

# Local labor markets, population density and the gender gap

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October 8, 2020

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# Introduction

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# Summary

In the next slides I document three main facts about the **gender gap** in the US for the period of 1970 and 2020:

1. There is a large dispersion in the **level** of the gender wage gap across labor markets in the US. The dispersion persists despite the general decrease in the level of the gap since 1970.
2. There are differences in the **change** of the gender wage gap. The largest reductions happened in densest labor markets.
3. The relationship between the **level** of gender wage gap and population density has inverted over the period. Today, the densest labor markets have a lower gender wage gap.

# Data

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**Source:** IPUMS data for:

- 1950-2000 Decennial censuses.
- 5-year ACS for the years 2011 and 2018. For ease of presentation I label these datasets as 2010 and 2020 respectively.

**Sample** includes all full-time year-round workers whom:

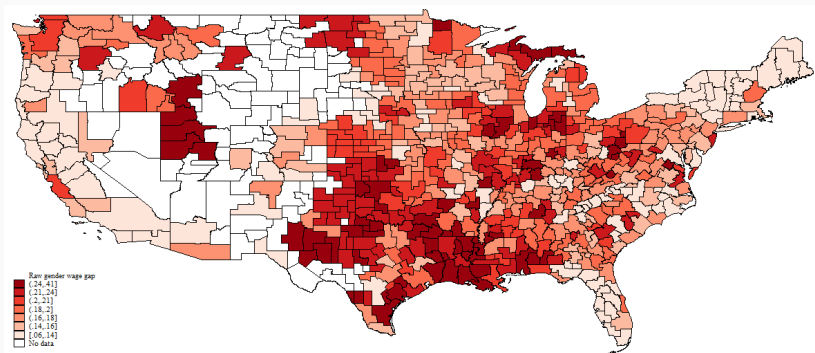
- Aged 18-64.
- Not attending school.
- Not living in group quarters.
- For all graphs I limit the sample to people living in CZ with a population density of at least 1 person per-square kilometer in 1950.

## Empirical facts

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# Fact 1: there is substantial variation in the gender gap across CZ

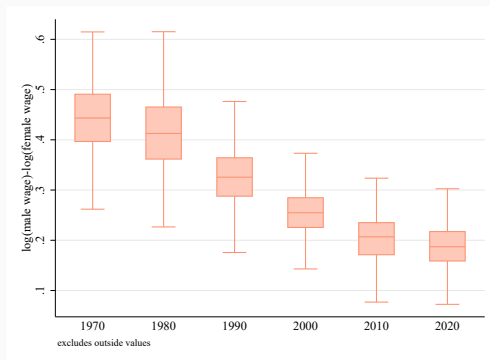
**Figure 1:** The gender gap in the US in 2020



**Note:** darker colors denote higher relative wages for men. Figure restricts to czones with population densities above 1 person per km<sup>2</sup> and full-time year-round workers.

## Fact 1: Cross-CZ variation persists despite general decline at the national level

Figure 2: Evolution of raw gender gap across CZ

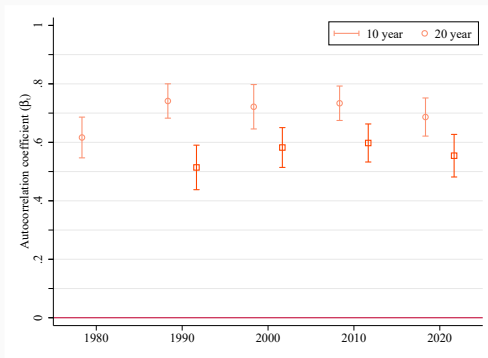


**Note:** figure restricts to CZ with more than people per km<sup>2</sup> and full-time year-round workers..



# Cross-CZ gender gap differences are persistent

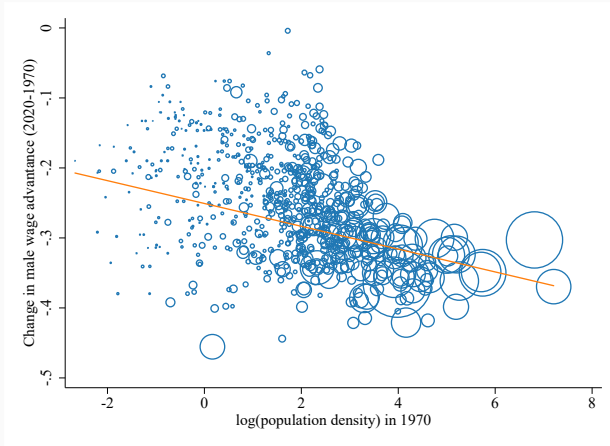
**Regression specification:**  $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t(w_{rt-j}^{men} - w_{rt-j}^{women})$



**Note:** figure restricts to CZ with more than people per km<sup>2</sup> and full-time year-round workers.. Bars show 95% robust confidence intervals. Standard errors are clustered at the CZ level. Dependent and independent variables are standardized

