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Pay gaps – an $18 billion a year issue

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Disclaimer

Apart from the hourly rate estimates, which are from official Labour Market (Incomes) data, these results are not official statistics. They are based on tabulations created for research purposes from the Statistics New Zealand Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI, see https://www.stats.govt.nz/integrated-data/. The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

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Abstract

This note estimates the aggregate size of gender and ethnic pay gaps in New Zealand. The gender pay gap represents $7.6 billion per year, or 5% of wages and salaries. Gender and ethnic pay gaps combined represent $17.6 billion per year, or 11% of wages and salaries. The note also discusses recent research that identifies the contributions of gender and ethnic differences in personal and job characteristics, and points to the important role of within-firm pay gaps.

JEL codes

- J15: Economics of Minorities, Races, Indigenous Peoples, and Immigrants
- J16: Economics of Gender
- J31: Wage differentials
- J70: Labor Discrimination

Keywords

Gender pay gap; Ethnic pay gaps;

Summary haiku

Different pay rates

For gender and ethnic groups

Add up to a lot!

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Pay Gaps – an $18 billion a year issue

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The gender wage gap

Statistics New Zealand recently released updated estimates of the gender wage gap. Their measures show that, in the June 2022 quarter, half of female employees earned more than $28.00 per hour whereas half of male employees earned more than $30.85 – a gap equal to 9.2% of the male rate (the official gender gap figure) or 10.2% of the female rate. Measuring pay gaps in this way, based on *median* pay, provides the most reliable measure for monitoring changes over time (Statistics New Zealand, 2016). The hourly rate difference of $2.85 may not seem like much, but across the whole workforce, it certainly adds up.

To get an idea of what the gender wage gap adds up to, it makes more sense – mathematically - to look at the difference in *average* hourly rates (rather than the *median* rates in the previous paragraph). The difference in *average* pay rates is even larger than the median difference, at $3.84, because high-paid men tend to have much higher pay than high-paid women. This $3.84 difference amounts to 11.5% of the average rate for women and 10.3% of the average for men. If men and women were paid the same on average, women's earnings (and the cost of employment) would increase by $7.6 billion per year. This equates to around 5% of all wages and salaries that will be paid in 2022.[1]

Of course, reducing the gender pay gap could also be achieved if men's pay rates were lower. Because men work more hours in aggregate than women each year, men would have to take a pay cut of only 10.3% each hour to equalise men's and women's pay rates. And if men's and women's pay rates were made equal while keeping overall average pay rates unchanged, men would see their wage reduced by 5.0%, while women's wage rates would on average rise by 5.9%

Ethnic pay gaps

In addition to the well-documented gender pay gap, there are also substantial hourly pay gaps between different ethnic groups. Compared with the median wage rate for NZ European/ Pākehā men ($32.18), the median Pacific man earns 19% ($6.18) less. Similarly, the median gap for Māori men is 13.9% ($4.48 less), and for Asian men is 6.8% ($2.18 less). As is the case for gender pay gaps, differences in *average* pay rates are even larger than median differences – 22.9% for Pacific men, 16.7% for Māori men, and 10.8% for Asian men.

Women are subject to both gender and ethnic pay gaps. Within ethnic groups, the gender average-pay gap is high for European/ Pākehā women (11.9%), but is also substantial for wāhine Māori (7.5%), Pacific women (1.3%) and Asian women (7.4%). The relatively small MELAA and 'other ethnicity' groups have the highest within-ethnicity gender gaps (20.8% and 21.8% respectively), with

[1] A similar calculation for the Australian workforce recently calculated that the gender gap in Australia added up to AU$51.8 b, or around 7.0% of total yearly earnings (KPMG, 2022).

relatively high average pay rates for men in these groups. The combined effect of gender and ethnic pay gaps is that, relative to the average hourly pay rate of European men, European women earn on average 11.9% less, wāhine Māori earn 23.0% less, Pacific women earn 24.0% less, Asian women earn 17.4% less, MELAA women earn 19.0% less, and women in the 'other ethnicity' group earn 22.0% less.

To eliminate both gender and ethnic gaps, by increasing the average wage of all groups to match that of European men would require an extra $17.6 bn per year of wage and salary payments – about 11% of overall wage and salary payments to employees.

A summary of gender and ethnic wage rate differences, and the size of pay gaps is included as Table 1. The annual size of pay gaps is summarised in Table 2.

Why?

