

**Supplemental Appendix**

**The Impact of Unions on the Wage Distribution: Evidence from Higher Education**

Michael Baker (University of Toronto and NBER)  
Yosh Halberstam (Federal Deposit Insurance Corporation)  
Kory Kroft (University of Toronto and NBER)  
Alexandre Mas (UC Berkeley and NBER)  
Derek Messacar (Memorial University and Statistics Canada)

June 2025

## **Description of University and College Academic Staff System (UCASS)**

The survey captures all professors/teachers within faculties, academic staff in teaching hospitals, visiting academic staff, and research staff who have academic rank and salary similar to teaching staff, for all those whose term of appointment is not less than twelve months. It excludes administrative and support staff, librarians, and research and teaching assistants.

Participation in UCASS is mandatory and it is administered directly to institutions. The unit of observation in the data is the individual but the survey unit is the institution. Information on the economic and demographic characteristics of staff—including pay—are obtained directly from payroll records. Individuals are assigned (anonymized) internal identification numbers, which allow us to follow them over time within institutions. However, because the numbers are university specific we cannot track mobility of individuals across institutions. Statistics Canada works closely with institutions to maintain consistent reporting each year and to ensure the data are comparable across institutions.<sup>1</sup>

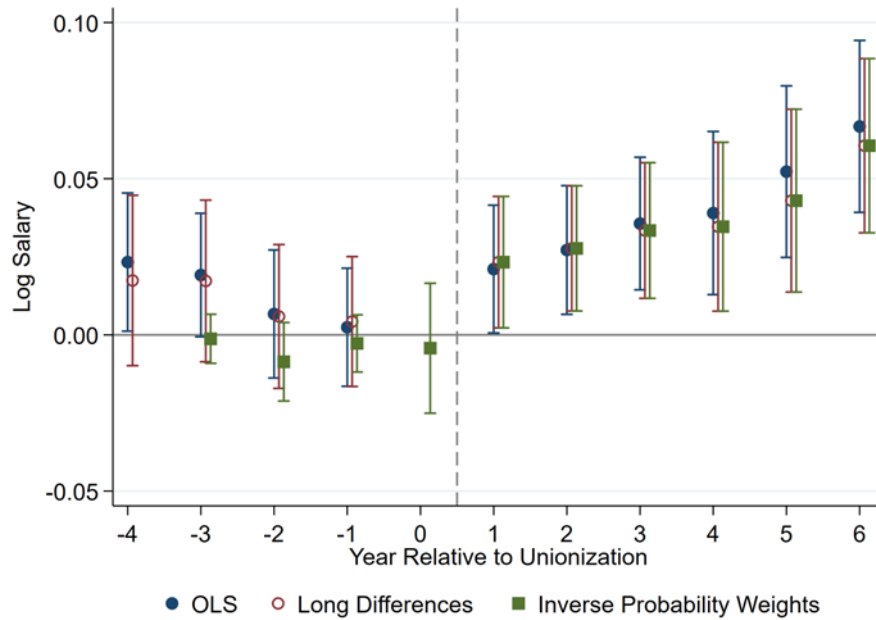
Our primary measure of wages is the annual (12 month) rate of pay contractually negotiated and agreed upon between the employee and employer. Because the data are collected typically in October, they provide a view of salaries for the fiscal year at this time. Statistics Canada has worked closely with the institutions to obtain a measure of base salary that is comparable across institutions and over time. It excludes other components/factors of actual salary including unpaid leave (including maternity or parental leave) and stipend pay for senior administrative duties. It also excludes income paid out of research grants and other external funding sources.

---

<sup>1</sup> Baker et al. (2023) provide further detail of these data including the suspension of collection between 2011 and 2015 which has been remedied by Statistics Canada using the National Faculty Data Pool.

As a robustness check, we also consider a measure of compensation corresponding to the actual salary which is generally available for the sample period from 1985 onwards. In the available years, we find there a close relationship between base and actual salary in practice; base salary accounts for 104.0 percent of actual salary on average within institutions and years for which actual salary is observed and the correlation coefficient is 0.9215 within the analytical sample. On average, base salary exceeds actual salary due to unpaid leave.

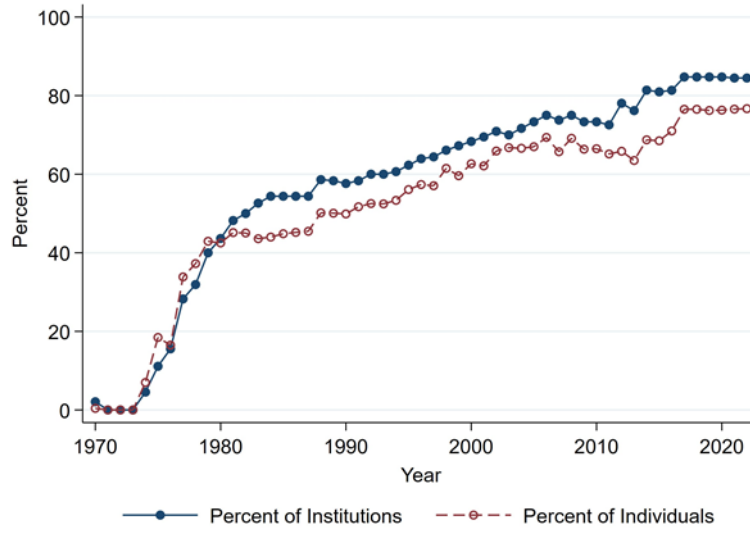
**Figure S1: The Effect of Unionization on Average Salaries using TWFE, Long Differences or Inverse Probability Weights**



**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. Three estimators that differ from the baseline specification are presented. The blue dots correspond to the conventional two-way fixed effect (TWFE) estimator, where event-time 0 is used as the (universal) omitted period. The hollow red dots correspond to estimates that are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). Compared to our benchmark specification, the pre-treatment and post-treatment coefficients both average “long-differences,” i.e., comparisons relative to the omitted reference period, and event-time 0 is used as the (universal) omitted period. In this regression, the control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The square green dots also correspond to estimates that are based on the estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. In this regression, the control group consists of never-treated institutions but, compared to our benchmark specification, all cohort-specific treatment effects are aggregated using inverse-probability weighting with stabilized weights. Individual and year fixed effects are included in all specifications. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

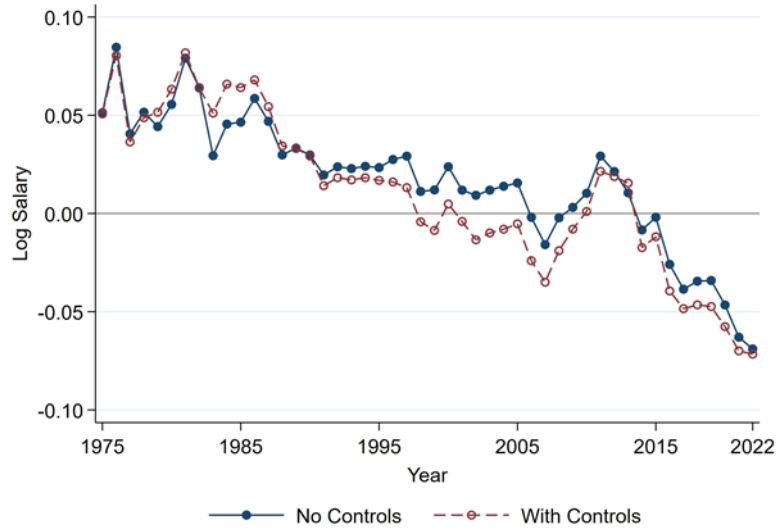
**Figure S2: The Percent of Institutions and Individuals Unionized by Year**



**Notes:** The percent of institutions with unions relative to total number of institutions in a given year as well as the percent of faculty members at institutions with a union relative to the total number of faculty members in a given year are presented.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

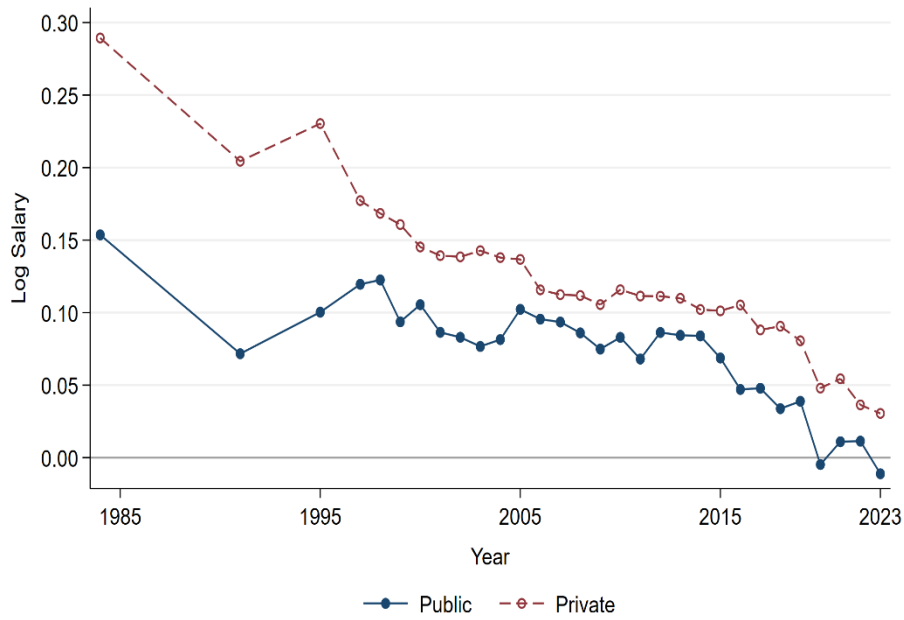
**Figure S3: The Union Earnings Premium by Year**



**Notes:** The estimated union earnings premium by year with and without controls are presented. The dependent variable is base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The union earnings premium is estimated by regressing the log of salary on a union status dummy interacted with year fixed effects, along with institution and department fixed effects and fixed effects for age (in years), gender, citizenship, rank, administrative responsibilities, sabbatical leave and unpaid leave, and a cubic polynomial for years of experience. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans.

