



# Wage differences between women and men 2018

Official wage statistics

Medlingsinstitutet

Swedish National Mediation Office



# 1. Gender pay gap

**The pay gap between men and women has been decreasing year by year for the past eleven years. In 2018, the average monthly salary for women was SEK 32,600 and SEK 36,500 for men. The salary for women is 89.3 per cent of the SEK 36,500 paid to men on average each month, constituting a pay gap of 10.7 per cent. This is demonstrated by the Swedish National Mediation Office's processing of wage structure statistics.**

**Differences in wages** may be due to a large number of different factors. Taking into account the explanatory factors available from the statistics, using standard weighting, an unexplained difference of 4.4 per cent remains between the sexes.

One important explanation for the difference in average wage between the sexes is a gender-segregated labour market where women and men still largely work in different occupations, and where these occupations have different wage levels.

The pay gap has decreased both in the short and long term: dropping 0.6 percentage points between 2017 and 2018, and 5.6 percentage points between 2005 and 2018. The greatest decline in the pay gap in one single sector between 2017 and 2018 was identified in the county council sector, where the pay gap was down 0.6 percentage points. The pay gap has seen a decrease in all sectors except for workers in the private sector, where it increased by 0.1 percentage points.

This report begins with an analysis of the gender pay gap. Both the average (un-weighted) and standard-weighted pay gaps are presented, and the different sectors of the labour market are analysed separately. Corresponding figures for the period 2005-2018 are also presented.

The second chapter of the report examines the pay gap in different local labour market regions and the role played by commuting trends from a gender equality perspective.

## 1.1 The official wage statistics and pay gap

The Swedish National Mediation Office is responsible for the content and scope of the official wage statistics. The statistics can roughly be broken down into three parts: economy wage statistics, wage structure statistics and EU statistics.

The Swedish National Mediation Office, established in the year 2000, is tasked with analysing wage developments from a gender equality perspective.<sup>1</sup> It has done so annually since publication of its first annual report in 2001. Since 2009, the analysis is published in a separate report, alongside publication of the wage structure statistics for the entire economy.

The gender pay gap in Sweden has been analysed in the reports on the basis of the official wage structure statistics, which are the most appropriate statistics for this purpose.

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<sup>1</sup> Section 4, first paragraph of the Ordinance (2007:912) regarding instructions for the Swedish National Mediation Office.

### 1.1.1 Wage structure statistics

The wage structure statistics are an annual study based on individual information. The goal of the study is to provide comparable information on the wage structure on the labour market. Wage structure statistics allow researchers to analyse wage levels, wage structure and wage developments.

The wage structure statistics include information on wages, gender, age, working hours and profession according to the Swedish Standard Classification of Occupations (SSYK 2012). Information on level of education obtained from Statistics Sweden's education register is linked to the wage structure statistics.

#### Detailed information: Facts about the wage structure statistics

The wage structure statistics are an annual study. The measurement period is one single month – September for the private sector and the state and November for municipalities and county councils. This means that the statistics are sensitive to when the collective bargaining wage increases occur and if there has been enough time for the new wages to have been paid at the time of measurement.

The wage structure statistics are published in May the year after the data collection year and are broken down by sector (private sector, municipalities, county councils and the state; the private sector is broken down into blue-collar and white-collar employees). In June of the same year, a compilation is published for the whole labour market, where hourly wages for blue-collar employees are translated into monthly salaries.

The study is a census survey for municipalities, county councils and the state. For the private sector, the wage structure statistics are a sample survey that comprises around 50 per cent of the total number of employees in the private sector. The target population in the survey consists of individuals aged 18-66 years with permanent and temporary employment and active business operators/partners with wages and terms of employment according to an agreement.

All companies with at least 500 employees are included in the survey each year. The selection, consisting of around 8,500 companies, organisations and foundations, is made through a simple random sample. Under normal circumstances, around 40 per cent of the companies change from year to year. It is the small and medium-sized enterprises that are replaced in the survey, since companies with at least 500 employees are always included.

The selection is stratified by company size (seven size categories) and industry (83 industry groups) in 530 strata, where the individual items in each respective stratum are allocated the respective stratum's index factor. Using this index factor, calculations can be made of the wage structure for Sweden as a whole.

The wage structure statistics for the whole labour market apply the concept of monthly wage. The measurement of monthly wage includes several different wage components where all wages are indexed to full time. Besides fixed salary, fixed wage supplements and a large number of variable wage supplements are also included. A management supplement is an example of a fixed wage supplement. Variable supplements often depend on the placement of the working hours (such as supplements for uncomfortable working hours or shift work). Other variable supplements include supplements for higher risk, dirt and heat.

The wage structure statistics do not include any information on collective agreement affiliation for the employee or information on so-called lump sum payments or bonuses and other irregular compensation.

