New Century, Old Disparities

Evolution of Gender Earnings Gaps in Latin America

Hugo Ñopo (based on work with Juan Pablo Atal, Alejandro Hoyos, and Natalia Winder)

The One Slide Presentation

What is this presentation about?

- A refined answer to the old question:
  - To what extent gender differences in individuals' characteristics can explain the differences in earnings?
- Methodological improvements:
  - Matching and a decomposition that recognizes not only differences on average characteristics but also on their distribution; and most importantly, on their supports

Findings? New Insights?

- Gender wage gaps are between 8% and 28% of average female wages.
- Higher gaps among those with lower income, with secondary incomplete, in part-time jobs, self-employed and in small firms
- An across-the-board reduction over the last decade, especially in those segments of the labor market that reported higher gaps in the early 90's

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Gender Differences in:

- Wages
- Individual Characteristics
  - Age
  - Education
- Individual Characteristics
  - Urban and Rural Area
  - Presence of children in the HH
  - Presence of other income earner in the HH
- Job Characteristics
  - Occupation
  - Sector
  - Type of employment
  - Part – time
  - Formality
  - Firm size

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The Main Counterfactual Question

What would the distribution of earnings for males be, in the case that their individual characteristics follow the distribution of the characteristics for females?

→ Matching on characteristics

The Matching Algorithm

For each possible value of the vector of characteristics x:

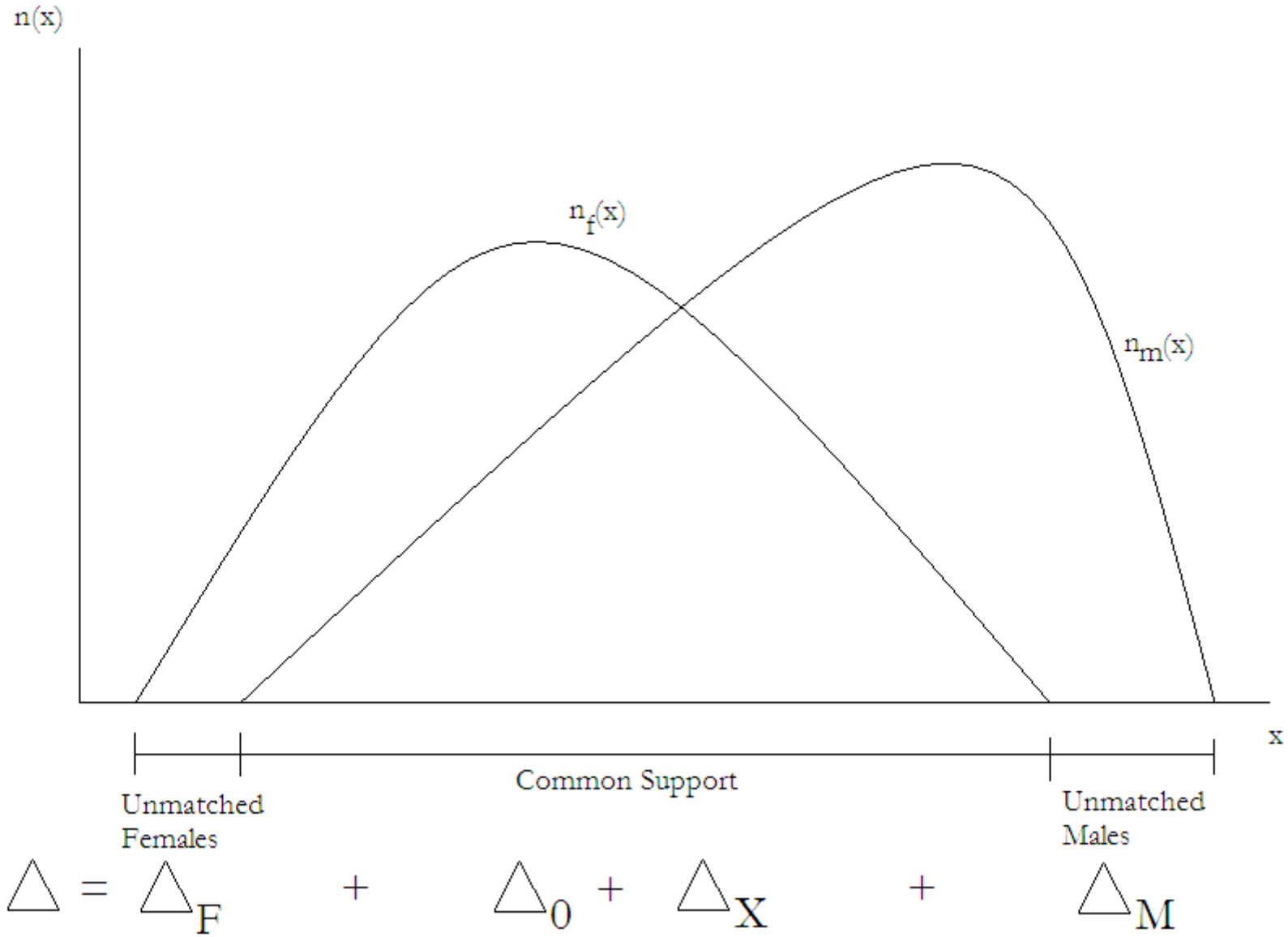
- Select all females with these characteristics $n_F(x)$
- Select all males with these characteristics $n_M(x)$
- If $n_F(x)=0$ and $n_M(x)>0 \rightarrow$ unmatched males
- If $n_F(x)>0$ and $n_M(x)=0 \rightarrow$ unmatched females
- If $n_F(x)>0$ and $n_M(x)>0 \rightarrow$ reweight:
  - Each female with 1
  - Each male with $n_F(x)/n_M(x)$

The Matching Algorithm

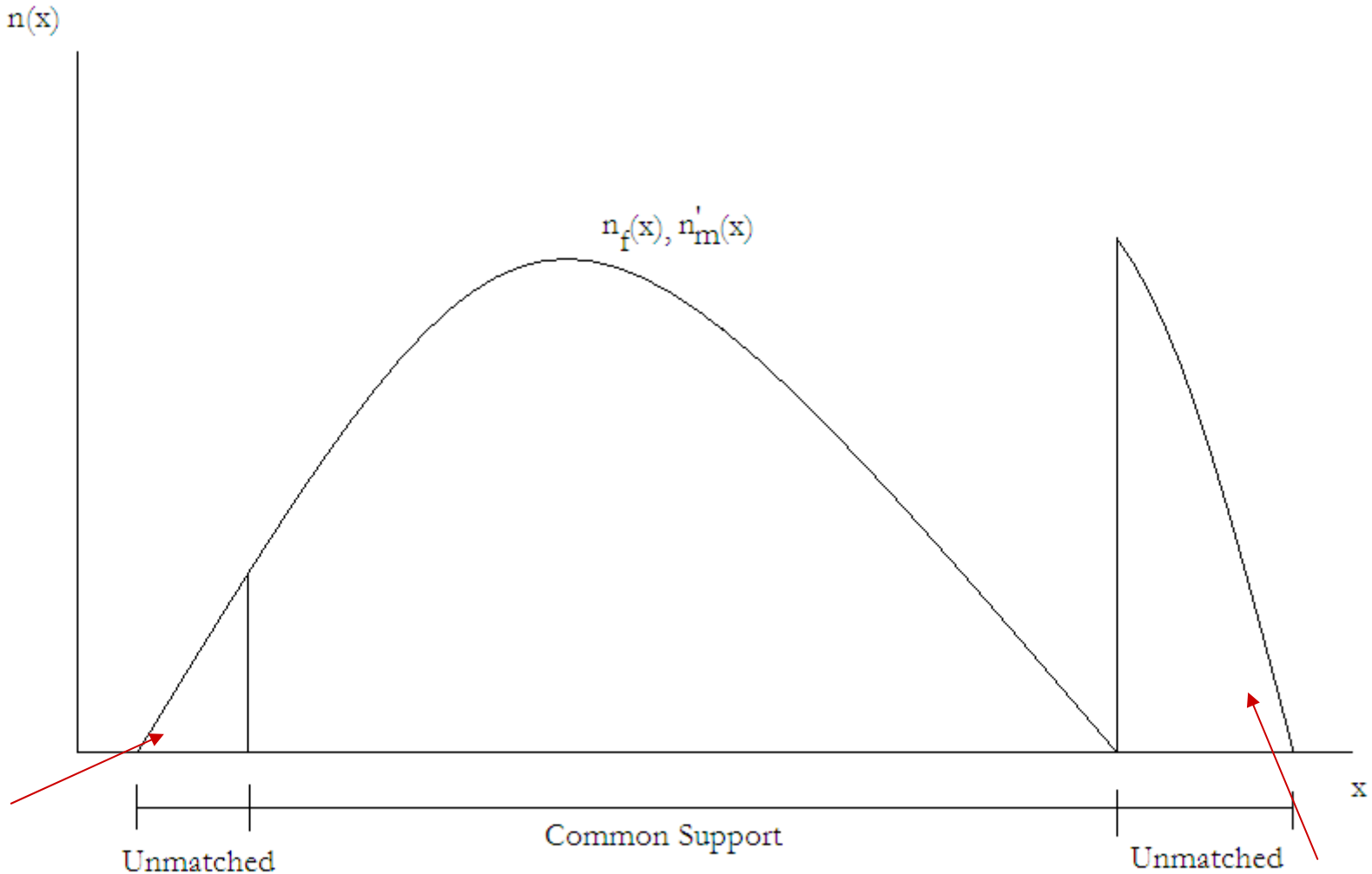
→ Result:

A sample of matched females and males with the same distribution of observable individual characteristics (but not necessarily the same distribution of earnings).

A sample of unmatched females and another of unmatched males



$$\triangle = \triangle_F + \triangle_0 + \triangle_X + \triangle_M$$



$$\triangle - \triangle_X = \triangle_F + \triangle_0 + \triangle_M$$

This Matching Approach is…

A non-parametric alternative to B-O decompositions that has advantages in terms of:

- Simplicity

  Avoiding the estimation of earnings equations
- Flexibility

  It “contains” all possible propensity scores
- Identification/Correct specification

  Recognizing that the supports of empirical distributions of characteristics do not completely overlap (the failure to recognize this leads to an overestimation of the unexplained component of the wage gap)
- Information

  Allowing us to compute directly the distribution of the unexplained effects, not just the average

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Advantages/Disadvantages

- ☺ It is not necessary to estimate earnings equations (no functional form assumption)
- ☺ Better assessment. The traditional approach seems to deliver biased results when the differences in supports are not taken into account
- ☺ Once the matching has been done, it is straightforward to:
  - » Explore the distribution of the unexplained wage gap
  - » Explore not only wage gaps but also gaps for other labor market outcomes (participation, unemployment, unemployment spells, segregation)
- ☹ Curse of Dimensionality. The method does not allow us to use too many explanatory variables.
- ☹ It does not take into account selection into the labor markets

2. Empirical Results.

A. The Data

B. The Late 2000's Picture

C. Evolution of Gender Earnings Gaps LAC (1990's-2000's)

The pooled data set

- Covering all Latin American countries (except rural Argentina and Uruguay)
- Use of expansion factors, so the size of the economies are properly represented (all but Mexico)
- Income measures are normalized to 2002 PPP USD, deflated by nominal GDP
- After that, average females' earnings is normalized to one

The Data

Country	Years	Name of the Survey	Sample Size
Argentina	1992	Encuesta Permanente de Hogares (EPH)	16,787
	2006	Encuesta Permanente de Hogares-Continua (EPH-C)	28,681
Bolivia	1997	Encuesta Nacional de Empleo (ENE)	9,609
	2007	Encuesta Continua de Hogares - MECOVI (ECH)	5,356
Brazil	1992	Pesquisa Nacional por Amostra de Domicilios (PNAD)	108,303
	2008	Pesquisa Nacional por Amostra de Domicilios (PNAD)	159,515
Chile	1992	Encuesta de Caracterización Socioeconómica Nacional (CASEN)	41,207
	2006	Encuesta de Caracterización Socioeconómica Nacional (CASEN)	86,595
Colombia	1992	Encuesta Nacional de Hogares - Fuerza de Trabajo (ENH-FT)	21,891
	2006	Gran Encuesta Integrada de Hogares (GEIH)	34,637
Costa Rica	1992	Encuesta de Hogares de Propósitos Múltiples (EHPM)	9,984
	2007	Encuesta de Hogares de Propósitos Múltiples (EHPM)	17,079
Dominican Republic	2000	Encuesta Nacional de Fuerza de Trabajo (ENFT)	7,521
	2007	Encuesta Nacional de Fuerza de Trabajo (ENFT)	9,781
Ecuador	1995	Encuesta de Condiciones de Vida (ECV)	8,431
	2006	Encuesta de Condiciones de Vida (ECV)	17,050
El Salvador	1991	Encuesta de Hogares de Propósitos Múltiples (EHPM)	9,225
	2007	Encuesta de Hogares de Propósitos Múltiples (EHPM)	19,815
Guatemala	2000	Encuesta Nacional de Condiciones de Vida (ENCOVI)	24,262
	2006	Encuesta Nacional de Condiciones de Vida (ENCOVI)	20,097
Honduras	1997	Encuesta Permanente de Hogares de Propósitos Múltiples (EPHPM)	9,230
	2007	Encuesta Permanente de Hogares de Propósitos Múltiples (EPHPM)	23,727
Mexico	1992	Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH)	14,119
	2008	Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH)	43,280
Nicaragua	1993	Encuesta Nacional de Hogares sobre Medición de Nivel de Vida (EMNV)	4,629
	2005	Encuesta Nacional de Hogares sobre Medición de Nivel de Vida (EMNV)	10,440
Panama	1991	Encuesta de Hogares, Mano de Obra (EMO)	8,432
	2006	Encuesta de Hogares (EH)	16,722
Paraguay	1995	Encuesta de Hogares (Mano de Obra) (EH)	6,797
	2007	Encuesta Permanente de Hogares (EPH)	7,461
Peru	1997	Encuesta Nacional de Hogares (ENAHO)	9,609
	2007	Encuesta Nacional de Hogares (ENAHO)	33,086
Uruguay	1992	Encuesta Continua de Hogares (ECH)	10,428
	2007	Encuesta Continua de Hogares (ECH)	56,114
Venezuela	1992	Encuesta de Hogares Por Muestreo (EHM)	90,261
	2006	Encuesta de Hogares Por Muestreo (EHM)	51,180

