



Wage differences between women and men 2017

Official wage statistics

Medlingsinstitutet

Swedish National Mediation Office

1. Wage differences between men and women

The pay gap between men and women has been decreasing year by year for the past decade. Women's average monthly wage in 2017 was SEK 31,700, which is 88.7 per cent of the men's average of SEK 35,700. In other words, the gap is now estimated at 11.3 per cent. These are the findings of the Swedish National Mediation Office's wage structure statistics.

Differences in wages may be due to a large number of different factors. Taking into account the explanatory factors available in the statistics using standard weighting, an unexplained difference of 4.3 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 wage difference has decreased both in the short and long term: dropping 0.7 percentage points between 2016 and 2017, and 5 percentage points between 2005 and 2017. The most significant closing of the gap between 2016 and 2017 took place among white-collar employees in the private sector, and within the governmental sector. Among these groups, the unweighted difference has decreased by 0.8 percentage points.

This report begins with an analysis of the wage differences between men and women. Both the standard-weighted and the average (unweighted) wage differences are presented and the labour market's different sectors are analysed separately. Corresponding figures for the period 2005-2017 are also presented.

The second chapter of the report examines how education and the composition of a given occupation affect the pay gap between sexes, while the third chapter discusses the causes of wage differences.

1.1 The official wage statistics and wage differences

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 National Mediation Office, instituted in the year 2000, is tasked with analysing wage trends from a gender equality perspective.¹ It has done so annually since its first yearly report in 2001. Since 2009, the analysis is published in a separate report, alongside the report on the wage structure statistics for the entire economy.

Wage differences between men and women have been analysed in the reports based on the official wage structure statistics, which are the best suited statistics for this purpose.

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

1.2 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 trends.

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

Facts about the wage structure statistics

The wage structure statistics are an annual study. The measurement period is a 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 out when measured.

The wage structure statistics are published in May of the year after the 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 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. 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 are replaced between years. It is 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 increments and a large number of variable wage increments are also included. A management supplement is an example of a fixed wage increment. Variable increments often depend on the placement of the working hours (such as increments for uncomfortable hours or shift work). Other variable increments include increments 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.

1.2.1 Difference between wages and income

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

Besides wages, income can for example include transfers and capital gains. Income includes compensation that is received during a given period of time, usually one year. In contrast to wages, income is accordingly affected by whether one works part or full time, overtime or is absent from work. The term income is not covered by the National Mediation Office's official wage statistics.

1.2.2 Monthly wage as the point of comparison

The gross wage measure of monthly wage includes several different wage components. Besides contractual fixed wage, fixed wage increments and a large number of variable wage increments are also included.³ The term basic wage includes contractual wage including fixed increments.

When the wage differences between men and women are analysed using the wage structure statistics, the measure of monthly wage is used.

The measure one chooses for the analysis affects the calculated wage difference between men and women. Including various wage increments, such as increments for being on-call or working uncomfortable hours, also affects the size of the wage difference. Bonuses and other irregular compensation are additional examples of factors that can affect the wage difference.⁴ The National Mediation Office's report on wage differences for 2010 took a special look at how different wage increments affect the wage differences between men and women.⁵

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 systems 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 2013" [Collective bargaining negotiations and wage formation 2013]*, Swedish National Mediation Office (2014).

4 See Granqvist (2009) for a study of wage benefits, bonuses and wage differences between male university graduates and female university graduates.

5 Swedish National Mediation Office *"What do the official wage statistics say about wage differences between men and women 2010"* (2011).

1.2.3 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 can for obvious reasons not capture other wage-influencing factors beyond occupation, such as individual productivity or social skills.

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 Classification of Occupations ISCO-08, which is drafted and published by the UN body 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 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 been 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 since classes have been added, aggregated, divided up, 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.

1.2.4 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 wage differences in such calculations is dependent on what variables are included. The wage difference that remains after having taken these variables into account, referred to as the wage difference, is the wage difference that cannot be explained with the available variables.

