

Women working in IT sector



in Northern Finland and Northern Sweden

Survey report

Women working in IT sector in Northern Finland and Northern Sweden

2013

Produced by **MätaJämt** – *Increased growth with equality and diversity as tools* - project 2010-2013

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Survey is available online: <<http://ged-scanning.com/surveyITwomen.pdf>> and <matajamt.cdt.ltu.se/>

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Foreword

The Survey *Women working in IT sector in Northern Finland and Northern Sweden* aims to find out amount of female and male workers in IT sector in Finland and Sweden, and how occupations inside IT sector are divided by gender. Special focus is in representation of women and northern parts of the countries, which include to *Interreg IV A North* –programme area¹.

In this study IT sector was defined as Information technology sector using *Classification of Occupations*² by ISCO-88 (COM) of European Unions member countries. It was based on Classification of occupations ISCO-88 of the International Labour Organisation. Statistical data providers were *Statistics Finland* and *Statistics Sweden*. Newest data available was from year 2009 (Finland) and from year 2010 (Sweden). Based on classification there were eleven occupations in Finland and ten in Sweden suitable for survey. Variables used were gender, occupations, regions and year. Also existing literature and researches were used.

Survey *Women working in IT sector in Northern Finland and Northern Sweden* was part of **Mätajämt** – development and research project (2010-2013). Aim of the project was to create growth and productivity in technical and educational environments with gender equality and diversity. Project was funded by European Union programme *Interreg IV A Nord*³, Norrbotten County Administration, Regional Council of Lapland, Centre for Distance-spanning Technology/Luleå Technical University and Center for Internet Excellence/University of Oulu.

The first chapter *Introducing the data* presents statistical data of amount of women and men in IT sector occupations. Second chapter *Analyses of the data* further analyses of presented data. Third chapter *Conclusions* summarizes main findings and introduces phenomenon *Gender*⁴ *segregation of labour markets*.

¹ Mätajämt –project was funded partly by Interreg –programme.

² System of grading's: *Classification of Occupations* 2001 by Statistics Finland (StatFin) and *Standard för svensk yrkesklassificering* (SSYK -96) by Statistics Sweden (StatSwe).

³ Interreg IV A Nord is one of European Regional Development Fund –programs. More information: <http://www.interregnord.com/en/about-the-programme/program-area.aspx>

⁴ **Gender** refers to socialization process which produces only two genders in western societies: a female and a male (a girl and a boy) versus biological reality which is diverse. More information: see e.g. Judith Butler *Gender Trouble*.

1 Introducing the data

Jenny Selesniemi, Leena Teräs

Aim of the survey is to find out amount of female and male workers in IT sector in Finland and Sweden based on *Classification of Occupations*. Focus is on the Northern parts of the countries (3 regions in Finland and 2 provinces in Sweden) which are part of *Interreg IV A North* – programme area. Rests of the countries are examined as one ensemble.



Data was provided by *Statistics Finland* (StatFin) and *Statistics Sweden* (SCB). Used variables were gender, occupation, region and year. Data used was latest available: Finnish data from year 2009 and Swedish 2010.

Principal categories of <i>Classification of Occupations</i>	IT occupations in Finnish data	IT occupations in Swedish data
0 Armed forces	1236 Computing services managers	1316 Managers of small enterprises in public administration
1 Legislators, senior officials and managers	1316 Managers of small enterprises in transport, storage and communications	2131 Computer systems designers, analysts and programmers
2 Professionals	213 Computing Professional	2139 Computing professionals not elsewhere classified
3 Technicians and associate professionals	2144 Electronics and telecommunications engineers	2144 Electronics and telecommunications engineers
4 Clerks	3114 Electronics and telecommunications technicians	3114 Electronics and telecommunications engineering technicians
5 Service and care workers, and shop and market sales workers	312 Computer associate professionals	3121 Computer assistants
6 Skilled agricultural and fishery workers	313 Optical and electronic equipment operators	3122 Computer equipment operators
7 Craft and related trades workers	411 Secretaries and keyboard-operating clerks	4111 Data entry operators
8 Plant and machine operators and assemblers	7242 Electronics mechanics and servicers	7242 Electronics mechanics, fitters and servicers
9 Elementary occupations	7244 Telecommunications installers and mechanics	8282 Electrical- and electronic-equipment assemblers
X Unknown	8283 Electronic-equipment assemblers	

Table 1. Classification categories.

Left column in table 1 presents principal categories of *Classification of Occupations*. Middle column presents selected subcategories, which are IT occupations in Finland in year 2009. Finnish data includes 11 categories. Right column presents 10 IT categories⁵ in Sweden.

1.1 Finland

Population in year 2009 in Finland was 5 351 427 inhabitants, from which 2 726 360 were women and 2 625 067 men. According to *Classification of Occupations* 2 539 995 people took part in working life. Employment rate of women was 68% and men 69%. IT sector employed 6% (160 188) of all employees, 44% (71 045) women and 56% (89 143) men.

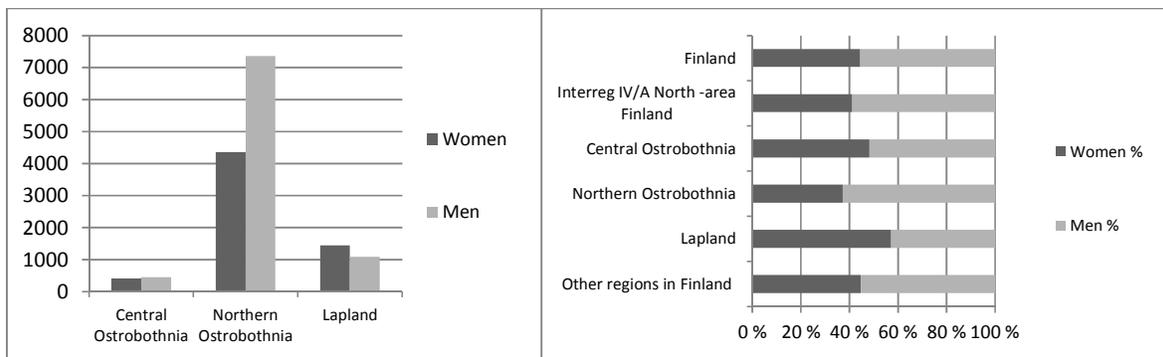


Chart 1. Amount of IT sector employees in Finnish Interreg -programme area, divided by regions (StatFin).

Chart 1. Interreg - programme area includes three regions in Finland: *Central Ostrobothnia*, *Northern Ostrobothnia* and *Lapland*. In year 2009 there were 15 124 employees in IT sector, 41% (6 230) women and 59% (8 894) men. Clear majority of employees were located in Northern Ostrobothnia (11 721; 77%), when Lapland (2 538; 17%) and Central Ostrobothnia (865; 6%) came far behind. In Finland 9% of all employees in IT sector located in Interreg area.

⁵ Selection of occupations relevant to this survey was made in cooperation with officials of Statistics Finland and Statistics Sweden. More detailed list of categories is in Appendix.

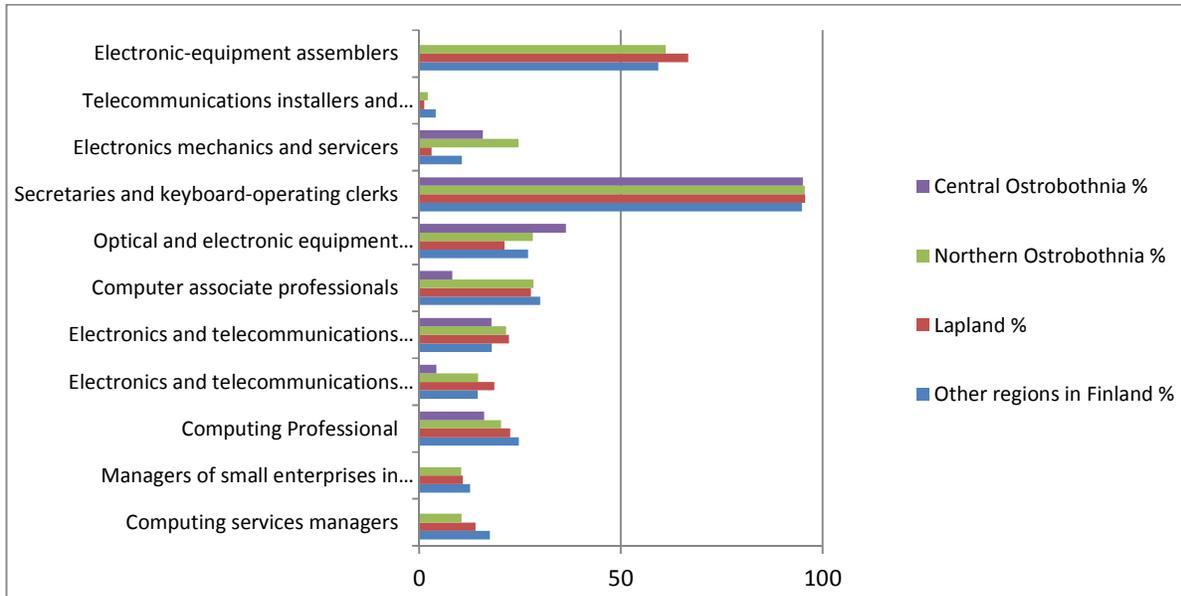


Chart 2. Women employees in IT sector occupations, divided by study areas (StatFin).

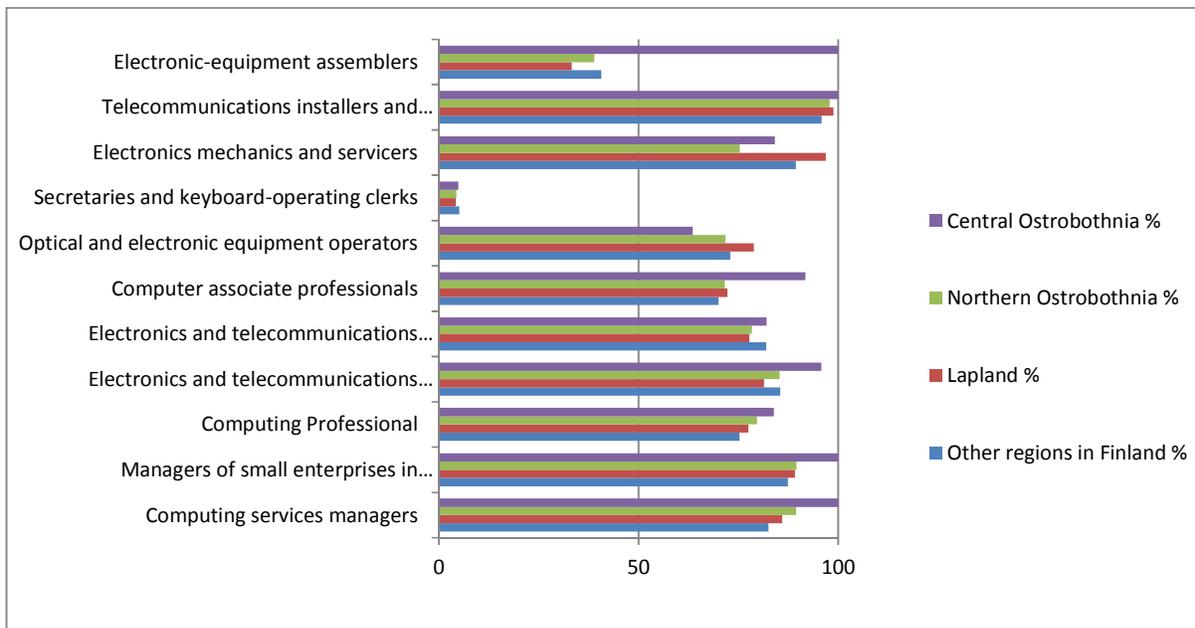


Chart 3. Men employees in IT sector occupations, divided by study areas (StatFin).

Charts 2 and 3 shows most female and male dominated occupations in Finland divided by regions. Women dominated clearly only one occupation: *Secretaries and keyboard-operating clerks*. Another slightly female dominated IT occupation in all other regions except in Central Ostrobothnia was *Electronic-equipment assemblers*. In Central Ostrobothnia it was single-sex male occupation. Other most male dominated IT occupations were *Telecommunication installers*, *Managers of small enterprises in transport, storage and communications* and *Computer service managers*.

1.1.1 Central Ostrobothnia

Central Ostrobothnia is the southernmost and smallest region in Finnish Interreg area. It has a coast line, Bay of Bothnia in the west. Population in end of year 2009 was 68 131. Biggest town in the region is Kokkola. Key livelihoods were agriculture, wood industry, metal and engineering industry; IT sector employed 3% of the workforce. Main higher education institutes were *University of Applied sciences Centria* and *University center Chydenius* which is part of *University of Jyväskylä*.

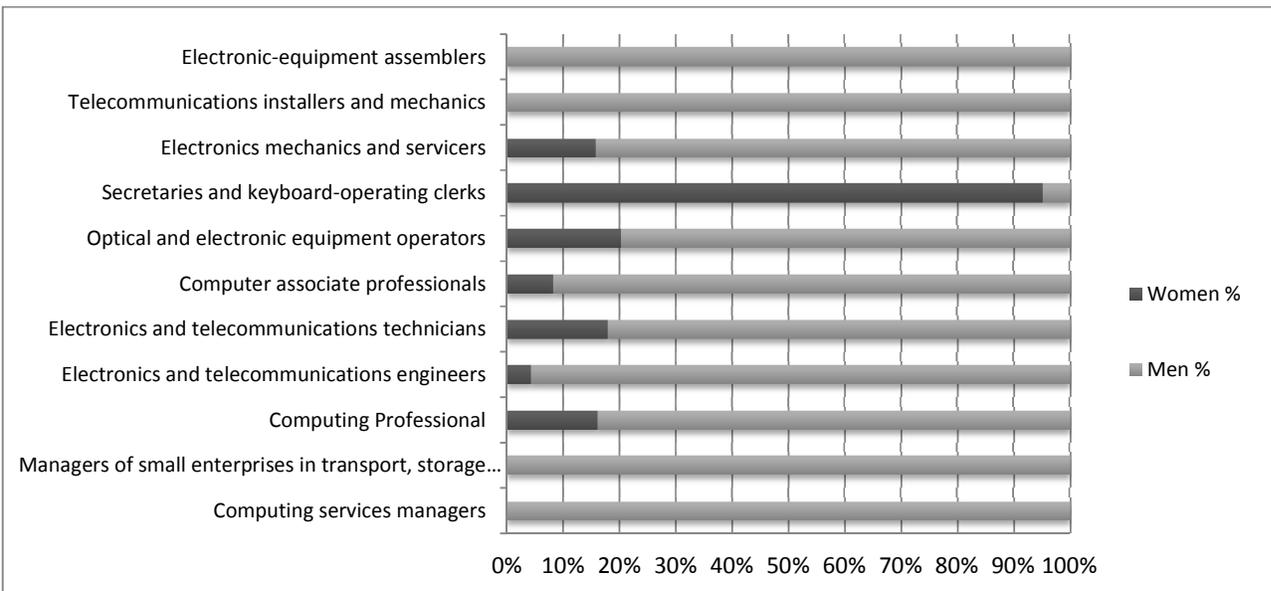


Chart 4. IT occupations in Central Ostrobothnia divided by gender (StatFin).

