

Catalogue no. 11F0019M — No. 430
ISSN 1205-9153
ISBN 978-0-660-32243-8

Analytical Studies Branch Research Paper Series

Pay Transparency and the Gender Gap

by Michael Baker, Yosh Halberstam, Kory Kroft,
Alexandre Mas and Derek Messacar

Release date: September 16, 2019



 Statistics Canada Statistique Canada

Canada 

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

Email at STATCAN.infostats-infostats.STATCAN@canada.ca

Telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- | | |
|---|----------------|
| • Statistical Information Service | 1-800-263-1136 |
| • National telecommunications device for the hearing impaired | 1-800-363-7629 |
| • Fax line | 1-514-283-9350 |

Depository Services Program

- | | |
|------------------|----------------|
| • Inquiries line | 1-800-635-7943 |
| • Fax line | 1-800-565-7757 |

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "[Standards of service to the public.](#)"

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Published by authority of the Minister responsible for Statistics Canada

© Her Majesty the Queen in Right of Canada as represented by the Minister of Industry, 2019

All rights reserved. Use of this publication is governed by the Statistics Canada [Open Licence Agreement](#).

An [HTML version](#) is also available.

Cette publication est aussi disponible en français.

Pay Transparency and the Gender Gap

by

Michael Baker

Department of Economics, University of Toronto
and National Bureau of Economic Research

Yosh Halberstam

Department of Economics, University of Toronto

Kory Kroft

Department of Economics, University of Toronto
and National Bureau of Economic Research

Alexandre Mas

Department of Economics, University of Toronto
and National Bureau of Economic Research
and Institute of Labor Economics

Derek Messacar

Social Analysis and Modelling Division, Statistics Canada

11F0019M No. 430

2019018

ISSN 1205-9153

ISBN 978-0-660-32243-8

September 2019

**Analytical Studies Branch
Research Paper Series**

The Analytical Studies Branch Research Paper Series provides for the circulation of research conducted by Analytical Studies Branch staff and collaborators. The Series is intended to stimulate discussion on a variety of topics, such as labour, immigration, education and skills, income mobility, well-being, aging, firm dynamics, productivity, economic transitions, and economic geography. Readers of the Series are encouraged to contact the authors with their comments and suggestions.

All the papers in the Analytical Studies Branch Research Paper Series go through institutional and peer review to ensure that they conform to Statistics Canada's mandate as a governmental statistical agency and adhere to generally accepted standards of good professional practice.

Table of contents

Abstract	5
Executive summary	6
1 Introduction.....	7
2 Why might pay transparency affect the gender wage gap?	9
3 Public sector pay disclosure laws in Canada	10
4 Data.....	11
5 Context	13
6 Econometric specification	15
7 Empirical results.....	16
8 Conclusion	21
Appendix.....	22
References.....	24

Abstract

This paper examines the impact of public sector salary disclosure laws on university faculty salaries in Canada. These laws, which give the public access to the salaries of individual faculty members if they exceed specified thresholds, were introduced in different provinces at different points in time. Using detailed administrative data covering the universe of university faculty in Canada and an event-study research design, this study documented three key findings. First, the disclosure laws reduced salaries on average. Second, the laws reduced the gender wage gap between men and women. Third, the gender wage gap narrowed primarily in universities where faculty members are unionized.

Keywords: Salary disclosure laws; pay transparency; gender wage gap; event study; University and College Academic Staff System (UCASS)

Executive summary

One of the most persistent and salient features of labour markets around the world is that women earn less than men. A hypothesis recently gaining traction among academic researchers and policy makers is that the gender earnings gap persists in part because it is hidden. There have also been calls in the private sector for more transparency on pay discrepancies between male and female workers.

As a result, transparency laws are increasingly being considered as a policy to reduce the gender wage gap. However, despite the increase in transparency legislation in Canada and other countries, there has been limited academic research that sheds light on whether pay transparency systematically reduces the gender wage gap. This is a significant shortcoming because transparency laws presumably impose costs on employers and increase the administrative burden. Whether these laws meet the standard of a cost-benefit analysis depends on whether they create more equality between genders, given the efficiency cost.

This paper provides new evidence on the causal effect of pay transparency laws on salaries. Specifically, the impact of the (staggered) introduction of pay disclosure laws on university faculty salaries across Canadian provinces is examined. In 1996, British Columbia, Manitoba and Ontario were the first to introduce disclosure laws, and several other provinces have passed such legislation more recently.

To evaluate the effect of these laws, administrative data on the salaries of full-time academic employees at Canadian postsecondary institutions from 1970 onwards are used, based on an analysis of the University and College Academic Staff System. The research design uses the variation across Canadian provinces in the rollout of the disclosure laws, as well as within-province variation in exposed departments.

The following three key results were established:

1. Transparency laws reduce faculty salaries by approximately 1 to 3 percentage points on average.
2. These laws also reduce the gender wage gap by approximately 2.2 to 2.4 percentage points. This represents a roughly 30% reduction in the gap, from a base of 7% to 8%, which was the gender wage gap that prevailed at the time of the first series of transparency reforms in Canada. This effect primarily reflects a slowing in the growth of salaries for male faculty members. There is also some evidence to suggest that the salaries of female faculty members have increased, although the estimates are smaller in magnitude.
3. The effects of salary disclosure on average wages and the gender wage gap are more pronounced in unionized workplaces. For example, female wages increased by roughly 1 percentage point in response to the introduction of a disclosure law in unionized universities, whereas that change was close to zero in non-unionized universities. Unions may play an important role in the response to disclosure, since universities must participate in—and respond to—the formal grievance procedures of unionized workplaces. The existence of a formal grievance procedure might particularly benefit women in an environment where the majority of chairs and senior faculty members are men.

The results of this study are informative about the partial equilibrium impacts of pay transparency laws. However, it is possible that such laws have spillover effects that lead to broader changes in social norms and, as a result, the general equilibrium effects of these laws may be different.

1 Introduction

One of the most persistent and salient features of labour markets around the world is that women earn less than men. For example, in the United States, a woman typically earns roughly 77 dollars for every 100 dollars earned by a man (Goldin 2014). A hypothesis recently gaining traction among academic researchers and policy makers is that the gender earnings gap persists in part because it is hidden. This is buttressed by a series of policy reforms that mandate the disclosure of salaries broken down by gender.¹ In the United States, President Obama passed legislation requiring firms with government contracts to disclose the average wages of employees by gender, although this was subsequently rolled back by President Trump.² There have also been calls in the private sector for more transparency on pay differences between male and female workers; for example, technology firms are facing public pressure to disclose salaries broken down by gender.³

Outside the United States, transparency laws are increasingly being considered as a policy to reduce the gender earnings gap. Denmark introduced legislation in 2006 requiring large firms to report wage statistics broken down by gender (Bennedsen et al. 2019). Starting in 2017, firms in the United Kingdom with more than 250 employees are required to report pay and bonuses broken down by gender (The Equality Act 2010 (Gender Pay Gap Information) (S.I. 2017/172)).⁴ Similar reforms are underway in Australia, France and Germany. In Canada, the *Pay Transparency Act* (2018, S.O. 2018, C.5 – Bill 3), which was introduced recently in Ontario, requires all publicly advertised job postings to include a salary range, bars employers from asking about past compensation and mandates employers to report gender earnings gaps to the province.⁵

Despite the increase in transparency legislation, there has been limited academic research that sheds light on whether pay transparency systematically reduces the gender wage gap. This is a significant shortcoming because transparency laws presumably impose costs on employers and increase the administrative burden. Whether these laws meet the standard of a cost-benefit analysis depends on whether they create more equality between genders, given the efficiency cost.

