



DIVERSITY
COUNCIL
AUSTRALIA



Australian Government



Workplace
Gender Equality
Agency

She's Price(d)less

The economics of the gender pay gap

Prepared with Diversity Council Australia (DCA) and the Workplace Gender Equality Agency (WGEA)

22 August 2019

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Foreword



Alison Kitchen

National Chairman
KPMG Australia

KPMG is pleased to release the current edition of the gender pay gap report, *She's Price(d)less*.

This report is the third of its kind and builds on our critical work with the Diversity Council Australia and the Workplace Gender Equality Agency from 2009 and 2016.

KPMG recognises the persistence of gender pay gaps and discrimination against women in the Australian labour market. Solving the challenge of Australia's gender pay gap is not only fair and sensible, it's an economically responsible endeavour.

Evidence reflected in this report identifies the key drivers of the gender pay gap. These findings provide crucial knowledge that can help government and business take action and build on the progress that has been made.

The most significant drivers of the gender pay gap in Australia continue to be discrimination against women along with family and care, and industrial and occupational segregation.

As is proven in the *She's Price(d)less* report, addressing barriers to equality is critical to the development of Australian society and the nation's economic growth.

Taking action on Australia's gender pay gap is the right thing to do and would produce lasting and significant benefits for individuals, families, businesses and communities.



Lisa Annese

CEO

Diversity Council Australia

Diversity Council Australia (DCA) is very proud to present this third iteration of *She's Price(d)less* with KPMG.

For too long, the Australian gender pay gap has remained stubbornly high. Despite excellent work that many DCA members are undertaking to close the gap in their own organisations, structural inequalities and rigid gender-norms continue to diminish our capacity to provide pay equality across the economy.

To get our house in order, we have to address pay inequity at a systemic level. We need to challenge ideas that the vast majority of caring responsibilities and housework should fall to women. As this report shows, at the moment, close to two-fifths of the gender pay gap is attributable to women taking on a greater share of unpaid housework and caring responsibilities, more career breaks and a higher share of part-time work.

We need to tackle the social norms that see the majority of men and women working in different industries and different types of jobs.

And we need to end gender-based harassment and discrimination, which now accounts for almost 40 per cent of the gender pay gap.

The work that we need to do to make these changes is not simple, but as this report shows, there are huge potential gains for the Australian economy if we do.

I am excited by the opportunities for improvement presented in this report. We see this as a call to action for policy makers who want to make sustainable change.



Libby Lyons

Director

Workplace Gender
Equality Agency

The gender pay gap is an important measure of women's position in our economy and society.

This report and the two that preceded it have given us a deeper understanding of Australia's gender pay gap and the factors which combine to create it. At the heart of each of these factors are stubborn gender stereotypes about the roles women and men play in both paid and unpaid work and family and caring responsibilities. These stereotypes continue to shape the working lives of Australian women and men and their earning potential.

We know there are many actions employers can take to achieve pay equity. However, we cannot rely solely on the actions of employers if we are going to close the gender pay gap. We must also change the outlook, the hearts and minds of all Australians. We must challenge ourselves in order to change the very ingrained gender stereotypes that underpin the gender pay gap. We need to challenge our blind acceptance that women's work is less valuable than men's work. We have to accept that real and lasting cultural change is required if we are going to achieve and sustain gender equality in our workplaces and in society more broadly.

It is my hope that the insights and recommendations in *She's Price(d)less* will play a valuable part in driving the impetus for such change. Our children deserve nothing less and our nation's future success depends on it.

Disclaimer

Inherent Limitations

*This report has been prepared as outlined with the Diversity Council Australia Limited (**DCA**) and the Workforce Gender Equality Agency (**WGEA**) in the Scope Section of the engagement letter dated 20 February 2019 (**Engagement Letter**) and varied 7 May 2019 (**Variation Letter**). The services provided in connection with this engagement comprise an advisory engagement, which is not subject to assurance or other standards issued by the Australian Auditing and Assurance Standards Board and, consequently no opinions or conclusions intended to convey assurance have been expressed.*

KPMG have indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by stakeholders consulted as part of the process.