Chart 4. In year 2009 in Central Ostrobothnia IT sector employed 865 workers which was 3% of all employees (28 029) in the region. Amount of women was 417 (48%) and amount of men 448 (52%). Only occupation *Secretaries and keyboard-operating clerks* which was strongly female dominated: 95% of the employees were women. There were none female representation in four IT occupations: *Telecommunications installers and mechanics*, *Electronic-equipment assemblers*, *Computing services managers* and *Managers of small enterprises in transport, storage and communications*. Occupations which both genders were represented, men had clear majority in all of them.

1.1.2 Northern Ostrobothnia

Northern Ostrobothnia is geographically middle region of Finnish Interreg area. It has a border with Russia in the east and a coast line, Bay of Bothnia in the west. Population in end of year 2009 was 392 110. Biggest town is Oulu with population of 140 000. Key livelihoods were metal and forest industry, agriculture and technology industry; IT sector employed 8% of the workforce. Main higher educational institutes were University of Oulu and University of applied sciences of Oulu region.

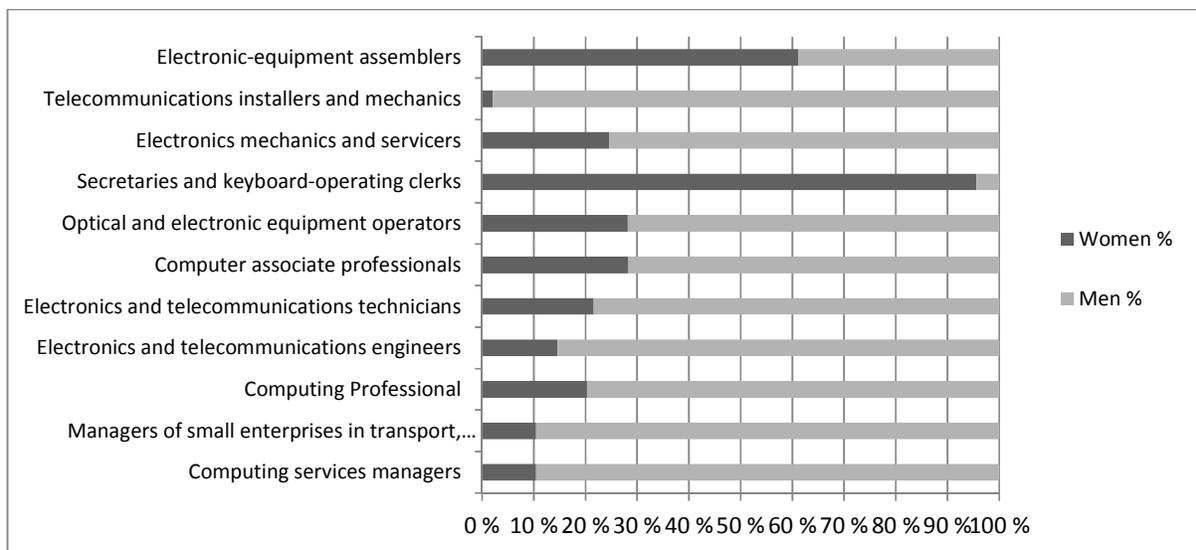
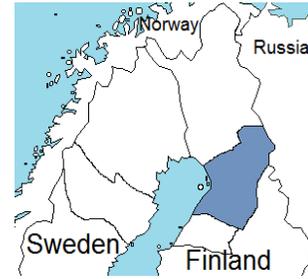


Chart 5. IT occupations in Northern Ostrobothnia divided by gender (StatFin).

Chart 5. In year 2009 in Northern Ostrobothnia IT sector employed 8% (11 721) of total workforce of the region (152 824). Amount of women were 4 360 (37%) and men 7 361 (63%). Women had majority in two IT occupations out of eleven: *Secretaries and keyboard-operating clerks* (96%) and *Electronic-equipment assemblers* (61%). Men had majority in nine IT occupations out of eleven. Three most male dominated occupations were *Telecommunications installers and mechanics* (98%), *Managers of small enterprises in transport, storage and communications* (90%) and *Computing services managers* (90%). Every occupation had both female and male employees.

1.1.3 Lapland

Lapland is northernmost region in Finnish Interreg area. It has a border with Sweden, Norway and Russia. Population in end of year 2009 was 183 748. Main towns are Rovaniemi, Tornio and Kemi. Key livelihoods were forest and metal industry, tourism and mining; IT sector employed 4% of the workforce. Main higher educational institutes were University of Lapland, Kemi-Tornio and Rovaniemi Universities of applied sciences.

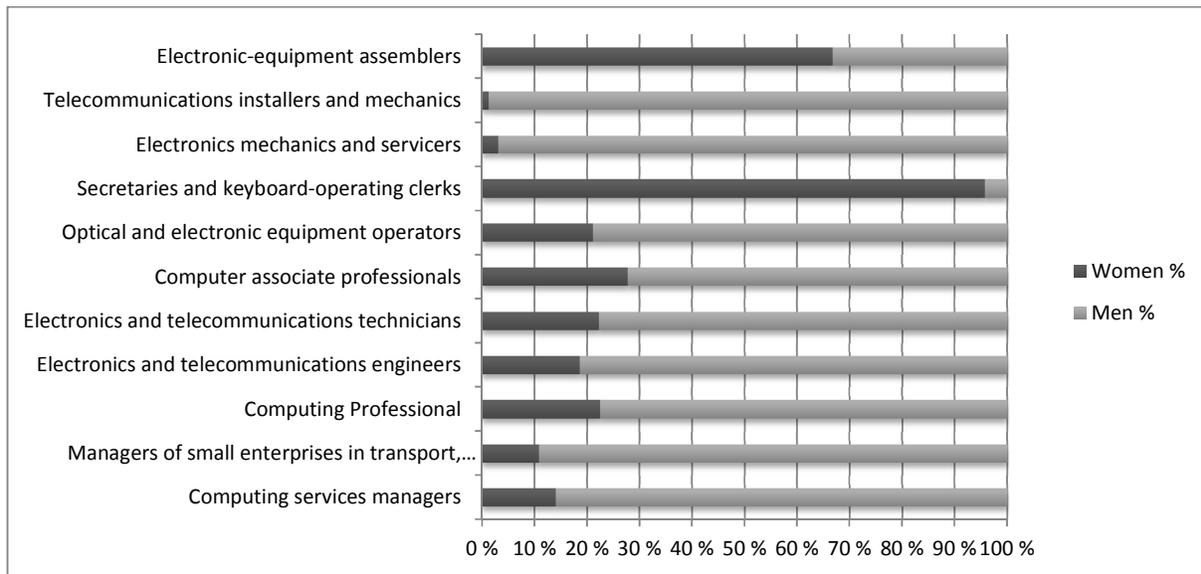


Chart 6. IT occupations in Lapland divided by gender (StatFin).

Chart 6. In year 2009 in Lapland IT sector employed 2 538 workers, which was 4% of all employees (69 167) in Lapland. Amount of women were 1 453 (57%) and men 1 085 (43%). Lapland was only region in the whole Interreg –programme area where total amount of female employees in IT sector was higher than men. Women had majority in two occupations out of eleven: *Secretaries and keyboard operating clerks* (99%) and *Electronic-equipment assemblers* (67%). Men had clear majority in *Telecommunications installers and mechanics* (99%) and *Electronic mechanics and servicers* (97%).

1.1.4 Other regions in Finland

There are 16 regions outside Interreg –programme area and in this survey they are examined as one ensemble. Regions are Uusimaa, Itä-Uusimaa, Varsinais-Suomi, Satakunta, Kanta-Häme, Pirkanmaa, Päijät-Häme, Kymenlaakso, South Karelia, Etelä-Savo, Pohjois-Savo, North Karelia, Central Finland, South Ostrobothnia, Kainuu and Åland.

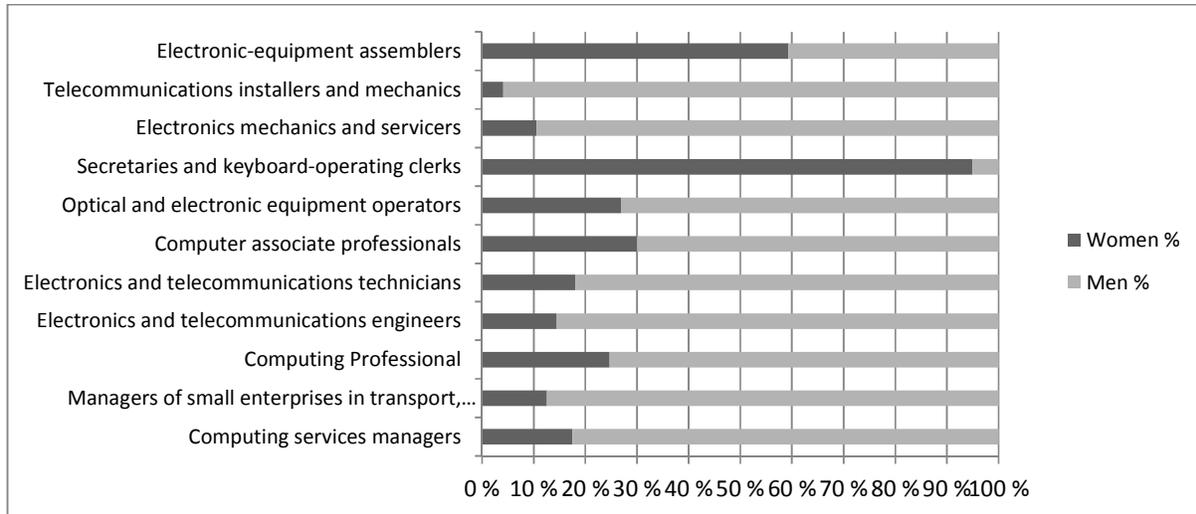


Chart 7. IT occupations in other regions in Finland divided by gender (StatFin).

Chart 7. In year 2009 there were 145 046 employees in IT sector other regions of Finland. Sector employed 6% of all employees (2 289 975) of the other regions. Amount of women in IT sector was 64 815 (45%) women and men 77 286 (55%). Women had majority in two occupations: *Secretaries and keyboard-operating clerks* (95%) and *Electronic-equipment assemblers* (59%). Men had clearest majority in *Telecommunications installers and mechanics* (96%) and *Electronics mechanics and servicers* (89%).

1.2 Sweden

Population in Sweden in year 2010 was 9 415 570, from which 4 725 326 were women and 4 690 244 men. 4 265 777 employees took part to working life according to *Classification of Occupations*. Employment rate of women was 68% and men 74%. IT sector employed 5% (205 924) of all employees, 23% (46 524) were women and 77% (159 400) were men.

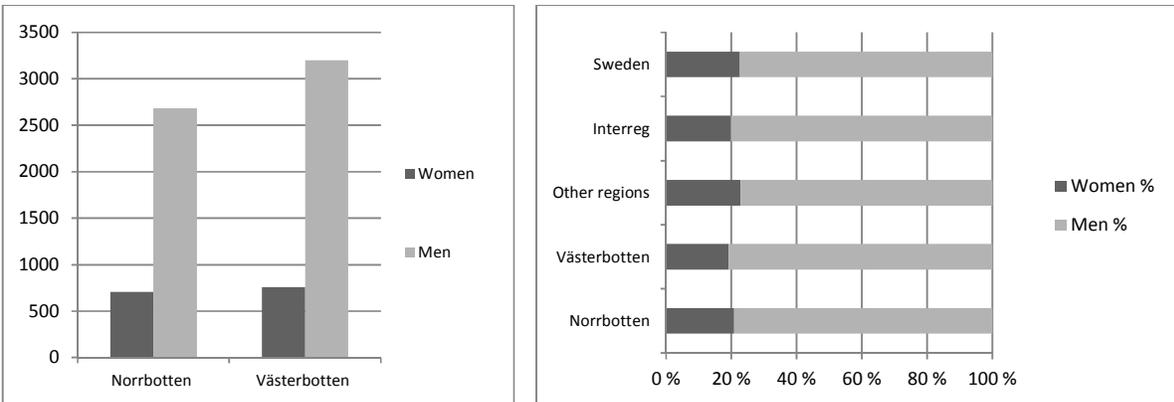


Chart 8. Percentual representation of IT sector employees in Sweden, divided by regions and gender (SCB).

Chart 8. Interreg –programme area in Sweden includes two provinces: *Västerbotten* and *Norrbotten*. In year 2010 there were 7 343 employees in IT sector, 20% (1 463) women and 80% (5 880) men. It was 4% of the all employees in IT sector in Sweden (205 924). In both Interreg provinces percentual representation of women and men employees in IT sector appeared same as national.

