

Supplementary Table 1. Groups excluded from the study population in the observation year 2013

Excluded group	Description	%
Students	Main activity at the end of the observation year student or receiving student allowance during the observation year	10.3
Primarily self-employed	Socioeconomic status at the end of the observation year self-employed or entrepreneurial income in the observation year higher than work income	4.9
Pensioners	Main activity at the end of the observation year pensioner or receiving any type of pension other than survivor's pension during the observation year	3.6
Those with major leaves from work	Sum of sickness allowance and parental and other child home care allowances being more than 50% of one's employment income in the observation year	0.4 and 2.0 due to sickness and child care, respectively, based on whichever allowance was the highest
Recent migrants	Did not reside in the country at the end of the observation year or two preceding years	0.8

Supplementary Table 2. Operationalization of precarious employment items applied to wage earners using register data in the current Finnish version and the previously developed Swedish version of the measure

Finnish version		Swedish version		Notes
Item name	Description	Item name	Description	
Job discontinuity	Having at least three different employers or at least two new main employment episodes during the observation and the two preceding years, based on the longest employment episode of each year	Contractual temporariness	Having at least two different employers during the observation and the two preceding years, based on the employer from which largest income was gained in each year	Finnish version stricter, leading to a smaller and more selected group for this item
Multijob holding	Having three or more employers or further three or more employers in thee or more main industrial sectors during the observation year	Multiple jobs/ economic sectors	Having three or more employers or further three or more employers in thee or more main industrial sectors during the observation year	Similarly measured
Agency employment	Having the longest employment of the observation year in the industry “temporary employment agency activities”, but not having the occupation “employment agents and contractors”	Contractual relationship insecurity	Having the employer from which largest income was gained during the observation year in the industry “temporary employment agency activities”	No large discrepancy expected
Under-employment	Employment income per employed day in the observation year in relation to the median income of the study population in strata by occupation, age group, gender and employment sector			Not included in the Swedish version, which may lead to differences between the countries in what the precarious employment measure captures

Employment income	Employment income per employed day in the observation year in relation to the median income of the whole study population	Income level	The sum of employment income and work-related benefits elevated to the level the income would be if salary were paid	Although differently measured, both versions examine the income level from employment while being actively working, so no large discrepancy expected
		Lack of unionization	Proportion of employees being covered by collective bargaining agreements in the industrial sector of the employer from which largest income was gained	Not included in the Finnish version, which may lead to differences between the countries in what the precarious employment measure captures

Supplementary Table 3. Correlations between the precarious employment items

	Job discontinuity	Multijob holding	Agency employment	Underemployment	Employment income
Job discontinuity	1.000				
Multijob holding	0.152	1.000			
Agency employment	0.112	0.071	1.000		
Underemployment	0.125	0.105	0.068	1.000	
Employment income	0.219	0.086	0.089	0.465	1.000

Supplementary Table 4. Distribution and assigned score values of the precarious employment items among those with precarious employment

Precarious employment item	N	%	Score value
Job discontinuity			
No	30 779	33.4	0
Yes	61 229	66.6	-2
Multijob holding			
No	61 194	66.5	0
Jobs	13 863	15.1	-1
Jobs and sectors	16 951	18.4	-2
Agency employment			
No	82 245	89.4	0
Yes	9 763	10.6	-1
Underemployment			
No	27 701	30.1	0
≥1/3 and <2/3 of median	35 285	38.4	-1
<1/3 of median	29 022	31.5	-2
Employment income			
≥200% of median	0	0.0	2
≥120%, <200 % of median	36	0.0	1
≥80%, <120% of median	3 247	3.5	0
≥60%, <80% of median	14 116	15.3	-1
<60% of median	74 609	81.1	-2
Total	92 008	100.0	

Supplementary Table 5. Percentage distribution of combinations of the five precarious employment items (job discontinuity, multijob holding, agency employment, underemployment, and employment income) contributing among men and women defined as precariously employed

