statistiche **report**

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STRUCTURE OF EARNINGS IN ITALY - YEAR 2018

Temporary employees less paid per hour

In 2018, mean hourly earnings for temporary employees is 29.7% less than those of permanent employees. The negative gap rises to 31.1% for part-timers compared to full-timers.

Women earn less than men. The gender pay gap (6.2% in favor of men) widens among Managers (27.3%) and employees with a tertiary education (18%).

Higher levels of education, better skills, longer length of service and higher age lead to higher earnings. Earnings are higher in larger enterprises and in some economic activities.

15.8 euros
Mean hourly earnings

Women: 15.2 euros
Men: 16.2 euros

35,062 euros
Mean annual earnings

+6.2%
Gender Pay Gap

+17.7% private economic and financial control sector, +2% public economic and financial control sector

The figures presented in this report are based on the Structure of Earnings Survey (SES) for the year 2018. The target population is composed by all the enterprises and institutions belonging to Private and Public sectors with at least 10 employees. The employees covered are those who received remuneration for the reference month (October 2018).

Higher mean annual earnings in Industry

Mean annual earnings in 2018 is 35,062 euros and goes up to 36,610 euros in Industry (except Construction), while it reaches the minimum value of 31,967 in Construction sector.

Even after taking account of a lower number of hours paid (1,552 hours for women and 1,840 for men), women earn about 6,500 euros less than men (31,335 euros compared to 37,912)

This is due to the fact that the mean hourly earnings, which in general is equal to 15.8 euro, is 1 euro lower for women than for men (respectively 15.2 and 16.2 euro).

Looking at the economic activities, in Other Services[i] the highest mean hourly earnings is recorded (17.8 euros for women and 19.4 for men). This is mainly due to the contribution of the Education Sector (whose share of employees over the macro sector is about one-third of the employees) in which the teachers' high mean hourly earnings depends on the low (nominal) number of paid hours[ii].

The Gender pay gap (GPG), calculated as the difference between the m gross hourly earnings of men and women expressed as a percentage of those of men, is equal to 6.2%. It reaches the values of 15.9% in Services of the business economy (G-N), and 14.2% in Industry (except Construction).

EARNINGS AND GENDER PAY GAP
YEAR 2018, euros and percentage values

ECONOMIC ACTIVITIES	Mean annual earnings (€)			Mean hourly earnings (€)			GPG (%)
	Females	Males	Total	Females	Males	Total	
Industry (B-E)	31,846	38,217	36,610	13.3	15.5	15.0	14.2
Construction (F)	31,331	32,059	31,967	12.9	13.9	13.7	7.2
Services of the business economy (G-N)	31,503	37,885	35,218	12.7	15.1	14.1	15.9
Other Services* (O-S)	31,064	38,557	34,084	17.8	19.4	18.5	8.2
Total (B-S)	31,335	37,912	35,062	15.2	16.2	15.8	6.2

* Includes NACE Rev. 2 sections O to S, i.e. Public administration, Defence, Compulsory social security; Education; Human health & social work activities; Arts, entertainment & recreation and Other service activities.

## Gender gaps are wider among workers with tertiary education

Mean annual earnings, equal in 2018 to 35,062 euros, rises as educational attainment rises, in all sectors of economic activity and indistinctly for men and women (Figure1).

Among employees with tertiary education level (Bachelor's degree and beyond), the highest mean annual earnings is in Industry except construction (53,922 euros) while the lowest is among employees with primary education in Total Services (26,167 euro). The Services of the business economy sector is the one where the earnings gaps by level of education are most marked. Compared to an employee with primary education, an employee with secondary education receives, on average, an annual earnings 28.8% higher and the gap rises to 85.6% for an employee with tertiary education. On the other side, the Other Services sector is the one with the lowest gaps: compared to those with a primary level of education (at most Lower secondary), the earnings gaps fall respectively to 10.8% (High school) and 41.8% (Bachelor's degree and beyond).

Regarding the gender, the lowest mean annual earnings is among women with primary education (24,738 euros), while the highest is among men with tertiary education (53,816 euros). Mean annual earnings for male employees is higher than mean annual earnings for women with an equivalent level of education: 20.5% more if they have primary education and 21.7% if they have secondary education. The gap doubles in the case of tertiary education (45.7%).

Earnings gap related to education is quite different between men and women. In fact, mean earnings for women with secondary education exceeded that for women with primary education by 20.9% - an increase quite similar to that of men, equal to 22.1%. For women with tertiary education the gap widens to 49.3% that is just over half of that for men (80.5%).