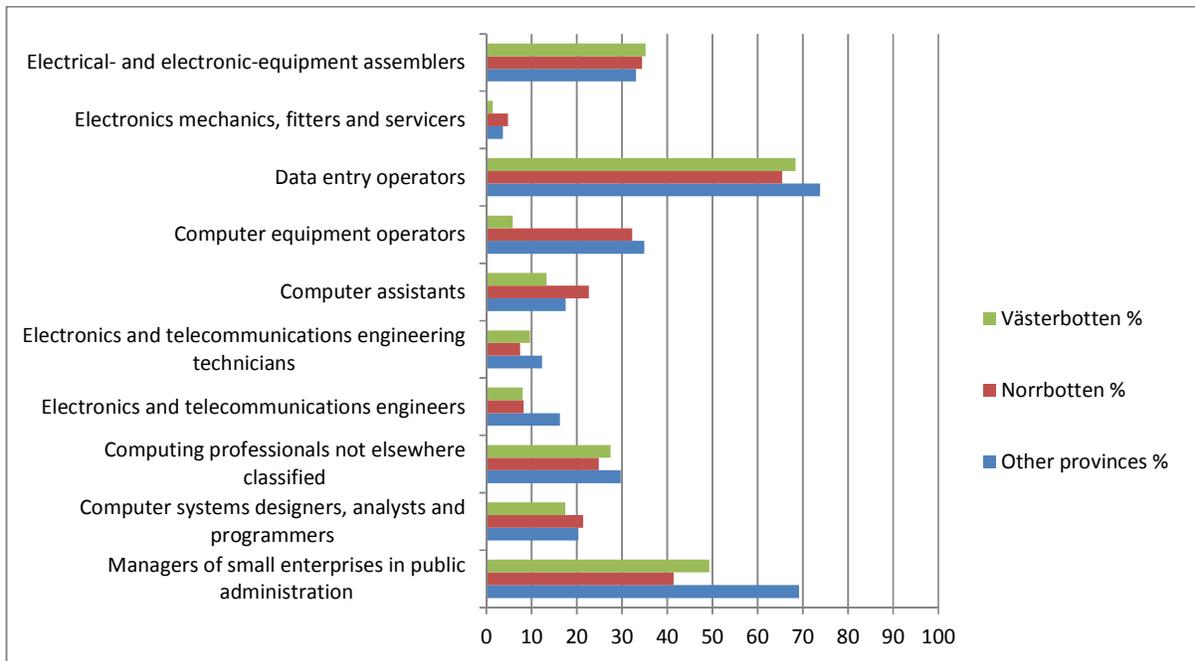


Chart 9. Women employees IT sector occupations divided by study areas (SCB).

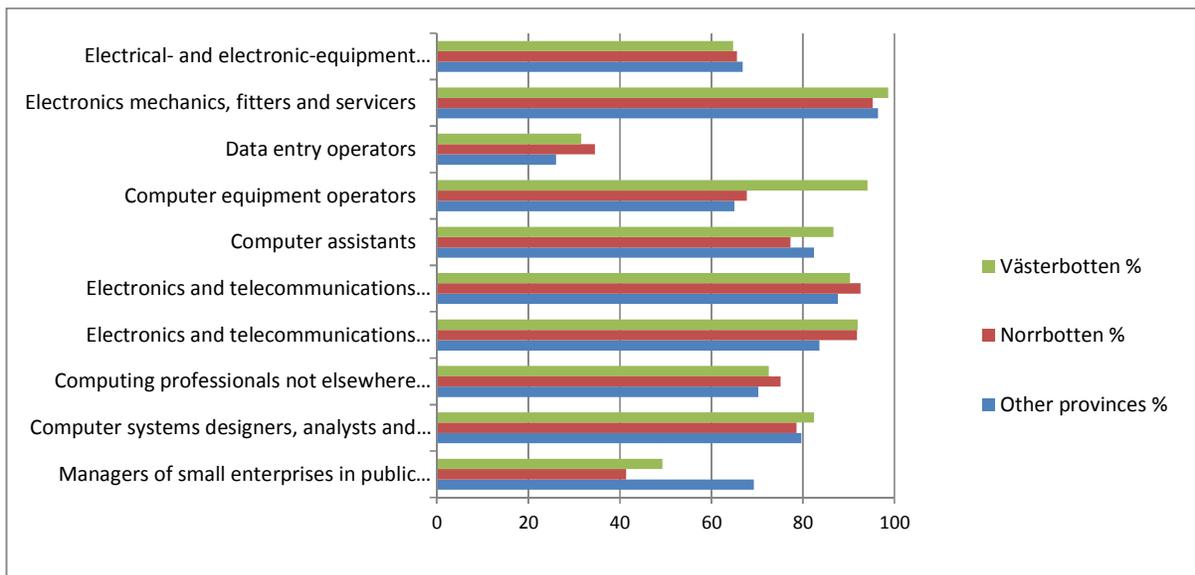


Chart 10. Men employees in IT sector occupations, divided by study areas (SCB).

Charts 9 and 10 shows most female and male dominated occupations in Sweden divided by provinces. Women were centred clearly in three occupations: *Data entry operators*, *Managers of small enterprises in public administration* and *Electrical- and Electrical- and electronic-equipment assemblers*. Most of the IT occupations were clearly male-dominated.

1.2.1 Västerbotten

Västerbotten is southernmost province in Swedish Interreg area. Västerbotten has a coast line, Bay of Bothnia, in the east and border with Norway in the west. Biggest towns are Umeå, Skellefteå and Lycksele. Population in Västerbotten in year 2010 was 259 286 citizens. Key livelihoods were agriculture, forest and mining industry; IT sector employed 3% of the workforce. Main higher educational institutes in Västerbotten were Umeå University, Swedish University of Agricultural Sciences and Campus Skellefteå.

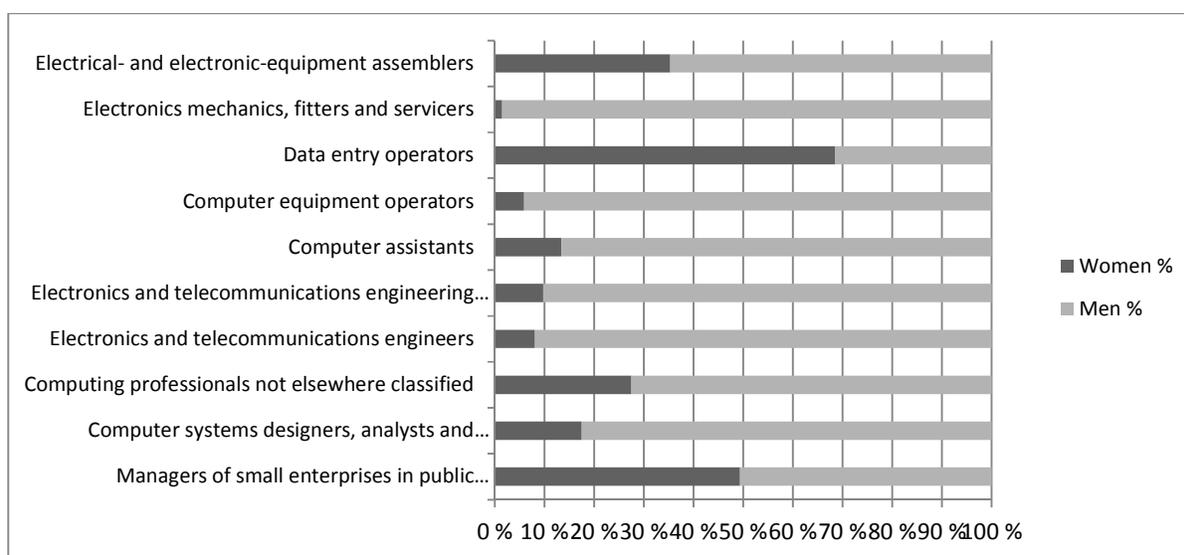


Chart 11. Division of IT sector occupations in Västerbotten by gender (SCB).

Chart 11. In year 2010 there were 3 957 workers in IT sector in Västerbotten, which was 3% of the total workforce (116 652) of the province. Amount of women were 758 (19%) and men 3 199 (81%). Women had majority only in one occupation as *Data entry operators* (68%). Most gender balanced occupation was *Managers of small enterprises in public administration* (49% of women). Also *Electrical- and electronic-equipment assemblers* had fair amount of women (36%). Men had clear majority as *Electronics mechanics, fitters and servicers* (99%), *Computer equipment operators* (94%) and *Electronics and telecommunications engineers* (92%).

1.2.2. Norrbotten

Norrbotten is largest and northernmost province in Sweden. It has a border with Finland and coast line, Bay of Bothnia, in the east and a border with Norway in the west. In year 2010 there were 248 609 people living in the province. Biggest towns are Luleå, Piteå, Boden and Kiruna. Key livelihoods in Norrbotten were mining, metal and forest industry; IT sector employed 3% of the workforce. Main higher educational institution were Luleå University of Technology which has campuses in Skellefteå, Piteå and Kiruna.

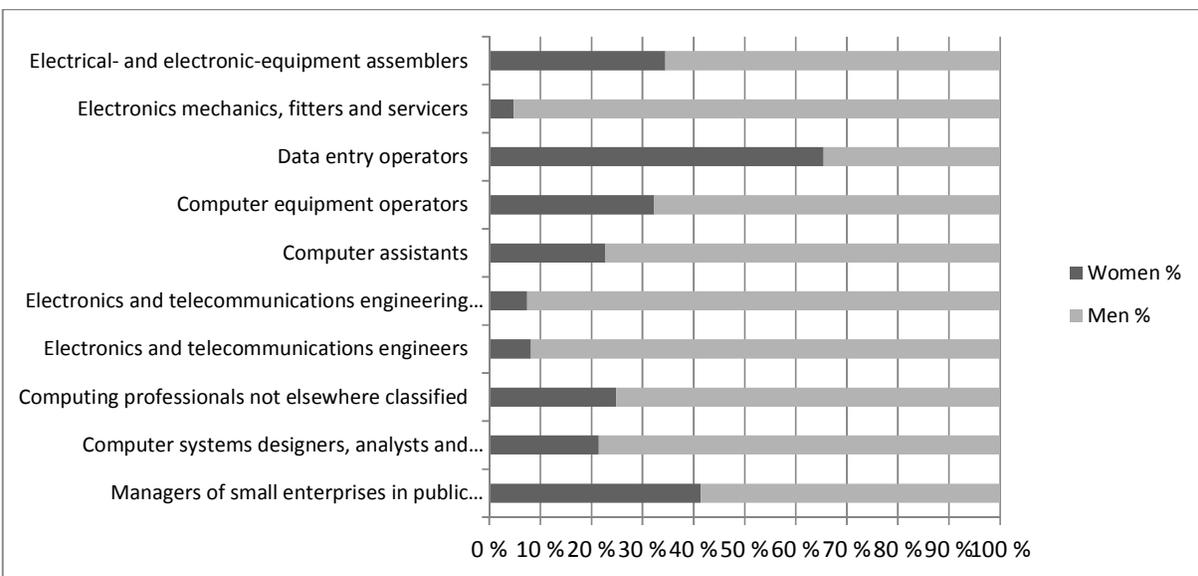


Chart 12. Division of IT sector occupations in Norrbotten by gender (SCB).

Chart 12. In year 2010 there were 3 386 workers in IT sector in Norrbotten. which was 3% of the total workforce (111 962) in Norrbotten. Amount of women were 705 (21%) and men 2 681 (79%). Most of IT occupations in Norrbotten, nine out of ten, were male dominated. Women had majority in one occupation: *Data entry operators* (65%). Women had fair representation in *Managers of small enterprises in public administration* (41%) and *Electrical- and electronic-equipment assemblers* (34%). Men had strong representation in *Electronics mechanics, fitters and servicers* (95%), *Electronics and telecommunications engineering technicians* (93%) and *Electronics and telecommunications engineers* (92%).

1.2.3. Other provinces of Sweden

There are 19 provinces outside Interreg –programme area and in this survey they are examined as one ensemble. Provinces are: Jämtland, Västernorrland, Gävleborg, Dalarna, Västmanland, Örebro, Värmland, Västra Götaland, Halland, Skåne, Blekinge, Gotlands, Kalmar, Kronoberg, Jönköping, Östergötland, Södermanland, Uppsala and Stockholm.

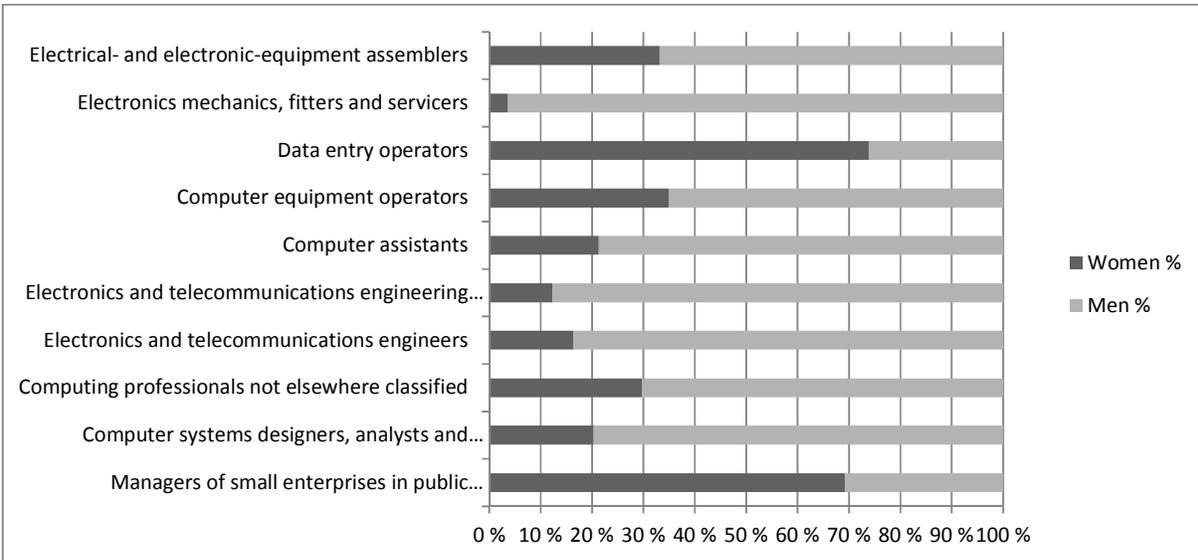


Chart 13. Division of IT sector occupations by gender (SCB).

Chart 13. In year 2010 in other provinces in Sweden there were 198 581 employees in IT sector, which was 5% of the total workforce (198 581) of other provinces in Sweden. Amount of women were 45 061 (23%) and men 153 520 (77%). Women had majority in two occupations: *Data entry operators* (74%) and *Managers of small enterprises in public administration* (69%). Two most male dominated occupations were *Electronics mechanics, fitters and servicers* (96%) and *Electronics and telecommunications engineering technicians* (88%).

2 Analysis of the data

Leena Teräs

The survey aims to find out amount of female and male employees in IT sector in Finland and in Sweden and how occupations inside the sector are divided by gender. Special focus is in female representation and northern parts of the countries which are included to *Interreg IV A North* –programme area.

