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## The gender wage gap and returns to skills: Evidence from Ontario

Andrés Arcila-Vásquez

Department of Economics, University of Waterloo

Ana Ferrer

Department of Economics, University of Waterloo

Tammy Schirle

Department of Economics, Wilfrid Laurier University

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Andres Arcila-Vasquez (University of Waterloo)  
Ana Ferrer (University of Waterloo)  
Tammy Schirle (Wilfrid Laurier University)

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## Introduction

The gender wage gap remains an important area of research in Canada. Schirle (2015) examined the gender gaps in average hourly wages facing private sector workers across Canada and found that all provinces made progress toward narrowing the gender wage gap since 1997. However, progress varies substantially: Ontario's gender log wage differential fell from 0.25 to 0.19 over the 1997-2014 period; Alberta's gap barely moved, from 0.33 in 1997 to 0.30 in 2014. Schirle (2015) finds that in all provinces a large portion of the gap remains unexplained in that gender differences in job characteristics, education, age, and marital status explain less than half the wage gap. Among those factors that explain the gap, gender differences in industry and occupation remain the most prominent.

Gender differences in occupation are consistently identified as an important factor underlying gender wage gaps. Vincent (2013) examined the Canadian literature and finds the professional choices made by women (represented by their representation across occupations) is one of the most important explanatory variables of the wage gap. Blau and Kahn (2016) have provided recent evidence for the United States also demonstrating that gender differences in occupation and industries remain important for understanding current wage gaps. While women in the U.S. have become more likely to work in professional jobs over the 1981-2011 period, many remain employed in traditionally female professional occupations such as nursing or K-12 teaching, which are less lucrative than traditionally male professions.

In this study we aim to develop a better understanding of what it means to say the gender gap is accounted for by gender differences in occupation. On one hand, it may be that different occupations require different levels of skill. As men and women tend to enter different occupations, gender wage gaps may reflect skill differentials. On the other hand, it may be that occupations requiring the same level of skill are compensated differently, along the lines of gender. We might expect that the returns to skill in female dominated occupations are lower than returns to the same skills in male dominated occupations. Such results may speak to whether skills are systematically undervalued in female-dominated jobs. It does not, however, inform us of why women continue to dominate these lower-paying jobs.

In what follows we use information from Canada's Labour Force Survey to examine the gender gap in hourly wages for Ontario's private sector workers. The innovation in this study is to incorporate measures of skill requirements within occupations, including social skills, general intelligence, fine motor skills, visual skills, physical strength skills and analytical/quantitative skills. We demonstrate the relative importance of accounting for specific skills as representing productivity differences rather than a general set of occupation indicators that may reflect both gender differences in productivity and occupational segregation and discrimination.

## Data sources and sampling

We use the confidential microdata files for the Canadian Labour Force Survey (LFS) for the years 2010-2014. We sample men and women aged 25-59, residing in Ontario and working as paid employees (not self-employed) in the private sector. From the survey, we are able to link individuals' hourly wage rates to various personal and job characteristics, including the 4-digit occupation code (NOC) and detailed industry codes (NAICS) describing individuals' main jobs.

The key advantage to using the confidential files is that we are able to link these occupation codes to indices of the skills required within each occupation. The skill indices we use here are those derived in Imai et al. (2015). Using detailed information about job requirements from the Occupational Information Network (O\*NET), a small set of fundamental skill requirements for each job is derived using confirmatory factor analysis. This methodology summarizes the rich information contained in the O\*Net database into a few indices representing the skills required in specific jobs. The indices selected cover cognitive and manual skills. Specifically, we use three cognitive indices representing social skills, general intelligence, and analytical/quantitative skills. Further, we use three indices for manual skills, including fine motor skills, physical strength, and visual skills. We then match these indices to more than four hundred occupational categories contained in the 4-digit Standard Occupational Category (SOC).

To facilitate interpretation of the skill variables the factor analysis uses as weights the distribution of the skill in the Canadian work force in 2000; hence a unit of the skill score (with mean zero) can be interpreted as one standard deviation in the skill distribution of the Canadian working population. For instance, the average male worker in our Ontario sample works in an occupation that requires slightly higher physical strength skills than the average worker in the Canadian population (0.101 standard deviations *more* strength than the average worker in 2000) whereas the average female Ontario worker in our sample works at an occupation using 0.325 standard deviation *less* strength than the average worker in 2000. Thus the strength index highlights a stylized fact of the labour force; men typically work in jobs with higher physical strength skills requirements than women do.

## Descriptive statistics

Table 1.A summarizes the main job characteristics of men and women in our sample. As documented in past research, we see that men in Ontario's private sector are, on average, better paid than women. They also differ in characteristics, in ways that may support such pay differential. For example, men are more likely to work full time, in permanent positions or unionized jobs. Average job tenure (experience in their current position) is also higher for men, and they are also more likely to work in large establishments and firms.

**Table 1.A. Means of job-related characteristics of men and women, Ontario private sector employees aged 25-59 (2010-2014).** (Standard deviation is in parentheses)

	Men		Women	
	Mean	SD	Mean	SD
Hourly earnings	26.52	(13.421)	21.29	(11.196)
Ln(wage)	3.16	(0.478)	2.95	(0.462)
Skill Characteristics (index)				
Social	-0.156	(0.940)	0.011	(0.872)
General intelligence	-0.113	(0.950)	-0.179	(0.882)
Fine motor	0.062	(1.011)	-0.501	(0.798)
Visual	0.057	(0.995)	-0.554	(0.593)
Physical strength	0.101	(1.047)	-0.325	(0.960)
Analytical	0.091	(1.031)	0.108	(0.925)
Job Characteristics				
Tenure (months)	97.94	(101.651)	91.65	(93.020)
Full Time in Main Job	0.952	(0.214)	0.818	(0.386)
Permanent Position	0.923	(0.266)	0.919	(0.272)
Union or Covered	0.188	(0.391)	0.127	(0.333)
Establishment Size				
Less than 20	0.299	(0.458)	0.372	(0.483)
20 to 99	0.322	(0.467)	0.314	(0.464)
100 to 500	0.248	(0.432)	0.218	(0.413)
Over 500	0.131	(0.337)	0.096	(0.294)
Firm Size				
Less than 20	0.186	(0.389)	0.223	(0.416)
20 to 99	0.187	(0.390)	0.167	(0.373)
100 to 500	0.162	(0.368)	0.150	(0.357)
Over 500	0.466	(0.499)	0.461	(0.498)
Number Observations	267,629		234,226	

In Table 1.A. we also present the average value of each skills index for men and women in Ontario’s private sector. Recall that an index value of zero represents the skills of the average Canadian worker. Consider the average analytical/quantitative skills of Ontario men and women in our sample, whose occupations (on average) require higher analytical skills than the average Canadian worker in 2000 – by 0.091 standard deviations for men and .108 standard deviations for women. While the analytical skill requirements are similar for men and women in Ontario, there are clear differences in other skill requirements. The occupations held by women tend to use more social skills than the occupations held by men. Recent U.S. research has suggested that the financial return to social skills has increased in recent years and may have played a role in narrowing the gender wage gap (Deming 2015). In contrast, the

occupations typically held by Ontario men tend to require higher levels of fine motor skills than the occupations held by women in Ontario. Similarly, the occupations held by men require more visual and physical strength skills than do the occupations held by women.

**Table 1.B. Mean individual Characteristics of men and women, Ontario private sector employees aged 25-59 (2010-2014).** (Standard deviation is in parentheses)

	Men		Women	
	Mean	SD	Mean	SD
Age				
25-29	0.158	(0.365)	0.157	(0.364)
30-34	0.147	(0.354)	0.143	(0.350)
35-39	0.143	(0.350)	0.133	(0.340)
40-44	0.149	(0.356)	0.149	(0.356)
45-49	0.150	(0.358)	0.156	(0.363)
50-54	0.147	(0.354)	0.151	(0.358)
55-59	0.106	(0.307)	0.111	(0.314)
Personal Characteristics				
Married	0.703	(0.457)	0.691	(0.462)
Child 18	0.395	(0.489)	0.406	(0.491)
Education				
0-8 years of schooling	0.017	(0.128)	0.011	(0.106)
9-10 years of schooling	0.033	(0.180)	0.022	(0.146)
11-13 years of schooling	0.033	(0.179)	0.025	(0.157)
Grade 11-13 graduate	0.224	(0.417)	0.216	(0.412)
Some post-secondary education	0.056	(0.230)	0.052	(0.221)
Post-secondary cert. or diploma	0.093	(0.291)	0.038	(0.192)
Community college	0.248	(0.432)	0.323	(0.468)
University certificate below				
Bachelor's degree	0.017	(0.131)	0.021	(0.144)
Bachelor's degree	0.190	(0.393)	0.210	(0.407)
Above bachelor's degree	0.088	(0.283)	0.081	(0.273)
Number Observations	267,629		234,226	

In Table 1.B. we consider other individual characteristics generally associated with an individual's earning potential. We see that women tend to attain higher levels of education than men – they are more likely to obtain a Bachelor's degree and less likely to leave school before graduating high school than men. Higher levels of education should contribute to higher wages among women. We note our inability to account for fields of study when using the Labour Force Survey, which is known as an important factor for understanding the gender wage gap among recent post-secondary graduates in Canada (Boudarbat and Connolley, 2013).