This paper provides new evidence on the causal effect of pay transparency laws on salaries. The impact of the (staggered) introduction of pay disclosure laws on university faculty salaries across Canadian provinces is examined. In 1996, British Columbia, Manitoba and Ontario were the first to introduce disclosure laws that require universities to report the salaries of each employee earning over \$50,000 (British Columbia and Manitoba) and over \$100,000 (Ontario). Disclosure laws in other provinces have passed more recently, and only four provinces currently lack the explicit legal means to publicize university faculty salaries.

To evaluate the effect of these laws, Statistics Canada administrative data on the salaries of full-time academic employees at Canadian colleges and universities from 1970 onwards are used. These data have nearly 100% coverage of full-time faculty members at Canadian universities, and almost all universities in Canada are in the public sector. This dataset contains a wide range of demographic and job-related variables relevant to identifying and explaining the evolution of the gender wage gap over time. With these variables, the salaries that are “exposed” by these

-
1. Throughout, the terms “transparency” and “disclosure” are used interchangeably.
 2. D. Paquette, “The Trump administration just halted this Obama-era rule to shrink the gender wage gap,” *The Washington Post*, August 30, 2017, https://www.washingtonpost.com/news/wonk/wp/2017/08/30/the-trump-administration-just-halted-this-obama-era-rule-to-shrink-the-gender-wage-gap/?utm_term=.95fb069454fc.
 3. See “Tech Companies Tout Gender Pay Equity but Balk at Transparency,” *Bloomberg Law*, April 13, 2017, <https://news.bloomberglaw.com/daily-labor-report/tech-companies-tout-gender-pay-equity-but-balk-at-transparency>, but also B. Covert, “Even Google Can No Longer Hide Its Gender Pay Gap: A new federal rule will force big companies to report pay scales according to gender and race,” *The New York Times*, March 7, 2019, <https://www.nytimes.com/2019/03/07/opinion/google-pay-gap.html>.
 4. See http://www.legislation.gov.uk/uksi/2017/172/pdfs/uksi_20170172_en.pdf.
 5. See <https://www.ontario.ca/laws/statute/s18005>. This law was set to come into effect on January 1, 2019, but its implementation has been delayed pending further consultation with employers.

laws can be determined at a very detailed level. This is one of the few datasets that jointly provides information on earnings and demographic characteristics for a comprehensive set of employers within a sector.

The research design uses variation across Canadian provinces in the rollout of the disclosure laws, as well as within-province variation in exposed departments. Since the laws apply only to faculty members with salaries above thresholds, lower-paying departments were not affected by the disclosure. However, higher-paying departments were affected, which provides an additional source of within-province variation. Therefore, treatment and control groups can be defined at the academic unit level, and time-varying trends at the provincial level can be controlled for in a flexible manner.

The university sector is a good setting for studying the impact of transparency laws on the gender wage gap for several reasons. First, the gender gap was pervasive at all academic ranks and across all academic institutions in Canada over the period of study.⁶ Second, there is consensus on the output of academic faculty—classes taught, research publications, administrative service—and it is relatively easy to observe. Therefore, there is logic to the potential arguments in favour of salary redress under a disclosure law. Third, the well-established and widely adopted divisions of faculty by department and rank allow for precise definitions of reference groups. Fourth, given the way salaries are determined in the university sector, earnings differentials reflect wage differentials rather than differences in hours worked. Lastly, the ease of access to the information revealed by some disclosure laws studied depends on Internet access, and universities were at the forefront of providing Internet access to their employees over the study period.

Three key results were established. First, transparency laws reduce faculty salaries on average. In particular, transparency laws lead to a statistically significant 1- to 3-percentage-point reduction in salaries. Second, transparency laws reduce the gender wage gap: there is a statistically significant reduction of 2.2 to 2.4 percentage points. This represents a roughly 30% reduction in the gap, from a base of 7% to 8%, which was the gender wage gap that prevailed at the time of the first series of transparency reforms in Canada. The estimates indicate that the reduction in the gender wage gap reflects a slowing in the growth of salaries for male faculty members in the treatment group relative to the control group. There is also some evidence to suggest that the salaries of female faculty members have increased, although the estimates are smaller in magnitude. Third, the effects of salary disclosure on average wages and the gender wage gap are more pronounced in unionized workplaces.

This paper contributes to several strands of the literature on pay transparency. Several studies have examined the effects of transparency on wages. Gomez and Wald (2010) evaluated the impact of pay disclosure in the province of Ontario and found that the salaries of university presidents in the province increased relative to the average public sector salary and also led to higher growth in average professorial salaries in Ontario relative to other provinces.⁷ Mas (2017) looked at the effects of a law change in California that mandated the online disclosure of municipal salaries and found salary compression.

Closer to the present context, Bennedsen et al. (2019) examined the impact of a law in Denmark that required firms of more than 35 employees to provide salary data by gender to employees through their employee representative. The data are reported for groups that are large enough to

6. For example, previous research has shown that only 36% of associate professors and 22% of full professors are women, despite the fact that women account for nearly half of all assistant professors (Council of Canadian Academies 2012). Furthermore, when the salaries of men and women at universities were compared, men's salaries were higher at all faculty ranks, controlling for experience (Boyd et al. 2012).

7. The latter conclusion is based on a difference-in-differences analysis using 1991, 1996 and 2001 census data.

protect the anonymity of individuals.⁸ Using a difference-in-differences design that compares firms with 35 to 50 employees to firms with 20 to 34 employees, Bennedsen et al. (2019) found that the disclosure law led to a reduction in the gender wage gap in treated firms primarily because of a slowing in men's wage growth.⁹

There are a couple of differences between the present study and that of Bennedsen et al. (2019). First, the nature of the transparency law is very different between the two contexts. In Denmark, either salary gaps are disclosed by firms to an employee representative or the firms draft an internal report on pay equity, whereas in the present context, all salaries above a certain threshold are disclosed and accessible directly by all workers. Second, unlike Bennedsen et al. (2019), who focused on private sector workers, this paper studies public sector workers. Therefore, the two papers are complementary in this respect. Nevertheless, the results of the two studies are quite similar—a reduction in the gender wage gap driven in part by lower salaries among men was also found in the present study.

Other studies have examined the impacts of pay transparency on other outcomes. Cullen and Perez-Truglia (2018) conducted a field experiment at a large corporation that revealed the salaries of peers and managers. They found that a higher perceived peer salary lowers effort, output and retention, whereas a higher perceived manager salary increases these outcomes. Card et al. (2012) used a randomized information experiment to show that pay transparency reduced the well-being of university faculty members in departments where they earned below-median pay in California. Breza, Kaur and Shamasani (2018) showed that the productivity of Indian manufacturing workers decreased when they were able to find out the salaries of their peers. Perez-Truglia (2019) looked at how transparency affects well-being by evaluating a reform in Norway that led to online tax records for the whole population being disclosed and also found a reduction in well-being.

The rest of the paper is organized as follows: Section 2 discusses the mechanisms by which transparency laws might affect the gender wage gap. Section 3 provides an overview of public sector disclosure laws in Canada. Section 4 discusses the data. Section 5 provides evidence of the gender wage gap for all workers in Canada and for professional occupations within the educational services sector. Section 6 describes the event-study specification. Section 7 contains the empirical results and Section 8 concludes.