2.1 Amount of female and male workers

Amount of employees in IT sector is summarized from previous chapters. Firstly amount of women and men are specified by country and eventually comparison is made between Finland and Sweden.

2.1.1 Finland

employees in IT sector	total	women	men	difference bw women and men
Finland	160 188	71 045 44%	89 143 56%	-18 098
Interreg area - 9% of country total	15 124	6 230 41%	8 894 59%	-2 664
Lapland - 4% of workforce	2 538	1 453 57%	1 085 43%	368
Northern Ostrobothnia - 8% of workforce	11 721	4 360 37%	7 361 63%	-3 001
Central Ostrobothnia - 3% of workforce	865	417 48%	448 52%	- 31

Table 2. Summary of amount of employees in IT sector in Finland.

Table 2. Total amount of workers in IT sector in Finland was 160 188, 44% women and 56% men, difference 18 098 persons. In Finnish Interreg area were 15 124 employees working in IT sector which was 9% of IT sector country total.

There are 3 regions in Finnish Interreg area: Lapland, Northern Ostrobothnia and Central Ostrobothnia. In Lapland IT sector had female majority, 57% of employees were women. Difference between women and men was 368 persons. Sector employed 4% of the regions workforce. Northern Ostrobothnia had male dominance in IT sector, only 37% of workers were women. Difference between women and men was 3 001 persons. Sector employed 8% of the workforce of the region. IT sector in Central Ostrobothnia employed almost as much women (48%) than men (52%), difference 31 persons. Sector employed 3% of the regions workforce.

There were great differences in volume of workers. IT sector employed in Northern Ostrobothnia over 3 times more than in Lapland and Central Ostrobothnia put together. Only in Northern Ostrobothnia percentage value of women was under national value as well as value of Interreg area. IT sector was heavily male dominated and thus unbalanced from gender aspect. Both Lapland and Central Ostrobothnia were above national and Interreg level. In Lapland IT sector was even female dominated and Central Ostrobothnia was gender balanced from total volume point of view.

2.1.2 Sweden

employees in IT sector	total	women	men	difference between women and men
Sweden	205 924	46 524 23%	159 400 77%	-112 876
Interreg area - 4% of country total	7 343	1 463 20%	5 880 80%	- 4 417
Norrbottn - 3% of workforce	3 386	705 21%	2 681 79%	- 1 976
Västerbottn - 3% of workforce	3 957	758 19%	3 199 81%	- 2 441

Table 3. Summary of amount of employees in IT sector in Sweden.

Table 3. Total amount of workers in IT sector in Sweden was 205 924, 23% women and 77% men, difference 112 876 persons. In Swedish Interreg area were 7 343 employees working in IT sector which was 4% of IT sectors country total.

There are 2 provinces in Swedish Interreg area: Norrbotten and Västerbotten. In Norrbotten IT sector was male dominated, only 20% women. Difference between women and men were 1 976 persons. Sector employed 3% of total workforce of the province. IT sector in Västerbotten was male dominated as well, only 19% women, difference 2 441 persons. Sector employed 3% of total workforce of the province. Amount of women working in IT sector was below national level in both provinces. In Västerbotten amount of women was also below the level of Swedish Interreg area.

Volume of workers in IT sector was quite similar in both provinces: Norrbotten 3 386 and Västerbotten 3 957. Both provinces were also below national level in terms of percentage value of women working in IT sector. Västerbotten was also below percentage value of Interreg area. IT sector in Sweden and in Swedish Interreg area seems heavily unbalanced from total volume point of view.

2.1.3 Country comparison

	FINLAND	SWEDEN	difference FI - SWE
employees in IT sector	160 188	205 924	-45 736
women in IT sector	71 045	46 524	24 521
employees in IT sector in Interreg area	15 124	7 343	7 781
women in IT sector in Interreg area	6 230	1 463	4 767

Table 4. Summary of amount of employees in IT sector in Sweden.

Table 4. In Sweden altogether there were 1,3 times more people working in IT sector than in Finland, 1,8 times more men but 1,5 less women.

In Interreg area ratio is the other way round: there's 1,5 times more men and over 4 times more women working in IT sector in Finnish Interreg area than in Swedish Interreg area. Totally there's twice as much IT workers in Finnish Interreg area than in Swedish.

2.2 Most popular occupations

Summary of most popular occupations for women and men are listed in following. Also content of occupation is reviewed.

2.2.1 Finland

	Finland	Finnish Interreg area
Amount of workers in IT sector	Total: 160 188 Women: 44% (71 045) Men: 56% (89 143)	Total: 15 124 (9,4% of country total) Women: 41% (6 230) Men: 56% (8 894)
Most female employees	Secretaries and keyboard-operating clerks 45 648 Computing Professionals 11 157 Computer associate professionals 4 886	Secretaries and keyboard-operating clerks 3 904 Computing Professionals 673 Electronics and telecommunications technicians 439
Most male employees	Computing Professional 34 535 Electronics and telecommunications engineers 12 081 Computer associate professionals 11 516	Computing Professional 2 641 Electronics and telecommunications engineers 1 879 Electronics and telecommunications technicians 1 594

Table 5. Three (3) most popular occupations by volume (StatFin).

Table 5. Most female dominated and also most popular occupation in IT sector in Finland was *Secretaries and keyboard-operating clerks*. 64% of all women working in IT sector in Finland represent this particular category. 87% of women in IT sector were working one of top three female categories: *Secretaries and keyboard-operating clerks*, *Computing professionals* and *Electronic-equipment assemblers*. Both *Secretaries and keyboard-operating clerks* and *Electronic-equipment assemblers* are supportive occupations, not actual IT professionals who are doing development and designing of IT.

Top three IT categories in Finland for men were *Computing professional*, *Electronics and telecommunications engineers* and *Computer associate professionals* which represented 65% of all men working in IT sector in Finland. All occupations are actual IT professionals.

Interreg Finland	Women	Men	Total
1236 Computing services managers	25	216	241
1316 Managers of small enterprises in transport, storage and communications	21	213	234
213 Computing Professional	673	2 641	3 314
2144 Electronics and telecommunications engineers	322	1 879	2 201
3114 Electronics and telecommunications technicians	439	1 594	2 033
312 Computer associate professionals	317	858	1 175
313 Optical and electronic equipment operators	60	161	221
411 Secretaries, word processing professionals etc.	3 904	179	4 083
7242 Electronics mechanics and servicers	186	697	883
7244 Telecommunications installers and mechanics	5	277	282
8283 Electronic-equipment assemblers	278	179	457
	6 230	8 894	15 124

Table 6. Amount of women and men in IT sector occupations (StatFin).

Table 6. In Finnish Interreg area top three female occupational categories were *Secretaries and keyboard-operating clerks*, *Computing professionals* and *Electronic and telecommunications technicians* which represented 81% of all women working in IT sector in Finnish Interreg area. 63% of all women in IT sector in Finnish Interreg area were working in category *Secretaries and keyboard-operating clerks*. Combination of all sorts of computer professionals were second largest group: 32% of all women in IT sector in Interreg area were working as engineers, technicians, mechanics, operators, installers and professionals. Less than 10% of all managers in Interreg area were women.

Men's top three IT occupational categories in Finnish Interreg area were *Computing professionals*, *Electronics and telecommunications engineers* and *Electronics and telecommunication technicians* which represented 69% of all men working in IT sector in Finnish Interreg area. 50% of men (and 15% of women) were working with "hardware"⁶ as engineers, technicians and mechanics.

⁶ "Hardware" refers to working with machine itself versus "software", which refers to programming.

2.2.2 Sweden

	Sweden	Interreg Sweden
Amount of workers in IT sector	Total: 205 924 Women: 23% (46 524) Men: 77% (159 400)	Total: 7 343 (3,6% of country total) Women: 20% (1 463) Men: 80% (5 880)
Most female employees	Computer systems designers, analysts and programmers 15 055 Computer assistants 8 840 Computing professionals 6 183	Computer systems designers, analysts and programmers 439 Computer assistants 325 Electrical- and electronic-equipment assemblers 233
Most male employees	Computer systems designers, analysts and programmers 59 110 Computer assistants 41 437 Electronics and telecommunications engineers 15 147	Computer systems designers, analysts and programmers 1 857 Computer assistants 1 452 Electronics and telecommunications engineering technicians 667

Table 7. Three (3) most popular occupations by volume (SCB).

Table 7. Most popular female category: *Computer system designers, analysts and programmers* represented 32% of all women working in IT sector in Sweden. Top three categories were quite strong in terms of representation also in Swedish data: combined they represented 65% of all women and top three male occupations represented 73% of all men working in IT sector in Sweden. Same phenomenon continues in data of Swedish Interreg area: top three female and male occupations both had representation percentage of 68%. In Swedish data a domination of one occupation didn't exist and representations were more evenly spread.

	Interreg Sweden	Women	Men	Total
1316	Managers of small enterprises in public administration	90	113	203
2131	Computer systems designers, analysts and programmers	439	1 857	2 296
2139	Computing professionals not elsewhere classified	154	428	582
2144	Electronics and telecommunications engineers	25	282	307
3114	Electronics and telecommunications engineering technicians	64	667	731
3121	Computer assistants	325	1 452	1 777
3122	Computer equipment operators	21	58	79
4111	Data entry operators	92	46	138
7242	Electronics mechanics, fitters and servicers	20	546	566
8282	Electrical- and electronic-equipment assemblers	233	431	664
		1 463	5 880	7 343

Table 8. Amount of women and men in IT sector occupations. (SCB)

Table 8. In Swedish Interreg area representation of female employees were evenly spread between three occupational categories: *Computer system designers, analyst and programmers, Computer assistants* and *Electrical- and electronic-equipment assemblers*. 30% of all women in IT sector in Swedish Interreg area were working in category *Computer system designers, analyst and programmers*, 22% as *Computer assistants* and 16% in assembly line. In Swedish Interreg area women who work in IT sector seems to work more as computer professionals: 72% of women are working as designers, analysts, programmers, engineers, technicians, mechanics, fitters, services, operators and professionals. Only 22% of women are working in supportive professions, such as data entry operators and assemblers. 44% of all managers (women and men) in IT sector in Swedish Interreg area were women.

Men's top three IT occupation categories in Swedish Interreg area were *Computer system designers, analyst and programmers, Computer assistants* and *Electronics and telecommunications engineering technicians*. First two categories were more than twice larger group than third one. 25% of men (and 7% of women) were working with "hardware"⁷ as engineers, technicians and mechanics.

⁷ "Hardware" refers to working with machine itself versus "software", which refers to programming.

2.2.3 Country comparison

In order to be able to do country comparisons standardization of categories must be done if possible. Original data is from different years: Finnish data is from year 2009 and Swedish 2010. These were newest data available. Other challenge is slightly different division of categories: Finnish data had 11 and Swedish 10 occupational categories. Also there are differences in titles and levels of subcategories. Mapping relevant categories for this survey were chosen together with experts of Statistics Finland and Statistics Sweden.

Principal categories of Classification of occupations	IT occupations in Finnish data	IT occupations in Swedish data
0 Armed forces	1236 Computing services managers	1316 Managers of small enterprises in public administration
1 Legislators, senior officials and managers	1316 Managers of small enterprises in transport, storage and communications	2131 Computer systems designers, analysts and programmers
2 Professionals	213 Computing Professional	2139 Computing professionals not elsewhere classified
3 Technicians and associate professionals	2144 Electronics and telecommunications engineers	2144 Electronics and telecommunications engineers
4 Clerks	3114 Electronics and telecommunications technicians	3114 Electronics and telecommunications engineering technicians
5 Service and care workers, and shop and market sales workers	312 Computer associate professionals	3121 Computer assistants
6 Skilled agricultural and fishery workers	313 Optical and electronic equipment operators	3122 Computer equipment operators
7 Craft and related trades workers	411 Secretaries and keyboard-operating clerks	4111 Data entry operators
8 Plant and machine operators and assemblers	7242 Electronics mechanics and servicers	7242 Electronics mechanics, fitters and servicers
9 Elementary occupations	7244 Telecommunications installers and mechanics	8282 Electrical- and electronic-equipment assemblers
X Unknown	8283 Electronic-equipment assemblers	

Table 9. Copy of table 1. Classification categories (from page 4)..

Table 9. All subcategories in Swedish data are 4-level categories (amount of numbers in front of a title) and Finnish data has both 3 and 4-levels. Subcategories might have slightly different content, but both countries have based their statistics to ISCO-88 (COM) standard. Full lists of categories are in appendix.

Standardation for this survey was made by using classification numbers and with help of Classification of occupations –lists. Equivalence of subcategories between Finnish and Swedish data are colour coded. There were two extra categories in Finnish data: *1236 Computing services managers* and *313 Optical and electronic equipment operators*, which didn't have equivalence in Swedish data. Some categories are divided differently in Finland and in Sweden.

In Finnish data there was one category above all others: 64% of all women working in IT sector in Finland (and 63% in Finnish Interreg area) belonged to category *Secretaries and keyboard-operating clerks*. Equivalent category in Swedish data is *Data entry operators* in which only 5% of all women in Sweden (and 6% in Swedish Interreg area) were working.

Most popular occupation for women in Sweden was *Computer system designers, analysts and programmers*, where 32% of women (30% in Swedish Interreg area) were working. According to Classification of occupations –standards equivalent occupation in Finnish data was *Computing professionals* which is second popular occupation also in Finnish data: 16% of women in Finland (11% of women in Finnish Interreg area) were working.

amount of women	Finnish number one: <i>Secretaries and keyboard-operating clerks</i>	Swedish number one: <i>Computer system designers, analysts and programmers</i>
in country	45 648	15 055
in Interreg	3 909	439

Table 10. Comparing volumes of number one female occupations.

Table 10. There's most significant difference in volumes of most popular categories. There were three times more *Secretaries and keyboard-operating clerks* in Finland than *Computer system designers, analysts and programmers* were in Sweden.

There's also great difference in content of the work: *Secretaries and keyboard-operating clerks* provide supportive services and assists IT professionals, whereas *Computer system designers, analysts and programmers* are working with designing and developing IT itself.

