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Report on the Project Quality Adjusted Input Price Indices for Collective Services in the Norwegian National Accounts

Report from a Project Co-financed by Eurostat

Contents

1. Background and purpose[1]

1.1. Introduction to the Norwegian National Accounts

In the final Norwegian annual national accounts, an integrated set of price and volume measures is compiled within the framework of annual Supply and Use tables (SUT). The relationships of the definitions inherent in the current price SUT, are maintained in the constant price tables. Value added for the different industries are calculated as a balancing item, i.e. by double deflation.

The Norwegian supply and use tables are compiled in current and previous year's prices, including 1200 products, comprised of 700 commodities and 500 services. The constant price figures are compiled by deflating current values by price indices at the product level. This method results in integrated Laspeyres volume indices and Paasche price indices. Deflation is from the supply side and balancing of the supply and use tables in constant prices is first carried out at the detailed product level in basic values.

In the Norwegian SUT, separate categories have been introduced for market production, production for own final use and three categories for other non-market production, including central government, local government and NPIs serving households. Each of these categories is broken down by detailed industries.

For each industry in central and local government, the production accounts have traditionally been deflated by input price indices. The calculation has been based on separate deflations of the three components: intermediate consumption, compensation of employees and consumption of fixed capital. In principle the input price indices used have been quality adjusted. However the quality adjustment was a schematic one assuming 0.5 per cent annual increases in labour productivity in all government industries excluding defense. We did not have well-founded annual estimates of change in productivity.

"The handbook on price and volume measures in national accounts" states that input price indices will not be allowed for government services except for collective services. Due to the difficulty of defining what the output of collective services are, input indices can be accepted as B-methods on certain conditions.

1.2. Quality adjusted input price indices for collective services

The primary purpose of the project was to develop an appropriate and effective methodology for establishing input price indices for collective services (an acceptable B-method) to satisfy requirements of ESA95. In accordance with the guidelines in the handbook, we estimate the volume of each input separately, taking quality of the inputs into account.

In the case of intermediate consumption, quality corrections should not be necessary. In principle, the price indices used for the detailed products of intermediate consumption are quality adjusted.

Consumption of fixed capital is calculated by the perpetual inventory method. The price indices of some capital goods used in this process are quality adjusted. Emphasis will be however given in the forthcoming years to calculate quality adjusted indices for all important capital goods.

[1] To follow up Eurostat's principles for measuring prices and volumes in national accounts Statistics Norway improved the deflation method for collective services.

The Division for National Accounts has labour accounts integrated into the annual accounts. We need to establish new and improved annual quality adjustments for compensation of employees. The skill of the work force can be measured according to different criteria: e.g. education level, occupation and scale of wages (grade). In 1994 we carried out a pilot research on how moving to a higher pay-level could be interpreted as an increase in productivity. However, the results showed that this method was not acceptable. We expected annual adjustment figures between 0.0 per cent and 1.0 per cent. For central government, results were 1.3 per cent for 1988/1989 and 3 per cent for 1989/1990.

The aim of the new project is to calculate wage indices for government employees that are adjusted for changes in the level of skill over time. This will allow for changes in the combination of skills to be reflected in the volume change when compensation of employees is measured at constant prices. This is a requirement of ESA95; see section 3.10.2 in the Eurostat "Handbook on price and volume measures in national accounts".

The intention was to estimate wage indices separately for three government industries:

Central government public administration and compulsory social security activities
Defence activities
Local government public administration and compulsory social security activities

However due to insufficient data we were not able to carry out calculations for local government (see 3.2).

An important part of the project was to identify and evaluate data sources, including administrative registers. Education/occupation is a characteristic variable in several of our registers. Links between the different data sources had to be identified. Another important step was to carry out calculations on different aggregation levels of variable groups to determine the most appropriate aggregates of education/occupation groups.

2. The Average Wage method

The method used is described in the Eurostat handbook as the Average Wage (AW) method, which is comparable to a unit value approach. The starting point is an exhaustive set of data on numbers of employees and their salaries, in a detailed breakdown of grades and activities. For each category of employees, the average wage is calculated. The wage index for the industry is then calculated using the Paasche formula:

$$(1) \qquad P_w = \frac{\sum_i w_{i1} L_{i1}}{\sum_i w_{i0} L_{i1}}$$

w_{it} = Average wage in group i in period t (t = 0, 1)
L_{i1} = Number of employees in group i in period 1

When the value index for wages is deflated by the Paasche wage index, the result is a Laspeyres volume index for wages.

$$(2) \qquad L_L = \frac{\sum_i w_{i1} L_{i1}}{\sum_i w_{i0} L_{i0}} / P_w = \frac{\sum_i w_{i0} L_{i1}}{\sum_i w_{i0} L_{i0}}$$

This implies that the relative wages in the base year are assumed to measure the relative quality or skill level of the different job categories.

The difference between the change in the volume index and the change in the total number of employees, is a measure of the change in quality or skill combination of the employees, S.

$$S = L_L / \left(\sum_i L_{i1} / \sum_i L_{i0} \right) \quad (3)$$

This can also be expressed using the wage index and the average wage in the industry:

$$S = \left(w_1 / w_0 \right) / P_w \quad (4)$$

With this approach, the decomposition into price and volume is implicit in the classification made in grades, activities, etc., and the detail of those classifications: shifts between the categories end up in the volume component, while wage increases within categories are included in the price component. Hence, the coverage of the volume component is increased when a more detailed stratification is used. Improvements in skill within a category will not be reflected in this volume measure.

3. Data sources

3.1. Central government public administration and defence

The estimates are based on the State Central Register of Government Employees (*SST - Statens sentrale tjenestemannsregister* in Norwegian), for the years 1999-2002. The Ministry of Labour and Government Administration collects data from services/institutions in electronic form or on paper. Statistics Norway obtains the data in electronic form from the ministry.

This SST register contains data on wages and salaries for all central government employees (except teachers) for the month of September each year. There is also information on each employee's occupation (in accordance with central government salary plans), level of education, seniority, organization/establishment, full-time/part-time etc.

SST does not include industry classification codes. Organisation number, i.e. identification number establishment, is however included. Linking the organisation number to the Central Coordinating Register of Legal Entities gave in most cases the industry. For more information see Appendix B.

The personal registration number of the employee in SST has been linked to registers containing the highest level of education.

The wage concept used in the estimates includes fixed supplements (e.g. for working night-shifts) but excludes payments for overtime, income in kind and employers' social contributions. With data for only one month, our estimate of the change in the wage index and the average wage will differ from the annual estimates when wage increases take place at different times of the year. This will affect both the wage index and the average wage in the same way, and for our purpose, which is to compare these two in order to estimate the change in quality, it will not be a problem.

The occupation categories of the salary plans are often rather general in nature, and not directly related to the tasks and skills involved in the work. They are therefore not suitable as stratification criteria for wage index estimation. Because of this, it was decided to add occupation codes according to the

Norwegian standard occupational classification to the register. The occupation coding was carried out by combining information from the salary plan with other information in the register, such as the employee's education, and the type, size and industry of the organisation he or she works for. The occupation groups that are the result of this method are clearly more relevant for the wage index than the salary groups, but some problems remain. In some cases, the same salary group is used for different tasks in the same organisation. Another example is when employees are moved to a higher salary group as a result of the wage bargaining process, and not because their skills have improved. From 1999 to 2002 there has been an increase in the number of employees coded to occupation code 2 Professionals of about 40 per cent, and much of this increase is probably due to changes in the use of the coding system, rather than an increase in the skill level. The coding of occupations is described in more detail in Appendix B.

The estimates are based on data for full-time employees. The register contains data for about 40 000 full-time employees in Public administration, which has around 65 000 employees in total within central government, see table 1. For Defence, the register contains data on around 20 000 full-time employees, out of a total of around 25 000. The register data for defence does not include conscripts.