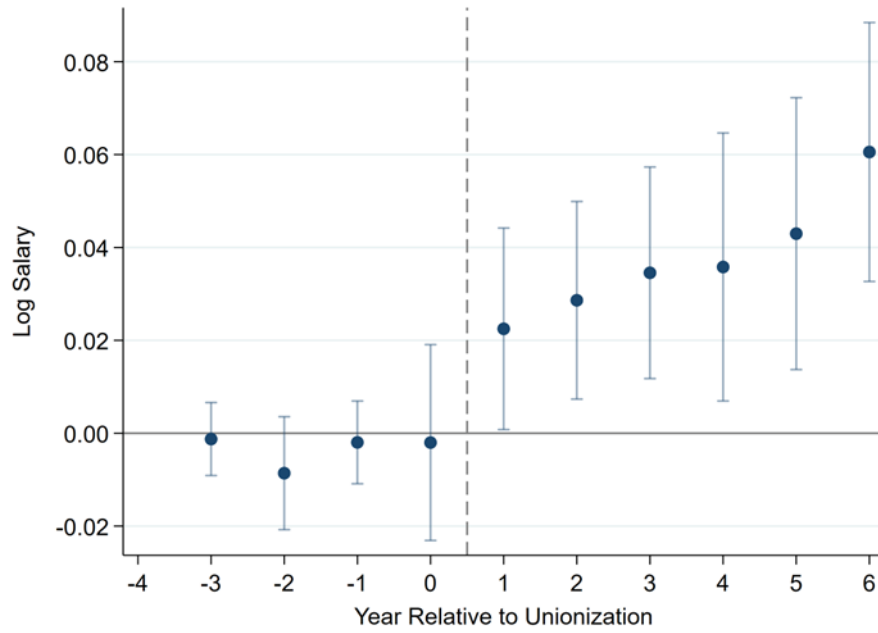
**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Figure S4: The Union Wage Premium in the Canadian Public and Private Sectors by Year**



**Notes:** The estimates of  $\beta_1$  and  $\beta_2$  are plotted from the regression  $\ln(\text{salary}_{it}) = \beta_1 \text{public}_{it} \times \text{union}_{it} + \beta_2 \text{private}_{it} \times \text{union}_{it} + \Gamma X_{it} + \varepsilon_{it}$  using data on all individuals aged 15-64 in the labor force.  $\text{public}_{it}$  and  $\text{private}_{it}$  are indicators equal to one if individual  $i$  in year  $t$  is an employee in that sector and union is an indicator equal to one if they are either a union member or covered by a collective bargaining agreement.  $X_{it}$  is a vector of controls for gender, education-by-age group, province, and sector fixed effects.  $X_{it}$  also includes month fixed effects for 1997 to 2003. Salaries are deflated using national CPI in 2002. Individuals are dropped if their wage is below 2.5 CAD per hour and are topcoded to 74.3 in the Labour Force Survey for consistency with the Survey of Union Membership. Topcoded salaries in the Survey of Work Arrangements are multiplied by an adjustment factor of 1.143. These adjustments are consistent with Card, Lemieux, and Riddell (2020).  
**Source:** Statistics Canada, Survey of Union Membership, 1984; Statistics Canada, Survey of Work Arrangements, 1991, 1995; and Statistics Canada, Labour Force Survey, March and November, 1997 to 2023.

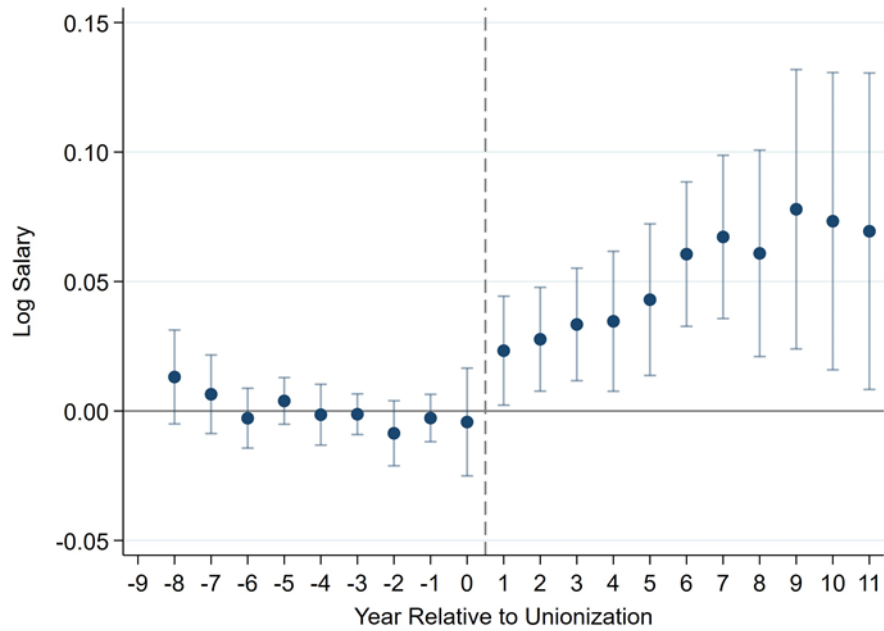
**Figure S5: The Effect of Unionization on Average Salaries with Both Never-treated and Not-yet-treated as the Control Group**



**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. Compared to our benchmark specification, the control group now consists of both never-treated and not-yet-treated institutions. All cohort-specific treatment effects are aggregated using a simple average. Individual and year fixed effects are included. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

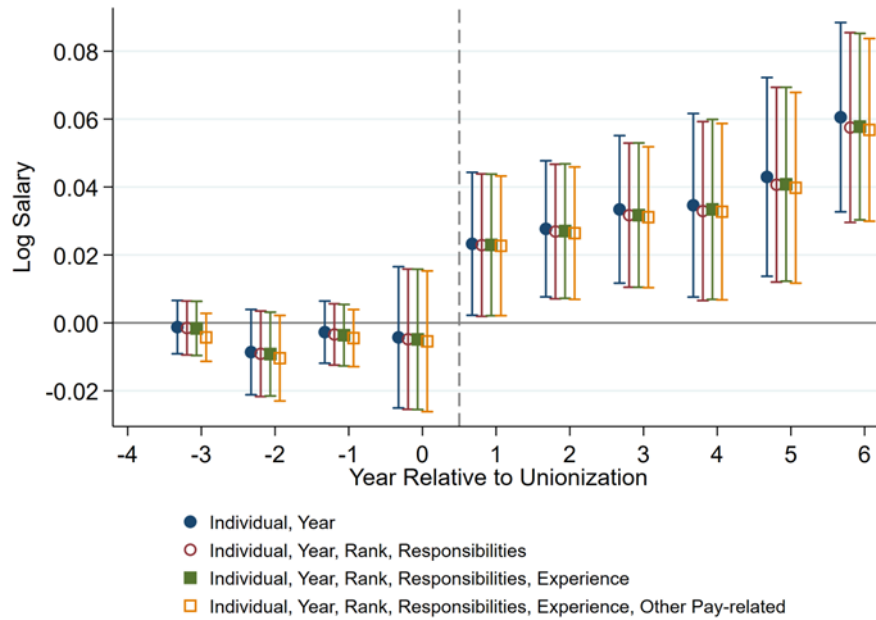
**Figure S6: The Effect of Unionization on Average Salaries using a Wider Event Study Window**



**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Compared to our benchmark specification, the event-time window is extended to range from 9 years before treatment to 11 years after treatment, i.e., including an additional five years on either side of the treatment. Individual and year fixed effects are included. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

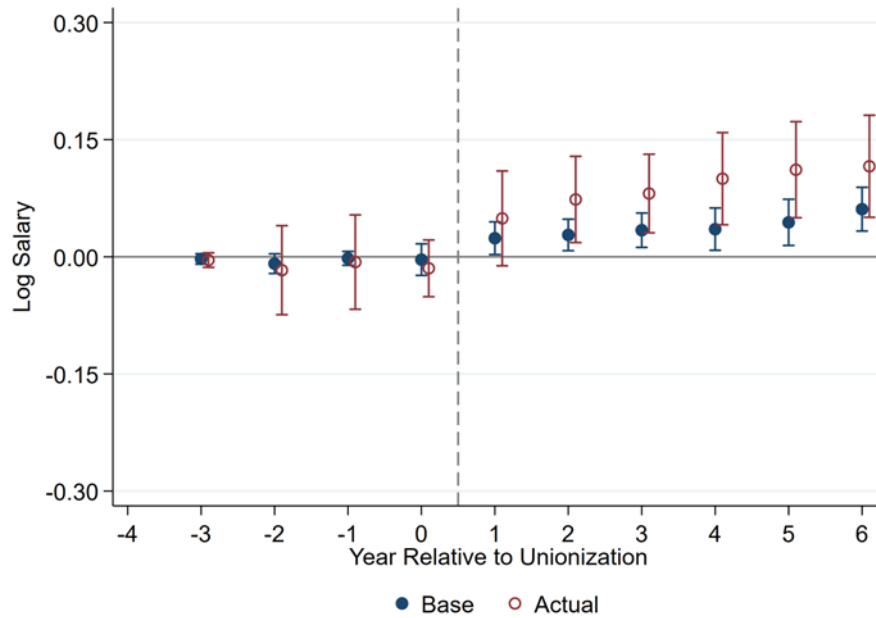
**Figure S7: The Effect of Unionization on Average Salaries using Various Controls**



**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Individual and year fixed effects are included in all specifications. Additional controls are included as stated in the legend. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. Years of experience is controlled for using a cubic polynomial. Other pay-related control variables consist of indicators for being on sabbatical and taking unpaid leave. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

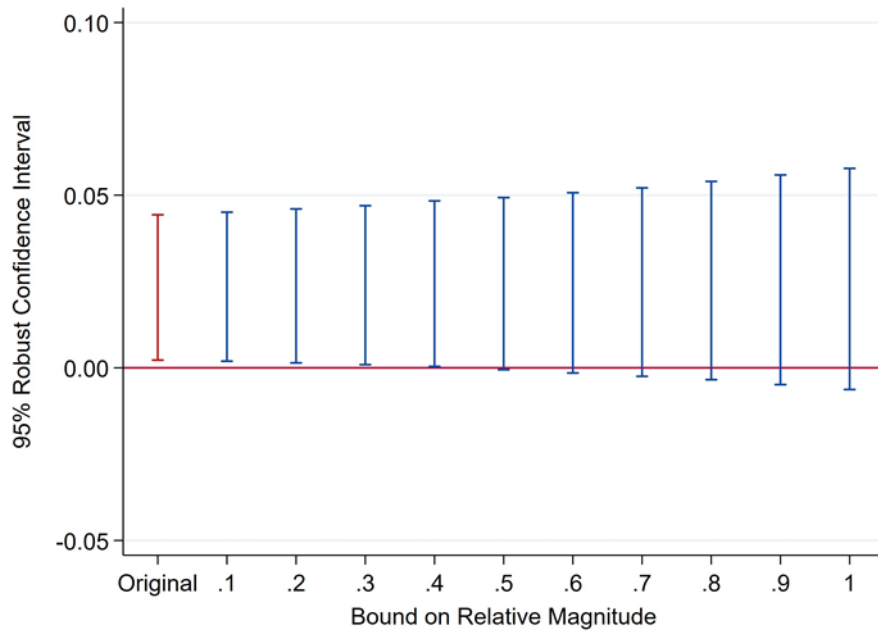
**Figure S8: The Effect of Unionization on Average Salaries by Measure of Pay**



**Notes:** The dependent variable is either the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave, or actual pay, which may be less than base pay due to unpaid leave or higher than base pay due to stipends, as stated in the legend. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Individual and year fixed effects are included in both specifications. Restricted to observations with both non-missing and non-zero base and actual pay in the year. Actual pay is not available before 1985. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

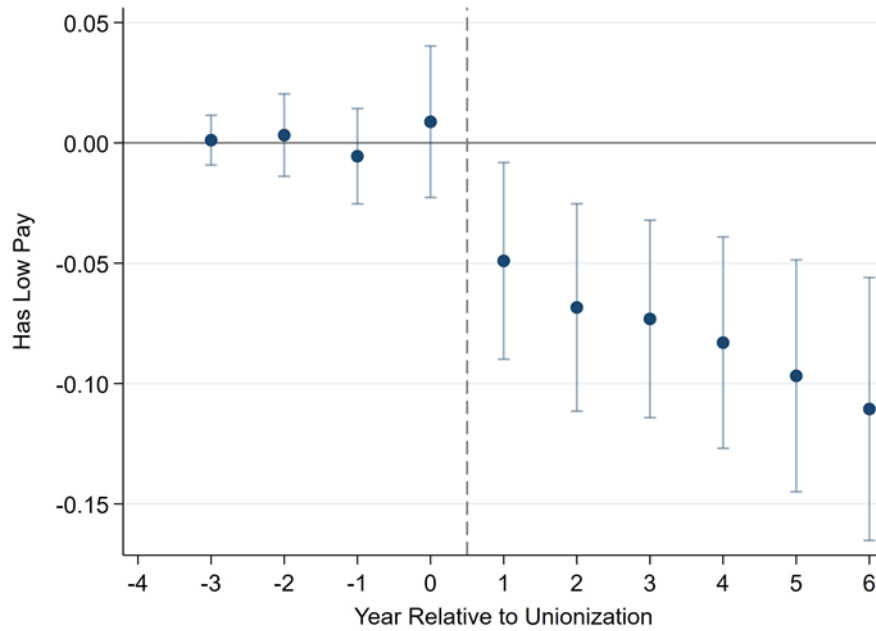
**Source:** Statistics Canada, University and College Academic Staff System, 1985 to 2022; and self-collected union data.