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Acknowledgements

*This paper uses unit record data from Household Income and Labour Dynamics in Australia (**HILDA**) conducted by the Australian Government Department of Social Services (**DSS**). The findings and views reported in this paper, however, are those of the author[s] and should not be attributed to the Australian Government, DSS, or any of DSS' contractors or partners.
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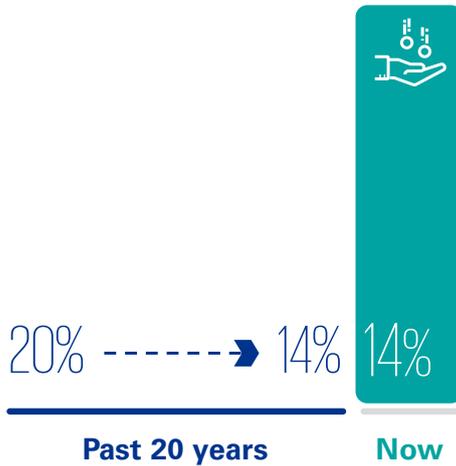
Acronyms

Term	Definition
ABS	Australian Bureau of Statistics
AFL	Australian Football League
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industry Classification
ASX	Australian Stock Exchange
AWE	Average Weekly Earnings
DCA	Diversity Council Australia
HILDA	Household, Income and Labour Dynamics in Australia
IMR	Inverse Mills Ratio
NATSEM	National Centre for Social and Economic Modelling
NGO	Non-Government Organisation
OECD	Organization for Economic Co-operation and Development
PPL	Paid Parental Leave
SACS	Social and Community Services
UK	United Kingdom
US	United States
WGEA	Workplace Gender Equality Agency

Key messages



Weekly wage gaps over the past 20 years



Source: ABS average full-time average weekly earnings gap between men and women



Hourly wage in \$



Hourly wage gaps by %



Source: KPMG analysis of Household, Income and Labour Dynamics in Australia Survey, Waves 7, 14 and 17 (HILDA Survey).

Alongside the overall decrease in the hourly gender pay gap, there have been changes in the share of drivers of the gap between 2014 and 2017.



Gender discrimination

The most significant single component contributing to the gender pay gap in Australia continues to be gender discrimination, accounting for **39 per cent** of the gender pay gap.

Closing this gap is equivalent to **\$182 million** each week.



Care, family and workforce participation

Factors that relate to the gendered impact of **children and family** (years not working due to interruptions, part-time employment and unpaid care and work) together account for **39 per cent** of the gender pay gap.

Closing this gap is equivalent to **\$186 million** each week.



Occupational and industrial segregation

Occupational and industrial segregation persist across the labour force.

Together, occupational and industrial segregation account for

17 per cent of the gender pay gap.

Closing this gap is equivalent to **\$77 million** each week.

A 2018 KPMG report, *Ending workforce discrimination against women*, found that **halving the gender pay gap** in Australia and **reducing entrenched discrimination against women in the workforce** could result in a payoff to society valued at **\$60 billion in GDP by 2038**.

Source: KPMG, 2018, *Ending workforce discrimination against women*, viewed 16 February 2019, available at: <https://home.kpmg/au/en/home/media/press-releases/2018/04/improving-workforce-participation-rates-for-woman-could-boost-gdp-26-april-2018.html>.

1 Introduction

Diversity Council Australia (DCA) and the Workplace Gender Equality Agency (WGEA) share a commitment to diversity and inclusion, particularly gender equality. As part of this commitment, KPMG, DCA, and WGEA have worked together since 2009 to develop a greater evidence base on the nature and drivers of the gender pay gap in Australia. This work has culminated in the release of two major reports, namely, *Understanding the Economic Implications of the Gender Pay Gap in Australia* ('the 2009 report'), and *She's Price(d)less: The Economics of the Gender Pay Gap* ('the 2016 report').

This report expands on the methodology developed for those reports and makes a further contribution to the evidence base and public discussion around the nature and impact of factors contributing to the gender pay gap.

1.1 Purpose and scope

The purpose of this report is to document the latest-available evidence on the nature and magnitude of drivers of the gender pay gap in Australia. Its scope includes:

- modelling factors contributing to the gender pay gap using the latest data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey;
- a snapshot of trends in the gender pay gap in other jurisdictions; and
- analysis of the potential impacts of strategies targeted at drivers of the gender pay gap.

1.2 Report structure

This report is structured as follows:

- **Section 2** provides background on the gender pay gap in Australia;
- **Section 3** explains the analytical approach;
- **Section 4** discusses recent evidence on contribution of factors to the gender pay gap; and
- **Section 5** discusses the potential impacts of strategies at a government and company level that may help to reduce gender pay gaps.

A set of appendices provides supplementary information to the main body of the report:

- **Appendix A** provides background on the Australian labour market and trends in the key drivers of the gender pay gap; and
- **Appendix B** provides a detailed methodology and data limitations.