2 Why might pay transparency affect the gender wage gap?

One effect of the disclosure of information on gender-based salary disparities within an organization is that it may lead individuals to privately demand higher pay from their employer. The case of Lilly Ledbetter illustrates this. Ledbetter, a supervisor at Goodyear Tire, an American manufacturing company, was unaware that her male counterparts—in similar positions—were being paid more than she was. The revelation of this fact through an anonymous letter led her to file an employment discrimination lawsuit against her employer. This case went all the way to the U.S. Supreme Court and subsequently led to the *Lilly Ledbetter Fair Pay Act of 2009* (Pub. L. No. 111-2, 123 Stat. 5 (2009)), which eased the burden of filing a discrimination lawsuit.¹⁰

-
8. Anonymity is preserved by restricting disclosure to firms with six-digit occupation codes that have at least 10 employees of each gender.
 9. Kim (2015) investigated the effect of U.S. state-level laws that ban pay secrecy, i.e., employer-level prohibitions on employees sharing salary information. Using a difference-in-differences design, Kim found that in states with laws prohibiting pay secrecy, the wages of college-educated women were higher, which led to a lower gender wage gap.
 10. See <https://www.congress.gov/bill/111th-congress/senate-bill/181>.

The Ledbetter case emphasizes individual action by employees. It is also possible that broad salary disclosure reduces the gender wage gap as a result of an institutional response to wider public attention to pay disparities. In particular, organizations may take institutional action to make salary adjustments, in part to maintain public relations. For example, Mas (2017) found that the disclosure of city manager salaries in California led to a reduction in average salaries, which has been interpreted as an institutional response to public outcry over high levels of compensation.

On the other hand, it is possible that the gender wage gap is unaffected by transparency laws. For example, if there is taste-based discrimination or if the gender wage gap is the result of monopsony, transparency may have no impact. Similarly, while learning about co-workers' wages might reveal something about the nature of firm-specific rents, if men and women use this information in a symmetric fashion when bargaining, one should not expect to see any impact on the gender wage gap. However, if men—but not women—use this information when bargaining, it could exacerbate the gap.¹¹ In the present study of university faculty members, both individual and institutional action can lead to redress.

3 Public sector pay disclosure laws in Canada

As noted in the introduction, the first public sector salary disclosure laws were passed in 1996 in the provinces of British Columbia, Manitoba and Ontario. In each case, the government mandated the disclosure of all university salaries exceeding a certain threshold—\$50,000 in British Columbia and Manitoba and \$100,000 in Ontario.

Table 1 outlines the year of implementation and disclosure thresholds of the disclosure laws and legislation in provinces that provide access to public salaries, as well as whether these governments publish these salaries online.¹² These laws contain a number of noteworthy additional features.

First, most provinces with salary disclosure laws publish salary data online.¹³ The first time the governments of Ontario, Nova Scotia, Alberta, and Newfoundland and Labrador published salary information online, it was widely covered in the media. However, in other provinces, disclosure laws do not require the province to make these data accessible online. In British Columbia, online access to faculty salaries was given only after a freedom of information request by journalists from the *Vancouver Sun*—a provincial newspaper—in 2008. The newspaper maintained an online, searchable databank of public sector salaries (including faculty salaries) from 2008 to 2015.¹⁴

11. Leibbrandt and List (2014) presented evidence that, in some circumstances, men are more likely to negotiate salaries than women.

12. The laws on salary disclosure in Saskatchewan target employees of Crown corporations and have not been expanded to include other public sector workers' salaries (including faculty members' salaries). However, the pressure of having some salaries in this province disclosed has led the University of Saskatchewan to undertake its own transparency initiative. See A. Macpherson, "U of S online salary disclosure 'a step in the right direction': expert," *Saskatoon StarPhoenix*, August 14, 2018, <https://thestarphoenix.com/news/local-news/u-of-s-online-salary-disclosure-a-step-in-the-right-direction-expert>.

13. For example, see Ontario's salary disclosure ("Public sector salary disclosure," Ontario, last modified May 31, 2019, accessed July 4, 2019, <https://www.ontario.ca/page/public-sector-salary-disclosure>).

14. "Public Sector Salaries," *Vancouver Sun*, Postmedia Network, accessed July 4, 2019, <http://www.vancouversun.com/business/public-sector-salaries/basic.html>.

Table 1
Provincial salary disclosure laws

	Year of implementation	Disclosure threshold (dollars)	Online government publication
British Columbia	1996	50,000	no
Manitoba	1996	50,000	no
Ontario	1996	100,000	yes
Nova Scotia	2012	100,000	yes
Alberta	2015	125,000	yes
Newfoundland and Labrador	2016	100,000	yes

Notes: There are no applicable salary disclosure laws affecting university faculty pay in Prince Edward Island, New Brunswick, Quebec or Saskatchewan. In British Columbia, the initial salary reporting threshold of \$50,000 was amended to \$75,000 in 2002. Alberta's threshold is adjusted to the province's Consumer Price Index. There are no pay transparency laws in Prince Edward Island, Quebec, New Brunswick or Saskatchewan that require universities to disclose non-executive salaries to the province or respond to freedom of information requests for non-anonymized faculty salaries.

Source: Statistics Canada, authors' compilations.

Second, the initial reporting threshold for disclosure has remained fixed throughout time in most provinces, but has been adjusted for inflation in others. For example, several years following the adoption of legislation on government employee salary disclosure in Alberta, a separate act that applied more broadly to the public sector (including university faculty) was passed in 2012, with a threshold of \$125,000 adjusted annually to the Alberta Consumer Price Index.

Lastly, in some provinces, legislation affecting salary disclosure was passed prior to the legislation cited in the table, but did not require the salaries of the university faculty being studied to be disclosed publicly. For example, before the adoption of the legislation in Ontario, the salaries of government employees earning over \$40,000 were published in the Public Accounts (Ontario. Ministry of Finance 1990). However, this disclosure did not extend to university faculty and access was limited, as it required obtaining a hard copy of the Public Accounts.¹⁵

4 Data

This study is based on an analysis of Statistics Canada's University and College Academic Staff System (UCASS) dataset from 1970 to 2017. This is an annual national survey that collects data on full-time teaching staff at degree-granting Canadian universities and their affiliated colleges, as of October 1 of each year. The survey includes all teachers within faculties, academic staff in teaching hospitals, visiting academic staff, and research staff who have an academic rank and salary similar to teaching staff, all of whom have terms of appointment not less than twelve months. It excludes administrative and support staff, librarians, and research and teaching assistants.

UCASS is administered directly to institutions and participation is mandatory. The unit of observation in the data is the individual, but the survey unit is the institution, and information on the socioeconomic characteristics of staff—including pay—is obtained directly from payroll records. Statistics Canada works closely with institutions to maintain consistent reporting each year and to ensure that the data are comparable across institutions. A limitation of this dataset is that it was discontinued from 2011 to 2015. During this period, data were collected independently by participating institutions in association with the National Vice-Presidents Academic Council,

15. Starting in 1996, the *Financial Information Act* (RSBC 1996, ch. 140) has been in force in British Columbia. It requires public bodies to prepare a statement documenting the salaries of employees making \$75,000 or more (threshold as of 2002). There is no evidence that these statements were ever made public. Since 1996, the salaries of public employees earning \$25,000 or more in Nova Scotia have been published in the Public Accounts (Nova Scotia 1997), but university faculty are excluded. New Brunswick has a similar requirement that began in 2008. It has a \$60,000 threshold and excludes university faculty (see the Unaudited Supplementary Employee Lists from “Public Accounts,” New Brunswick, Finance and Treasury Board, accessed July 4, 2019, <https://www2.gnb.ca/content/dam/gnb/Departments/tb-ct/pdf/OC/PA08Emp.pdf>).

leading to the creation of the National Faculty Data Pool (NFDP) consortium, with the goal of emulating UCASS as closely as possible for longitudinal consistency. A recent collaborative effort between Statistics Canada and the university consortium has led to the NFDP being integrated into UCASS to fill in the missing years.