**Figure S9: Robust Confidence Intervals for the Period One Effect of Unionization on Salaries using the Method of Rambachan and Roth (2023)**



**Notes:** The robust inference approach in Rambachan and Roth (2022) is implemented postestimation to our benchmark specification using the Callaway and Sant’Anna estimator. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.  
**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

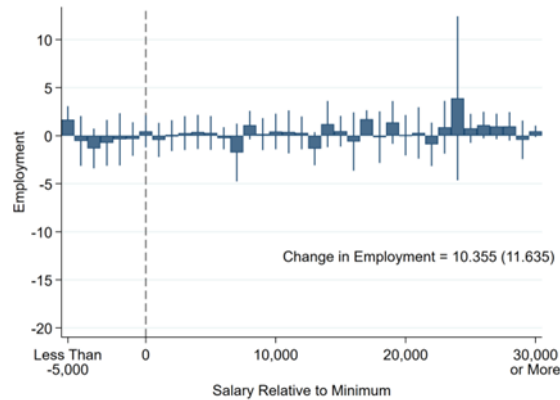
**Figure S10: The Effect of Unionization on Low-Income Status**



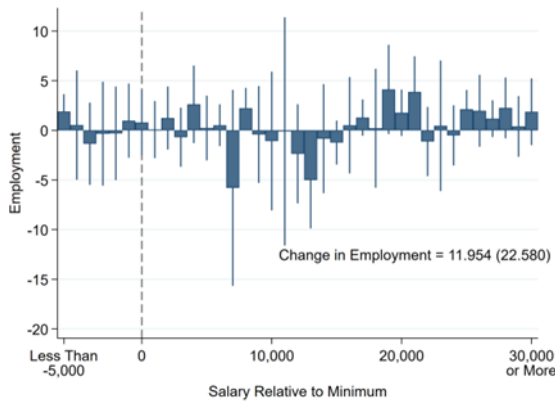
**Notes:** The dependent variable uses base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. Specifically, the dependent variable is an indicator equal to “1” if the income for the year is below the 25th percentile and “0” otherwise, where this percentile is based on total (inflation-adjusted) earnings for the treatment group in the pre-treatment period. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Individual and year fixed effects are included. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

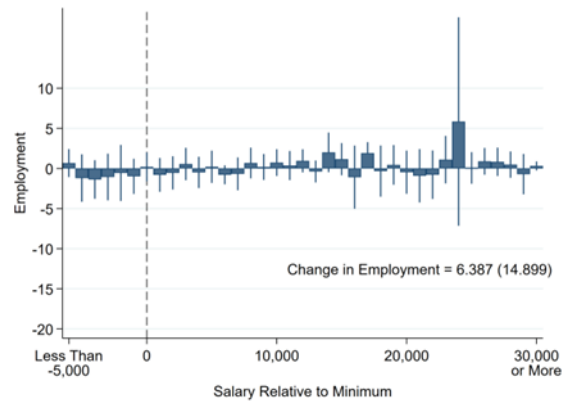
**Figure S11: The Effect of Randomly Assigned Salary Floors at Unionization on Employment by Relative Salary and Time Period**



(A) 1970-2022



(B) 1970-1995

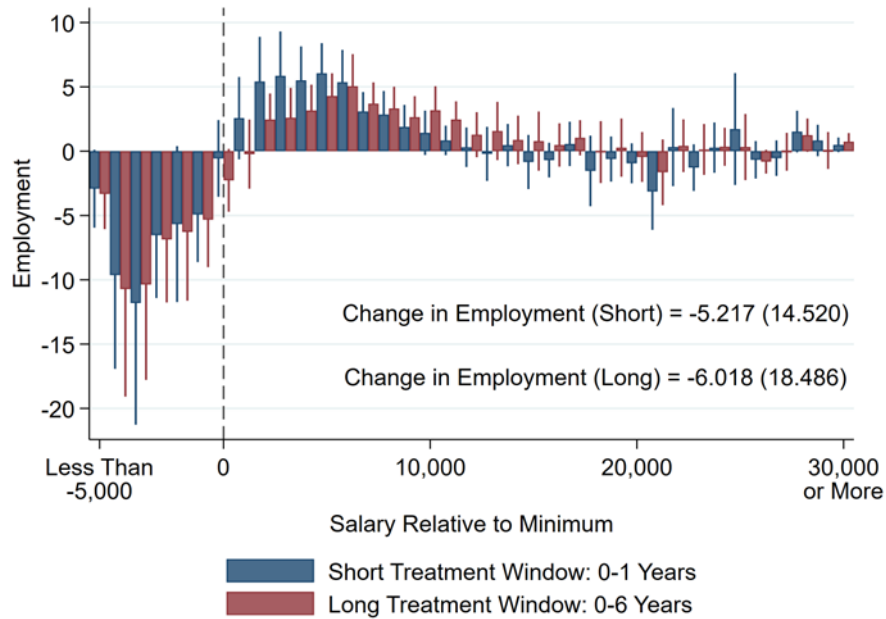


(C) 1996-2022

**Notes:** This analysis is based on salary floors that are randomly generated by institution and rank over the same interval as the true minimum and maximum salary floors observed in the data. The estimates reported are based on the “bunching” estimator from Cengiz et al. (2019). Restricted to institutions that ever unionized and have salary floor information in the relevant time period as stated in the legend or that never unionized and to the years used in the event-study analysis, i.e., from event-time  $-4$  to  $+6$  for the treatment group and all years for institutions that never unionize. The model is estimated on data collapsed to institution-year-rank-salary bin cells. Salary bin widths of  $\$1,000$  are used, beginning at  $\$0$  and increasing to the maximum salary. The dependent variable is the total number of individuals within each cell. The dependent variable is regressed on a set of relative-bin indicators interacted with a post-treatment indicator that averages over the post-treatment years  $0$  to  $+6$ , while controlling for absolute bin-rank-institution and absolute bin-year fixed effects. Each relative-bin indicator takes the value of “1” if the salary in that bin is  $\$x$  distance from the randomly generated salary floor that is considered to have taken effect in the year of unionization, and “0” otherwise, where  $x$  varies along the horizontal axis (also in bins of width  $\$1,000$ ). The coefficients on the relative-bin indicators interacted with a post-treatment indicator are shown in the figure. Each bar is the effect of unionization on the change in the number of workers earning  $\$x$  from the salary floor. The change in employment reported in each panel is the sum of all bars, with standard error in parentheses. The 95% confidence intervals are shown as vertical bars, with standard errors clustered by institution.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

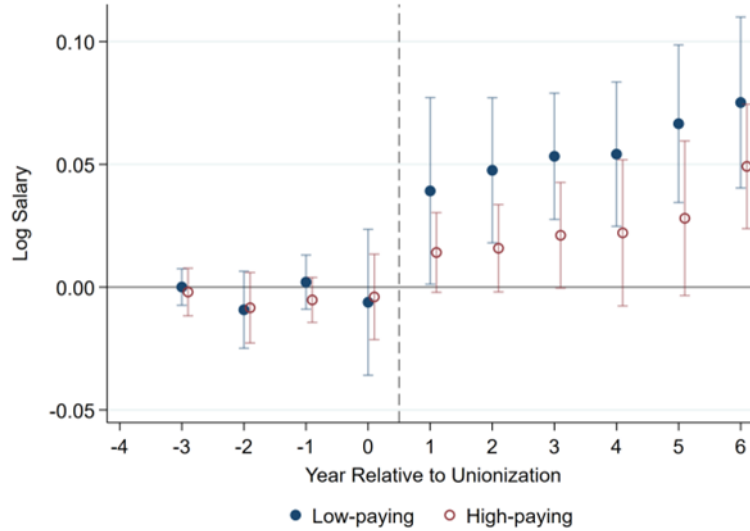
**Figure S12: The Effect of Salary Floors at Unionization on Employment by Relative Salary and by Time Period: Comparing 1 year and 6 year Treatment Windows**



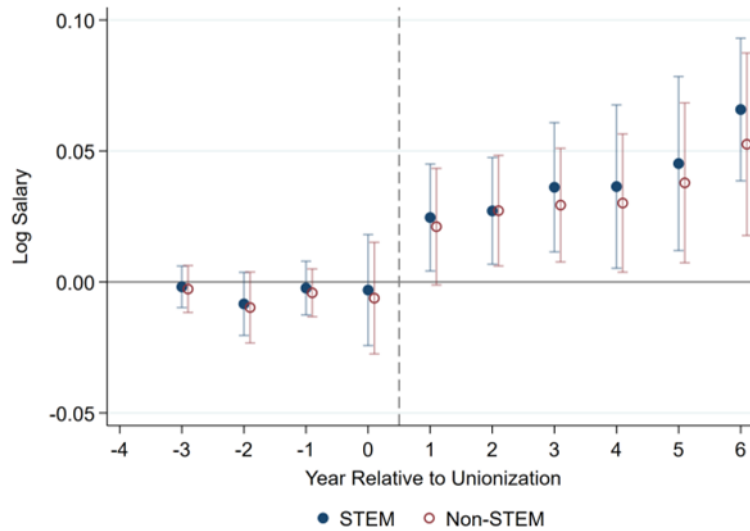
**Notes:** The estimates reported are based on the “bunching” estimator from Cengiz et al. (2019). Restricted to institutions that ever unionized and have salary floor information or that never unionized and to the years used in the event-study analysis. Specifically, the baseline specification that uses observations from the treatment group from event-time  $-4$  to  $+6$ , i.e., the “Long” time period, is plotted against an analogous regression that restricts observations from the treatment group to one year after unionization, i.e., the “Short” time period, in order to plot the immediate effect of union formation on salary. For both specifications, all years are used for institutions that never unionize. The model is estimated on data collapsed to institution-year-rank-salary bin cells. Salary bin widths of \$1,000 are used, beginning at \$0 and increasing to the maximum salary. The dependent variable is the total number of individuals within each cell. The dependent variable is regressed on a set of relative-bin indicators interacted with a post-treatment indicator that averages over the post-treatment years 0 to +6, while controlling for absolute bin-rank-institution and absolute bin-year fixed effects. Each relative-bin indicator takes the value of “1” if the salary in that bin is  $\$x$  distance from the salary floor that took effect in the year of unionization, and “0” otherwise, where  $x$  varies along the horizontal axis (also in bins of width \$1,000). For institutions whose salary floors vary within cell (e.g., by experience), the smallest salary floor is used. The coefficients on the relative-bin indicators interacted with a post-treatment indicator are shown in the figure. Each bar is the effect of unionization on the change in the number of workers earning  $\$x$  from the salary floor. The change in employment reported is the sum of all bars, with standard error in parentheses. The 95% confidence intervals are shown as vertical bars, with standard errors clustered by institution.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Figure S13: The Effect of Unionization on Average Salaries by Department Characteristics**