78% of all women working in IT sector in Sweden worked as actual IT professionals such as engineers, technicians, mechanics, operators, installers, designers, analysts, programmers and other computer professionals but only 31% in Finland. Amount of female IT professionals in Sweden were 1,6 times more than in Finland.

amount of women	IT professionals	Engineering	Supportive professions
Finnish Interreg area	2 002	952	4 182
Swedish Interreg area	1 048	109	325

Table 11. Comparing volumes of IT professionals, engineering professionals and supportive professionals.

Table 11. When looking more closely IT sector in Interreg area 67% of all women in IT sector in Finnish Interreg area were working as supportive professions such as secretaries and only 32% as actual IT professionals such as engineers, technicians, mechanics, operators, installers, designers, analysts, programmers and other computer professionals. In Swedish Interreg area 72% of all women working in IT sector in Swedish Interreg area were working as IT professionals and only 22% in supportive professions. There was twice as many female IT professionals in Finnish Interreg area than in Swedish and 13 times as many supportive professionals in Finnish Interreg area than in Swedish.

15% of all women in IT sector in Finnish Interreg area were working as engineers, technicians and mechanics whereas 7% in Swedish Interreg area. That is 9 times more women in engineering in Finnish than in Swedish Interreg area.

All men's top three professions were IT professionals (hardware and software). In Finnish Interreg area 50% of all men working in IT sector were engineers, technicians and mechanics and 25% in Sweden. By numbers it's three times more men working in engineering in Finnish Interreg area than in Swedish.

There were two management categories in Finnish data: *Computing services managers* and *Managers of small enterprises in transport, storage and communications*. Comparison with Swedish data is quite problematic, because only management category was titled *Managers of small enterprises in public administration*. Although classification numbers are same with *Managers of small enterprises in transport,*

storage and communications and *Managers of small enterprises in public administration* titles refers to different sectors: Finnish category to private enterprises and Swedish category to public sector. Traditionally in Nordic Welfare countries majority of women are working in public sector whereas men are working in private sector. Also women have better career development in public sector. (e.g. Julkunen 2010; Kolehmainen 1999; Rantalaiho 1994.)

amount of female managers	Sweden	Finland
Interreg area	90	46
Country	3 944	1 067

Table 12. Comparing volumes of female managers.

Table 12. According to data there were twice as many female managers in Swedish Interreg area and almost 4 times more in whole country than in Finland. 44% of all managers in Swedish Interreg area and even 69% of all managers in IT sector in Sweden were women, whereas only 10% of all managers in Finnish Interreg area and 15% of all managers in IT sector in Finland were women.

3 Conclusions

Leena Teräs

IT sector is deeply connected to globalized markets. Nordic countries have lost whole factories to lower income countries during progression of globalization. Especially blue-collar jobs has diminished whereas research and designing remained. During preparation of this survey there has been a massive layouts in ICT sector especially in Oulu region. Impact of it is not yet shown statistical data available.

IT sector is understood traditionally male dominated sector, which also this survey supports. Majority of occupations examined in this survey were clearly male dominated. Only about 20% of all employees in IT sector in Sweden were women and approximately 40% in Finland. Numbers of Interreg areas followed national levels.

But these numbers were not the whole truth. Although total amount of women in IT sector in Sweden was 1,5 times lower than in Finland, only 31% of all women working in IT sector in Finland could be categorised as IT professionals (such as engineers, technicians, mechanics, operators, installers, designers, analysts, programmers and other computer professionals). Compared to Sweden where 78% of all women working in IT sector were categorized as IT professionals. Actually amount of female IT professionals were 1,6 times higher in Sweden than in Finland.

In Finnish Interreg area there were over 4 times more women working in IT sector than in Swedish Interreg area, but again only 32% of them were working as IT professionals, whereas in Swedish Interreg area the proportion was 72%. Due great difference in volumes the number of female IT professionals in Finnish Interreg area was still twice as high than in Swedish Interreg area.

Although plain numbers suggested that women had better representation in IT sector in Finland, that wasn't the case. Closer look revealed that in fact women in IT sector in Sweden had spread more evenly and did have greater proportions as IT professionals.

In Nordic countries women participate actively in working life outside home: 68%/69% in Finland (employment rate of women/men) and 68%/74% in Sweden. But labour markets are divided heavily to female dominated occupations and male dominated occupations. This occupational gender segregation is a problem in labour markets both in Sweden and in Finland.

3.1 Gender segregation of labour markets as phenomenon

Finland and Sweden have promoted equal opportunities in their policies for decades. Everyone should have same possibilities regardless of one's own gender, ethnicity, age, physical handicaps, religion, sexual orientation, socioeconomic status or location. All members of Nordic countries are dominating global gender equality listings (Global Gender Gap Report 2012) and these countries have strong female representation in labour markets.

Labour markets in Finland and in Sweden are segregated by gender. Profession is considered as segregated when more than 60% of workers are same gender (Tilastokeskus). There's segregation between professions (horizontal: women's professions – men's professions), but also inside profession (vertical: women's work – men's work). Vertical gender segregation refers to hierarchic difference between women's and men's labour markets, where male occupations are more valued e.g. in terms of wages. (Kolehmainen 1999, 23-25.) Hierarchy of occupations could change if amount of men become less than female or vice versa. If profession or work place turns into male dominated occupation, it will improve e.g. wages and working conditions. Though change doesn't necessary include those few women who stayed. (ibid 36-39.)

Segregation as a phenomenon covers also other spheres of life such as politics, free time activities and education. Women and men are focusing in different issues in politics, women's hobbies are different than men's and in education girls are considered to be essentially different types of people than boys, even interests and competences are explained with biology. Children in very early age are guided to traditional gender roles during socialization processes carried by educational institutions and families. Another major problem is puberty when simultaneously with young person's identity reshaping process there's vocational councillor pushing to career choices. In puberty young person is easily uncertain of her/himself and there's great temptation to seek support to adulthood from traditional occupations. There's a great need to become *true* woman or a man and it is ensured by absorbing gender stereotypes. (Teräs 2005, 39-43.)

Lagesen (2004) have compared gendered ICT sector in Norway, Malaysia and California and found out that although Norway has long tradition in gender mainstreaming, they fail as every other Nordic country to attract girls and women to ICT sector whereas Malaysia has female representation of 50% in ICT. Difference is in perceiving ICT. In Malaysia ICT represents modernism, something new and trendy and it is not understood as “men’s work”. Neat indoors job is more suitable for women. Norway on the other hand suffers same phenomenon as the rest of Nordic countries: ICT is seen as engineering and part of machinery, which are part of men’s life sphere. Additionally Lagesen points out that there’s *“symbolic association between ICT and masculinity because of dualistic and stereotypes perception of gender: boys as playful and competent, girls as oriented toward usefulness”*. (ibid 2004, 4.) This is enforced throughout educational systems and eventually women’s double workload. *“Who has time as adult to play?”* (ibid 2004, 4.)

Occupational segregation by gender is connected to traditional division of work, gender stereotypes, uneven distribution of resources and power, wage gap, limitations of choice, differences in career development etc. (Kolehmainen 1999, 253-254; Carnoy 1995, 9.) With separation of labour markets women and men are able to avoid competition (Julkunen 2010, 130-135; Kolehmainen 1999, 11-12) and conflicts caused by unequal practices of the organisation or unfair distribution of resources and power (Kolehmainen 1999, 27).

Segregation as a phenomenon doesn’t consist unequal elements itself, but they are created and sustained by social structures such as different expectation or rewarding systems. (Kolehmainen 1999, 253-254; Carnoy 1995, 9.) Also e.g. ethnicity and age could be basis of segregation. Gender segregation in labour markets means also that women are mainly working in public sector and men in private sector. This division also maintains and enforce wage gap between women and men. One structural means for keeping up gender inequality is using different titles regardless of same job description. There’s almost 67% more titles in male dominated occupations than in female dominated (Kolehmainen 1999, 65).

ICT sector is deeply connected to globalized markets and it has faced layoffs and increase of competition in global level. It has created a sense of instability among workers and even fear of losing one’s job. Simultaneously management is boosting competitiveness and diversity of the workforce as one element for increasing creativity. If management is pushing equal opportunities policies down to organization ignoring uncertainty of workers, the benefits of increased diversity will probably fail. Securing one’s job prevents welcoming newcomers and it will segregate the workers. Monocultural workplace doesn’t welcome

competent newcomers who are able to compete in whole new categories: female IT professionals who are used to be “twice as good as men” as saying goes or workers from India or China where they are used to work around o’clock. These kind of new colleagues easily draw competition in a workplace to very uncomfortable level from resident workers point of view. In order to avoid segregation of the workplace management should prepare residents with renewing processes and practices and enforcing team work.

History can teach us. Organizations of society have formulated by men and with men in historical period when women’s life sphere was narrowed into home. There was a shift in legislation in the end of 18th century: instead of restricting and even totally denying women from e.g. earning their own livelihood new laws protected women’s right to do so. (Wilkama 1938, 233-238.) When women were allowed to enter organizations outside home, men’s sphere of operations were protected by dividing work tasks following traditional gender roles (Rantalaiho 1994, 16-26). Especially after Second World War post-war reforms and rapid industrialization pulled women in to labour markets outside home during 1960’s – 1970’s. Integration of women was conducted based on traditional division of work between women and men (Rantalaiho 1994, 16-26) and that enforced segregation of labour markets. Public services in cooking, caring and catering (3C’s) were providing jobs for women. Simultaneously men’s jobs in mechanics, management and money (3M’s) remained mainly untouched. (Julkunen 2010, 131.)

According to Acker (1990) organizations are creating and enforcing gender in interaction processes which have following gendering practices: 1) differences between women and men are re-created and highlighted and they are used as justification of actions, 2) these are enforce by symbols and images, 3) workers will form social networks and groups simultaneously closing others off, 4) individuals are selecting jobs which are “suitable” for one’s gender and 5) workers put members of organization into hierarchical structures based on gender and to understand operational logic of the organization. (ibid 145-147.)

Sociological, psychological and economic theories has tendency to blame individuals of the choices they have made in terms of careers or education. Especially women are accused of their poorer status in work life. (Strober 1995, 248.) But it is unlikely that an individual really have possibility to make choice only based on hers/his own will (Antikainen 1998, 192-193).

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Appendix 1. Some important dates of Equality and Gender Equality

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Finland

- 1864** Unmarried 25 years old women become plenipotentiary
- 1878** Equal inheritance rights for women and men
- 1890** First public kindergarten is establish in Helsinki
- 1901** Women got same rights to study in universities as men
- 1907** Women got the right to vote and eligibility of candidate
- 1919** Women got right to work without permission of husband
- 1937** Law of maternity benefit
- 1962** “*same salary from same work*” –principal for public and private working sector
- 1970** Abortion law
- 1975** Paternity law
- 1980** First governmental program of promoting gender equality (1980-1985)
- 1986** Act of gender equality between women and men
- 1994** Law against rape in marriage
- 1998** Restraining order law
- 2004** The Act of parity
- 2005** An Overall reform of Act of gender equality between women and men

Sweden

- 1845** Equal inheritance rights for women and men.
- 1921** Women got right to vote and run for office.
- 1938** Contraception is legalized
- 1965** Law against rape in marriage
- 1974** Parental insurance is introduced, granting both parents the right to parental leave.
- 1975** A new abortion law permits free abortions through the 18th week.
- 1979** Act of gender equality
- 1980** Female (i.e. gender-neutral) succession to the throne comes into effect.
- 1980** The Office of the Equality Opportunities Ombudsman is introduced (became part of the Equality Ombudsman in 2009)
- 1998** The Act on Violence against Women is introduced.
- 1999** A new law forbids the purchase of sexual services.
- 2002** Human trafficking for sexual purposes is criminalized
- 2009** the Discrimination Act replaced seven anti-discriminations law

(Tasa-arvon vuosituhat, 1999.)

(The official gateway to Sweden, 2012.)⁸

⁸ <http://www.sweden.se/eng/Home/Society/Equality/>

Appendix 2. Classification of Occupations 2001 Statistics Finland



1 Legislators, senior officials and managers

- 11 Legislators and senior officials
 - 111 Legislators and senior government officers
 - 1110 Legislators and senior government officers
 - 11101 Senior central government officials
 - 11102 Senior district and local government officials
 - 11103 Senior local administration officials
 - 114 Senior officials of special-interest organisations
 - 1141 Senior officials of political party organisations
 - 1142 Senior officials of employers', workers' and other economic-interest organisations
 - 1143 Senior officials of humanitarian and other special-interest organisations
 - 12 Corporate managers
 - 121 Directors and chief executives
 - 1210 Directors and chief executives
 - 122 Production and operations managers
 - 1221 Production and operations managers in agriculture, hunting, forestry and fishing
 - 1222 Production and operations managers in manufacturing
 - 1223 Production and operations managers in construction
 - 1224 Production and operations managers in wholesale and retail trade
 - 1225 Production and operations managers in restaurants and hotels
 - 1226 Production and operations managers in transport, storage and communications
 - 12261 Ships' officers (large ship)
 - 12269 Other production and operations managers in transport, storage and communications
 - 1227 Production and operations managers in business services enterprises
 - 1228 Production and operations managers in personal care, cleaning and related services
 - 1229 Production and operations managers not elsewhere classified
 - 12291 Education managers and headmasters and headmistresses
 - 12292 Health and social services managers
 - 12293 Recreational and leisure services managers
 - 12294 Cultural services managers
 - 12299 Other production and operations managers
 - 123 Other specialist managers
 - 1231 Finance and administration managers
 - 1232 Personnel and industrial relations managers
 - 1233 Sales and marketing managers
 - 1234 Advertising and public relations managers