Contributing precarious employment items	Men	Women	All
Two items only			
Job discontinuity & multiple jobs in multiple sectors	3.7	1.9	2.8
Job discontinuity & employment income below 60% of the median	6.4	18.0	12.5
Multiple jobs in multiple sectors & employment income below 60% of the median	0.7	1.9	1.3
Underemployment below one-third of the median & employment income below 60% of the median	20.1	19.7	19.9
Other combinations of two items	<0.1	<0.1	<0.1
Three items only			
Job discontinuity, multiple jobs (in multiple sectors) & employment income at least below 80% of the median	7.2	9.9	8.6
Job discontinuity, agency employment & employment income at least below 80% of the median	3.3	2.6	2.9
Job discontinuity, at least some underemployment & employment income at least below 80% of the median	31.5	23.0	27.0
Multiple jobs (in multiple sectors), at least some underemployment & employment income at least below 80% of the median	9.2	9.6	9.4
Agency employment, at least some underemployment & employment income at least below 80% of the median	2.1	1.6	1.8
Other combinations of three items	1.3	1.0	1.2
Four or five items	14.5	10.8	12.5
Total, %	100.0	100.0	100.0
N	43 308	48 700	92 008

Supplementary Table 6. Percentage of employees (darker shades represent quartiles with higher %) with precarious employment (PE), job insecurity (JI) and unemployment occurrence (UE) by 3-digit occupational group, excluding military occupations and occupational groups in which the percentage is based on less than 3 individuals

Occupational group code and name	N	PE %	JI %	UE %
111 Legislators and senior officials	3684	1.3	25.9 (I)	8.7
112 Managing directors and chief executives	2055	0.7	25.9 (I)	13.7
121 Business services and administration managers	9027	1.1	10.5	16.8
122 Sales, marketing and development managers	12445	0.8	32.1	20.5
132 Manufacturing, mining, construction, and distribution managers	11828	1.1	22.6	16.6
133 Information and communications technology service managers	4638	0.7	66.7	17.3
134 Professional services managers	14073	1.2	23.4	8.4
141 Hotel and restaurant managers	597	3.7	33.3 (I)	24.2
142 Retail and wholesale trade managers	3484	1.2	33.3 (I)	17.9
143 Other services managers	945	4.8	33.3 (I)	19.5
211 Physical and earth science professionals	3660	2.7	11.1	20.3
212 Mathematicians, actuaries and statisticians	824	3.4	27.1 (I)	13.6
213 Life science professionals	7924	3.3	31.0	19.6
214 Engineering professionals (excluding electrotechnology)	41059	1.4	27.8	17.8
215 Electrotechnology engineers	18232	1.6	36.2	21.9
216 Architects, planners, surveyors and designers	10004	4.4	13.0	21.2
221 Medical doctors	14593	1.3	8.3	1.9
222 Nursing and midwifery professionals	5348	0.8	23.1	3.2
225 Veterinarians	688	2.8	12.2 (I)	6.6
226 Other health professionals	6361	2.4	13.8	7.4
231 University and higher education teachers	14435	5.0	24.5	13.3
232 Vocational education teachers	14596	3.4	34.0	18.9
233 Secondary education teachers	21014	4.1	25.0	15.7
234 Primary school and early childhood teachers	39248	3.5	12.7	14.9
235 Other teaching professionals	23569	10.9	26.5	24.0
241 Finance professionals	16701	1.6	18.2	12.8
242 Administration professionals	24608	2.8	23.2	15.6
243 Sales, marketing and public relations professionals	27785	2.7	37.0	22.3
251 Software and applications developers and analysts	29635	2.0	32.1	16.7
252 Database and network professionals	5338	2.4	33.3 (I)	19.5
261 Legal professionals	6941	1.8	15.8	5.8
262 Librarians, archivists and curators	3299	3.1	10.0	13.1
263 Social and religious professionals	19654	3.3	25.4	13.6
264 Authors, journalists and linguists	10826	7.1	38.1	24.6
265 Creative and performing artists	6603	22.8	28.6	36.0
311 Physical and engineering science technicians	52882	1.6	24.4	18.1
312 Mining, manufacturing and construction supervisors	8456	1.4	16.0	22.8
313 Process control technicians	2637	1.5	24.2 (I)	14.4
314 Life science technicians and related associate professionals	5434	4.3	29.4	23.6
315 Ship and aircraft controllers and technicians	2811	1.9	40.0	16.3
321 Medical and pharmaceutical technicians	12151	1.8	2.3	7.3
322 Nursing and midwifery associate professionals	56119	1.7	15.9	6.6
324 Veterinary technicians and assistants	383	1.0	13.5 (I)	10.9