We also see from Table 1.B. that in Ontario’s private sector, employed women tend to be slightly older than employed men. This in part reflects women’s tendency to take time away from the workforce when children are young, developing greater attachment to careers later in life. While age structure (with women being older) may lead us to expect higher wages among women, the age structure will also capture differences across birth cohorts, as the general labour market attachment of younger cohorts of women will be greater than older cohorts. We note that men and women in Ontario’s private sector are really no different with respect to their marital status and likelihood of having children at home. However, gender roles tend to imply very different implications of marriage and family for men and women’s labour market outcomes (see for example Phipps et al. 2001).

**Table 2. Occupational structure, men and women employees in Ontario’s private sector**

<b>Code</b>	<b>Name</b>	<b>% Female</b>	<b>% Male</b>	<b>% Total</b>
A	Management Occupations	7.78	10.23	9.09
B	Business, Finance and Administrative Occupations	32.61	12.98	22.1
C	Natural and Applied Sciences and Related Occupations	4.52	13.2	9.17
D	Health Occupations	8.34	1.01	4.42
E	Occupations in Social Science, Education, Government Service and Religion	5.7	2.37	3.92
F	Occupations in Art, Culture, Recreation and Sport	2.51	1.97	2.22
G	Sales and Service Occupations	29.59	17.51	23.12
H	Trades, Transport and Equipment Operators and Related Occupations	2.45	27.3	15.76
I	Occupations Unique to Primary Industry	0.53	1.93	1.28
J	Occupations Unique to Processing, Manufacturing and Utilities	5.98	11.48	8.92
Total		100	100	100

Table 2 shows differences in the fraction of men employed in broad occupational categories in Ontario jobs. The main occupations in Ontario are business, finance and administration, employing 22.1% of all Ontario workers and sales and services occupations (23.1%). Women are over-represented in these sectors (32.6% of women and 13.0% of men work in business, finance and administration, whereas 29.6% of women and 17.5% of men work in sales and service). Women are overrepresented in health occupations (8.3% of women and 1.0% of men work in health). Women are also overrepresented in Social Science occupations, where the percentage of women is twice that of men. In contrast women are clearly underrepresented in

trade and transport (where 2.5% of women are employed versus 27.3% of men), natural and applied science occupations, and occupations specific to manufacturing.

Table 3 shows differences in the allocation of men and women across industry. The main industries in Ontario are manufacturing, and professional, scientific and technical services. Health care and social services, finance and insurance, and retail trade all employ similar fractions of workers, each representing nearly 9% of Ontario workers. Gender imbalances across industry are the norm rather than the exception. Women are underrepresented in manufacturing and construction, both major industrial sectors in Ontario. Women are overrepresented in health and finance and insurance.

**Table 3. Gender shares of employment in different Industries in Ontario’s private sector**

Code	Name	%	%	%
		Female	Male	Total
11	Agriculture, Forestry, Fishing and Hunting	0.57	0.92	0.76
21	Mining, Quarrying and Oil and Gas Extraction	0.19	1.24	0.75
22	Utilities	0.17	0.36	0.27
23	Construction	2.02	11.47	7.08
31	Manufacturing <sup>a</sup> (Food, textiles)	2.9	3.26	3.09
32	Manufacturing <sup>a</sup> (Wood, plastics, non-metallic)	3.27	6.21	4.84
33	Manufacturing <sup>a</sup> (Metal, machinery, electrical, furniture)	5.91	16.2	11.42
41	Wholesale Trade	3.8	6.45	5.22
44	Retail Trade <sup>a</sup> (motor vehicles, furniture, food)	9.78	7.3	8.45
45	Retail Trade <sup>a</sup> (sporting goods, general merchandise)	5.23	2.74	3.9
48	Transportation <sup>a</sup> (air, rail, water, pipeline)	2.43	5.05	3.83
49	Transport/Warehousing <sup>a</sup> (couriers, postal, storage)	0.59	1.37	1.01
51	Information and Cultural Industries	3.08	3.77	3.45
52	Finance and Insurance	11.51	6.25	8.69
53	Real Estate and Rental and Leasing	1.92	1.72	1.81
54	Professional, Scientific and Technical Services	9.41	9.2	9.3
55	Management of Companies and Enterprises	0.03	0.02	0.02
56	Admin., Support, Waste, Mgmt. And Remedial Serv.	5.33	5.06	5.19
61	Educational Services	1.13	0.43	0.75
62	Health Care and Social Assistance	16.15	1.83	8.48
71	Arts, Entertainment and Recreation	1.32	1.22	1.26
72	Accommodation and Food Services	7.51	4.31	5.8
81	Other Services (exc. Public Administration)	5.73	3.64	4.61
Total		100	100	100

<sup>a</sup> Industries have been grouped by the first two digits of the NAICS code; a non-exhaustive list of examples is provided in brackets. Full descriptions can be found in Statistics Canada (2012) and a more complete list is presented in Appendix Table A.1.

Gender differences in representation within industries and occupations, particularly at such a highly aggregated level, are not necessarily a source of wage differentials. If the set of skills employed in specific jobs across occupation categories are similar (and assuming that skills are rewarded similarly across occupations and industries), these employment differentials would not result in a gender gap.

To consider gender differences across industries further, we select several male and female dominated industries - that is, industries where more than 75% of workers are men or women respectively - as well as several gender balanced industries. In Table 4 we describe the average level of skills required in occupations within these select industries. (A complete list of all industries, with associated average skills, is provided in the appendix.)

Consider first the wages and skills associated with private sector workers in nursing and residential care facilities (coded as industry 623). Workers in this industry are predominantly female (as only 12% are male) and earn \$21.18 per hour in our sample period. Compare this to workers involved in the construction of buildings (industry 236), which is predominantly male (83%) and pays higher wages (\$25.58 per hour), and to workers in food and beverage stores (industry 445) which is gender balanced (44% male) and pays a lower wage at \$17.43 per hour. Across these three industries physical strength is an important skill requirement, and workers in care facilities have jobs that require the highest level of physical strength. The workers in care facilities require fewer analytical skills than workers in construction or food stores, but a higher level of social skills. Each of these skills are rewarded differently, and we should expect each skill to have different returns across industries. As such, assessing skill differentials and their returns across industries may help us understand more of the gender pay gap.

It is difficult to draw general conclusions about the skill requirements of female and male-dominated industries. In the few industries selected here, (and presented in the appendix) it appears female-dominated industries require more social skills than male-dominated industries, and may often require greater analytical skills. Male-dominated industries, on the other hand tend to require more fine motor, visual, and physical strength skills. Skill requirements of gender balanced industries tend to more closely resemble female-dominated industries than male-dominated industries.

Table 4. Average skills required in specific male/female dominated industries (Standard deviations in parenthesis)