The NFDP has two limitations that are important to note. First, participation in the survey was voluntary. From 2010 to 2012, the sample size decreased from approximately 35,450 workers to 27,000, and the number of institutions observed decreased from 113 to 56. The loss of institutions is proportionately larger, as the withdrawal of a university from the survey also led to the loss of all of its (smaller) satellite colleges. Second, for confidentiality reasons or ease of reporting, several institutions did not maintain consistent reporting of their employees' personal identifiers when moving from UCASS to the NFDP in 2011 or back to UCASS in 2016. To overcome this issue, individuals were matched on observables to generate longitudinally consistent identifiers for institutions where a break was observed. This was done by matching individuals within institutions and departments based on year of birth, gender, year appointed to the institution and year of highest degree. Placebo checks for institutions and years where no break occurred indicate that the success rate exceeds 99%.

The following sample restrictions were imposed throughout this analysis. Individuals were included only if they held appointments at the rank of assistant, associate or full professor; they were not employed in the faculties of medicine or dentistry; and they were assigned to a specific department. These restrictions were put in place because there is a clearer understanding of the salary determination for the included faculties. For example, salary determination for medicine and dentistry may be affected by activities beyond research and teaching, including medical practice. The analysis was restricted to faculty members with a non-missing department, since the empirical specification below requires assigning a peer group based on department and this is not possible for those not assigned to a department.¹⁶ Lastly, the sample was restricted to institutions that were observed in the 2012 wave of the NFDP and that finalized their data with or submitted information to Statistics Canada. This restriction on institutions was in place to balance the panel around the years that the survey was discontinued.

In Table 2, descriptive statistics for the full sample used in this study and separately for men and women are presented. The sample includes 101,103 individual university employees across Canada. On balance, individuals are approximately 48 years old and one-quarter of them are women. This masks the fact that, in the 1970s, less than 15% of faculty members were women. However, this figure has climbed to about 40% in recent years and approximately 45% of new hires in the 2010s were women. In addition, about 80% of faculty members hold a doctorate and 70% belong to unionized institutions. Interestingly, women are nearly 10% more likely to be unionized than men, although this may be driven by two factors: (1) women are more likely to work at institutions represented by unions or faculty associations, and (2) the proportion of women in the industry has risen over time alongside a gradual increase in unionization from the 1970s to 1990s.

16. Prior to 2008, the department variable was not well-reported. As a result, a variable for subject taught was used as a proxy for department. This variable uses the same classification system as the department variable.

Table 2
Descriptive statistics of university employees across Canada

	Full sample		Men		Women	
	mean	standard deviation	mean	standard deviation	mean	standard deviation
Demographics						
Age (years)	47.5	9.7	47.7	9.8	47.1	9.4
Female (percent)	24.5	43.0	0.0	0.0	100.0	0.0
Highest degree (percent)						
Doctorate	81.6	38.7	83.0	37.5	77.3	41.9
Professional	0.5	7.4	0.5	7.2	0.6	7.9
Master's	14.2	34.9	13.0	33.7	18.0	38.4
Below master's	3.6	18.6	3.4	18.2	4.1	19.8
Rank (percent)						
Assistant professor	24.0	42.7	20.4	40.3	35.2	47.8
Associate professor	39.7	48.9	38.4	48.6	43.7	49.6
Full professor	36.3	48.1	41.2	49.2	21.1	40.8
Other job traits (percent)						
Unionized	69.6	46.0	67.4	46.9	76.6	42.3
Has responsibilities	11.6	32.0	12.1	32.6	10.1	30.2
Compensation						
Salary (2017 constant dollars)						
Full sample	116,750	29,750	118,750	29,750	110,700	28,850
Assistant professor	89,350	19,000	89,200	19,050	89,600	18,900
Associate professor	111,900	21,100	111,350	20,650	113,350	22,250
Full professor	140,250	25,150	140,250	24,950	140,300	26,350
Salary growth (percent)						
Full sample	2.7	5.6	2.5	5.6	3.3	5.5
Assistant professor	3.4	4.8	3.3	4.8	3.7	4.8
Associate professor	2.8	5.3	2.6	5.3	3.3	5.3
Full professor	2.2	6.1	2.0	6.0	3.0	6.6

Notes: Responsibilities are defined as appointments to senior administrative roles, including dean; assistant, associate or vice dean; director whose responsibilities and salary are equivalent to those of dean; department head or coordinator; and chairperson. To control for outliers, observations with salaries below the 0.5th percentile or above the 99.5th percentile (in 2017 constant dollars) were dropped. The currency values are rounded to the nearest \$50. Number of individuals: 101,103 (full sample), 72,823 (men), 28,280 (women). Number of observations: 1,002,081 (full sample), 756,312 (men), 245,789 (women).

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

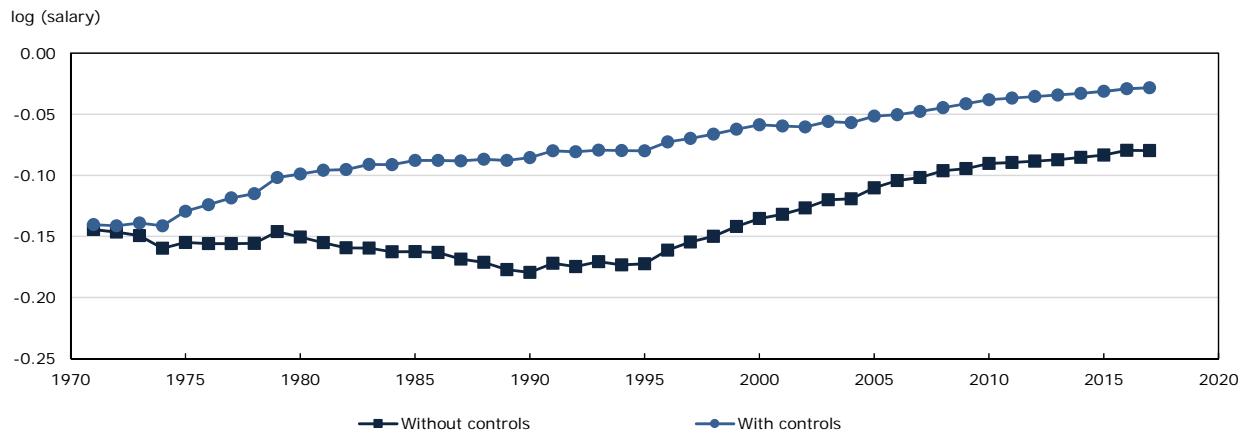
5 Context

Female workers in Canada earn less than their male counterparts, as is the case in most developed economies. In Chart A.1 of the Appendix, the female-to-male hourly wage ratio for full-time workers over the period of this study is documented (Baker and Drolet [2010] and Morissette, Picot and Lu [2013]). The ratio for all workers and professional occupations within the educational services sector is reported. The ratio for all workers rises from a low of just over 0.82 to almost 0.89 over this period. The ratio for education workers is more volatile because of smaller sample sizes—it begins the period at just over 0.88 and rises above 0.90, except for an abrupt decline in 2018. Throughout almost the entire period, female education professionals faced a smaller wage gap than their counterparts in the wider labour market.

While it has become commonplace to measure gender pay disparities with hourly wages in Canada, earnings are the norm in many other countries, and this study focuses on the annual earnings of the faculty members in this analysis. Using earnings to document gender differences may conflate both the differences in hours worked (e.g., part time versus full time) and the differences in hourly wages. This is less of a concern in the present context, as the sample is restricted to full-time appointments and faculty salaries in Canada are typically a fixed amount paid over 12 months.

