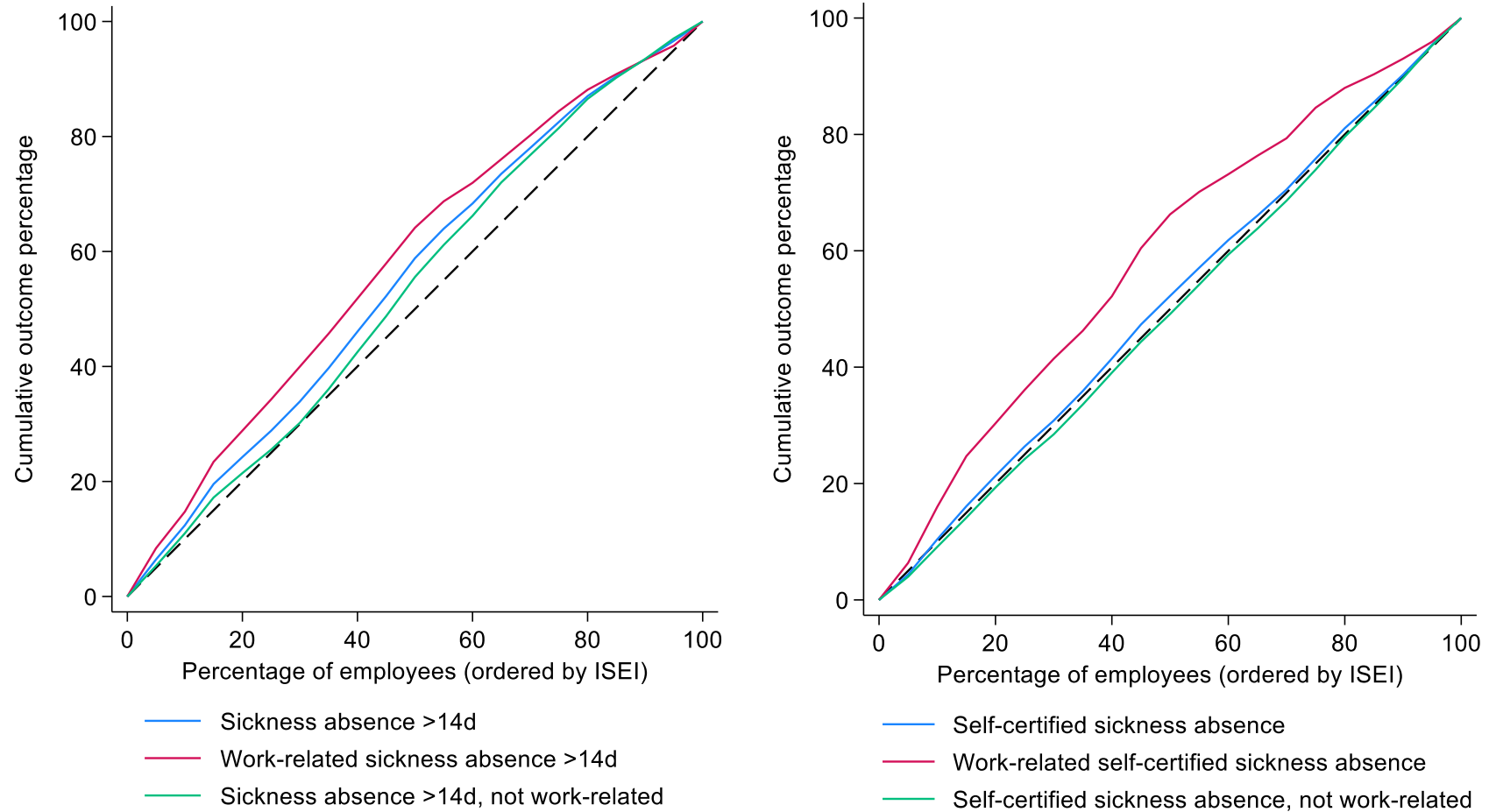