Code	Name	Prop. Male	Mean wage	N	Social	General Intelligence	Fine Motor	Visual	Physical Strength	Analytical/Quantitative
<b>Selected female dominated industries</b>										
448	Clothing and Clothing Accessories Stores	0.18	16.80	4,764	0.015 (0.513)	-0.303 (0.522)	-0.346 (0.585)	-0.659 (0.392)	0.257 (0.526)	0.332 (0.595)
621	Ambulatory Health Care Services	0.10	24.10	19,211	0.186 (0.651)	-0.038 (0.877)	-0.139 (0.870)	-0.638 (0.465)	-0.115 (1.012)	0.063 (0.597)
623	Nursing and Residential Care Facilities	0.12	21.18	14,938	-0.186 (0.818)	-0.359 (0.999)	0.117 (0.805)	-0.547 (0.284)	0.711 (1.039)	-0.265 (0.820)
624	Social Assistance	0.12	21.01	13,596	0.584 (0.720)	0.235 (0.612)	-0.750 (0.628)	-0.464 (0.776)	-0.356 (0.780)	0.001 (0.766)
<b>Selected Male Dominated Industries</b>										
236	Construction of Buildings	0.83	25.58	10,790	-0.456 (0.974)	-0.430 (0.856)	0.486 (1.025)	0.507 (0.862)	0.491 (1.121)	-0.181 (1.225)
238	Specialty Trade Contractors	0.89	26.60	23,106	-0.405 (0.742)	-0.290 (0.712)	0.651 (0.888)	0.709 (0.909)	0.826 (1.008)	-0.034 (0.919)
332	Fabricated Metal Product Mfg.	0.82	23.69	8,917	-0.515 (0.871)	-0.265 (0.873)	0.480 (0.915)	-0.018 (0.718)	0.412 (0.880)	-0.021 (0.990)
336	Transportation Equipment Mfg.	0.79	27.00	25,260	-0.413 (0.870)	-0.249 (0.917)	0.472 (0.822)	0.138 (0.787)	0.428 (0.821)	-0.111 (1.088)
<b>Selected Gender-balanced Industries</b>										
311	Food Mfg.	0.58	22.26	11,554	-0.780 (1.131)	-0.681 (1.009)	0.242 (0.812)	-0.255 (0.786)	0.355 (0.856)	-0.249 (0.869)
445	Food and Beverage Stores	0.44	17.43	14,130	-0.411 (0.683)	-0.669 (0.692)	-0.168 (0.618)	-0.561 (0.478)	0.367 (0.606)	0.029 (0.702)
541	Professional, Scientific and Technical Services	0.53	31.81	36,867	0.603 (0.600)	0.669 (0.692)	-0.939 (0.563)	-0.661 (0.427)	-1.092 (0.552)	0.885 (0.873)
561	Administrative and Support Services	0.50	18.25	22,856	-0.429 (0.954)	-0.549 (0.805)	-0.301 (0.856)	-0.183 (0.798)	-0.020 (1.057)	-0.589 (1.174)
722	Food Services and Drinking Places	0.39	14.88	23,683	-0.780 (0.651)	-1.004 (0.845)	-0.270 (0.465)	-0.637 (0.366)	0.350 (0.381)	-0.470 (0.627)

**Table 5. Skills and wages in select occupations within the Professional, Scientific and Technical Services Industry**

SOC Code	Name	Prop. Male	Mean Hourly Earnings	Social	General intelligence	Fine Motor	Visual	Strength	Analytical/ Quantitative
B011	Financial auditors and accountants	0.409	33.51	0.730	0.866	-1.282	-0.801	-1.451	1.742
B313	Personnel and recruitment officers	0.104	24.09	0.947	0.165	-1.472	-0.869	-1.305	-0.278
C063	Computer Programmers	0.797	34.26	0.062	0.854	-1.167	-0.857	-1.438	1.116
E211	Paralegal and related occupations	0.102	26.56	0.231	-0.035	-1.449	-0.878	-1.305	-0.025

Finally, we present in Table 5 a summary of skills within select occupations in the professional, scientific and technical industry to highlight gender differences across occupations within a given industry. First, we note that our use of 4-digit SOC codes allows us a fairly narrow definition of occupations to which we assign each skills index value. Second, consider the lower wages of personnel and recruitment officers (a female dominated occupation) relative to computer programmers (a male-dominated occupation). While recruitment officers are required to have much higher social skills, programmers require much higher analytical skills and general intelligence. This type of skill differential may explain part of the gender wage gap as analytical skills are expected to have a higher return than social skills in this industry. Financial auditors and accountants (a more gender balanced occupation), however, require even higher analytical skills, as well as higher social skills, while other skill requirements are similar to computer programmers. Despite this, the hourly wages of financial auditors are slightly lower than computer programmers. This exemplifies a scenario where gender differences in skill levels, even within industries, will not help us explain the gender wage gap.

## Methods

Our goal is to describe the extent to which the gender wage gap is associated with differences in average characteristics of men and women (referred to as the compositional or explained part of the gap). Our methods closely follow the literature, such as Schirle (2015) or Schirle and Vickers (2014) (whose description of methods is closely followed here), using the standard Oaxaca-Blinder decomposition methods.

As a first step, we estimate the following wage regressions using samples of Ontario men and women, respectively:

$$\ln w_{iM} = \alpha_M + \text{Occup}_{iM} \delta_M + X_{iM} \beta_M + \varepsilon_{iM} \quad (1)$$

$$\ln w_{iF} = \alpha_F + \text{Occup}_{iF} \delta_F + X_{iF} \beta_F + \varepsilon_{iF} \quad (2)$$

where  $\ln w_{iG}$  is the natural logarithm of the hourly wage for individual  $i$ , with gender  $G$  (male or female). The characteristics  $X_{iG}$  that we account for include indicator variables for age (5-year groups), education (as listed in Table 1), whether the person is unionized and/or covered by a collective agreement, their tenure (months experience) at their present job, the broad industry group they work in (23 categories as in Table 3), whether they are married, and whether they have a child in the home under the age of 18. We also include a set of variables related to the occupation held by the individual ( $\text{Occup}_{iG}$ ). This is done either by including a set of indicators for broad occupation categories (10 categories, as in Table 2) as is quite often done in such wage gap studies, or by including our skills indices (for social, general intelligence, fine motor, visual, physical strength and analytical/quantitative skills).

Taking expectations and differencing equations (2) and (3), we have the average log wage differential restated as:

$$\begin{aligned} \overline{\ln w}_M - \overline{\ln w}_F &= (\overline{\text{Occup}}_M - \overline{\text{Occup}}_F) \hat{\delta}_M + (\bar{X}_M - \bar{X}_F) \hat{\beta}_M \\ &+ (\hat{\alpha}_M - \hat{\alpha}_F) + \overline{\text{Occup}}_F (\hat{\delta}_M - \hat{\delta}_F) + \bar{X}_F (\hat{\beta}_M - \hat{\beta}_F) \end{aligned} \quad (4)$$

The first terms,  $(\overline{Occup}_M - \overline{Occup}_F)\hat{\delta}_M + (\bar{X}_M - \bar{X}_F)\hat{\beta}_M$  in equation (4) represents that part of the gender log wage gap that is related to differences in men's and women's average characteristics (the composition of each sample of workers). When using a set of indicators for occupation, the vectors  $\overline{Occup}_G$  represents the portion of gender  $G$  workers that are employed in each category of occupation. When skills measures are used, the term represents the average skill levels of gender  $G$  workers.

Notice we can separately account for the contribution of covariates describing occupations and other characteristics. As is standard in this literature, we use the coefficients representing the returns to each characteristic for men ( $\delta_M, \beta_M$ ) as the reference coefficients in our decomposition.

The second set of terms in equation (4) represents the unexplained portion of the wage gap. When skills measures are used to estimate equations (2) and (3), the difference  $(\delta_M - \delta_F)$  describes a gender differential in the financial return to each type of skill. While we consider such differentials in our discussion of results below, a full detailed decomposition of the unexplained portion of the gap is of limited value and not pursued further in this report (see Schirle 2015 for a discussion of methodological limitations when categorical variables are used in the decomposition, which is more fully described in Fortin, Lemieux and Firpo 2011).

We focus our attention on the portion of the gap that can be explained when the skills measures are used to describe productivity differences across occupations rather than using a set of indicator variables for occupations. In the case that the two specifications suggest a similar portion of the gap can be explained, we would suggest the set of occupation indicators fairly captures differences in the skill requirements of various occupations. In the case that the two specifications suggest very different portions of the gap can be explained, we would suggest the occupation indicators do not fairly capture differences in skill requirements.

We expect that the nature of occupational segregation, and the potential gender difference in the returns to skill  $(\delta_M - \delta_F)$  varies by industry. For this reason, we repeat our estimation of gender log wage differentials and the decomposition within industries. By examining each industry in turn we can gain a better understanding of which industries face the largest gaps and where gaps associated with occupational segregation are more likely representing discrimination and other barriers rather than skill differentials between men and women.

## Results

We examine the difference between the average log wages of men and women in Ontario's private sector over the 2010-14 period. In this section we first present our regression results for equations (1) and (2) when using our full samples of men and women (in all industries). Recall that we use two specifications: one model uses a set of indicator variables for occupation categories while the alternative model uses our set of six skills indices. For comparison purposes, we also provide results when occupation information is left out of the model. All models include the control variables discussed in the previous section. We then present the results of our decomposition (represented by equation 4) for this full sample of men and women. Finally, we present results representing the decomposition of gender wage gaps and the relative importance of gender differentials in skills within industry categories.

## a. Log wage regressions

In Table 6 we present the results of our wage regressions. In the first columns, we provide results for men and women, using the model specification that does not account for occupation. The second set of columns provides estimates when occupation indicators are included as control variables. The third set of columns provides estimates when skills indices are included instead of occupation indicators. As log wages are used as our dependent variable, coefficients can be generally interpreted in terms of a percentage increase in wages relative to a base amount.