The gender earnings gap in this sample of faculty members is reported in Chart 1. The gap is presented over time both unconditionally and conditional on controls (institution, department, year of birth and highest degree attained). The conditional gap was around 15% at the beginning of the period and has narrowed to roughly 4% to 5% in recent years. This is consistent with the findings of Warman, Woolley and Worswick (2010), who used similar data to document a narrowing in male-to-female earnings differentials between 1970 and 2001.

Chart 1
Gender wage gap for university faculty members, with controls versus without controls, by year



Notes: Results are based on a regression of the log of salary on year fixed effects and their interactions with an indicator for being female. To control for outliers, observations with salaries below the 0.5th percentile or above the 99.5th percentile (in 2017 constant dollars) were dropped. The coefficients of the interaction variables are reported, where 1970 serves as the reference year, after being scaled down by the estimated unconditional gender wage gap from the coefficient for the female indicator. Control variables include institution, department, year of birth and highest degree attained.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

A potential concern in using university sector pay is that salaries may be set according to a statutory formula; for example, they may be determined entirely on the basis of institution, department and rank. To gauge whether there is discretion in pay and scope for transparency laws to impact the gender wage gap, salaries are predicted by regressing them on the interaction of institution, department, rank, tenure and year fixed effects; age fixed effects; and highest degree obtained fixed effects. If salaries are set in a formulaic way, then there should be very little residual variance between actual salaries and predicted salaries. Chart A.2 in the Appendix shows that this is not the case, as substantial residual variation was observed for both men and women. The R-squared for both models is roughly 70%. Furthermore, the fact that the conditional gender earnings gap was roughly 7% to 8% at the time the first disclosure laws were introduced suggests that there is scope for disclosure to affect the gap.

6 Econometric specification

The Canadian setting is unique for evaluating the causal effect of transparency, as there are three separate sources of variation in transparency: province, year and baseline salary. For example, as discussed above, salary disclosure in Ontario was introduced in 1996, but only individuals with salaries above the \$100,000 threshold were included.¹⁷ The baseline definition of treatment takes advantage of all of these sources of variation. Specifically, an individual is defined as treated in a given year if, during that year, they worked in a province with salary disclosure legislation in place and worked in a department where a faculty member's salary was revealed by the disclosure policy in the year of the reform.¹⁸ The main definition of peer group consists of all faculty in the same institution and department. Results are also reported from another definition based on institution, department and rank. The two definitions of treatment are conceptually distinct: the former may capture vertical comparisons, whereas the latter is limited to horizontal comparisons (see Cullen and Perez-Truglia 2018).

To formalize the approach, consider a panel of $i = 1, \dots, N$ individuals in which salary Y_{it} is observed for $t = 1, \dots, T$ years or, for some, a subset thereof. A binary treatment variable is also observed, $D_{it} \in \{0, 1\}$: $D_{it} = 0$ if i has not been treated by year t and $D_{it} = 1$ if i has been treated by year t . In the present setting, treatment is an absorbing state and the treatment path $D_{(i,t)(t=0)}^T$ is a sequence of zeros and ones. In this case, the treatment path is uniquely characterized by the time period of the initial treatment, which is denoted by $E_i = \min\{t : D_{i,t} = 1\}$. This is typically referred to as the “event time,” and $K_{it} = t - E_i$ is denoted as the “relative time.” Let F_i be an indicator variable that takes on a value of 1 if individual i is female. The following standard dynamic specification is considered:

$$\begin{aligned} \log(Y_{it}) &= \alpha_i + \beta_t^M + \beta_t^F + \sum_{k=-A}^{B-1} \gamma_k 1\{K_{it} = k\} + \gamma_{B+} 1\{K_{it} \geq B\} \\ &\quad + \sum_{k=-A}^{B-1} \delta_k 1\{K_{it} = k\} \times F_i + \delta_{B+} 1\{K_{it} \geq B\} \times F_i + \varepsilon_{it} \end{aligned}$$

Where $A \geq 0$ leads of the treatment are included together with $B \geq 0$ terms that capture the short-run effects and a single parameter to capture longer-run effects. In the present specification, $A = 10$ and $B = 6$. Therefore, the model controls for an individual fixed effect (α_i) and gender-specific year effects (β_t^M, β_t^F) ($M = \text{male}, F = \text{female}$). Some specifications also control flexibly for year-by-province-by-gender fixed effects. Therefore, this controls for time-varying, province-specific shocks that might differentially affect the salaries of men and women and that are correlated with the event time. The identifying assumption is that there are no shocks correlated with the introduction of transparency laws that differentially affect the salaries of men and women within peer groups. The coefficients of interest are the parameters $\{\delta_k\}_{k=-A}^{B-1}$ and δ_{B+} . These indicate the causal effect of transparency on the gender wage gap in the short run and long run,

-
- 17. In Ontario, the median salary in 1996 was \$74,950, which indicates that many faculty members were not necessarily treated by the transparency law despite living in Ontario.
 - 18. According to this definition of treatment, an individual can be untreated if his or her salary is above the threshold, but no peers have a salary above the threshold. The results are virtually unchanged if this individual is considered as being treated.

respectively. The presence of pre-trends can also be tested for by plotting the $\hat{\delta}_k$ for $k < 0$ and examining whether $\hat{\delta}_k = 0$.

Lastly, to quantify the magnitude of the effect and increase the precision of the estimates, the “static” or canonical specification is adapted by setting $A = B = 0$:

$$\log(Y_{it}) = \alpha_i + \beta_t^M + \beta_t^F + \gamma_{0+} D_{it} + \delta_{0+} D_{it} \times F_i + \varepsilon_{it}$$

Where γ_{0+} is the causal effect of transparency on average wages for male faculty members and $\gamma_{0+} + \delta_{0+}$ is the causal effect for female faculty members. Compared with the dynamic model, this specification imposes no pre-trends and assumes constant treatment effects for all k . The standard errors are clustered at the level of institution and department, as this is the level at which the treatment is defined.