Table 1. Number of full-time and part-time employees (1000) and wages/salaries (million NOK)

Year	**Public administration Central Government**		**Defence**			
	Number of employees	Wages/ salaries	Employees excl. conscripts		Conscripts	
			Number of employees	Wages/ salaries	Number of employees	Wages/ salaries
1999	62.4	16506	26.3	7527	15.6	866
2000	63.6	17551	26.2	7898	13.8	827
2001	64.7	18670	24.6	7872	12.4	717
2002	67.2	20578	23.9	8233	11.6	658

Source: National Accounts

Table 1 shows that the number of employees in public administration has been increasing over the period from 1999 to 2002. Following cuts in defence budgets, the number of employees in this industry, and in particular the number of conscripts, has been reduced in this period.

3.2 Local government public administration

The main source for local government employees is the Staff Administration Information System of the Norwegian Association of Local and Regional Authorities (*PAI - Personaladministrativt informasjonssystem* in Norwegian). This register has however severe deficiencies related to our project. PAI does not include industry classification codes. Like the SST register, PAI does include organisation number, though this variable in PAI is of considerably poorer quality. Linking the register data to industry is therefore very difficult. In addition, conversion of reported PAI position codes to occupation codes is a formidable task. Traditionally the job positions were more differentiated in local government than in central government. Classifying occupations from job positions was more difficult within local government than within central government. Further problems were created by the simplification of the job positions in local government in 2002, when many job positions were redefined giving less information about the job tasks. The result being more uncertainty in occupation coding and even fewer resolved occupations. Inconsistencies in the coverage of PAI from 1999 to 2000, created further problems. Specifically, the largest municipality (Oslo) was not included in PAI

before 2000. Finally, it should be mentioned that there is a larger portion of part-time employees in local government than in central government.

Our conclusion was that local government had to be excluded from our calculations due to the poor data quality.

4. Stratification categories

According to the Eurostat manual, when the AW method is used, the work force should be stratified at least by grades, functions/activities, and seniority. Our estimates use occupation, education, and seniority.

Table 2. Stratification

Category	Description
Occupation	Norwegian standard occupational classification (STYRK98) at 4-digit level (about 350 occupations). STYRK98 is compatible with the International Standard Classification of Occupations (ISCO 1988). See Appendix B.
Education	Norwegian standard educational classification (NUS2000) at 2-digit level (about 85 groups). See Appendix C. The first digit shows the level of education (primary school, high school, university etc), the second digit shows the field of study. NUS2000 is compatible with the International Standard Classification of Education (ISCED97).
Seniority	Two groups: - Less than 5 years experience - 5 years experience or more This is seniority in government service, not just in the employee's current job. Relevant work experience from outside government is also included. The choice of groups is based on an assumption that productivity increases most in the first few years on the job.

Combining these categories results in around 1500 groups for public administration and 1100 for defence. Since Norway is a small country, such a detailed stratification results in many small groups. For both public administration and defence, more than half the groups have less than five employees.

5. Results

The tables below summarise the results for the two industries: public administration and defence. The estimates for change in quality are in the range of 0.0 per cent to 1.7 per cent for the industries and years included in our study. The results seem reasonable, and probably reflect a gradual improvement in the employees' educational backgrounds. The average of 0.6 per cent increase in quality in public administration is close to the assumption used in our estimates until now, which is 0.5 per cent.

Table 3. Central government public administration and compulsory social security activities, change from previous year in per cent

Year	Wage index (1)	Average wage (2)	Change in quality (3)
2000	4.4	5.5	1.1
2001	3.2	3.3	0.1
2002	5.8	6.4	0.6
Average			**0.6**

(1) This is the Paasche wage index, see equation (1) in section 2.
(2) This is the un-weighted average wage
(3) See equation (3) and (4) in section 2.

Table 4. Defence activities (excluding conscripts), change from previous year in per cent

Year	Wage index	Average wage	Change in quality
2000	5.0	6.8	1.7
2001	2.3	2.3	0.0
2002	7.9	8.6	0.6
Average			**0.8**

The estimates for defence exclude conscripts. This group has a monthly "wage" that is only about 20 per cent of the average for employees, and the number of conscripts have been falling faster than the number of employees over the period from 1999 to 2002, as shown in table 1.This means that including conscripts would have a significant effect on the un-weighted average wage. In 2002, it would be 9.4 per cent rather than 8.6 per cent, for example. Because of this potential problem, employees and conscripts have always been treated as separate groups in the calculation of the wage index for the defence industry. Estimating a change in quality for conscripts is conceptually difficult, as it is hard to say to what extent the conscripts' non-military education and work experience is relevant for their military tasks.

Even with a detailed stratification, some uncertainties remain in the estimates. In some cases, there are considerable variations in wages among the employees in a group. This can affect the split between price and volume changes. The problems with the coding of occupations mentioned in section 3 may also have an influence on the results.

6. Alternative estimates for 2002

In order to test the sensitivity of the estimates with regard to the standard stratification categories described above (occupation, education, seniority), some estimates were made for 2002 with alternative stratification groups. The alternatives are shown in the table below.

Table 5. Alternative estimates for 2002

	Standard	Alt 1	Alt 2	Alt 3
Occupation	STYRK98 4-digit	Not used	STYRK98 4-digit	STYRK98 4-digit
Education	NUS2000 2-digit	NUS2000 2-digit	Not used	NUS2000 2-digit
Seniority	0-4 years, 5+	0-4 years, 5+	0-4, 5+	0-4, 5-14, 15+

Not using the occupation groups in the stratification (Alternative 1) would be an advantage from a practical point of view, since there would be no need to add occupation codes to register. However, the impact on the estimated change in quality was relatively large. For public administration, the quality change was reduced from 0.6 per cent in the standard model to 0.3 per cent, and for defence it was reduced from 0.6 per cent to 0.0 per cent.

Disregarding the education groups (Alternative 2) had a smaller impact on the estimates. This is to be expected, since many occupation codes also include some information on educational background. However, for some occupation groups, additional information on education is relevant, therefore it was decided to keep this group in the standard model.

Adding an additional seniority group for employees with 15 years or more experience (Alternative 3), had no impact on the estimates for defence, and only 0.1 percentage points for public administration.

Table 6. Central government public administration and compulsory social security activities, change from 2001 to 2002 in per cent

Stratification groups	Wage index	Change in quality
Standard	5.8	0.6
Alt 1 Without occupation groups	6.1	0.3
Alt 2 Without education groups	6.0	0.4
Alt 3 With extra seniority group	5.7	0.7

Table 7. Defence activities, change from 2001 to 2002 in per cent

Stratification groups	Wage index	Change in quality
Standard	7.9	0.6
Alt 1 Without occupation groups	8.6	0.0
Alt 2 Without education groups	7.8	0.7
Alt 3 With extra seniority group	8.0	0.6

7. Conclusions

We are planning to update the estimates of quality change of the employees in public administration and defense annually in the future. The quality change will be used to adjust the index for compensation of employees per hour worked, and this adjusted index will then be used to deflate the current price data for compensation of employees.

Because of the uncertainties that remain in the estimates, there is a case for smoothing of some particularly high and low values of the quality change. A longer time-series than three years is needed to establish what can be considered as a 'normal' range for the change in quality, but given the results reported here and our previous assumption of a change of 0.5 per cent, a working hypothesis could be between 0 per cent and 1 per cent. Any results outside of this range should be checked, and possibly smoothed, before it is used to adjust the index for compensation of employees per hour worked

Appendix A. The project team

The project was guided by the Division for National Accounts:

Team leaders:
Lasse Røgeberg, Senior Advisor (project leader)
Tor Skoglund, Researcher
Steinar Todsen, Advisor

Team members:
Stein Hansen, Senior Executive Officer
Jennifer Bush, Senior Executive Officer

Data was supplied by the Division for Labour Market Statistics and the Division for Income and Wage Statistics. The calculations were done by the Division for National Accounts.