The coefficients on age describe the extent to which wages are higher than the wages of 25-29 year olds. For example, the estimates for men in the first column suggest wages at ages 45-49 are 14 percent higher than at ages 25-29. The wages of men tend to increase more with age than the wages of women. Whether occupation variables are included in the specification does not substantially change the coefficients on age.

The coefficients on education have the expected wage-education gradients, as higher education is associated with higher wages relative to high school graduation. We also see that higher education has a higher return for women than men. In our specifications without occupation controls, women with a graduate or profession education (above a BA) earn 38% more than women with high school degrees. Men with graduate degrees earn 27% more than men with high school degrees. When occupation controls are included, the coefficients associated with education are diminished in size, indicating important interactions between formal education and occupational outcomes of men and women. When using the model with skills indices (3<sup>rd</sup> set of columns), we still see large gender differences in the returns to education as men enjoy a 10% return to graduate and professional degrees while women enjoy a 21% return.

Other characteristics have the expected relative magnitudes for men and women. Men tend to enjoy higher wage premiums associated with marriage and children than women do. While being unionized is associated with higher wages, men enjoy slightly higher union premiums than women. Job experience (tenure) also has a positive premium that does not differ between men and women.

We then turn to the coefficients on occupation indicators, which represent the premium paid within each occupation relative to those in sales and services occupation (category G). Relative to sales and service occupations, women enjoy higher wage premiums than men by moving to most other occupations, notably to management, business, and sciences.

In the last set of columns in Table 6 we also see gender differences in the returns to occupational skills. Women enjoy a higher return to social skills – working in a job that requires 1 standard deviation higher social skills than the average job increases women’s wages by 8.9% and increases men’s wages by 5.3%. Women also enjoy slightly higher returns to analytical skills than men. The returns to general intelligence, fine motor skills, and visual skills are lower for women than men. Notably, strength appears to have a negative return for both men and women: men’s wages are 3.1% lower when the physical strength required in their occupation is one standard deviation higher than the average Canadian worker. This ‘penalty’ for women is only slightly closer to zero.

**Table 6. OLS wage regression results under different model specifications** (Standard deviations in parenthesis)

	1		2		3	
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
<b>Age (25-29 base)</b>						
30-34	0.083 (0.003)	0.056 (0.003)	0.075 (0.003)	0.044 (0.003)	0.079 (0.003)	0.050 (0.003)
35-39	0.113 (0.003)	0.078 (0.003)	0.104 (0.003)	0.070 (0.003)	0.116 (0.003)	0.078 (0.003)
40-44	0.122 (0.003)	0.076 (0.003)	0.110 (0.003)	0.064 (0.003)	0.119 (0.003)	0.079 (0.003)
45-49	0.144 (0.003)	0.053 (0.003)	0.130 (0.003)	0.046 (0.003)	0.147 (0.003)	0.067 (0.003)
50-54	0.115 (0.003)	0.048 (0.003)	0.104 (0.003)	0.046 (0.003)	0.123 (0.003)	0.063 (0.003)
55-59	0.083 (0.003)	0.009 (0.003)	0.077 (0.003)	0.017 (0.003)	0.097 (0.003)	0.038 (0.003)
<b>Education (HS base)</b>						
0-8 Years of Schooling	-0.137 (0.006)	-0.144 (0.008)	-0.104 (0.006)	-0.088 (0.008)	-0.067 (0.006)	-0.038 (0.008)
9-10 Years of Schooling	-0.097 (0.005)	-0.106 (0.006)	-0.073 (0.004)	-0.062 (0.005)	-0.042 (0.004)	-0.053 (0.005)
11-13 Years of Schooling	-0.059 (0.005)	-0.059 (0.005)	-0.043 (0.004)	-0.041 (0.005)	-0.023 (0.004)	-0.025 (0.005)
Some PS	0.040 (0.004)	0.074 (0.004)	0.015 (0.004)	0.046 (0.004)	-0.000 (0.003)	0.035 (0.004)
PS certificate	0.085 (0.003)	0.028 (0.005)	0.077 (0.003)	0.030 (0.004)	0.056 (0.003)	0.021 (0.004)
Community College	0.112 (0.002)	0.114 (0.002)	0.066 (0.002)	0.069 (0.002)	0.037 (0.002)	0.056 (0.002)
University below BA	0.172 (0.006)	0.190 (0.006)	0.093 (0.006)	0.127 (0.005)	0.063 (0.006)	0.103 (0.005)
BA	0.236 (0.003)	0.253 (0.003)	0.139 (0.003)	0.168 (0.002)	0.091 (0.003)	0.136 (0.002)
More than BA	0.272 (0.003)	0.382 (0.003)	0.155 (0.003)	0.251 (0.003)	0.102 (0.003)	0.211 (0.003)
<b>Personal Characteristics</b>						
Married	0.052 (0.002)	0.007 (0.002)	0.042 (0.002)	0.007 (0.002)	0.035 (0.002)	0.006 (0.002)
Child under 18	0.029 (0.002)	0.013 (0.002)	0.023 (0.002)	0.013 (0.002)	0.022 (0.002)	0.009 (0.002)

Union covered	0.061 (0.002)	0.044 (0.003)	0.118 (0.002)	0.084 (0.002)	0.138 (0.002)	0.129 (0.002)
Job Tenure	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
<b>Industry</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Occupations (sales/service base)</b>						
Management Occ.			0.482 (0.003)	0.555 (0.003)		
Business, Finance, Administrative Occ.			0.088 (0.003)	0.153 (0.002)		
Natural, Applied Sciences Occ.			0.324 (0.003)	0.398 (0.004)		
Health Occupations			0.289 (0.009)	0.278 (0.003)		
Social Sc., Education, Gov.Service, Religion			0.243 (0.006)	0.348 (0.004)		
Art, Culture, Sport, Recreation Occ.			0.190 (0.006)	0.304 (0.005)		
Trades, Transport and Equipment Operators			0.049 (0.003)	-0.016 (0.005)		
Occ. Unique to Primary Industry			0.048 (0.007)	0.081 (0.002)		
Occ. Unique to Processing, Mnfg.			-0.080 (0.004)	-0.127 (0.004)		
<b>Skill</b>						
Social					0.053 (0.002)	0.089 (0.003)
Intelligence					0.131 (0.002)	0.107 (0.002)
Fine Motor					0.004 (0.002)	-0.005 (0.002)
Visual					0.009 (0.002)	-0.021 (0.002)
Strength					-0.031 (0.002)	-0.021 (0.002)
Analytical					0.019 (0.002)	0.024 (0.001)
Constant	2.614 (0.004)	2.481 (0.004)	2.575 (0.004)	2.425 (0.003)	2.775 (0.004)	2.573 (0.004)
Observations	267,629	234,226	267,629	234,226	267,629	234,226
R-Squared	0.275	0.297	0.369	0.410	0.385	0.421

## b. Oaxaca-Blinder decomposition results

We now turn to the Oaxaca-Blinder decomposition of the wage gap to describe the extent to which differences in men's and women's characteristics (the composition of the samples) can explain gender wage differentials.

In Table 7 we present our decomposition results obtained using the full sample of Ontario's male and female private sector workers, as was represented in the regression results of the previous section. This is common for the three models used here. The first three rows present the overall gap and how much is explained by labour characteristics and how much remains unexplained. The log wage differential to consider is 0.218. For the rest of the table, the first two columns (model 1) represent results when the specification without occupation indicators or skill indices is used. In this case, the explained fraction of the gap is only 16.4%. The second pair of columns corresponds to the specification where we include occupation indicators. This increases the explained portion of the gap by 13.3 percentage points. Finally, in model 3, we substitute the occupational indicators with skill indices. This reduces the portion of the gap that is explained to 23.6%.

The rest of the table presents results from the detailed Oaxaca decomposition where we show how much is explained specifically by each of the characteristics considered. When different indicators are used to summarize a characteristic, we present the total effect. For instance education explains -0.0094 log points of the difference, or -4% of the wage gap. Notice, however, that the portion of the gap associated with gender differences in education is negative. Given the positive return to higher education, the negative sign here indicates that women on average have higher levels of education and, as such, we would expect the gap to be smaller than it is.

In general, similar (small) portions of the gap are explained by demographic variables across all specifications (age, marital status, children under 18 and tenure). Education and unionization explains a slightly bigger fraction of the gap in the initial model. However, this changes when we switch the model specification, indicating important interactions between these variables and occupational indicators and skills. The fraction of the gap explained by education diminishes in absolute value, while the fraction explained by unionization increases.