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Descriptive Statistics: Personal Characteristics

	circa 1992		circa 2007	
	Composition by gender (%)		Composition by gender (%)	
	Male	Female	Male	Female
Personal Characteristics				
Age Groups:				
15 to 24	24.14	25.95	20.11	18.67
25 to 34	29.48	30.38	27.29	28.07
35 to 44	23.69	24.72	24.37	26.37
45 to 54	14.48	13.19	18.46	18.95
55 to 64	8.21	5.76	9.77	7.94
Education Level				
None	7.99	7.74	4.05	3.38
Primary Incomplete	37.29	31.02	24.71	18.68
Primary Complete	14.38	12.14	14.41	12.03
Secondary Incomplete	16.56	14.95	19.95	17.29
Secondary Complete	13.13	17.80	19.63	22.57
Tertiary Incomplete	4.50	6.60	7.05	10.35
Tertiary Complete	6.16	9.75	10.21	15.70
Presence of children in the household				
No	84.02	88.57	91.15	93.19
Yes	15.98	11.43	8.85	6.81
Presence of other household member with labor income				
No	39.41	19.61	34.55	21.25
Yes	60.59	80.39	65.45	78.75
Urban				
No	27.11	17.55	18.06	11.07
Yes	72.89	82.45	81.94	88.93

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Relative Wages: Personal Characteristics

	circa 1992		circa 2007	
	Base: Average female wage = 100		Base: Average female wage = 100	
	Male	Female	Male	Female
All	116.32	100.00	108.80	100.00
Personal Characteristics				
Age Groups:				
15 to 24	78.37	72.55	71.07	69.11
25 to 34	120.99	110.50	106.01	101.00
35 to 44	139.17	115.86	121.00	109.24
45 to 54	134.37	105.91	132.53	114.14
55 to 64	113.43	86.68	119.01	104.66
Education Level				
None	61.98	52.61	55.83	52.31
Primary Incomplete	90.71	65.14	73.96	61.17
Primary Complete	104.76	80.56	84.07	67.25
Secondary Incomplete	106.40	83.56	87.85	72.95
Secondary Complete	147.98	124.23	116.23	90.65
Tertiary Incomplete	193.79	157.42	156.70	132.21
Tertiary Complete	271.56	214.88	242.63	203.57
Presence of children in the household				
No	119.37	102.25	110.92	101.52
Yes	100.29	82.56	86.97	79.18
Presence of other household member with labor income				
No	124.37	107.84	109.75	103.91
Yes	111.09	98.09	108.30	98.94
Urban				
No	78.37	66.12	71.69	69.24
Yes	130.44	107.21	116.98	103.83

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Descriptive Statistics and Associated Relative Wages: Labor Characteristics

	circa 1992		circa 2007	
	Composition by gender (%)		Composition by gender (%)	
	Male	Female	Male	Female
Labor Characteristics				
Type of Employment				
Employer	6.01	2.16	5.64	2.88
Employee	68.38	71.90	70.65	73.80
Self - Employed	25.61	25.94	23.71	23.32
Time Worked				
Part time	11.29	31.41	13.54	32.20
Full time	56.89	48.60	57.78	50.08
Over time	31.83	19.98	28.68	17.71

	circa 1992		circa 2007	
	Base: Average female wage = 100		Base: Average female wage = 100	
	Male	Female	Male	Female
All	116.32	100.00	108.80	100.00
Labor Characteristics				
Type of Employment				
Employer	197.83	181.85	195.88	187.87
Employee	113.57	103.66	107.42	102.43
Self - Employed	104.54	83.04	92.22	81.45
Time Worked				
Part time	148.27	121.04	130.43	114.87
Full time	120.80	102.38	111.34	101.17
Over time	96.98	61.13	93.47	69.66

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A look at the evolution of Gender Wage Gaps

Period 1 (CIRCA 1992)							
	Age	+ Education	+ Presence of Children in the Household	+ Presence of Other Wage Earner in the Household	+ Urban	+ Type of Employment	+ Time Worked
Δ	16.32%	16.32%	16.32%	16.32%	16.32%	16.32%	16.32%
Δ0	13.44%	25.17%	25.42%	23.96%	25.00%	23.99%	33.68%
ΔM	0.00%	0.39%	0.50%	0.80%	0.02%	2.23%	1.29%
ΔF	0.00%	-0.01%	0.05%	-0.02%	0.13%	0.26%	-1.43%
ΔX	2.88%	-9.23%	-9.65%	-8.41%	-8.83%	-10.16%	-17.22%
% CS Males	100.00%	99.46%	98.20%	93.47%	89.34%	79.62%	65.55%
% CS Females	100.00%	99.88%	99.52%	98.88%	97.40%	92.79%	80.66%

Period 2 (CIRCA 2007)							
	Age	+ Education	+ Presence of Children in the Household	+ Presence of Other Wage Earner in the Household	+ Urban	+ Type of Employment	+ Time Worked
Δ	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%
Δ0	9.73%	22.21%	22.21%	21.88%	22.56%	20.75%	29.56%
ΔM	0.00%	0.03%	0.04%	-0.25%	-0.89%	-0.33%	-2.07%
ΔF	0.00%	0.01%	0.02%	0.07%	0.16%	0.37%	0.43%
ΔX	-0.92%	-13.44%	-13.47%	-12.90%	-13.03%	-11.98%	-19.12%
% CS Males	100.00%	99.86%	99.26%	97.42%	95.28%	89.61%	79.42%
% CS Females	100.00%	99.97%	99.78%	99.41%	98.74%	96.36%	89.04%

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A. The Late 2000 Picture

Distribution of the Portrayed Unexplained Differences

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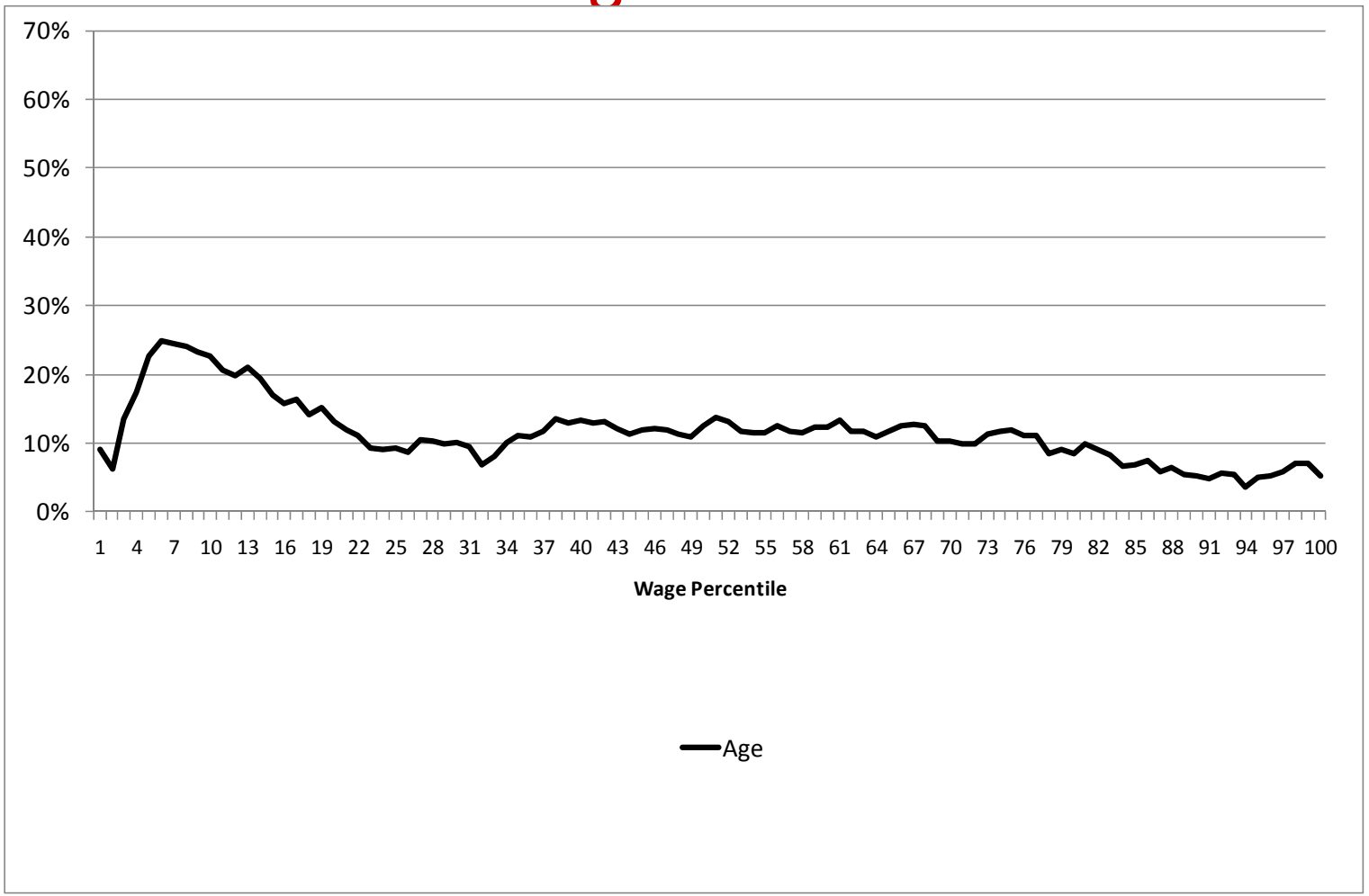
Unexplained Gender Wage Gaps by Percentiles of the Wage Distribution



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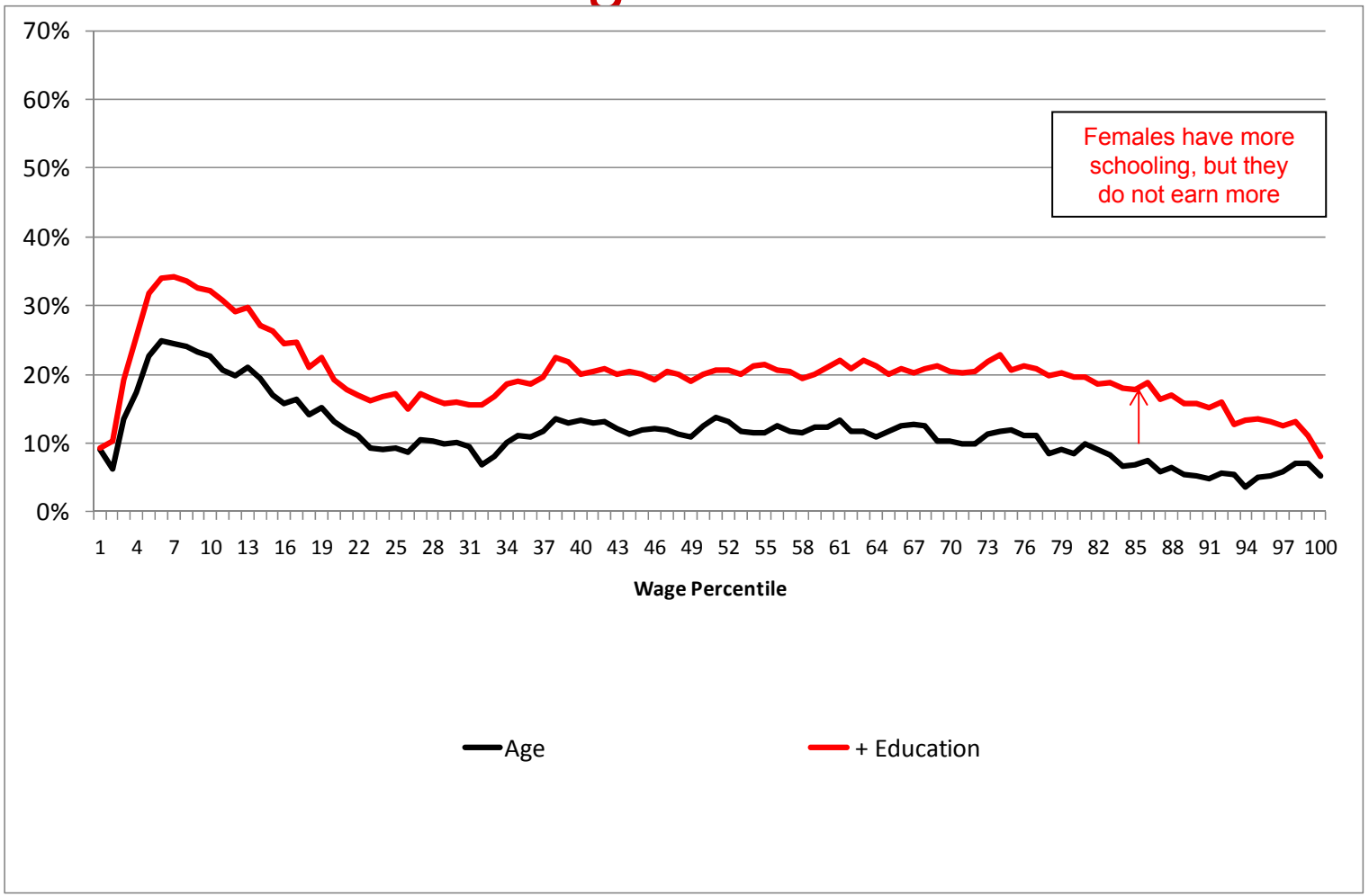