Appendix B. Implementing industry and occupation codes in the State Central Register of Government[2]

This paper describes the process of determining occupations codes from position codes in the State Central Register of Government Employees (SST - Statens sentrale tjenestemannsregister in Norwegian) for 1999 to 2002. The Norwegian coding system for occupations and thereby the process reported in this paper follow the guidelines established in the International Standard Classification of Occupations. The current recoding catalogue was originally created to convert reported SST position codes to occupation codes used in the Register of Employees. The catalogue uses industry codes, education information, number of employees and other organisation information to determine occupation codes. As SST does not include industry codes additional sources must be used to determine industry codes. The industry codes are derived from links to the Central Coordinating Register of Legal Entities (CCRLE).

The following is a description of how industry codes are linked to the data attained from SST, how position codes are linked to occupation codes and the problems that occur in this process.

Industry coding from SST data

2002
SST 2002 consists of 131 420 job positions. The companies' organisation number from SST was used to link 96 608 jobs to CCRLE industry codes. In cases where the companies' organisation numbers were not in CCRLE, a code conversion was performed to convert organisation numbers from SST to ministry codes. This conversion process was created as a part of another project in the Division for Labour Market Statistics. This process provided links to CCRLE industry codes for 19 130 job positions. Of the remaining 15 682 job positions, 14 980 were manually coded for industry.

2001
SST 2001consisted of 157 388 jobs. 103 134 job positions were linked to CCRLE industry codes via the companies' organisation number. 29 998 jobs were linked to industry codes using the conversion of organisation numbers to ministry codes, then linking to CCRLE industry codes. 23 385 jobs, of the remaining 24 256 job positions, were manually coded for industry.

2000
In 2000, the SST consisted of 170 812 jobs, though organisation number was not a variable at that time. Our primary source for assigning industry codes then became the ministries recoding process. 101 707 were coded by this method. An additional 67 899 jobs were industry coded manually, leaving 1206 positions without codes.

1999
The 1999 SST consisted of 173 895 job positions and as in 2000 the companies' organisation number were not a variable. 95 783 jobs were coded via the recoding process, that is ministry to industry code linkage. Of the remaining 78 112 job positions, 76 679 were manually coded for industry.

Table B1 shows the result of determining industry codes for each of the job positions in SST. In 1999, 173 895 job positions were reported to SST, while in 2002, only 131 420 jobs were reported. As of 2002, the Norwegian State Railways and Norway Post no longer report figures to SST.

[2] Translation of a paper by Stein Olav Gystad, Division for Labour Market Statistics, 10th of November, 2003. Translation by Jennifer Bush, Division for National Accounts.

Table B1. Industry coding results for SST 1999-2002

	1999	2000	2001	2002
Total job positions	173 895	170 812	157 388	131 420
Linked via organisation number	-	-	103 134	96 608
Linked via recoding catalogue	95 783	101 707	29 988	19 130
Manual industry coding	76 679	67 899	23 385	14 980
Undetermined industry	1 433	1 206	881	702

Principles for coding of occupation from SST data

Many position codes can be linked to occupations from position title alone, in other words the position title is the same as the occupation title. Of course many position codes cannot be linked via position title alone. Often position codes differ from occupation codes because position codes are connected to salary structure, seniority, and other factors than work descriptions. The occupation codes must then be determined from a combination of characteristics such as the enterprise's industry, ministry grouping and number of employees and employee education levels. 1067 *Senior executive officer* is an example of this type of position code as senior executive officer is used in various industries and for various work descriptions.

Senior executive officers within general government administration (industries 75110, 75120, and 75130) are generally occupationally coded as *24 Public service administrative professionals.* Professional education determines the remaining digits: i.e. Senior Executive Officers with juridical education are coded as *2412104 Senior executive officer (juridical deliberation and planning, public service administration)*. There are, of course, exceptions for certain ministries within general government administration. At Statistics Norway, with industry code *75110 general government administration*, senior executive officers are given the occupation code *2122 Statistician,* not occupational category 24. Senior executive officers at the taxation authorities come under the category *3442105 Government tax and excise officials*, while senior executive officers at the Directorate of Labour come under the category *3444102 Executive Officer (government employment service officials)*. Senior executive officers in other industries are coded according to professional education where appropriate, and otherwise coded as *2512 Personnel and careers professionals*.

Problems associated with occupation coding

Field of occupation
The occupation code's first digit refers to the occupation's competence level. For example, occupations that require 4 or more years of tertiary education are coded as academic occupations (the first digit then being 2). Similar position codes within a field of occupation principally receive the similar occupation code. A shortage of appropriately trained personnel can create problems for this strategy of coding. Employees in such fields often receive salaries that are higher than their competence level. As position codes within the government are linked to salaries, these employees must also be reassigned to higher position codes than their actual competence level. These cases can result in an exaggeration in competence levels.

Coding for Leaders
Another problem in occupation coding is classifying positions within the occupation field of Administrative Leaders and Politicians (first digit code of 1). The general rule is that a position is coded as occupation field 1 if over half of the work hours are consumed planning, prioritising, and

monitoring operations. In many cases, position codes are then clearly occupation code 1. In other cases, the occupation code is determined from the number of employee in the enterprise. If there are more than ten employees, the occupation code is 1, while less than 10 employees yields an occupation code of 2. It is difficult to determine if this is an appropriate distinction for compliance with the International Standard Classification of Occupations.

Work task variation within ministries and industries

As mentioned, industry and ministry variables are used to determine the occupation codes for certain position codes. We use these variables on the assumption that work tasks vary across industries and ministries. However, work tasks also often vary within the same ministry or industry. As an example, a senior executive officer at Statistics Norway could work as a programmer, a statistician, an account consultant, a personnel consultant, etc. We are unable to separate these work tasks via our recoding process based on position codes. Like position codes receive like occupation codes within the same enterprise, except where cases of professional education is weighted.

Error due to development process

The recoding table was created in connection with a project started in 2001 for reporting position codes to the Register of Employees. In 2001 some controls on the position codes could be performed, but many controls were impossible for earlier data. Statistics Norway once again can be used in an example of potential problems. Newly educated academic employees at Statistics Norway were in earlier years given the position code 1065 Executive officer. Generally 1065 Executive officer was given an occupation area code of 3 Technicians and associate professionals. Today, the same group is however given the position code 1408 Senior executive officer, which is classified as occupation area 2 Professionals. This change creates an increase in the proportion of occupation codes in the professionals category without a real change in competence.

Results of occupation coding

Table B2. Number of employees in industry code 75 Central Government distributed across one digit occupation codes and defence/central government public administration. 1999-2002

	1999		2000		2001		2002	
	Defence	Public admin.	Defence	Public admin.	Defence	Public admin.	Defence	Public admin.
Total	24145	49647	23212	50271	21360	51317	21151	52327
Undetermined	252	2985	146	780	144	839	152	822
0 Armed forces	14170	-	13413	-	12245	-	12228	-
1 Legislators, senior officials and managers	320	4208	310	4395	325	4554	349	4227
2 Professionals	1804	11602	1922	13596	1961	14714	2237	16575
3 Technicians and associate professionals	2419	23184	2453	24469	2338	24573	2274	24593
4 Clerks	1744	3163	1558	2608	1254	2143	1044	1818
5 Service workers and shop and market sales workers	2126	3020	2131	2986	1953	3093	1790	2952
6 Agricultural, forestry and fishery workers	-	19	-	22	-	19	-	22
7 Craft and related trades workers	252	272	250	261	224	258	241	285
8 Plant and machine operators and assemblers	87	74	88	48	64	53	63	25
9 Elementary occupations	971	1120	941	1106	852	1071	773	1008

In 2002 only 822 persons could not be linked to an occupation, while in 1999 there were 2985 that could not be linked. There are two main reasons for the increase in successful linkages. One reason is that the recoding catalogue (position code to occupation code) was created according to data available in 2001 and 2002. Position codes that had been used in 1999 and 2000, but were not used after that

have not been recoded in the catalogue. The other reason was that the proportion of job positions without a reported industry was higher in 1999 than in 2002.