(A) Low-paying versus High-paying

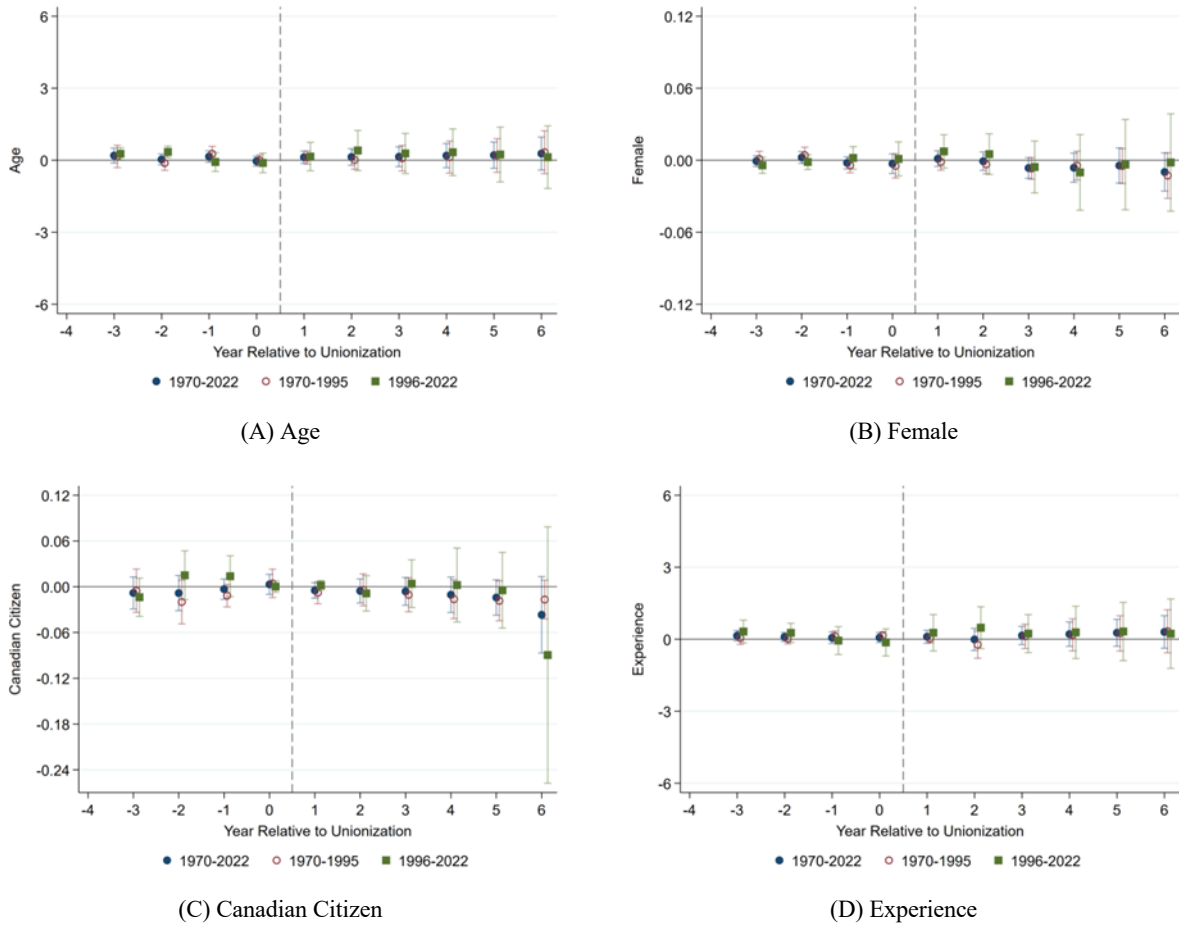


(B) STEM versus Non-STEM

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Individual and year fixed effects are included in all specifications. Panel A presents estimates for the subsample of departments at institutions that are “low-paying” versus “high-paying.” Departments are assigned to one of these categories based on whether the average pay across faculty was below or above the median for all departments in the sample at event-time  $-4$ . This assignment is time-invariant and based on the level of pay in the earliest pre-treatment year included in the analysis. Panel B carries out the analysis in the same way as Panel A except that departments at institutions are grouped into science, technology, engineering and mathematics (STEM) fields versus non-STEM fields. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

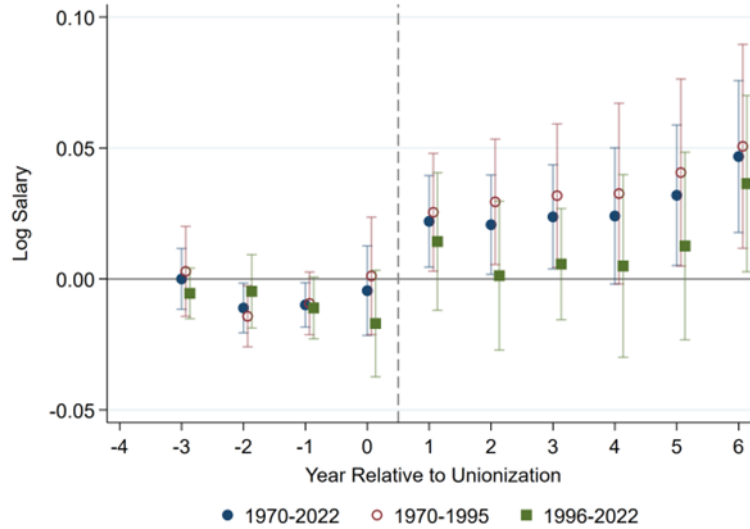
**Figure S14: The Effect of Unionization on Selected Demographics of Faculty**



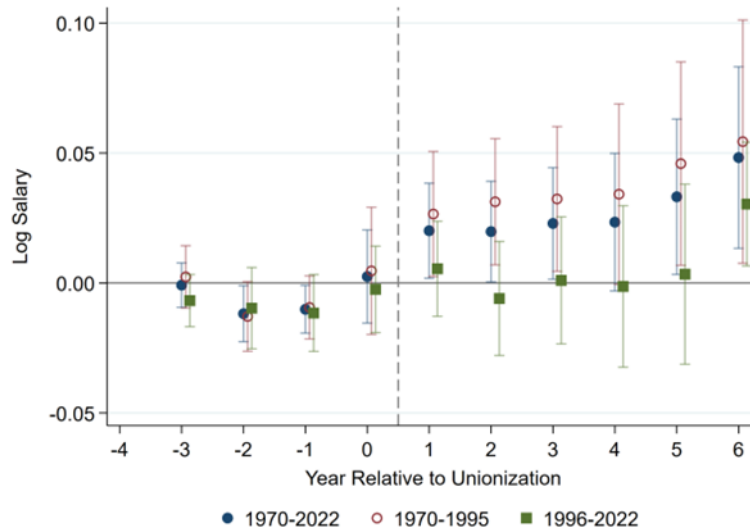
**Notes:** The dependent variable in panel A is the average age of workers in a given institution and year. The dependent variable in panel B is the percent of workers who are female in a given institution and year. The dependent variable in panel C is the percent of workers who are Canadian in a given institution and year. The dependent variable in panel D is the average years of experience of workers in a given institution and year. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells. Institution and year fixed effects are included in all specifications. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Figure S15: The Effect of Unionization on Average Salaries at the Institution or Institution-Department Level**



(A) Institution



(B) Institution and Department

**Notes:** The dependent variable in panel A is the average of the log of base annual salary in a given institution and year, which excludes additional pay such as stipends and reduced pay due to leave. The dependent variable in panel B is the average of the log of base annual salary in a given institution, department and year. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells in panel A and on data collapsed to institution-department-year cells in panel B. Institution and year fixed effects are included in panel A and institution-department and year fixed effects are included in panel B. Standard errors are clustered by institution and the 95% confidence intervals are shown as vertical bars.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S1: University Union Information**

	Arts, Military, Private or Theological (1)	Year Unionized, if Known and Applicable (2)	Source of Unionization Data (3)	Salary Floors Known and Applicable (4)
Memorial University of Newfoundland		1988	Contract	✓
University of Prince Edward Island		2001	Contract	✓
Acadia University		1976	Contract	✓
Acadia Divinity College	✓		Other	
Atlantic School of Theology	✓		None	
Cape Breton University			Other	
Dalhousie University		1978	Contract	✓
University of King's College	✓		Other	
Mount Saint Vincent University		1988	Contract	✓
Nova Scotia Agricultural College			None	
Nova Scotia College of Art and Design University			None	
Université Sainte-Anne			Other	
St. Francis Xavier University		2005	Contract	✓
Saint Mary's University			None	
Dalhousie University			None	
Nova Scotia Teachers College			None	
Pine Hill Divinity Hall	✓		None	
Bethany Bible College	✓		None	
Mount Allison University		1982	Contract	✓
University of New Brunswick		1979	Contract	✓
Université de Moncton (parent)			None	
Université de Moncton - Campus de Moncton			None	
Université de Moncton - Campus de Shippagan			None	
Université de Moncton - Campus d'Edmundston			None	
St. Thomas University		1976	Contract	✓
College de Bathurst			None	
College Saint-Louis/Maillet			None	
Bishop's University		1992	Contract	✓
McGill University		2022, 2024	Other	
Université de Montréal		1975	Contract	✓
Polytechnique Montréal		1999	Contract	✓
École des hautes études commerciales			Other	
Université du Québec			None	
Université Laval		1975	Contract	✓
Université de Sherbrooke		1974	Contract	✓
Concordia University		1981	Contract	✓
Université du Québec à Chicoutimi		1970	Contract	✓
Université du Québec à Montréal		1971	Other	
Université du Québec en Abitibi-Témiscamingue		1972	Other	
Université du Québec à Trois-Rivières		1971	Contract	✓
Université du Québec en Outaouais		1980	Contract	✓
Université du Québec, École nationale d'administration publique		2012	Contract	✓
Université du Québec, Institut national de la recherche scientifique			None	
Université du Québec à Rimouski		1973	Contract	✓
Université du Québec, École de technologie supérieure		1984	Contract	✓
Université du Québec, Télé-université du Québec		1982	Other	
Institut Armand-Frappier			None	
Collège Militaire Royal de St-Jean	✓		None	
Loyola College			None	
Sir George Williams			None	
Montreal Diocesan Theological College	✓		None	
Presbyterian College of Montreal	✓		None	
United Theological College of Montreal	✓		None	
Brock University		1996	Contract	✓
Concordia Lutheran Theological Seminary	✓		Other	
Carleton University		1975	Other	
Collège Dominicain de Philosophie et Théologie	✓		Other	
University of Guelph		2006	Contract	✓
Lakehead University		1979	Other	
Laurentian University of Sudbury		1979	Other	
Algoma University College		1976	Other	
Université de Hearst			None	
Huntington University			None	
University of Sudbury		2002	Other	