FIGURE 1. MEAN ANNUAL EARNINGS BY ECONOMIC ACTIVITY, EDUCATIONAL ATTAINMENT AND SEX
Year 2018, euros
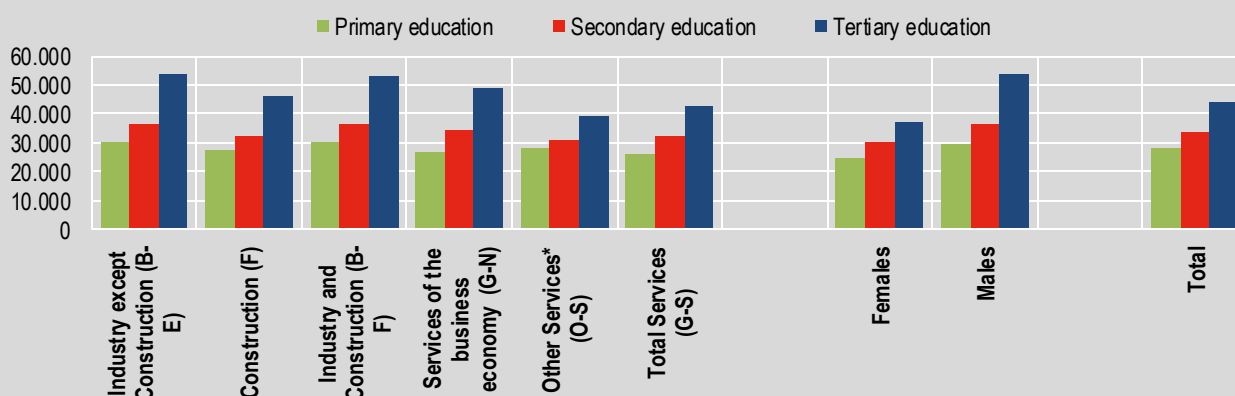
* Includes NACE Rev. 2 sections O to S, i.e. Public administration, Defence, Compulsory social security; Education; Human health & social work activities; Arts, entertainment & recreation and Other service activities.

In the North-West the highest number of hours paid

In Italy, the number of hours paid obtained as the sum of ordinary hours and overtime, in 2018 amount on average to 1,716: this figure increases up to 1,749 in the North-West, 1,740 in the Centre and 1,734 in the North-East while it is lower in the South and the Islands (respctively 1,624 and 1,605).

The difference of 15.7% recorded between women and men (1,552 and 1,840 hours) is mainly due to the distribution of part-time contracts: in enterprises with at least 10 employees, the share of female part-timers is more than twice that of men (17.1% *versus* 6.4%) (Figure 2).

In the South and the Islands, hours paid among women are lower than men respectively by 19.4% and 17%. The effect of the higher percentage of women part-timers is, however, lower compared to what is observed at national level: the share of women with a part-time job in the South exceeds that of men by only 4.5 percentage points; the difference is 6.1 points in the Islands.

In the North-East and the North-West, mean hours paid – among the highest in Italy – remain high even among women, despite the high percentage of part-timers (20.6% in the North-East and 18.6% in the North-West); however, the difference with male hours paid remains high: it's at 16% in the North-East and 14.8% in the North-West.

In Total Services, mean hours paid (1,604 hours) are about 300 less than in Industry and construction (1,916 hours), and the part-time share among women is much higher (19.2% versus 6.9% among men), contributing to the gender difference in mean hours paid (15.1%).

Among Industry activities, the sector Water supply; sewerage, waste management and remediation activities shows the lowest mean (1,827 hours), the Mining and quarrying sector shows the highest one (1,986 hours). Within the Services of the business economy, the 1,398 hours recorded in Accommodation and food service activities is almost 500 hours lower than Information and Communication Services (1,859 hours). Finally, the Education sector is characterized by a low number of hours (1,263 hours) and a clear female prevalence in contrasts to the high value observed for the Public administration, defence and compulsory social security (1,845 hours), characterized by a strong male component.

The number of annual hours paid increases as the age of the worker increases, in particular among male employees. The hours paid for youngest employees (aged 14-29) are 10.1% lower than the oldest ones (aged 50 and over). Depending on the economic macro-sectors to which the employees belong this difference between youngest and oldest varies from 6% to 16.2% for women, while from 9.5% to 17.3% for men. Also the geographic location of local unit influences the differences: hours paid to employees under 30 years are lower than the over-50s by a percentage that varies between 4.8% (in the North-East) and 15.5% (in the South) for women and between 10.2% (in the North-East) and 19.6% (in the Islands) for men.

FIGURE 2. MEAN ANNUAL HOURS AND PERCENTAGE OF PART-TIME WORKERS BY SEX
Year 2018, annual means and percentage values
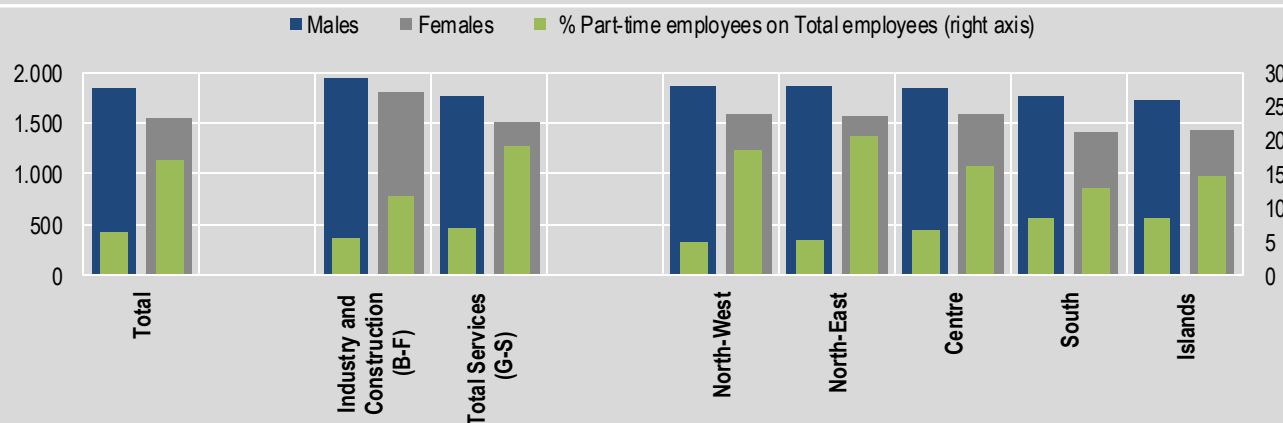
Mean hourly earnings: higher gaps according to education and age

