

# Empirical evidence of the gender pay gap in NZ

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*ministry for* **Women**  
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# Disclaimer

Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the authors, not Statistics NZ.

# Research objectives

- 1) Describe profile of males and females in the labour force
- 2) Estimate size of the gender pay gap, controlling for all observables, and apportion the gap into 'explained' and 'unexplained'
- 3) Repeat after correcting for sample selection bias
- 4) Estimate size of gap if using propensity score matching
- 5) How does the gap differ across the wage distribution?

# Key findings

- 1) The gender pay gap is approx. 12%, unchanged since 2003
- 2) Regardless of approach undertaken, majority of the gender pay gap remains is unexplained
- 3) The size of the gap depends heavily on the location in the wage distribution – with strong evidence pointing to a glass ceiling effect in NZ

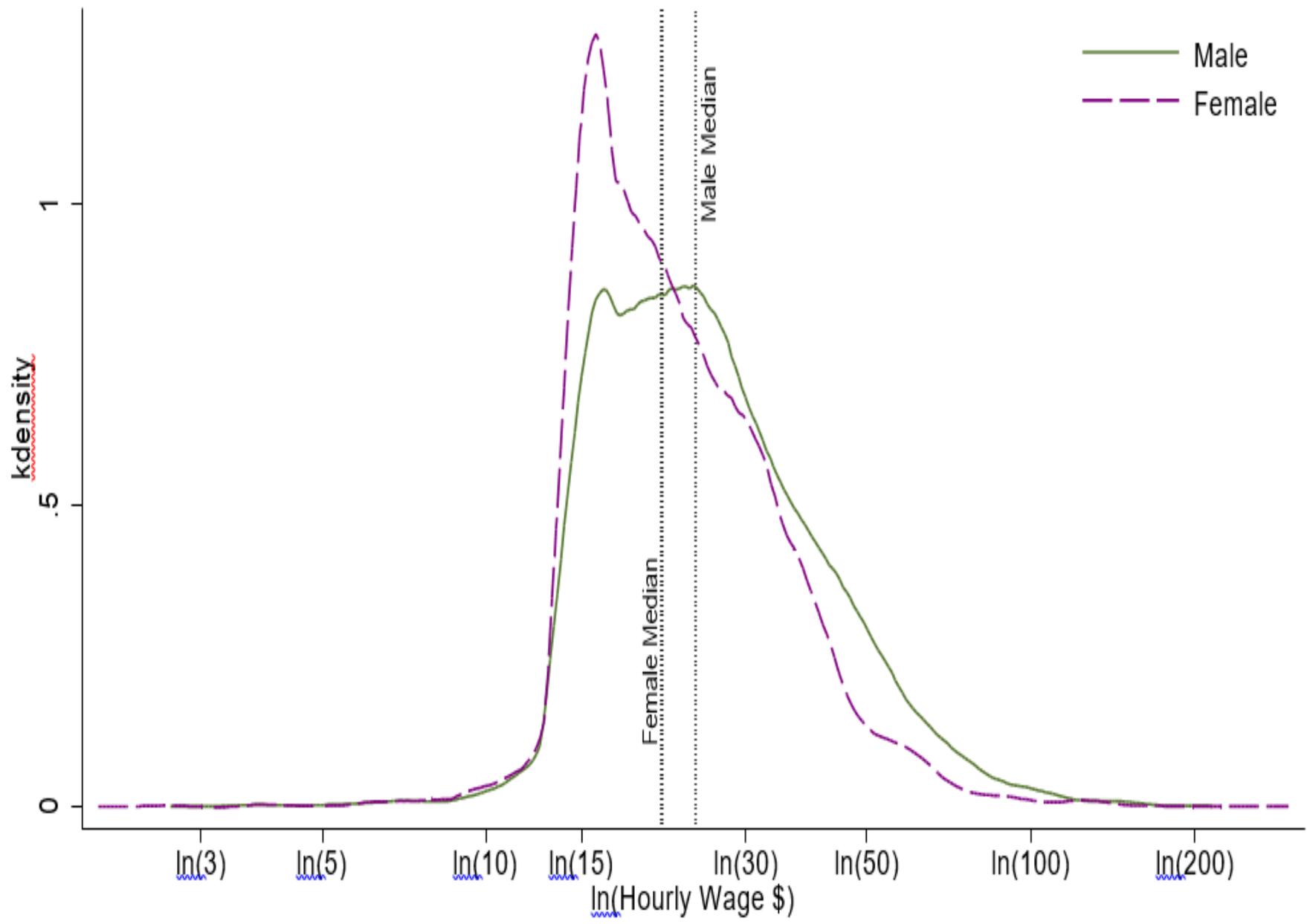
# NZ literature

- After the Income Survey was added to the HLFS in 1997, there was a flurry of analysis
- Kirkwood and Wigbout (1999) used 'tree analysis' and found half the gap could be explained by observables
- Lots of analysis by Dixon (1996a,b; 1998; 2000)
- 40-80% explained of a 15% pay gap
- By Dixon (2003) the wage gap had fallen to 12.8%
- Work in progress – Sin (2017)

# Data

- Income Survey – 2015
- Working age population – 16 to 64
- Trim outliers in hourly earnings
- Remove self employed
- Final sample = 6,834 males and 6,903 females

Figure 1: Usual hourly wage distribution, by gender (2015)



# Data - descriptives

- Females more likely to be sole parents, widowed / separated / divorced; and males more likely to have an under 6 year old in the household