### 1.1.2 Difference between wages and income

It is important to note the difference between wages and income. Wages are compensation for work performed during a specific unit of time, such as an hour or a month. Wages are presented in the wage structure statistics as monthly wages, and part-time wages are translated into full-time wages to enable comparison.<sup>2</sup>

Income includes compensation that is received during a specific period of time, usually one year. Unlike wages, income is thus affected by how much you work. Income is affected, for example, by whether you work full-time or part-time, overtime or are absent from work. Besides wages, income can for example include transfers and capital gains. The term income is not covered by the Swedish National Mediation Office's official wage statistics and is not analysed in this report.

### 1.1.3 Monthly wage measured for comparison

The gross wage measurement for monthly wage includes several different wage components. Besides contractual fixed wage, fixed wage supplements and a large number of variable wage supplements are also included.<sup>3</sup> The term basic wage includes contractual wage including fixed supplements.

When analysing the gender pay gap using the wage structure statistics, the monthly wage measurement is used.

The choice of measurement for the analysis affects the calculated gender pay gap. The inclusion of various wage supplements, such as supplements for being on-call or working uncomfortable hours, also affects the size of the pay gap. Bonuses and other irregular compensation are additional examples of factors that can affect the pay gap.<sup>4</sup> The Swedish National Mediation Office's report on the pay gap for 2010 took a special look at how different wage supplements affect the gender pay gap.<sup>5</sup>

2 The calculation method to translate hourly wages to monthly wage varies between the public and private sectors. In the public sector, the wage is multiplied by 165. In the private sector, the hourly wage is multiplied by the number of hours reported as corresponding to a full-time position.

3 Annual incentive schemes such as bonuses, profit sharing or the allocation of shares/options are not included in the wage structure statistics, nor is overtime pay. For a more detailed description of the wage structure statistics, see *"Avtalsrörelsen och lönebildningen 2018" [Collective bargaining negotiations and wage formation 2018]*, Swedish National Mediation Office (2019).

4 We also recommend *"Inte bara lön. En studie av akademernas löneförmåner och bonus" [Not just salary. A study of wage benefits and bonuses for academics]*, Granqvist, Sacos report series (2009) for a study of wage benefits, bonuses and pay gaps between male academics and female academics.

5 *"Vad säger den officiella lönestatistiken om löneskillnaden mellan kvinnor och män 2010"*, [What do the official wage statistics say about the gender pay gap] Swedish National Mediation Office (2011).

### 1.1.4 The new classification of occupations does not capture everything

In 2014, a new revised Swedish Standard Classification of Occupations (SSYK 2012) was introduced. The classification is significantly more detailed than its predecessor, although certain occupations are still bundled together into groups. The classification does not for obvious reasons capture other wage-influencing factors beyond occupation, such as individual productivity or social skills.

#### Detailed information: Swedish Standard Classification of Occupations (SSYK 2012)

Since the 2014 survey (published in 2015), the wage structure statistics' occupation codes are structured according to the Swedish Standard Classification of Occupations (SSYK 2012). SSYK 2012 is an updated version of the older occupation classification, SSYK 96.

SSYK 2012 is based on the International Standard Classification of Occupations ISCO-08, which is drafted and published by the UN agency, the International Labour Organization (ILO). ISCO-08 is in turn an update of its predecessor ISCO-88 and the EU variant ISCO-88 (COM).

The goal has been to achieve an occupation classification that better reflects today's occupational structure. The classification is also meant to meet the requirements of international reporting and comparability as far as possible.

SSYK is primarily developed to classify people according to the work they do. There are multiple users of SSYK, including Statistics Sweden, the Swedish Public Employment Service and the Swedish National Mediation Office.

Like SSYK 96, SSYK 2012 has a hierarchical structure with four levels. The first numerical level indicates occupational area, the second indicates main group, the third occupational group and the fourth the occupation. The number of main groups has increased from 27 to 46, the number of occupational groups has increased from 113 to 147 and the number of occupations from 355 to 429. The number of occupational areas is unchanged at 10.

The changes between SSYK 2012 and its predecessor SSYK 96 are significant, as classes have been added, aggregated, divided, moved or removed. Some classes have an unchanged content, but may have been given a new code and/or name. Occupation data from SSYK 2012 can generally not be translated to the old occupation standard SSYK 96 or vice versa.

The publication SSYK 2012 is available on Statistics Sweden's website [www.scb.se/ssyk](http://www.scb.se/ssyk).

### 1.1.5 Alternative statistical methods

In addition to studying differences in average wage between men and women, alternative methods can also be used. These methods take into consideration how men and women are divided with regards to different wage-influencing factors. The size of the pay gap in such calculations is dependent on what variables are included. The pay gap that remains after having taken these variables into account, referred to as the unexplained pay gap, is the pay gap that cannot be explained with the variables available.

The Swedish National Mediation Office uses two methods, standard weighting and regression analysis, to take into account factors that affect the calculation of the gender pay gap.