The National Mediation Office uses two methods, standard weighting and regression analysis, to take into account factors that affect the calculation of the wage differences between men and women.

Standard weighting and regression analysis

Table B2 in Appendix 2 shows how the individuals in the wage structure statistics are distributed over 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 standard weighting or regression analysis.

The **standard weighting** that is used by the National Mediation Office means that wage amounts for different groups are calculated by the number of employees (men and women) being multiplied by 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 then 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 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 with 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 them, one can calculate the size of the wage difference between men and women, given the level of the other variables. The choice of explanatory variables is motivated by the access to data and economic theory.

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

1.2.5 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 factors beyond what can be

found in the statistics which might influence a person's wage, such as absence from work or various aspects of individual productivity. Wages are often based on information that is missing in the statistics, such as the requirements a job sets in the form of qualifications, expertise, motivation and other characteristics that employees or applicants have.

1.2.6 Unexplained not the same as unfounded

It is not possible to use standard weighting or regression analysis to say whether unfounded wage differences exist. The unexplained difference is only unexplained in a statistical sense.

An unfounded wage difference is defined in this context as a difference in outcome that is due solely to gender. In other words, an unfounded wage difference between the sexes 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 on discrimination.⁶ 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 different observable characteristics. They cannot, however, show a causal connection, which means that the analysis cannot prove that the remaining wage difference, the so-called unexplained wage difference, between the sexes is due solely to gender.⁷

Since it cannot be shown that the remaining wage difference is solely due to gender, it is also not possible to say if wage discrimination is occurring according to the Discrimination Act. Applying different wage terms for men and women who do the same or similar work at the same employer is illegal unfair treatment. But 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.

1.3 How large is the wage difference between the sexes in 2017?

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.

6 Qualitative methods such as interviews of employees or employers also cannot with certainty ascertain if discrimination has occurred. An individual may feel that he or she has been discriminated without that being the case. Correspondingly, an individual can be discriminated 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 can instead be due to other factors that the analysis has not taken into consideration.

1.3.1 Unweighted difference in wages

The table shows average wages⁸ for men and women, and women's wages as a percentage of men's (the unweighted wage difference).

Table 1.1 Average wages^{*} and women's wages as a percentage of men's 2017

	Women	Men	Total	Women's wages as a percentage of men's wages	Difference in per cent
All sectors	31,700	35,700	33,700	88.7	11.3
Private sector	31,900	35,900	34,300	89.1	10.9
Blue-collar employees	26,000	28,900	27,900	90.0	10.0
White-collar employees	37,400	45,100	41,700	82.9	17.1
Public sector	31,300	34,900	32,300	89.9	10.1
Municipalities	29,500	30,500	29,800	96.9	3.1
County councils	34,600	43,600	36,600	79.4	20.6
State	35,700	38,200	36,900	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 88.7 per cent of men's salaries in 2017, which means that the wage difference between men and women was 11.3 per cent (100-88.7). There is a large variation between different sectors. The largest wage difference was in county councils, where the difference is 20.6 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 share of the few men who work there are doctors. The second largest wage difference was among white-collar employees in the private sector: 17.1 per cent. The wage difference was smallest in the municipalities, averaging at 3.1 per cent. The second smallest wage difference, 6.5 per cent, was in the state. For blue-collar employees in the private sector, the wage difference was 10 per cent.

1.3.2 A view of the 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.

How the gender composition at the occupation level varies with the wage level and the wage difference between men and women 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.