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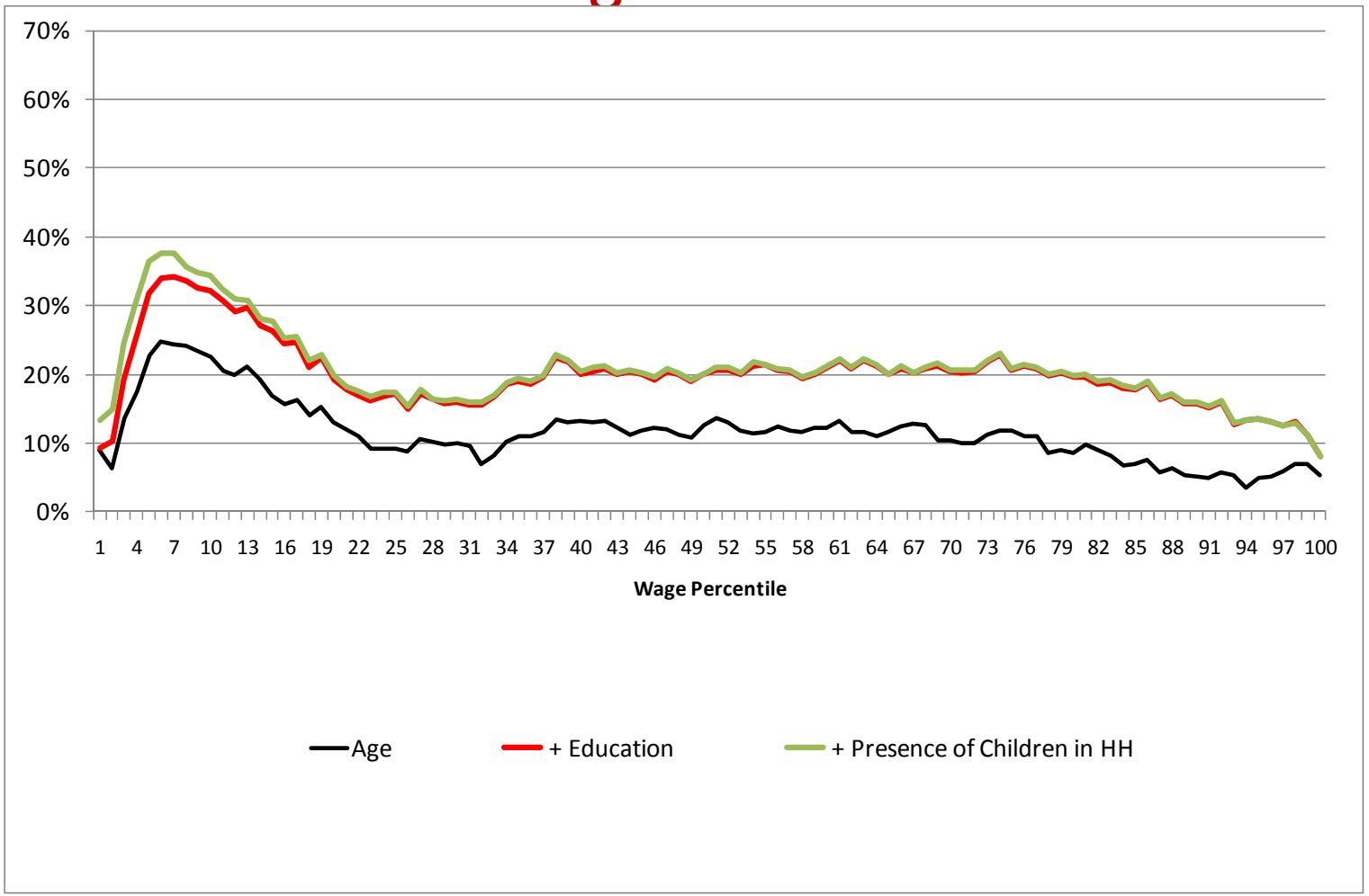

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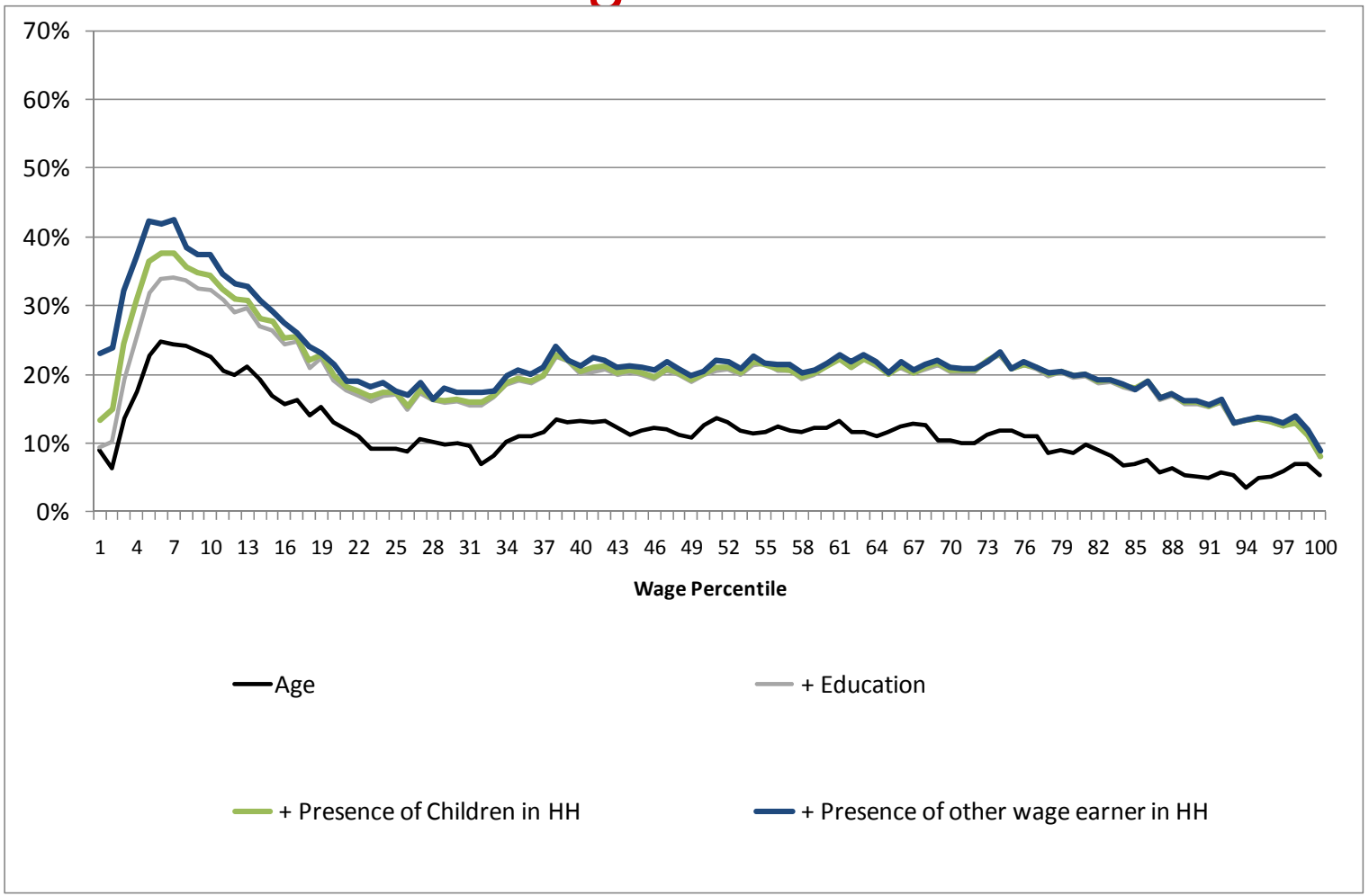

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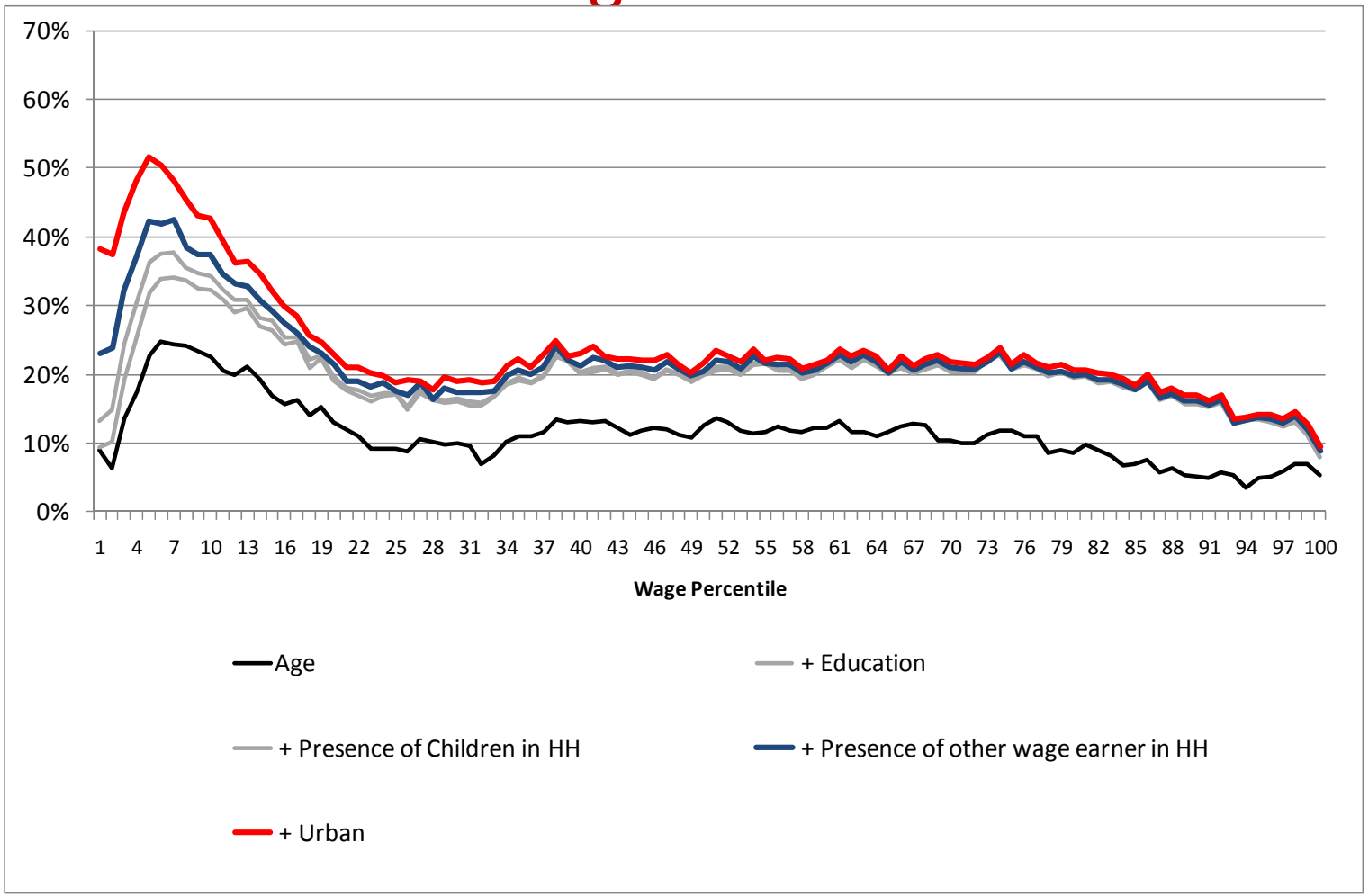

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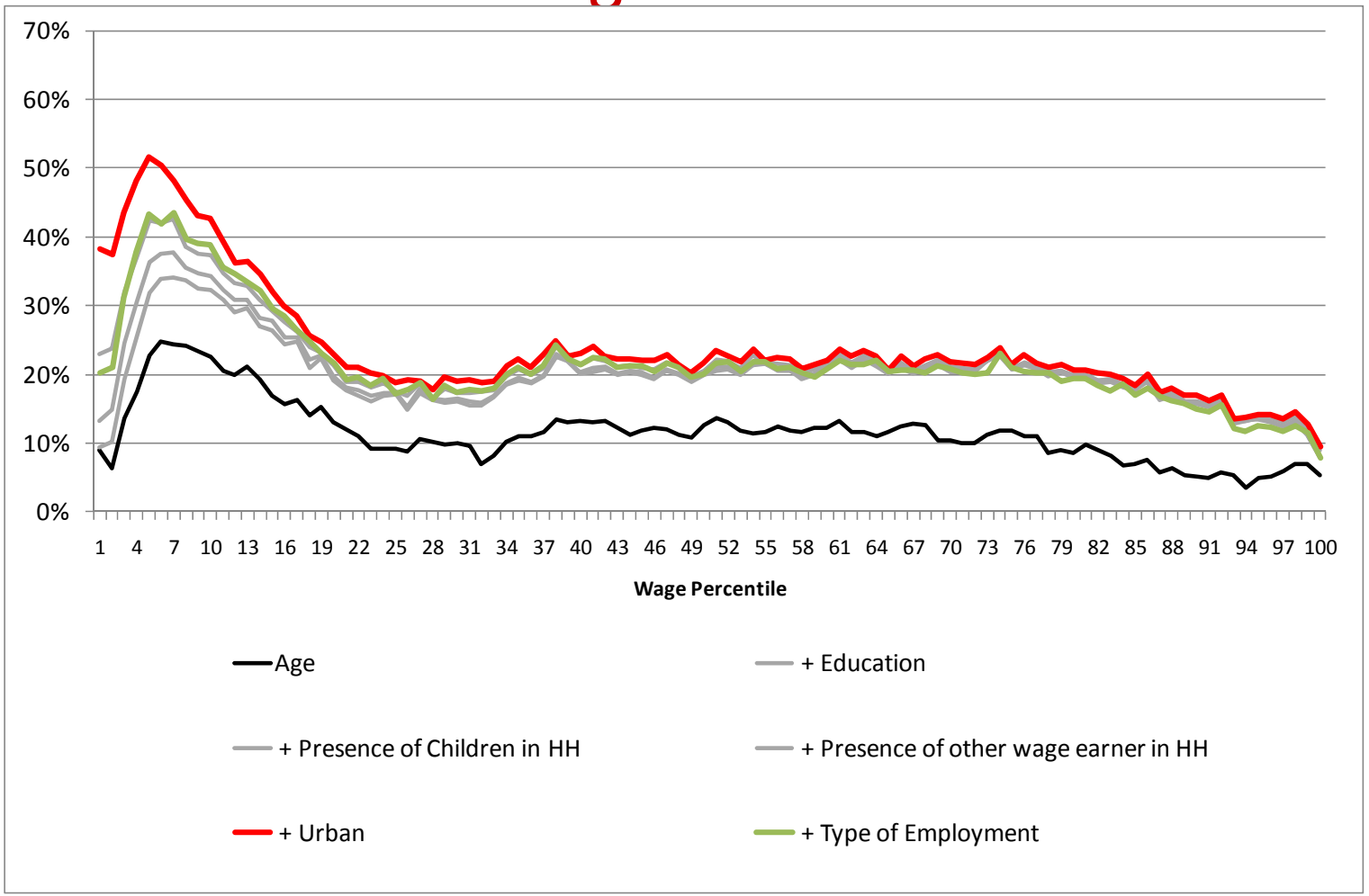