Discrimination, in the form of racism and sexism, certainly contributes to these stark differences in pay rates. However, pay gaps alone cannot tell us the extent of labour market discrimination, or the effects of discrimination that occurs outside the labour market. Men and women of different ethnic groups may differ in ways that would be expected to affect the wages of any workers. For instance, women have higher average levels of qualifications than men, suggesting that we might expect them to be paid higher wage rates. In this case, pay gaps will understate the underpayment of women. More generally, groups may have different age structures, differ in whether they live in cities, where wages rates are generally higher, may live in different sorts of households, work in different sorts of jobs or require different forms of work-life balance. All of these factors may help to explain why there are group-differences in median or average pay rates.

Adjusting estimates of the pay gap for differences in worker and job characteristics sheds light on how much progress can be made in reducing gender and ethnic pay gaps through changes in firm-level pay and employment practices that organisations or employers have control over. Where pay differences between groups reflect different personal household or job characteristics, reducing gender and ethnic pay gaps will also require social changes beyond the labour market, to address the causes of these differences. Among these causes are social and institutional factors including current discrimination, as well as the consequences of historic and systemic discrimination.

As a step towards unpacking the importance of labour market factors relative to other factors in shaping the size of gender and ethnic pay gaps, researchers often statistically adjust pay gaps for observed person and job differences, such as education levels, age, and location. They generally also control for differences in the industries or occupations that people work in, even though patterns of occupational or industrial segregation may themselves be influenced by firms.

In New Zealand, recent studies of the gender gap (Pacheco et al., 2017), and ethnic gaps (Cochrane & Pacheco, 2022) have carried out such analyses. Using their estimates of how much of the gender and pay gaps are explained by observed person and job characteristics, we find that the overall size of the adjusted gender gap is reduced somewhat to $11.66b per year – still large, and equal to around two-thirds of the raw gap (See Table 3). When analysed by ethnicity and combinations of ethnicity and gender, our results reflect the findings of Cochrane and Pacheco (2002), that significant gaps remain, with adjustments having a moderately strong effect on pay gaps for Māori men and Māori women. The adjusted gaps for Asian men are actually larger than the raw gap, because their wage rates are lower despite favourable education and location. Similarly, Pacific Peoples earn less despite their over-representation in high-wage regions.

The bottom line is that substantial gender and ethnic pay gaps remain even when we discount the contribution of factors that are arguably outside the firm's control. There is clearly scope for pay and employment practices within firms to affect the size of gender and ethnic pay gaps.

A number of other recent pieces of research point to within-firm disparities being a key factor in gender and ethnic pay gaps. Even though pay rates differ markedly across firms, pay gaps *within* firms contribute substantially to overall pay gaps. In New Zealand, Sin et al. (2022) find that around half of the raw gender gap is due to gender differences in pay within firms, and that productivity differences cannot explain the pay differences. Similarly, a recent UK study (Forth et al., 2021) finds that "most of the ethnic wage gap exists between observationally equivalent co-workers".

Some studies have looked beyond differences in average or median pay gaps, to examine variation in pay gaps throughout the wage distribution. Gender pay gaps are larger in higher pay ranges, where women are under-represented, and gaps cannot be accounted for by observable differences (Pacheco et al., 2017). Gender pay gaps are also larger for larger jobs, and for non-wage items such as bonuses and benefits (Strategic Pay, 2021). Fabling et al. (2012) found that women benefit less from performance pay systems within firms, because such systems favour higher-paid workers, who are disproportionately men. More generally, when firms are doing well, the benefits are less likely to be shared with women and with Māori and Pasifika workers (Allan & Maré, 2022)

Shining the light on pay gaps

Gender and ethnic pay gaps are a result of many factors, some of which cannot be solved by workplace policies and behaviour alone. However, evidence points to a substantial portion of pay gaps being the result of employment and pay decisions within firms. Recent efforts to encourage firms to measure and report on pay gaps (https://www.mindthegap.nz/) may help firms to focus on whether their gender and ethnic pay structures can be justified. More structured and systematic approaches to setting pay, such as job evaluation, may also limit the scope for unjustified pay discrimination. A recent UK study suggests that "the ethnic wage penalty is halved, on average, in the presence of a job evaluation system" (Forth et al., 2021).

Addressing gender and ethnic pay gaps is a large enough issue – at $18 billion a year – to warrant continued attention. Within firm pay-gaps are a key contributor to the overall gap, although reducing gaps will require much broader efforts if group differences in personal, household and job characteristics that contribute to pay gaps are to be reduced as well.