When occupation indicators are added to our models, results indicate that a larger part of the wage gap is 'explained' (second set of columns in Table 7). Note that the overall gap explained by either occupational indicators or skill indices is very small, rather much of the increase in the explained portion appears as an increase in the extent to which gender differences in industry explain the gap.

What we are most interested in is how the portion 'explained' changes when we use measures of skill in our model rather than indicators for occupation. Overall we see a reduction in the portion of the wage gap that can be explained. Despite the small fraction of the overall gap explained by skills it is important to consider the detailed decomposition associated with skills. We have seen that women on average have occupations requiring greater social and analytical skills (so that the average skill index of men less the average of women will be negative). Given the positive return to

such skills, we would expect women to earn more than men, in much the same way that women’s higher education levels should result in higher wages. Men, on the other hand, have occupations requiring greater motor and visual skill and these differences help explain the gender wage gap. Physical strength is interesting to consider here – although men on average have job requiring more physical strength, the return (as presented in Table 6) was negative. As such, this gender difference should result in lower pay for men and will not help explain the gender wage gap.

Overall, the reduction in the explained portion we observe when moving away from occupation indicators to using skills indices in our models suggests occupation indicators are in part capturing skills differentials between men and women in the labour market, but also capturing some level of discrimination (or more generally a gender difference in the returns to specific skills) in the labour market.

**Table 7. Oaxaca results, full sample**

	(1)		(2)		(3)	
<b>Overall</b>						
Male ln(wage)	3.163		3.163		3.163	
Female ln(wage)	2.945		2.945		2.945	
Gap	0.218		0.218		0.218	
	Coeff.	%	Coeff.	%	Coeff.	%
Explained	0.036	16.4	0.065	29.7	0.051	23.6
Unexplained	0.182	83.6	0.153	70.3	0.166	76.4
<b>Detailed decomposition of the Explained:</b>						
Total Age	-0.0004	-0.16	-0.0003	-0.15	-0.0005	-0.21
Total Education	-0.0094	-4.33	-0.0044	-2.05	-0.0021	-0.97
Marital status	0.0006	0.28	0.0005	0.23	0.0004	0.19
Child under 18	-0.0003	-0.14	-0.0002	-0.11	-0.0002	-0.11
Union coverage	0.0037	1.71	0.0072	3.32	0.0084	3.87
Tenure	0.0063	2.92	0.0053	2.45	0.0049	2.24
Total Industry	0.0351	16.12	0.0555	25.52	0.0464	21.34
Total Occupation			0.0011	0.49		
Skills						
Social					-0.0089	-4.08
Intellectual					0.0087	3.99
Motor					0.0023	1.07
Visual					0.0056	2.57
Strength					-0.0133	-6.12
Analytical					-0.0003	-0.15
Total skills					-0.0059	-0.03

Given the apparent interaction between industry and occupation, however, we believe it is sensible to investigate gender wage gaps within industries. This also aids in identifying industries with the largest wage gaps that cannot be explained by gender differences in skills.

In Tables 8, 9, and 10, we present detailed results for select female-dominated, male-dominated, and gender-balanced industries, respectively. (A summary of main results within each 3-digit industry category is provided in the appendix).

Few generalizations can be made across industries, except to say that whether skills indices or occupation indicators are used will matter for our interpretation of the gender wage gap. Consider first some of the results for female-dominated industries presented in Table 8. For the ambulatory health care services industry (621), the use of skills indices suggests there are greater skills differences between men and women that support a wage gap than suggested by the use of occupation indicators. For the social assistance industry (624) or clothing stores industry (448) the results suggest skill differentials do little explain the gender wage gap, so that the occupational segregation 'explaining' the gap may represent discrimination or other barriers rather than productivity differences within these industries.

In male-dominated industries (Table 9) we see similar mixed results. The industry representing special trade contractors (industry 238) has the largest gender wage gap (0.257) among the industries presented, of which 41% can be explained by gender differences in the type of occupation they are employed in. When all factors are accounted for, results for industry 238 suggest 77% of the wage gap can be accounted for by gender differences in characteristics (model 1). However, when skills measures are used, none of the wage gap in this industry can be accounted for. In the manufacturing of transportation equipment (industry 336), however, accounting for skills rather than occupation indicators explains more of the gap.

In Table 10 we present results for select gender-balanced industries. The professional, scientific and technical services industry (541) offers another example of an industry in which the gender differences in occupation of employment can explain a substantial part of the wage gap (16%) and the use of skills indices will capture an even large part of the wage gap (25%). Recall from table 5 that male-dominated occupations within this group required higher analytical skills and these would be highly rewarded in this industry. Skills differentials in food manufacturing (industry 311), in contrast can not help explain the gender wage gap and the results suggest to us the occupation differences are not capturing true productivity differences.

**Table 8. Decomposition Within Select Female-Dominated Industries**

Model	Ambulatory health 621		Nursing/Res. Care Facilities 623		Social Assistance 624		Clothing & Access. Stores 448	
	1	2	1	2	1	2	1	2
<b>Overall Gap</b>	0.163		0.028		0.183		0.151	
Explained (%)	51.7	51.6	-131.5	-85.5	68.4	-5.5	17.4	-18.4
Unexplained (%)	48.3	48.4	231.5	185.5	31.6	105.5	82.6	118.4
<b>Explained (Detailed, % of gap)</b>								
Age	1.5	2.0	-7.4	-17.0	-5.9	-4.5	-8.3	-5.3
Education	19.4	7.0	15.4	12.8	7.8	8.6	1.6	-1.1
Marital status	-0.7	-1.0	-0.9	-1.4	-0.5	-0.6	-2.7	-3.5
Child under 18	-0.5	-0.2	-2.6	-2.8	-2.0	-1.5	-7.2	-6.1
Union coverage	10.3	9.2	-16.3	-15.3	0.2	0.2	-1.9	1.8
Tenure	-10.2	-7.4	-45.9	-33.0	5.6	6.1	8.6	5.5
A. Management	20.3		72.9		33.9		2.2	
B. Business, Finance, Admin.	-6.0		-12.8		2.5		3.0	
C. Natural and Applied Sc.	13.1		33.0		5.9		18.8	
D. Health	1.7		-147.3		-0.4		0.0	
E. Social Sc. Education, Gov. Service and Religion	3.7		8.4		19.8		1.7	
F. Art, Culture, Recreation and Sport	0.1		-10.6		0.1		0.0	
H. Trades, Transport and Equipment Operators	-1.1		-8.1		-0.6		1.5	
I. Occup. Unique to Primary Industry	0.0		-9.2		-0.7		0.0	
J. Occup. Unique to Processing, Mnfg. and Utilities	0.0		0.0		2.7		-0.1	
<b>Total Occupation</b>	<b>31.8</b>		<b>-73.7</b>		<b>63.3</b>		<b>27.2</b>	
Social		35.4		2.4		31.6		-5.2
General intelligence		-1.6		17.7		-10.9		-3.0
Fine motor		12.8		263.6		0.4		6.7
Visual		-7.7		-0.4		0.6		-1.1
Physical strength		-3.4		-286.0		-30.4		-1.3
Analytical		6.5		-26.3		-5.0		-5.8
<b>Total skills</b>		<b>41.9</b>		<b>-29.0</b>		<b>-13.8</b>		<b>-9.7</b>
<p>Note: Model 1 refers to the regression model using occupation indicators. Model 2 refers to the model using skills indices. Each model includes the same set of control variables other than the difference in occupation controls.</p>								

**Table 9. Decompositions within select male-dominated industries**

	236		238		332		336	
	1	2	1	2	1	2	1	2
<b>Overall Gap</b>	0.193	0.193	0.257	0.257	0.185	0.185	0.192	0.192
Explained (%)	-38.2	-61.8	77.9	-3.7	21.5	-4.3	32.9	35.8
Unexplained (%)	138.2	161.8	22.1	103.7	78.5	104.3	67.1	64.2
<b>Explained (Detailed, % of gap)</b>								
Age	-3.5	-3.5	-4.4	-4.6	-2.5	-3.0	0.1	-0.1
Education	-8.3	-4.5	3.7	4.0	-0.2	0.3	5.2	3.8
Marital status	-1.1	-0.6	-0.6	-0.5	0.0	0.0	0.1	0.0
Child under 18	-0.6	-0.6	-0.1	-0.1	-0.2	-0.2	0.0	0.1
Union coverage	38.1	39.6	39.2	38.6	1.4	2.1	3.6	3.9
Tenure	-0.9	-0.7	-1.0	-0.9	0.0	0.0	8.4	7.0
A. Management	-5.4		-0.1		5.2		5.2	
B. Business, Finance, Admin.	-55.2		53.2		41.1		-1.9	
C. Natural and Applied Sc.	1.3		0.0		3.6		10.4	
D. Health	0.0		0.0		0.0		-0.4	
E. Social Sc. Education, Gov. Service and Religion	-1.7		-0.2		0.5		-1.2	
F. Art, Culture, Recreation and Sport	-0.1		-1.0		0.1		-0.2	
H. Trades, Transport and Equipment Operators	-0.6		-10.6		-21.2		0.9	
I. Occup. Unique to Primary Industry	0.0		-0.1		0.0		0.0	
J. Occup. Unique to Processing, Mnfg.and Utilities	0.0		-0.1		-6.3		2.7	
<b>Total Occupation</b>	<b>-61.9</b>		<b>41.1</b>		<b>23.0</b>		<b>15.5</b>	
Social		-20.7		13.5		-2.8		7.3
General intelligence		5.7		-3.8		14.7		15.8
Fine motor		-35.4		-34.4		-42.6		-5.8
Visual		-2.1		10.3		9.1		10.7
Physical strength		-9.3		-19.4		18.0		-2.7
Analytical		-29.7		-6.3		0.0		-4.3
<b>Total skills</b>		<b>-91.4</b>		<b>-40.1</b>		<b>-3.5</b>		<b>21.0</b>