**Table S1 (Continued)**

	Arts, Military, Private or Theological (1)	Year Unionized, if Known and Applicable (2)	Source of Unionization Data (3)	Salary Floors Known and Applicable (4)
Thorneloe University	✓	1990	Other	
McMaster University			Other	
McMaster Divinity College	✓		None	
Nipissing University		1994	Contract	✓
Tyndale University College	✓		None	
Tyndale Seminary	✓		None	
University of Ottawa		1977	Contract	✓
Université Saint-Paul	✓	2008	Contract	
Queen's University		1995	Contract	✓
Queen's Theological College	✓		None	
Redeemer University College	✓		None	
Royal Military College of Canada	✓		None	
Toronto Metropolitan University		1969	Contract	✓
University of Toronto			Other	✓
Saint Augustine's Seminary	✓		Other	
University of Saint Michael's College	✓	2011	Contract	✓
University of Trinity College	✓		Other	
Victoria University	✓		Other	
Knox College	✓		Other	
Wycliffe College	✓		Other	
Regis College	✓		Other	
Ontario Institute for Studies in Education			Other	
Trent University		1980	Contract	✓
University of Waterloo			Other	
St. Jerome's University	✓	2009	Contract	✓
Renison College	✓	2020	Contract	
Conrad Grebel University College	✓		Other	
Saint-Paul College			None	
University of Western Ontario		1998	Contract	✓
Brescia University College	✓	2011	Contract	✓
Huron University College	✓	2019	Contract	✓
King's College	✓	2020	Contract	
Wilfrid Laurier University		1988	Other	
University of Windsor		1977	Contract	✓
York University		1977	Contract	✓
Ontario College of Art and Design	✓		Other	
University of Ontario Institute of Technology			Other	
Algoma University College			None	
Université de Hearst			None	
Ontario Teacher Education College			None	
Althouse College Of Education			None	
Brandon University		1978	Contract	✓
Canadian Mennonite University	✓		Other	
Concord College			None	
Canadian Mennonite Bible College	✓		None	
University of Manitoba		1974	Contract	✓
Université de Saint-Boniface		1983	Contract	✓
Saint Andrew's College - University of Manitoba	✓		None	
University of Winnipeg		1981	Contract	✓
Canadian Nazarene College	✓		None	
Canadian Bible College	✓		None	
Canadian Theological Seminary	✓		None	
University of Regina		1977	Contract	✓
Campion College	✓		None	
Luther College	✓		None	
University of Saskatchewan		1977	Contract	✓
College of Emmanuel and Saint Chad	✓		None	
Lutheran Theological Seminary	✓		None	
St. Andrew's College - University of Saskatchewan	✓		None	
St. Thomas More College	✓	1977	Other	
Horizon College and Seminary	✓		None	
St Charles Scholasticate	✓		None	
Notre Dame College of Canada	✓		None	

**Table S1 (Continued)**

	Arts, Military, Private or Theological (1)	Year Unionized, if Known and Applicable (2)	Source of Unionization Data (3)	Salary Floors Known and Applicable (4)
University of Alberta		2017	Contract	✓
Augustana University College	✓		None	
Athabasca University			None	
University of Calgary		1979	Contract	✓
Canadian Nazarene University College	✓		None	
Burman University	✓		None	
Concordia University of Edmonton		2012	Contract	✓
University of Lethbridge		2017	Contract	✓
Newman Theological College	✓		None	
The King's University	✓		None	
Alliance University College	✓		None	
Ambrose University College			None	
Grant MacEwan University			None	
Mount Royal University		2017	Contract	✓
University of British Columbia			Other	
Vancouver School of Theology	✓		None	
University of Northern British Columbia		2014	Contract	✓
Northwest Baptist Theological College	✓		None	
Royal Roads University			None	
Seminary of Christ the King	✓		None	
Simon Fraser University		2014	Contract	✓
Trinity Western University	✓		None	
University of Victoria		2014	Contract	✓
Royal Roads Military College	✓		None	
Thompson Rivers University		1974	Other	
Capilano University		1973	Other	
Vancouver Island University			None	
Emily Carr University of Art and Design			None	
Kwantlen Polytechnic University		1975	Contract	✓
University of the Fraser Valley			None	
Notre Dame University of Nelson	✓		None	
Yukon University			None	

**Notes:** Institutions that are deemed to be arts institutes, military, private or theological as shown in column (1) are excluded from this study on the basis that pay determination is less clear at these institutions. Column (2) reports the year of unionization at institutions for which this information is applicable, i.e., unionized at some point, and known. The source of union data is reported in column (3), where “Contract” indicates that the first contract was obtained; “Other” indicates that information about timing of unionization was obtained but a first contract could not be accessed; and “None” indicates that union details at the institution could not be determined and remain unknown. At McGill University, Professors of Law unionized in 2022 and many other academic staff unionized two years later, although this occurred after the end of the data sample period covered in this study. Mount Royal University, University of Calgary, Thompson Rivers University, Capilano University, and Kwantlen Polytechnic University are excluded from this study due to insufficient information to map individuals to salary floors or conflicting information collected about the structure of salary floors. Université du Québec à Rimouski and Toronto Metropolitan University are both first observed in the data after unionization and, therefore, do not contribute to the identification in our event-study analysis. Université du Québec en Abitibi-Témiscamingue and Université du Québec, Télé-université du Québec also do not contribute to the identification because the information to map individuals to salary floors is not available in the data until after unionization.

**Sources:** Self-collected union data, prepared after extensive engagements with faculty unions and associations at universities across Canada.

**Table S2: Descriptive Statistics of the Analysis Sample**

	Full Sample		Never Unionized		Unionized	
	Mean (1)	Standard Deviation (2)	Mean (3)	Standard Deviation (4)	Mean (5)	Standard Deviation (6)
Demographics						
Age (Years)	47.2	9.9	48.0	10.0	45.9	9.6
Women (Percent)	21.8	41.3	23.1	42.2	19.6	39.7
Degree (Percent)						
PhD	78.0	41.4	80.7	39.5	73.3	44.3
Professional	7.2	25.8	8.3	27.5	5.2	22.3
Master's	11.7	32.1	8.4	27.7	17.3	37.8
Below Master's	3.2	17.6	2.7	16.1	4.2	20.0
Rank (Percent)						
Assistant Professor	24.4	42.9	23.4	42.3	26.2	43.9
Associate Professor	37.3	48.4	36.0	48.0	39.4	48.9
Full Professor	38.3	48.6	40.6	49.1	34.4	47.5
Job Traits (Percent)						
Unionized	20.4	40.3	0.0	0.0	55.3	49.7
Has Responsibilities	10.1	30.1	9.5	29.4	11.0	31.3
Salary (Dollars)						
Full Sample	142,900	46,300	149,700	48,650	131,350	39,400
Assistant Professor	106,850	31,200	111,400	34,950	99,800	22,750
Associate Professor	132,950	32,150	138,600	34,800	124,050	24,950
Full Professor	175,600	44,450	181,500	45,700	163,650	39,250
Institutional						
Faculty Size (Count)	600	600	750	700	400	350
Enrollment (Count)	16,850	16,950	24,350	20,700	10,750	9,500
Tuition (Dollars)	3,800	1,800	4,200	1,800	3,550	1,700
Transfers (Thousands of Dollars)	239,700	277,000	325,200	317,700	149,800	188,850
Number of Individuals	62,493		30,389		32,104	
Number of Observations	539,812		340,763		199,049	

**Notes:** Restricted to the sample of faculty included in the event-study analysis. The reported values are averages over all observations used in the event-study analysis. The category “Has Responsibilities” indicates whether a worker has administrative responsibilities. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. The salary measure used is a base annual rate, which offers a consistent measure of employees’ annual earnings over time and across institutions. Currency values, faculty size and enrollment are rounded to the nearest 50. Currency values are expressed in 2022 constant dollars. To control for outliers, salaries are winsorized at the 0.5th and 99.5th percentiles. Columns (3) and (4) pertain to individuals at institutions that never unionize and columns (5) and (6) pertain to the remaining institutions that eventually unionize, using observations from both before and after unionization.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; Statistics Canada, University Student Information System, 1972 to 1994, and Postsecondary Information System 1995 to 2022 (enrollment statistics); Statistics Canada, Tuition and Living Accommodation Costs, 1972 to 2022 (tuition statistics); Statistics Canada and Canadian Association of University Business Officers, Financial Information of Universities and Colleges, 1979 to 2022 (government transfers statistics); and self-collected union data.

**Table S3: Descriptive Statistics of the Analysis Sample by Time Period**

	1970-1995		1996-2022	
	Mean (3)	Standard Deviation (4)	Mean (5)	Standard Deviation (6)
Demographics				
Age (Years)	44.7	9.0	50.2	10.1
Women (Percent)	14.3	35.1	30.5	46.1
Degree (Percent)				
PhD	70.2	45.8	87.1	33.5
Professional	8.1	27.2	6.1	23.9
Master's	17.0	37.5	5.5	22.7
Below Master's	4.8	21.4	1.3	11.5
Rank (Percent)				
Assistant Professor	26.6	44.2	21.8	41.3
Associate Professor	38.8	48.7	35.5	47.8
Full Professor	34.6	47.6	42.7	49.5
Job Traits (Percent)				
Unionized	24.4	43.0	15.7	36.3
Has Responsibilities	9.6	29.5	10.6	30.8
Salary (Dollars)				
Full Sample	129,550	36,950	158,550	51,000
Assistant Professor	99,150	26,450	117,800	34,100
Associate Professor	122,850	25,000	145,850	35,450
Full Professor	160,450	31,500	189,950	49,900
Institutional				
Faculty Size (Count)	500	550	650	600
Enrollment (Count)	12,900	11,950	22,050	20,800
Tuition (Dollars)	2,850	800	6,050	1,350
Transfers (Thousands of Dollars)	177,050	198,750	299,900	324,500
Number of Individuals		41,349		30,367
Number of Observations		291,283		248,529

**Notes:** Restricted to the sample of faculty included in the event-study analysis and the time period shown in the column headings. The reported values are averages over all observations, i.e., averages both across individuals and within individuals over time, used in the event-study analysis. The category "Has Responsibilities" indicates whether a worker has administrative responsibilities. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. The salary measure used is a base annual rate, which offers a consistent measure of employees' annual earnings over time and across institutions. Currency values, faculty size and enrollment are rounded to the nearest 50. Currency values are expressed in 2022 constant dollars. To control for outliers, salaries are winsorized at the 0.5th and 99.5th percentiles.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; Statistics Canada, University Student Information System, 1972 to 1994, and Postsecondary Information System 1995 to 2022 (enrollment statistics); Statistics Canada, Tuition and Living Accommodation Costs, 1972 to 2022 (tuition statistics); Statistics Canada and Canadian Association of University Business Officers, Financial Information of Universities and Colleges, 1979 to 2022 (government transfers statistics); and self-collected union data.

