Pay Transparency and the Gender Gap

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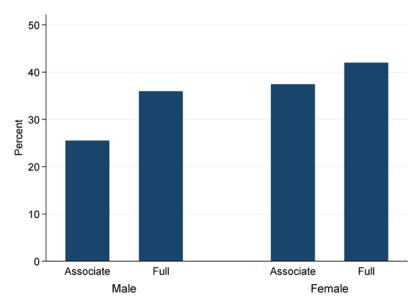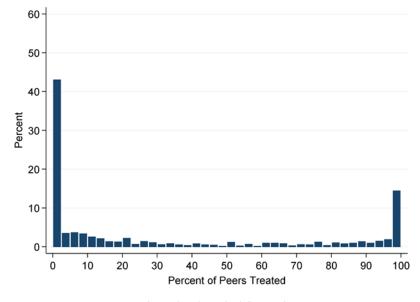Derek Messacar (Statistics Canada and Memorial University of Newfoundland)

Figure A1: Percent of Faculty with a Higher-Paid Peer of Lower Rank

Notes: This analysis plots the percent of individuals who have at least one colleague at the same institution and in the same department who is paid more but is one level lower in rank (assistant relative to associate, or associate relative to full professor). The sample is restricted to treated provinces one year before the reform occurred and excludes individuals with senior administrative responsibilities.
Source: Statistics Canada, University and College Academic Staff System, 1995, 2011, 2014 and 2015.

(a) Horizontal and Vertical Comparisons
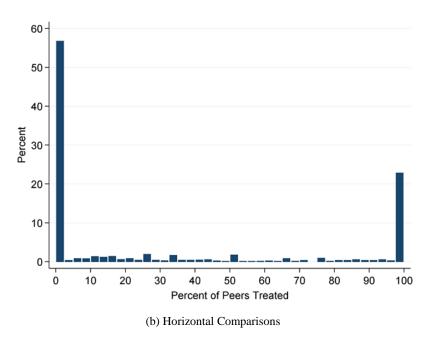

(b) Horizontal Comparisons

Figure A2: Distribution of Peer Groups Based on the Percent of Peers Treated in the Group

Notes: The distribution of peer groups is plotted based on the percent of peers treated in the group, from 0 to 100. Bins are of width 2.5 percentage points. The sample is restricted to treated provinces in the reform year.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.
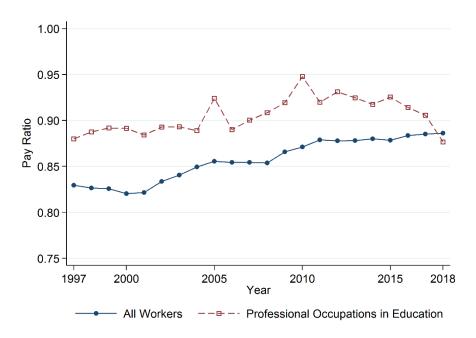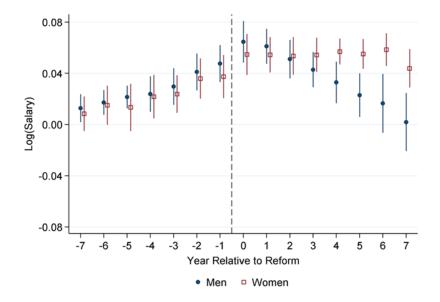
Figure A3: Women-to-Men Hourly Wage Ratio for Full-Time Workers in the Canadian Labor Market by Year

Notes: The reported statistics are the ratios of average hourly wages for women to average hourly wages for men among full-time workers, in the indicated industries.
Source: Statistics Canada, authors' compilation from table 14-10-0307-01, 1997 to 2018.