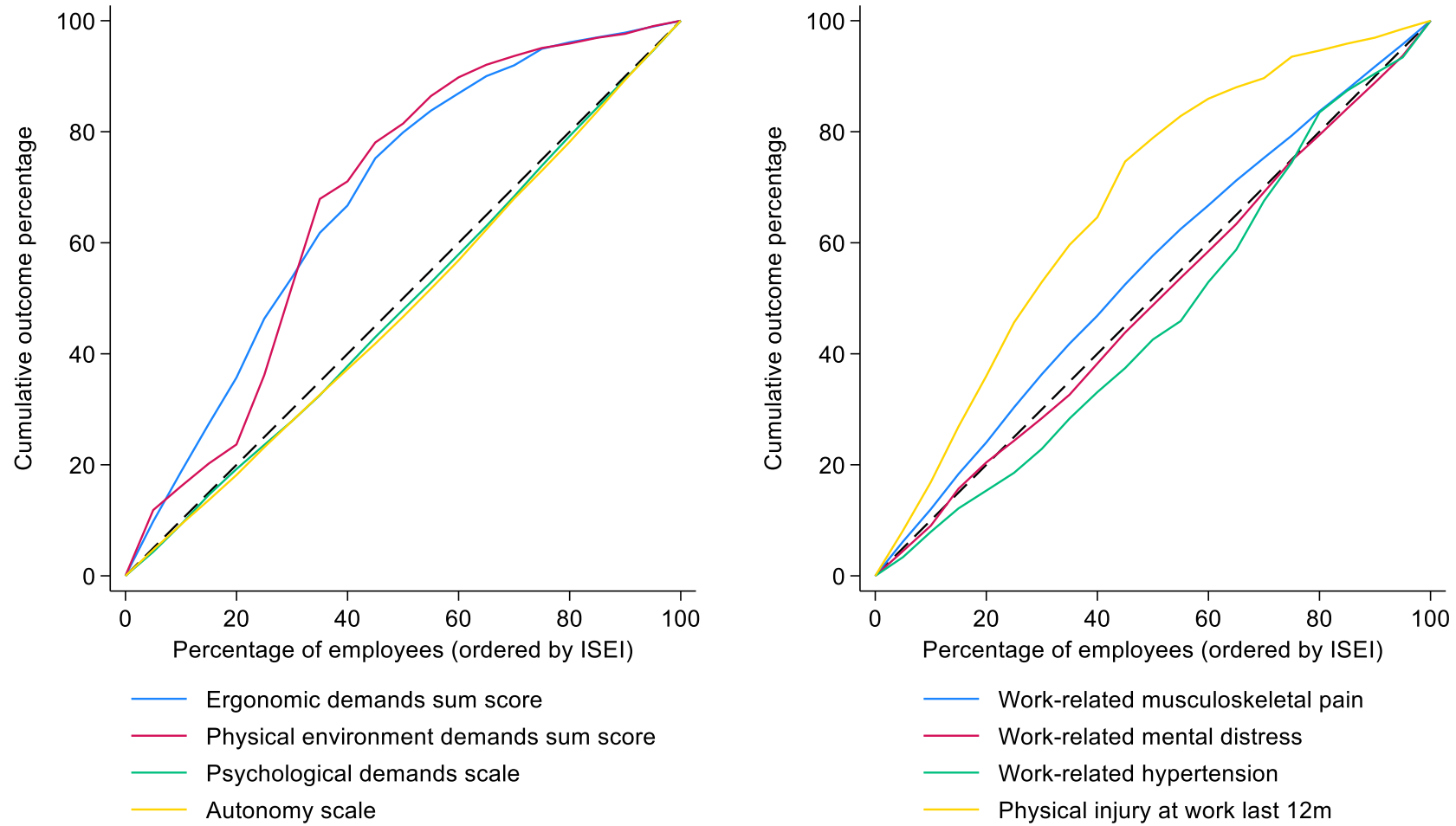