- Education gains aplenty for females. More likely to have a qualification in almost all categories. Compared to 1997, 14.3% of males had a bachelors or higher (and 12.4% of females). Those numbers are now 22.5% and 30.5%

# Oaxaca decomposition

Dep variable = ln hourly wage; Overall pay penalty = 12.71%

	Exp	Unexp
Model A: Include personal characteristics	-1.13%	13.84%
Model B: (A) + education	-3.88%	16.59%
Model C: (B) + occupation, industry and other job characteristics	1.81%	10.90%
Model D: (C) + region	1.97%	10.74%
Model E: (D) + household characteristics	2.15%	10.56%

# The unexplained?

- Unobserved differences in characteristics – e.g. subject of degree couldn't be controlled for.
- Different preferences between genders
- Discrimination
- Unconscious bias
- ???

# Correcting for selection bias

Sample selection bias – wages only observed for those employed.

Decision to enter the labour force may be systematically correlated with potential wages.

Limiting our analysis to those employed >>> potentially biased estimates.

Need to apply Heckman procedure

# With and without adjustment

	Not corrected	Corrected for females	Corrected for males	Corrected for both
Explained	2.15%	2.15%	2.46%	2.46%
Unexplained	10.56%	18%	2.10%	9.54%
<b>Total</b>	<b>12.71%</b>	<b>20.14%</b>	<b>4.56%</b>	<b>12%</b>
Inverse mills	N/A	0.205	0.373	0.205 and 0.373

All figures are statistically significant

A positive inverse mills ratio indicates positive selection into the labour market – those participating in the labour force have favourable unobservable characteristics (relative to those not in labour force) that positively affect their wages