As observed for annual earnings, the hourly earnings rises with the workers' age and level of education: young people (under 30) earn on average 11.1 euros per hour, that is 39% lower than employees over-50 (18.2 euros) and 26% lower than employees aged between 30 and 49 (15 euros). Employees with primary education level earn hourly earnings of 12.1 euros, 17.7% less than employees with secondary education (14.7 euros) and 43.7% of those with tertiary education (21.5 euros).
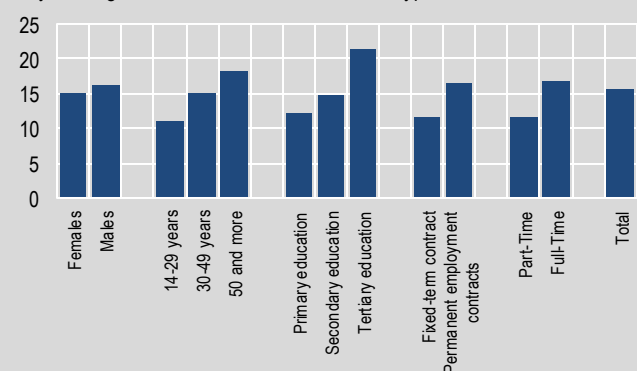
Temporary employees earn 29.7% less than permanent employees (11.6 and 16.5 euros, respectively); part-timers earn 31.1% less than full-timers.

Considering the gender and length of service in the enterprise, hourly earnings of men are more than one euro above that of women among employees with a seniority of 5 to 24 years. Women hourly earnings are 6.3% lower than men considering length of service between 10 and 14 years. The gap rises to 11.6% for seniority between 5 and 9 years.

Hourly earnings for women increase particularly in the transition from 20-24 to 25-29 years of length of service in the enterprise (+14.2%); for males, on the other hand, the greatest difference is found between the first two classes (0-4 and 5-9 years) of seniority (+22.4%), and then the growth rate gradually decreases.

FIGURE 3. MEAN HOURLY EARNINGS BY SOME CHARACTERISTICS. October 2018, values in euros
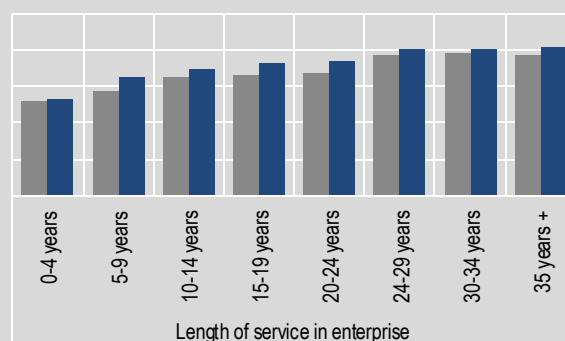
Lower earnings among female, young, less educated and unskilled employees

Following the EU definition, *low-wage earners* are employees that earn two-thirds or less of the national median gross hourly earnings. In 2018 this value is 8.5 euros in Italy.

The incidence of low-paid earners is 9.8%, and it is higher among women (11.6% versus 8.5% for men), young people, up to 29 years of age (23.9%) and employees with the lowest educational level (17.4%); very high proportions are also observed between workers in elementary occupations (31.3%) and those employed in services and sales (16.4%).

The lowest percentage of *low-wage earners* is found among professionals (1.3%), managers (1.8%), employees with tertiary education level and those over 50.

FIGURE 4. *LOW-WAGE EARNERS* BY SEX, EDUCATIONAL ATTAINMENT, AGE CLASS AND OCCUPATION
Year 2018, percentage values
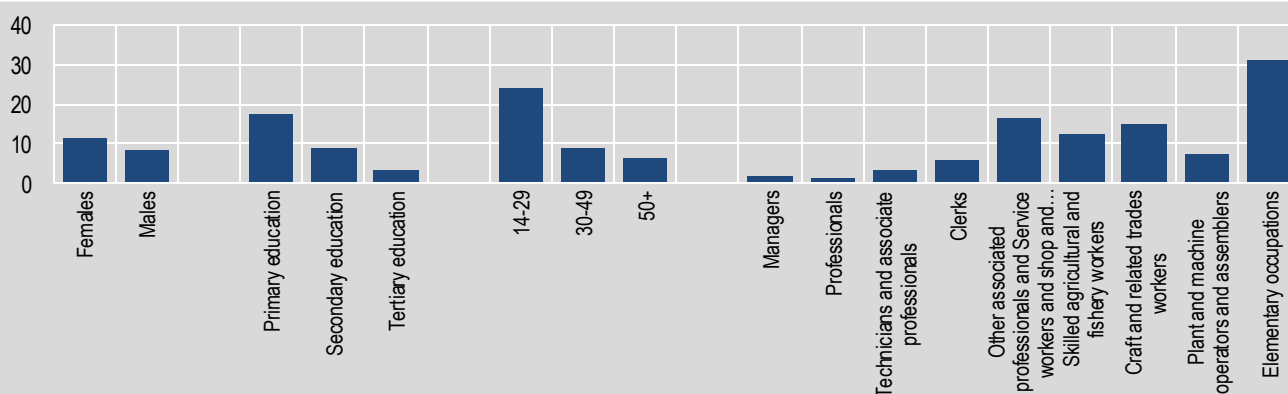
GPG is wider among workers with a bachelor's degree and among managers