Over the years there has also been a significant increase in the number of jobs coded as area *2 Professionals*. In 1999, 11 602 job positions (23.4 per cent) were considered to be professionals, while in 2002, 16 575 (31.6 per cent) were considered professionals. It can be assumed that the increase is primarily due to variation in the use of position codes from 1999 to 2002. The increase cannot be solely attributed to increased competence for employees in central government administration.

Table B3. Number of employees in industry code 75 Central Government distributed across four digit occupation codes and defence/central government public administration. 1999-2002

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
0111	Privates and corporals	1678	-	1150	-	1146	-	1122	-
0112	Officers (with rank from sergeant to captain)	9643	-	9230	-	8284	-	8039	-
0113	Officers (above the rank of captain)	2849	-	3033	-	2815	-	3067	-
1110	Legislators	-	-	-	-	-	33	-	-
1120	Senior government officials	-	77	-	66	-	46	-	40
1141	Senior officials of political party organisations	-	-	-	-	-	-	-	-
1142	Senior officials of employers , workers and other economic organisations	-	-	-	-	-	-	-	-
1143	Senior officials of humanitarian and other interest organisations	-	-	-	-	-	-	-	-
1210	Directors and chief executives	5	139	6	194	12	225	25	224
1220	Production and operations department managers in unspecified industries	-	-	-	-	-	-	-	-
1221	Production and operations department managers in agriculture, forestry and fishing	-	-	-	-	-	-	-	-
1222	Production and operations department managers in manufacturing, mining and quarrying, electricity, gas and water supply	-	-	-	-	-	-	-	-
1223	Production and operations department managers in construction	-	1	-	1	-	-	-	-
1224	Production and operations department managers in wholesale and retail trade, hotels and restaurants	81	2	79	1	70	2	65	3
1225	Production and operations department managers in transport and communications	-	-	-	-	-	-	-	-
1226	Production and operations department managers in business services	-	-	-	-	-	-	-	-
1227	Production and operations department managers in public administration	166	3862	158	4008	182	4090	201	3798
1228	Production and operations department managers in education, health and social security	43	4	41	6	36	2	31	5
1229	Production and operations department managers in personal care, cleaning and related services	-	-	-	-	-	-	-	-
1231	Finance and administration department managers	6	107	6	102	6	136	6	133
1232	Personnel department managers	1	12	1	11	1	13	1	19
1233	Sales department managers	-	-	-	-	-	-	-	-
1234	Advertising and public relations department managers	-	-	-	-	-	-	-	-
1235	Supply and distribution department managers	-	-	-	-	-	-	-	-
1236	Computing services department managers	-	-	-	-	-	-	-	-
1237	Research and development department managers	18	6	19	6	18	7	20	5
1239	Other department managers not elsewhere classified	-	-	-	-	-	-	-	-
1310	General managers in unspecified industries	-	-	-	-	-	-	-	-

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
1311	General managers in agriculture, forestry and fishing	-	-	-	-	-	-	-	-
1312	General managers in manufacturing, mining and quarrying, electricity, gas and water supply	-	-	-	-	-	-	-	-
1313	General managers in construction	-	-	-	-	-	-	-	-
1314	General managers in wholesale and retail trade	-	-	-	-	-	-	-	-
1315	General managers in restaurants and hotels	-	-	-	-	-	-	-	-
1316	General managers in transport and communications	-	-	-	-	-	-	-	-
1317	General managers in business services	-	-	-	-	-	-	-	-
1318	General managers in personal care, cleaning and related services	-	-	-	-	-	-	-	-
1319	General managers not elsewhere classified	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
2111	Physicists and astronomers	35	-	32	-	34	-	34	-
2112	Meteorologists	-	-	-	-	-	-	-	-
2113	Chemists	13	6	14	5	12	7	14	8
2114	Geologists and geophysicists	2	2	2	2	1	3	2	3
2121	Mathematicians and related professionals	13	1	16	1	12	1	10	1
2122	Statisticians	2	3	2	474	2	510	1	539
2130	Computer systems designers and computer programmers	60	3	64	2	58	5	72	8
2141	Architects, town and traffic planners	21	31	22	27	20	26	25	30
2142	Civil engineers	182	91	197	82	217	98	280	105
2143	Electrical engineers	-	-	-	-	-	-	-	-
2144	Electronics and telecommunications engineers	171	15	178	15	186	21	204	33
2145	Mechanical engineers	64	32	72	19	71	36	83	35
2146	Chemical engineers	23	32	23	22	19	31	20	40
2147	Mining engineers, metallurgists and related professionals	2	2	2	1	6	2	6	5
2148	Cartographers and surveyors	-	32	-	40	-	74	-	99
2149	Other engineers and related professionals not elsewhere classified	175	66	189	45	182	60	189	65
2211	Biologists, botanists, zoologists and related professionals	6	8	5	1	5	8	3	8
2212	Agronomists and related professionals	-	-	-	-	-	-	-	-
2221	Medical doctors	14	35	17	35	18	30	23	46
2222	Dentists	19	1	18	1	16	4	15	6
2223	Veterinarians	1	11	1	11	1	16	1	10
2224	Pharmacists	-	18	-	24	-	20	-	20
2225	Nutritionists	-	-	-	-	-	-	-	-
2230	Nursing and midwifery professionals	46	8	46	9	46	8	41	8
2310	College, university and higher education teaching professionals	7	-	9	-	13	1	12	1
2320	Secondary education teaching professionals	49	11	48	7	48	7	41	4
2340	Special education teaching professionals	-	-	-	-	-	-	-	-
2351	Education methods specialists	2	1	2	-	2	1	1	1
2352	School inspectors	23	-	30	1	27	1	28	1
2359	Other teaching professionals not elsewhere classified	-	-	-	-	-	-	-	-
2411	Economic and social planning	296	2607	306	2904	314	3129	366	3340
2412	Juridical deliberation and planning	73	2089	80	2336	82	2421	90	2609
2413	Technical and scientific deliberation and planning	161	2177	184	2499	181	2561	216	2681
2419	Other public service administrative professionals	294	3303	309	3872	339	4368	404	5478
2511	Accountants	-	191	-	187	-	209	-	240
2512	Personnel and careers professionals	-	11	-	12	-	8	-	2