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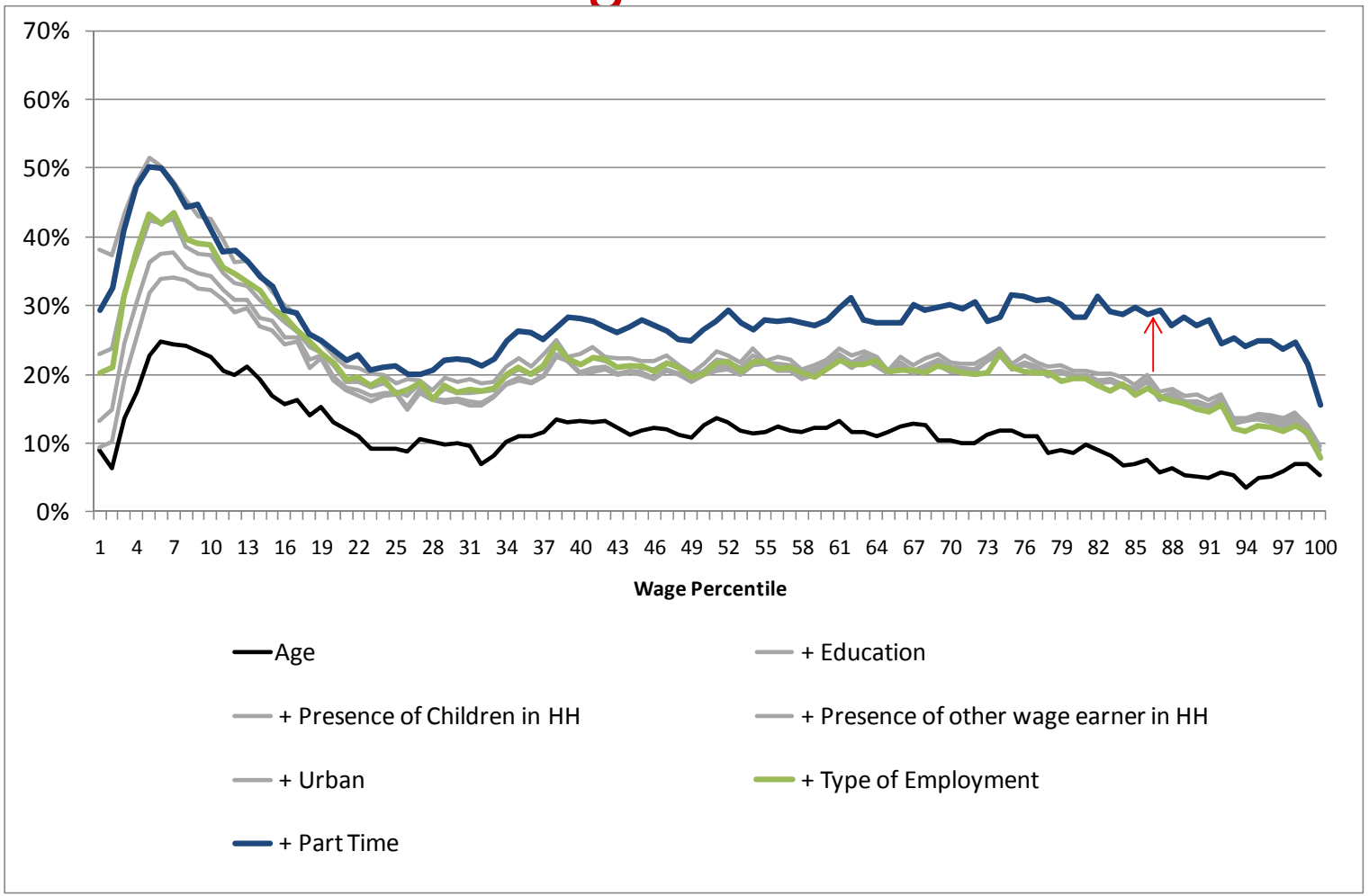

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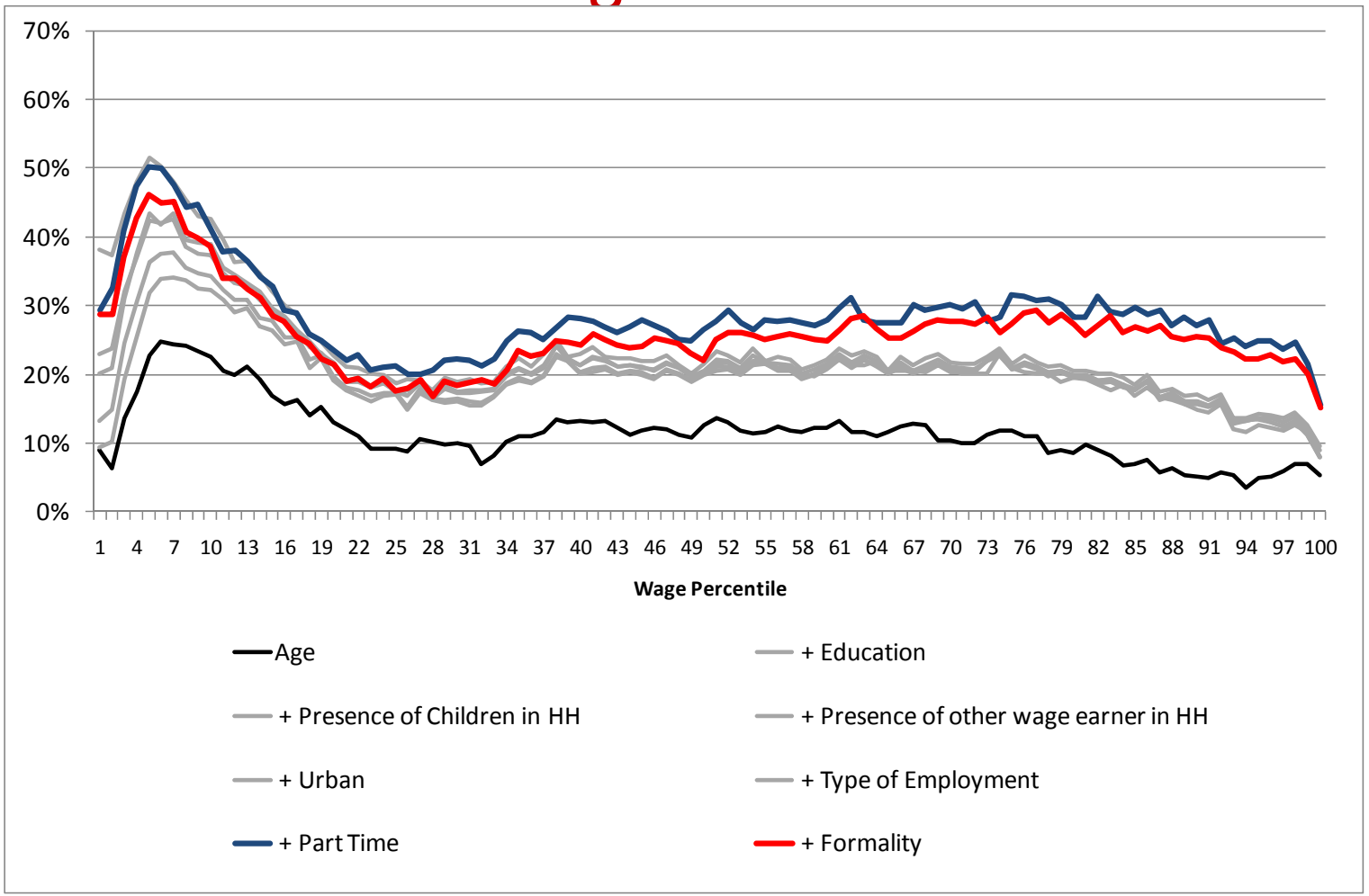

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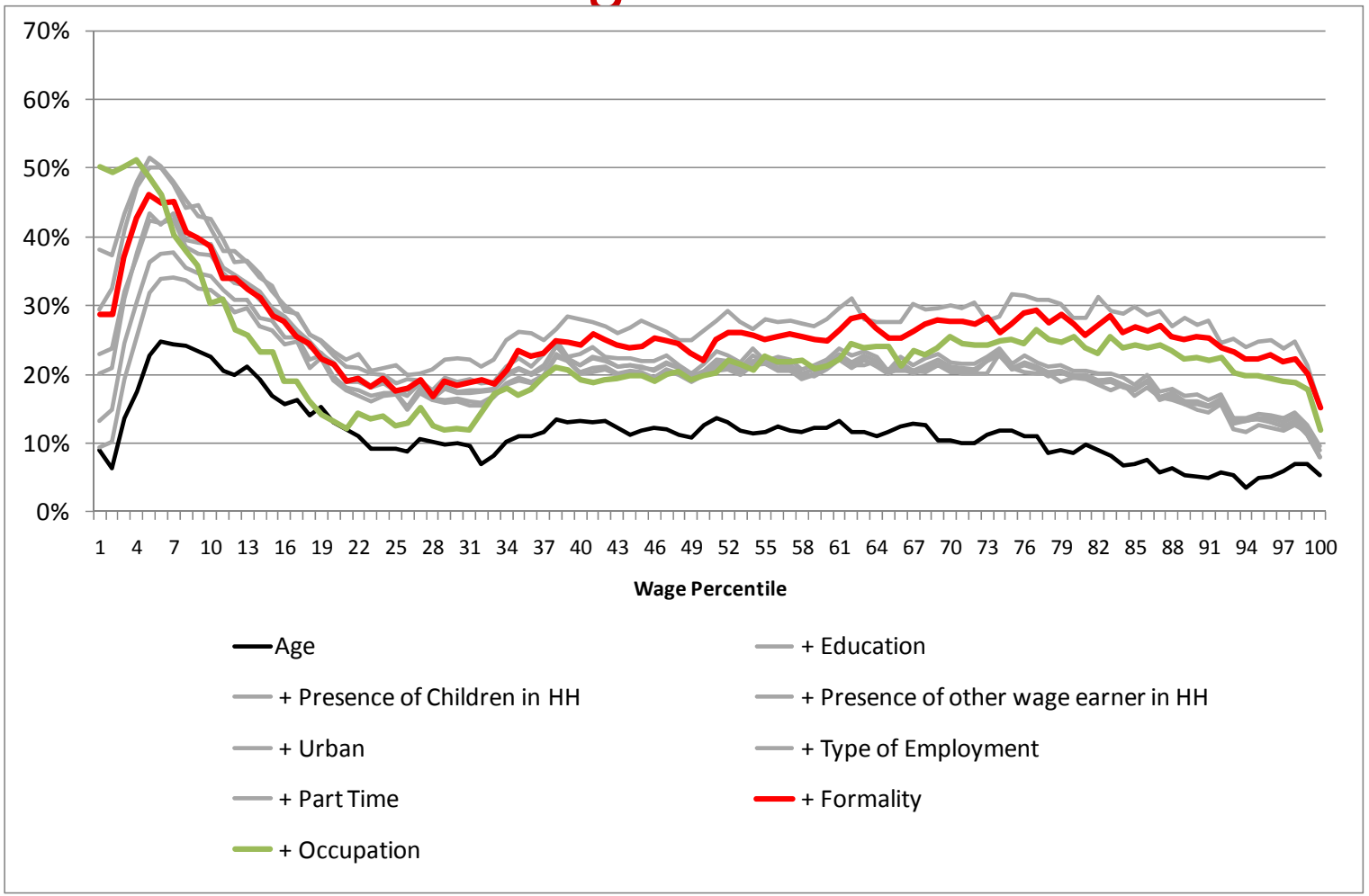