**Table S4: The Effect of Unionization on Average Salaries with Various Controls**

	(1)	(2)	(3)	(4)
Event-Time -3	-0.001 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.004 (0.004)
Event-Time -2	-0.009 (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.010 (0.006)
Event-Time -1	-0.003 (0.005)	-0.003 (0.005)	-0.004 (0.005)	-0.004 (0.004)
Event-Time 0	-0.004 (0.011)	-0.005 (0.011)	-0.005 (0.011)	-0.005 (0.011)
Event-Time 1	0.023** (0.011)	0.023** (0.011)	0.023** (0.011)	0.023** (0.010)
Event-Time 2	0.028*** (0.010)	0.027*** (0.010)	0.027*** (0.010)	0.026*** (0.010)
Event-Time 3	0.033*** (0.011)	0.032*** (0.011)	0.032*** (0.011)	0.031*** (0.011)
Event-Time 4	0.035** (0.014)	0.033** (0.013)	0.033** (0.014)	0.033** (0.013)
Event-Time 5	0.043*** (0.015)	0.041*** (0.015)	0.041*** (0.015)	0.040*** (0.014)
Event-Time 6	0.061*** (0.014)	0.058*** (0.014)	0.058*** (0.014)	0.057*** (0.014)
Individual Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Rank Fixed Effect		✓	✓	✓
Responsibilities Fixed Effect		✓	✓	✓
Years of Experience			✓	✓
Other Pay-related Controls				✓
Observations	499,667	499,012	498,968	498,968

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. Years of experience is controlled for using a cubic polynomial. Other pay-related control variables consist of indicators for being on sabbatical and taking unpaid leave. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S5: The Effect of Unionization on Average Salaries by Time Period**

	Time Period	
	1970-1995 (1)	1996-2022 (2)
Event-Time -3	0.005 (0.006)	-0.009* (0.005)
Event-Time -2	-0.011 (0.007)	-0.005 (0.010)
Event-Time -1	0.001 (0.006)	-0.008 (0.005)
Event-Time 0	-0.003 (0.017)	-0.007 (0.006)
Event-Time 1	0.033** (0.016)	0.007 (0.009)
Event-Time 2	0.043*** (0.014)	0.001 (0.011)
Event-Time 3	0.049*** (0.014)	0.008 (0.014)
Event-Time 4	0.051*** (0.017)	0.008 (0.021)
Event-Time 5	0.061*** (0.018)	0.013 (0.022)
Event-Time 6	0.068*** (0.019)	0.043*** (0.014)
Individual Fixed Effect	✓	✓
Year Fixed Effect	✓	✓
Observations	285,010	273,252

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S6: The Effect of Unionization on Salaries by Percentile**

	10th (1)	25th (2)	50th (3)	75th (4)	90th (5)
Event-Time -3	0.016** (0.007)	-0.001 (0.006)	-0.009* (0.005)	-0.006 (0.004)	-0.002 (0.004)
Event-Time -2	0.003 (0.013)	-0.007 (0.008)	-0.009 (0.007)	-0.016** (0.008)	-0.013*** (0.005)
Event-Time -1	0.010 (0.012)	-0.002 (0.007)	-0.006 (0.005)	-0.006 (0.004)	-0.007 (0.006)
Event-Time 0	-0.003 (0.022)	-0.003 (0.017)	-0.002 (0.012)	0.003 (0.007)	-0.005 (0.004)
Event-Time 1	0.065** (0.027)	0.041** (0.019)	0.018** (0.009)	0.005 (0.006)	-0.010** (0.005)
Event-Time 2	0.081*** (0.030)	0.058*** (0.019)	0.024*** (0.009)	-0.000 (0.008)	-0.022** (0.009)
Event-Time 3	0.084*** (0.028)	0.067*** (0.018)	0.037** (0.015)	0.010 (0.012)	-0.025* (0.015)
Event-Time 4	0.097*** (0.030)	0.071*** (0.021)	0.036* (0.019)	0.007 (0.017)	-0.027 (0.020)
Event-Time 5	0.104*** (0.031)	0.082*** (0.022)	0.046** (0.022)	0.014 (0.019)	-0.022 (0.016)
Event-Time 6	0.124*** (0.037)	0.101*** (0.025)	0.070*** (0.026)	0.033 (0.023)	-0.019 (0.019)
Individual Fixed Effect	✓	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓	✓
Observations	499,667	499,667	499,667	499,667	499,667

**Notes:** The dependent variable uses base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. Specifically, the dependent variable is the re-centered influence function (RIF) of earnings evaluated at each percentile shown in the event-study sample. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S7: The Effect of Unionization on Average Salaries using TWFE, Long Differences or Inverse Probability Weights**

	TWFE (1)	Long Differences (2)	Inverse Probability Weights (3)
Event-Time -4	0.023** (0.011)	0.017 (0.014)	
Event-Time -3	0.019* (0.010)	0.017 (0.013)	-0.001 (0.004)
Event-Time -2	0.007 (0.010)	0.006 (0.012)	-0.009 (0.006)
Event-Time -1	0.002 (0.010)	0.004 (0.011)	-0.003 (0.005)
Event-Time 0			0.023** (0.011)
Event-Time 1	0.021** (0.010)	0.023** (0.011)	0.028*** (0.010)
Event-Time 2	0.027** (0.011)	0.028*** (0.010)	0.033*** (0.011)
Event-Time 3	0.036*** (0.011)	0.033*** (0.011)	0.035** (0.014)
Event-Time 4	0.039*** (0.013)	0.035** (0.014)	0.043*** (0.015)
Event-Time 5	0.052*** (0.014)	0.043*** (0.015)	0.061*** (0.014)
Event-Time 6	0.067*** (0.014)	0.061*** (0.014)	-0.004 (0.011)
Individual Fixed Effect	✓	✓	✓
Year Fixed Effect	✓	✓	✓
Observations	531,737	484,566	499,667

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. Three estimators that differ from the baseline specification are presented. Column (1) corresponds to the conventional two-way fixed effect (TWFE) estimator, where event-time 0 is used as the (universal) omitted period. Column (2) corresponds to estimates that are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). Compared to our benchmark specification, the pre-treatment and post-treatment coefficients both average “long-differences,” i.e., comparisons relative to the omitted reference period, and event-time 0 is used as the (universal) omitted period. In this regression, the control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Column (3) also corresponds to estimates that are based on the estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. In this regression, the control group consists of never-treated institutions but, compared to our benchmark specification, all cohort-specific treatment effects are aggregated using inverse-probability weighting with stabilized weights. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S8: The Effect of Unionization on Average Salaries with Both Never-treated and Not-yet-treated as the Control Group**

	(1)
Event-Time -3	-0.001 (0.004)
Event-Time -2	-0.009 (0.006)
Event-Time -1	-0.002 (0.005)
Event-Time 0	-0.002 (0.011)
Event-Time 1	0.022** (0.011)
Event-Time 2	0.029*** (0.011)
Event-Time 3	0.035*** (0.012)
Event-Time 4	0.036** (0.015)
Event-Time 5	0.043*** (0.015)
Event-Time 6	0.061*** (0.014)
Individual Fixed Effect	✓
Year Fixed Effect	✓
Observations	499,746

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. Compared to our benchmark specification, the control group now consists of both never-treated and not-yet-treated institutions. All cohort-specific treatment effects are aggregated using a simple average. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S9: The Effect of Unionization on Average Salaries with Various Controls using a Wider Event Study Window**

	(1)	(2)	(3)	(4)
Event-Time -8	0.013 (0.009)	0.011 (0.009)	0.011 (0.009)	0.008 (0.009)
Event-Time -7	0.006 (0.008)	0.006 (0.008)	0.006 (0.008)	0.005 (0.008)
Event-Time -6	-0.003 (0.006)	-0.001 (0.006)	-0.001 (0.006)	-0.002 (0.005)
Event-Time -5	0.004 (0.005)	0.003 (0.005)	0.003 (0.005)	0.001 (0.004)
Event-Time -4	-0.001 (0.006)	-0.003 (0.006)	-0.002 (0.006)	-0.005 (0.005)
Event-Time -3	-0.001 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.004 (0.004)
Event-Time -2	-0.009 (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.010 (0.006)
Event-Time -1	-0.003 (0.005)	-0.003 (0.005)	-0.004 (0.005)	-0.004 (0.004)
Event-Time 0	-0.004 (0.011)	-0.005 (0.011)	-0.005 (0.011)	-0.005 (0.011)
Event-Time 1	0.023** (0.011)	0.023** (0.011)	0.023** (0.011)	0.023** (0.010)
Event-Time 2	0.028*** (0.010)	0.027*** (0.010)	0.027*** (0.010)	0.026*** (0.010)
Event-Time 3	0.033*** (0.011)	0.032*** (0.011)	0.032*** (0.011)	0.031*** (0.011)
Event-Time 4	0.035** (0.014)	0.033** (0.013)	0.033** (0.014)	0.033** (0.013)
Event-Time 5	0.043*** (0.015)	0.041*** (0.015)	0.041*** (0.015)	0.040*** (0.014)
Event-Time 6	0.061*** (0.014)	0.058*** (0.014)	0.058*** (0.014)	0.057*** (0.014)
Event-Time 7	0.067*** (0.016)	0.063*** (0.016)	0.063*** (0.016)	0.062*** (0.015)
Event-Time 8	0.061*** (0.020)	0.056*** (0.021)	0.055*** (0.020)	0.053*** (0.019)
Event-Time 9	0.078*** (0.028)	0.071** (0.029)	0.069** (0.028)	0.067** (0.026)
Event-Time 10	0.073** (0.029)	0.065** (0.030)	0.063** (0.029)	0.061** (0.027)
Event-Time 11	0.069** (0.031)	0.061* (0.032)	0.059* (0.031)	0.057* (0.029)
Individual Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Rank Fixed Effect		✓	✓	✓
Responsibilities Fixed Effect		✓	✓	✓
Years of Experience			✓	✓
Other Pay-related Controls				✓
Observations	595,249	592,035	591,972	591,972

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Compared to our benchmark specification, the event-time window is extended to range from 9 years before treatment to 11 years after treatment, i.e., including an additional five years on either side of the treatment. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. Years of experience is controlled for using a cubic polynomial. Other pay-related control variables consist of indicators for being on sabbatical and taking unpaid leave. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S10: The Effect of Unionization on Average Salaries by Measure of Pay**

	Base Pay (1)	Actual Pay (2)
Event-Time -3	-0.003 (0.003)	-0.004 (0.005)
Event-Time -2	-0.009 (0.006)	-0.017 (0.029)
Event-Time -1	-0.002 (0.005)	-0.007 (0.031)
Event-Time 0	-0.004 (0.010)	-0.015 (0.019)
Event-Time 1	0.024** (0.011)	0.049 (0.031)
Event-Time 2	0.028*** (0.010)	0.073*** (0.028)
Event-Time 3	0.034*** (0.011)	0.081*** (0.026)
Event-Time 4	0.035** (0.014)	0.100*** (0.030)
Event-Time 5	0.044*** (0.015)	0.112*** (0.031)
Event-Time 6	0.061*** (0.014)	0.116*** (0.033)
Individual Fixed Effect	✓	✓
Year Fixed Effect	✓	✓
Observations	495,057	495,057

**Notes:** The dependent variable in column (1) is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The dependent variable in column (2) is actual pay, which may be less than base pay due to unpaid leave or higher than base pay due to stipends. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Restricted to observations with non-missing and non-zero base and actual pay in the year. Actual pay is not available before 1985. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1985 to 2022; and self-collected union data.