(a) Average Salaries of Men and Women
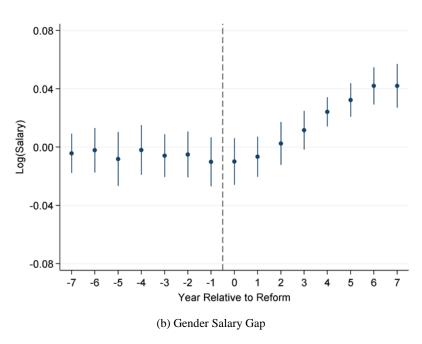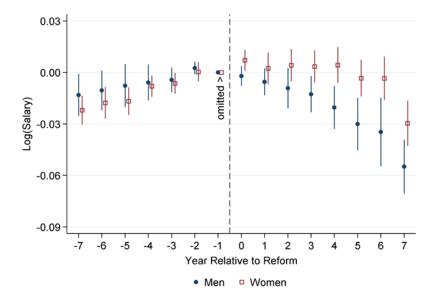

(b) Gender Salary Gap

Figure A4: Event Study without Individual Fixed Effects

Notes: This analysis replicates Figure 4 except that individual fixed effects (FEs) are omitted, whereas additional controls are included for the number of years since appointed to institution, years since highest degree obtained, and an indicator for having senior administrative responsibilities. The institution and department FEs are also included. In this specification with province-year-gender FEs but omitting the individual FEs, the event-time coefficients show estimates of the average salary of treated peer groups within the treated provinces around the time of the reforms, expressed relative to peer groups in treated provinces but for which no peer salary was above the threshold for disclosure. As such, normalizing an event-time coefficient to zero is not necessary because they are all well-identified from the within-province heterogeneity in the treatment. These results correspond to the regression estimates in column 1 of Table 4. See the notes in Figure 4 for more information.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

(a) Average Salaries of Men and Women

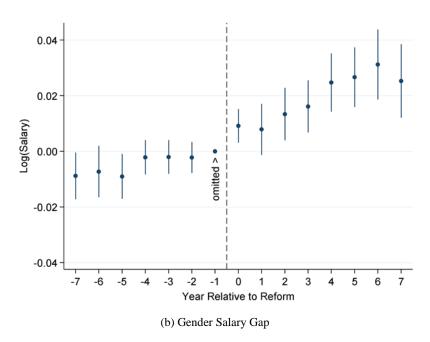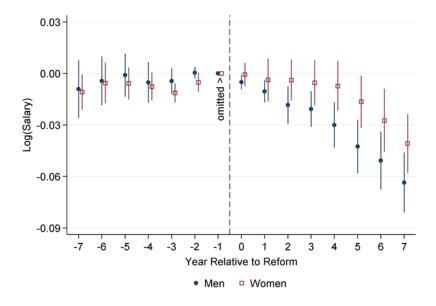(b) Gender Salary Gap

Figure A5: Event Study using All Institutions

Notes: This analysis replicates Figure 4 except that no restriction is imposed on whether the institution belongs to the 2012 wave of the National Faculty Data Pool to be included. See the notes in Figure 4 for more information.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

(a) Average Salaries of Men and Women

(b) Gender Salary Gap

Figure A6: Event Study using a Balanced Sample of Institutions

Notes: This analysis replicates Figure 4 except that a balanced sample of institutions is used. More precisely, individuals are included in the analysis only if they are employed at treated institutions that are observed for all 15 years centered on the reform year, or employed at untreated institutions that are observed for all years since 1989. This restriction ensures there is no change in the sample composition of institutions in the event study analysis. See the notes in Figure 4 for more information.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

(a) Average Salaries of Men and Women

(b) Gender Salary Gap

Figure A7: Event Study using a Balanced Sample of Workers

Notes: This analysis replicates Figure 4 except that a balanced sample of individuals is used. Since the unit of observation is at the institution-worker level, balancing on workers also implicitly balances on institutions. More precisely, individuals are included in the analysis only if they are observed for 10 or more years. This restriction ensures all workers contribute to the identification. See the notes in Figure 4 for more information.
Source: Statistics Canada, University and College Academic Staff System., 1989 to 2018