### Detailed information: Standard weighting and regression analysis

**Table B2 in Appendix 2** shows how the individuals in the wage structure statistics are distributed according to various wage-influencing factors. The table shows, for example, that women have a higher education than men, that men and women work in different occupations, that women are somewhat older and that it is more common for women to work part time. To get an alternative view of the relationship between men's and women's wages, consideration can be given to such differences. Two ways of doing this is through so-called standard weighting or regression analysis.

The **standard weighting** that is used by the Swedish National Mediation Office means that wage amounts for different groups are calculated by multiplying the number of employees (men and women) with the average wage for men and women, respectively.

The groups are formed by combinations of four age groups, two education categories, two working hour groups, two sector groups and within each occupation (SSYK 2012 at the four-digit level consists of 429 occupations). The various wage amounts are then added. By subsequently dividing the wage amount for women with the wage amount for men, the standard weighted wage ratio is obtained.

An alternative to standard weighting is **regression analysis**. Regression analysis of questionnaire and register data is the most common empirical method used in labour market research to study differences in outcomes between individuals or groups. Regression analysis can be used to study the relationship between one factor (such as gender) and an outcome variable (such as wage) and at the same time take other factors into account (such as occupation, sector, education).

When wages are analysed by means of regression analysis, a model is first established that includes different factors that are assumed to affect the size of the wages, such as gender. Then, so-called coefficients are calculated that show how much impact the various factors (explanatory variables) have on the wages. To avoid the significance of gender being determined by men and women working in, for example, different sectors or occupations that have wages at different levels, these additional explanatory variables are included in the model. By including these data, one can calculate the size of the gender pay gap, given the level of the other variables. The choice of explanatory variables is justified by access to data and economic theory.

A more detailed description of how regression analysis is used in this chapter is provided in Appendix 3.

#### 1.1.6 Some wage-influencing factors are missing in the statistics

The wage structure statistics contain a wealth of information about employees and their places of work. However, there are obviously several factors beyond what can be found in the statistics which might influence a person's wage, such as experience, absence from work or various measurements of individual productivity. Wages are often based on information that is missing in the statistics, such as the requirements for a position in the form of qualifications, expertise, motivation and other characteristics that employees or applicants have.

### 1.1.7 Unexplained not the same as unfounded

It is not possible to use standard weighting or regression analysis to say whether unfounded pay gaps exist. The unexplained gap is only unexplained in a statistical sense.

An unfounded pay gap is defined in this context as a difference in outcome that is due solely to gender. In other words, an unfounded gender pay gap exists if differences in wages remain when consideration has been taken to all systematic differences in characteristics between the sexes. In practice, this is basically impossible as all possible factors cannot be captured in statistics.

Because of this, it is difficult to determine if differences in outcome between men and women are due to relevant differences in characteristics – that cannot be observed in the statistics, but are clear when the wage is set – or due to discrimination.<sup>6</sup> Standard weighting and regression analysis can therefore only indicate the connection between gender and wage outcome after consideration has been given to differences in a number of observable characteristics. They cannot, however, show a causal connection, which means that the analysis cannot prove that the remaining pay gap, the so-called unexplained gender pay gap is due solely to gender.<sup>7</sup>

Since it cannot be shown that the remaining pay gap is attributable to gender, it is also not possible to determine whether wage discrimination exists according to the Discrimination Act. Applying different wage terms for men and women who do the same or similar work for the same employer is defined as disadvantaging. However, based on the official wage structure statistics, no determination can be made as to whether one occupation or job is comparable to another.

A more detailed discussion on discrimination can be found in Chapter 3.

## 1.2 How large is the gender pay gap in 2018?

**Table 1.1** shows that for men and women alike, the highest average wages were found among white-collar workers in the private sector, while blue-collar workers in the private sector had the lowest average wages.

### 1.2.1 Unweighted difference in wages

The table shows average wages<sup>8</sup> for men and women, and women's wages as a percentage of men's (the unweighted pay gap).

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6 Qualitative methods such as interviews of employees or employers also cannot with certainty ascertain whether discrimination has occurred. An individual may feel that he or she has been discriminated against without that being the case. Correspondingly, an individual can be discriminated against without being aware of it. Employers in turn rarely voluntarily say that discrimination takes place at the workplace.

7 A causal connection exists if it is the individual's gender that determines the wage. The existence of a correlation (connection) between gender and wages need not mean that gender determines the wage level. This connection may rather be attributable to other factors that the analysis has not taken into consideration.