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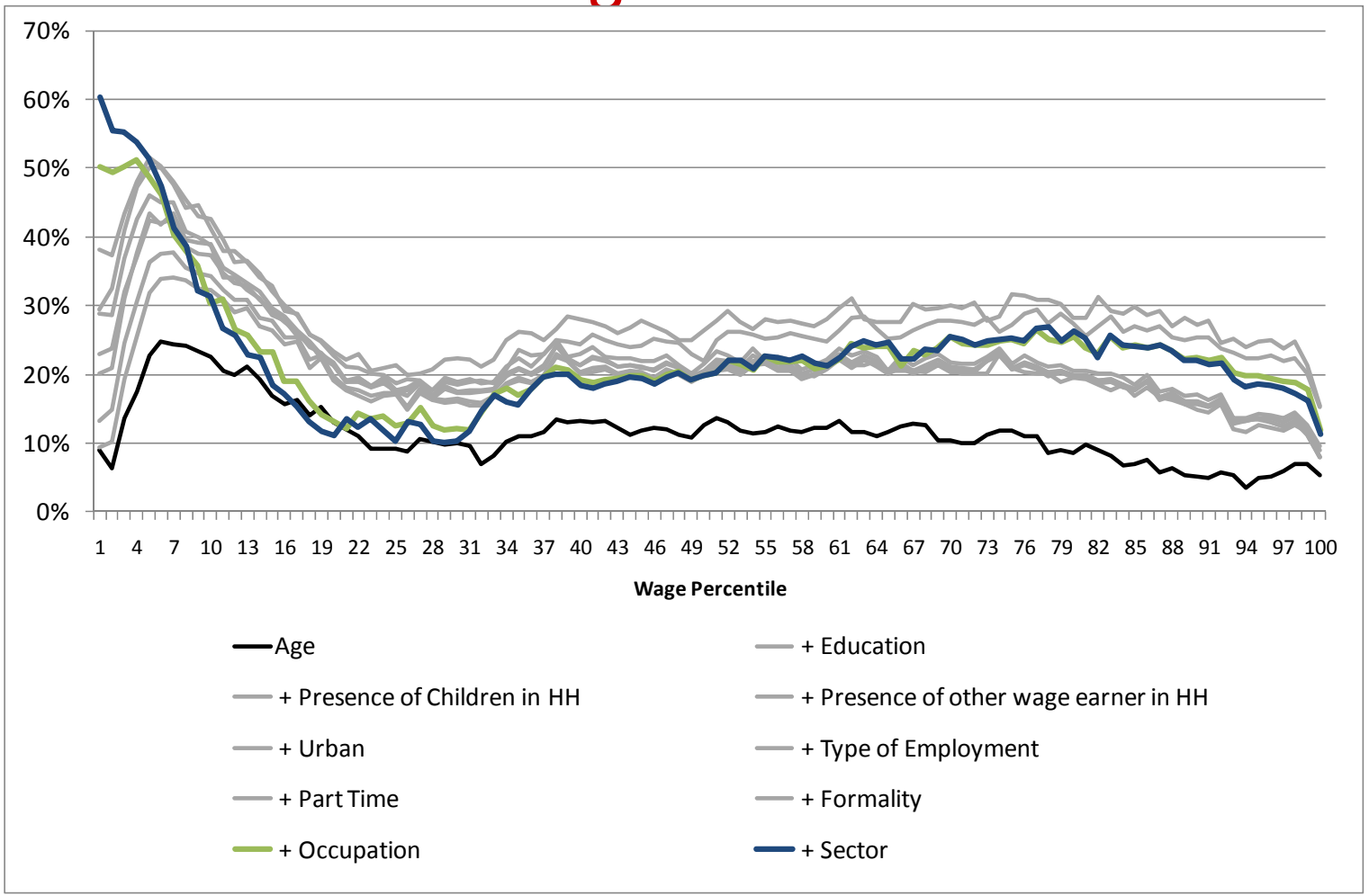

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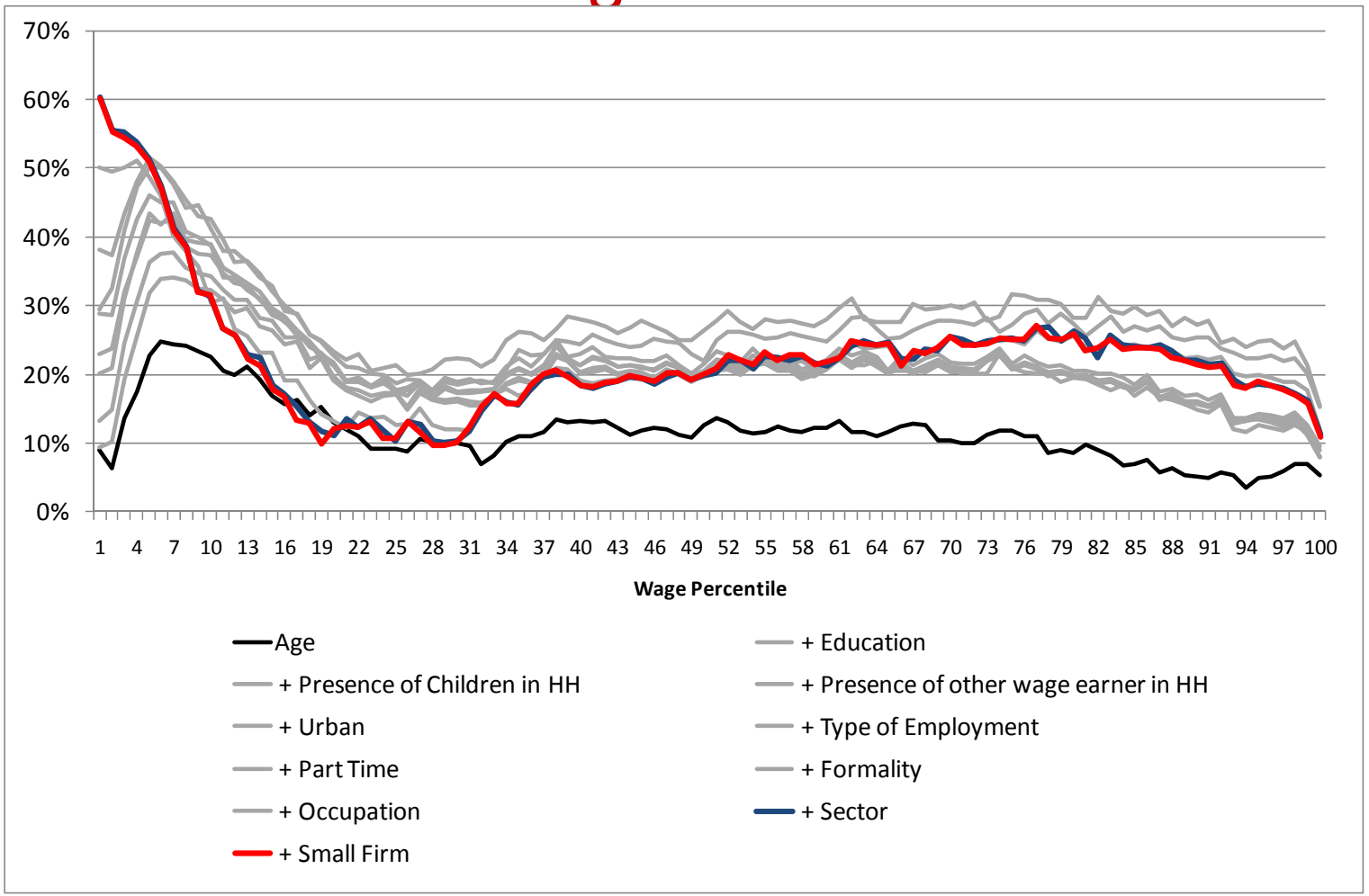

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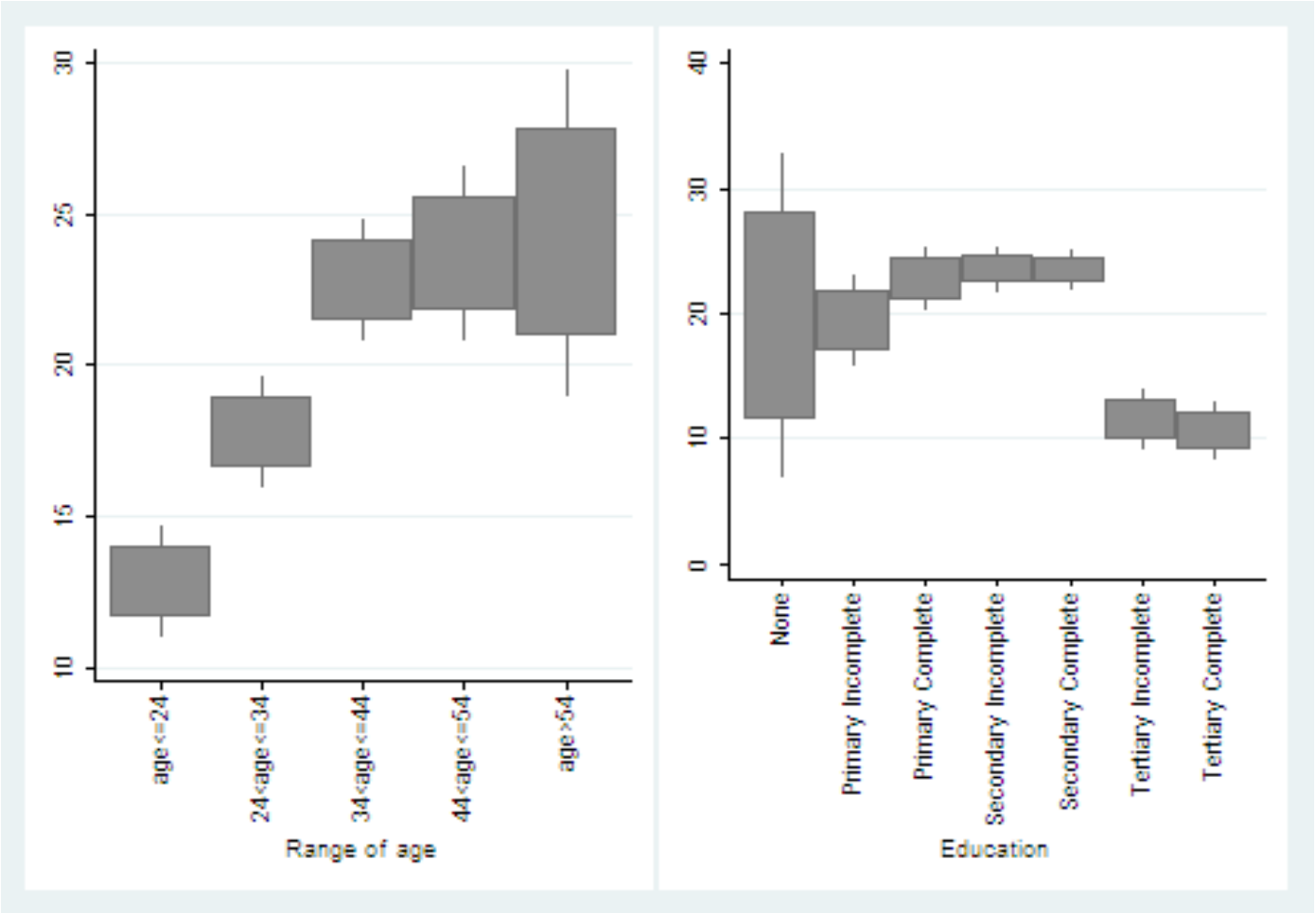
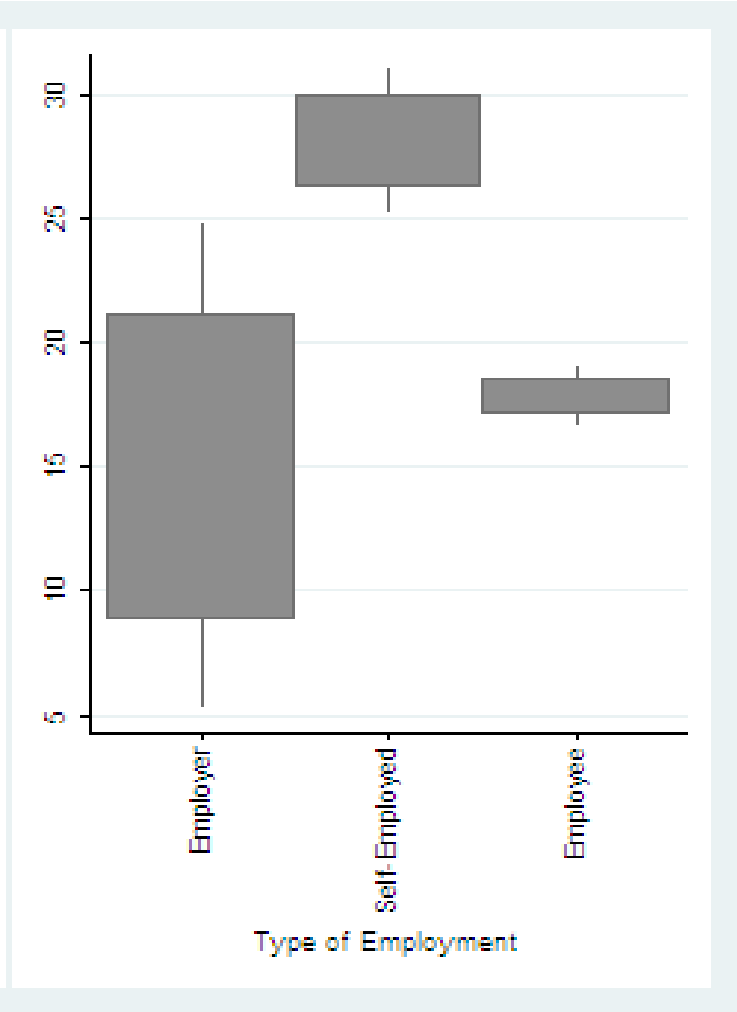
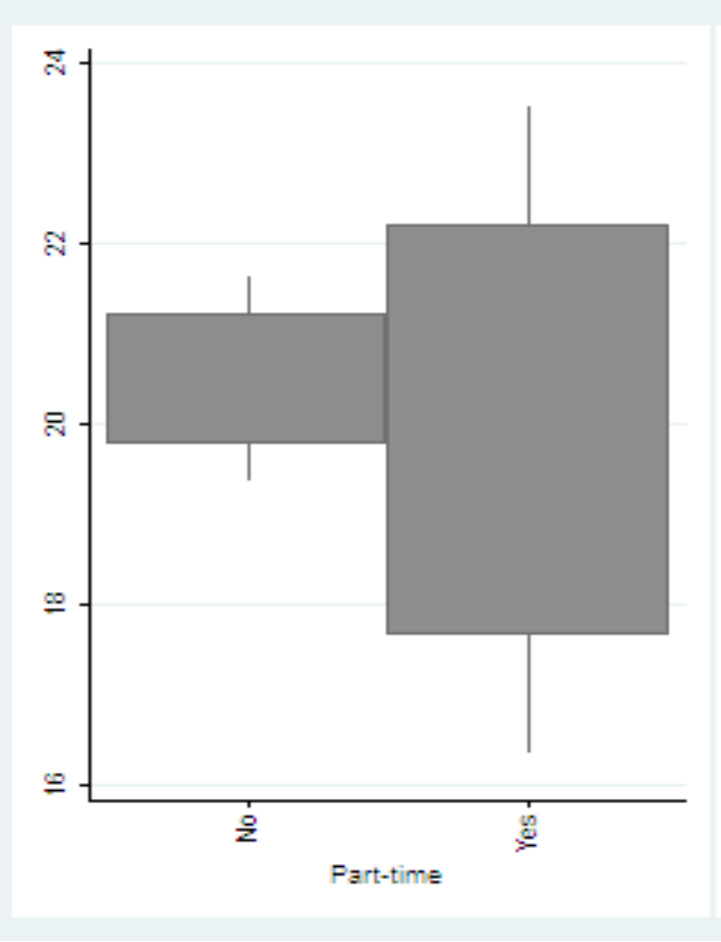
The unexplained gender wage gap increases with age and is lower among those with tertiary education.