Figure 3: Concentration curves for work demands and work-related health in Norway 2022



**Table 1: Concentration indices for different measures of sickness absence and different ranking variables.**

	Mean	ISEI		Wages		Education		Income	
		Wagstaff	CI	CI	Diff	CI	Diff	CI	Diff
At least one registered sickday 2022	0,423*** (0,005)	-0,161*** (0,011)	-0,093*** (0,007)	-0,089*** (0,007)	-0,004 (0,007)	-0,047*** (0,007)	-0,046*** (0,007)	-0,071*** (0,007)	-0,021** (0,008)
Registered sickdays 2022	11,302*** (0,259)	-0,096*** (0,013)	-0,093*** (0,013)	-0,092*** (0,012)	-0,001 (0,013)	-0,049*** (0,014)	-0,043*** (0,013)	-0,068*** (0,013)	-0,025 (0,016)
Sickness absence >14days last 12 months	0,192*** (0,004)	-0,131*** (0,013)	-0,107*** (0,011)	-0,127*** (0,011)	0,021 (0,011)	-0,059*** (0,012)	-0,048*** (0,012)	-0,077*** (0,011)	-0,030* (0,013)
Work-related sickness absence >14days	0,070*** (0,003)	-0,182*** (0,021)	-0,169*** (0,020)	-0,157*** (0,018)	-0,013 (0,019)	-0,084*** (0,022)	-0,085*** (0,021)	-0,114*** (0,020)	-0,055* (0,022)
Sickness absence >14days, not work-related	0,119*** (0,003)	-0,077*** (0,016)	-0,069*** (0,014)	-0,107*** (0,014)	0,038** (0,013)	-0,042* (0,017)	-0,026 (0,016)	-0,056*** (0,015)	-0,013 (0,017)
Self-certified sickness absence	0,583*** (0,005)	-0,047*** (0,011)	-0,020*** (0,005)	-0,037*** (0,005)	0,017*** (0,004)	0,023*** (0,005)	-0,043*** (0,005)	-0,045*** (0,005)	0,026*** (0,006)
Work-related self-certified sickness absence	0,103*** (0,003)	-0,200*** (0,017)	-0,179*** (0,017)	-0,164*** (0,015)	-0,015 (0,015)	-0,052** (0,018)	-0,127*** (0,017)	-0,157*** (0,016)	-0,022 (0,016)
Self-certified sickness absence, not work-related	0,475*** (0,005)	0,030** (0,011)	0,016** (0,006)	-0,007 (0,006)	0,023*** (0,006)	0,043*** (0,006)	-0,027*** (0,006)	-0,021** (0,007)	0,037*** (0,007)

Notes: All concentration indices are calculated using the convenient covariance approach (see Kakwani et al 1997). Wagstaff is the modified concentration index accounting for the outcome variable being bounded (see Wagstaff 2005). Differences between indices based on different ranking variables refer to differences from the index that uses ISEI as the ranking variable (and unmodified indices). Bootstrapped standard errors in parentheses (400 repetitions).