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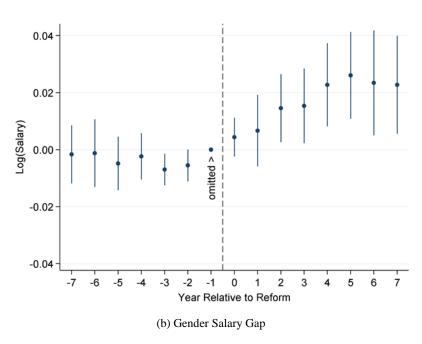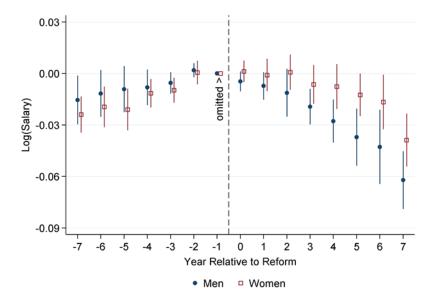(a) Average Salaries of Men and Women

(b) Gender Salary Gap

Figure A8: Event Study with Department-Specific Time Trends

Notes: This analysis replicates Figure 4 except that department-specific linear time trends are included. Robust standard errors are reported in this case, due to the larger number of coefficients being estimated. See the notes in Figure 4 for more information.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

(a) Average Salaries of Men and Women

(b) Gender Salary Gap

Figure A9: Event Study using a Wide Event-Time Window

Notes: This analysis replicates Figure 4 except that a wide event-time window is used, spanning 14 years on either side of the reform. Standard errors are clustered by institution and department in this case, due to the larger number of coefficients being estimated relative to the number of clusters. See the notes in Figure 4 for more information.
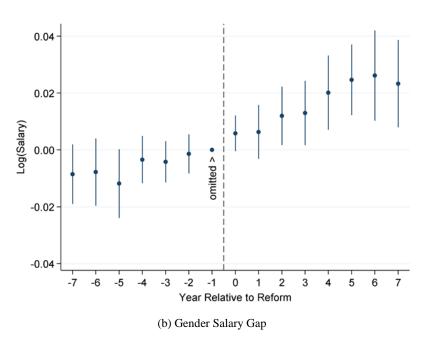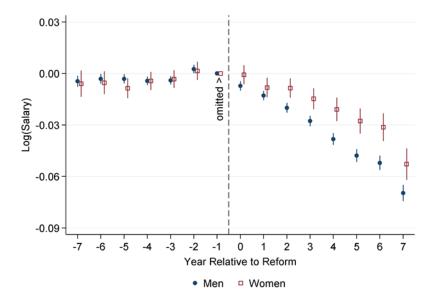**Source:** Statistics Canada, University and College Academic Staff System, 1982 to 2018.

(a) Assistant Professors

(b) Associate Professors

(c) Full Professors

Figure A10: Distribution of the Residuals from Salary Regressions, by Gender and Rank