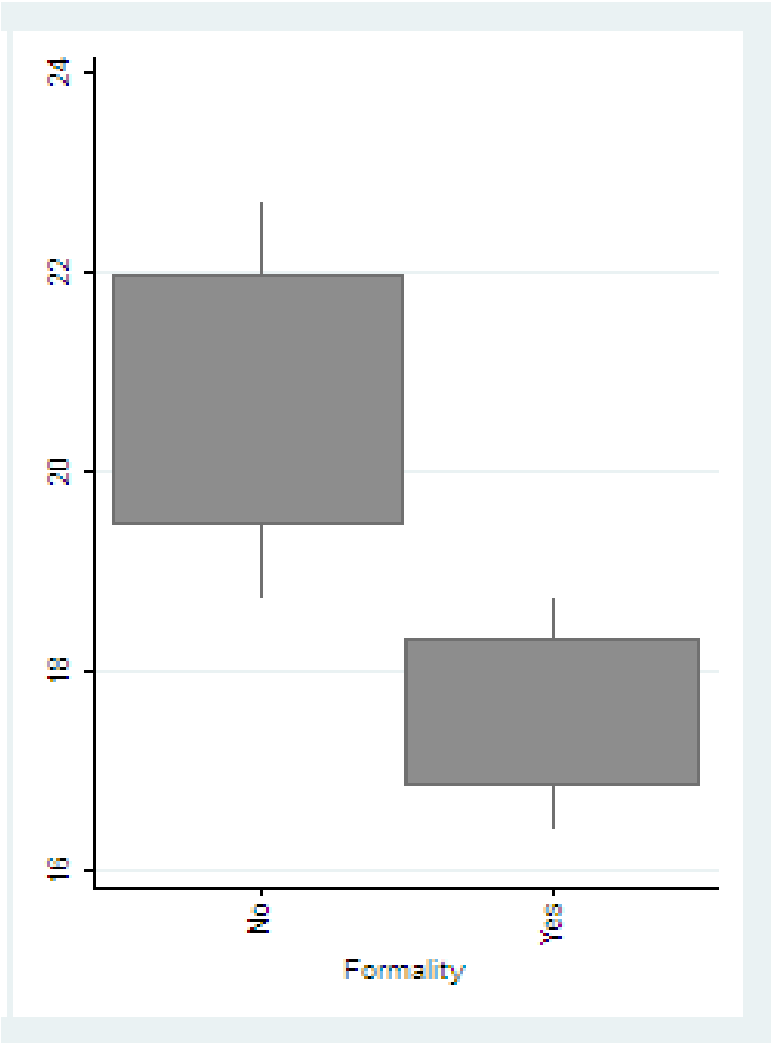
The unexplained gender wage gap is higher among the self-employed.

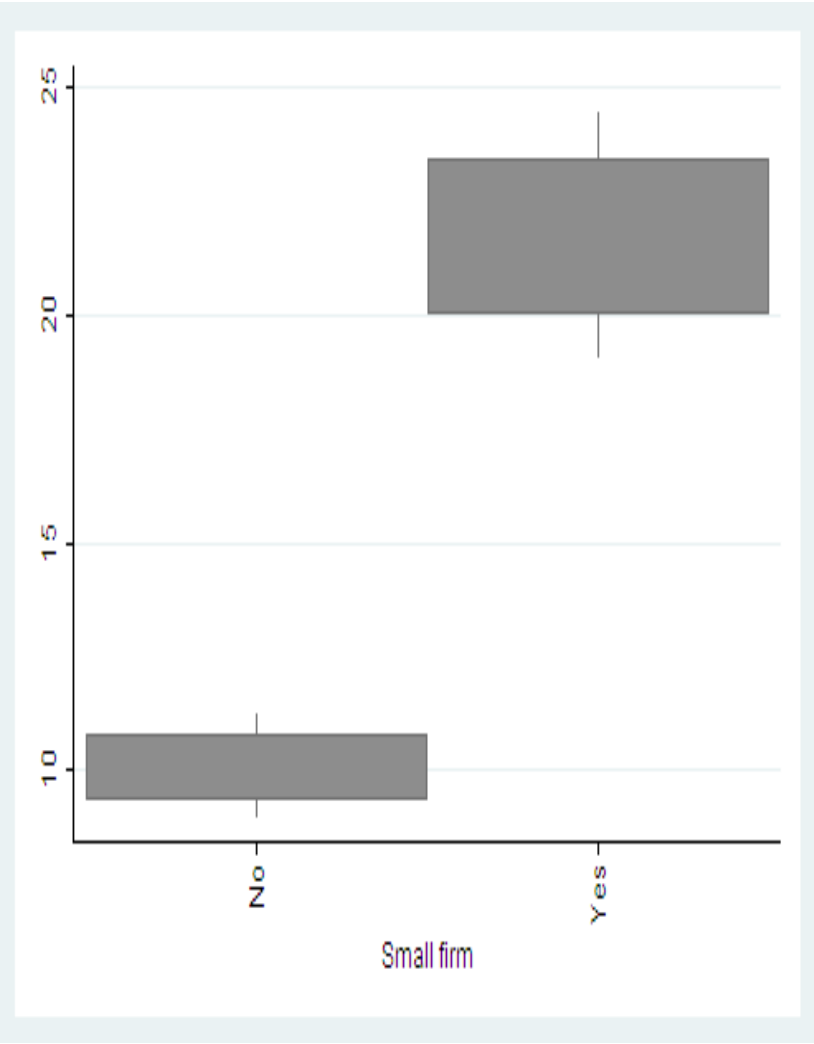


The unexplained gender wage gap for part-time workers is on average similar to that one of full-time workers, but more disperse.

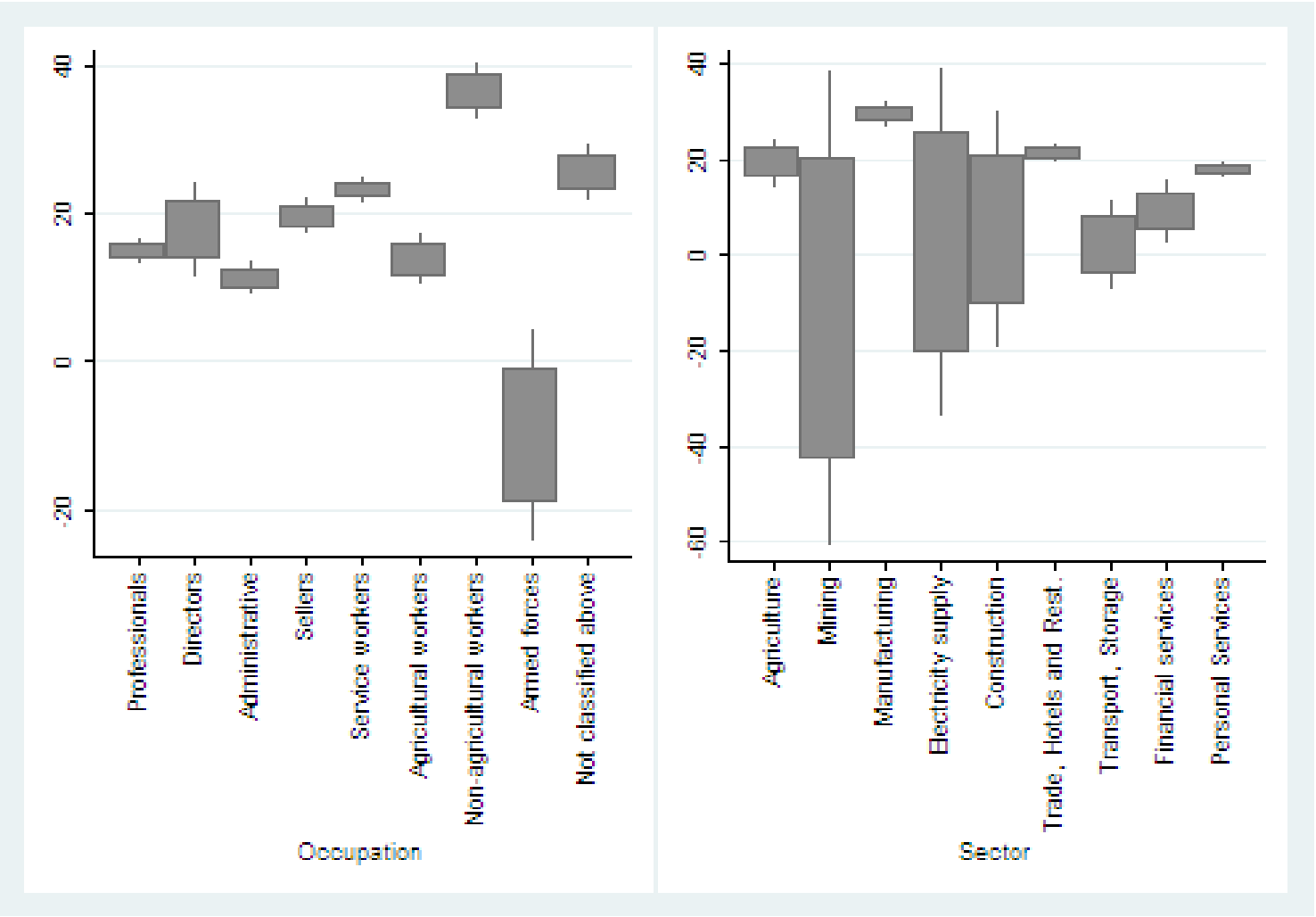


The unexplained gender wage gap is higher among informal workers and those in small firms.



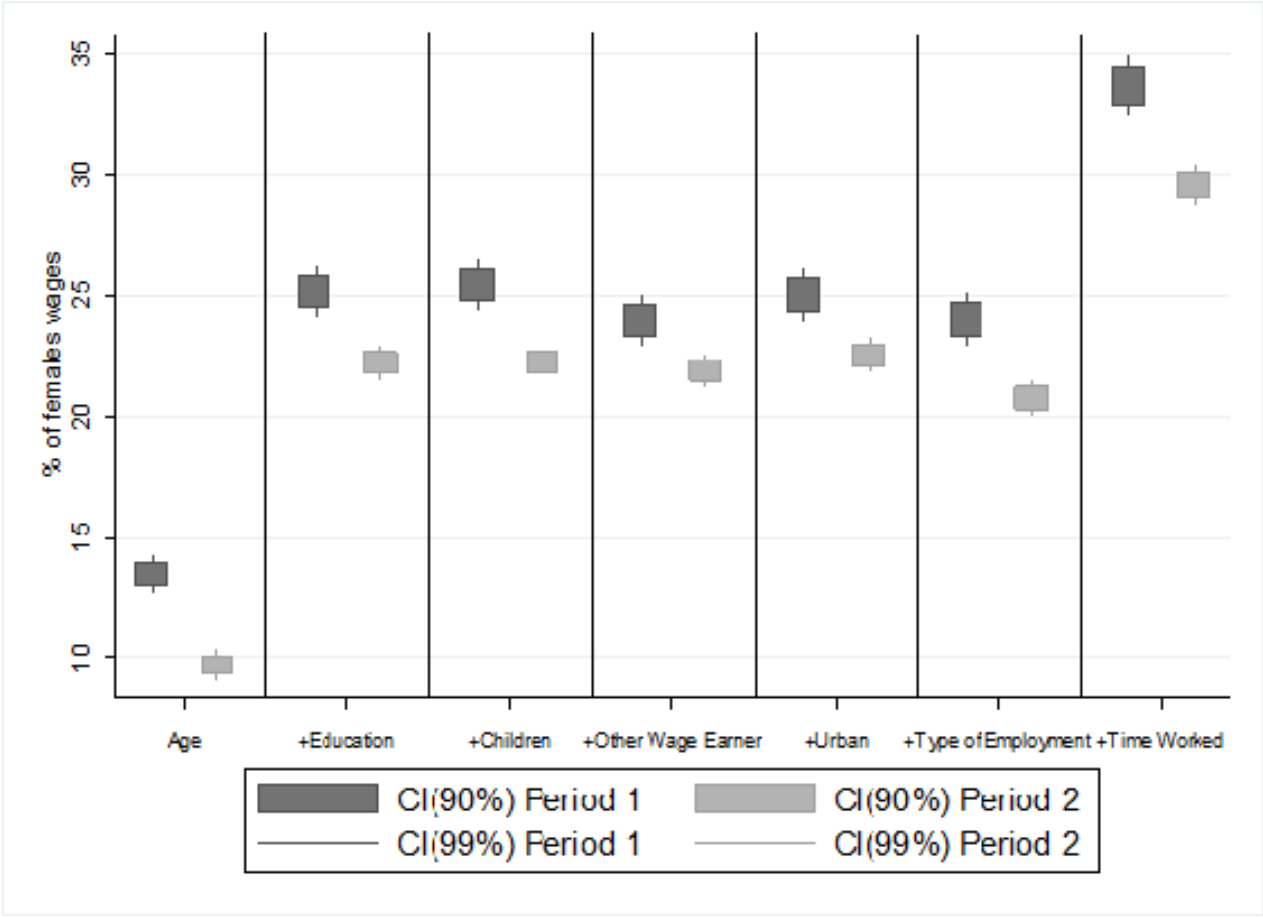


The unexplained gender wage gap is negative in the mining sector and in the armed forces.