325	Other health associate professionals	13296	3.5	16.3	11.3
331	Financial and mathematical associate professionals	24882	2.2	28.4	17.1
332	Sales and purchasing agents and brokers	47623	3.5	37.5	22.9
333	Business services agents	13841	5.5	23.5	24.7
334	Administrative and specialised secretaries	24723	1.8	25.8	15.7
335	Regulatory government associate professionals	17901	1.4	9.6	5.9
341	Legal, social and religious associate professionals	34574	4.6	19.4	20.5
342	Sports and fitness workers	4488	15.0	20.0 (I)	30.0
343	Artistic, cultural and culinary associate professionals	5437	6.4	15.4	25.5
351	Information and communications technology operations and user support technicians	19684	2.2	43.1	20.5
352	Telecommunications and broadcasting technicians	4807	4.1	44.6 (I)	21.8
411	General office clerks	5809	12.7	28.6	29.4
412	Secretaries (general)	37320	4.6	29.0	26.0
413	Keyboard operators	1516	4.6	29.8 (I)	25.5
421	Tellers, money collectors and related clerks	16074	2.2	34.0	16.6
422	Client information workers	16983	6.2	29.8	26.8
431	Numerical clerks	16966	2.0	20.0	18.4
432	Material-recording and transport clerks	10834	1.9	17.4	22.6
441	Other clerical support workers	25510	5.2	32.7	24.9
511	Travel attendants, conductors and guides	2721	7.2	16.6 (I)	31.5
512	Cooks	32654	7.9	16.1	28.5
513	Waiters and bartenders	10971	17.4	11.1	40.2
514	Hairdressers, beauticians and related workers	3940	14.0	16.6 (I)	35.3
515	Building and housekeeping supervisors	25885	5.0	18.0	24.7
516	Other personal services workers	2205	8.7	16.6 (I)	25.5
522	Shop salespersons	94788	7.6	20.5	27.2
523	Cashiers and ticket clerks	7676	9.9	14.3	23.9
524	Other sales workers	19541	12.9	23.5	36.0
531	Child care workers and teachers' aides	48839	8.4	18.7	32.7
532	Personal care workers in health services	93469	4.2	20.9	18.5
541	Protective services workers	18881	7.3	14.3	17.2
611	Market gardeners and crop growers	5961	12.5	26.7	40.9
612	Animal producers	7079	10.0	24.0	27.2
613	Mixed crop and animal producers	1255	21.4	27.3 (I)	35.7
621	Forestry and related workers	2382	11.4	27.5 (I)	61.3
622	Fishery workers, hunters and trappers	447	10.3	27.5 (I)	33.0
711	Building frame and related trades workers	45736	7.9	36.4	54.8
712	Building finishers and related trades workers	21567	4.6	17.1	43.6
713	Painters, building structure cleaners and related trades workers	6855	6.2	18.2	53.3
721	Sheet and structural metal workers, moulders and welders, and related workers	17880	3.5	37.8	49.0
722	Blacksmiths, toolmakers and related trades workers	23055	2.5	33.3	34.2
723	Machinery mechanics and repairers	38273	2.8	22.8	25.8
731	Handicraft workers	1689	5.3	45.5 (I)	34.7
732	Printing trades workers	6036	2.9	50.0	41.3
741	Electrical equipment installers and repairers	23426	4.5	25.8	31.2
742	Electronics and telecommunications installers and repairers	9454	4.5	26.3	33.2
751	Food processing and related trades workers	4134	5.4	31.6 (I)	24.6
752	Wood treaters, cabinet-makers and related trades workers	8601	5.2	36.8	46.8