Notes: This analysis replicates Figure 3 except that it conditions on rank. See the notes in Figure 3 for more information.
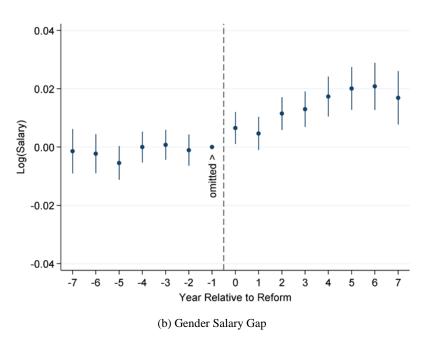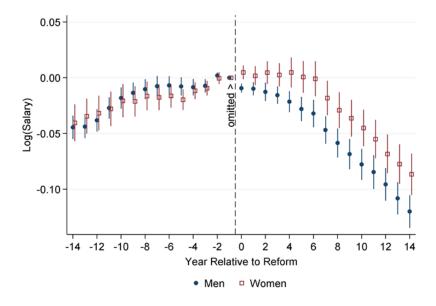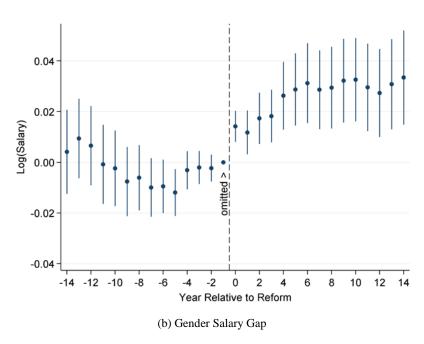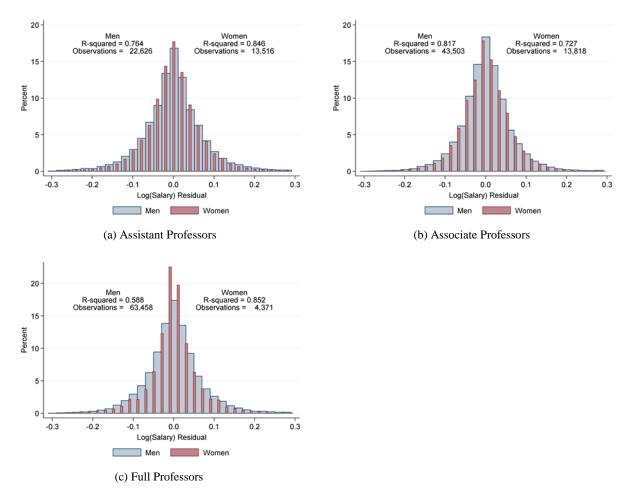**Source:** Statistics Canada, University and College Academic Staff System, 1989 to 2018.

Table A1: List of Current Websites Providing Online Access to Salary Disclosures

Province	Details
Alberta	Salaries are for calendar year. Publication is by June of the following year. Salaries are published by individual universities. For example: https://www.ualberta.ca/human-resources-health-safety-environment/benefits-and-pay/pay/compensation-disclosure/compensation-disclosure-list.html.
British Columbia	Salaries are for fiscal year. Salaries are published January-May of the following year. https://vancouversun.com/news/local-news/b-c-public-sector-salaries-database-10th-edition. Salaries are also published by individual universities. For example: https://finance.ubc.ca/sites/finserv.ubc.ca/files/FY21_Financial_Information_Act_Report.pdf.
Manitoba	Salaries are for fiscal year. https://www.gov.mb.ca/openmb/infomb/pscd.html.
Nova Scotia	Salaries are for fiscal year. Salaries must be published by June of the following year. https://beta.novascotia.ca/public-sector-compensation-disclosure-reports.
Newfoundland and Labrador	Salaries are for calendar year. Publication is by June of the following year. Salaries are published by individual universities. For example: https://www.gov.nl.ca/exec/tbs/files/compensation-disclosure-pdf-2017-mun-listing.pdf.
Ontario	Salaries are for calendar year. Salaries are published on April 1 of the following year. https://www.ontario.ca/page/public-sector-salary-disclosure.

Table A2: Known Examples of Institutional Studies into Gender Pay Equity and Women's Pay Adjustments

	Year(s) of Study	Date of Pay Adjustment	Size of Adjustment
Western Ontario University	2005, 2009	N/A	N/A
University of British Columbia	2010	February 28, 2013	2.0%
University of Victoria	2014	Unknown	Unknown
McMaster University	2015	July 1, 2015	$3,515
Simon Fraser University	2015	September 3, 2016	1.7%
University of Waterloo	2016	September 1, 2016	$2,905
Wilfrid Laurier University	2017	22 June, 2017	3.0%
Guelph University	2018	June 1, 2018	$2,050
University of Toronto	2019	July 1, 2019	1.3%
Memorial University of Newfoundland	2021	July 1, 2021	1–2 steps on payscale

Notes: At Simon Fraser University, a fund of $4.0 million was established to provide some retroactive compensation. The adjustment at University of British Columbia was retroactive to July 1, 2010. At Western Ontario 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 stated adjustment at Wilfred Laurier University was for associate professors, and for full professors it was 3.9%; those adjustments were retroactive to July 1, 2016.

