

# Appendix A

## Operationalizing socioeconomic position using occupation.

In the HUNT3 Survey interview, all participants were asked: “What is/was the title of your main occupation?” Free-text answers were manually classified according to the *Standard Classifications of Occupations* by Statistics Norway,<sup>1</sup> which is based on the European Union’s version of the *International Standard Classification of Occupations-88*.<sup>2</sup>

The standard categorize occupations according to skill level and specialization, degree of independence, and manual labor but not social position.<sup>1</sup> Occupations are coded with up to four digits, with increasing detail. One digit indicates major groups; two digits, submajor groups; three digits, minor groups; and four digits, unit groups. The minor occupational group was the highest level of detail available in the HUNT3 Survey.

Occupational socioeconomic position was operationalized using the European Socio-economic Classification scheme.<sup>3</sup> The full version of the scheme requires employment status and size of organization in addition to occupation to assign a class position. We used the simplified class scheme, based on minor occupational group only<sup>3</sup>, as the HUNT3 Survey did not have data corresponding to employment status and size of organization. It is shown that the agreement between three-digit full and simplified version of this scheme is 79.7% for the total workforce.<sup>3</sup>

The syntax is available from <https://www.iser.essex.ac.uk/archives/esec/matrices-and-syntax>. It was performed using SPSS 25.0 (SPSS Inc., Chicago, IL, USA).

Table 1 gives details of transformation of data, discrepancies between the Norwegian and European Union standard and the allocated position in the full classification scheme. 2179 individuals had alterations to their occupational data to fit the syntax, 5.7% (2179/38027) of the total sample.

In the HUNT3 Survey data, the minor occupational group was a string variable. To perform the syntax, it had to be altered to a numeric variable. The string “011” changed to numeric value “11,” which was manually corrected in the syntax. In the 3-digit variable, some participants were classified with 1 digit and 2 digits only. These were transformed to the corresponding 3-digit minor group, at the lowest level of detail, by manually adding suffix digits 0 or 00. This is in line with operationalizing of European Socio-economic Classification (see footnote table 1).<sup>3</sup>

Norwegian minor groups, which were not found in the European Union standard, were altered to the level of detail in which corresponding groups could be identified. These were *Standard Classifications of Occupations* by Statistics Norway codes: 112 (corresponding to 2 digits), 25 (corresponding to 1 digit), 251-6 (corresponding to 1 digit), 349 (corresponding to 2 digits), 631 (corresponding to 1 digit), 641 (corresponding to 1 digit), 735 (corresponding to 2 digits), and 745 (corresponding to 2 digits).

In total, 9 classes were created. To increase power and simplify interpretation, the full scheme was collapsed into a 3-class version, with “high” combining class 1 and 2, “middle” combining 3 to 6, and “low” combining 7 to 9.<sup>3</sup> The high occupational class represents large employers, higher-grade and lower-grade professionals, administrative and managerial occupations, higher-grade technician occupations, and supervisory occupations. The middle occupational class consist of small employers, self-employed individuals, lower supervisory occupations, and lower technician occupations. The low occupational class contain lower services, sales and clerical occupations, lower technical occupations, and routine occupations.

Table A1. The distribution of transformed occupational data and discrepancies between the Norwegian and International Standard Classifications of Occupations, and allocation in the European Socio-economic Classification scheme.

Standard Classifications of Occupations		European Socio-economic		
Norwegian	International	Classification scheme	<i>n</i>	%
1	100	1	262	(0.69)
011 (=num 11)	011=11	3	134	(0.35)
<b>112*</b>	→ 11=110	1	31	(0.08)
12	120	1	73	(0.19)
13	130	4	20	(0.05)
2	200	1	10	(0.03)
21	210	1	10	(0.03)
22	220	1	1	(0.00)
23	230	2	27	(0.07)
24	240	1	9	(0.02)
25	→ 2=200	1	4	(0.01)
<b>251*</b>	→ 2=200	1	296	(0.78)
<b>252*</b>	→ 2=200	1	48	(0.13)
<b>253*</b>	→ 2=200	1	20	(0.05)
<b>254*</b>	→ 2=200	1	138	(0.36)
<b>255*</b>	→ 2=200	1	64	(0.17)
<b>256*</b>	→ 2=200	1	46	(0.12)
3	300	3	39	(0.10)
31	310	2	37	(0.10)
33	330	3	241	(0.63)
34	340	3	45	(0.12)
<b>349*</b>	→ 34=340	3	160	(0.42)
4	400	3	1	(0.00)
41	410	3	1	(0.00)
42	420	3	1	(0.00)
5	500	7	1	(0.00)
51	510	7	8	(0.02)
61	610	5	4	(0.01)
<b>631*</b>	→ 6=600	5	93	(0.24)
<b>641*</b>	→ 6=600	5	99	(0.26)
7	700	8	20	(0.05)
71	710	8	1	(0.00)
72	720	8	6	(0.02)
73	730	6	1	(0.00)
<b>735*</b>	→ 73=730	6	38	(0.10)
74	740	8	1	(0.00)
<b>745*</b>	→ 74=740	8	46	(0.12)
8	800	9	62	(0.16)
81	810	9	38	(0.10)
82	820	9	35	(0.09)
83	830	9	6	(0.02)
9	900	9	1	(0.00)
93	930	9	1	(0.00)
<b>Sum</b>			<b>2179</b>	<b>(5.73)</b>

Bold\* = Divergence of *Standard Classifications of Occupations* by Statistics Norway from the European Union's version of *The International Standard Classification of Occupations-88*.

## References

1. Statistics Norway. Standard Classification of Occupations. Oslo/Kongsvinger: Statistics Norway, 1998.
2. International Labour Organization (ILO). The International Standard Classification of Occupations, ISCO-88 [Webpage]. 1988 [updated 18.09.2004. Available from: <https://www.ilo.org/public/english/bureau/stat/isco/isco88/index.htm> accessed 24.05. 2019.
3. Rose D, Harrison E. The european socio-economic classification: A new social class schema for comparative European research. *Eur Soc* 2007;9(3):459-90. doi: 10.1080/14616690701336518