	Mean	Elast.	CI	CCI	%CCI
Woman	0,478	0,214	-0,046	-0,010	10,4 %
Age	43,511	0,639	0,023	0,015	-15,7 %
ISEI	48,254	0,032	0,197	0,006	-6,7 %
Equivalised disposable income 2022 (EU-scale, 10000 NOK)	54,902	-0,209	0,077	-0,016	17,1 %
Monthly wages (1000 NOK)	50,053	-0,328	0,155	-0,051	54,5 %
ln(Contracted workdays 2022)	5,385	7,251	0,012	0,088	-93,8 %
Years with employer	9,988	-0,040	0,037	-0,001	1,6 %
Educational attainment=Secondary	0,335	-0,027	-0,241	0,006	-6,8 %
Educational attainment=University I	0,338	-0,040	0,148	-0,006	6,3 %
Educational attainment=University II	0,160	-0,023	0,546	-0,013	13,5 %
Industry (NACE)=Farming (01-03)	0,010	0,000	-0,525	0,000	0,2 %
Industry (NACE)=Mining (05-09)	0,027	0,010	0,221	0,002	-2,3 %
Industry (NACE)=Energy (35-39)	0,014	0,002	0,086	0,000	-0,2 %
Industry (NACE)=Construction (41-43)	0,080	0,009	-0,129	-0,001	1,3 %
Industry (NACE)=Retail (45-47)	0,125	0,007	-0,200	-0,001	1,5 %
Industry (NACE)=Transportation (49-53)	0,051	0,015	-0,146	-0,002	2,3 %
Industry (NACE)=Hospitality (55-56)	0,028	0,004	-0,569	-0,002	2,5 %
Industry (NACE)=Information (58-63)	0,040	0,011	0,543	0,006	-6,3 %
Industry (NACE)=Finance (64-66)	0,024	0,000	0,434	0,000	0,2 %
Industry (NACE)=Technical services (68-75)	0,065	0,018	0,400	0,007	-7,5 %
Industry (NACE)=Business services (77-82)	0,039	0,003	-0,355	-0,001	1,2 %
Industry (NACE)=Public administration (84)	0,079	0,013	0,357	0,005	-5,1 %
Industry (NACE)=Education (85)	0,093	0,010	0,403	0,004	-4,3 %
Industry (NACE)=Healthcare (86-88)	0,209	0,056	-0,228	-0,013	13,6 %
Industry (NACE)=Other service (90-99)	0,036	0,003	0,006	0,000	0,0 %
Occupation (ISCO-08)=Armed forces occupations	0,004	-0,002	0,282	-0,001	0,6 %
Occupation (ISCO-08)=Professionals	0,323	0,001	0,509	0,001	-0,6 %
Occupation (ISCO-08)=Technicians and associate professionals	0,157	0,021	0,117	0,002	-2,6 %
Occupation (ISCO-08)=Clerical support workers	0,059	0,010	-0,298	-0,003	3,0 %
Occupation (ISCO-08)=Services and sales workers	0,182	0,019	-0,698	-0,013	14,1 %
Occupation (ISCO-08)=Skilled agricultural, forestry and fishery	0,008	0,004	-0,935	-0,004	3,7 %
Occupation (ISCO-08)=Craft and related trades workers	0,082	0,020	-0,373	-0,008	8,1 %
Occupation (ISCO-08)=Plant and machine operators and assemblers	0,053	0,011	-0,516	-0,005	5,8 %
Occupation (ISCO-08)=Elementary occupations	0,027	0,006	-0,955	-0,005	5,6 %
Ergonomic demands sum score	0,125	0,101	-0,362	-0,037	39,0 %
Physical environment demands sum score	0,035	0,007	-0,354	-0,002	2,7 %
Psychological demands scale	0,437	0,247	0,026	0,006	-6,9 %
Autonomy scale	0,604	-0,378	0,037	-0,014	15,0 %
Work-related musculoskeletal pain	0,461	0,071	-0,090	-0,006	6,8 %
Work-related mental distress	0,265	0,089	0,018	0,002	-1,7 %
Work-related hypertension	0,018	0,009	0,075	0,001	-0,7 %
Physical injury at work last 12m	0,070	0,019	-0,339	-0,007	7,0 %
Musculoskeletal pain unrelated to work	0,299	0,100	0,064	0,006	-6,9 %
Mental distress unrelated to work	0,285	0,120	-0,025	-0,003	3,2 %
Hypertension unrelated to work	0,084	0,022	-0,015	0,000	0,4 %
Explained				-0,068	73,6 %
Residual				-0,024	26,4 %
Total (unadjusted) CI				-0,092	

**Table 2: Results from regression-based decomposition of inequality in sick leave by occupational status**

		CCI		%CCI
Woman	-0,010***	[-0,01;-0,01]	0,106***	[0,06;0,15]
Age	0,015***	[0,01;0,02]	-0,159***	[-0,23;-0,09]
Educational attainment	-0,012	[-0,03;0,00]	0,132	[-0,04;0,30]
ISEI	0,006	[-0,05;0,06]	-0,068	[-0,69;0,56]
Disposable income	-0,016**	[-0,03;-0,01]	0,173**	[0,06;0,29]
Monthly wages	-0,051***	[-0,07;-0,03]	0,551***	[0,25;0,85]
ln(Contracted workdays)	0,088***	[0,08;0,10]	-0,951***	[-1,27;-0,63]
Years with employer	-0,001	[0,00;0,00]	0,016	[0,00;0,03]
Industry	0,003	[-0,01;0,02]	-0,029	[-0,17;0,11]
<b>Occupation</b>	<b>-0,036</b>	<b>[-0,08;0,01]</b>	<b>0,384</b>	<b>[-0,14;0,90]</b>
Sum control variables	0,031	[-0,02;0,09]	-0,331	[-1,00;0,34]
Ergonomic demands	-0,037***	[-0,05;-0,02]	0,395***	[0,23;0,56]
Physical environment demands	-0,003	[-0,01;0,00]	0,027	[-0,04;0,09]
Psychological demands	0,007***	[0,00;0,01]	-0,070***	[-0,11;-0,03]
<b>Autonomy</b>	<b>-0,014***</b>	<b>[-0,02;-0,01]</b>	<b>0,152***</b>	<b>[0,08;0,22]</b>
Sum work environment factors	-0,047***	[-0,06;-0,03]	0,504***	[0,31;0,70]
Work-related musculoskeletal pain	-0,006**	[-0,01;0,00]	0,069*	[0,02;0,12]
Work-related mental distress	0,002	[0,00;0,00]	-0,018	[-0,04;0,00]
Work-related hypertension	0,001	[0,00;0,00]	-0,007	[-0,02;0,00]
<b>Physical injury at work last 12m</b>	<b>-0,007***</b>	<b>[-0,01;0,00]</b>	<b>0,071***</b>	<b>[0,03;0,11]</b>
Sum work-related health problems	-0,011***	[-0,02;0,00]	0,116**	[0,04;0,19]
Musculoskeletal pain unrelated to work	0,007***	[0,00;0,01]	-0,070***	[-0,11;-0,03]
Mental distress unrelated to work	-0,003**	[-0,01;0,00]	0,032*	[0,01;0,06]
<b>Hypertension unrelated to work</b>	<b>0,000</b>	<b>[0,00;0,00]</b>	<b>0,004</b>	<b>[-0,01;0,01]</b>
Sum health problems unrelated to work	0,003	[0,00;0,01]	-0,034	[-0,08;0,01]
Total (unadjusted) CI	-0,092***	[-0,12;-0,07]		
Unexplained residual	-0,024***	[-0,04;-0,01]	0,259***	[0,12;0,40]