-
- 1235 Supply and distribution managers
 - 1236 Computing services managers
 - 1237 Research and development managers
 - 1239 Other specialist managers not elsewhere classified
 - 13 Managers of small enterprises
 - 131 Managers of small enterprises
 - 1311 Managers of small enterprises in agriculture, hunting, forestry and fishing
 - 1312 Managers of small enterprises in manufacturing
 - 1313 Managers of small enterprises in construction
 - 1314 Managers of small enterprises in wholesale and retail trade
 - 1315 Managers of small enterprises of restaurants and hotels
 - 1316 Managers of small enterprises in transport, storage and communications
 - 1317 Managers of small enterprises of business services enterprises
 - 1318 Managers of small enterprises in personal care, cleaning and related services
 - 1319 Managers of small enterprises not elsewhere classified
 - 2 Professionals**
 - 21 Physical, mathematical and engineering science professionals
 - 211 Physicists, chemists and related professionals
 - 2111 Physicists and astronomers
 - 2112 Meteorologists
 - 2113 Chemists
 - 2114 Geologists and geophysicists
 - 212 Mathematicians, statisticians and related professionals
 - 2121 Mathematicians and related professionals
 - 2122 Statistical professionals
 - 213 Computing professionals
 - 2131 Computer systems designers, analysts and programmers
 - 2139 Computing professionals not elsewhere classified
 - 214 Architects and engineering science professionals
 - 2141 Architects, town and traffic planners
 - 2142 Civil engineers
 - 2143 Electrical engineers
 - 2144 Electronics and telecommunications engineers
 - 2145 Mechanical engineers
 - 2146 Chemical engineers
 - 2147 Mining engineers, metallurgists and related professionals
 - 2148 Cartographers and surveyors
 - 2149 Architects, engineers and related professionals not elsewhere classified
 - 22 Life science and health professionals
 - 221 Life science professionals
 - 2211 Biologists, botanists, zoologists and related professionals
 - 2212 Pharmacologists, pathologists and related professionals
 - 22121 Pharmacologists, biochemists and related professionals
 - 22122 Pathologists
 - 2213 Agronomists and related professionals
-

22131 Agronomists, horticulturists and fishery professionals
22132 Forestry professionals
222 Health professionals (except nursing)
2221 Medical doctors
22211 Senior physicians
22212 Specialists and ward physicians
22213 Other medical doctors
2222 Dentists
2223 Veterinarians
2224 Qualified chemists
2229 Health professionals (except nursing) not elsewhere classified
223 Matrons and ward sisters
2230 Matrons and ward sisters
22301 Matrons
22302 Ward sisters
23 Teaching professionals
231 College, university and higher education teaching professionals
2310 College, university and higher education teaching professionals
23101 Professors
23102 Lecturers and senior assistants
23103 Assistants and part-time lecturers
232 Secondary education teaching professionals
2321 Secondary education teaching professionals
23211 Teachers in mathematical subjects
23212 Native language teachers
23213 Foreign language teachers
23214 Arts and science teachers
23215 Crafts and art teachers
23219 Other secondary education teaching professionals
2322 College and polytechnic education teaching professionals
23221 College and polytechnic head teachers and lectures
23222 Vocational and professional education institution lecturers
2323 Teaching professionals not elsewhere classified
233 Primary and pre-primary education teaching professionals
2331 Primary education teaching professionals
2332 Pre-primary education teaching professionals
234 Special education teaching professionals
2340 Special education teaching professionals
235 Other teaching professionals
2351 Education methods specialists
23511 Training directors, training planners and trainers
23512 Teachers of public speaking and presentation skills
2352 School inspectors
2359 Career counsellors
24 Other professionals

241 Business professionals
2411 Accountants
2412 Personnel and careers professionals
2419 Business professionals not elsewhere classified
24191 Advertising and marketing professionals
24192 Public relations professionals
24193 Consumer advisers and related professionals
24194 Administrative professionals in organisations
242 Legal professionals
2421 Lawyers
2422 Judges
2429 Legal professionals not elsewhere classified
243 Archivists, librarians and related information professionals
2431 Archivists and curators
24311 Archivists
24312 Curators
2432 Librarians and related information professionals
244 Social science and related professionals
2441 Economists
2442 Sociologists, anthropologists and related professionals
2443 Philosophers, historians and political scientists
2444 Philologists, translators and interpreters
2445 Psychologists, psychotherapists and speech therapists
24451 Psychologists
24452 Psychotherapists
24453 Speech therapists
2446 Social work professionals
24461 Social workers
24462 Social planners
245 Writers and creative or performing artists
2451 Authors, journalists and other writers
24511 Managing editors
24512 Journalists, editors and critics
24513 Radio and television journalists
24514 Advertising copywriters
24515 Authors and dramaturgists
2452 Sculptors, painters and related artists
24521 Sculptors and painters
24522 Graphic designers
24523 Art and craft designers and related artists
2453 Composers, musicians and singers
2454 Choreographers and dancers
2455 Film, stage and related actors and directors
24551 Actors
24552 Stage and film directors

- 246 Parish clergy and other religious professionals
- 2460 Parish clergy and other religious professionals
- 247 Public service administrative professionals
- 2470 Public service administrative professionals
- 24701 Central government professionals
- 24702 Local government professionals

3 Technicians and associate professionals

- 31 Physical and engineering science associate professionals
- 311 Physical, chemical and engineering science technicians
- 3111 Chemical and physical science technicians
- 3112 Civil engineering technicians
- 31121 Building construction technicians
- 31122 Land use and civil engineering technicians
- 31123 Cartographic and surveying technicians
- 3113 Electrical engineering technicians
- 3114 Electronics and telecommunications technicians**
- 3115 Mechanical engineering technicians
- 3116 Wood processing and chemical engineering technicians
- 3117 Mining and metallurgical technicians
- 3118 Draughtspersons
- 3119 Physical and engineering science technicians not elsewhere classified
- 31191 Mechanical forest industry technicians
- 31192 Printing technicians
- 31193 Textile and clothing technicians
- 31199 Other physical and engineering science technicians not elsewhere classified
- 312 Computer associate professionals**
- 3120 Computer assistants, computer equipment operators and related associate professionals
- 313 Optical and electronic equipment operators**
- 3131 Photographers and image and sound recording equipment operators
- 3132 Broadcasting and telecommunications equipment operators
- 3139 Optical and electronic equipment operators not elsewhere classified
- 314 Ship, aircraft and harbour traffic controllers and technicians
- 3141 Ships' engineers
- 3142 Pilots and small ships' officers
- 3143 Aircraft pilots and related associate professionals
- 3144 Air and harbour traffic controllers
- 31441 Air traffic controllers and related associate professionals
- 31442 Harbour traffic controllers
- 3145 Air traffic safety technicians
- 315 Safety and quality inspectors
- 3151 Building and fire inspectors
- 3152 Safety, health and quality inspectors
- 31521 Occupational safety inspectors
- 31522 Inspectors, product safety and quality inspectors
- 32 Life science and health associate professionals

321 Life science technicians and related associate professionals
3211 Life science technicians
3212 Agronomy and forestry technicians
32121 Agrologists
32122 Forestry technicians
3213 Farming, horticulture and fishery advisers
322 Health associate professionals (except nursing)
3222 Hygienists, health and environmental officers
32221 Health officers
32222 Environmental officers
3223 Dieticians and nutritionists
3224 Optometrists and opticians
3225 Dental hygienists
3226 Physiotherapists and occupational therapists
32261 Physiotherapists
32262 Occupational therapists
32269 Other therapists
3227 Veterinary assistants
3228 Pharmacists
3229 Nature healers
323 Nursing and related associate professionals
3231 Nursing and related associate professionals
32311 Nurses
32312 Public health nurses
32313 Radiographers
32314 Medical laboratory technologists
32315 Hearing testers
3232 Midwives

33 Traffic instructors and other teaching associate professionals
334 Traffic instructors and other teaching associate professionals
3340 Traffic instructors, hairdresser, beautician and related teaching associate professionals

34 Other associate professionals
341 Finance and sales associate professionals
3411 Securities and finance dealers and brokers
3412 Insurance representatives
3413 Estate agents and property managers
34131 Estate agents
34132 Property managers
3414 Travel consultants and organisers
3415 Technical and commercial sales representatives
34151 Sales consultants and sales representatives
34152 Sales and exports secretaries
34153 Wholesale dealers
3416 Buyers
3417 Appraisers, valuers and auctioneers

- 3419 Finance and sales associate professionals not elsewhere classified
- 34191 Superiors at banks and post offices
- 34192 Shop managers and small shopkeepers
- 34193 Service station managers
- 34194 Office managers
- 342 Business services agents and trade brokers
- 3421 Trade brokers
- 3422 Clearing and forwarding agents
- 3423 Employment agents and labour contractors
- 3429 Business services agents and trade brokers not elsewhere classified
- 343 Administrative associate professionals
- 3431 Administrative secretaries and related associate professionals
- 3432 Legal and related business associate professionals
- 3433 Bookkeepers
- 3434 Statistical, mathematical and related associate professionals
- 344 Customs inspectors, frontier and coast guards, government tax officials and related associate professional
- 3441 Customs inspectors, frontier guards and coast guards
- 34411 Customs inspectors
- 34412 Frontier and coast guards
- 3442 Government tax and excise officials
- 3443 Government social benefits officials
- 345 Police inspectors and detectives
- 3450 Police inspectors and detectives
- 346 Social instructors and related associate professionals
- 3460 Social instructors and related associate professionals
- 34601 Social work instructors and educators
- 34602 Youth leaders
- 34603 Work and craft leaders
- 347 Artistic, entertainment and sports associate professionals
- 3471 Artistic and crafts and design associate professionals and producer's assistants
- 34711 Artistic and crafts and design associate professionals
- 34712 Producer's assistants and related associate professionals
- 3472 Radio, television and other announcers
- 3473 Night-club and related musicians, singers and dancers
- 3474 Clowns, magicians, acrobats and related associate professionals
- 3475 Athletes, sportspersons, coaches, physical exercise instructors and related associate professionals
- 34751 Athletes, sportspersons and coaches
- 34752 Physical exercise and sports instructors
- 348 Religious associate professionals
- 3480 Deacons, deaconesses and religious associate professionals
- 34801 Deacons and deaconesses
- 34809 Other religious associate professionals
- 4 Clerks**
- 41 Office clerks
- 411 Secretaries and keyboard-operating clerks**

4112 Word-processor and related operators
4113 Data entry operators
4114 Calculating-machine operators
4115 Secretaries
412 Payroll accounting and insurance clerks
4121 Payroll accounting and book-keeping clerks
4122 Insurance clerks
413 Material-recording and transport clerks
4131 Stock clerks
4133 Rail traffic controllers and other transport clerks
41331 Rail traffic controllers
41339 Other transport clerks
414 Library, mail and related clerks
4141 Library and filing clerks
4142 Mail carriers, sorting clerks and porters
41421 Mail carriers and sorting clerks
41422 Porters
419 Other office clerks
4190 Other office clerks
42 Customer services clerks
421 Cashiers, tellers and related clerks
4211 Cashiers and ticket clerks
4212 Tellers and other counter clerks
4213 Croupiers and related clerks
4214 Pawnbrokers and money-lenders
4215 Debt-collectors and related workers
422 Client information clerks
4221 Travel agency and related clerks
4222 Receptionists and information clerks
4223 Telephone switchboard operators and emergency officers
42231 Telephone switchboard operators
42232 Emergency officers

5 Service and care workers, and shop and market sales workers

51 Personal and protective services workers
511 Travel attendants and related workers
5111 Travel attendants and travel stewards
5112 Transport conductors
5113 Travel guides and tour leaders
512 Housekeeping and restaurant services workers
5121 Housekeepers and related supervisors
51211 Housekeeping and restaurant services supervisors
51212 Cleaning supervisors
5122 Cooks
5123 Waiters, waitresses and bartenders
513 Practical nurses, childminders and home care assistants

- 5131 Child-care workers
 - 51311 Childminders and kindergarten assistants
 - 51312 Private childminders
- 5132 Practical nurses
 - 51321 Practical nurses
 - 51322 Practical mental nurses
 - 51323 Hospital and ambulance attendants
 - 51324 Mental handicap nurses
 - 51325 Dental assistants
 - 51326 Social work assistants
 - 51327 Equipment maintenance assistants
- 5133 Home care assistants, personal care workers
 - 51331 Home care assistants
 - 51332 Personal care workers
- 5139 Pharmaceutical assistants
 - 51391 Pharmaceutical assistants
 - 51399 Veterinary aids
- 514 Other personal services workers
 - 5141 Hairdressers, barbers, beauticians and related workers
 - 51411 Hairdressers and barbers
 - 51412 Beauticians
 - 51413 Practical rehabilitation nurses and chiropodists
 - 51419 Bath attendants and related workers
 - 5143 Undertakers and embalmers
 - 51431 Undertakers and related funeral workers
 - 51432 Other funeral workers
- 5149 Other personal services workers not elsewhere classified
- 516 Protective services workers
 - 5161 Fire-fighters
 - 5162 Police officers
 - 5163 Prison guards
 - 5169 Protective services workers not elsewhere classified
- 52 Models, salespersons and demonstrators
 - 521 Fashion and other models
 - 5210 Fashion and other models
 - 522 Shop, stall and market salespersons and demonstrators
 - 5220 Shop, stall and market salespersons and demonstrators
 - 52201 Demonstrators
 - 52202 Salespersons and cashiers
 - 52203 Salespersons in specialised shops
- 6 Skilled agricultural and fishery workers**
 - 61 Skilled agricultural and fishery workers
 - 611 Market gardeners and crop growers
 - 6111 Field crop and vegetable growers
 - 61111 Field crop growers

61112 Field crop supervisors and workers
6112 Gardeners, horticultural and nursery growers and workers
61121 Gardeners, horticultural and nursery growers
61122 Horticultural and nursery supervisors
61123 Horticultural and nursery workers
612 Animal producers and related workers
6121 Dairy and livestock producers
6122 Dairy and livestock workers
6123 Farmer's locums
6129 Animal producers and related workers not elsewhere classified
613 Crop and animal producers and workers
6130 Crop and animal producers and workers
614 Forestry and related workers
6140 Forestry and related workers
615 Fishery workers, hunters and trappers
6151 Aquatic life cultivation workers
61511 Fish farmers
61512 Fishery supervisors and workers
6152 Inland and coastal waters fishery workers
6154 Hunters and trappers

7 Craft and related trades workers

71 Extraction and building trades workers
711 Miners, shotfirers, stone cutters and carvers
7111 Miners and quarry workers
7112 Shotfirers and blasters
7113 Stone splitters, cutters and carvers
712 Building frame and related trades workers
7121 Builders
7122 Bricklayers and stonemasons
7123 Concrete placers, concrete finishers and related workers
7124 Carpenters and joiners
7129 Building frame and related trades workers not elsewhere classified
713 Building finishers and related trades workers
7131 Roofers
7132 Floor layers and tile setters
7133 Plasterers
7134 Insulation workers
7135 Glaziers
7136 Plumbers and pipe fitters
7137 Building and related electricians
7139 Building finishers and related trade workers not elsewhere classified
714 Painters, building structure cleaners and related trades workers
7141 Painters and related workers
71411 Building painters
71412 Vehicle and other painters