In Italy, the gender pay gap in 2018 is 6.2% (Figure 5). Pay differentials tend to widen among women and men with at least a bachelor's degree (18%): women earn 19.6 euros per hour and men 23.9 euros per hour. Among employees with primary education, recording much lower hourly earnings levels (10.8 euros for women and 12.7 euros for men), the GPG is 15%. The GPG associated with secondary education - the most common level among both men and women - is lower (10.4%), with hourly wages of 13.8 euros for females and 15.4 euros for males.

The pay gap widens among occupations where women are underrepresented. In detail, managers, that record the highest hourly wages for both women (33.6 euros) and men (46.2 euros), show a GPG of 27.3%. The GPG is 18.8% in the Armed Forces and 18.5% for Craft and Related Trades Workers.

One of the lowest GPG is in Elementary occupations (9.3%) with the lowest hourly wages (9.7 euros for women and 10.7 euros for men).

High earnings levels (22.9 euros among women and 25.6 euros among men) and low level of GPG (10.5%) characterize Professionals group, in which women are more concentrated.

The form of economic and financial control of the enterprise is a relevant factor in explaining the differences in the gender pay gap levels.

While the GPG in the private economic and financial control sector is 17.7%, it drops to 2% in the public one. In the latter, women account for 55.4% of the employees and there is also the highest concentration of women with a high educational level. Women with a bachelor's degree (or more) in the public sector earn 22.6 euros per hour, 7.7 euros higher than their counterpart in the private sector. Among men, the difference drops to 4 points: 26.1 euros in the public sector and 22.1 in the private sector.

FIGURE 5. HOURLY EARNINGS BY GENDER AND GPG, BY OCCUPATION AND EDUCATIONAL ATTAINMENT
Month October 2018, values in euros and percentage values
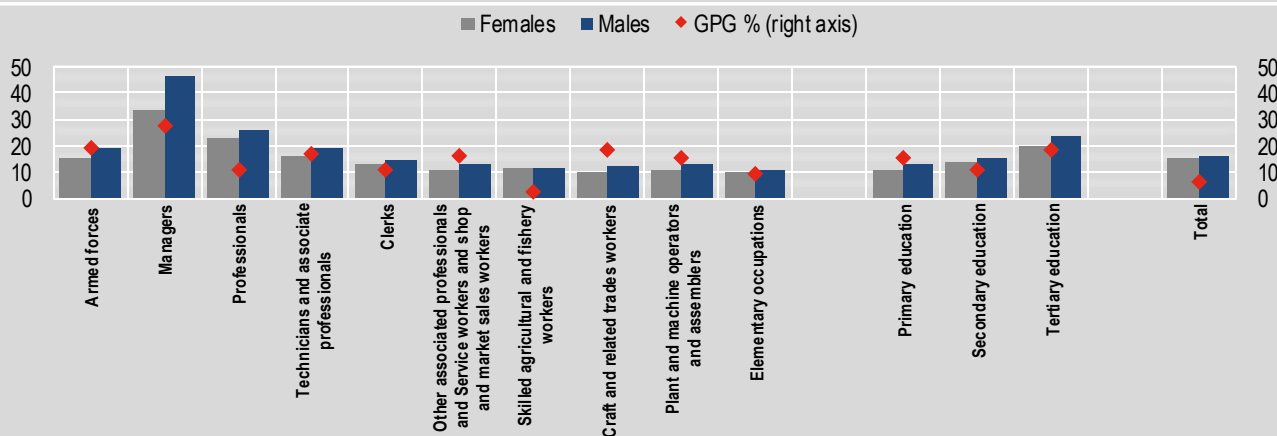
Gender Pay Gap in Italy below the EU average level

This paragraph compares the level of GPG in EU countries, excluding the NACE section "O" (Public administration, Defence, Compulsory social security) since in the EU Regulation the survey for this sector is optional and not all countries collect the data.

In 2018, GPG in Italy is 5.5%, below the EU28 average (15.3%) with a slight decrease compared to 2014 (6.1%). This relatively low value for Italy is mainly due to the contribution of the public sector, which records a high share of women employed, high hourly earnings and a contained GPG (4.4%). In fact, considering only enterprises under private economic and financial control the Italian GPG is much higher (17.7%).

There are other six other countries with a GPG below 10%. They are Luxembourg (1.4%), Romania (2.2%), Belgium (5.8%), Poland (8.5%), Portugal (8.9%), and Slovenia (9.3%). Values above 20% are recorded in Estonia (21.8%), Austria (20.4%), Czechia (20.1%) and Germany (20.1%).

Compared to four year earlier in 2018 the GPG is lower both in EU28 (from 16.6% to 15.3%) and in Euro area (from 16.8% to 15.3%). The majority of countries (19) register a reduction in GPG level, the highest of which is in Estonia (-6.3 percentage points). Slight increases occur in Slovakia, Ireland, Lithuania and Poland. Stronger increases occur in Croatia (2.7), Malta (2.4), Latvia (2.3), Slovenia (2.3) and France (1.2).