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Table 1: Base Data and pay gaps (%)

Ethnicity	Gender	N(000)	Annual earn (2022)	Ave. Annual earnings	Median hourly wage	Mean hourly wage	Median gap	Mean gap	
All	All	2272.6	$155.05 bn	$68,225	29.67	35.25	n/a	n/a	
All	Men	1153.6	$89.44 bn	$77,534	30.85	37.12	REF	REF	
All	Women	1119.0	$65.48 bn	$58,520	28	33.28	-9.2%	-10.3%	
									for women
European	All	1541.1	$109.27 bn	$70,903	30.69	36.69	REF	REF	REF EurWom
Māori	All	350.5	$19.56 bn	$55,798	27	31.26	-12.0%	-14.8%	-12.6%
Pacific Peoples	All	164.8	$10.74 bn	$65,146	26	29.85	-15.3%	-18.6%	-12.5%
Asian	All	398.7	$28.04 bn	$70,329	28.61	33.54	-6.8%	-8.6%	-13.7%
MELAA	All	31.3	$3.12 bn	$99,689	31.31	35.58	2.0%	-3.0%	1.3%
Other	All	21.6	$3.61 bn	$167,294	29.83	35.02	-2.8%	-4.6%	-6.3%
									within-ethnicity
European	Men	770.8	$62.65 bn	$81,281	32.18	38.99	REF	REF	REF
European	Women	770.3	$46.53 bn	$60,404	28.89	34.34	-10.2%	-11.9%	-11.9%
Māori	Men	175.9	$10.84 bn	$61,643	27.7	32.46	-13.9%	-16.7%	REF
Māori	Women	174.6	$8.69 bn	$49,798	26	30.02	-19.2%	-23.0%	-7.5%
Pacific Peoples	Men	86.2	$6.15 bn	$71,307	26	30.05	-19.2%	-22.9%	REF
Pacific Peoples	Women	78.6	$4.58 bn	$58,301	26	29.65	-19.2%	-24.0%	-1.3%
Asian	Men	205.6	$16.34 bn	$79,456	30	34.78	-6.8%	-10.8%	REF
Asian	Women	193.1	$11.77 bn	$60,974	27.43	32.19	-14.8%	-17.4%	-7.4%
MELAA	Men	14.7	$1.94 bn	$132,279	36.44	39.9	13.2%	2.3%	REF
MELAA	Women	16.7	$1.22 bn	$73,069	27	31.59	-16.1%	-19.0%	-20.8%
Other	Men	11.9	$2.35 bn	$197,659	34.97	38.89	8.7%	-0.3%	REF
Other	Women	9.7	$1.26 bn	$130,090	25.6	30.42	-20.4%	-22.0%	-21.8%

Notes: June 2022 Labour Market (Incomes) data, combined with author's calculations from IDI annual wage and salary earnings. *REF* indicates the reference group against which pay gaps are measured

Table 2: Aggregate pay gaps ($b)

Ethnicity	Gender	Total Gap	'Unexplained' Gap
		Gender gap	
All	Women	$17.60 bn	$11.66 bn
		Gender*ethnicity gap	
European	All	$6.30 bn	$4.06 bn
Māori	All	$4.78 bn	$1.58 bn
Pacific Peoples	All	$3.27 bn	$2.18 bn
Asian	All	$4.46 bn	$4.58 bn
MELAA	All	$0.24 bn	$0.18 bn
Other	All	$0.36 bn	$0.29 bn
Total*	All	$17.60 bn	$11.66 bn
European	Men	$0.00 bn	$0.00 bn
European	Women	$6.30 bn	$4.06 bn
Māori	Men	$2.18 bn	$0.65 bn
Māori	Women	$2.60 bn	$0.94 bn
Pacific Peoples	Men	$1.83 bn	$1.33 bn
Pacific Peoples	Women	$1.44 bn	$0.85 bn
Asian	Men	$1.98 bn	$2.41 bn
Asian	Women	$2.49 bn	$2.16 bn
MELAA	Men	-$0.04 bn	-$0.04 bn
MELAA	Women	$0.29 bn	$0.22 bn
Other	Men	$0.01 bn	$0.01 bn
Other	Women	$0.36 bn	$0.29 bn
Total*	All	$17.60 bn	$11.66 bn

* Totals across ethnicities are adjusted for multiple ethnicity responses (Divided by 1.104)

Table 3: Adjusted pay gaps ($b)

Ethnicity	Gender	Average Pay gap	Adjusted (Unexplained) Pay Gap
		Gender Gap	
All	Women	-10.3%	-6.9%
		Gender*ethnicity gap	
European	Men	0%	0%
European	Women	-11.9%	-8.0%
Māori	Men	-16.7%	-5.6%
Māori	Women	-23.0%	-9.7%
Pacific Peoples	Men	-22.9%	-17.8%
Pacific Peoples	Women	-24.0%	-15.6%
Asian	Men	-10.8%	-12.9%
Asian	Women	-17.4%	-15.5%
MELAA	Men	2.3%	2.3%
MELAA	Women	-19.0%	-15.4%
Other	Men	-0.3%	-0.3%
Other	Women	-22.0%	-18.5%