7 Empirical results

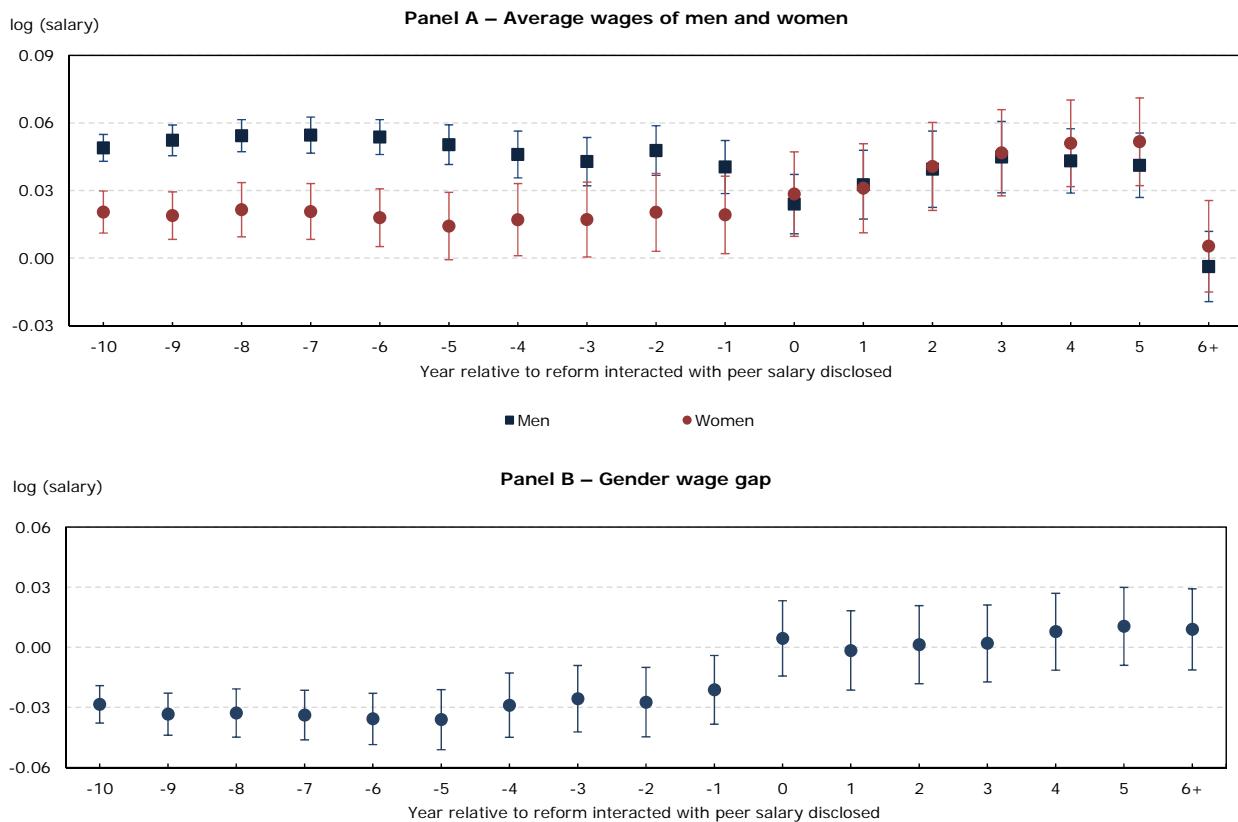
This section begins by presenting a series of non-parametric event-study plots to visually examine the effects of transparency on the gender wage gap. Next, it turns to regression models to quantify the precise impact.

Chart 2 contains the main event study showing the impact of pay disclosure laws on the gender wage gap.¹⁹ Panel A splits the sample into male and female faculty members. The red circles represent women's log salaries, and the blue squares represent men's log salaries. The blue squares correspond to γ_k while the red circles correspond to $\gamma_k + \delta_k$. Year 0 is the year of the reform. The chart shows that, prior to the reform, the blue squares were above the red circles. However, after the reform, the reverse is true, indicating that the disclosure laws reduced the gender wage gap. The chart shows that men's salaries fell on average, while women's salaries increased. This can also be seen in Panel B, which graphs the gender wage gap δ_k . In terms of pre-trends, while a slight increase is seen in the gender wage gap in the years prior to the reforms, the visual evidence indicates a clear and noticeable jump around the event year, which provides some degree of confidence that it is not just differential pre-trends that are being detected. The chart also shows that salaries for both men and women tend to drop in the long run (e.g., $\gamma_{0+} + \delta_{0+}$ and γ_{0+} are quite low relative to their short-run effects).

19. Treatment is defined based on the year the laws were implemented. Results using the year the salaries were disclosed are very similar and available upon request.

Chart 2

Event study of the effect of pay transparency on the average wages of men and women and on the gender wage gap, for university faculty members, peer group specification by institution and department



Notes: The analysis controls for fixed effects by individual and by province, year and gender. The 95% confidence intervals shown are based on standard errors clustered by institution and department. See notes in Table 2 for more information.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

The regression results are presented in Table 3. Panel A reports the results for the full sample of both men and women. The first and third columns include individual fixed effects and province-by-year fixed effects, while the second and fourth columns control additionally for the number of years since appointment to the institution, the number of years since the highest degree was obtained and an indicator for having senior administrative responsibilities. The first and second columns consider the peer group to be the institution and department, while the third and fourth columns consider the peer group to be the institution, department and rank.²⁰ Appendix Table A.1 reproduces Table 3 clustering on the institution.

20. For the peer group specification by institution, department and rank, it is assumed that individuals compare themselves to peers as follows: (1) assistant professors compare themselves to assistant and associate professors, (2) associate professors compare themselves to all ranks, and (3) full professors compare themselves to associate and full professors.

Table 3
Effect of pay transparency on the average wage and on the gender wage gap, university faculty members

	Peer group specification				
	Institution and department		Institution, department and rank		
	coefficient estimates				
Panel A: Effect on the average wage					
Treated	-0.014 **	-0.015 **	-0.025 ***	-0.026 ***	
R-squared	0.923	0.926	0.923	0.926	
Number of observations	982,543	948,691	982,543	948,691	
Number of clusters	1,262	1,239	1,262	1,239	
indicators					
Fixed effects					
Individual	yes	yes	yes	yes	
Province–year	yes	yes	yes	yes	
Additional controls	no	yes	no	yes	
coefficient estimates					
Panel B: Effect on the gender wage gap					
Treated	-0.014 **	-0.017 **	-0.025 ***	-0.026 ***	
Female-treated interaction	0.022 **	0.023 ***	0.023 ***	0.024 ***	
R-squared	0.924	0.927	0.925	0.927	
Number of observations	982,543	948,691	982,543	948,691	
Number of clusters	1,262	1,239	1,262	1,239	
indicators					
Fixed effects					
Individual	yes	yes	yes	yes	
Province–year	yes	yes	yes	yes	
Additional controls	no	yes	no	yes	

** significantly different from reference category ($p < 0.01$)

*** significantly different from reference category ($p < 0.001$)

Notes: Additional controls include the number of years since appointment to the institution (first and third columns), the number of years since the highest degree was obtained and an indicator for having senior administrative responsibilities (second and fourth columns) (see the notes in Table 2 for the list of senior responsibilities). Models are estimated using the Stata command `reghdfe`, which calculates degrees of freedom lost due to fixed effects and iteratively removes singleton groups to avoid biasing standard errors. For the peer group specification by institution, department and rank, individuals compare themselves to peers as follows: (1) assistant professors compare themselves to assistant and associate professors, (2) associate professors compare themselves to all ranks, and (3) full professors compare themselves to associate and full professors. Significances are based on standard errors clustered by institution and department. No: not included in the regression; yes: included in the regression.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

Across all of these specifications, transparency laws were consistently found to reduce average salaries. All estimates are statistically significant at the 1% level.²¹ The point estimates range between 1.4 and 1.5 percentage points in the institution and department peer group specification and between 2.5 and 2.6 percentage points in the institution, department and rank peer group specification, where conditioning on the additional controls in the second and fourth columns increases the magnitude of the estimates by 0.1 percentage point.

Panel B presents the estimates for the gender wage gap, breaking down the impact of the treatment by gender. In all specifications, year-by-province-by-gender fixed effects were controlled for. Across the specifications, the estimates indicate a statistically significant reduction in the gender wage gap by 2.2 to 2.4 percentage points. Relative to a mean gender wage gap of 7% to 8% at the time of the initial reforms in 1996 (see Chart 1), this represents an effect of roughly 30%. In the first and second columns, the narrowing of the gender wage gap stems from both a decline in the growth of men's wages and an increase in women's wages, consistent with

21. When the standard errors are clustered only on the institution, the estimates in the first and second columns of Panel A fall out of significance at conventional levels for the institution–department specification and remain significant for the institution–department–rank comparison. The estimates in Panel B are significant in all specifications, clustering on the institution–department and at the institutional level.

the evidence in the event study in Chart 2. However, in the third and fourth columns, the change in the gap stems mostly from changes in men's wages.