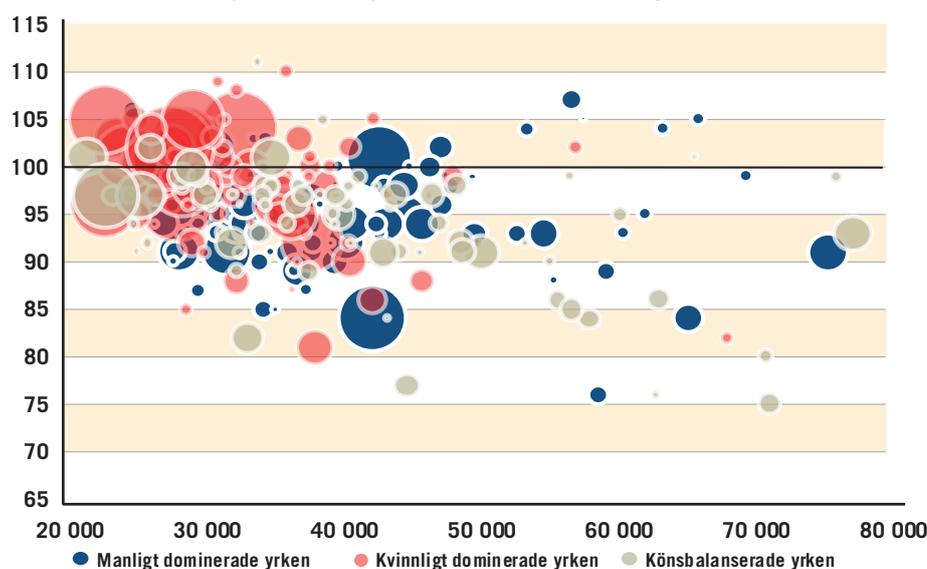
Lastly, the gender composition is described by the surface of the different circles being given different colours, depending on the proportion of men and women in the occupation. Female-dominated occupations are indicated in red,⁹ male-dominated occupations in blue, and gender-neutral occupations with at most a 40-60 split in grey.

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

9 Predominantly female occupations are defined as occupations with more than 60 per cent women.

The variables that form the basis of the diagram are taken from the wage structure statistics in the statistics database (published on the Statistics Sweden website).¹⁰ All occupations are not included in the data material due to uncertainty in the estimates.¹¹ In total, there is information on 271 different occupations. Not all circles are seen in the diagram since they partially overlap each other. For technical reasons, the x-axis showing women's wages as a percentage of men's wages and the y-axis with wage levels have been truncated (65 to 115 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 proportion of women for the respective occupation, the entire economy, 2017



Source: Swedish National Mediation Office and Statistics Sweden

Diagram 1.1 shows that the majority of the occupations have an average salary less than SEK 35,000 per month. The accumulation to the left of the diagram makes it difficult to distinguish individual occupations but, for example, the red circle far to the left just over the 100 line represents the occupation “childcare workers”. The average salary for the occupation is SEK 23,100 per month, the number of employees is 90,100 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). As another example, the large blue circle in the middle of the diagram comprises “software and systems developers”. The average monthly wage is SEK 43,100, the proportion of women is 18 per cent, women's wages are on average 1 per cent higher than men's, and the number of employees is SEK 77,000.

There are more circles (occupations) with a red colour at lower average wages, which means that the higher proportion of women there is in an occupation, the lower the average wage. The diagram thus shows a negative covariation between the proportion of women and the average wage.

10 All data can be found in Statistics Sweden's database: http://www.scb.se/sv/_Hitta-statistik/Statistikdatabasen/

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 estimate of the wage, the observation is not presented. Observations are also not presented if an individual company can be discerned.

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 wage difference is between the sexes in the respective occupation. In other words, there seems to be a negative relation 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 blue circle in the top/middle of the diagram. The average wage in this occupation is SEK 51,700 per month, women's wages are 109 per cent of men's and the number of employees is 77,000.

The calculations are solely based on average wage differences. Accordingly, in the calculations for diagram 1.1, consideration has not been given 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.

1.3.3 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 hours¹² 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 95.3 per cent. This means that the unexplained wage difference that remains is 4.3 per cent for the entire labour market in 2017.