Method

Pay Gaps

Pay gaps are calculated using the following formula:

$$paygap_g\ (\%) = \frac{\left(w_g - w_{REF}\right)}{w_{REF}} \quad (1)$$

Where w_g is the hourly wage rate for a subgroup of workers, and w_{REF} is the hourly wage rate for a reference group, as defined in the following table:

Pay Gap	Subgroup (g)	reference group
Gender Pay Gap	All Women	All Men
Ethnic Pay Gap	All employees identifying with a particular ethnicity	All European/ Pākehā employees
Ethnic-gender Pay Gap	Combination of ethnicity and gender	Male European/ Pākehā

Notes: Pay gaps can be calculated using either median wage rates or average wage rates. People can identify with more than one ethnic group.

In addition, the final column of Table 1 shows Ethnic pay gaps for women, with European women as the reference group, and within-ethnicity gender gaps, where males of the same ethnicity are the reference group.

Adjusted Pay Gaps

Adjusted pay gaps are calculated as the difference between a group's pay rate and the pay rate of the reference group, adjusted for differences in individual and household characteristics, education, location, and job-related attributes. The size of the adjustment is based on estimates from Pacheco et al. (2017), and Cochrane & Pacheco (2022).

$$\widetilde{w}_{REF} = w_{REF} - s^{explained} * \left(w_g - w_{REF}\right) \quad (2)$$

$$Adjusted\ paygap_g\ (\%) = \frac{\left(w_g - \widetilde{w}_{REF}\right)}{\widetilde{w}_{REF}} \quad (3)$$

Table 4: Adjustment factors

Comparison	$s^{explained}$: (% of gap explained)	Source
$w_{Women} - w_{Men}$	$\frac{4.27}{12.00} = 35.58\%$	Pacheco et al. (2017): Table 4
$w_{Māori\ men} - w_{European\ men}$	70.37%	Cochrane & Pacheco (2022): Table 4
$w_{Māori\ women} - w_{European\ women}$	72.77%	Cochrane & Pacheco (2022): Table 4
$w_{Pacific\ men} - w_{European\ men}$	27.07%	Cochrane & Pacheco (2022): Table 4
$w_{Pacific\ women} - w_{European\ men}$	38.55%	Cochrane & Pacheco (2022): Table 4
$w_{Asian\ \ men} - w_{European\ men}$	-22.12%	Cochrane & Pacheco (2022): Table 4
$w_{Asian\ \ women} - w_{European\ women}$	-21.36%	Cochrane & Pacheco (2022): Table 4

$w_{MELAA\ men} - w_{European\ men}$	Set to zero	n/a
$w_{MELAA\ women} - w_{European\ women}$	Set to zero	n/a
$w_{Other\ men} - w_{European\ men}$	Set to zero	n/a
$w_{Other\ women} - w_{European\ men}$	Set to zero	n/a

The adjustment of ethnic-gender pay gaps is done in two stages:

1) Adjustment to European rates for the same gender, using the factors in Table 4
2) For women,, adjustment of the remaining gap using the $w_{Women} - w_{Men}$ value of $s^{explained}$ (=35.58%).

$$\widetilde{w}^{*}_{REF} = \widetilde{w}_{REF} - 0.3558 * \left(w_g - \widetilde{w}_{REF}\right)$$

$$Adjusted\ paygap_g\ (\%) = \frac{\left(w_g - \widetilde{w}^{*}_{REF}\right)}{\widetilde{w}^{*}_{REF}}$$

Aggregate Pay Gaps

Aggregate pay gaps are calculated as the dollar increase required to make average wage rates for all groups equal to the reference wage rate, using the following formulae:

$$PctIncrease_g = \frac{\left(w_g - w_{REF}\right)}{w_g} \qquad (4)$$

$$Aggregate\ Gap\ (\$) = PctIncrease_g * Total\_Earnings_g \qquad (5)$$

For adjusted pay gaps, w_{REF} in equation (4) is replaced with $\widetilde{w}_{REF}$ or $\widetilde{w}^{*}_{REF}$.

Total earnings for each group are derived from administrative data in the IDI (IDI_Clean_202206].[data].[income_cal_yr_summary]), for the latest complete calendar year (2021). Total earnings are then adjusted for each group, using the group-specific change in average hourly earnings rates between the June quarter 2021 and the June quarter 2022.

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