Table A3: Gender Pay Gap Prior to Treatment Based on the Percent of Peers Treated in the Group

	Horizontal and Vertical Comparisons			Horizontal Comparisons		
	None	Partial	Full	None	Partial	Full
	(1)	(2)	(3)	(4)	(5)	(6)
No Controls	-0.172	-0.153	-0.126	-0.154	-0.142	-0.120
With Controls	-0.033	-0.042	-0.025	-0.032	-0.032	-0.031

Notes: The difference in log salaries between men and women is reported based on the level of treatment exposure in the reform year. Specifically, estimates are reported from regressions of log salaries on a indicator for women and year fixed effects. The sample is restricted to treated provinces two years prior to the reform. Control variables also included in the regressions in the second row are fixed effects for institution by department, year of birth, number of years since appointed to institution, and years since highest degree obtained. The level of exposure is binned as follows: "none" refers to zero individuals being revealed; "partial" exposure refers to more than zero but less than 100 percent of individuals being revealed; and "full" exposure refers to 100 percent of individuals being revealed.
Source: Statistics Canada, University and College Academic Staff System, 1996, 2012, 2015 and 2016.

Table A4: Effect of Pay Transparency with Standard Errors Clustered by Institution and Department

	Peer Group Specification			
	Horizontal and Vertical Comparisons		Horizontal Comparisons	
	(1)	(2)	(3)	(4)
Salaries of Men	0.034***	-0.017***	0.052***	-0.034***
	(0.004)	(0.004)	(0.005)	(0.004)
Salaries of Women	0.052***	0.003	0.067***	-0.022***
	(0.005)	(0.005)	(0.006)	(0.005)
Gender Salary Gap	0.018***	0.020***	0.015***	0.012**
	(0.005)	(0.005)	(0.005)	(0.005)
R-squared	0.645	0.938	0.646	0.939
Number of Observations	384,519	378,890	384,519	378,890
Number of Clusters	1,104	1,081	1,104	1,081
Institution FEs	✓		✓	
Department FEs	✓		✓	
Individual FEs		✓		✓
Province-Year-Gender FEs	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓

Notes: This analysis replicates Table 4 except that standard errors (in parentheses) are clustered by institution and department rather than by institution. See the notes in Table 4 for more information about the regression specifications. ✓ denotes included in the regression. ***, **, and * denote significant at the 1, 5 and 10 percent levels, respectively.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

Table A5: Effect of Pay Transparency using the Wild Bootstrap

	Peer Group Specification			
	Horizontal and Vertical Comparisons		Horizontal Comparisons	
	(1)	(2)	(3)	(4)
Salaries of Men	0.034	-0.017	0.052	-0.034
	(0.019, 0.049)	(-0.031, -0.005)	(0.032, 0.070)	(-0.050, -0.019)
Salaries of Women	0.052	0.003	0.067	-0.022
	(0.036, 0.067)	(-0.019, 0.024)	(0.041, 0.089)	(-0.037, -0.008)
Gender Salary Gap	0.018	0.020	0.015	0.012
	(0.007, 0.029)	(0.006, 0.034)	(0.004, 0.026)	(0.004, 0.023)
R-squared	0.645	0.938	0.646	0.939
Number of Observations	384,519	378,890	384,519	378,890
Number of Clusters	49	48	49	48
Institution FEs	✓		✓	
Department FEs	✓		✓	
Individual FEs		✓		✓
Province-Year-Gender FEs	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓

Notes: This analysis replicates Table 4 except that the wild bootstrap (the 'boottest' command in Stata by Roodman (2015)) is used for hypothesis testing. Below each coefficient estimate is the 95% confidence interval based on the bootstrap. ✓ denotes included in the regression.

Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

Table A6: Robustness Checks of the Effects of Pay Transparency based on the Sets of Controls

	Peer Group Specification									
	Horizontal and Vertical Comparisons					Horizontal Comparisons				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Salaries of Men	0.067***	-0.008	0.026***	-0.018**	-0.020***	0.086***	-0.008	0.045***	-0.016*	-0.020***
	(0.012)	(0.007)	(0.008)	(0.008)	(0.007)	(0.015)	(0.009)	(0.008)	(0.008)	(0.008)
Salaries of Women	0.083***	0.001	0.048***	-0.007	-0.012**	0.083***	0.001	0.048***	-0.007	-0.012**
	(0.010)	(0.007)	(0.007)	(0.007)	(0.006)	(0.010)	(0.007)	(0.007)	(0.007)	(0.006)
Gender Salary Gap	0.016***	0.009**	0.022***	0.011***	0.008**	0.010	0.010**	0.019***	0.011**	0.008**
	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.004)	(0.005)	(0.004)	(0.003)
R-squared	0.584	0.770	0.678	0.797	0.814	0.586	0.770	0.679	0.797	0.814
Observations	384,519	384,519	384,500	384,500	384,440	384,519	384,519	384,500	384,500	384,440
Number of clusters	49	49	49	49	49	49	49	49	49	49
Institution FEs		✓					✓			
Department FEs		✓					✓			
Rank FEs		✓		✓			✓		✓	
Institution-Department FEs			✓	✓				✓	✓	
Institution-Department-Rank FEs					✓					✓
Province-Year-Gender FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: This analysis replicates Table 4 but varies the control variables used in the model for the case without individual fixed effects. Standard errors (in parentheses) are clustered by institution except for columns 4 and 8 where robust standard errors are used. See the notes in Table 4 for more information about the regression specifications. ✓ denotes included in the regression. ***, **, and * denote significant at the 1, 5 and 10 percent levels, respectively.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

Table A7: Effect of Pay Transparency using a Wide Event-Time Window

	Peer Group Specification			
	Horizontal and Vertical Comparisons		Horizontal Comparisons	
	(1)	(2)	(3)	(4)
Salaries of Men	0.002	-0.026***	0.017	-0.040***
	(0.008)	(0.007)	(0.011)	(0.007)
Salaries of Women	0.035***	-0.003	0.044***	-0.027***
	(0.007)	(0.009)	(0.011)	(0.006)
Gender Salary Gap	0.033***	0.022***	0.026***	0.012**
	(0.005)	(0.006)	(0.004)	(0.006)
R-squared	0.648	0.930	0.648	0.930
Number of Observations	620,378	612,579	620,378	612,579
Number of Clusters	49	49	49	49
Institution FEs	✓		✓	
Department FEs	✓		✓	
Individual FEs		✓		✓
Province-Year-Gender FEs	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓

Notes: This analysis replicates Table 4 except that a wide event-time window is used, spanning 14 years on either side of the reform. See the notes in Table 4 for more information. Standard errors (in parentheses) are clustered by institution. ✓ denotes included in the regression. ***, **, and * denote significant at the 1, 5 and 10 percent levels, respectively.
Source: Statistics Canada, University and College Academic Staff System, 1982 to 2018.