1.3 Revision – 2016 report

In preparing the 2019 report, an error was identified in the way that KPMG presented the results for part-time employment and industrial and occupational segregation in the 2016 report. The methodology and aggregate results remain unchanged. Revised results can be found in Section 3.2.

2 Background

This section defines the gender pay gap, outlines different approaches to calculating gender pay gaps, and summarises recent trends in the gender pay gap in Australia. Although different methodologies and data sources return different levels of gender pay gaps, they are apparent regardless of the approach taken.

2.1 Female and male earnings gap

Gender pay gaps exist nationally across industries and occupations in Australia. Data from the Australian Bureau of Statistics (ABS) shows the gap between men and women in full-time average weekly earnings (AWE) has hovered between 14 per cent and 20 per cent over the past 20 years, and is currently at 14 per cent.¹

Trends in AWE of men and women are shown in Chart 1.

Chart 1: Average real weekly full-time earnings



Source: KPMG analysis of Australian Bureau of Statistics Average Weekly Earnings, Cat. 6302, November 2018.

Across Australia, the pay gap varies in different States and Territories. As of November 2018, Western Australia had the widest gender pay gap at 23.1 per cent,² while Victoria and South Australia had the smallest gender pay gaps at 9.3 per cent and 9.4 per cent respectively.³ Industry and occupational profiles as well as the underlying structure of the economy influence these differentials across jurisdictions. For example, the full-time workforce in Western Australia is concentrated in the mining and construction sectors, which have relatively higher earnings, lower representation of women and higher industry gender pay gaps, 16.9 per cent and 12.5 per cent respectively.⁴ In contrast, the majority of the full-time workforce in the Australian Capital Territory is employed in Public Administration and Safety, a sector which has a relatively balanced gender representation and the lowest gender pay gap, at 5.1 per cent.⁵ These differences in industry and occupational profiles between Western Australia and the Australian Capital Territory are key drivers in the magnitude of their respective gender pay gaps.

¹ Workplace Gender Equality Agency (WGEA), 2019, 'Gender workplace statistics at a glance 2018-19', viewed 15 August 2019, <https://www.wgea.gov.au/data/fact-sheets/gender-workplace-statistics-at-a-glance-2018-19>.

² WGEA, 2019, Australia's Gender Pay Gap Statistics, February 2019.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

Directly comparing international gender pay gaps is challenging due to differences in sources, definitions and methods used to calculate gender pay gaps.⁶ Country-specific factors such as the structure of the economy, how wages are set, the degree of collective bargaining and reporting requirements are important determinants of gender pay gaps. However, it is clear that gender pay gaps in favour of men are a common feature of these international economies despite inconsistencies in data sources and calculation methods.⁷ For example, on average, women across the Organization for Economic Co-operation and Development (OECD) countries earn 13.9 per cent less than men.⁸

2.2 Defining the gender pay gap

The gender pay gap measures the difference between the average earnings of women and men in the workforce. It is not the difference between two people being paid differently for work of the same or comparable value, which is unlawful. This is called equal pay. The gender pay gap is an internationally established measure of women's position in the economy in comparison to men. It is the result of the social and economic factors that combine to reduce women's earning capacity over their lifetime.

The gender pay gap is influenced by a number of factors, including:

- discrimination and bias in hiring and pay decisions;
- men and women working in different industries and different jobs, with female-dominated industries and jobs attracting lower wages;
- women's disproportionate share of unpaid caring and domestic work;
- lack of workplace flexibility to accommodate caring and other responsibilities, especially in senior roles; and
- women's greater time out of the workforce impacting career progression and opportunities.

The gender pay gap starts from the time women enter the workforce. The pay gap, together with time out of the workforce for caring reasons and women's higher likelihood of part-time work, impacts on their lifetime economic security.

Source: Workplace Gender Equality Agency, 2019.

2.3 Approaches to calculating gender pay gaps

Different approaches and data can be used to calculate the gender pay gap. While each can produce different results (due to differences in data sources and/or definitions), pay gaps are apparent in hourly, weekly and annual wages.

For the purpose of this report, the gap has been calculated based on average hourly earnings calculated from the latest available data from the HILDA Survey, Wave 17 (2017). The HILDA Survey is a household-based longitudinal survey which began in 2001 and is collected and published annually by the Melbourne Institute in conjunction with the Department of Social Services. HILDA comprises a sample of over 9,500 households and over 23,000 individuals, with interviews conducted annually with all adult members of each household followed over time to enable longitudinal analysis.⁹

2.4 The hourly gender pay gap

For this report, hourly wages were calculated by dividing total earnings by total hours worked for respondents where earnings and hours are greater than zero. The total earnings variable is imputed by HILDA, based on the gross weekly wages and salaries respondents provide for all their jobs.