753	Garment and related trades workers	2759	6.7	31.6 (I)	45.3
754	Other craft and related workers	2431	1.4	31.6 (I)	27.6
811	Mining and mineral processing plant operators	7675	2.7	28.6	40.2
812	Metal processing and finishing plant operators	6255	2.1	30.9 (I)	25.5
813	Chemical and photographic products plant and machine operators	7885	2.0	20.0	16.6
814	Rubber, plastic and paper products machine operators	8601	2.2	33.3	33.5
815	Textile, fur and leather products machine operators	5996	5.9	18.2	39.1
816	Food and related products machine operators	13583	4.8	24.1	26.2
817	Wood processing and papermaking plant operators	17164	1.6	42.4	24.0
818	Other stationary plant and machine operators	9373	3.3	17.6	33.6
821	Assemblers	20494	3.2	32.0	35.7
831	Locomotive engine drivers and related workers	3229	0.7	21.9 (I)	7.4
832	Car, van and motorcycle drivers	9851	13.7	23.5	30.3
833	Heavy truck and bus drivers	43461	4.3	20.0	28.3
834	Mobile plant operators	20215	5.8	27.9	38.6
835	Ships' deck crews and related workers	1432	3.0	21.9 (I)	23.6
911	Domestic, hotel and office cleaners and helpers	63385	9.1	27.7	32.1
912	Vehicle, window, laundry and other hand cleaning workers	292	7.5	27.7 (I)	34.3
921	Agricultural, forestry and fishery labourers	1085	14.8	24.8 (I)	50.3
931	Mining and construction labourers	9382	7.2	5.3	47.7
932	Manufacturing labourers	3254	2.8	18.9 (I)	31.7
933	Transport and storage labourers	32784	6.3	20.6	31.4
941	Food preparation assistants	15945	11.8	29.3	37.3
951	Street and related service workers	333	30.3	24.8 (I)	42.4
961	Refuse workers	1283	5.1	26.7 (I)	57.8
962	Other elementary workers	4953	14.0	28.6	45.9

(I) = Imputed value

Supplementary Table 7. Proportion of employees with precarious employment in specific occupations within the top quartile of 3-digit occupational groups, excluding occupations with less than 100 individuals

Occupational code and name		%	N
951	Street and related service workers	30.3	333
–	No further digits applied		
265	Creative and performing artists	22.8	6 603
2651	Visual artists	23.2	426
2652	Musicians, singers and composers	23.9	3 247
2653	Dancers and choreographers	31.5	416
2654	Film, stage and related directors and producers	15.0	986
2655	Actors	19.5	1 007
2656	Announcers on radio, television and other media	30.8	182
2659	Creative and performing artists not elsewhere classified	46.8	169
613	Mixed crop and animal producers	21.4	1 255
–	No further digits applied		
513	Waiters and bartenders	17.4	10 971
5131	Waiters	17.2	10 235
5132	Bartenders	22.2	546
342	Sports and fitness workers	15.0	4 488
3421	Athletes and sports players	12.2	288
3422	Sports coaches, instructors and officials	11.3	930
3423	Fitness and recreation instructors and program leaders	16.3	3 178
921	Agricultural, forestry and fishery labourers	14.8	1 085
9211	Crop farm labourers	21.3	211
9214	Garden and horticultural labourers	13.8	528
9215	Forestry labourers	13.9	252
962	Other elementary workers	14.0	4 953
9621	Messengers, package deliverers and luggage porters	14.4	2 712
9622	Odd job persons	11.1	1 557
9629	Elementary workers not elsewhere classified	20.2	648
514	Hairdressers, beauticians and related workers	14.0	3 940
5141	Hairdressers	12.2	2 905
5142	Beauticians and related workers	18.8	1 035
832	Car, van and motorcycle drivers	13.7	9 851
8322	Car, taxi and van drivers	13.7	9 752

524	Other sales workers	12.9	19 541
5242	Sales demonstrators	7.8	1 687
5243	Door to door salespersons	12.3	130
4244	Contact centre salespersons	14.4	5 668
5245	Service station attendants	6.8	3 003
5246	Food service counter attendants	14.8	8 891
411	General office clerks	12.7	5 809
–	No further digits applied		
611	Market gardeners and crop growers	12.5	5 961
61112	Field crop supervisors and workers	19.7	940
61132	Gardeners, horticultural and nursery growers and workers	11.0	4 748
941	Food preparation assistants	11.8	15 945
9411	Fast food preparers	20.1	1 149
9412	Kitchen helpers	11.2	14 796
621	Forestry and related workers	11.4	2 382
–	No further digits applied		
235	Other teaching professionals	10.9	23 569
2351	Education methods specialists	3.2	5 760
2352	Special needs teachers	2.3	6 677
2353	Other language teachers	21.3	221
2354	Other music teachers	17.6	1 651
2355	Other arts teachers	26.2	854
23591	Career counsellors	3.6	2 717
23592	Other teaching professionals	27.9	5 606
622	Fishery workers, hunters and trappers	10.3	447
62212	Fishery supervisors and workers (Aquaculture workers)	5.9	289
6222	Inland and coastal waters fishery workers	15.0	127
612	Animal producers	10.0	7 079
61212	Dairy and livestock workers	18.1	1 677
61214	Farm relief workers	6.7	4 460
6122	Poultry producers	10.4	173
61291	Fur and reindeer producers	9.7	659
523	Cashiers and ticket clerks	9.9	7 676
–	No further digits applied		