High GPG values are not always associated with high pay levels. Germany and Austria have a GPG higher than 20% and mean hourly earnings of 19.7 euros and 17.4 euros respectively. Estonia and Czechia, which have a very high GPG, register very low earnings (7.5 euros and 7.1 euros respectively). On the other hand, Luxembourg has very high earnings (25.1 euros) and the lowest GPG, while Romania, which has a very low GPG, shows mean hourly earnings of just 5.1 euros.

FIGURE 6. GENDER PAY GAP IN EUROPEAN UNION COUNTRIES
October 2014 and 2018, percentage values
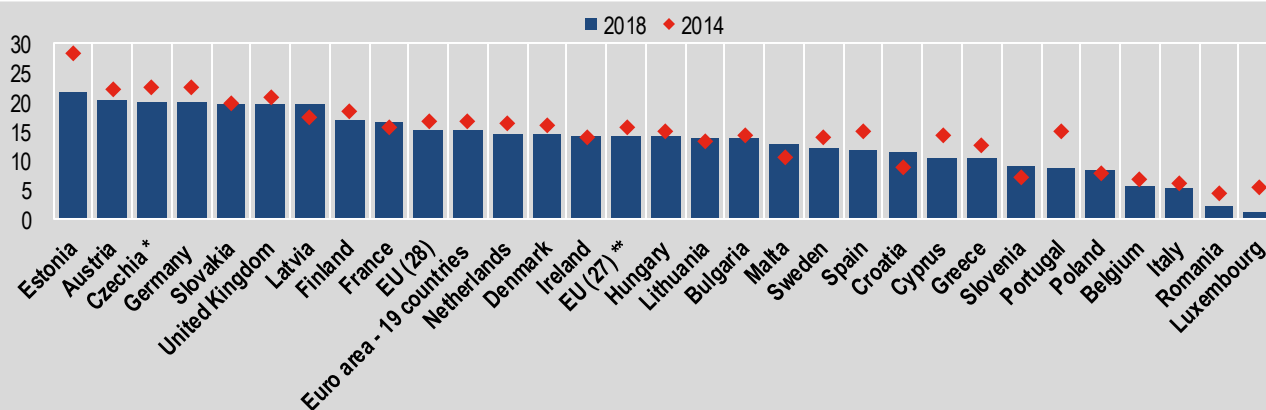
Source: Eurostat (February 2021)
* The figure for the Czech Republic is calculated using a different methodology
** European Union (27) does not include the United Kingdom

Glossary

Age: it is calculated as the difference between the reference year of the survey and the year of birth. It is expressed in three classes (years 14-29, 30-49 and 50 and more).

Contractual working time: it defines the employee's working time. It can be full-time or part-time. Full-time contracts establish the same working hours as the collective agreements or customary worked in the local unit under consideration, part-time contracts involves less time than full-time.

Economic activity: an activity that takes place when resources such as capital goods, labour, manufacturing techniques or intermediary products contribute to the production of goods or the provision of services. Thus, an economic activity is characterized by an input of resources, a production process and an output of products (goods or services). Within the European Union, the classification used of economic activities is the Statistical classification of economic activities in the European Community, abbreviated as NACE. The version used is Nace Rev.2.

Educational attainment: it is the level of successfully completed general, professional or higher education which the employee has received according to the International Standard Classification of Education, 2011 version. The level must be associated with obtaining a certificate or a diploma. It allows to classify the different educational and training areas enabling the international comparison. Here is summarized into three classes: Primary (Less than primary, Primary and Lower secondary), Secondary (Upper secondary and Post-secondary non-tertiary), Tertiary (Short-cycle tertiary and above).

Employee: all persons, who have a direct employment contract with the enterprise or local unit and receive remuneration, irrespective of the type of work performed, the number of hours worked (full-time or part-time) and the duration of the contract (fixed or indefinite). The following are to be considered as employees: executives, managers, clerks, workers, apprentice, members (also of cooperatives) for whom social security contributions are paid as employees, home workers registered in the single book of work, seasonal workers, workers with insertion contract. The number of employees also includes staff temporarily absent for various reasons such as vacations, leave, maternity leave, redundancy fund.

Employee position: it is a unit of analysis defined as the employment relationship between an economic unit and a worker. It must have homogeneous characteristics in terms of professional qualification (apprentice, worker, office worker, manager), working hours (part-time and full-time - distinguishing between on-call and intermittent contracts) and type of contract (fixed-term - including seasonal - and open-ended), with at least one hour paid by the company. In the RCL-SES survey, only positions who actually received remuneration during the month of October are considered.

Enterprise: it is an organizational unit producing goods or services which has a certain degree of autonomy in decision-making. An enterprise can carry out more than one economic activity and it can be situated at more than one location. An enterprise may consist out of one or more legal units.

Euro Area (19): it includes all the countries of the Eurozone: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain.

European Union (27): countries of the European Union after the *Brexit* (2020): Austria, Belgium, Bulgaria, Cyprus, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Czechia, Romania, Slovakia, Slovenia, Spain, Sweden, Hungary.

European Union (28): all of the following countries of the European Union: Austria, Belgium, Bulgaria, Cyprus, Croatia, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Czechia, Romania, Slovakia, Slovenia, Spain, Sweden, Hungary.

