

# Measuring and analyzing the gender pay gap: A conceptual and methodological overview

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## The gender pay gap: Why are there different estimates?

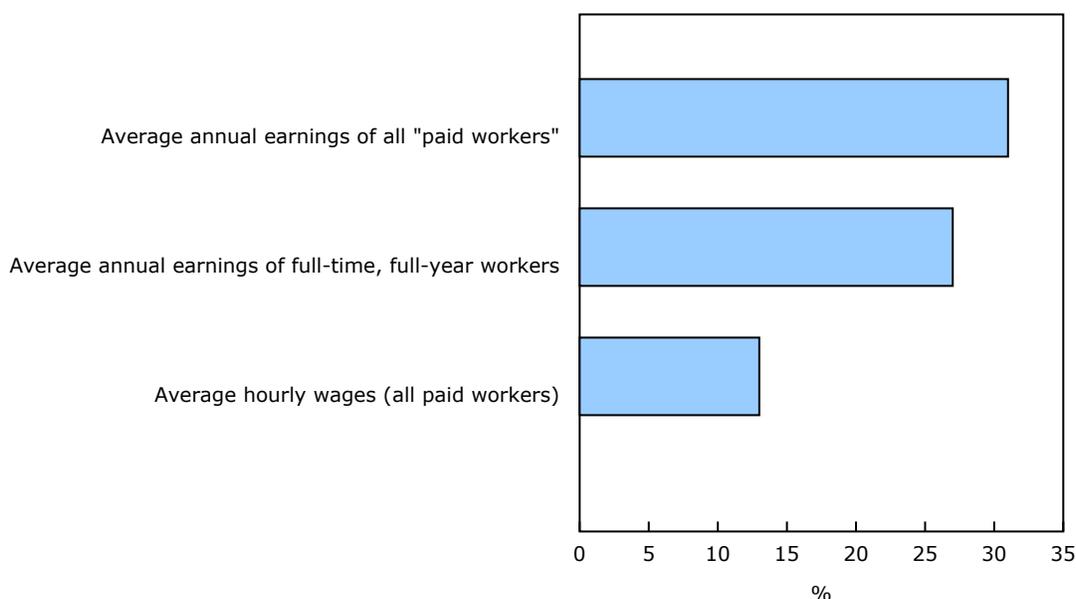
Pay inequality between women and men is a persistent phenomenon in Canada and around the world. The gender pay gap—the difference between women's and men's earnings from paid employment, expressed as a proportion of men's earnings—is widely used to document gender-based pay inequality and to track progress in this regard. The size of the gender pay gap varies, however, depending on how it is measured. Each measurement method sheds light on a particular aspect of gender-based earnings inequality.

In 2017, for example, estimates of the gross or "unadjusted" gender pay gap in Canada ranged from 13% to 31%. Although all these estimates are technically correct, each method used to obtain them uses different inputs and assumptions. Given that the size of the gender pay gap varies depending on the method used, it is important to understand the differences between the approaches; the "best" method varies depending on the intended use of the estimate.

Statistics Canada's Centre for Gender, Diversity and Inclusion Statistics released today the study "[Measuring and Analyzing the Gender Pay Gap: A Conceptual and Methodological Overview](#)," which looks at the different methods of measuring the gender pay gap. This analysis contributes to a discussion on international standards for measuring the gender pay gap and aims to improve our understanding of the meaning and interpretation of different estimates of this phenomenon.



**Chart 1**  
**Gender pay gap among employed women and men aged 15 and older, Canada, 2017**



**Source(s):** The Survey of Consumer Finances (3502), the Survey of Labour and Income Dynamics (3889), the Canadian Income Survey (5200) and related table 11-10-0239-01, and the Labour Force Survey (3701) and related table 14-10-0064-01.

## What are the main methods used to estimate the gender pay gap?

There are three main methods of measuring the gender pay gap: (1) using the annual earnings of all workers, (2) using the annual earnings of workers employed on a full-time, full-year basis and (3) using the hourly wages of all workers. The gender pay gap can also be calculated based on either the average or the median annual earnings or hourly wages of workers. For the purposes of this *Daily* release, the gender pay gap is calculated using averages.

### Method 1: Comparing the annual earnings of all employed women and men

This method produces the largest estimate of the gender pay gap. Using this method, the annual earnings of all employed women are compared with those of all employed men. Measured this way, employed women aged 16 and older earned an average of \$0.69 for every dollar earned by men in 2017 (a gender pay gap of 31%).