8 The average wage (or mean wage) is the sum of the wages in a group divided by the number of people in the group.

Table 1.1 Average wages \* and women's wages as a percentage of men's, 2018

	Women	Men	Total	Women's wages as a percentage of men's wages	Difference in per cent
All sectors	32,600	36,500	34,600	89.3	10.7
Private sector	33,000	36,700	35,200	89.8	10.2
Blue-collar employees	26,600	29,600	28,600	89.9	10.1
White-collar employees	38,600	46,400	42,900	83.3	16.7
Public sector	32,200	35,800	33,200	90.1	9.9
Municipalities	30,300	31,200	30,500	97.2	2.8
County councils	35,500	44,400	37,400	80.0	20.0
State	36,800	39,400	38,000	93.5	6.5

\*The monthly wages are rounded to the nearest SEK 100.

Source: Swedish National Mediation Office and Statistics Sweden

As seen in the table, women had an average of 89.3 per cent of men's salaries in 2018, which means that the gender pay gap was 10.7 per cent (100-89.3). There is a large variation between different sectors. The largest pay gap was in county councils, where the difference is 20.0 per cent. Within county councils, there is an uneven distribution of men and women over occupations. Among the many women who work there, there is a large share of occupations such as assistant nurses, while a large proportion of the few men who work there are doctors. The second largest pay gap was among white-collar employees in the private sector: 16.7 per cent. The municipalities report the lowest pay gap at 2.8 per cent.

### 1.2.2 An illustration of gender composition

The fact that men and women work in different occupations and that these occupations have different wage levels is an important explanation for why men's and women's wages differ.

The variation in gender composition at occupation level in relation to the wage level and gender pay gap can be illustrated graphically in a so-called bubble diagram (**diagram 1.1**).

The diagram is constructed by showing women's salaries as a percentage of men's for each occupation (y axis) against the average wage level (x axis). Each observation (occupation) in the diagram is then illustrated by a circle, the size of which represents the number of employees in the occupation.

Lastly, the gender composition is described by the different colours used for the surface of the different circles, depending on the proportion of men and women in the occupation. Female-dominated occupations are indicated in yellow,<sup>9</sup> male-dominated occupations in black, and gender-neutral occupations with at most a 40-60 split in grey.

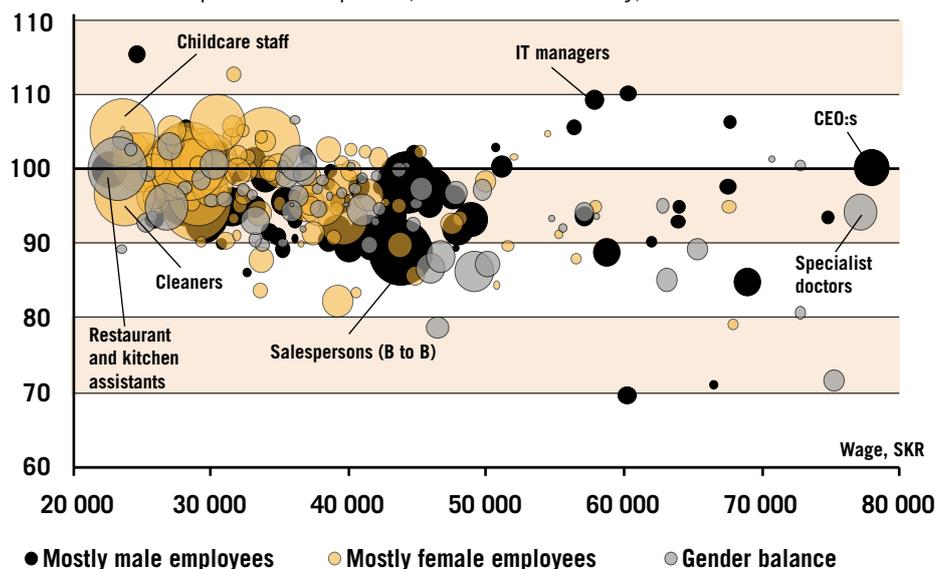
The variables that form the basis for the diagram are obtained from the wage structure statistics in the statistics database (published on Statistics Sweden's website).<sup>10</sup> Not all

9 Female-dominated and male-dominated occupations are defined as occupations with more than 60 per cent of the respective gender.

10 All data can be found in Statistics Sweden's statistical database: <https://www.scb.se/hitta-statistik/statistik-efter-amne/arbetsmarknad/loner-och-arbetskostnader/lonestrukturstatistik-hela-ekonomin/>

occupations are included in the data material due to uncertainty in the estimates.<sup>11</sup> In total, there is information on 264 different occupations. Not all circles are visible in the diagram since they partially overlap each other. For technical reasons when designing the diagram, the x-axis showing women's wages as a percentage of men's wages and the y-axis with wage levels have been truncated (60 to 110 per cent, and SEK 20,000 to SEK 80,000, respectively).

Diagram 1.1 Women's wages as a percentage of men's, average salary, size and ratio of women for the respective occupation, the entire economy, 2018



Source: Swedish National Mediation Office.