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
2519	Market analysts and business professionals not elsewhere classified	-	-	-	-	-	-	-	-
2521	Lawyers	-	-	-	-	-	27	-	29
2522	Judges	-	236	-	240	-	231	-	268
2523	Prosecuting legal professionals	-	340	-	643	-	692	-	722
2531	Archivists and curators	15	72	18	59	18	70	19	77
2532	Librarians	-	2	-	2	-	1	-	1
2541	Economists	6	21	7	-	6	2	7	5
2542	Sociologists, social anthropologists, human geographers and political scientists	7	20	7	1	7	1	9	3
2543	Historians, archaeologists and philosophers	11	1	10	1	9	2	10	2
2544	Philologists, translators and interpreters	1	-	2	-	1	-	1	1
2545	Psychologists	10	4	10	4	8	5	10	9
2551	Authors and other writers	-	-	-	-	-	-	-	-
2552	Sculptors, painters and other figurative artists	-	-	-	-	-	-	-	-
2553	Conductors, composers, musicians and singers	-	-	-	-	-	-	-	-
2554	Choreographers and dancers	-	-	-	-	-	-	-	-
2555	Actors and directors	-	-	-	-	-	-	-	-
2560	Religious professionals	-	4	-	12	-	17	-	32
3111	Civil engineering technicians	230	127	191	104	171	68	151	28
3112	Electrical engineering technicians	-	-	-	-	-	-	-	-
3113	Electronics and telecommunications engineering technicians	180	5	163	6	147	7	144	8
3114	Mechanical engineering technicians	107	4	99	3	89	3	81	2
3115	Chemical engineering technicians	15	15	12	12	13	11	9	10
3116	Oil, mining and metallurgical technicians	1	-	2	-	1	1	2	-
3119	Engineering technicians not elsewhere classified	45	24	42	19	33	16	28	13
3120	Computer associate professionals	22	-	17	-	18	1	21	1
3131	Photographers and image and sound recording equipment operators	1	-	-	-	1	-	1	-
3132	Broadcasting and telecommunications equipment operators	202	-	198	-	181	-	161	-
3139	Optical and electronic equipment operators not elsewhere classified	-	-	-	-	-	-	-	-
3141	Ships engineers	-	-	-	1	-	1	-	1
3142	Ships deck officers and pilots	21	41	21	43	17	45	17	5
3143	Aircraft pilots	-	-	-	-	-	-	-	-
3144	Air traffic controllers	-	-	-	-	-	-	-	-
3151	Fire inspectors	-	-	-	-	-	-	-	-
3152	Safety inspectors	42	162	44	168	46	166	47	155
3211	Life science technicians	5	-	4	-	4	-	4	-
3212	Agronomy and forestry technicians	-	-	-	-	-	-	-	-
3213	Farming and forestry advisers	-	-	-	-	-	-	-	-
3221	Radiographers and audiology associate professionals	-	-	2	-	3	-	2	-
3222	Sanitarians	-	-	-	-	-	-	-	-
3223	Dieticians	-	-	-	-	-	-	-	-
3224	Opticians	-	-	-	-	-	-	-	-
3225	Dental assistants	-	-	-	-	-	-	-	-
3226	Physiotherapists and related associate professionals	6	13	7	6	4	8	5	13
3227	Veterinary assistants	-	-	-	-	-	-	-	-
3228	Pharmaceutical assistants	-	-	-	-	-	-	-	-
3229	Modern health associate professionals (except nursing) not elsewhere classified	-	-	-	-	-	-	-	-
3231	Nurses	31	22	29	20	27	20	26	8
3232	RNMS	-	-	-	-	-	-	-	-

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
3310	Primary education teaching associate professionals	-	3	-	2	-	2	-	-
3320	Pre-primary education teaching associate professionals	-	9	-	9	-	8	-	2
3341	Technical and subject teaching associate professionals (secondary education)	-	-	-	-	-	-	-	-
3349	Other teaching associate and pedagogical professionals not elsewhere classified	5	-	3	-	2	-	1	-
3411	Finance dealers and brokers	-	-	-	-	-	-	-	-
3412	Insurance representatives	-	-	-	-	-	-	-	-
3413	Estate agents	-	-	-	-	-	-	-	-
3414	Travel consultants	-	-	-	-	-	-	-	-
3415	Technical and commercial sales representatives	-	-	-	-	-	-	-	-
3416	Buyers	-	-	-	-	-	-	-	-
3417	Appraisers, valuers and auctioneers	-	-	-	-	-	-	-	-
3418	Bank associate professionals	-	-	-	-	-	-	-	-
3419	Marketing and advertising advisers	-	-	-	-	-	-	-	-
3421	Trade and shipbrokers	-	-	-	-	-	-	-	-
3422	Clearing and forwarding agents	-	-	-	-	-	-	-	-
3423	Employment agents and labour contractors	-	-	-	-	-	-	-	-
3429	Business services agents not elsewhere classified	-	-	-	-	-	-	-	-
3431	Administrative secretaries and related associate professionals	41	16	46	7	37	14	36	14
3432	Accountant associate professionals and bookkeepers	-	477	-	705	-	691	-	707
3433	Chief housekeepers	4	1	6	1	6	1	4	5
3441	Customs and border inspectors	-	938	-	987	-	1175	-	1143
3442	Government tax and excise officials	-	4406	-	4200	-	4056	-	3844
3443	Government social benefits officials	-	5593	-	5618	-	5482	-	5280
3444	Government employment service officials	-	-	-	-	-	-	-	-
3449	Other public service administrative associate professionals	1430	5382	1531	5481	1502	5431	1501	5377
3450	Police officers	-	5998	-	6959	-	7248	-	7835
3460	Social workers (college-trained), child care officers, etc.	6	33	8	37	6	38	5	55
3471	Decorators and commercial designers	-	-	-	-	-	-	-	-
3472	Singers and musicians in the entertainment industry	-	-	-	-	-	-	-	-
3473	Clowns, magicians, acrobats and related associate professionals	-	-	-	-	-	-	-	-
3474	Prompters, etc.	-	-	-	-	-	-	-	-
3475	Athletes, sportspersons and coaches	-	-	-	-	-	-	-	-
3480	Religious associate professionals	-	-	-	-	-	-	-	-
3491	Journalists and information associate professionals	10	35	11	40	10	37	9	41
3492	Radio and television announcers	-	-	-	-	-	-	-	-
3493	Librarians	15	38	17	41	20	43	19	46
4111	Stenographers and typists	-	-	-	-	-	-	-	-
4112	Data processors, data entry operators and related operators	-	-	-	-	-	-	-	-
4113	Secretaries	-	-	-	-	-	-	-	-
4114	Clerical officers	816	2781	705	2268	531	1845	402	1592
4121	Accounting and bookkeeping clerks	119	351	102	272	80	234	45	186
4129	Other numerical clerks	-	-	-	60	-	55	-	38
4131	Stock clerks	732	-	667	-	565	-	535	-
4132	Logistical clerks	-	-	-	-	-	-	-	-
4133	Transport clerks	73	29	81	7	76	5	60	-
4141	Library and filing clerks	4	2	3	1	2	4	2	2