⁶ WGEA 2019, *International Reporting Schemes*, December 2019.

⁷ Ibid.

⁸ The OECD defines the gender wage gap as the difference between median earnings of men and women relative to median earnings of men, with employees and self-employed people presented separately and uses mean full-time, annual earnings. OECD, 2015, *Family Database*, viewed 19 March 2019.

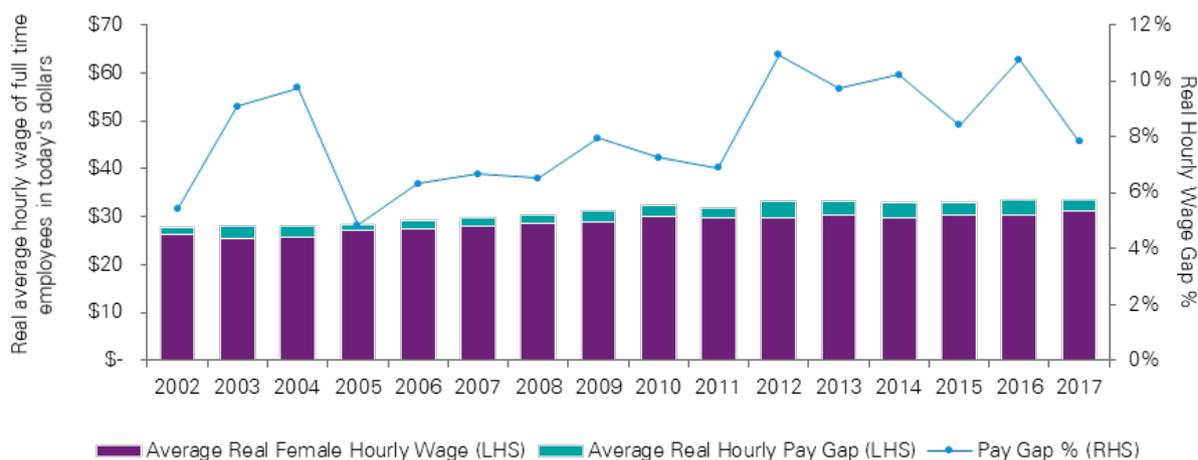
⁹ Appendix B provides further background information on the HILDA Survey.

The hourly gender pay gap was then calculated by the difference between average male and average female hourly earnings, divided by average female hourly earnings.

Data from the 2017 HILDA Survey (Wave 17) showed that women earned \$31.14 per hour, on average, in 2017, while men earned \$33.57 per hour, on average. This represents an hourly wage gap of \$2.43 (7.8 per cent). It is a decrease from 10.2 per cent in 2014 but an increase from 6.7 per cent in 2007.

The gender pay gaps between 2007 and 2017, estimated from HILDA data, are summarised below.

Chart 2: Changes in the calculated gender pay gap between 2002 and 2017



Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Waves 2 - 17 (HILDA Survey).

2.5 Pay gap initiatives and awareness

At a government, business, and community level, there is increasing focus on gender equality, and the level and drivers of the gender pay gap.

Legislative framework

An equal pay case in 1972 established the principle of 'equal pay for work of equal value' in Australia. This was enshrined in legislation via the *Affirmative Action (Equal Employment Opportunity for Women) Act 1986* being replaced by the *Equal Opportunity for Women in the Workplace Act 1999* and then the *Workplace Gender Equality Act 2012*. Australia's legislation aims to improve and promote equality for both women and men in the workplace. The principal objectives are to:

- promote and improve gender equality (including equal remuneration between women and men) in employment and in the workplace;
- support employers to remove barriers to the full and equal participation of women in the workforce;
- promote, among employers, the elimination of discrimination on the basis of gender in relation to employment matters (including in relation to family and caring responsibilities);
- encourage workplace consultation between employers and employees on issues concerning gender equality in employment and in the workplace; and
- improve the productivity and competitiveness of Australian business through the advancement of gender equality in employment and in the workplace.