The Evolution: Pictures in Both Periods

The Unexplained Gap: Evolution for Different Specifications



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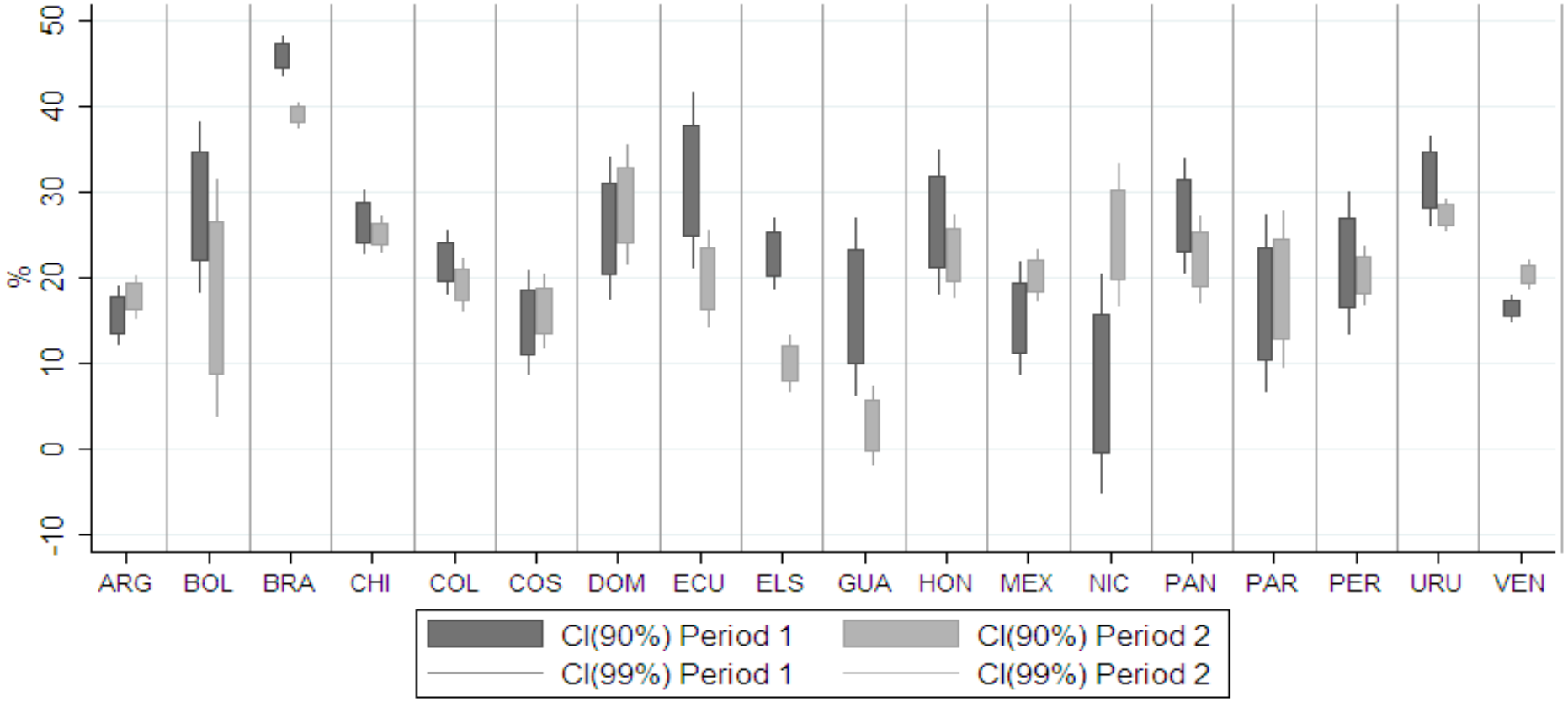
The Gap has Dropped in Most Countries



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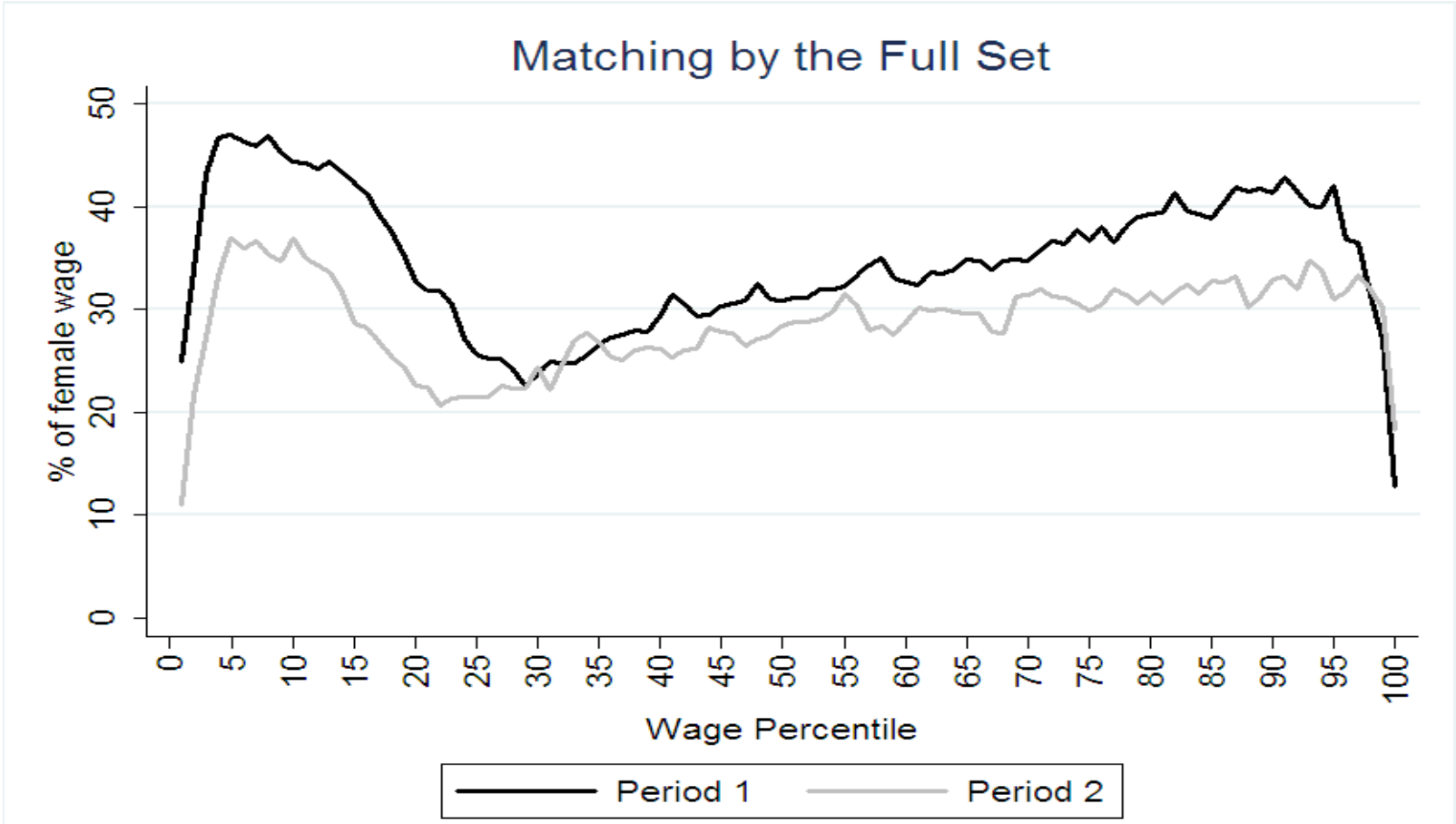
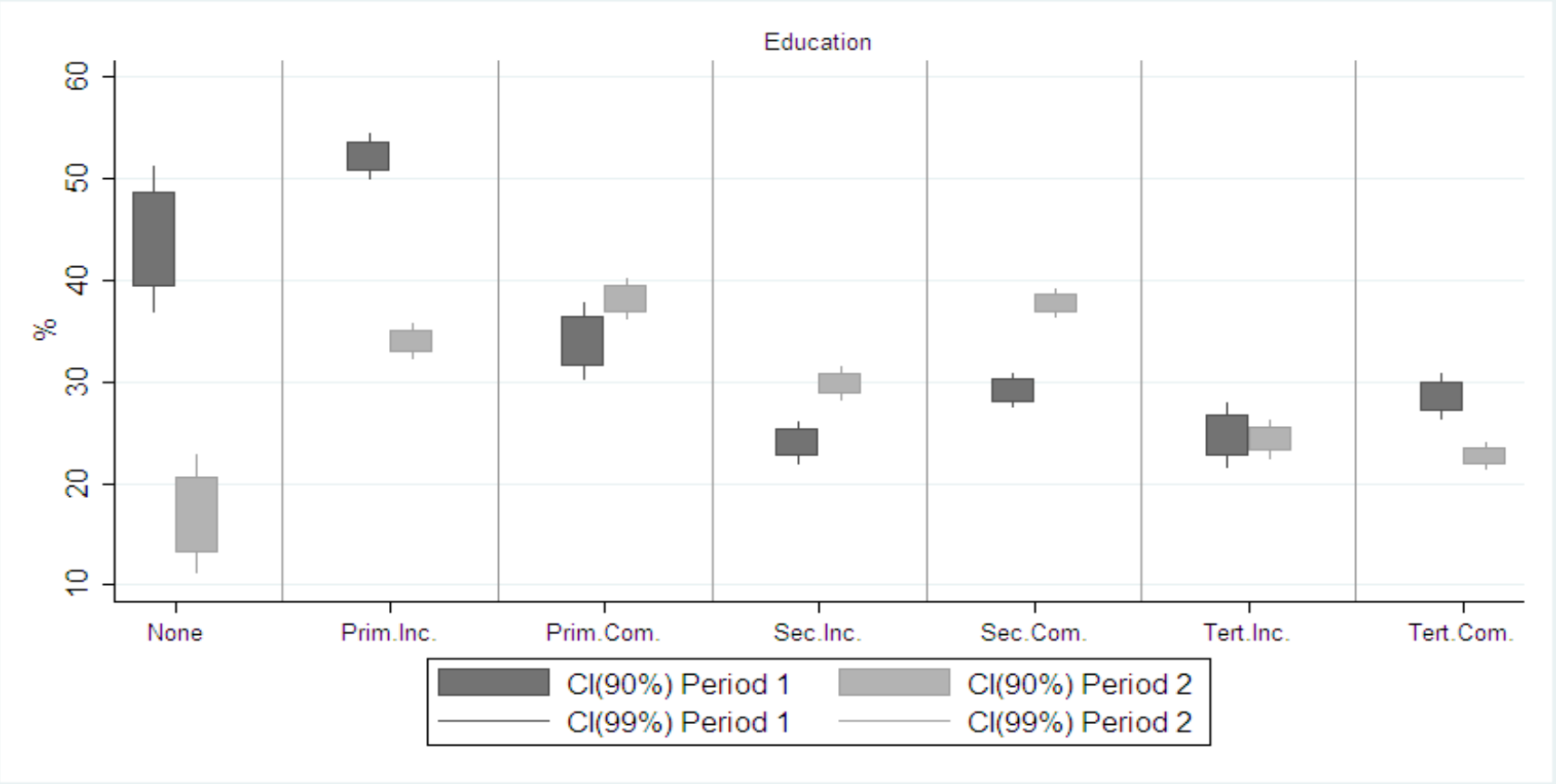
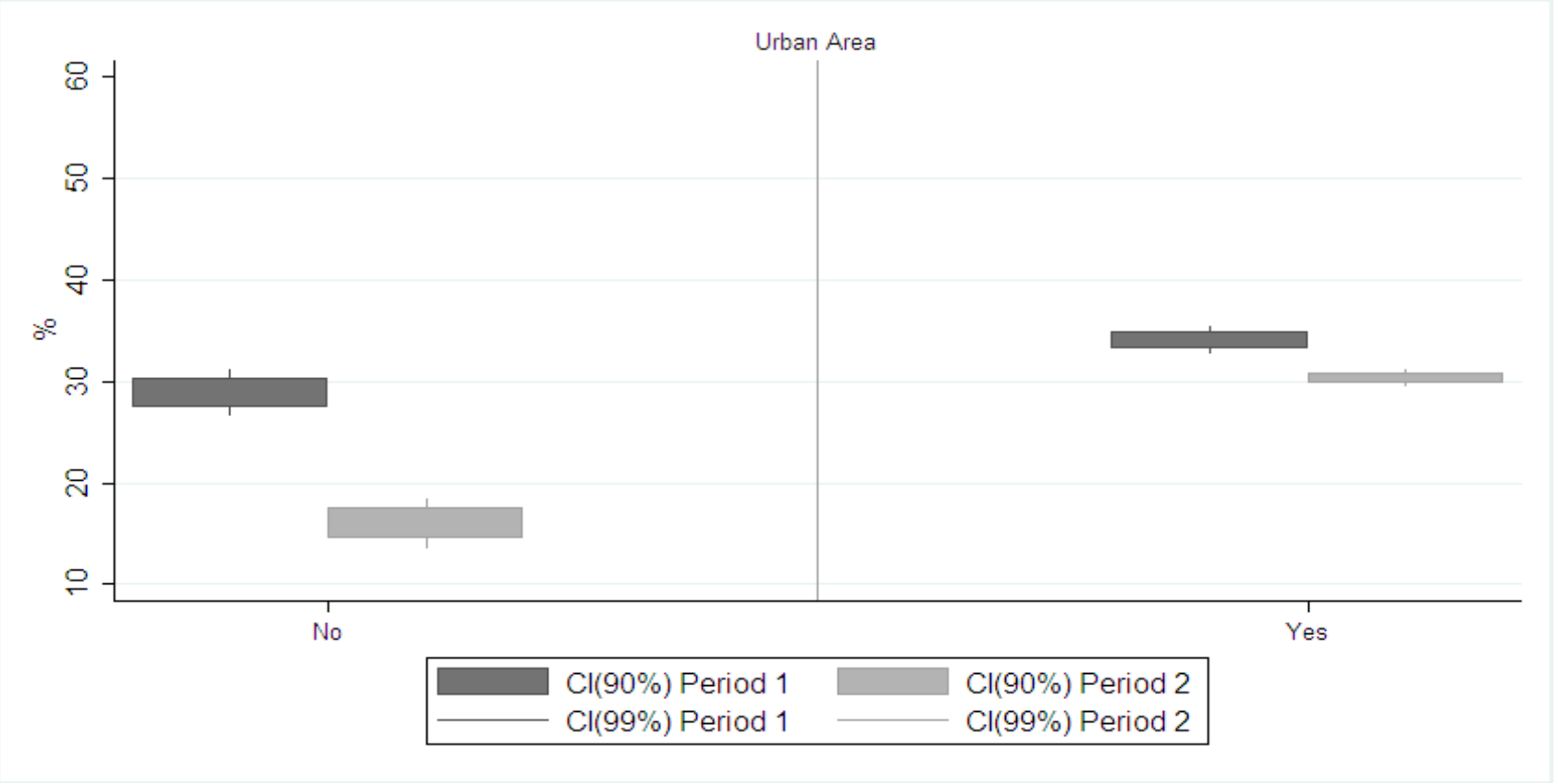
And it Has Dropped Especially at Both Extremes of the Earnings Distribution