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
4142	Mail carriers and sorting clerks	-	-	-	-	-	-	-	-
4211	Cashiers and ticket clerks	-	-	-	-	-	-	-	-
4212	Tellers and other counter clerks	-	-	-	-	-	-	-	-
4213	Bookmakers and croupiers	-	-	-	-	-	-	-	-
4214	Pawnbrokers	-	-	-	-	-	-	-	-
4215	Debt collectors	-	-	-	-	-	-	-	-
4221	Travel agency and related clerks	-	-	-	-	-	-	-	-
4222	Receptionists and information clerks	-	-	-	-	-	-	-	-
4223	Telephone switchboard operators	-	-	-	-	-	-	-	-
5111	Travel attendants and travel stewards	-	-	-	-	-	-	-	-
5112	Transport conductors	-	-	-	-	-	-	-	-
5113	Travel guides	-	-	-	-	-	-	-	-
5121	Housekeepers and related workers	2	13	2	20	2	18	2	24
5122	Cooks	589	60	571	60	536	82	469	82
5123	Head waiters, waiters, waitresses and bartenders	1	-	-	1	-	1	1	-
5131	Childcare workers	2	14	2	16	-	11	-	2
5132	Nursing assistants and care assistants	4	3	2	-	2	-	2	1
5133	Home helpers	-	-	-	-	-	-	-	-
5134	Dentists secretaries	48	-	46	-	42	1	37	1
5135	Doctors secretaries	-	-	-	-	-	-	-	-
5136	Trainees, nursemaids, etc.	-	-	-	-	-	-	-	-
5137	Pharmacy technicians	-	-	-	-	-	-	-	-
5139	Personal care and related workers not elsewhere classified	-	27	-	25	-	23	-	25
5141	Hairdressers, barbers, beauticians and related workers	-	-	-	-	-	-	-	-
5142	Undertakers and crematorium workers	-	-	-	-	-	-	-	-
5143	Reducing treatment hosts/hostesses and related workers	-	-	-	-	-	-	-	-
5149	Other personal services workers not elsewhere classified	-	-	-	-	-	-	-	-
5161	Fire-fighters	167	30	168	29	165	29	168	32
5162	Prison guards	-	2006	-	2012	-	2088	-	2067
5163	Caretakers	1229	783	1249	740	1135	626	1037	479
5164	Security guards	84	76	91	63	71	59	74	72
5169	Protective services workers not elsewhere classified	-	-	-	-	-	-	-	-
5210	Fashion and other models	-	-	-	-	-	-	-	-
5221	Shop salespersons and other salespersons (retail)	-	-	-	-	-	-	-	-
5222	Flower decorators	-	-	-	-	-	-	-	-
5223	Door-to-door salesmen and related workers	-	-	-	-	-	-	-	-
5224	Salespersons (wholesale)	-	-	-	-	-	-	-	-
5225	Interviewers	-	-	-	20	-	155	-	167
6111	Field crop and vegetable growers	-	-	-	-	-	-	-	-
6112	Market gardeners	-	3	-	3	-	3	-	3
6121	Dairy and livestock producers	-	-	-	6	-	4	-	5
6122	Poultry producers	-	-	-	-	-	-	-	-
6129	Animal producers and related workers not elsewhere classified	-	-	-	-	-	-	-	-
6130	Crop and animal producers	-	4	-	2	-	2	-	3
6210	Forestry workers, etc.	-	12	-	11	-	10	-	11
6310	Fish farmers, etc.	-	-	-	-	-	-	-	-
6411	Fishery workers	-	-	-	-	-	-	-	-
6412	Hunters	-	-	-	-	-	-	-	-
7110	Stone cutters and related workers	-	-	-	-	-	-	-	-
7121	Bricklayers and stonemasons	-	-	-	-	-	-	-	-

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
7122	Concrete workers and site labourers	-	-	-	-	-	-	-	-
7123	Iron fixers	-	-	-	-	-	-	-	-
7124	Shutter hangers	-	-	-	-	-	-	-	-
7125	Carpenters and joiners	1	49	2	44	3	57	-	60
7126	Road workers and construction workers	14	38	10	48	12	46	11	44
7127	Tunnel, mountain and blasting workers	-	-	-	-	-	-	-	-
7128	Scaffolding builders	-	-	-	-	-	-	-	-
7129	Landscape gardeners	-	3	-	4	-	4	2	4
7131	Roofers	-	-	-	-	-	-	-	-
7132	Insulation workers	-	-	-	-	-	-	-	-
7133	Glaziers	-	-	-	-	-	-	-	-
7134	Plumbers	-	-	-	-	-	-	-	-
7141	Painters and related workers	-	-	-	-	-	-	-	-
7142	Building structure cleaners and varnishers	-	-	-	-	-	-	-	-
7143	Sandblasters	-	-	-	-	-	-	-	-
7144	Chimney sweepers	-	-	-	-	-	-	-	-
7211	Founders	-	-	-	-	-	-	-	-
7212	Welders	-	-	-	-	-	-	-	-
7213	Tinsmiths, etc.	-	-	-	-	-	-	-	-
7214	Sheet-metal workers	-	-	-	-	-	-	-	-
7215	Riggers and cable splicers	-	-	-	-	-	-	-	-
7216	Underwater workers	-	-	-	-	-	-	-	-
7217	Panel beaters	-	-	-	-	-	-	-	-
7221	Blacksmiths	-	-	-	-	-	-	-	-
7222	Gunsmiths, locksmiths and related trades workers	-	-	-	-	-	-	-	-
7231	Motor vehicle mechanics and fitters	154	63	163	57	140	73	136	77
7232	Aircraft engine mechanics and fitters	-	-	-	-	-	-	-	-
7233	Agricultural or industrial machinery mechanics and fitters	40	-	32	-	24	-	26	-
7234	Motor mechanics and fitters	-	-	-	-	-	-	-	-
7235	Automatic controls mechanics and fitters	-	-	-	-	-	-	-	-
7236	Precision mechanics and fitters	-	-	-	-	-	-	-	-
7237	Industrial mechanics and fitters	-	-	-	-	-	-	-	-
7241	Electricians, electrical and electronic equipment mechanics and fitters	21	24	19	15	22	31	36	28
7242	Telegraph and telephone installers and servitors	-	1	-	1	5	4	12	2
7243	Electronics mechanics and servitors	-	-	-	-	-	-	-	-
7244	Electrical line installers, repairers and cable jointers	-	-	-	-	-	-	-	-
7311	Precision instrument makers and repairers	-	-	-	-	-	-	-	-
7312	Musical instrument makers and tuners	-	-	-	-	-	-	-	-
7313	Jewellery and precious metal workers	-	-	-	-	-	-	-	-
7321	Potters and ceramists	-	-	-	-	-	-	-	-
7322	Glassmakers	-	-	-	-	-	-	-	-
7331	Handicraft workers in wood and related materials	-	-	-	-	-	-	-	-
7332	Handicraft workers in textile, leather and related materials	-	-	-	-	-	-	-	-
7341	Graphic artists	-	-	-	-	-	-	-	-
7342	Photographers	3	5	5	5	3	4	2	3
7350	Technical illustrators	3	4	3	8	3	4	4	1
7411	Butchers, fishmongers and related food preparers	-	-	-	-	-	-	-	-
7412	Bakers and confectionery makers	-	-	-	-	-	-	-	-
7413	Food and beverage tasters and graders	-	-	-	-	-	-	-	-

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
7419	Other craft and related trades workers in manufacture of food products	-	-	-	-	-	-	-	-
7421	Cabinetmakers	-	-	-	-	-	-	-	-
7422	Boat builders	-	-	-	-	-	-	-	-
7423	Basketry weavers, brush makers and related workers	-	-	-	-	-	-	-	-
7431	Weavers, knitters and related workers	-	-	-	-	-	-	-	-
7432	Tailors, dressmakers and hatters	-	-	-	-	-	-	-	-
7433	Furriers and related workers	-	-	-	-	-	-	-	-
7434	Textile, leather and related patternmakers and cutters	-	-	-	-	-	-	-	-
7435	Wigmakers	-	-	-	-	-	-	-	-
7436	Upholsterers and related workers	-	-	-	-	-	-	-	-
7441	Pelt dressers, tanners and fell mongers	-	-	-	-	-	-	-	-
7442	Shoemakers	-	-	-	-	-	-	-	-
7443	Taxidermists	-	-	-	-	-	-	-	-
7450	Laboratory assistants	16	72	16	79	12	35	12	66
8111	Mining plant operators	-	-	-	-	-	-	-	-
8112	Mineral ore and stone processing plant operators	-	-	-	-	-	-	-	-
8113	Oil and gas processing plant operators	-	-	-	-	-	-	-	-
8114	Well service operators	-	-	-	-	-	-	-	-
8121	Ore and metal furnace operators	-	-	-	-	-	-	-	-
8122	Metal moulders	-	-	-	-	-	-	-	-
8131	Ceramics moulders and decorators	-	-	-	-	-	-	-	-
8132	Glass production plant operators	-	-	-	-	-	-	-	-
8139	Glass, ceramics and related plant operators not elsewhere classified	-	-	-	-	-	-	-	-
8141	Wood processing plant operators	-	-	-	-	-	-	-	-
8142	Paper-pulp and papermaking plant operators	-	-	-	-	-	-	-	-
8143	Particle and fibreboard plant operators	-	-	-	-	-	-	-	-
8151	Petroleum and natural-gas refining plant operators	-	-	-	-	-	-	-	-
8159	Chemical processing plant operators not elsewhere classified	-	-	-	-	-	-	-	-
8161	Power production plant operators	-	-	-	-	-	-	-	-
8162	Combustion, refrigeration and water cleaning plant operators	-	-	-	-	-	-	-	-
8211	Metal products machine operators	-	-	-	-	-	-	-	-
8212	Machine tool operators	-	-	-	-	-	-	-	-
8213	Machinists	-	-	-	-	-	-	-	-
8214	Cement and other mineral products machine operators	-	-	-	-	-	-	-	-
8221	Pharmaceutical and toiletry products machine operators	-	-	-	-	-	-	-	-
8222	Ammunition and explosive products machine operators	-	-	-	-	-	-	-	-
8223	Rubber products machine operators	-	-	-	-	-	-	-	-
8224	Plastic products machine operators	-	-	-	-	-	-	-	-
8225	Paint and varnish products machine operators	-	-	-	-	-	-	-	-
8229	Chemical products machine operators not elsewhere classified	-	-	-	-	-	-	-	-
8251	Graphic printing machine operators	-	-	-	-	-	-	-	-
8252	Bookbinding machine operators	-	-	-	-	-	-	-	-
8253	Paper-products machine operators	-	-	-	-	-	-	-	-
8254	Photo laboratory assistants	-	-	-	-	-	-	-	-
8261	Fibre preparing, spinning and winding machine operators	-	-	-	-	-	-	-	-
8262	Weaving and knitting machine operators	-	-	-	-	-	-	-	-