**Table 2: Results from regression-based decomposition of inequality in sick leave by occupational status**

		CCI		%CCI
Woman	-0,010***	[-0,01;-0,01]	0,106***	[0,06;0,15]
Age	0,015***	[0,01;0,02]	-0,159***	[-0,23;-0,09]
Educational attainment	-0,012	[-0,03;0,00]	0,132	[-0,04;0,30]
ISEI	0,006	[-0,05;0,06]	-0,068	[-0,69;0,56]
Disposable income	-0,016**	[-0,03;-0,01]	0,173**	[0,06;0,29]
Monthly wages	-0,051***	[-0,07;-0,03]	0,551***	[0,25;0,85]
ln(Contracted workdays)	0,088***	[0,08;0,10]	-0,951***	[-1,27;-0,63]
Years with employer	-0,001	[0,00;0,00]	0,016	[0,00;0,03]
Industry	0,003	[-0,01;0,02]	-0,029	[-0,17;0,11]
<b>Occupation</b>	<b>-0,036</b>	<b>[-0,08;0,01]</b>	<b>0,384</b>	<b>[-0,14;0,90]</b>
Sum control variables	0,031	[-0,02;0,09]	-0,331	[-1,00;0,34]
Ergonomic demands	-0,037***	[-0,05;-0,02]	0,395***	[0,23;0,56]
Physical environment demands	-0,003	[-0,01;0,00]	0,027	[-0,04;0,09]
Psychological demands	0,007***	[0,00;0,01]	-0,070***	[-0,11;-0,03]
<b>Autonomy</b>	<b>-0,014***</b>	<b>[-0,02;-0,01]</b>	<b>0,152***</b>	<b>[0,08;0,22]</b>
Sum work environment factors	-0,047***	[-0,06;-0,03]	0,504***	[0,31;0,70]
Work-related musculoskeletal pain	-0,006**	[-0,01;0,00]	0,069*	[0,02;0,12]
Work-related mental distress	0,002	[0,00;0,00]	-0,018	[-0,04;0,00]
Work-related hypertension	0,001	[0,00;0,00]	-0,007	[-0,02;0,00]
<b>Physical injury at work last 12m</b>	<b>-0,007***</b>	<b>[-0,01;0,00]</b>	<b>0,071***</b>	<b>[0,03;0,11]</b>
Sum work-related health problems	-0,011***	[-0,02;0,00]	0,116**	[0,04;0,19]
Musculoskeletal pain unrelated to work	0,007***	[0,00;0,01]	-0,070***	[-0,11;-0,03]
Mental distress unrelated to work	-0,003**	[-0,01;0,00]	0,032*	[0,01;0,06]
<b>Hypertension unrelated to work</b>	<b>0,000</b>	<b>[0,00;0,00]</b>	<b>0,004</b>	<b>[-0,01;0,01]</b>
Sum health problems unrelated to work	0,003	[0,00;0,01]	-0,034	[-0,08;0,01]
Total (unadjusted) CI	-0,092***	[-0,12;-0,07]		
Unexplained residual	-0,024***	[-0,04;-0,01]	0,259***	[0,12;0,40]

# Thank you for your attention

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