Table 1.2 Women's wages as a percentage of men's wages in 2017

	Unweighted percentage	Unweighted difference in per cent	Standard weighted percentage	Standard weighted difference in per cent
All sectors	88.7	11.3	95.7	4.3
Private sector	89.1	10.9	94.7	5.3
Blue-collar employees	90.0	10.0	96.4	3.6
White-collar employees	82.9	17.1	93.5	6.5
Public sector	89.9	10.1	98.1	1.9
Municipalities	96.9	3.1	99.7	0.3
County councils	79.4	20.6	96.2	3.8
State	93.5	6.5	96.0	4.0

Source: Swedish National Mediation Office and Statistics Sweden

After standard weighting, county councils no longer have the largest difference in 2017. The largest unexplained salary difference, 6.5 per cent, is found among private sector white-collar employees. The county councils' unexplained wage difference is 3.8 per cent after standard weighting (compare with a standard weighted wage difference of 20.6 per cent).

The smallest unexplained wage difference, 0.3 per cent, is in the municipalities. Employees in the private sector have an unexplained wage difference of 3.6 per cent. Among state employees, the unexplained wage difference is 4.0 per cent.

¹² 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.

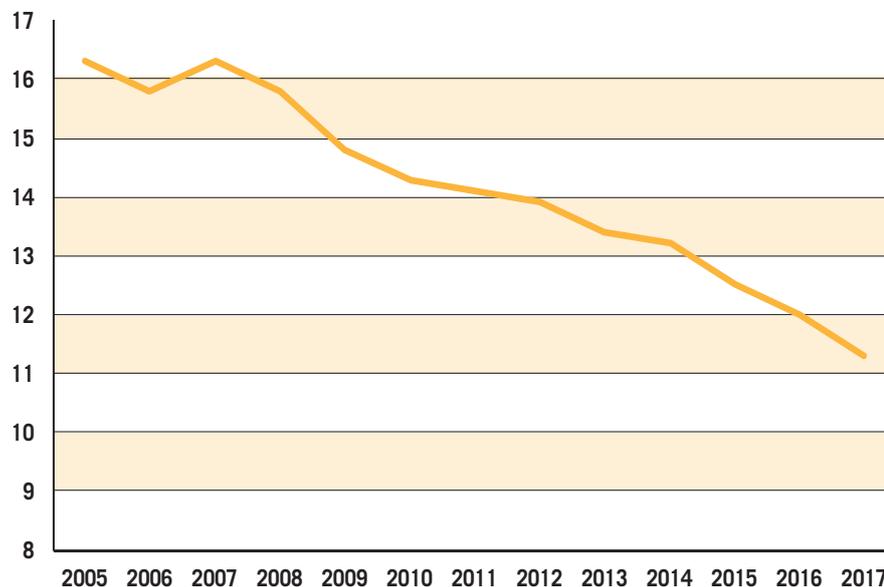
1.4 Wage difference trends between men and women

Between 2016 and 2017, the unweighted wage difference between men and women decreased by 0.7 percentage points. Women's average wage increased by SEK 1,000 and men's average wage increased by SEK 800. As women's average wage started out lower, this represents a higher proportional increase than for men.

The wage difference is clearly shrinking in recent years. **Diagram 1.2** shows the development between 2005 and 2017.

Women's average wage has increased by 43.4 per cent during this period, which is equal to an annual increase of 3.6 per cent. Men's average wage has increased by 35.2 per cent during this period, which is equal to an annual increase of 2.9 per cent.

Diagram 1.2 Wage difference trends between men and women
Percentage points



Source: Swedish National Mediation Office and Statistics Sweden

Table 1.3 shows the unweighted wage differences between men and women between 2005 and 2017.