**Table S11: The Effect of Unionization on Low-Income Status with Various Controls**

	(1)	(2)	(3)	(4)
Event-Time -3	0.001 (0.005)	0.006 (0.005)	0.006 (0.005)	0.008* (0.004)
Event-Time -2	0.003 (0.009)	0.006 (0.009)	0.006 (0.009)	0.008 (0.009)
Event-Time -1	-0.006 (0.010)	-0.003 (0.010)	-0.003 (0.010)	-0.003 (0.010)
Event-Time 0	0.009 (0.016)	0.011 (0.016)	0.011 (0.016)	0.012 (0.016)
Event-Time 1	-0.049** (0.021)	-0.047** (0.021)	-0.047** (0.021)	-0.047** (0.021)
Event-Time 2	-0.068*** (0.022)	-0.064*** (0.022)	-0.064*** (0.022)	-0.064*** (0.022)
Event-Time 3	-0.073*** (0.021)	-0.067*** (0.021)	-0.067*** (0.021)	-0.066*** (0.020)
Event-Time 4	-0.083*** (0.022)	-0.077*** (0.022)	-0.078*** (0.022)	-0.077*** (0.022)
Event-Time 5	-0.097*** (0.025)	-0.089*** (0.025)	-0.090*** (0.025)	-0.089*** (0.024)
Event-Time 6	-0.111*** (0.028)	-0.101*** (0.029)	-0.103*** (0.029)	-0.101*** (0.028)
Individual Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Rank Fixed Effect		✓	✓	✓
Responsibilities Fixed Effect		✓	✓	✓
Years of Experience			✓	✓
Other Pay-related Fixed Effect				✓
Observations	499,667	499,012	498,968	498,968

**Notes:** The dependent variable uses base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. Specifically, the dependent variable is an indicator equal to “1” if the income for the year is below the 25th percentile and “0” otherwise, where this percentile is based on total (inflation-adjusted) earnings for the treatment group in the pre-treatment period. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The categories for administrative responsibilities are: none; Chairs/Heads/Directors; Associate/Vice Deans; and Deans. Years of experience is controlled for using a cubic polynomial. Other pay-related control variables consist of indicators for being on sabbatical and taking unpaid leave. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S12: The Effect of Unionization on Average Salaries by Department Characteristics**

	Pay Level		Subject	
	Low-paying (1)	High-paying (2)	STEM (3)	Non-STEM (4)
Event-Time -3	0.000 (0.004)	-0.002 (0.005)	-0.002 (0.004)	-0.003 (0.005)
Event-Time -2	-0.009 (0.008)	-0.008 (0.007)	-0.008 (0.006)	-0.010 (0.007)
Event-Time -1	0.002 (0.006)	-0.005 (0.005)	-0.002 (0.005)	-0.004 (0.005)
Event-Time 0	-0.006 (0.015)	-0.004 (0.009)	-0.003 (0.011)	-0.006 (0.011)
Event-Time 1	0.039** (0.019)	0.014* (0.008)	0.025** (0.010)	0.021* (0.011)
Event-Time 2	0.048*** (0.015)	0.016* (0.009)	0.027*** (0.010)	0.027** (0.011)
Event-Time 3	0.053*** (0.013)	0.021* (0.011)	0.036*** (0.013)	0.029*** (0.011)
Event-Time 4	0.054*** (0.015)	0.022 (0.015)	0.036** (0.016)	0.030** (0.013)
Event-Time 5	0.067*** (0.016)	0.028* (0.016)	0.045*** (0.017)	0.038** (0.016)
Event-Time 6	0.075*** (0.018)	0.049*** (0.013)	0.066*** (0.014)	0.053*** (0.018)
Individual Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Observations	388,257	438,933	272,061	226,353

**Notes:** The dependent variable is the log of base annual salary, which excludes additional pay such as stipends and reduced pay due to leave. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Columns (1) and (2) presents estimates for the subsample of departments at institutions that are “low-paying” versus “high-paying.” Departments are assigned to one of these categories based on whether the average pay across faculty was below or above the median for all departments in the sample at event-time -4. This assignment is time-invariant and based on the level of pay in the earliest pre-treatment year included in the analysis. Columns (3) and (4) carry out the analysis in the same way as columns (1) and (2) except that departments at institutions are grouped into science, technology, engineering and mathematics (STEM) fields versus non-STEM fields. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S13: The Effect of Unionization on Average Salaries at the Institution or Institution-Department Level**

	Institution			Institution and Department		
	1970-2022 (1)	1970-1995 (2)	1996-2022 (3)	1970-2022 (4)	1970-1995 (5)	1996-2022 (6)
Event-Time -3	0.000 (0.006)	0.003 (0.009)	-0.006 (0.005)	-0.001 (0.004)	0.002 (0.006)	-0.007 (0.005)
Event-Time -2	-0.011** (0.005)	-0.014** (0.006)	-0.005 (0.007)	-0.012** (0.005)	-0.013* (0.007)	-0.010 (0.008)
Event-Time -1	-0.010** (0.004)	-0.009 (0.006)	-0.011* (0.006)	-0.010** (0.005)	-0.009 (0.006)	-0.012 (0.008)
Event-Time 0	-0.004 (0.009)	0.001 (0.011)	-0.017 (0.010)	0.002 (0.009)	0.005 (0.012)	-0.002 (0.008)
Event-Time 1	0.022** (0.009)	0.025** (0.011)	0.014 (0.013)	0.020** (0.009)	0.027** (0.012)	0.005 (0.009)
Event-Time 2	0.021** (0.010)	0.029** (0.012)	0.001 (0.014)	0.020** (0.010)	0.031** (0.012)	-0.006 (0.011)
Event-Time 3	0.024** (0.010)	0.032** (0.014)	0.006 (0.011)	0.023** (0.011)	0.032** (0.014)	0.001 (0.012)
Event-Time 4	0.024* (0.013)	0.033* (0.018)	0.005 (0.018)	0.023* (0.013)	0.034* (0.018)	-0.001 (0.016)
Event-Time 5	0.032** (0.014)	0.041** (0.018)	0.013 (0.018)	0.033** (0.015)	0.046** (0.020)	0.003 (0.018)
Event-Time 6	0.047*** (0.015)	0.051** (0.020)	0.036** (0.017)	0.048*** (0.018)	0.054** (0.024)	0.030** (0.012)
Institution Fixed Effect	✓	✓	✓			
Institution-Department Fixed Effect				✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓	✓	✓
Observations	909	584	411	15,983	10,042	7,523

**Notes:** The dependent variable in columns (1) to (3) is the average of the log of base annual salary in a given institution and year, which excludes additional pay such as stipends and reduced pay due to leave. The dependent variable in columns (4) to (6) is the average of the log of base annual salary in a given institution, department and year. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells in columns (1) to (3) and on data collapsed to institution-department-year cells in columns (4) to (6). Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S14: The Effect of Unionization on Selected Faculty Demographics**

	Age (1)	Female (2)	Canadian Citizen (3)	Experience (4)
Event-Time -3	0.195 (0.158)	-0.001 (0.002)	-0.008 (0.011)	0.146 (0.110)
Event-Time -2	0.035 (0.115)	0.002 (0.002)	-0.008 (0.012)	0.098 (0.095)
Event-Time -1	0.155 (0.121)	-0.002 (0.003)	-0.003 (0.007)	0.062 (0.122)
Event-Time 0	-0.038 (0.103)	-0.003 (0.004)	0.003 (0.007)	0.068 (0.105)
Event-Time 1	0.125 (0.129)	0.001 (0.003)	-0.005 (0.005)	0.105 (0.136)
Event-Time 2	0.135 (0.176)	-0.001 (0.004)	-0.005 (0.008)	-0.009 (0.235)
Event-Time 3	0.145 (0.210)	-0.006 (0.004)	-0.006 (0.009)	0.154 (0.194)
Event-Time 4	0.193 (0.256)	-0.006 (0.006)	-0.011 (0.012)	0.213 (0.259)
Event-Time 5	0.211 (0.280)	-0.004 (0.007)	-0.014 (0.012)	0.268 (0.286)
Event-Time 6	0.276 (0.351)	-0.010 (0.008)	-0.037 (0.026)	0.303 (0.346)
Institution Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Observations	909	909	909	909

**Notes:** The dependent variable in column (1) is the average age of workers in a given institution and year. The dependent variable in column (2) is the percent of workers who are female in a given institution and year. The dependent variable in column (3) is the percent of workers who are Canadian in a given institution and year. The dependent variable in column (4) is the average years of experience of workers in a given institution and year. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S15: The Effect of Unionization on Selected Faculty Demographics by Time Period**

	Age		Female		Canadian Citizen		Experience	
	1970-1995 (1)	1996-2022 (2)	1970-1995 (3)	1996-2022 (4)	1970-1995 (5)	1996-2022 (6)	1970-1995 (7)	1996-2022 (8)
Event-Time -3	0.158 (0.237)	0.267** (0.130)	0.001 (0.003)	-0.004 (0.003)	-0.005 (0.014)	-0.014 (0.013)	0.055 (0.138)	0.321 (0.242)
Event-Time -2	-0.122 (0.152)	0.348*** (0.122)	0.004 (0.003)	-0.002 (0.003)	-0.020 (0.015)	0.015 (0.016)	0.014 (0.107)	0.265 (0.204)
Event-Time -1	0.269* (0.157)	-0.073 (0.199)	-0.004 (0.003)	0.002 (0.005)	-0.012 (0.008)	0.014 (0.014)	0.121 (0.113)	-0.056 (0.296)
Event-Time 0	-0.006 (0.116)	-0.111 (0.207)	-0.005 (0.005)	0.001 (0.007)	0.004 (0.009)	0.000 (0.004)	0.158** (0.080)	-0.134 (0.288)
Event-Time 1	0.111 (0.138)	0.154 (0.302)	-0.001 (0.004)	0.007 (0.007)	-0.008 (0.007)	0.002 (0.003)	0.032 (0.098)	0.267 (0.387)
Event-Time 2	0.015 (0.197)	0.405 (0.427)	-0.003 (0.004)	0.005 (0.009)	-0.004 (0.011)	-0.009 (0.012)	-0.228 (0.288)	0.481 (0.444)
Event-Time 3	0.084 (0.271)	0.282 (0.426)	-0.007 (0.005)	-0.006 (0.011)	-0.011 (0.011)	0.004 (0.016)	0.119 (0.259)	0.233 (0.403)
Event-Time 4	0.131 (0.341)	0.332 (0.496)	-0.004 (0.006)	-0.010 (0.016)	-0.016 (0.013)	0.002 (0.025)	0.180 (0.341)	0.284 (0.556)
Event-Time 5	0.199 (0.358)	0.236 (0.583)	-0.005 (0.007)	-0.004 (0.019)	-0.018 (0.013)	-0.005 (0.025)	0.244 (0.375)	0.321 (0.619)
Event-Time 6	0.333 (0.455)	0.127 (0.665)	-0.013 (0.010)	-0.002 (0.021)	-0.017 (0.013)	-0.090 (0.086)	0.331 (0.456)	0.231 (0.737)
Institution Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓
Observations	584	411	584	411	584	411	584	411