Table A8: Heterogeneous Effects of Pay Transparency by Province

	Peer Group Specification							
	Horizontal and Vertical Comparisons				Horizontal Comparisons			
	Ontario	British Columbia	Nova Scotia	Alberta	Ontario	British Columbia	Nova Scotia	Alberta
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Salaries of Men	-0.017***	-0.010	0.011	-0.038***	-0.035***	-0.049	0.001	-0.033***
	(0.006)	(0.027)	(0.007)	(0.006)	(0.007)	(0.030)	(0.013)	(0.007)
Salaries of Women	0.003	0.030*	0.030	-0.022	-0.025***	0.030*	0.008	-0.026***
	(0.011)	(0.017)	(0.033)	(0.013)	(0.009)	(0.017)	(0.012)	(0.007)
Gender Salary Gap	0.020***	0.040	0.019	0.016	0.010**	0.079*	0.007***	0.007***
	(0.007)	(0.040)	(0.040)	(0.010)	(0.005)	(0.045)	(0.001)	(0.000)
R-squared	0.952	0.942	0.953	0.964	0.952	0.942	0.953	0.964
Number of Observations	247,514	142,358	93,106	79,740	247,514	142,358	93,106	79,740
Number of Clusters	43	26	20	21	43	26	20	21
Number of Treated Institutions	16	3	2	3	16	3	2	3
Number of Treated Peer Groups	155	66	39	56	167	187	77	99
Individual FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province-Year-Gender FEs	✓	✓	✓	✓	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: This analysis replicates Table 4 except it is carried out separately by treated province. The effects of pay transparency in Manitoba and Newfoundland and Labrador are not separately estimated due to insufficient number of institutions to be reported; the results are suppressed due to data restrictions. Columns 1 and 5 estimate the effect of pay transparency in Ontario, introduced in 1996, using data from all provinces except Manitoba and British Columbia from 1989 to 2003. The two provinces are excluded because they also introduced pay transparency in 1996. All other provinces either did not adopt pay transparency or did so after 2003. Similarly, columns 2 and 6 estimate the effects of pay transparency in British Columbia using data from the same years as columns 1 and 5 but excluding Ontario and Manitoba. Columns 3 and 7 estimate the effect of pay transparency in Nova Scotia, introduced in 2012, using data from 2005 to 2018 and excluding Ontario, Manitoba, British Columbia (where reforms had already occurred), Alberta and Newfoundland and Labrador (where reforms occurred after 2012 but within the event window). Lastly, columns 4 and 8 estimate the effect of pay transparency in Alberta, introduced in 2015, using data from 2008 to 2018 but excluding Ontario, Manitoba, British Columbia, Nova Scotia and Newfoundland and Labrador. Standard errors (in parentheses) are clustered by institution. See the notes in Table 4 for more information about the regression specifications. ✓ denotes included in the regression. ***, **, and * denote significant at the 1, 5 and 10 percent levels, respectively.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.

Table A9: Effect of Pay Transparency Not Adjusting for Calendar versus Fiscal Year Salary Reporting

| | Peer Group Specification | | | |
| | Horizontal and Vertical Comparisons | | Horizontal Comparisons | |
	(1)	(2)	(3)	(4)
Male Salaries	0.033***	-0.019***	0.052***	-0.035***
	(0.007)	(0.005)	(0.009)	(0.006)
Female Salaries	0.050***	-0.002	0.066***	-0.019**
	(0.008)	(0.008)	(0.010)	(0.007)
Gender Salary Gap	0.017***	0.018***	0.014**	0.016***
	(0.005)	(0.005)	(0.005)	(0.004)
R-squared	0.645	0.938	0.646	0.939
Number of Observations	384,519	378,890	384,519	378,890
Number of Clusters	49	48	49	48
Institution FEs	✓		✓	
Department FEs	✓		✓	
Individual FEs		✓		✓
Province-Year-Gender FEs	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓

Notes: This analysis replicates Table 4 except that salaries in Ontario are not adjusted using a two-year average measure that would account for differences in calendar versus fiscal year reporting as described in the main text. Standard errors (in parentheses) are clustered by institution. See the notes in Table 4 for more information about the regression specifications. ✓ denotes included in the regression. ***, **, and * denote significant at the 1, 5 and 10 percent levels, respectively.
Source: Statistics Canada, University and College Academic Staff System, 1989 to 2018.