Note: Model 1 refers to the regression model using occupation indicators. Model 2 refers to the model using skills indices. Each model includes the same set of control variables other than the difference in occupation controls.

**Table 10. Decomposition for select gender-balanced industries**

Industry	311		445		541		722	
	1	2	1	2	1	2	1	2
<b>Overall Gap</b>	0.190		0.207		0.244		0.159	
Explained (%)	22.1	3.0	33.3	26.1	21.5	27.3	2.8	16.7
Unexplained (%)	77.9	97.0	66.7	73.9	78.5	72.7	97.2	83.3
<b>Explained (Detailed, % of gap)</b>								
Age	-1.6	-1.7	-1.6	-3.6	-1.7	-2.0	-1.4	-1.3
Education	1.0	0.2	1.4	2.1	8.3	5.4	-0.9	-1.4
Marital status	0.0	-0.1	-0.7	2.3	0.7	0.6	-1.6	-1.3
Child under 18	0.1	0.1	-1.3	-1.6	0.0	0.1	1.3	2.4
Union coverage	1.3	2.8	0.4	0.8	0.5	0.8	-0.5	-0.6
Tenure	6.7	5.7	9.5	8.6	-2.7	-2.8	-1.0	-1.0
A. Management	13.9		16.1		8.6		0.0	
B. Business, Finance, Admin.	-3.9		2.5		-32.2		9.5	
C. Natural and Applied Sc.	-5.6		8.9		59.6		-4.4	
D. Health	0.0		-5.0		-2.7		0.3	
E. Social Sc. Education, Gov. Service and Religion	0.7		-1.7		-15.9		0.0	
F. Art, Culture, Recreation and Sport	0.0		-2.3		-0.9		0.2	
H. Trades, Transport and Equipment Operators	7.1		7.4		-0.2		0.4	
I. Occup. Unique to Primary Industry	0.0		-0.2		0.0		1.0	
J. Occup. Unique to Processing, Mnfg.and Utilities	2.4		0.0		0.1		0.0	
<b>Total Occupation</b>	<b>14.5</b>		<b>25.7</b>		<b>16.4</b>		<b>6.9</b>	
Social		-1.8		-3.4		6.5		9.8
General intelligence		4.9		13.4		16.3		19.7
Fine motor		7.3		0.0		3.4		-20.3
Visual		10.9		16.5		-3.9		7.7
Physical strength		-25.1		-10.0		-0.5		0.4
Analytical		-0.1		0.9		3.5		2.6
<b>Total skills</b>		<b>-3.9</b>		<b>17.5</b>		<b>25.3</b>		<b>19.9</b>
<p>Note: Model 1 refers to the regression model using occupation indicators. Model 2 refers to the model using skills indices. Each model includes the same set of control variables other than the difference in occupation controls.</p>								

## Concluding Remarks

In this study we have re-examined the gender wage gap in Ontario's private sector. The distinctive feature of this paper is the focus on occupational skills required in the jobs held by men and women. Our interest in occupational skills is motivated by the difficulties involved in correctly assessing the gender gap by taking into account gender differences in the occupation of employment.

In past studies, occupation indicators are included as factors that might explain gender wage gaps, and are often interpreted as explaining away a large part of the gap by productivity differences between men and women. However, to the extent that there might be barriers to occupational choice for women, what has been interpreted as a compositional effect might better be represented as a structural effect, or discrimination.

Using measures of skill rather than occupations reduces this problem because it measures difference in the skill composition of each job, a dimension across which men and women are more likely to be equally represented. The main result drawn from this study is that a large part of the gender wage gap that has been attributed to occupational choice does not necessarily represent productivity differences between men and women. Skills differences can account for large parts of the gender gap within some industries, but accounts for little or none of the gap in others.

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## Appendix

The following tables offer more information about skills required and gender gaps in 3-digits industries. Caution should be exercised in interpreting the numbers due to small sample cell sizes.

**Table A.1. Average skills within each industry**

Code	Industry	% of. ON Workers	%. Male	Average wage	Social	Intel.	Fine Motor	Visual	Strength	Analytical
111	Crop Production	0.37	0.59	16.28	-0.88	-0.83	0.76	0.98	0.71	-0.82
112	Animal Production and aquaculture	0.23	0.67	16.55	-1.03	-0.87	1.01	1.20	0.86	-0.82
113	Forestry and Logging	0.06	0.87	22.23	-0.79	-0.71	0.98	1.33	0.28	-0.16
114	Fishing, Hunting and Trapping	0.01	0.70	19.10	-1.05	-0.75	1.20	1.69	1.19	-0.77
115	Support Activities for Agriculture and Forestry	0.07	0.67	22.00	-0.49	-0.39	0.59	0.85	0.26	-0.19
211	Oil and Gas Extraction	0.05	0.80	38.27	0.18	0.34	0.04	0.26	-0.10	0.42
212	Mining and Quarrying (No Oil-Gas)	0.45	0.90	32.34	-0.08	-0.01	0.66	0.82	0.53	0.13
213	Support Act. - Mining and Oil Gas Extraction	0.19	0.85	30.40	0.11	0.16	0.34	0.52	0.27	0.27
221	Utilities	0.27	0.71	35.20	0.24	0.32	-0.22	-0.24	-0.32	0.58
236	Construction of Buildings	2.14	0.83	25.58	-0.46	-0.43	0.49	0.51	0.49	-0.18
237	Heavy and Civil Engineering Construction	0.8	0.87	27.57	-0.44	-0.53	0.62	0.86	0.38	-0.25
238	Speciality Trade Contractors	4.14	0.89	26.60	-0.40	-0.29	0.65	0.71	0.83	-0.03
311	Food Mfg.	2.3	0.58	22.26	-0.78	-0.68	0.24	-0.25	0.35	-0.25
312	Beverage and Tobacco Product Mfg.	0.34	0.66	28.08	-0.27	-0.28	-0.08	-0.17	-0.06	0.03
313	Textiles Mills	0.07	0.55	19.01	-0.88	-0.67	0.53	-0.48	0.46	-0.37
314	Textile Product Mills	0.12	0.49	17.67	-1.13	-0.93	0.60	-0.46	0.50	-0.63