		1999		2000		2001		2002	
		Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.	Defence	Public Admin.
8263	Sewing machine operators	-	-	-	-	-	-	-	-
8264	Fishing tackles machine operators	-	-	-	-	-	-	-	-
8265	Textile cutters	-	-	-	-	-	-	-	-
8266	Bleaching, dyeing and cleaning machine operators	-	-	-	-	-	-	-	-
8267	Shoemaking and related machine operators	-	-	-	-	-	-	-	-
8269	Textile, fur and leather products machine operators not elsewhere classified	-	-	-	-	-	-	-	-
8271	Fish processing machine operators	-	-	-	-	-	-	-	-
8272	Meat processing machine operators	-	-	-	-	-	-	-	-
8273	Dairy products machine operators	-	-	-	-	-	-	-	-
8274	Grain and spice milling machine operators	-	-	-	-	-	-	-	-
8275	Baked-goods, cereal and chocolate products machine operators	-	-	-	-	-	-	-	-
8276	Fruit, vegetable and nut processing machine operators	-	-	-	-	-	-	-	-
8277	Brewers and other beverage machine operators	-	-	-	-	-	-	-	-
8279	Food and related products machine operators not elsewhere classified	-	-	-	-	-	-	-	-
8281	Mechanical machinery assemblers	-	-	-	-	-	-	-	-
8282	Electronic equipment assemblers	-	-	-	-	-	-	-	-
8311	Locomotive engine drivers and locomotive inspectors	-	-	-	-	-	-	-	-
8312	Railway brakers, signallers and shunters	-	-	-	-	-	-	-	-
8321	Car, taxi and van drivers	46	22	44	19	35	23	34	22
8322	Bus and tram drivers	-	-	-	-	-	-	-	-
8323	Heavy truck and lorry drivers	-	-	-	-	-	-	-	-
8331	Earth moving and related plant operators	12	28	19	2	13	2	14	1
8332	Crane, hoist and related plant operators	29	-	25	-	16	-	15	-
8333	Lifting truck operators	-	-	-	-	-	-	-	-
8341	Ships deck crews	-	4	-	5	-	5	-	1
8342	Ships machine crews	-	20	-	22	-	23	-	1
9120	Odd jobs for private persons and households	-	-	-	-	-	-	-	-
9131	Domestic helpers and cleaners	-	-	-	-	-	-	-	-
9132	Helpers and cleaners in offices and other establishments	971	1116	941	1106	852	1071	773	1008
9133	Kitchen helps and related workers	-	-	-	-	-	-	-	-
9141	Window cleaners	-	-	-	-	-	-	-	-
9142	Car and related cleaners	-	-	-	-	-	-	-	-
9151	Messengers, package and luggage porters and deliverers	-	-	-	-	-	-	-	-
9152	Doorkeepers, watchpersons and related workers	-	-	-	-	-	-	-	-
9153	Meter readers and related workers	-	-	-	-	-	-	-	-
9160	Garbage collectors and related labourers	-	-	-	-	-	-	-	-
9210	Agricultural, fishery and related labourers	-	-	-	-	-	-	-	-
9310	Labourers in construction and maintenance, etc.	-	-	-	-	-	-	-	-
9320	Labourers in manufacturing	-	-	-	-	-	-	-	-
9330	Storing and goods handling labourers	-	-	-	-	-	-	-	-
0000	Unspecified or unidentified occupations	252	2965	146	780	144	839	152	822

Appendix C. Norwegian Standard Classification of Education

1. Background

The Norwegian Standard Classification of Education (NUS) was initially prepared by Statistics Norway in 1970, and subsequently revised in 1973, 1989 and 2000. The 2000 Norwegian Standard Classification of Education will be referred to as NUS2000.

The NUS2000 has undergone considerable changes in relation to the previous education classifications. The main changes are a new level classification (1st digit), a field classification (2nd - 4th digits) that is the same on all levels, and a clarification of the subjects each educational programme (5th - 6th digits) includes and does not include. The fact that the field classification is the same at all levels offers major advantages in terms of a general understanding of how the Norwegian Standard Classification of Education is structured, and in the field of education-based statistics and analyses of the education system. Education is also of international interest, and Statistics Norway delivers statistics to international publications in which the education statistics of various countries are compared. The International Standard Classification of Education ISCED97 is used in reporting statistics for international use. To ensure international comparability a key was made to link the NUS2000 and ISCED97 codes.

2. Definitions and principles

2.1. Definitions

In a broad sense education is a collective term for the transmission of skills and knowledge. In a statistical context it is nevertheless important to delimit the education concept to make it statistically measurable. The NUS covers only educational activities that take place within the education system, i.e. educational activities that have a formal academic framework aimed at a systematic transmission of knowledge and skills, and are of a certain duration.

For statistical analyses it is important to classify educational activities that are the same from one set of criteria. On this basis, an educational activity is defined as one or more educational offerings that are approximately equal with respect to academic content and level placement.

2.2. General principles

In a broad sense the NUS2000 shall function as a classification norm for all educational activities found in Norway and for education completed abroad. The objective of the classification is not to be complete for educational activities abroad, but to include codes that can be used for coding such education. This is important for covering needs in education statistics and in various registers, inter alia in the database of the highest level of education in the population (BHU).

The classification should include all educational activities completed within the ordinary education system in Norway. All educational activities have specific education codes. Specifically, this means that degrees and subjects under the Upper Secondary Education Act have specific codes. Other educational activities are also classified in the classification, but then with the use of aggregate codes specified by broad, narrow or detailed fields of education. Aggregate codes can be identified with the aid of the code “99” as the 5th and 6th digit, or with the help of a separate classification for code type.

3. Code system and structure

The Norwegian Standard Classification of Education is a 6-digit code system that classifies educational activities by level and field. The classification has the following structure:

1st digit	Level
2nd digit	Broad field of education
2nd - 3rd digits	Narrow field of education
2nd - 4th digits	Detailed field of education
1st - 6th digits	Individual educational programme

The 1st and 2nd digits can be used for independent classifications while the 2nd - 3rd, 2nd - 4th and 1st - 6th digits in combination can be used as specific classifications in coding educational activities and in the production of official education statistics.