**Notes:** The dependent variable in columns (1) and (2) is the average age of workers in a given institution and year. The dependent variable in columns (3) and (4) is the percent of workers who are female in a given institution and year. The dependent variable in columns (5) and (6) is the percent of workers who are Canadian in a given institution and year. The dependent variable in columns (7) and (8) is the average years of experience of workers in a given institution and year. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S16: The Effect of Unionization on Employment**

	Number of Workers (1)	Number of New Hires (2)	Number of Promotions (3)	Number of Early Departures (4)
Event-Time -3	-20.290 (13.405)	-7.853** (3.170)	-16.984 (24.016)	11.644 (9.683)
Event-Time -2	-5.889 (5.339)	-1.451 (2.256)	14.963 (16.592)	-17.873 (11.993)
Event-Time -1	-7.199 (7.776)	2.060 (2.349)	6.510 (13.452)	-0.025 (7.225)
Event-Time 0	-10.608* (5.631)	-1.463 (1.947)	7.476 (10.853)	2.032 (4.778)
Event-Time 1	-18.587 (17.457)	2.414 (2.701)	4.553 (7.218)	-3.657 (6.650)
Event-Time 2	-2.587 (8.979)	17.937 (15.639)	9.681 (8.819)	-8.293 (5.418)
Event-Time 3	-12.187 (10.460)	0.268 (2.840)	2.884 (6.010)	-5.260 (7.767)
Event-Time 4	-5.335 (11.885)	5.063* (2.847)	12.374 (9.069)	-0.846 (4.528)
Event-Time 5	-10.177 (12.089)	6.922 (4.233)	8.221 (9.158)	-13.603 (19.251)
Event-Time 6	-4.539 (16.291)	8.141* (4.730)	1.554 (9.442)	-1.213 (4.931)
Institution Fixed Effect	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓
Observations	909	909	909	909

**Notes:** The dependent variable in column (1) is the number of workers in a given institution and year. The dependent variable in column (2) is the number of new hires in a given institution and year. The dependent variable in column (3) is the number of promotions to a higher rank, i.e., assistant to associate, or associate to full, in a given institution and year. The dependent variable in column (4) is the number of early departures in a given institution and year. An early departure is defined as a worker who exits the sample before the age of 65. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data

**Table S17: The Effect of Unionization on Employment by Time Period**

	Number of Workers		Number of New Hires		Number of Promotions		Number of Early Departures	
	1970-1995 (1)	1996-2022 (2)	1970-1995 (3)	1996-2022 (4)	1970-1995 (5)	1996-2022 (6)	1970-1995 (7)	1996-2022 (8)
Event-Time -3	-22.781 (19.291)	-15.474* (8.765)	-9.763** (4.433)	-4.160 (3.372)	-12.088 (32.382)	-26.448 (31.358)	3.674 (5.977)	27.053 (26.836)
Event-Time -2	-4.062 (7.515)	-9.544 (7.148)	0.352 (2.470)	-5.057 (4.101)	27.212 (20.219)	-9.534 (21.318)	-9.664* (5.777)	-34.291 (32.708)
Event-Time -1	-5.358 (9.548)	-10.882 (19.384)	1.127 (2.606)	3.926 (4.142)	12.581 (17.267)	-5.630 (18.932)	1.292 (6.063)	-2.661 (16.635)
Event-Time 0	-9.504 (6.438)	-13.071* (7.742)	-1.840 (2.388)	-0.623 (3.469)	7.225 (15.446)	8.035 (11.844)	2.773 (5.212)	0.380 (8.731)
Event-Time 1	-25.785 (24.773)	-2.529 (12.208)	2.916 (3.413)	1.294 (4.846)	-4.111 (8.097)	23.880* (13.192)	3.950 (6.787)	-20.628 (15.532)
Event-Time 2	-2.659 (10.339)	-2.426 (27.485)	26.287 (22.420)	-0.690 (4.511)	17.739 (11.199)	-8.297 (8.794)	-7.172 (5.825)	-10.792 (13.437)
Event-Time 3	-2.780 (11.843)	-33.173 (20.853)	0.791 (4.115)	-0.898 (4.266)	4.298 (8.070)	-0.269 (10.668)	-0.239 (9.550)	-16.461 (13.102)
Event-Time 4	1.475 (14.234)	-20.526 (35.051)	6.468 (3.963)	1.927 (4.555)	19.176 (11.729)	-2.799 (9.234)	-1.853 (5.475)	1.399 (7.458)
Event-Time 5	5.612 (17.137)	-45.398 (34.991)	9.205 (6.536)	1.828 (5.124)	11.504 (9.770)	0.896 (15.237)	-9.954 (10.034)	-21.745 (56.527)
Event-Time 6	17.772 (20.509)	-63.359 (40.029)	10.558 (6.697)	1.770 (6.038)	9.792 (11.519)	-20.163 (17.980)	2.655 (5.730)	-11.412 (14.221)
Institution Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓
Observations	584	411	584	411	584	411	584	411

**Notes:** The dependent variable in columns (1) and (2) is the number of workers in a given institution and year. The dependent variable in columns (3) and (4) is the number of new hires in a given institution and year. The dependent variable in columns (5) and (6) is the number of promotions to a higher rank, i.e., assistant to associate, or associate to full, in a given institution and year. The dependent variable in columns (7) and (8) is the number of early departures in a given institution and year. An early departure is defined as a worker who exits the sample before the age of 65. The estimates are based on the “doubly robust” estimator from Callaway and Sant’Anna (2020). The pre-treatment coefficients average “short-differences,” i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average “long-differences,” i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. The model is estimated on data collapsed to institution-year cells. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Source:** Statistics Canada, University and College Academic Staff System, 1970 to 2022; and self-collected union data.

**Table S18: The Effects of Unionization on Enrollment, Tuition and Government Transfers by Time Period**

	Enrollment			Tuition			Government Transfers		
	1972-2022 (1)	1972-1995 (2)	1996-2022 (3)	1972-2022 (4)	1972-1995 (5)	1996-2022 (6)	1979-2022 (7)	1979-1995 (8)	1996-2022 (9)
Event-Time -3	0.002 (0.020)	0.011 (0.036)	-0.010 (0.014)	0.007 (0.011)	0.012 (0.016)	-0.002 (0.011)	0.007 (0.024)	0.054** (0.025)	-0.012 (0.032)
Event-Time -2	-0.009 (0.015)	-0.005 (0.023)	-0.015 (0.016)	0.013 (0.018)	0.010 (0.022)	0.021 (0.020)	-0.028 (0.021)	-0.017 (0.030)	-0.033 (0.027)
Event-Time -1	-0.005 (0.019)	-0.004 (0.031)	-0.005 (0.022)	0.007 (0.016)	0.007 (0.020)	0.005 (0.012)	0.043 (0.038)	0.047** (0.021)	0.041 (0.060)
Event-Time 0	-0.031* (0.017)	-0.033 (0.026)	-0.027 (0.019)	0.010 (0.016)	0.007 (0.018)	0.025 (0.022)	-0.009 (0.019)	0.036* (0.021)	-0.044* (0.025)
Event-Time 1	0.015 (0.014)	0.030 (0.022)	-0.009 (0.013)	-0.009 (0.016)	-0.015 (0.018)	0.015 (0.023)	-0.026 (0.036)	-0.034 (0.065)	-0.017 (0.024)
Event-Time 2	0.009 (0.020)	0.034 (0.029)	-0.027 (0.021)	-0.013 (0.022)	-0.020 (0.024)	0.027 (0.040)	-0.044 (0.050)	-0.035 (0.080)	-0.053 (0.057)
Event-Time 3	0.025 (0.023)	0.068** (0.031)	-0.043* (0.024)	-0.017 (0.031)	-0.031 (0.033)	0.044 (0.041)	-0.042 (0.048)	-0.024 (0.082)	-0.062 (0.051)
Event-Time 4	0.045 (0.037)	0.101** (0.050)	-0.045 (0.035)	-0.031 (0.044)	-0.050 (0.050)	0.051 (0.044)	-0.026 (0.053)	0.002 (0.072)	-0.056 (0.079)
Event-Time 5	0.078* (0.040)	0.143*** (0.047)	-0.065 (0.045)	-0.017 (0.054)	-0.033 (0.063)	0.052 (0.044)	-0.055 (0.056)	-0.015 (0.077)	-0.098 (0.086)
Event-Time 6	0.073* (0.042)	0.144*** (0.051)	-0.098** (0.047)	-0.008 (0.064)	-0.017 (0.071)	0.041 (0.059)	0.035 (0.034)	0.039 (0.059)	0.028 (0.041)
Institution Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year Fixed Effect	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	710	423	357	584	454	200	645	323	407

**Notes:** The dependent variable in columns (1) to (3) is the log of total enrollment in a given institution and year. This includes full-time and part-time students who are in both undergraduate and graduate programs. It excludes students who are enrolled in courses but not seeking an academic degree, diploma or certificate. The dependent variable in columns (4) to (6) is the log of tuition in a given institution and year. The measure of tuition is the price paid for a Bachelor's degree in the Arts or Humanities by resident students, i.e., domestic or non-international. The dependent variable in columns (7) to (9) is the log of transfers from the provincial government to the university in the year. The estimates are based on the "doubly robust" estimator from Callaway and Sant'Anna (2020). The pre-treatment coefficients average "short-differences," i.e., comparisons of consecutive periods, whereas the post-treatment coefficients average "long-differences," i.e., comparisons relative to the omitted reference period. The control group consists of never-treated institutions and all cohort-specific treatment effects are aggregated using a simple average. Standard errors are clustered by institution. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Sources:** Statistics Canada, University Student Information System, 1972 to 1994, and Postsecondary Information System, 1995 to 2022 (columns (1) to (3)); Statistics Canada, Tuition and Living Accommodation Costs, 1972 to 2022 (columns (4) to (6)); Statistics Canada and Canadian Association of University Business Officers, Financial Information of Universities and Colleges, 1979 to 2022 (columns (7) to (9)); and self-collected union data.