Diagram 1.1 shows that the majority of the occupations have an average salary less than SEK 40,000 per month. The accumulation on the left-hand side of the diagram makes it difficult to distinguish individual occupations but, for example, the yellow circle far to the left just over the 100 line represents the occupation “child-care workers”. The average salary for the occupation is SEK 23,600 per month, the number of employees is 92,400 and the fact that the circle is just above the line means that women have a higher average wage than men (5 per cent higher). To take another example, the large black circle in the middle of the diagram comprises “corporate salespeople”. The average monthly wage is SEK 43,800, the proportion of women is 27 per cent, women's wages are on average 11.3 per cent lower than men's, and the number of employees is 87,500.

There are more circles (professions) in yellow at the lower average wages, which means that female-dominated professions often have lower average wages than male-dominated professions.

The fact that most of the occupations are below the 100 line means that women's wages in most of the occupations are lower than men's on average. It also appears as if the higher the salary is, the larger the gender pay gap in the respective occu-

11 Information for occupations that contain fewer than 100 observations of either gender is not published in the statistics database. If the uncertainty (mean error in relation to mean value) is too large with regard to the wage estimate, the observation is not presented. Observations are also not presented if an individual company can be discerned.

pation. In other words, there seems to be a negative correlation between women's wages as a percentage of men's and the level of average wages.

One occupation which clearly goes against the grain is "IT managers, level 2" – the black circle in the top/middle of the diagram. The average wage in this occupation is SEK 57,900 per month, women's wages are 9 per cent higher than men's and the number of employees is 7,500.

The calculations are solely based on average wages. Accordingly, in the calculations for diagram 1.1, consideration has not been taken to men and women being distributed differently between sectors, nor have potential differences in company-specific factors such as industry, company size, etc. been taken into account.

### 1.2.3 Difference after standard weighting

The standard weighting used in **table 1.2** takes into account the fact that men and women work in different occupations and sectors, have different levels of education, different working hours<sup>12</sup> and different ages (the standard weighting method is described in more detail in the fact box in section 1.1.5). After standard weighting, women's wages as a percentage of men's increase to 95.6 per cent. This means that the unexplained pay gap that remains is 4.4 per cent for the entire labour market in 2018.

Table 1.2 Women's wages as a percentage of men's wages in 2018

	Unweighted percentage	Unweighted difference in per cent	Standard weighted percentage	Standard weighted difference in per cent
All sectors	89.3	10.7	95.6	4.4
Private sector	89.8	10.2	94.5	5.5
Blue-collar employees	89.9	10.1	96.2	3.8
White-collar employees	83.3	16.7	93.3	6.7
Public sector	90.1	9.9	98.2	1.8
Municipalities	97.2	2.8	99.7	0.3
County councils	80.0	20.0	96.5	3.5
State	93.5	6.5	96.3	3.7

Source: Swedish National Mediation Office and Statistics Sweden

After standard weighting, county councils no longer have the largest pay gap in 2018. The largest unexplained pay gap, 6.7 per cent, is found among private sector white-collar employees. The county councils' unexplained pay gap is 3.5 per cent after standard weighting (compared with an unweighted pay gap of 20.0 per cent).

The smallest unexplained pay gap, 0.3 per cent, is in the municipalities. Employees in the private sector have an unexplained pay gap of 3.8 per cent. Among state employees, the unexplained pay gap is 3.7 per cent.

## 1.3 Gender pay gap developments

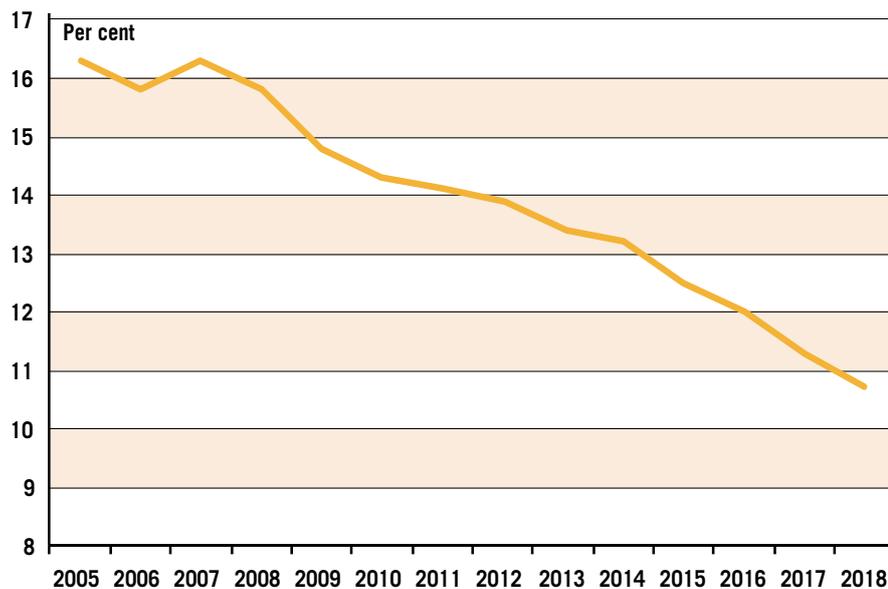
Between 2017 and 2018, the unweighted gender pay gap decreased by 0.6 percentage points. Women's average wage increased by SEK 900 and men's average wage increased by SEK 800.