Form of economic and financial control of the enterprise: the economic and financial control of the enterprise is coded as public control when public ownership is more than 50%, and as private control when private ownership is more or equal than 50%.

Gender Pay Gap (GPG): it refers to the difference in average wages between men and women. The unadjusted gender pay gap is calculated as the difference between the average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees. The average hourly earnings used is defined by Commission Implementing Regulation 1738/2005 and in this case is the cash earnings for the month of October net of the extra-monthly components.

Hours paid: hours actually paid includes all normal and overtime hours worked and remunerated by the employer. Hours not worked but nevertheless paid (partially or totally) are counted as 'paid hours' (e.g. for annual leave,

public holidays, paid sick leave, paid vocational training, paid special leave etc.). The hours paid in full by social security and assistance institutions (even if advanced by the employer) are excluded.

Length of service in enterprise: the total length of service in the reference month should be based on the number of completed years of service. The total length of service relates to the period since the employee joined the enterprise, which may have been in another local unit. It is grouped in eight seniority year classes (0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35 and more).

Low-wage earners: all the employees who earn two thirds or less of national median gross hourly earnings.

Mean annual earnings: mean annual earnings includes the wages and salary in cash, payable regularly and directly to all persons counted on the payroll in return for work done during the accounting period. Earning's components not payable in every month and wages in kind are included. It includes the values of any social contributions, income taxes, payable by the employee even if they are actually withheld by the employer and paid directly to social insurance schemes and tax authorities on behalf of the employee. As done in EU practice, the annual earnings are adjusted for considering the length of the working-time regime (part-time vs full-time) and the duration of the employment arrangements (less than one year), so to derive the annual earnings on Full Time and Full Year (FTFY).

Mean hourly earnings for the reference month: it refers to wages and salary in cash, payable regularly and directly to all persons counted on the payroll in return for work done during the reference month of October 2018. Earning's components not payable in every month and wages in kind are excluded, while earnings for overtime hours are included. The choice of October for calculating the mean hourly earnings is internationally agreed as it is less seasonal month, characterized to a reduced number of absence events or national holidays (that could affect the workable days). The indicator is calculated using hours paid as the denominator (the hourly actually worked for ordinary and overtime hours, paid holidays and sickness payed by the employer, etc.).

Occupation: it is defined in Italy according the CP2011 classification, which takes into account both the previous 2001 classification (Cp2001) and the International Standard Classification of Occupation (Isco-08). Occupations are organized into nine major groups based on the different level of competence required to be exercised. The nine broad groups are in turn detailed, depending on the scope of skills, into 37 groups, 129 classes, 511 categories and 800 occupational units and more than 6,700 occupational headings.

Overtime hours: paid hours worked in addition to ordinary hours. Working hours on Sundays, nights or public holidays are considered as overtime only if they are not included in the working time under contract or stored overtime credit systems. They include supplementary hours form part-time workers that is for those hours worked beyond the hours originally agreed in the part-time contract.

Public Institution: legal-economic unit whose main function is to provide non-market goods and services and/or to redistribute income and wealth; their main resources are compulsory levies on households, enterprises and non-profit institutions or non-repayable transfers received from other general government institutions.

Payment in kind: it includes the value of meal vouchers or canteen meals, excluding meal replacement allowances, as these are cash payments; remuneration based on stock options and the transfer of shares free of charge or at a price below the market price; compensation in goods and services provided to employees (fringe benefits). The latter include: the value of goods and services produced by the company and provided free of charge or at discounted prices; buildings (accommodation) leased, used or loaned; company car for mixed use or exclusively personal use by the employee; cell phone for mixed use or exclusively personal use; goods and services purchased from third parties and given to employees free of charge at a price below the market price; transport services from home to work; granting of subsidized loans to employees; bonus trips; consultancy services to employees.

Size of the enterprise: it is defined on the basis of the annual average number of employee positions in the Statistical register of active enterprises (ASIA - Enterprises).

Territorial statistical units (NUTS): geographical areas defined for statistical purposes as an aggregation of Italian regions. According to the first level of the Unified Territorial Nomenclature for Statistical Purposes (NUTS1), they are: North-West (Piedmont, Valle d'Aosta, Lombardy and Liguria), North-East (Bolzano/Bozen, Trento, Friuli-Venezia Giulia, Emilia-Romagna and Veneto), Center (Tuscany, Lazio, Umbria and Marche), South (Abruzzo, Molise, Campania, Basilicata, Puglia and Calabria) and Islands (Sicily and Sardinia).

Type of employment contract: it distinguishes the employees between permanent employee (workers under permanent contract where there is no end-date) and temporary employee (workers under a fixed-term contract where there is an end-date).

Methodological note

Structure of Earnings Survey (SES 2018)

The Structure of earnings survey, abbreviated as SES, is conducted every four years in the Member States and it is based on the Council Regulation (EC) No 530/1999 concerning structural statistics on earnings and on labour costs. The SES allows to produce comparable information on relationships between the level of remuneration, individual characteristics of employees (sex, age, occupation, length of service, highest educational level attained, etc.) and of their employer (economic activity and geographic location of the local unit; size of the enterprise).

The target population is composed by all the enterprises and institutions belonging to the Private and Public sectors with at least 10 employees in the NACE Rev. 2 sections B to S. The employees covered are those who received remuneration for the reference month (October 2018). Since SES 2014 edition, Italy provided also data related to section O (even if the extension to this section is still considered optional).