## Fact 2: Denser CZ have faster declines in the gender wage gap

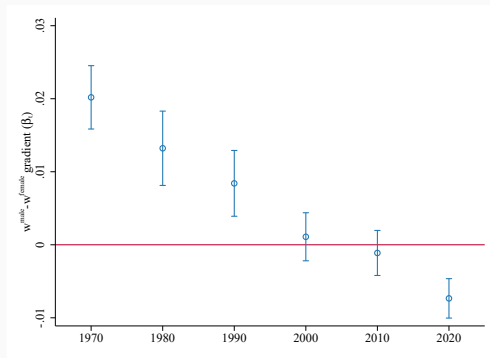
**Figure 3:** Change in male wage advantage in US CZ



## Fact 3: The gender gap - density relation has inverted

**Regression specification:**  $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t \ln(density)_{rt}$

**Figure 4:** Coefficient on population density  $\beta_t$



**Note:** figure restricts to CZ with more than 1 people per km<sup>2</sup>. Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 7 Oct 2020 at 10:48:28. Figure generated using the dofile 2\_analysis/code\_files/write\_regression\_coefplots.do.

# How big are these coefficients?

**Table 1:** Male advantage changes implied by estimated elasticities

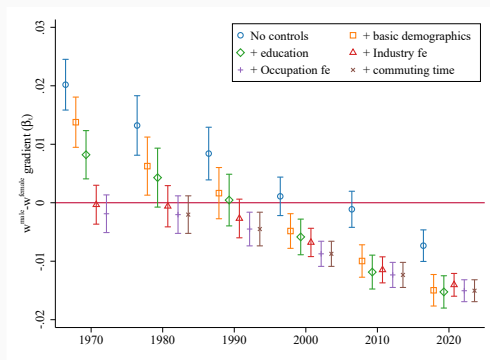
	1970	1980	1990	2000	2010	2020
Density elasticity ( $\beta$ )	0.020	0.013	0.008	0.001	-0.001	-0.007
s.d. wage gap	0.073	0.077	0.060	0.049	0.049	0.050
$\beta/sd$	0.278	0.173	0.141	0.022	-0.023	-0.146
IC range	0.029	0.019	0.013	0.002	-0.002	-0.012
(% mean gap)	0.065	0.047	0.040	0.007	-0.009	-0.064
90 - 10 pctl range	0.061	0.040	0.027	0.004	-0.004	-0.025
(% mean gap)	0.137	0.097	0.082	0.014	-0.018	-0.133

*Note:* changes based on unweighted estimated elasticities. Sample restricted to full-time year-round workers. Table generated on 28 Sep 2020 at 15:15:18.

# What can account for the change in the density-gradient?

**Regression specification:**  $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t \ln(density)_t$

**Figure 5:** Coefficient on population density  $\beta_t$  controlling for worker characteristics



**Note:** figure restricts to CZ with more than 1 people per km<sup>2</sup>. The regressions are done on data aggregated at the CZ level. Bars show 95% robust confidence intervals. Standard errors clustered at the CZ level. Figure generated on 7 Oct 2020 at 10:48:33. Figure generated using the dofile 2\_analysis/code\_files/write\_regression\_coefplots.do.

# Residualization procedure

1. Run the regression on **individual** level data:

$$wage_{igrt} = X_{igrt}\gamma_t + \lambda_{grt} + \varepsilon_{igrt}$$

where  $i, g, r, t$  index individual, sex, CZ and decade respectively. I impose the **same** return on individual level characteristics across sex and CZ.

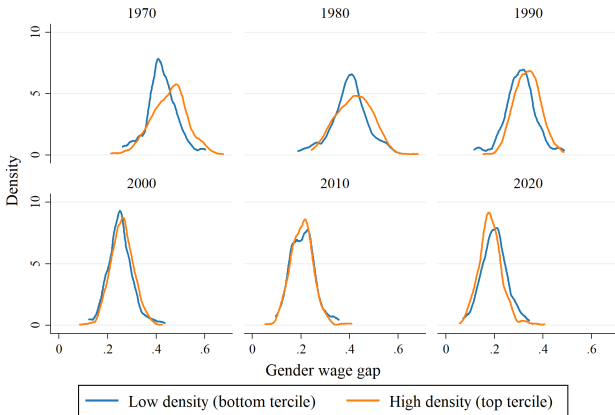
2. Run the following regression at the CZ level:

$$\lambda_{mrt} - \lambda_{frt} = \alpha_t + \beta_t \ln(density)_{rt}$$

no weight is imposed on the CZ-level regressions (Solon et al., 2015).

Return

# Low vs high density CZ



Graphs by Census year

**Note:** figure restricts to CZ with more than 1 people per km<sup>2</sup>. Figure generated on 28 Sep 2020 at 15:56:45. Figure generated using the dofile `code_files/kernel_density_movement.do`.

## References

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Solon, G., Haider, S. J., and Wooldridge, J. M. (2015). What are we weighting for? *Journal of Human Resources*, 50(2):301–316.