<sup>12</sup> In the wage structure statistics, all wages are adjusted upwards to full-time wages. The variable of working hours is included in standard weighting and regression analysis because part-time employees can have a different salary than full-time employees, also counted per hour.

The pay gap is clearly shrinking in recent years. **Diagram 1.2** shows the development between 2005 and 2018.

During this period, women's average wages have risen by SEK 10,500, corresponding to 47.5 per cent. This corresponds to an average annual increase of 3.65 per cent. During the same period, men's average wages have risen by SEK 10,100, corresponding to 38.3 per cent. This corresponds to an average annual increase of 2.95 per cent.

Diagram 1.2 Change in gender pay gap  
Percentage points



Source: Swedish National Mediation Office and Statistics Sweden

**Table 1.3** shows the unweighted gender pay gap between 2005 and 2018.

Table 1.3 Gender pay gap (unweighted) 2005-2018

	2005	2006	2007	2008	2009	2010	2011	2012
All sectors	16.3	15.8	16.3	15.8	14.8	14.3	14.1	13.9
Private sector	14.7	14.1	14	14.1	13.4	12.8	12.8	12.2
Blue-collar employees	11.7	11.2	10.3	10.9	10.0	10.0	9.9	9.1
White-collar employees	22.7	21.9	22.1	21.9	20.8	20.8	20.6	19.9
Public sector	16.6	16.3	17	15.9	15.1	14.6	14.1	14.1
Municipalities	8.4	8.4	9.0	7.7	6.6	6.1	6.1	6.2
County councils	28.6	28	27.6	27.3	26.9	26.5	26	25
State	14.3	12.8	12.7	12.4	11.3	10.7	9.4	8.9

	2013	2014	2015	2016	2017	2018	Change 2005-2018
All sectors	13.4	13.2	12.5	12	11.3	10.7	-5.6
Private sector	12.1	12.2	11.9	11.9	10.9	10.2	-4.5
Blue-collar employees	9.5	10.4	10.3*	10.3*	10.0*	10.1*	-1.6
White-collar employees	19.4	18.6	18.3*	17.9*	17.1*	16.7*	-6.0
Public sector	13.4	13.1	12.0	10.7	10.1	9.9	-6.7
Municipalities	5.8	5.4	4.6	3.4	3.1	2.8	-5.6
County councils	23.8	23.6	22.4	21.1	20.6	20.0	-8.6
State	8.2	7.9	7.3	7.3	6.5	6.5	-7.8

\*Not comparable with years before 2014 due to changed classification of personnel category.

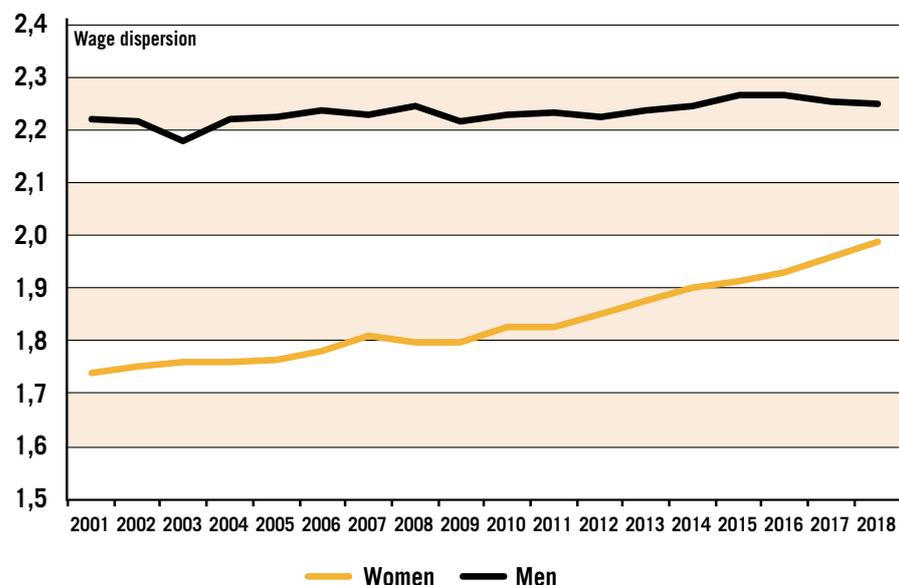
Source: Swedish National Mediation Office and Statistics Sweden

For blue-collar and white-collar employees in the private sector, comparisons should not be made with years prior to 2014, when their classifications changed.<sup>13</sup>

The rate at which the pay gap decrease differs between sectors, as shown in table 1.3. The largest change is within county councils, where women's wages moved closer to men's by 8.6 percentage points between 2005 and 2018. The second largest decrease is among state employees, where the pay gap decreased by 7.8 percentage points.