- 7143 Building structure cleaners
- 72 Metal, machinery and related trades workers
- 721 Metal moulders, welders, sheet-metal workers, structural metal preparers, and related trades workers
- 7211 Metal moulders and coremakers
- 7212 Welders and flame cutters
- 7213 Sheet-metal workers
- 7214 Structural-metal preparers and erectors
- 7215 Riggers and cable splicers
- 7216 Underwater workers
- 722 Blacksmiths, tool-makers and related trades workers
- 7221 Blacksmiths, hammer-smiths and forging-press workers
- 7222 Tool-makers and related workers
- 7223 Machine-tool setters and setter-operators
- 7224 Metal wheel-grinders, polishers and tool sharpeners
- 723 Machinery mechanics and fitters
- 7231 Motor-vehicle mechanics and fitters
- 7232 Aircraft engine mechanics and fitters
- 7233 Agricultural- or industrial-machinery mechanics and fitters
- 724 Electrical, electronic and telecommunications equipment mechanics and fitters
- 7241 Electrical mechanics and servicers
- 7242 Electronics mechanics and servicers**
- 72421 Computer installers and repairers
- 72422 Automation installers and repairers
- 72423 Electronic installers and repairers
- 7244 Telecommunications installers and mechanics**
- 7245 Electrical line installers, repairers and cable jointers
- 73 Precision, handicraft, craft printing and related trades workers
- 731 Precision workers in metal and related materials
- 7311 Precision-instrument makers and repairers
- 7312 Musical-instrument makers and tuners
- 7313 Jewellery and precious-metal workers
- 732 Potters, glass-makers and related trades workers
- 7321 Abrasive wheel formers, potters and related workers
- 7322 Glass-makers, cutters, grinders and finishers
- 7323 Glass-engravers and etchers
- 7324 Glass, ceramics and related decorative painters
- 733 Handicraft workers in wood, textile, leather and related materials
- 7330 Handicraft workers in wood, textile, leather and related materials
- 734 Craft printing and related trades workers
- 7341 Compositors, typesetters and related workers
- 7342 Stereotypers and electrotypers
- 7343 Printing engravers and etchers
- 7344 Photographic and related workers
- 7345 Bookbinders and related workers
- 7346 Silk-screen, block and textile printers

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- 74 Other craft and related trades workers
 - 741 Food processing and related trades workers
 - 7411 Butchers, fishmongers and related food preparers
 - 7412 Bakers, pastry-cooks and confectionery makers
 - 7413 Dairy-products workers
 - 7414 Fruit, vegetable and related preservers
 - 7415 Food and beverage tasters and graders
 - 7416 Tobacco preparers and tobacco products makers
 - 742 Wood treaters, cabinet-makers and related trades workers
 - 7421 Wood treaters
 - 7422 Cabinetmakers and related workers
 - 7423 Woodworking machine setters and setter-operators
 - 7424 Basketry weavers, brush makers and related workers
 - 743 Textile, garment and related trades workers
 - 7431 Fibre preparers
 - 7432 Weavers, knitters and related workers
 - 7433 Tailors, dressmakers and hatters
 - 7434 Furriers and related workers
 - 7435 Textile, leather and related pattern-makers and cutters
 - 7436 Sewers, embroiderers and related workers
 - 7437 Upholsterers and related workers
 - 744 Pelt, leather and shoemaking trades workers
 - 7441 Pelt dressers, tanners and fellmongers
 - 7442 Shoe-makers and related workers
 - 8 Plant and machine operators and assemblers**
 - 81 Stationary plant and related operators
 - 811 Mining and mineral-processing-plant operators
 - 8111 Mining plant operators
 - 8112 Mineral-ore and stone-processing plant operators
 - 8113 Well drillers and borers and related workers
 - 812 Metal-processing plant operators
 - 8121 Ore and metal furnace operators
 - 8122 Metal melters, casters and rolling-mill operators
 - 8123 Metal heat-treating-plant operators
 - 8124 Metal drawers and extruders
 - 813 Glass, ceramics and related plant operators
 - 8131 Glass and ceramics kiln and related machine operators
 - 8139 Glass, ceramics and related plant operators not elsewhere classified
 - 814 Wood-processing- and papermaking-plant operators
 - 8141 Wood-processing-plant operators
 - 8142 Paper-pulp plant operators
 - 8143 Papermaking-plant operators
 - 815 Chemical-processing-plant operators
 - 8150 Chemical-processing-plant operators
 - 816 Power-production and related plant operators

- 8161 Power-production plant operators
- 8162 Steam-engine and boiler operators
- 8163 Incinerator, water-treatment and related plant operators
- 817 Industrial robot operators
- 8170 Industrial robot operators
- 82 Machine operators and assemblers
- 821 Metal- and mineral-products machine operators
- 8211 Machine-tool operators
- 8212 Cement and other mineral products machine operators
- 822 Chemical-products machine operators
- 8221 Pharmaceutical- and toiletry-products machine operators
- 8222 Ammunition- and explosive-products machine operators
- 8223 Metal finishing-, plating- and coating-machine operators
- 8224 Photographic-products machine operators
- 8229 Chemical-products machine operators not elsewhere classified
- 823 Rubber- and plastic-products machine operators
- 8231 Rubber-products machine operators
- 8232 Plastic-products machine operators
- 824 Wood-products machine operators
- 8240 Wood-products machine operators
- 825 Printing-, binding- and paper-products machine operators
- 8251 Printing-machine operators
- 8252 Book-binding-machine operators
- 8253 Paper-products machine operators
- 826 Textile-, fur- and leather-products machine operators
- 8261 Fibre-preparing, spinning- and winding-machine operators
- 8262 Weaving- and knitting-machine operators
- 8263 Sewing-machine operators
- 8264 Bleaching-, dyeing- and cleaning-machine operators
- 8265 Fur- and leather-preparing-machine operators
- 8266 Shoemaking- and related machine operators
- 8269 Textile-, fur- and leather-products machine operators not elsewhere classified
- 827 Food and tobacco products machine operators
- 8271 Meat- and fish-processing-machine operators
- 8272 Dairy-products machine operators
- 8273 Grain- and spice-milling-machine operators
- 8274 Baked-goods, cereal- and chocolate-products machine operators
- 8275 Fruit-, vegetable- and nut-processing-machine operators
- 8276 Sugar production machine operators
- 8277 Tea-, coffee- and cocoa-processing-machine operators
- 8278 Brewers, wine and other beverage machine operators
- 8279 Tobacco production machine operators
- 828 Assemblers
- 8281 Mechanical-machinery assemblers
- 8282 Electrical-equipment assemblers

8283 Electronic-equipment assemblers

- 8284 Metal-, rubber- and plastic-products assemblers
- 8285 Wood and related products assemblers
- 8286 Paperboard, textile and related products assembler
- 829 Other machine operators nor elsewhere classified
- 8290 Other machine operators not elsewhere classified

- 83 Drivers and related water traffic operators
- 831 Locomotive engine drivers and related workers
- 8311 Locomotive engine drivers
- 8312 Railway brakemen, signallers and shunters
- 832 Motor vehicle drivers
- 8321 Motorcycle drivers
- 8322 Car, taxi and van drivers
- 8323 Bus and tram drivers
- 8324 Heavy truck and lorry drivers
- 833 Mobile-plant operators
- 8331 Motorised farm and forestry plant operators
- 8332 Earth-moving and related plant operators
- 8333 Crane, hoist and related plant operators
- 8334 Lifting-truck operators
- 834 Ships' deck and engine crews and related workers
- 8340 Ships' deck and engine crews and related workers

9 Elementary occupations

- 91 Sales and services elementary occupations
- 911 Street vendors and related workers
- 9111 Street vendors and related workers
- 9113 Door-to-door and telephone salespersons
- 912 Shoe cleaning and other street services elementary occupations
- 9120 Shoe cleaning and other street services elementary occupations
- 913 Hospital, domestic, kitchen and related helpers, cleaners
- 9131 Domestic helpers and cleaners
- 9132 Hospital, domestic and kitchen helpers, cleaners
- 91321 Assistant nurses and hospital ward assistants
- 91322 Cleaners
- 91323 Kitchen helpers
- 9133 Hand-launderers and pressers
- 914 Building caretakers, window and related cleaners
- 9141 Building caretakers
- 9142 Vehicle, window and related cleaners
- 915 Messengers, doorkeepers and related workers
- 9151 Newspaper and advertisement deliverers and messengers
- 9152 Doorkeepers, watchpersons and related workers
- 9153 Vending-machine money collectors, meter readers and related workers
- 916 Garbage collectors and related labourers
- 9161 Garbage collectors

- 9162 Sweepers and related labourers
- 92 Agricultural, fishery and related labourers
- 921 Agricultural, fishery and related labourers
- 9210 Agricultural, fishery and related labourers
- 93 Labourers in manufacturing and construction
- 931 Mining and construction labourers
- 9311 Mining and quarrying labourers
- 9312 Construction and maintenance labourers: roads, dams and similar constructions
- 9313 Building construction labourers
- 932 Manufacturing labourers
- 9320 Manufacturing labourers
- 933 Transport labourers and freight handlers
- 9330 Transport labourers and freight handlers
- 0 Armed forces**
- 01 Armed forces
- 011 Armed forces
- 0110 Armed forces
- 01101 Officers
- 01102 Special officers
- 01103 Warrant officers
- 01104 Military special personnel
- 01105 Conscripts

Appendix 3. Swedish Standard Classification of Occupations (SSYK, -96)



1	Legislators, senior officials and managers
11	<i>Legislators and senior officials</i>
111	Legislators and senior government officials
1110	Legislators and senior government officials
112	Senior officials of special-interest organisations
1120	Senior officials of special-interest organisations
12	<i>Corporate managers</i>
121	Directors and chief executives
1210	Directors and chief executives
122	Production and operations managers
1221	Production and operations managers in agriculture, hunting, forestry and fishing
1222	Production and operations managers in manufacturing
1223	Production and operations managers in construction
1224	Production and operations managers in wholesale and retail trade, hotels and restaurants, transport and communications
1225	Production and operations managers in business services enterprises
1226	Production and operations managers in public administration
1227	Production and operations managers in education
1228	Production and operations managers in health and social work
1229	Production and operations managers not elsewhere classified
123	Other specialist managers
1231	Finance and administration managers
1232	Personnel and industrial relations managers
1233	Sales and marketing managers
1234	Advertising and public relations managers
1235	Supply and distribution managers
1236	Computing services managers
1237	Research and development managers
1239	Specialist managers not elsewhere classified
13	<i>Managers of small enterprises</i>
131	Managers of small enterprises
1311	Managers of small enterprises in agriculture, hunting, forestry and fishing
1312	Managers of small enterprises in manufacturing
1313	Managers of small enterprises in construction
1314	Managers of small enterprises in wholesale and retail trade, hotels and restaurants, transport and communications
1315	Managers of small enterprises in business services enterprises
1316	Managers of small enterprises in public administration
1317	Managers of small enterprises in education
1318	Managers of small enterprises in health and social work
1319	Managers of small enterprises not elsewhere classified

2 Professionals

- 21 *Physical, mathematical and engineering science professionals*
- 211 Physicists, chemists and related professionals
- 2111 Physicists and astronomers
- 2112 Meteorologists
- 2113 Chemists
- 2114 Geologists, geophysicists and related professionals
- 212 Mathematicians and statisticians
- 2121 Mathematicians
- 2122 Statisticians
- 213 **Computing professionals**
- 2131 **Computer systems designers, analysts and programmers**
- 2139 **Computing professionals not elsewhere classified**
- 214 Architects, engineers and related professionals
- 2141 Architects, town and traffic planners
- 2142 Civil engineers
- 2143 Electrical engineers
- 2144 **Electronics and telecommunications engineers**
- 2145 Mechanical engineers
- 2146 Chemical engineers
- 2147 Mining engineers, metallurgists and related professionals
- 2148 Cartographers and surveyors
- 2149 Engineers not elsewhere classified

- 22 *Life science and health professionals*
- 221 Life science professionals
- 2211 Biologists and related professionals
- 2212 Pharmacologists and related professionals
- 2213 Agronomists and horticulturists
- 2214 Forestry professionals
- 222 Health professionals (except nursing)
- 2221 Medical doctors
- 2222 Dentists
- 2223 Veterinarians
- 2224 Pharmacists
- 2225 Speech therapists
- 2229 Health professionals not elsewhere classified
- 223 Nursing and midwifery professionals
- 2231 Midwives
- 2232 Head nurses
- 2233 Emergency room nurses
- 2234 Paediatric nurses
- 2235 District nurses
- 2236 Other nursing professionals
- 23 *Teaching professionals*
- 231 College, university and higher education teaching professionals
- 2310 College, university and higher education teaching professionals
- 232 Secondary education teaching professionals
- 2321 Teaching professionals, academic subjects
- 2322 Vocational teaching professionals
- 2323 Teaching professionals, artistic and practical subjects
- 233 Primary education teaching professionals
- 2330 Primary education teaching professionals
- 234 Special education teaching professionals
- 2340 Special education teaching professionals
- 235 Other teaching professionals
- 2351 Education methods specialists and related professionals