WGEA was created by the *Workplace Gender Equality Act 2012*. Australia is the only country in the world where employers are required to submit raw data to an agency (WGEA) for data checking. WGEA is charged with promoting and improving gender equality in Australian workplaces and for calculating and monitoring key data – including gender pay gaps.¹⁰ All non-public employers with 100

¹⁰ WGEA 2019, *International Reporting Schemes*, December 2019.

or more employees are required to report on to WGEA each year on areas such as formal policies and strategies, employee movements, governing bodies, employer actions and consultations, support for flexible working, carers and parents and policies for sex based harassment and family or domestic violence.¹¹ This accounts for over 40 per cent of the Australian labour force.¹²

Policy directions

The Australian Government is progressing initiatives focused on increasing the number of women in leadership positions in public and private sectors, improving women's economic security, and enhancing women's safety. *Towards 2025: An Australian Government Strategy to Boost Women's Workforce Participation*, was launched in 2017. The Australian Government has made a range of investments to improve women's economic security, including an \$8.3 billion investment into the new child care system in 2018-19, and superannuation reforms to protect retirement savings in the Women's Economic Security Statement.¹³ A further \$119 million in new measures will be invested by 2022 to complement these existing actions.¹⁴

State and Territory governments have also progressed initiatives related to gender equality. For example, *Safe and Strong: A Victorian Gender Equality Strategy* sets out a vision for gender equality in Victoria, while the *NSW Women's Strategy 2018-2022* provides a whole-of-government and whole-of-community policy framework with the aim to improve the economic, social and physical wellbeing of women and girls across NSW. The *Tasmanian Women's Strategy 2018-2021: Financial Security, Leadership and Participation, Safety, Health and Wellbeing* provides a framework for government, the private sector and the wider Tasmanian community to take significant action to achieve gender equality.¹⁵

Australia has a government funded Paid Parental Leave (PPL) scheme that provides eligible working parents 18 weeks of PPL at the national minimum wage.¹⁶ Government funded PPL was introduced in 2011 and in 2012, a 'use it or lose it' entitlement of two weeks of leave was introduced for the other parent. The current minimum wage in Australia is \$719.20 per week (before tax), which equates to a minimum hourly rate of \$18.93.¹⁷ The 18 week entitlement can be taken by either parent or shared, and must be fully paid within 52 weeks of the child's birth, stillbirth or adoption, and a claim must be within 34 weeks of the birth or adoption. Employees can take PPL before, after, or in conjunction with employer-provided paid parental leave or other leave. The National Employment Standards provide long-term employees with access to unpaid parental leave. A 2014 review of the Paid Parental Leave Scheme suggests that parental leave is primarily taken by mothers.¹⁸ The evaluation also found that the Scheme increased employers' retention of mothers when they returned to work.¹⁹ In 2019, the Australian Government announced it would make changes to make parental leave pay more flexible, so that more parents can access parental leave pay allowing them to balance work and family responsibilities to best suit their needs.²⁰

While changes to government childcare subsidies, introduced in mid-2018, have made childcare more affordable for many families, the government subsidy system continues to penalise families where there are two parents in full-time work. For many Australian families, this impacts more on women than men due to persistence in the gendered nature of caring. More women than men work part-

¹¹ WGEA 2018, 'Reporting Questionnaire', viewed 24 July 2019, <https://www.wgea.gov.au/reporting/reporting-questionnaire>.

¹² WGEA 2019, *International Reporting Schemes*, December 2019.

¹³ Department of the Prime Minister and Cabinet, 2018, *Women's Economic Security Statement*, Australian Government, released 2018, viewed 19 February 2019, <https://www.pmc.gov.au/office-women/economic-security/wess>.

¹⁴ Ibid.

¹⁵ *The Policy Framework for Northern Territory Women 2015-2020* sets the Northern Territory Government's policy direction and priorities for women. The framework was developed through direct consultations with Northern Territory women and has four key focus areas with actions for each. Economic Security, one of the focus areas, includes reducing the gender pay gap in the Northern Territory. The Office of Women's Policy continues to raise community awareness through events such as Equal Pay Day, advocates for gender pay audits and, pay equity tools have been developed to address the gender pay gap.

¹⁶ WGEA 2017, *Towards Gender Balanced Parental Leave*, August 2017.

¹⁷ Fair Work Ombudsman, 2019, 'Minimum Wages', viewed 18 March 2019, www.fairwork.gov.au/how-we-will-help/templates-and-guides/fact-sheets/minimum-workplace-entitlements/minimum-wages.

¹⁸ Institute for Social Science Research, University of Queensland, 2014, 'Paid Parental Leave Scheme: Review Report', *Department of Social Services*.

¹⁹ Ibid.