Code	Industry	% of. ON Workers	% Male	Average wage	Social	Intel.	Fine Motor	Visual	Strength	Analytical
315	Clothing Mfg.	0.22	0.27	17.88	-1.07	-0.87	0.39	-0.42	0.07	-0.33
316	Leather and Allied Product Mfg.	0.04	0.55	15.57	-1.06	-0.95	0.57	-0.16	0.47	-0.63
321	Wood Product Mfg.	0.49	0.79	21.07	-0.65	-0.39	0.60	0.31	0.48	-0.14
322	Paper Mfg.	0.63	0.74	25.63	-0.48	-0.36	0.52	0.15	0.44	-0.19
323	Printing and Related Support Activities	0.74	0.64	22.76	-0.43	-0.17	0.28	0.00	0.21	0.02
324	Petroleum and Coal Product Mfg.	0.13	0.84	35.14	0.14	0.34	0.20	0.08	-0.06	0.61
325	Chemical Mfg.	1.31	0.57	28.75	0.14	0.30	0.12	-0.10	-0.05	0.57
326	Plastic and Rubber Products Mfg.	1.07	0.69	22.16	-0.53	-0.37	0.58	-0.02	0.50	-0.11
327	Non-Metallic Mineral Product Mfg.	0.47	0.86	25.14	-0.44	-0.46	0.48	0.39	0.47	-0.12
331	Primary Metal Mfg.	0.83	0.89	27.00	-0.55	-0.36	0.64	0.34	0.55	-0.01
332	Fabricated Metal Product Mfg.	1.55	0.82	23.69	-0.51	-0.27	0.48	-0.02	0.41	-0.02
333	Machinery Mfg.	1.27	0.81	25.35	-0.26	0.02	0.24	-0.13	0.14	0.17
334	Computer and Electronic Product Mfg.	1.3	0.65	29.89	0.09	0.37	-0.24	-0.43	-0.50	0.43
335	Electric Equipment, Appliance and Component Mfg.	0.53	0.63	24.55	-0.28	0.02	0.14	-0.21	-0.05	0.03
336	Transportation Equipment Mfg.	4.17	0.79	27.00	-0.41	-0.25	0.47	0.14	0.43	-0.11
337	Furniture and Related Prod Mfg.	0.72	0.77	20.52	-0.73	-0.42	0.54	0.26	0.52	-0.20
339	Miscellaneous Mfg.	1.06	0.59	22.99	-0.39	-0.33	0.13	-0.37	0.12	-0.15
411	Farm Product Whl.	0.07	0.58	22.09	-0.05	-0.26	-0.34	-0.06	-0.27	-0.03
412	Petroleum and Petroleum Products merchant Whl.	0.06	0.76	28.08	-0.02	-0.26	-0.17	0.25	-0.20	-0.02
413	Food, Beverage and Tobacco merchant Whl.	0.62	0.70	24.31	-0.02	-0.28	-0.35	-0.04	-0.18	-0.13
414	Personal and Household Goods merchant Whl.	0.68	0.42	26.79	0.38	0.10	-0.83	-0.57	-0.72	0.29
415	Motor Vehicle and Parts and accessories merchant Whl.	0.39	0.78	24.04	0.01	-0.14	-0.30	-0.06	-0.18	-0.01
416	Building Material and Supplies merchant Whl.	0.84	0.73	24.29	0.06	-0.13	-0.47	-0.22	-0.35	-0.03

Code	Industry	% of. ON Workers	% Male	Average wage	Social	Intel.	Fine Motor	Visual	Strength	Analytical
417	Machinery, Equipment and Supplies merchant Whl.	1.75	0.70	28.78	0.42	0.24	-0.65	-0.44	-0.71	0.52
418	Miscellaneous merchant Whl.	0.82	0.63	22.83	0.00	-0.22	-0.36	-0.11	-0.24	-0.01
441	Motor Vehicle and Parts Dealer	1.44	0.77	21.58	-0.26	-0.35	0.02	-0.06	0.26	0.05
442	Furniture and Home Furnishings Stores	0.44	0.44	17.25	-0.09	-0.43	-0.37	-0.42	0.21	0.17
443	Electronic and Appliance Stores	0.51	0.61	20.65	0.02	-0.27	-0.42	-0.56	0.13	0.30
444	Building Material and Garden Equipment and supplies Dealers	0.94	0.59	18.47	-0.15	-0.46	-0.28	-0.39	0.24	0.17
445	Food and Beverage Stores	2.66	0.44	17.43	-0.41	-0.67	-0.17	-0.56	0.37	0.03
446	Health and Personal Care Stores	1.2	0.22	21.72	0.10	-0.09	-0.21	-0.59	0.25	0.30
447	Gasoline Stations	0.24	0.57	14.31	-0.71	-0.92	0.25	-0.11	0.53	-0.14
448	Clothing and Clothing Accessories Stores	1.02	0.18	16.80	0.01	-0.30	-0.35	-0.66	0.26	0.33
451	Sporting Goods, Hobby, Book and Music Stores	0.4	0.50	17.03	-0.02	-0.36	-0.40	-0.60	0.27	0.27
452	General Merchandise Stores	2.27	0.36	17.38	-0.27	-0.53	-0.28	-0.49	0.27	0.07
453	Misc. Store Retailers	0.95	0.32	16.90	-0.11	-0.44	-0.32	-0.51	0.30	0.19
454	Non-Store Retailers	0.28	0.54	22.38	-0.06	-0.35	-0.34	-0.17	-0.18	0.12
481	Air Transportation	0.51	0.65	28.77	0.17	0.16	0.38	0.65	0.10	0.04
482	Rail Transportation	0.26	0.94	28.66	-0.35	-0.36	0.77	1.14	0.51	-0.31
483	Water Transportation	0.02	0.89	26.73	0.22	0.15	0.71	0.95	0.40	0.02
484	Truck Transportation	1.62	0.82	20.85	-0.55	-0.85	0.66	1.27	0.43	-0.29
485	Transit and Ground Passenger Transportation	0.66	0.46	17.04	-0.75	-0.68	0.95	1.87	-0.06	-0.50
486	Pipeline Transportation	0.02	0.78	37.66	-0.02	0.09	0.38	0.19	0.10	0.42
487	Scenic and Sightseeing Transportation	0.02	0.44	17.68	0.10	-0.13	-0.20	0.24	-0.34	0.31
488	Support Activities for Transportation	0.74	0.63	25.55	-0.01	-0.17	-0.25	0.08	-0.35	0.16
492	Couriers and Messengers	0.47	0.76	22.33	-0.52	-0.91	0.16	0.50	0.20	-0.21

Code	Industry	% of. ON Workers	%. Male	Average wage	Social	Intel.	Fine Motor	Visual	Strength	Analytical
493	Warehousing and Storage	0.54	0.70	20.19	-0.43	-0.73	0.18	0.40	0.40	-0.29
511	Publishing Industries (exc. Internet)	0.84	0.50	28.91	0.34	0.28	-0.69	-0.52	-0.81	0.26
512	Motion Picture and Sound Recording Industries	0.25	0.55	28.01	0.42	0.27	-0.50	-0.45	-0.71	0.19
515	Broadcasting (except Internet)	0.45	0.55	29.04	0.58	0.39	-0.62	-0.59	-0.92	-0.03
517	Telecommunications	1.74	0.64	30.84	0.38	0.34	-0.65	-0.40	-0.78	0.62
518	Data Processing, hosting and Related Services	0.11	0.59	30.79	0.24	0.36	-0.80	-0.78	-1.12	0.70
519	Other Information Services	0.07	0.62	32.23	0.47	0.54	-0.99	-0.78	-1.19	0.55
522	Credit Intermediation and Related Activities	4.94	0.40	29.22	0.60	0.49	-1.03	-0.84	-1.14	1.01
523	Securities, Commodity Contracts and other financial investment and Related activities	1.27	0.47	32.47	0.76	0.64	-1.21	-0.84	-1.29	1.03
524	Insurance Carriers and Related Activities	2.41	0.31	29.08	0.42	0.23	-1.14	-0.79	-1.31	0.74
526	Funds and Other Financial Vehicles	0.08	0.49	40.39	0.75	0.54	-1.20	-0.82	-1.31	1.07
531	Real State	1.41	0.45	23.01	-0.11	-0.29	-0.79	-0.49	-0.55	-0.17
532	Rental and Leasing Services	0.41	0.71	22.89	0.00	-0.20	-0.17	-0.19	0.00	0.28
541	Professional, Scientific and Technical Services	9.3	0.53	31.81	0.60	0.70	-0.94	-0.66	-1.09	0.89
551	Management of Companies and Enterprises	0.02	0.46	36.87	0.62	0.31	-1.09	-0.75	-1.07	0.75
561	Administrative and Support Services	4.92	0.50	18.25	-0.43	-0.55	-0.30	-0.18	-0.02	-0.59
562	Waste Management and Remediation Services	0.26	0.86	23.00	-0.66	-0.75	0.88	1.09	0.31	-0.32
611	Educational Services	0.75	0.30	24.78	0.78	0.31	-0.93	-0.63	-0.57	0.08
621	Ambulatory Health Care Services	3.48	0.10	24.10	0.19	-0.04	-0.14	-0.64	-0.12	0.06
623	Nursing and Residential Care	2.45	0.12	21.18	-0.19	-0.36	0.12	-0.55	0.71	-0.26