During this period, wage distribution has increased more among women than among men, as shown in **diagram 1.3**. This development can most likely be explained by reduced occupational segregation, meaning that more women are now found in high income occupations, such as managerial roles.

Diagram 1.3 Wage distribution trends for men and women 2005-2018  
Percentile quotient P90/P10



Source: Swedish National Mediation Office and Statistics Sweden

Wage distribution has been calculated by dividing the salary in the 90th percentile by the salary in the 10th percentile. A quotient of two then means that the 10 per cent with the highest wages earn at least twice as much as the 10 per cent with the lowest wages.

**Table 1.4** shows women's wages as a percentage of men's after standard weighting during the same period.

<sup>13</sup> In the study, the classification of personnel categories (blue-collar/white-collar employees) from 2014 was based on what occupation code the employees have. This has entailed structural changes for private sector blue-collar and white-collar employees, which affect the calculations of the pay gap.

Table 1.4 Gender pay gap (standard weighted) 2005-2018

	2005	2006	2007	2008	2009	2010	2011	2012
<b>All sectors</b>	6.8	6.6	6.5	6.6	6	5.9	5.9	6.1
<b>Private sector</b>	8.3	8.1	7.8	7.9	7.3	7.3	7.2	7.4
<b>Blue-collar employees</b>	5.6	5.1	5.2	4.6	4.5	4	3.8	3.7
<b>White-collar employees</b>	9.8	9.7	9.5	10	9.1	9.3	9.2	9.6
<b>Public sector</b>	3.5	3.4	3.4	3.4	3	2.9	3	3.1
<b>Municipalities</b>	0.9	1	1.2	0.8	0.6	0.4	0.6	0.7
<b>County councils</b>	5.3	5.2	4.8	5.4	4.7	4.8	4.6	4.6
<b>State</b>	7.1	6.5	6.3	6.3	6.2	5.8	5.6	5.3

	2013	2014	2015	2016	2017	2018	Change 2005-2018
<b>All sectors</b>	5.8	5	4.6	4.5	4.3	4.4	-2.4
<b>Private sector</b>	7	6.2	5.7	5.6	5.3	5.5	-2.8
<b>Blue-collar employees</b>	4.3	3.8	3.1*	3.5*	3.6*	3.8*	-1.8
<b>White-collar employees</b>	8.6	8.1	7.7*	7.2*	6.5*	6.7	-3.1
<b>Public sector</b>	3	2.2	2.1	1.9	1.9	1.8	-1.7
<b>Municipalities</b>	0.6	0.5	0.4	0.3	0.3	0.3	-0.6
<b>County councils</b>	4.4	4	3.9	3.8	3.8	3.5	-1.8
<b>State</b>	5.2	4.4	4.2	4.0	4.0	3.7	-3.4

\*Not comparable with years before 2014 due to changed classification of personnel category.  
Source: Swedish National Mediation Office and Statistics Sweden

Between 2005 and 2018, the unexplained pay gap after standard weighting (i.e. when corrected for differences in occupation, sector, education, age and if the person works part time) decreased by 2.4 percentage points. The largest decrease was in the state, where the unexplained pay gap decreased by 3.4 percentage points.<sup>14</sup>

The unexplained pay gap after standard weighting increased by 0.1 percentage points between 2017 and 2018. However, it is important to remember that comparisons of how the pay gaps have changed over time, particularly from one year to the next, must be made with great caution. Besides effects of, for instance, changes in the sample selection of the companies included in the wage structure statistics and revisions of control variables, the calculated pay gap may be affected by the structure of collective agreements and if there has been sufficient time for payment of the contractual wage increases at the time of measurement. Changes in the composition of the workforce are another factor that can affect the change in pay gaps over time.<sup>15</sup>

## 1.4 Gender pay gap with regression analysis

This section uses regression analysis to examine how the size of the pay gap changes when taking into account how men and women are distributed over different wage-influencing factors such as occupation and level of education.

14 Please note that the parties on the labour market may report different levels in relation to pay gaps. This may in part be due to them studying different sample selections or having more detailed information. For example, see the Swedish Agency for Government Employers (2017).

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Regression analysis can be used to study the relationship between one factor (such as gender) and an outcome variable (such as wage) and at the same time check for other factors such as occupation, sector and education (see fact box in section 1.1.5 for more information on regression analysis).

#### 1.4.1 What factors affect the gender pay gap?

**Table 1.5** shows the results from the regression analysis for the entire labour market. The analysis is built up in different steps, and information on the employee's characteristics and work is added gradually in various models. This way, the significance of the various individual and work-related characteristics is clarified. Detailed information about the variables used is available in Appendix 3.