Table 1.3 Wage differences between men and women (unweighted) 2005-2017

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Change 2005-2017
All sectors	16.3	15.8	16.3	15.8	14.8	14.3	14.1	13.9	13.4	13.2	12.5	12	11.3	-5
Private sector	14.7	14.1	14	14.1	13.4	12.8	12.8	12.2	12.1	12.2	11.9	11.9	10.9	-3.8
Blue-collar employees	11.7	11.2	10.3	10.9	10.0	10.0	9.9	9.1	9.5	10.4	10.3*	10.3*	10.0*	-1.7
White-collar employees	22.7	21.9	22.1	21.9	20.8	20.8	20.6	19.9	19.4	18.6	18.3*	17.9*	17.1*	-5.6
Public sector	16.6	16.3	17	15.9	15.1	14.6	14.1	14.1	13.4	13.1	12	10.7	10.1	-6.5
Municipalities	8.4	8.4	9.0	7.7	6.6	6.1	6.1	6.2	5.8	5.4	4.6	3.4	3.1	-5.3
County councils	28.6	28	27.6	27.3	26.9	26.5	26	25	23.8	23.6	22.4	21.1	20.6	-8
State	14.3	12.8	12.7	12.4	11.3	10.7	9.4	8.9	8.2	7.9	7.3	7.3	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

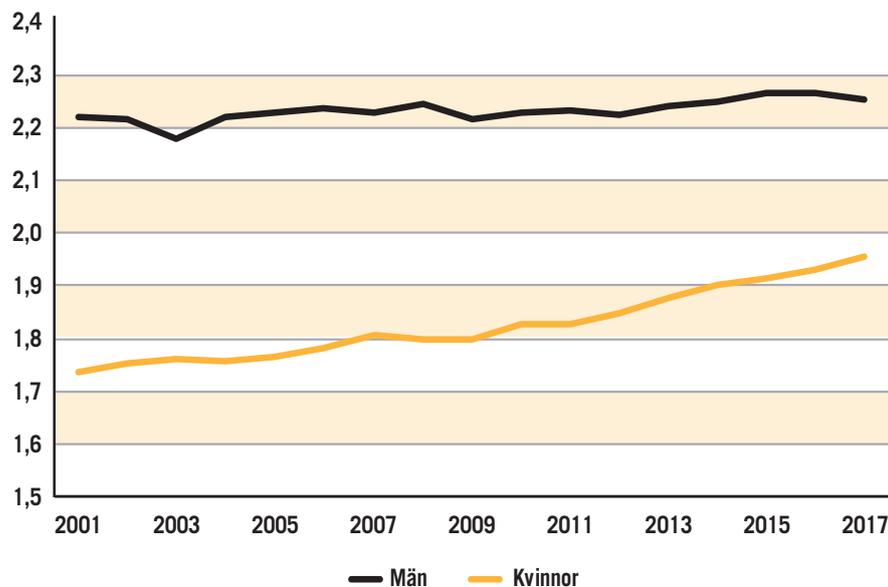
For blue-collar and white-collar employees in the private sector, comparisons should not be made with years prior to 2014, when their classifications changed.¹³

The rate at which wage differences 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 percentage points between 2005 and 2017. The second largest decrease is among state employees, where the wage difference decreased by 7.8 percentage points.

During this period, the wage dispersion 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. In the next chapter, we will for example examine the fact that more women are reaching management positions. This is one of the compositional changes that might affect wage dispersion.

Diagram 1.3 Wage dispersion trends for men and women 2005-2017

Percentile quotient P90/P10



Source: Swedish National Mediation Office

Wage dispersion has been calculated by dividing the 90th percentile wage by the 10th percentile wage. A quotient of 2 then means that the ten per cent with the highest wages earn twice as much as the ten 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.

13 In the study, the classification of personnel categories (blue-collar/white-collar employees) from 2014 was done 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 wage differences.