The statistical processes for the Private and Public sectors are quite different. For the Private sector, since SES 2014 edition, data from a direct statistical survey were combined with administrative sources in all major phases of the survey production process. The statistical process of the Public sector, on the other hand, was completely based on an intensive use of administrative and register data. In what follows, brief explanations of both are reported.

The statistical process for the Private sector

The survey for the private sector is based on the RACLI (Italian acronym for Annual register on earnings, hours and labour cost for jobs and enterprises) wage register, an earlier version of the Labour Register (LR) on the private sector within the ISTAT Register System. In each stage of the survey were used data from this register: in the sampling stage, allowing the reduction of the sample size; in the design of the questionnaire, facilitating a significant simplification through the elimination of variables available from registers; during the editing and imputation phases, where administrative data have been used as benchmarks, in the reconstruction of non-response and finally in the production of final estimates.

The process, therefore, was designed also taking into account the timing of the availability of the register. Following the scheduled availability of Social Security data, the RACLI register is available as a provisional version in the autumn of year t+1 and, as a final version, in the spring of year t+2. So the provisional version was used for sampling, for prefilling the variables of the questionnaire and for checks during the data collection phase, while the final version was used for the post collection editing and imputation, including the imputation of non-responses, for calibration of the survey weights to known totals and for validation of the data.

The sampling design

The sampling design for the SES 2018 survey is a two-stage sampling, separately performed for the private sectors and for the public sector. In the following, the design for the private sector is described. The design for the public sector mimic it closely.

In the first stage, the enterprises are selected within strata obtained by crossing 2 digit Nace sectors, size classes and NUTS1 regions. The enterprises with at least 250 employees belong to *take all* strata and have been selected with certainty. For the remaining enterprises, the allocation has been performed using the Bethel multivariate technique that determines the optimal number of units per strata by minimizing the expected error of given target variables. In this case, the driving variables used for the allocation are the enterprise average of the hourly earnings and the total wage paid to each worker respectively in October and in the Year.

In the second stage, a fixed number of employees was selected depending on the size of the enterprise. The number of employees extracted for each enterprise was predetermined according to the size of the enterprise, and the selection was stratified according to the geographical breakdown in which the employee works, the type of working time and the qualification.

The availability, from the register, of these variables very related to the target ones of the regulation, allows to calculate with good approximation the sampling errors of the estimates of the parameters of interest.

These characteristics have allowed since 2014, a downsizing of the sample size compared to the past editions.

The sampled enterprises are 22,099 out of the 189,123 enterprises with at least 10 employees contained in the Business Register ASIA (provisional version available at July 2018). The overall second stage sample size has been of 225,942 sampled employees who were paid at least one hour in 2018. Of that number, about the 70% was paid in October. The final sample of workers paid for the entire month of October, resulting after the E&I stage, is 141,138 out of 7,598,171 in the population.

Questionnaire

The main purpose of the re-design of the 2018 SES questionnaire was to exploit the administrative sources to increase data quality and reduce the statistical burden on respondents. In this regard, variables derived from the registers, able to satisfy the regulatory requirements, were not included in the questionnaire, while the core variables were pre-filled. The respondents could correct the prefilled data if they noticed errors. They had also to compile the sub items to provide the information not available in the Register, e.g. occupation, detailed information on the components of remuneration and on overtime hours.

The survey form included a number of pages equal to the number of employees sampled. Each sheet of the questionnaire consisted of three sections. The first is related to employee's personal characteristics and job position, the second regards earnings and working hours for the month of October, and the third covered annual earnings and hours paid.

Data collection

For the private sector, data have been gathered mainly through a Web-based questionnaire (CAWI), developed with ISTAT's GINO++ software. The respondents could also choose to prepare a data file, using a predefined layout, to upload via the online application. In order to ensure the quality of data collected, consistency and compatibility checks have been included in the questionnaire and in the uploading application.

Enterprises involved in the survey had to access the questionnaire via portal through user ID and password. Respondents could request assistance in filling in the questionnaire through toll-free number and other asynchronous channels managed by the Contact Center. In order to allow the CC operators to properly manage the assistance, ISTAT experts gave them training on technical and thematic aspects of the survey. The most specific and complex requests that could not be solved by the CC were forwarded to ISTAT experts.

Editing and Imputation procedures

The overall design of the survey (sample, questionnaire and data collection) allowed to reach one of the highest response rates for this type of survey. With reference to the sample of paid jobs for the entire month of October, the response rate exceeded 60% in terms of companies and 72% in terms of sampled workers.

Editing and imputation process has been carried out in several phases: an editing during data collection phase a post - data collection editing and finally the imputation of missing data. In the first stage, the input of data by employers is controlled by the rules in the survey questionnaire. The main rules, in addition to those of non-nullity and positivity, are related to the consistency between the main items, such as total remuneration and its components. The employer had the possibility to report exceptions through a special drop-down menu.

The post-collection check, with regard to quantitative variables, in addition to verifying compliance with the previous rules, added other deterministic ones by setting differentiated range for particular types of workers and distinguishing criteria for the editing of full-time workers from part-time ones. The main variables to be checked are monthly earnings, annual earnings and the number of working days. Records violating one or more of the above rules were checked with probabilistic procedures via minimal distance donor (BANFF system, Statistics Canada).