²⁰ Australian Liberal Party 2019, 'Our plan to support Australian women', viewed 7 July 2019, <https://www.liberal.org.au/our-plan-support-australian-women>.

time, and if women increase the number of days worked there are financial disincentives through increased tax, lost payments and out-of-pocket childcare expenses.²¹ As the policy landscape continues to evolve, it will remain important to focus on interactions between Australian personal income tax, family payment and childcare support systems to ensure these do not deter Australian women with young children from increasing their workforce participation.²²

Business and industry

Awareness and advocacy

Gender equality continues to be promoted across Australian workplaces through a number of key initiatives. DCA has been contributing to building awareness of all aspects of diversity and inclusion among its members and the broader community through research, events, resources, access to experts and knowledge programs, and has gained traction. For example, in 2017, DCA membership grew nearly 20 per cent and now covers approximately 15 per cent of the Australian workforce.²³ In Australia, the number of women on the Boards of Australian Stock Exchange (ASX)-200 listed companies grew from 8.3 per cent in 2009 to 26.2 per cent in 2017 due in part to a target-setting diversity policy implemented by the ASX Corporate Governance Council in 2010.²⁴

The WGEA Employer of Choice for Gender Equality citation commenced in 2014 and is a leading practice recognition program that aims to encourage, recognise and promote active commitment to achieving gender equality in Australian workplaces. The citation is strategically aligned with the *Workplace Gender Equality Act (2012)*. It recognises that gender equality is increasingly critical to an organisation's success and is viewed as a baseline feature of well-managed and leading organisations. In 2019, a record 141 organisations received the citation, including 26 first-time recipients. This included the Australian Football League (AFL) being recognised as the first national sporting body in Australian to receive a WGEA citation.²⁵

Workplace initiatives

Initiatives including the Male Champions of Change,²⁶ WGEA Pay Equity Ambassador,²⁷ CEOs for Gender Equity²⁸ and Employer of Choice programs²⁹ aim to prioritise reforming workplaces by challenging existing structures and ways of thinking that may drive inequality. For example, the Male Champions of Change challenges the notion that gender equality is reliant on 'women's activism', and emphasises the need for active engagement by men to drive and accelerate the change on what is not only a gender issue, but also an economic and social issue. The 26 companies that form Male Champions of Change are responsible for over 400,000 employees, 170,000 of whom are women. The 2018 Male Champions of Change impact report highlights the results that are being achieved from the strategy. For example, 58 per cent of member organisations achieved gender balance in

²¹ KPMG, 2018, 'The Cost of Coming Back: Achieving a Better Deal for Working Mothers', viewed 19 February 2019, <https://home.kpmg/au/en/home/insights/2018/10/working-mothers-returning-to-work.html>.

²² Ibid.

²³ Diversity Council Australia, 2017, *Annual Report*, viewed 27 March 2019, https://www.dca.org.au/sites/default/files/dca_annual_report_2017_final_2.pdf.

²⁴ Australian Human Rights Commission 2018, *Face the Facts: Gender Equality*, November 2018.

²⁵ WGEA, 2019, '2019 Leaders in Workplace Gender Equality Announced', viewed 4 March 2019, <https://www.wgea.gov.au/sites/default/files/documents/Media%20release%20-%202019%20leaders%20in%20workplace%20gender%20equality%20announced.pdf>.

²⁶ The first Male Champions of Change (MCC) peer group, the Founding Group, began in 2010 with eight Australian leaders and has since grown to a group of 30 CEOs, Board Directors, Government Department, University and Military leaders. The MCC coalition now encompasses ten groups, amounting to around 208 leaders across Australia, viewed 4 March 2019, <https://malechampionsofchange.com/about-us/>.

²⁷ WGEA's Pay Equity Ambassadors are a network of chief executive officers, heads of department and directors in the public and private sector committed to pay equity and gender equality. There are currently 158 Pay Equity Ambassadors, viewed 4 March 2019, <https://www.wgea.gov.au/leading-practice/pay-equity-ambassadors/meet-our-ambassadors>.

²⁸ Eighteen of Western Australia's most influential business leaders launched CEOs for Gender Equity at Government House in 2014. The Equal Opportunity Commission prompted the formation of the inaugural group of CEOs in 2012 and has seen it grow to represent CEOs from the corporate, not-for-profit and government sectors, viewed 16 April 2019, <https://www.ceosforgenderequity.com.au>.