2359 Teaching professionals not elsewhere classified

24 *Other professionals*

241 Business professionals

2411 Accountants

2412 Personnel and careers professionals

2413 Market research analysts and related professionals

2414 Organisational analysts

2419 Business professionals not elsewhere classified

242 Legal professionals

2421 Lawyers

2422 Judges

2423 Corporate legal officers

2429 Legal professionals not elsewhere classified

243 Archivists, librarians and related information professionals

2431 Archivists and curators

2432 Librarians and related information professionals

244 Social science and linguistics professionals (except social work professionals)

2441 Economists

2442 Sociologists, archaeologists and related professionals

2443 Philosophers, historians and political scientists

2444 Philologists, translators and interpreters

245 Writers and creative or performing artists

2451 Authors, journalists and related professionals

2452 Sculptors, painters and related artists

2453 Composers, musicians and singers

2454 Choreographers and dancers

2455 Film, stage and related actors and directors

2456 Designers

246 Religious professionals

2460 Religious professionals

247 Public service administrative professionals

2470 Public service administrative professionals

248 Administrative professionals of special-interest organisations

2480 Administrative professionals of special-interest organisations

249 Psychologists, social work and related professionals

2491 Psychologists and related professionals

2492 Social work professionals

3 Technicians and associate professionals

31 *Physical and engineering science associate professionals*

311 Physical and engineering science technicians

3111 Chemical and physical science technicians

3112 Civil engineering technicians

3113 Electrical engineering technicians

3114 Electronics and telecommunications engineering technicians

3115 Mechanical engineering technicians

3116 Chemical engineering technicians

3117 Mining and metallurgical technicians

3118 Draughtspersons

3119 Physical and engineering science technicians not elsewhere classified

312 Computer associate professionals

3121 Computer assistants

3122 Computer equipment operators

313 Optical and electronic equipment operators

3131 Photographers

3132 Image and sound recording equipment operators

3133	Broadcasting and telecommunications equipment operators
3134	Medical equipment operators and technicians
314	Ship and aircraft controllers and technicians
3141	Ships' engineers
3142	Ships' deck officers and pilots
3143	Aircraft pilots and related associate professionals
3144	Air traffic controllers
3145	Air traffic safety technicians
315	Safety and quality inspectors
3151	Building and fire inspectors
3152	Safety, health and quality inspectors
32	<i>Life science and health associate professionals</i>
321	Agronomy and forestry technicians
3211	Agronomy and horticultural technicians
3212	Forestry technicians
322	Health associate professionals (except nursing)
3221	Occupational therapists
3222	Hygienists, health and environmental officers
3223	Dieticians
3224	Optometrists and opticians
3225	Dental hygienists
3226	Physiotherapists and related associate professionals
3227	Veterinary assistants
3228	Pharmaceutical assistants
3229	Health associate professionals not elsewhere classified
323	Nursing associate professionals
3231	Medical care nurses
3232	Operating theatre nurses
3233	Geriatric nurses
3234	Psychiatric nurses
3235	Radiology nurses
3239	Nursing associate professionals not elsewhere classified
324	Life science technicians
3240	Life science technicians
33	<i>Teaching associate professionals</i>
331	Pre-primary education teaching associate professionals
3310	Pre-primary education teaching associate professionals
332	Other teaching associate professionals
3320	Other teaching associate professionals
34	<i>Other associate professionals</i>
341	Finance and sales associate professionals
3411	Securities and finance dealers and brokers
3412	Insurance representatives
3413	Estate agents
3414	Travel consultants and organisers
3415	Technical and commercial sales representatives
3416	Buyers
3417	Appraisers, valuers and auctioneers
3418	Banking associate professionals
3419	Finance and sales associate professionals not elsewhere classified
342	Business services agents and trade brokers
3421	Trade brokers
3422	Clearing and forwarding agents
3423	Employment agents and labour contractors

3429 Business services agents and trade brokers not elsewhere classified
343 Administrative associate professionals
3431 Administrative secretaries and related associate professionals
3432 Legal and related business associate professionals
3433 Bookkeepers
344 Customs, tax and related government associate professionals
3441 Customs and border inspectors
3442 Government tax and excise officials
3443 Government social benefits officials
3449 Customs, tax and related government associate professionals not elsewhere classified
345 Police officers and detectives
3450 Police officers and detectives
346 Social work associate professionals
3461 Social workers and related associate professionals
3462 Recreation officers and related associate professionals
347 Artistic, entertainment and sports associate professionals
3471 Decorators and commercial designers
3472 Radio, television and other announcers
3473 Street, nightclub and related musicians, singers and dancers
3474 Clowns, magicians, acrobats and related associate professionals
3475 Athletes, sportspersons and related associate professionals
3476 Property managers and related associate professionals
348 Religious associate professionals
3480 Religious associate professionals

4 Clerks

41 *Office clerks*

411 Office secretaries and data entry operators

4111 Data entry operators

4112 Office secretaries

412 Numerical clerks

4120 Numerical clerks

413 Stores and transport clerks

4131 Stock clerks and storekeepers

4132 Transport clerks

414 Library and filing clerks

4140 Library and filing clerks

415 Mail carriers and sorting clerks

4150 Mail carriers and sorting clerks

419 Other office clerks

4190 Other office clerks

42 *Customer services clerks*

421 Cashiers, tellers and related clerks

4211 Cashiers and ticket clerks

4212 Tellers and other counter clerks

4213 Croupiers and related clerks

4214 Pawnbrokers and moneylenders

4215 Debt-collectors and related workers

422 Client information clerks

4221 Travel agency and related clerks

4222 Receptionists

4223 Telephone switchboard operators

4224 Transport information clerks

5 Service workers and shop sales workers

- 51 *Personal and protective services workers*
- 511 Travel attendants and related workers
- 5111 Travel attendants and travel stewards
- 5112 Transport conductors
- 5113 Travel guides
- 512 Housekeeping and restaurant services workers
- 5121 Housekeepers and related workers
- 5122 Cooks
- 5123 Waiters, waitresses and bartenders
- 513 Personal care and related workers
- 5131 Child-care workers
- 5132 Assistant nurses and hospital ward assistants
- 5133 Home-based personal care and related workers
- 5134 Attendants, psychiatric care
- 5135 Dental nurses
- 5139 Personal care and related workers not elsewhere classified
- 514 Other personal services workers
- 5141 Hairdressers, barbers, beauticians and related workers
- 5142 Undertakers
- 5149 Personal services workers not elsewhere classified
- 515 Protective services workers
- 5151 Fire-fighters
- 5152 Security guards and patrolmen
- 5153 Prison guards
- 5159 Protective services workers not elsewhere classified

52 *Models, salespersons and demonstrators*

- 521 Fashion and other models
- 5210 Fashion and other models
- 522 Shop and stall salespersons and demonstrators
- 5221 Shop salespersons, food stores
- 5222 Shop salespersons, non-food stores
- 5223 Café-keepers
- 5224 Salespersons, stalls
- 5225 Salespersons, petrol stations
- 5226 Salespersons, cars, boats and caravans
- 5227 Demonstrators and telephone salespersons

6 Skilled agricultural and fishery workers

- 61 *Skilled agricultural and fishery workers*
- 611 Market gardeners and crop growers
- 6111 Field crop and vegetable growers
- 6112 Horticultural and nursery growers
- 6113 Gardeners, parks and grounds
- 612 Animal producers and related workers
- 6121 Dairy and livestock producers
- 6122 Poultry producers
- 6129 Animal producers and related workers not elsewhere classified
- 613 Crop and animal producers
- 6130 Crop and animal producers
- 614 Forestry and related workers
- 6140 Forestry and related workers
- 615 Fishery workers, hunters and trappers
- 6151 Aquatic-life cultivation workers
- 6152 Fishery workers
- 6153 Hunters and trappers

7	Craft and related trades workers
71	<i>Extraction and building trades workers</i>
711	Miners, shot firers, stonecutters and carvers
7111	Miners, shot firers and quarry workers
7112	Stone splitters, cutters and carvers
712	Building frame and related trades workers
7121	Bricklayers, stonemasons and tile setters
7122	Concrete placers, concrete finishers and related workers
7123	Carpenters and joiners
7124	Rail and road construction workers
7129	Building frame and related trades workers not elsewhere classified
713	Building finishers and related trades workers
7131	Roofers
7132	Floor layers
7133	Insulation workers
7134	Glaziers
7135	Plumbers
7136	Building and related electricians
7137	Building caretakers
7139	Building finishers and related trade workers not elsewhere classified
714	Painters, building structure cleaners and related trades workers
7141	Painters and related workers
7142	Varnishers and related painters
7143	Building structure cleaners
72	<i>Metal, machinery and related trades workers</i>
721	Metal moulders, welders, sheet-metal workers, structural-metal preparers and related trades workers
7211	Metal moulders
7212	Welders and flame cutters
7213	Sheet-metal workers
7214	Structural-metal preparers and erectors
7215	Riggers and cable splicers
7216	Underwater workers
722	Blacksmiths, tool-makers and related trades workers
7221	Blacksmiths, hammer-smiths and forging-press workers
7222	Tool-makers and related workers
7223	Machine-tool setters and setter-operators
7224	Metal wheel-grinders, polishers and tool sharpeners
723	Machinery mechanics and fitters
7231	Motor vehicle mechanics and fitters
7232	Aircraft engine mechanics and fitters
7233	Agricultural- or industrial-machinery mechanics and fitters
724	Electrical and electronic equipment mechanics and fitters
7241	Electrical mechanics fitters and servicers
7242	Electronics mechanics, fitters and servicers
7243	Electrical line installers, repairers and cable jointers
73	<i>Precision, handicraft, craft printing and related trades workers</i>
731	Precision workers in metal and related materials
7311	Precision-instrument makers and repairers
7312	Musical-instrument makers and tuners
7313	Jewellery and precious-metal workers
732	Potters, glass-makers and related trades workers
7321	Abrasive wheel formers, potters and related workers
7322	Glass-makers, cutters, grinders and finishers
7323	Glass engravers and etchers
7324	Glass, ceramics and related decorative painters

733 Handicraft workers in wood, textile, leather and related materials
7330 Handicraft workers in wood, textile, leather and related materials
734 Craft printing and related trades workers
7341 Compositors, desktop operators and related workers
7342 Printing engravers and etchers
7343 Bookbinders and related workers
7344 Silk-screen, block and craft textile printers

74 Other craft and related trades workers

741 Food processing and related trades workers
7411 Butchers, fishmongers and related food preparers
7412 Bakers, pastry-cooks and confectionery makers
7413 Food and beverage tasters and graders
742 Wood treaters, cabinet-makers and related trades workers
7421 Cabinet-makers and related workers
7422 Basketry weavers, brush makers and related workers
743 Garment and related trades workers
7431 Tailors, dressmakers and hatters
7432 Furriers and related workers
7433 Textile, leather and related pattern-makers and cutters
7434 Sewers and related workers
7435 Upholsterers and related workers
744 Pelt, leather and shoemaking trades workers
7441 Pelt dressers, tanners and fellmongers
7442 Shoe-makers and related workers

8 Plant and machine operators and assemblers

81 Stationary-plant and related operators

811 Mineral-processing-plant operators
8111 Mineral-ore- and stone-processing-plant operators
8112 Well drillers and borers and related workers
812 Metal-processing-plant operators
8121 Ore and metal furnace operators
8122 Metal melters and rolling-mill operators
8123 Metal-heat-treating-plant operators
8124 Metal drawers and extruders
8125 Casters and coremakers
813 Glass, ceramics and related plant operators
8130 Glass, ceramics and related plant operators
814 Wood-processing- and papermaking-plant operators
8141 Wood-processing-plant operators
8142 Veneer sheet and fibreboard plant operators
8143 Paper-pulp plant operators
8144 Papermaking-plant operators
815 Chemical-processing-plant operators
8150 Chemical-processing-plant operators
816 Power-production and related plant operators
8160 Power-production and related plant operators
817 Industrial-robot operators
8170 Industrial-robot operators

82 Machine operators and assemblers

821 Metal- and mineral-products machine operators
8211 Machine-tool operators
8212 Cement and other mineral products machine operators
822 Chemical-products machine operators
8221 Pharmaceutical- and toiletry-products machine operators

8222	Ammunition- and explosive-products machine operators
8223	Metal finishing-, plating- and coating-machine operators
8224	Photographic-products machine operators
8229	Chemical-products machine operators not elsewhere classified
823	Rubber- and plastic-products machine operators
8231	Rubber-products machine operators
8232	Plastic-products machine operators
824	Wood-products machine operators
8240	Wood-products machine operators
825	Printing-, binding- and paper-products machine operators
8251	Printing-machine operators
8252	Bookbinding-machine operators
8253	Paper-products machine operators
826	Textile-, fur- and leather-products machine operators
8261	Fibre-preparing-, spinning- and winding-machine operators
8262	Weaving- and knitting-machine operators
8263	Sewing-machine operators
8264	Bleaching-, dyeing- and cleaning-machine operators
8265	Shoemaking- and related machine operators
8269	Textile-, fur- and leather-products machine operators not elsewhere classified
827	Food and related products machine operators
8271	Meat- and fish-processing-machine operators
8272	Dairy-products machine operators
8273	Grain- and spice-milling-machine operators
8274	Baked-goods, cereal and chocolate-products machine operators
8275	Fruit-, vegetable- and nut-processing-machine operators
8276	Sugar production machine operators
8277	Tea-, coffee- and cocoa-processing-machine operators
8278	Brewers, wine and other beverage machine operators
8279	Tobacco production machine operators
828	Assemblers
8281	Mechanical-machinery assemblers
8282	Electrical- and electronic-equipment assemblers
8283	Metal-, rubber- and plastic-products assemblers
8284	Wood and related products assemblers
8285	Paperboard, textile and related products assemblers
829	Other machine operators and assemblers
8290	Other machine operators and assemblers
83	<i>Drivers and mobile-plant operators</i>
831	Locomotive-engine drivers and related worker
8311	Locomotive-engine drivers
8312	Railway brakemen, signallers and shunters
832	Motor-vehicle drivers
8321	Car, taxi and van drivers
8322	Bus and tram drivers
8323	Heavy truck and lorry drivers
833	Agricultural and other mobile-plant operators
8331	Motorised farm and forestry plant operators
8332	Earth-moving- and related plant operators
8333	Crane, hoist and related plant operators
8334	Lifting-truck operators
834	Ships' deck crews and related workers
8340	Ships' deck crews and related workers

9 Elementary occupations

91 *Sales and services elementary occupations*

911 Street vendors and market salespersons

9110 Street vendors and market salespersons

912 Helpers and cleaners

9121 Domestic helpers and cleaners

9122 Helpers and cleaners in offices, hotels and other establishments

9123 Window cleaners

913 Helpers in restaurants

9130 Helpers in restaurants

914 Doorkeepers, newspaper and package deliverers and related workers

9141 Newspaper and package deliverers

9142 Doorkeepers and related workers

9143 Vending-machine money collectors, meter readers and related workers

915 Garbage collectors and related labourers

9150 Garbage collectors and related labourers

919 Other sales and services elementary occupations

9190 Other sales and services elementary occupations

92 *Agricultural, fishery and related labourers*

921 Agricultural, fishery and related labourers

9210 Agricultural, fishery and related labourers

93 *Labourers in mining, construction, manufacturing and transport*

931 Mining and construction labourers

9310 Mining and construction labourers

932 Manufacturing labourers

9320 Manufacturing labourers

933 Transport labourers and freight handlers

9330 Transport labourers and freight handlers

0 Armed forces

01 *Armed forces*

011 Armed forces

0110 Armed forces