3.1. Level

The Norwegian Standard Classification of Education has nine levels along with a value for unspecified. The level classification is meant to provide the best possible picture of the structure of the Norwegian education system. The level classification is structured in the following way:

Tripartition of levels	Level	Level name	Class level
	0	**No education and pre-school education**	**Under school age**
Compulsory education	**1** **2**	**Primary education** **Lower secondary education**	1st - 7th class level 8th - 10th class level
Intermediate education	**3** **4** **5**	**Upper secondary, basic** **Upper secondary, final year** **Post secondary non-tertiary education**	11th - 12th class level 13th class level+ 14th class level+
Tertiary education	**6** **7** **8**	First stage of tertiary education, undergraduate level First stage of tertiary education, graduate level Second stage of tertiary education (postgraduate education)	14th - 17th class level 18th - 19th class level 20th class level +
	9	**Unspecified**	

Level placement of individual educational programmes was determined on the basis of an overall evaluation of admission requirements, duration and competence. The evaluation of the competencies provided by the various types of programmes is based on approval from the Ministry of Education, Research and Church Affairs (KUF).

3.2. Broad field of education

The broad field of education is the least detailed classification of the academic content of educational activities. Each broad field of education comprises programmes that are as academically homogenous as possible. Classifications in the broad field of education are the same at all levels of education in the NUS2000.

Broad fields of education in the NUS2000 are defined as follows:

0 General programmes

1 Humanities and Arts

2 Teacher Training and Pedagogy

3 Social Sciences and Law

4 Business and Administration

5 Natural Sciences, Vocational and Technical subjects

6 Health, Welfare and Sport

7 Primary Industries

8 Transport and Communications, Safety and Security and other services

9 Unspecified broad field of education

Appendix D. Wage statistics. Central government employees

About the statistics

1. Administrative information

1.1. Name

Wage statistics. Central government employees http://www.ssb.no/lonnstat_en/

1.2. Subject group

06.05. Wages and labour costs http://www.ssb.no/english/subjects/06/05/

1.3. Frequency

Annual

1.4. Regional level

National level

1.5. Responsible division

Income and Wage Statistics

1.6. Authority

Statistics Act Section 3-2.

1.7. EU regulation:

Council Regulation (EC) no. 530/1999 of 9 March 1999 concerning structural statistics for wages and labour market costs.

2. Background and purpose

2.1. Purpose and history

The purpose of the statistics is to provide an overview of the wage level and change in wages for central government employees. Statistics Norway has published statistics for 1959, 1963, 1967 and annually since 1973.

2.2. Users and applications

Major users are the Technical Reporting Committee on the Income Settlement, research institutes, employer and employee organizations, Eurostat and the media. The statistics are used in Statistics Norway's Labour Accounts.

3. Statistics production

3.1. Population

In addition to central government public administration and defence (Section L in the Standard Industrial Classification), the population includes government enterprises, universities and equivalent institutions.

3.2 Data sources

The wage statistics are based on updated data reported to the State Central Register of Government Employees (SST).

3.3. Sampling:

Census of central government employees employed in governmental occupations at 1 October of the census year.

3.4. Collection of data:

The Ministry of Labour and Government Administration (AAD) collects data from services/institutions in electronic form (diskettes) or on paper. Statistics Norway obtains the data in electronic form from the AAD, pursuant to Statistics Act Section 3-2.

3.5. Response burden

None.

3.6. Control and revision

Wage data are checked manually and by machine at both the AAD and Statistics Norway.

4. Concepts, variables and classifications

4.1. Definition of the main concepts

In the statistics, salaries refer only to cash payments from employer to employee for work done. The statistics consequently do not include payment in kind, insurance or non-taxable compensation for expenses and the like.

Total monthly earnings and payment for overtime work are in conformance with the concepts otherwise used in Statistics Norway's wage statistics. In Statistics Norway's wage statistics, however, fixed additional allowances are included in the basic paid salary, while in the wage statistics for central government employees the fixed additional allowances are grouped together with variable additional allowances.

Total monthly earnings

Total monthly earnings are the main term in Statistics Norway's wage statistics. Total monthly earnings cover gross salaries according to scale, fixed and variable additional allowances. Overtime pay is not included in total monthly earnings.

Salaries according to scale

Salaries according to scale cover gross salaries according to scale as of 1 October.

Fixed additional allowances

Fixed additional allowances are allowances that are paid as a fixed sum per month or per year. The fixed additional allowances consist of fixed additional allowances according to table B, the Additional Wage Table as of October and other fixed additional allowances, before deduction for taxes. The monthly earnings include fixed additional allowances paid in October, i.e. earned in September.

Variable allowances

As a rule, variable allowances are associated with special duties or working hours, and include inter alia allowances such as committee remuneration, weekend and holiday remuneration and an acting official allowance. Monthly earnings include variable allowances paid in October, i.e. earned in September.

Overtime payment

Payment for overtime work covers the sum of cash compensation for work done beyond contractual working hours, which is then compensated with a supplement to the salary according to scale. This type of wage is not included in the total monthly earnings, but when the statistics are released figures are given for overtime compensation earned in September and paid out in October.

4.2. Definition of the main variables

Occupation

The occupations are in accordance with central government salary plans at 1 October.

Education

Information about the education of an individual is obtained from Statistics Norway's register on the Population's Highest Level of Education. There is a one-year lag in education data.

Full-time

Employees with a job percentage equal to 100 are regarded as full-time employees.

Part-time

Employees with a job percentage under 100 are regarded as part-time employees.

4.3. Standard classifications

Service classification

Classification of the various services of the central government is not in accordance with the Standard Industrial Classification. The classification of services used in the tables is as follows:

- The ministries (incl. Office of the Prime Minister and Office of the Auditor General)
- Other central administration departments. All the directorates are found here
- Other civil services
- Universities and equivalent institutions
- Government enterprises
- Defence

Education classification

Education levels are obtained from the register of the Population's Highest Level of Education (BHU). The classification is by the length of education according to the Standard for Educational Classification.

Education is classified according to level of education (length of education):

- Lower secondary education
- Upper secondary education
- Tertial education, 4 years or less
- Tertial education, more than 4 years
- Unknown or no completed education

More information about the Standard Education Classification can be found (in Norwegian) at

http://www.ssb.no/emner/04/90/

5. Sources of error and uncertainty

5.1. Collection and processing errors

One possible error source is incorrect reporting by the respondent to the AAD.

Another error source may be processing errors by both the AAD and Statistics Norway.

5.2. Sampling errors

The statistics are based on a census, thereby avoiding uncertainty associated with sample variance and non-response associated with sample surveys.

5.3. Register errors

Cf. section 5.1. In addition, the register of the Population's Highest Education may contain errors in the coding of level of education.

6. Comparability and coherence

6.1. Spatial comparability and comparability over time:

The statistics are comparable back to 1973.

6.2. Coherence

Taking into account total monthly earnings the statistics are comparable with other wage statistics from 1997 (Cf. section 4.1). Wage statistics for employees in section L, municipal and county municipal public administration, are released on our website: http://www.ssb.no/lonnkomm_en/

7. Availability

7.1. Internet address

http://www.ssb.no/lonnstat_en/

7.2. Languages

Norwegian and English.

7.3. Publications

The statistics are published electronically as Today's Statistics on Statistics Norway's website. The statistics are released at 10.00 on the day given in the statistics calendar (http://www.ssb.no/english/subjects/calendar/calendar.shtml). The statistics are also published in Statistical Yearbook of Norway and NOS Wage Statistics.

7.4. Storing and use of basic material

Raw data files with wage data put through link programs are stored.

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