Code	Industry	% of. ON Workers	% Male	Average wage	Social	Intel.	Fine Motor	Visual	Strength	Analytical
	Facilities									
624	Social Assistance	2.55	0.12	21.01	0.58	0.23	-0.75	-0.46	-0.36	0.00
711	Performing Arts, Spectator Sports and Related	0.31	0.53	23.43	-0.02	-0.22	-0.41	-0.40	-0.26	-0.36
712	Heritage Institutions	0.08	0.40	24.04	0.16	0.31	-0.51	-0.37	-0.22	0.18
713	Amusement, Gambling and Recreation Industries	0.87	0.52	19.77	-0.15	-0.50	-0.12	-0.06	0.46	-0.69
721	Accommodation Services	1.16	0.43	17.09	-0.70	-0.85	-0.39	-0.48	0.27	-0.76
722	Food Services and Drinking Places	4.63	0.39	14.88	-0.78	-1.00	-0.27	-0.64	0.35	-0.47
811	Repair and Maintenance	1.19	0.85	20.94	-0.56	-0.35	0.65	0.55	0.67	-0.26
812	Personal and Laundry Services	1.06	0.22	16.52	-0.41	-0.24	0.06	-0.55	0.19	-0.72
813	Religious, Grant-Making, Civic and professional and Similar Orgs.	1.79	0.38	27.47	0.69	0.33	-0.83	-0.42	-0.87	0.41
814	Private Households	0.56	0.04	12.44	-0.35	-0.05	0.31	1.39	0.68	-1.41

**Table A.2. Gaps and explained portion of wage gaps by industry and model choice**

Code	Name	Log wage Differential	Explained Model 1 (indicators)	Explained Model 2 (skills)	N
111	Crop Production	0.142	-0.040	-0.077	2579
112	Animal Production and aquaculture	0.033	0.015	0.010	1639
113	Forestry and Logging	0.064	0.086	0.183	458
114	Fishing, Hunting and Trapping	0.407	0.259	0.140	99
115	Support Activities for Agr. and Forestry	0.388	-0.073	-0.113	580
211	Oil and Gas Extraction	0.005	0.283	0.233	334
212	Mining and Quarrying (exc. Oil and Gas)	0.086	-0.078	-0.042	4611
213	Support Act. - Mining and Oil Gas Extraction	0.079	-0.128	-0.195	1729
221	Utilities	0.259	-0.017	-0.009	1847
236	Construction of Buildings	0.193	-0.074	-0.119	10790
237	Heavy and Civil Engineering Construction	0.180	0.114	-0.073	4699
238	Speciality Trade Contractors	0.257	0.200	-0.009	23106
311	Food Mfg.	0.190	0.042	0.006	11554
312	Beverage and Tobacco Product Mfg.	0.061	-0.048	-0.057	1712
313	Textiles Mills	0.144	-0.096	0.010	448
314	Textile Product Mills	0.332	0.102	0.158	540
315	Clothing Mfg.	0.460	0.315	0.168	767
316	Leather and Allied Product Mfg.	0.071	-0.135	-0.104	206
321	Wood Product Mfg.	0.158	-0.003	0.002	3018
322	Paper Mfg.	0.219	0.004	-0.004	3677
323	Printing and Related Support Activities	0.251	0.034	0.026	3225
324	Petroleum and Coal Product Mfg.	0.389	-0.108	-0.098	854
325	Chemical Mfg.	0.141	0.029	-0.004	6690
326	Plastic and Rubber Products Mfg.	0.265	0.097	0.066	5511
327	Non-Metallic Mineral Product Mfg.	0.094	-0.101	-0.089	2610
331	Primary Metal Mfg.	0.119	-0.014	-0.041	5347
332	Fabricated Metal Product Mfg.	0.185	0.040	-0.008	8917

Code	Name	Log wage Differential	Explained Model 1 (indicators)	Explained Model 2 (skills)	N
333	Machinery Mfg.	0.178	-0.002	-0.016	7837
334	Computer and Electronic Product Mfg.	0.373	0.199	0.179	5260
335	Electric Equipment, Appliance and Component Mfg.	0.161	0.068	0.021	2646
336	Transportation Equipment Mfg.	0.192	0.063	0.069	25260
337	Furniture and Related Product Mfg.	0.072	-0.015	-0.039	2882
339	Miscellaneous Mfg.	0.265	0.082	0.033	5009
411	Farm Product Whl.	0.213	-0.053	0.039	447
412	Petroleum and Petroleum Products merchant Whl.	0.267	0.015	0.083	388
413	Food, Beverage and Tobacco merchant Whl.	0.081	-0.027	-0.025	2821
414	Personal and Household Goods merchant Whl.	0.168	0.017	0.004	2602
415	Motor Vehicle and Parts and accessories merchant Whl.	0.166	-0.018	-0.001	2094
416	Building Material and Supplies merchant Whl.	0.143	0.070	0.008	4236
417	Machinery, Equipment and Supplies merchant Whl.	0.166	0.037	0.065	8350
418	Miscellaneous merchant Whl.	0.157	0.010	-0.002	4063
441	Motor Vehicle and Parts Dealer	0.172	0.051	0.015	8239
442	Furniture and Home Furnishings Stores	0.218	0.026	0.002	2409
443	Electronic and Appliance Stores	0.153	-0.030	-0.076	2472
444	Building Material and Garden Equipment and supplies Dealers	0.168	0.014	-0.042	5648
445	Food and Beverage Stores	0.207	0.069	0.054	14130
446	Health and Personal Care Stores	0.319	0.181	0.209	6373
447	Gasoline Stations	-0.151	0.014	-0.020	1393
448	Clothing and Clothing Accessories Stores	0.151	0.026	-0.028	4764
451	Sporting Goods, Hobby, Book and Music Stores	0.113	0.060	0.041	2020
452	General Merchandise Stores	0.260	0.090	0.058	11943
453	Misc. Store Retailers	0.250	0.075	0.077	4858

Code	Name	Log wage Differential	Explained Model 1 (indicators)	Explained Model 2 (skills)	N
454	Non-Store Retailers	0.201	0.081	0.048	1368
481	Air Transportation	0.214	0.191	0.170	2228
482	Rail Transportation	-0.035	0.018	-0.024	1677
483	Water Transportation	-0.020	0.323	-0.038	149
484	Truck Transportation	0.125	-0.053	-0.072	9873
485	Transit and Ground Passenger Transportation	0.141	0.031	0.071	4073
486	Pipeline Transportation	0.393	-0.650	-0.053	118
487	Scenic and Sightseeing Transportation	0.385	0.181	1.649	94
488	Support Activities for Transportation	0.197	0.114	0.053	3250
492	Couriers and Messengers	0.072	-0.082	-0.055	1930
493	Warehousing and Storage	0.087	-0.029	-0.044	2512
511	Publishing Industries (exc. Internet)	0.263	0.075	0.072	3593
512	Motion Picture and Sound Recording Industries	0.226	0.043	0.050	782
515	Broadcasting (except Internet)	0.099	0.045	0.039	1654
517	Telecommunications	0.182	0.033	0.059	7216
518	Data Processing, hosting and Related Services	0.355	0.044	0.082	321
519	Other Information Services	0.263	0.046	0.045	227
522	Credit Intermediation and Related Activities	0.226	0.035	0.074	18762
523	Securities, Commodity Contracts and other financial investment and Related activities	0.258	0.036	0.140	4420
524	Insurance Carriers and Related Activities	0.191	0.040	0.057	11286
526	Funds and Other Financial Vehicles	0.436	-0.054	1.246	181
531	Real State	0.093	-0.059	-0.029	5600
532	Rental and Leasing Services	0.172	0.069	0.027	2050
541	Professional, Scientific and Technical Services	0.244	0.053	0.067	36867
551	Management of Companies and Enterprises	-0.201	0.180	-0.198	91

Code	Name	Log wage Differential	Explained Model 1 (indicators)	Explained Model 2 (skills)	N
561	Administrative and Support Services	0.075	-0.025	-0.024	22856
562	Waste Management and Remediation Services	0.146	-0.052	-0.107	1532
611	Educational Services	0.133	0.069	0.028	3293
621	Ambulatory Health Care Services	0.163	0.084	0.084	19211
623	Nursing and Residential Care Facilities	0.028	-0.037	-0.024	14938
624	Social Assistance	0.183	0.125	-0.010	13596
711	Performing Arts, Spectator Sports and Related	0.124	-0.039	-0.031	1343
712	Heritage Institutions	0.254	-0.078	0.035	446
713	Amusement, Gambling and Recreation Industries	0.160	-0.027	-0.026	4748
721	Accommodation Services	0.168	0.021	0.017	6230
722	Food Services and Drinking Places	0.159	0.004	0.026	23683
811	Repair and Maintenance	0.258	0.037	0.048	7016
812	Personal and Laundry Services	0.265	0.071	0.012	5405
813	Religious, Grant-Making, Civic and professional and Similar Orgs.	0.118	0.001	0.024	8864
814	Private Households	-0.066	-0.016	-0.018	1790

Note: Model 1 uses a set of occupation indicators while Model 2 uses the skills indices. Explained is the part of the gender log wage gap explained by all covariates in the model, in terms of the log wage differential (it is not representing a percent or portion).