This estimate can be considered the most inclusive measure of the gender pay gap, since it captures gender differences in both pay (namely, the price of labour) and in hours and weeks worked (namely, labour supply) for workers in all employment situations.

Data show that women typically spend less time on paid work than men. Although employed women and men aged 15 and older both worked an average of 44 weeks at all jobs in 2015/2016, employed women usually worked an average of 32.9 hours per week at their main job in 2017—5.5 hours fewer than employed men. As a result, women were less likely than men (43.6% versus 56.4%) to be employed on a full-time, full-year basis, defined as mostly working 30 or more hours per week for 49 to 52 weeks in a given year.

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## **Method 2: Comparing the annual earnings of women and men employed on a full-time, full-year basis**

The second method consists of calculating the gender pay gap among workers employed on a full-time, full-year basis. By excluding those employed part time or part year, this method limits the effects of gender differences in hours and weeks worked on the gender pay gap. For this reason, this method yields a smaller estimate of the gender pay gap than Method 1 (annual earnings of all workers).

Women aged 16 and older who were employed full time, full year earned an average of \$0.73 for every dollar earned by men in 2017 (a gender pay gap of 27%).

This estimate, however, only partially excludes gender differences in labour supply because—even among workers employed on a full-time, full-year basis—women often work fewer hours per week or fewer weeks per year than men. For example, among full-time workers aged 15 and older, women worked three hours fewer per week, on average, than men in 2017. These gender differences in labour supply are reflected in the gender pay gap when it is estimated from the annual earnings of full-time, full-year workers.

## **Method 3: Comparing the hourly wages of women and men**

This method produces the smallest estimate of the gender pay gap: employed women aged 15 and older earned an average of \$0.87 for every dollar earned by employed men on an hourly basis (a gender wage gap of 13%). Only the per-unit (hour) price of labour is captured by this estimate. Therefore, it is unaffected by differences in the number of hours and weeks that women and men work.

## **The best method depends on the intended use**

There are different perspectives on which method is the "best" for measuring the gender pay gap.

From one perspective, estimates based on annual earnings, which indicate a larger gender pay gap than those based on hourly wages, could be seen as confounding the effects of gender differences in pay and gender differences in labour supply. For people who want to focus exclusively on gender differences in pay, it may be preferable to estimate the gender pay gap using hourly wages (Method 3). For example, the gender wage gap speaks to issues of pay equity—that is, equal pay for work of equal or comparable value to the employer, regardless of employees' work hours and terms of employment.

From another perspective, gender differences in labour supply can be seen as an important aspect of the gender pay gap. If women perform less paid work than men because they have greater responsibility for housework, child care and caregiving, the financial consequences of these gender roles should be reflected in estimates of the gender pay gap. From this perspective, it is preferable to estimate the gender pay gap using Method 1 (annual earnings of all workers). Measured this way, the gender pay gap speaks to women's and men's different command over goods and services and material well-being.

## **Gender differences in various personal and work characteristics do not entirely account for the gender pay gap**

Regardless of the method used, the unadjusted gender pay gap reflects gender differences in human capital (for example, education, work experience and job tenure), job characteristics (including firm size and union status) occupation and industry.

Sophisticated statistical techniques are used to control or adjust for the effects of these variables on the gender pay gap. This reduced the 2017 gender pay gap, as measured from the hourly wages of women and men aged 15 and older, from 13% to 11%. Notably, gender differences in human capital, job characteristics, occupation and industry do not entirely account for the gender pay gap.

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### Note to readers

In this study, **annual earnings** refer to the sum of wages, salaries and commissions from all jobs in a given year before taxes among individuals who were paid employees at their main job. **Hourly wages** refer to the rate that an employer pays employees per hour worked at their main job.

For the purposes of estimating the gender pay gap, **workers** are generally defined as paid employees. Self-employed individuals are typically excluded because they work for themselves as a business owner, freelancer or independent contractor for another company. The earnings of self-employed individuals usually come directly from the business instead of from wages, salaries or commission-based reimbursement. Therefore, they are not comparable with earnings from paid employment.

### Definitions, data sources and methods: survey numbers [3701](#), [3901](#), [4503](#), [5200](#) and [5221](#).

The article, "[Measuring and Analyzing the Gender Pay Gap: A Conceptual and Methodological Overview](#)" is now available as part of a new Statistics Canada publication: *Studies on Gender and Intersecting Identities* ([45200002](#)).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; [STATCAN.infostats-infostats.STATCAN@canada.ca](mailto:STATCAN.infostats-infostats.STATCAN@canada.ca)) or Media Relations (613-951-4636; [STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca](mailto:STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca)).