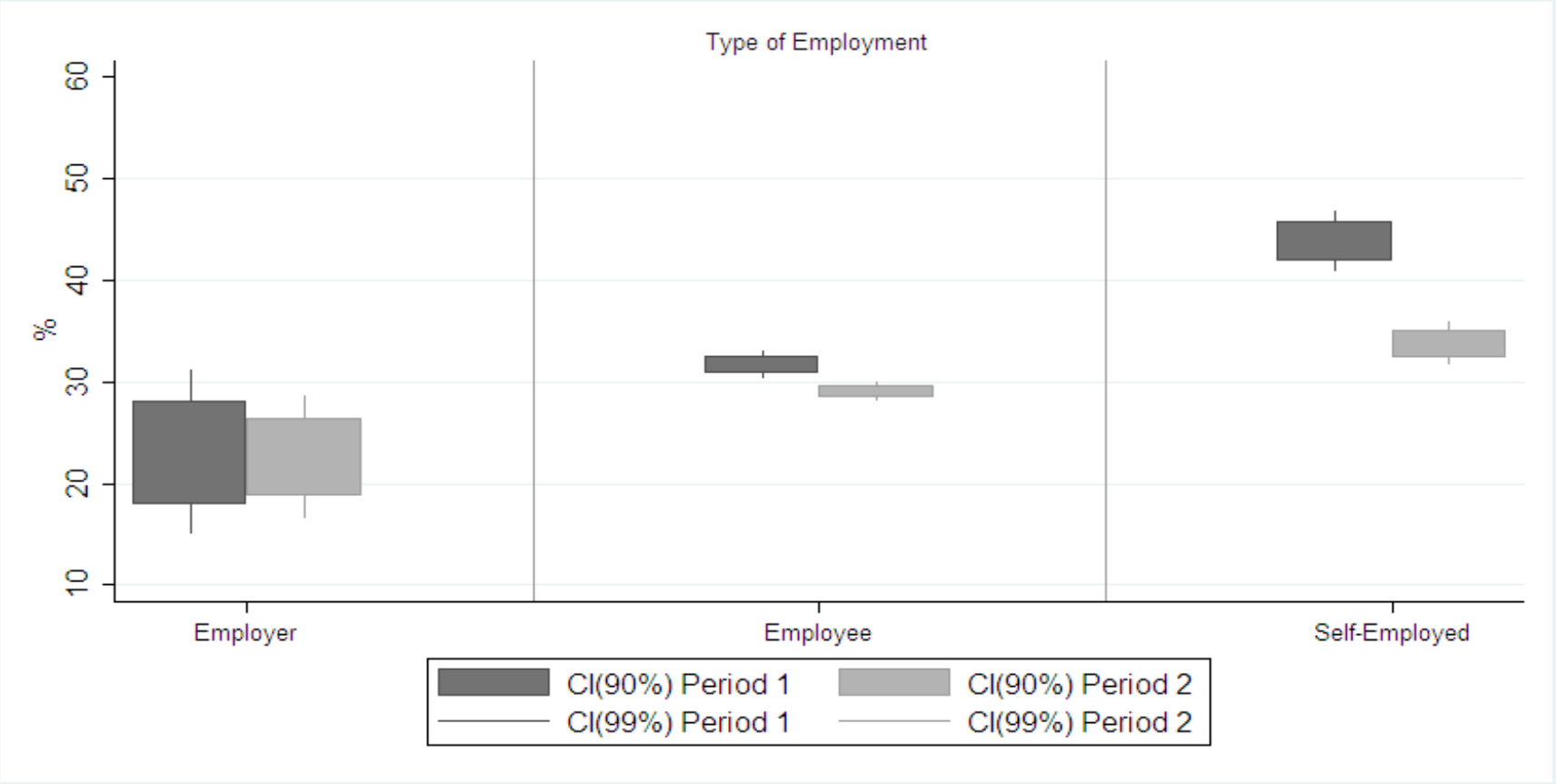
It Has Dropped more among Low-Educated People



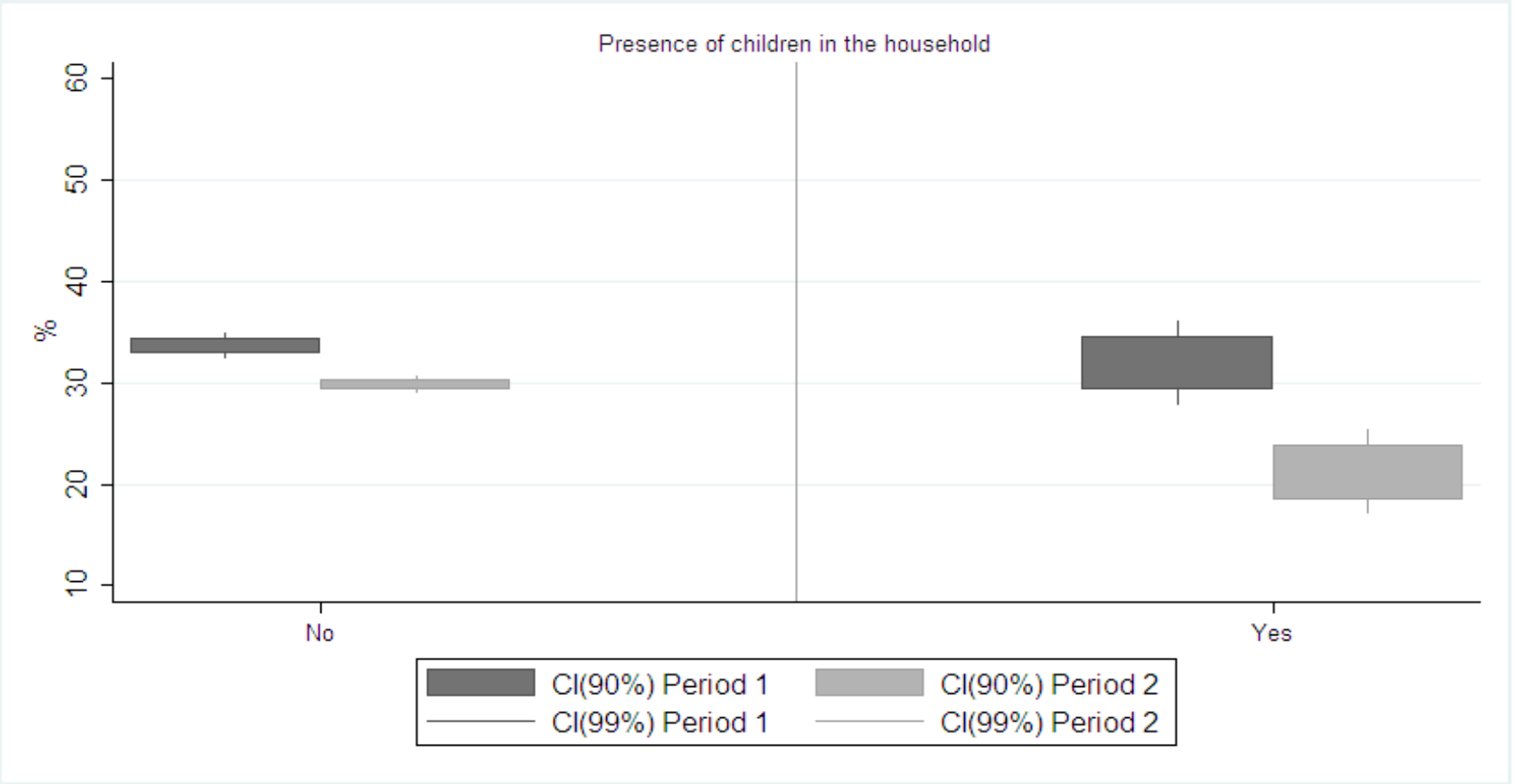
It has dropped more in rural areas



It Has Dropped more among the Self-Employed



It Has Dropped more among those with Children at Home



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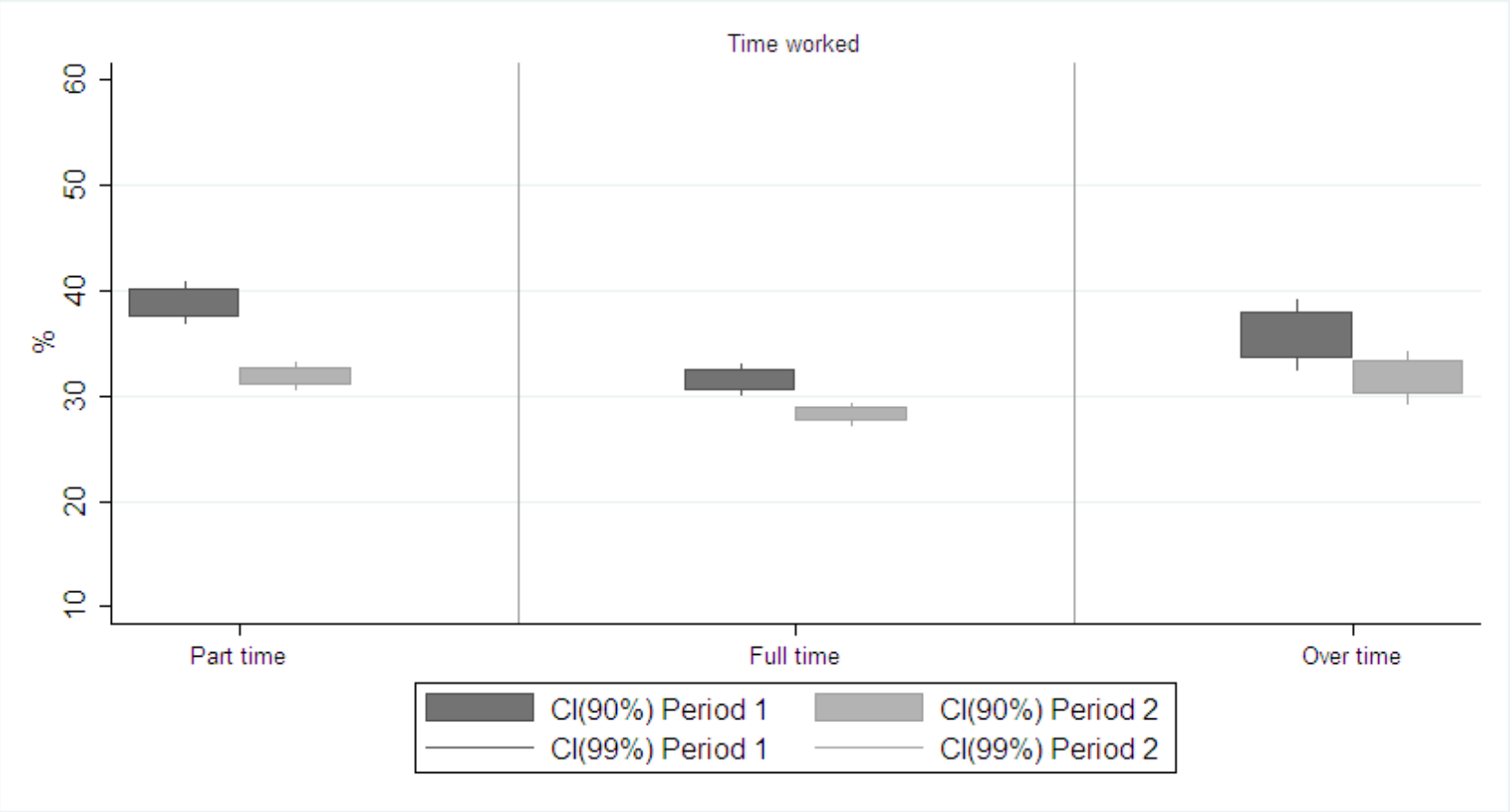
It Has Dropped more among Part-Time Workers



Are these drops the result of a general trend in all segments of labor markets or has the composition of such markets changed?

» "Matching after Matching"

	Counterfactual Jump if no Change in X's	Part of the Jump due to changes in X's	Total Change
Age	-7.19	3.08	-4.12
Education	-7.37	3.26	-4.12
Presence of Children in the Household	-4.56	0.45	-4.12
Presence of Other Wage Earner in the Household	-4.24	0.13	-4.12
Urban	-5.43	1.32	-4.12
Type of Employment	-4.23	0.11	-4.12
Time Worked	-4.60	0.49	-4.12
Full Set	-12.03	7.92	-4.12

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3. Conclusions

Summary

- Gender wage gaps between 8% and 28% with important country heterogeneity.
- Most of the gender earnings gap in the region cannot be explained by observable human capital characteristics
- Higher gaps among those with lower income
- An overall reduction over the last 15 years

Conclusions

- It is interesting to note that the unexplained gender earnings gap is lower among workers with tertiary education.
  - Both supply and demand factors could drive this result.
- The segments of the labor markets where the earnings gaps are more pronounced are those more “flexible”
  - For women, flexibility for their participation into the labor markets comes at a price.
  - Room for public policy to help flexible participation or to alleviate those costs
- The segments of the labor markets with the greatest reductions in unexplained gender earnings gaps are also the segments that were previously reported as those having the highest unexplained gender disparities.
  - So, there are reasons for being optimistic.

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