²⁹ WGEA's Employer of Choice for Gender Equality citation commenced in 2014 and is a leading practice recognition program that aims to encourage, recognise and promote active commitment to achieving gender equality in Australian workplaces. The citation is strategically aligned with the Workplace Gender Equality Act 2012, viewed 4 March 2019, <https://www.wgea.gov.au/leading-practice/employer-of-choice-for-gender-equality>.

their recruitment and 81 per cent of organisations have sought to mainstream flexible work by adopting an 'all roles flex' approach to flexibility.³⁰

National Inquiry into Sexual Harassment in Australian Workplaces

Although sexual harassment in workplaces in Australia is against the law, findings from the 2018 fourth *National Survey on Sexual Harassment in Australian Workplaces* suggest that one in three people have experienced sexual harassment at work in the last five years - an increase from previous surveys.³¹ On 20 June 2018, Australia's Sex Discrimination Commissioner, Kate Jenkins, announced a national inquiry into sexual harassment in Australian workplaces. 55 public consultations were undertaken with approximately 600 attendees around Australia, and individuals and organisations had the opportunity to make an online submission until February 2019.

Gender norms and community attitudes

People's lives are shaped by gender norms and attitudes. Gender norms refer to:

- how people are divided into categories of 'male' and 'female';
- the meanings given in society to being 'male' and 'female', such as how men and women are 'supposed' to talk, think, look and behave;
- different images and representations of women and men; and
- the organisation of men's and women's lives, including who holds power and makes decisions, who does what kinds of work, and expectations around how a person's sexuality can be expressed based on their gender.³²

Evidence about social attitudes in Australia suggests there have been modest improvements in attitudes supportive of gender equality, though in some areas challenging attitudes persist. Results from the 2017 *National Community Attitudes towards Violence Against Women Survey* indicate a modest positive change in knowledge and attitudes between 2013 and 2017 - including attitudinal support for gender equality.³³ The same study also showed that a significant number of Australians believe gender inequality is exaggerated or no longer a problem.³⁴ Further, a national survey of 2,122 Australians' attitudes to sexism and gender inequality conducted in March 2018 for the 50|50 by 2030 Foundation found that 88 per cent of Australians agreed that inequality between men and women is still a problem in Australia today.

However, the same survey for the 50|50 by 2030 Foundation suggested that:

- 48 per cent of respondents agreed there are no gender-based differences in skills and talents;
- 54 per cent of men and 40 per cent of women agreed that 'political correctness means I cannot say openly what I think about gender equality';
- 46 per cent of male respondents agreed that gender equality strategies in the workplace do not take men into account;
- 42 per cent of Australian men believed that men and boys are increasingly excluded from measures to improve gender equality; and
- 41 per cent of Australian men believed political correctness gives women advantage in the workplace.³⁵

³⁰ Male Champions of Change, 2018, Impact Report, viewed 27 March 2019, <https://malechampionsofchange.com/wp-content/uploads/2018/12/MCC-Impact-Report-2018-1.pdf>.

³¹ Australian Human Rights Commission 2018, *Everyone's Business: Fourth National Survey on Sexual Harassment in Australian Workplaces*, Australian Human Rights Commission.

³² Flood, M. and Russell, G., 2017, *Men Make a Difference: How to Engage Men on Gender Equality*, Sydney, DCA.

³³ Webster, K., Diemer, K., Honey, N., Mannix, S., Mickle, J., Morgan, J., Parkes, A., Politoff, V., Powell, A., Stubbs, J. and Ward, A., 2018, *Australians' attitudes to violence against women and gender equality: Findings from the 2017 National Community Attitudes towards Violence Against Women Survey (NCAS)*, Sydney, Australia's National Research Organisation for Women's Safety (ANROWS).

³⁴ Ibid.

³⁵ Evans, M., Haussegger, V., Halupka, M. and Rowe, P., 2019, *From Girls to Men: Social Attitudes to Gender Equality in Australia*, 50|50 by 2030 Foundation, Canberra.

3 Approach

This section outlines the approach to analysing drivers of the gender pay gap in Australia.

3.1 Background

A number of analytical approaches are cited in the literature to understand the gender pay gap. All approaches have particular strengths and limitations and utilise different data. A high level summary from Cassells et al. (2009) is provided below.

Table 1: Strengths and limitations of techniques to decompose gender gap gaps

Technique	Strengths	Limitations
Olsen and Walby simulation technique	<ul style="list-style-type: none"> • Enables direct discrimination to be measured • Allows emphasis on policy relevant variables and treat others as controls or irrelevant • Removes 'female advantaging' variables • Removes need to distinguish between rewards and endowments • Pre-market labour discrimination addressed by giving women 'best average situation among men'. 	<ul style="list-style-type: none"> • Measurement error associated with variables • Omitted variable bias • Removing factors considered 'controls' or not of policy relevance.
Oaxaca-Blinder decomposition technique	<ul style="list-style-type: none"> • Can calculate and quantify separate effects of endowments and prices • Can measure separate coefficients for men and women for each endowment. 	<ul style="list-style-type: none"> • Unsatisfactory choice of a true non-discriminatory wage structure • Feedback effects mean that discrimination is underestimated • Women and men cannot be compared directly due to separate wage estimations • Challenging to separate discrimination from other factors.