The fact that the growth in men's salaries fell in the treatment group relative to the control group suggests that there may have been, in part, an institutional response to disclosure. Unions are an important institutional mediator in the Canadian higher education sector, as a large share of faculty members are unionized (see Table 2). Unions may play an important role in the response to disclosure, since universities must participate in—and respond to—the formal grievance procedures of unionized workplaces.²² In contrast, the request for higher pay in a non-unionized environment is more likely to occur through an informal meeting with a department chair, which may be difficult without an external competing offer from a peer institution. The existence of a formal grievance procedure might particularly benefit women in an environment where the majority of chairs and senior faculty members are men.

Table 4 presents estimates of the effect of the treatment separately based on whether faculty members were unionized or non-unionized that year. In Panel B, the estimates by gender reveal that the primary effect of the law on the gender wage gap was observed in unionized workplaces. Women's wages increased by roughly 1 percentage point in response to the introduction of a disclosure law. In non-unionized universities, the change in women's wages was close to zero. While it is not possible to be certain that this is the result of the union mechanisms discussed above, this does suggest that the efficacy of the transparency laws turns on something that is different across—rather than common among—unionized and non-unionized universities.

22. Another possibility is that unions directly bargain for redress for female faculty, separate from the institutional responses documented in Table A.2.

Table 4**Effects of pay transparency by union status, university faculty members**

	Peer group specification			
	Institution and department		Institution, department and rank	
	Unionized	Not unionized	Unionized	Not unionized
coefficient estimates				
Panel A: Effect on the average wage				
Treated	-0.009	-0.008 statistics	-0.017 **	-0.030 ***
R-squared	0.926	0.936	0.926	0.936
Number of observations	686,692	294,003	686,692	294,003
Number of clusters	943	781 indicators	943	781
Fixed effects				
Individual	yes	yes	yes	yes
Province–year	yes	yes	yes	yes
coefficient estimates				
Panel B: Effect on the gender wage gap				
Treated	-0.013 †	-0.008	-0.021 ***	-0.027 **
Female-treated interaction	0.025 **	0.013 statistics	0.032 ***	0.007
R-squared	0.928	0.938	0.928	0.938
Number of observations	686,692	293,992	686,692	293,992
Number of clusters	943	781 indicators	943	781
Fixed effects				
Individual	yes	yes	yes	yes
Province–year	yes	yes	yes	yes

** significantly different from reference category ($p < 0.01$)*** significantly different from reference category ($p < 0.001$)† significantly different from reference category ($p < 0.10$)

Notes: Significances are based on standard errors clustered by institution and department. Union status is assigned on a yearly basis. The number of clusters obtained by summing across the unionized and non-unionized regressions exceeds the total number reported in Table 3 because some institutions switched union status over the period of study. Most of these switches occurred during the 1970s and 1980s, well before the first pay transparency laws came into effect. See the notes in Table 3 for more information. yes: included in the regression.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

Lastly, a number of the universities in the sample undertook campus-wide studies of gender differences in compensation over the sample period. While there is no direct evidence that these studies were in response to transparency laws, they appear to have all taken place within provinces after a law has come into effect. The analysis in these studies typically involves the use of regression analysis to estimate the gender wage gap, controlling for factors such as field and experience (years since the highest degree and years at the institution). In many of these cases, the studies revealed evidence of a gender wage gap, which has led the university to make a one-time across-the-board adjustment to female faculty members' salaries. In other cases, a pool of money has been established to grant anomalies to faculty members who fall below the regression line. A list of these initiatives, their relevant dates, and the amount and timing of any resulting salary adjustments is presented in Table A.2 of the Appendix. These studies may be a mechanism by which disclosure affected compensation at the institutional level.

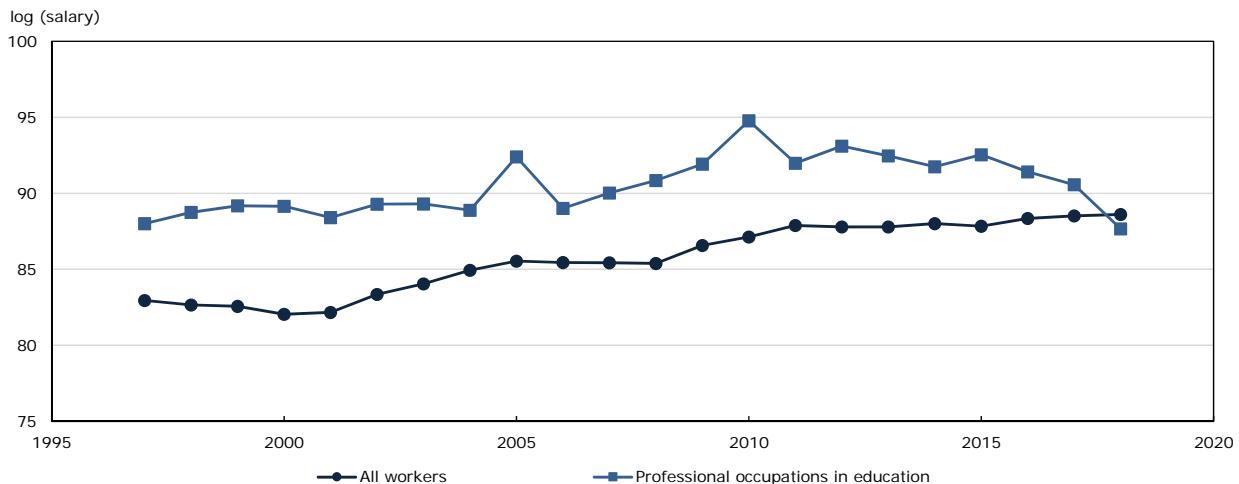
8 Conclusion

This paper examines the effect of transparency laws on the gender wage gap. While it focuses on public sector salaries, the ongoing efforts of governments around the world to increase the transparency of wages in the private sector may allow researchers to determine whether the effects documented hold in other sectors of the economy.

There are several directions for future research. First, the estimates are informative about the partial equilibrium impacts of transparency. It is possible that transparency laws have spillover effects that lead to broader changes in social norms and, as a result, the general equilibrium effects of these laws may be different. Second, transparency laws are complex and varied by nature. There is a difference between active disclosure—whereby salaries are easily accessible online—and passive disclosure—whereby salaries are available only upon request. These two forms of disclosure may not have the same equilibrium effects on salaries. For example, salaries that are accessible online may garner significantly more media attention and public pressure for adjustment. Additionally, the lower cost of access means that they are more likely to be used in bargaining with employers.