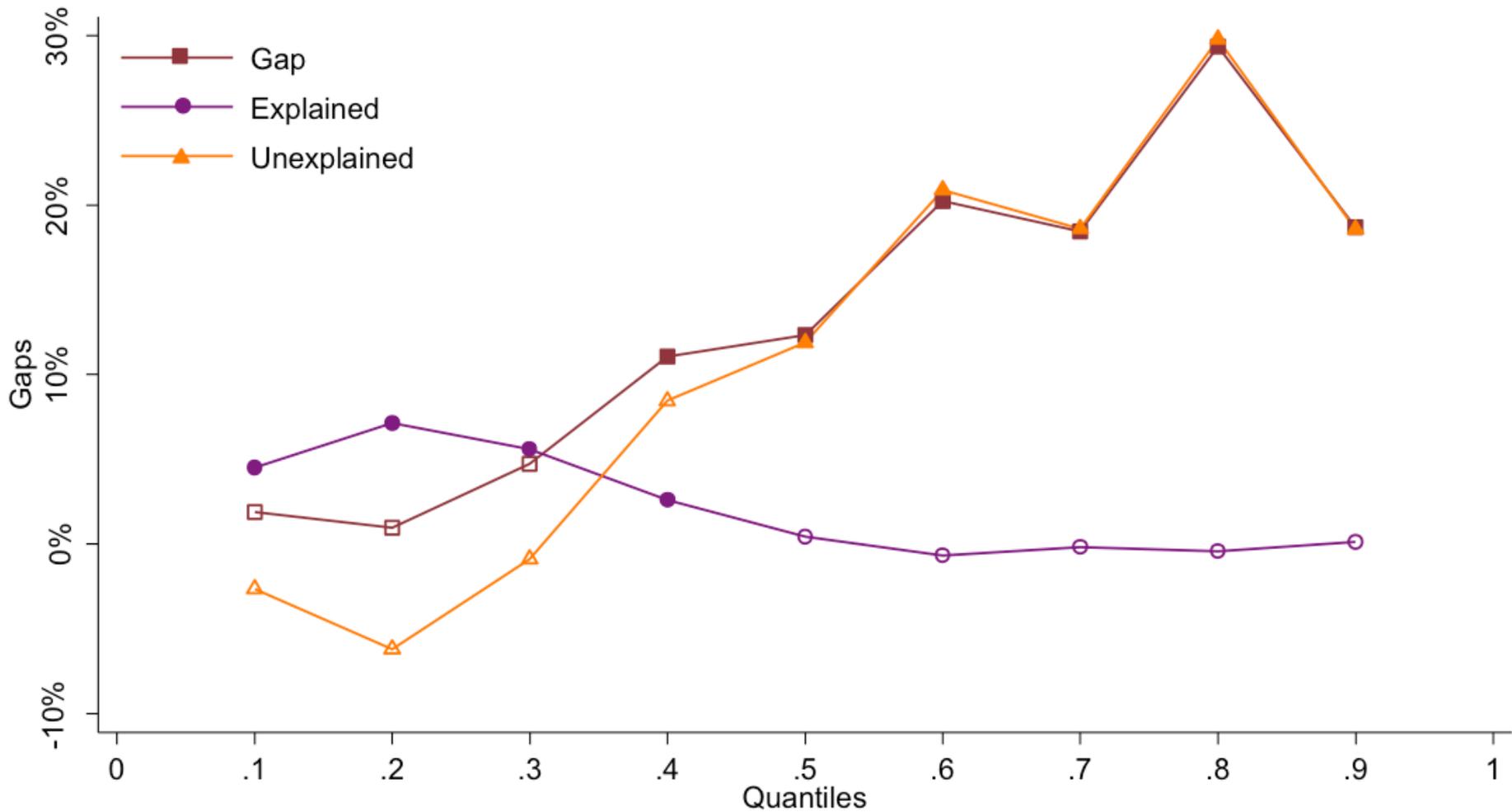
# Propensity score matching

	Corrected for both
Explained	4.27%
Unexplained	7.73%
<b>Total</b>	<b>12%</b>

The explained component has risen from 20.5% to 35.5%.

Majority is still unexplained.

# Quantile regression



# To conclude

- 1) The gender pay gap is approx. 12%, unchanged since 2003
- 2) Regardless of approach undertaken (Oaxaca or PSM), majority of the gender pay gap remains is unexplained. This persists after applying the heckman correction for selection bias.
- 3) The size of the gap depends heavily on the location in the wage distribution – with strong evidence pointing to a glass ceiling effect in NZ

# Thank you

More information:

Full report available at –

<http://women.govt.nz/work-skills/income/gender-pay-gap/research>

Also, email –

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