Table 1.4 Wage differences between men and women 2005-2017

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Change 2005–2017
All sectors	6.8	6.6	6.5	6.6	6	5.9	5.9	6.1	5.8	5	4.6	4.5	4.3	-2.5
Private sector	8.3	8.1	7.8	7.9	7.3	7.3	7.2	7.4	7	6.2	5.7	5.6	5.3	-3
Blue-collar employees	5.6	5.1	5.2	4.6	4.5	4	3.8	3.7	4.3	3.8	3.1*	3.5*	3.6*	-2
White-collar employees	9.8	9.7	9.5	10	9.1	9.3	9.2	9.6	8.6	8.1	7.7*	7.2*	6.5*	-3.3
Public sector	3.5	3.4	3.4	3.4	3	2.9	3	3.1	3	2.2	2.1	1.9	1.9	-1.6
Municipalities	0.9	1	1.2	0.8	0.6	0.4	0.6	0.7	0.6	0.5	0.4	0.3	0.3	-0.6
County councils	5.3	5.2	4.8	5.4	4.7	4.8	4.6	4.6	4.4	4	3.9	3.8	3.8	-1.5
State	7.1	6.5	6.3	6.3	6.2	5.8	5.6	5.3	5.2	4.4	4.2	4.0	4.0	-3.1

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

Source: Swedish National Mediation Office and Statistics Sweden

The unexplained wage difference after standard weighting (i.e. when corrected for differences in occupation, sector, education, age and if the person works part time) decreased by 0.2 percentage points between 2016 and 2017.

The unexplained wage difference after standard weighting also decreased between 2005 and 2017. The largest decrease was in the state, where the unexplained wage difference decreased by 3.1 percentage points.¹⁴

However, it is important to remember that comparisons of how the wage differences 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 wage difference can be affected by the structure of collective agreements and if the contractual wage increases have had time to be paid out at the time of measurement. Changes in the composition of the workforce are another factor that can affect the change of wage differences over time.¹⁵

1.5 Wage differences between men and women with regression analysis

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

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).

14 Note that the parties on the labour market may present different levels on the wage differences. 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).

15 For an in-depth discussion see section 2.2 in "Vad säger den officiella lönestatistiken om löneskillnaden mellan kvinnor och män 2009?" [What do the official wage statistics say about wage differences between men and women?] Swedish National Mediation Office (2010).

1.5.1 What affects the wage differences between men and women?

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 work-related characteristics is clarified. Detailed information about the variables used is available in Appendix 3.

Table 1.5 Wage differences between men and women, whole labour market 2017
Regression analysis with logarithmised monthly wage as a dependent variable

	Model 1	Model 2	Model 3
All sectors	-9.4	-12.0	-3.9
Private sector	-9.7	-10.7	-4.6
Blue-collar employees	-9.9	-9.0	-3.6
White-collar employees	-15.2	-15.0	-6.1
Public sector	-8.0	-6.9	-1.7
Municipalities	-2.3	-3.9	-0.3
County councils	-16.3	-14.7	-3.2
State	-7.1	-5.5	-3.5

Note: All estimates have 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 wage difference is then 9.4 per cent. This figure constitutes a base value. With this value, the results of including additional factors that can influence the wage differences can be compared. The estimate corresponds to the previously noted wage difference (11.3 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 wage differences between men and women after including the individual's age and level of education. For the whole economy, the unexplained wage difference 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 breakdown 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 wage differences when occupation is added to all of the factors above. Occupation explains a large part of the wage differences between women and men. The unexplained wage difference that remains when occupation is also included in the analysis is 3.9 per cent. The unexplained wage difference is more than halved in all sectors except the state when occupation is added to the analysis.

The fact that the wage difference 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).

1.5.2 Occupation the most important explanation of wage differences

Of the various factors taken into account, it is occupation that makes the single largest contribution to explaining the wage differences between women and men. This is apparent when looking at what percentage of the average wage difference is explained by the different factors. When the calculation takes occupation into account, we see that the unexplained wage difference decreases substantially.