Appendix

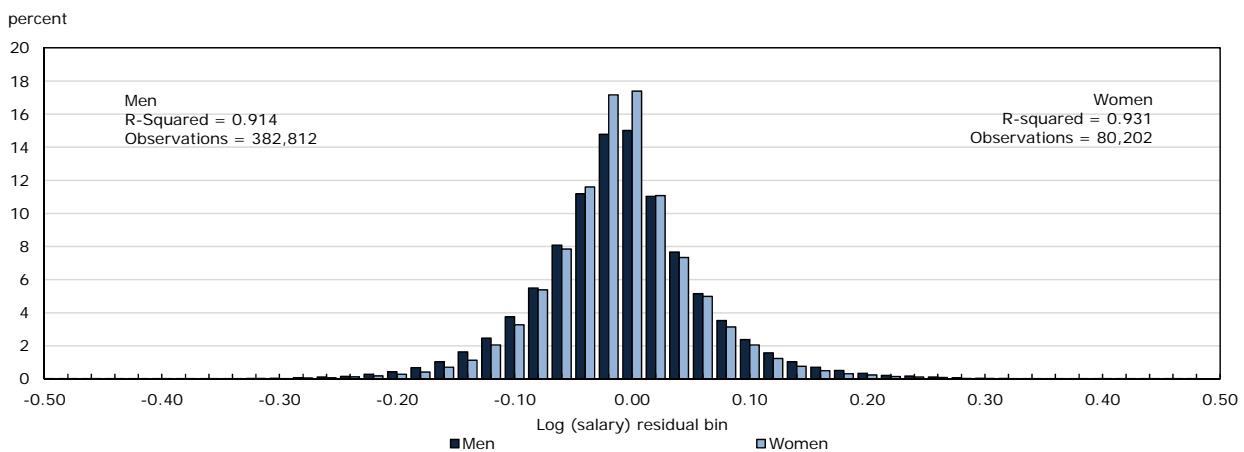
Chart A.1
The female-to-male wage ratio for full-time workers in the Canadian labour market, by year



Note: The reported statistics are the ratios of average hourly wages of women to average hourly wages of men among full-time workers in the indicated industries.

Source: Statistics Canada, authors' compilation from table 14-10-0307-01.

Chart A.2
Distributions of the residuals from salary regressions of university faculty members, by gender



Notes: The distributions are plotted using the residuals from regressions of the log of salary on fixed effects (FEs) for the interaction of institution, department, rank, years since appointment to the institution and year; and FEs for year of birth and highest educational attainment. Observations that are perfectly predicted by the FEs of the interaction variable are dropped. The analysis is carried out separately for men and women; the number of observations reported reflects the number after dropping all uniquely identified observations.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

Table A.1
Effects of pay transparency with standard errors clustered by institution, university faculty members

	Peer group specification				
	Institution and department		Institution, department and rank		
	coefficient estimates				
Panel A: Effect on the average wage					
Treated	-0.014	-0.015 statistics	-0.025 **	-0.026 **	
R-squared	0.923	0.926	0.923	0.926	
Number of observations	982,543	948,691	982,543	948,691	
Number of clusters	56	55 indicators	56	55	
Fixed effects					
Individual	yes	yes	yes	yes	
Province–year	yes	yes	yes	yes	
Additional controls	no	yes	no	yes	
coefficient estimates					
Panel B: Effect on the gender wage gap					
Treated	-0.014	-0.017 † statistics	-0.025 **	-0.026 **	
Female-treated interaction	0.022 **	0.023 **	0.023 **	0.024 ***	
R-squared	0.924	0.927	0.925	0.927	
Number of observations	982,543	948,691	982,543	948,691	
Number of clusters	56	55 indicators	56	55	
Fixed effects					
Individual	yes	yes	yes	yes	
Province–year	yes	yes	yes	yes	
Additional controls	no	yes	no	yes	

** significantly different from reference category ($p < 0.01$)

*** significantly different from reference category ($p < 0.001$)

† significantly different from reference category ($p < 0.10$)

Notes: Significances are based on standard errors clustered by institution. See the notes in Table 3 for more information. No: not included in the regression; yes: included in the regression.

Source: Statistics Canada, University and College Academic Staff System, 1970 to 2017.

Table A.2
Known examples of institutional studies on gender pay equity and women's pay adjustments, university faculty members

University	Year of study	Date of pay adjustment	Size of adjustment
Western University	2005, 2009
University of British Columbia	2010	February 28, 2013	2.00%
University of Victoria	2014	Unknown	Unknown
McMaster University	2015	July 1, 2015	\$3,515
Simon Fraser University	2015	September 3, 2016	1.70%
University of Waterloo	2016	September 1, 2016	\$2,905
Wilfrid Laurier University	2017	June 22, 2017	3.00%; 3.90%
Guelph University	2018	June 1, 2018	\$2,050
University of Toronto	2019	July 1, 2019	1.30%

... not applicable

Notes: At Simon Fraser University, a fund of \$4.0 million was established to provide retroactive compensation. The adjustment at the University of British Columbia was retroactive to July 1, 2010. At Western University, a below-the-line rather than across-the-board or group award was implemented; the salary adjustments were administered by the university's salary anomaly committee. The adjustment at Wilfrid Laurier University was 3.0% for associate professors, and for full professors it was 3.9%; those adjustments were retroactive to July 1, 2016.

Source: Statistics Canada, authors' compilations.

References

- Baker, M., and M. Drolet. 2010. "A new view of the male/female pay gap." *Canadian Public Policy* 36 (4): 429–464.
- Bennedsen, M., E. Simintzi, M. Tsoutsoura, and D. Wolfenzon. 2019. *Do Firms Respond to Gender Pay Gap Transparency?* NBER Working Paper Series, no. 25435. Cambridge, Massachusetts: National Bureau of Economic Research.
- Boyd, L., G. Creese, D. Rubuliak, M. Trowell, and C. Young. 2012. *Report of the Gender Pay Equity Recommendation Committee*. UBC Faculty Association. Vancouver: University of British Columbia.
- Breza, E., S. Kaur, and Y. Shamdasani. 2018. "The morale effects of pay inequality." *The Quarterly Journal of Economics* 133 (2): 611–663.
- Card, D., A. Mas, E. Moretti, and E. Saez. 2012. "Inequality at work: The effect of peer salaries on job satisfaction." *American Economic Review* 102 (6): 2981–3003.
- Council of Canadian Academies. 2012. *Strengthening Canada's Research Capacity: The Gender Dimension*. Expert Panel on Women in University Research. Ottawa: Council of Canadian Academies.
- Cullen, Z., and R. Perez-Truglia. 2018. *How Much Does Your Boss Make? The Effects of Salary Comparisons*. NBER Working Paper Series, no. 24841. Cambridge, Massachusetts: National Bureau of Economic Research.
- Goldin, C. 2014. "A grand gender convergence: Its last chapter." *American Economic Review* 104 (4): 1091–1119.
- Gomez, R., and S. Wald. 2010. "When public-sector salaries become public knowledge: Academic salaries and Ontario's Public Sector Salary Disclosure Act." *Canadian Public Administration* 53 (1): 107–126.
- Kim, M. 2015. "Pay secrecy and the gender wage gap in the United States." *Industrial Relations* 54 (4): 648–667.
- Leibbrandt, A., and J. List. 2014. "Do women avoid salary negotiations? Evidence from a large-scale natural field experiment." *Management Science* 61 (9): 2013–2280.
- Mas, A. 2017. "Does transparency lead to pay compression?" *Journal of Political Economy* 125 (5): 1683–1721.
- Morissette, R, G. Picot, and Y. Lu. 2013. *The Evolution of Canadian Wages over the Last Three Decades*. Analytical Studies Branch Research Paper Series, no. 347. Statistics Canada Catalogue no. 11F0019M. Ottawa: Statistics Canada.
- Nova Scotia. 1997. *Supplement to the Public Accounts of the Province of Nova Scotia for the fiscal year ended March 31, 1996*. Halifax, Nova Scotia. <https://notices.novascotia.ca/files/public-accounts/1996/1996-volume-3.pdf>.
- Ontario. Ministry of Finance. 1990. *Public Accounts of Ontario, 1994-95, Vol. 3: Details of expenditure*. Toronto: Ministry of Finance.
- Perez-Truglia, R. 2019. *The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment*. NBER Working Paper Series, no. 25622. Cambridge, Massachusetts: National Bureau of Economic Research.
- Warman, C., F. Woolley, and C. Worswick. 2010. "The evolution of male-female earnings differentials in Canadian universities, 1970–2001." *Canadian Journal of Economics* 43 (1): 347–372.