911	Domestic, hotel and office cleaners and helpers	9.1	63 385
9111	Domestic cleaners and helpers	20.5	156
91121	Office cleaners, etc.	9.8	37 020
91122	Hotel cleaners	10.5	1 405
91123	Hospital and institutional helpers	6.3	17 020
91124	Kindergarten assistants	9.1	4 211
91129	Other cleaners not elsewhere classified	14.9	3 573
516	Other personal services workers	8.7	2 205
51631	Undertakers and related funeral workers	11.2	250
5164	Pet groomers and animal care workers	11.4	964
5165	Driving instructors	4.2	739
5169	Personal services workers not elsewhere classified	11.8	144
531	Child care workers and teachers' aides	8.4	48 839
53111	Childminders in kindergartens and other institutions	4.4	24 883
53112	Private childminders	4.4	10 242
53113	Children's club leaders	22.9	2 003
5312	Teachers' aides	18.2	11 480
512	Cooks	7.9	32 654
51201	Cooks	10.5	20 323
51202	Restaurant services supervisors and shift managers	3.8	12 299
711	Building frame and related trades workers	7.9	45 736
7111	House builders	9.7	21 620
7112	Bricklayers and related workers	10.9	1 162
7113	Stonemasons, stone cutters, splitters and carvers	6.5	430
7114	Concrete placers, concrete finishers and related workers	4.7	1 100
7115	Carpenters and joiners	6.5	15 667
7119	Building frame and related trades workers not elsewhere classified	4.1	4 619
522	Shop salespersons	7.6	94 788
5221	Shop keepers	14.7	238
5222	Shop supervisors	2.2	10 634
5223	Shop sales assistants	8.2	83 916
912	Vehicle, window, laundry and other hand cleaning workers	7.5	292
9122	Vehicle cleaners	6.7	208
541	Protective services workers	7.3	18 881
5411	Fire-fighters	7.1	3 682
5412	Police officers	1.3	4 200
5413	Prison guards	1.7	1 713
5414	Security guards	11.5	8 349
5419	Protective services workers not elsewhere classified	8.0	937

931	Mining and construction labourers	7.2	9 382
9311	Mining and quarrying labourers	2.6	379
9312	Civil engineering labourers	5.4	5 979
9313	Building construction labourers	11.6	2 789
511	Travel attendants, conductors and guides	7.2	2 721
5111	Travel attendants and travel stewards	2.2	815
5112	Transport conductors	3.1	1 333
5113	Travel guides	23.7	573
264	Authors, journalists and linguists	7.1	10 826
2641	Authors and related writers	15.3	301
26421	Managing editors and subeditors	5.5	568
26422	Journalists	4.1	4 852
26423	Radio and television journalists	4.8	2 473
2643	Translators, interpreters and other linguists	14.3	2 622
753	Garment and related trades workers	6.7	2 759
7531	Tailors, dressmakers, furriers and hatters	7.0	597
7533	Sewing, embroidery and related workers	9.8	783
7534	Upholsterers and related workers	4.4	956
7536	Shoemakers and related workers	6.4	157

Supplementary Table 8. Predicted proportion of employees with unemployment occurrence and the predicted number of unemployment days during the 5-year follow-up by employment type, stratified by 5-year unemployment history

Predicted % unemployment occurrence during 5 years (a)	Unemployment history			
	No unemployment (N=1248285)	1–90 days (N=184103)	91–365 days (N=213563)	>365 days (N=151931)
Employment type				
High income	9.9	26.9	39.1	46.8
Standard	11.3	29.1	39.1	49.8
Sub-standard	16.4	37.1	49.7	63.5
Precarious	23.9	50.1	63.8	74.5
Limited	24.5	48.6	72.6	84.6
Predicted unemployment days during 5 years (a, b)	Unemployment history			
	No unemployment (N=155438)	1–90 days (N=62837)	91–365 days (N=110068)	>365 days (N=111249)
Employment type				
High income	360	365	427	514
Standard	361	326	382	497
Sub-standard	396	356	415	583
Precarious	444	407	464	640
Limited	456	426	586	807

Adjusted for age, gender, origin and education

(a) Including individuals with a defined 3-digit occupation and who remain in the country during the whole 5-year follow-up

(b) Including individuals with unemployment occurrence during the 5-year follow-up