Table 1.5 Gender pay gap, whole labour market 2018  
Regression analysis with logarithmised monthly wage as a dependent variable

	Model 1*	Model 2*	Model 3*
All sectors	-9.1	-12.00	-4.0
Private sector	-9.3	-10.6	-4.8
Blue-collar employees	-10.1	-9.3	-3.3
White-collar employees	-15.1	-14.7	-6.5
Public sector	-7.9	-7.1	-1.5
Municipalities	-2.1	-4.0	-0.2
County councils	-15.9	-14.3	-3.2
State	-7.4	-6.0	-3.0

\*Corresponds to  $(\exp(\beta_1)-1)*100$ .

Note: All estimates are significant at a 5 per cent level of significance.

Source: Swedish National Mediation Office.

**Model 1** shows results from a base model where gender is the only factor affecting the wage. The pay gap is then 9.1 per cent. This figure constitutes a base value. With this value, the results of including additional factors that can influence the pay gap can be compared. The estimate corresponds to the previously noted pay gap of 10.7 per cent for all sectors, but as both the method and calculation data have changed, the outcome is different. For example, all individuals without an education code have been excluded.

**Model 2** shows the gender pay gap after including the individual's age and level of education. For the whole economy, the unexplained pay gap increases to 12.0 per cent. This is due to a composition effect and women on average having more education and being older than men. This implies an unclear link between gender, education and wages. However, the sector-specific analysis shows that the unexplained difference is shrinking in all sectors except for municipalities. One explanation for why education does not have the same impact in the municipalities could be the compressed wage structure employed in this sector.

**Model 3** shows the unexplained pay gap when occupation is added to all of the factors above. Occupation explains a large part of the gender pay gap. The unexplained pay gap that remains when occupation is also included in the analysis is 4.0 per cent. The unexplained pay gap is more than halved in all sectors except the state when occupation is added to the analysis.

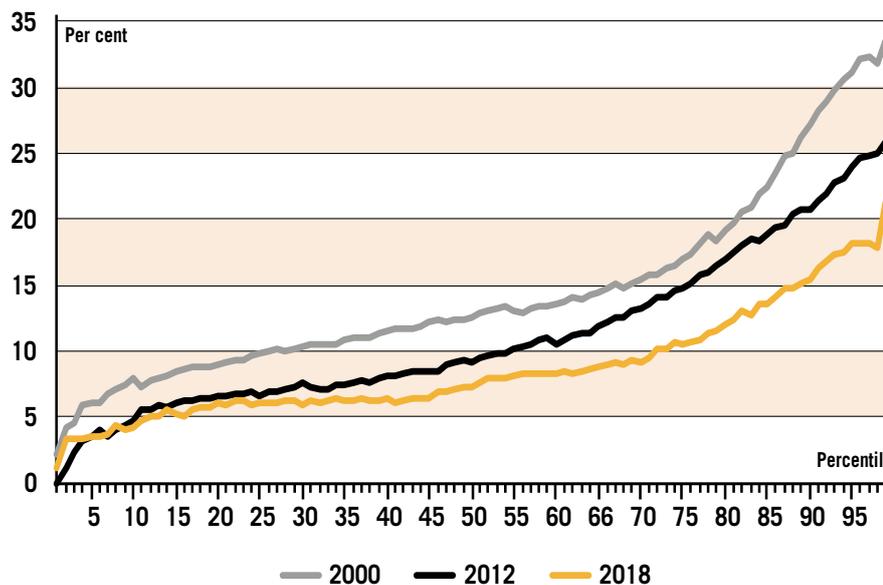
The fact that the pay gap shrinks compared to model 2 indicates that women and men work in different occupations with different pay. This is also clear from the “bubble diagram” above (diagram 1.1 in section 1.2.2).

#### 1.4.2 Occupation the most important explanation of pay gap

Of the various factors taken into account, it is occupation that makes the single largest contribution to explaining the gender pay gap. This is apparent when looking at what percentage of the average pay gap is explained by the different factors. When the calculation takes occupation into account, we see that the unexplained pay gap decreases substantially.

**Diagram 1.4** illustrates the difference between women's and men's pay distributions for years 2000, 2012 and 2018. The diagram indicates the percentage pay gap between women and men for each percentile. The diagram shows that the pay gap increases in distribution, i.e. the higher the salary, the greater the difference between the genders. This phenomenon is commonly referred to as the "glass ceiling". The main explanation is that there are fewer female than male managers in the Swedish labour market.

Diagram 1.4 Difference (in percentage) between women's and men's wages by percentile Years 2000, 2012 and 2018



Source: Swedish National Mediation Office.

A comparison between the lines in the diagram shows that the pay gap decreases from year to year in almost all percentiles. The decrease is highest in the higher wage positions. This can be explained, for example, by the increase in the proportion of female managers.