The qualitative variables are submitted to SCIA system for automated editing and imputation of data affected by errors that applies a generalization of the error localization method of Fellegy and Holt (1976). The variables undergone to the procedure consist of individual characteristic of each employee (age, managerial position, level of education, length of service in the enterprise, occupation according ISCO classification).

On 142,075 total observations of private sector, the share of 28% represents the non respondents. The availability of the set of core information (Gross wages in the month, Gross wages in the year, number of hours paid in the month) for the entire sample drawn from RACLI lets to perform a massive imputation on the non respondents to obtain the extra components.

The statistical process for the Public sector

The public sector data derived only from available registers and data sources. Referring to the economic units the frame list is built starting from the Public Institution register referred to 2018. In recent times, there has been an increasing investment in ISTAT in creating a new Integrated System of Registers in order to reduce the response burden and to satisfy national and international requirements. In this context, the Public-Sector Labour Register (LR-Public Sector) together with the already known RACLI Register on the private sector constitute the Labour Register.

The LR-public sector, implemented for the year 2018, is based on a plurality of administrative sources: the backbone of the system are the Social Security Institute (INPS) data and among them the monthly declarations

Uniemens-ex-INPDAP (covers the public sector) and Uniemens (covers employees with temporary contracts in the Public administration for whom less contributions are paid and employees of private economic units with public economic and financial control); the monthly IGOP-NOIPA (covers the employees of the ministries) of RGS- State General Accounting Department of the Ministry of Economy and Finance (MEF); the new CU declarations of the Revenue Agency (covers the entire economy) and the aggregated data of the Conto Annuale - MEF RGS (covers the public sector).

The LR is used not only for the estimation of variables but also for the definition of the list of units. As already mentioned above, all the economic units are those of the Register of Public Institutions, but within it, all the schools for the coverage of the education sector has been defined with the help of the Register of Labor-Public Sector.

The main source to obtain an estimate of the main variables for SES is certainly the IGOP-NOIPA flow. It guarantees the coverage of about 1.6 million employees (out of a total of about 3.5 million) belonging to public institutions whose employer has used the MEF's NOIPA system for the transmission of all legal and economic data. For this sub-population of employees, it provides detailed information on the composition of earnings (tabular salary, overtime compensation, etc.).

Variables not available from LR-public sector were estimated using imputation methods (e.g. overtime, overtime compensation, shift compensation) or methods of recycling based on present information (e.g. employment). The entire process was conducted on the entire population of public sector employees, from which a sample of employees was then extracted to populate the microdata file released. The extracted employees are 107,645 out of 3,270,749 of the total population.

Gender Pay Gap (GPG)

All European Union countries produce the Gender Pay Gap indicator annually. The Structure of Earnings Survey (SES) provides data to calculate it. As they are available only every four years, the EU countries update the indicator using annual information from other sources.

The Gender pay gap is the difference between the average gross hourly earnings of men and women expressed as a percentage of average gross hourly earnings of men. It is an indicator sensitive to composition effects (sector of economic activity, size of company, occupation, level of education, age of the employee, seniority in the company, etc.). For this reason, Eurostat is experimenting with the calculation of an Adjusted GPG. It is expected to be more suitable for measuring earnings differentials, relate e.g. to characteristics of economic unit, employee and job position, by controlling for composition effects.

Calibration and sampling errors

The data resulting from the editing and imputation process on the sub-sample of paid jobs for the whole month of October were subjected to a calibration procedure. The aim of such procedures is to adjust sampling weights in order to better represent the reference universe.

Weighting reproduces the known totals of three variables on the universe obtained from the register: the number of jobs, the number of hours paid (net of hours per overtime) and earnings. All totals refer to jobs entirely paid in October. The calibration works on groups, which always involve economic activity and sex and in addition, alternatively, the size class, the geographical distribution where the worker is employed, the age class of the worker, the type of time and level of education.

The coefficient of variation for the estimate of the average hourly wage in October, and the relative confidence interval, are presented in table 2[iii].

MEAN HOURLY EARNINGS COEFFICIENT OF VARIATION AND CONFIDENCE INTERVALS
October Year 2018, percentage values

Mean hourly earnings	15,8
Coefficient of variation (CV)	0,00336
Margin of error	(Mean x Cv) x 1,96 = 15,8 x 0,00336 x 1,96 = 0,104
Lower limit	15,7
Upper limit	15,9

Source: Istat, RCL-SES Year 2018

References

More detailed information about The Structure of Earnings Survey is available on

https://ec.europa.eu/eurostat/web/microdata/structure-of-earnings-survey

More detailed data are available in Eurostat data base http://ec.europa.eu/eurostat/data/database.

More detailed information on statistical process for the Private sector is available on https://www.istat.it/it/archivio/204531

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[i] In this report the term 'Other Services' includes NACE Rev. 2 sections O to S, i.e. Public administration, Defence, Compulsory social security; Education; Human health & social work activities; Arts, entertainment & recreation and Other service activities.

[ii] As for all other economic activity sector, in the Education the ordinary hours paid are established by the Contractual Collective bargains. However, it should be mentioned that teachers work hours not stipulated in the contract: these are hours spent beyond school time, for example for the correction of homework, the preparation of lessons, etc.

[iii] The sample error is presented here on the total of the main parameter of the statistics of this survey. A greater analytical detail will be present in the Quality Report of the survey available on the Eurostat website during 2021.

Further technical and methodological information

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