Technique	Strengths	Limitations
Juhn-Murphy-Pierce decomposition	<ul style="list-style-type: none"> • Enables estimates of wage gaps over time and between countries • Can decompose changes in the residual into price and quantity effects, allowing consideration of the relative importance of gender specific factors and wage structures • Minimises problems of sample selection bias. 	<ul style="list-style-type: none"> • Assumptions about distribution of male wage residuals and that similar factors raise wage inequality of men and women may not hold • Complex to interpret the impact of discrimination on wage gaps.

Source: Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs, viewed 19 March 2019, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf.

3.2 Revision – 2016 results

In preparing the 2019 report, an error was identified in the way that KPMG presented the results for part-time employment and industrial and occupational segregation in the 2016 report. The methodology and aggregate results remain unchanged.

The revised presentation of results is provided below.

Despite the below correction, it is important not to compare the 2016 (2014 data) results in Table 2 below with the 2016 results in Table 6 later in this report. This is because the 2016 results in Table 6 have been generated using an updated enhanced methodology, which took into account the ageing effect of the HILDA cohort and introduced a new variable, namely unpaid care and work. See Section 3.3.2 for more information.

Table 2: Revision of previous decomposition results from KPMG’s 2016 report (2014 data), She’s Price(d)less – The Economics of the Gender Pay Gap.

	Original		Revised	
	Proportion	\$ Equivalent	Proportion	\$ Equivalent
Age (years)	6%	\$0.15	6%	\$0.15
Tenure with current employer (year)	1%	\$0.03	1%	\$0.03
Years not working due to interruptions	21%	\$0.53	21%	\$0.53
Industry segregation index (males per 100 workers)	19%	\$0.48	4%	\$0.10
Occupational segregation (males per 100 workers)	11%	\$0.28	19%	\$0.48
Proportion in part-time employment	4%	\$0.10	11%	\$0.28
Proportion working in Government or NGO	0%	\$0.01	0%	\$0.01
Unpaid care and work (proxied by hours per week on housework)	Not tested	Not tested	Not tested	Not tested
Gender discrimination	38%	\$0.95	38%	\$0.95
Total	100%	\$2.50	100%	\$2.50

Source: KPMG analysis of Household, Income and Labour Dynamics in Australia Survey, Wave 14.

3.3 Estimation approach

Consistent with the 2009 and 2016 reports, this report applies the Walby and Olsen technique, tailored for the Australian context, and updated with the most recent data available (2017). This approach was originally developed and applied in the United Kingdom (UK). It estimates the factors that impact wages and simulates the changes that would arise if women’s levels of these attributes were in line with those of men. The analysis assumes that wages are broadly equivalent to the value of a person’s output.³⁶

³⁶ It is important to note that the implication is *not* that women are currently paid less than men because they are not as productive and is in no way a reflection on the current contribution or value of the work of women. Instead, wages are used as a substitute for productivity, which is widely recognised as an acceptable proxy. See Walby, S. and Olsen, W., 2002, *The impact of women’s position in the labour market on pay and implications for UK productivity*. Report to Women and Equality Unit, pp. 18-20.

A number of enhancements have been made to the previous methodology utilised in the 2009 and 2016 reports to more fully reflect trends in underlying data.

3.3.1 Overview

The Walby and Olsen approach was applied through three steps:

Table 3: Walby and Olsen Approach

Step	Description
Likelihood of being in the labour force	The first step involves modelling the probability of selection into the labour force, based on a range of potential explanatory variables.
Factors affecting hourly wages	Estimates the factors that affect the hourly wages earned by a person in the workforce. Several potential explanatory variables were included. Further, this analysis controls for approximately 40 variables, including (but not limited to) parental status, industry and educational attainment.
Decomposition of the gender pay gap	To estimate the effect of the gender differences on pay, and the implications of this for broader economic output, the methodology established by Walby and Olsen (2002) was used to break down the contributors of the gender wage gap and estimate the gross effect of each underlying factor on the wage gap. This makes it possible to estimate the change in earnings that would occur 'if women's conditions changed to reflect the best or the average situation among men' (Olsen and Walby, 2004, p. 66).

Further discussion of the technical approach and variables tested is available in Appendix B.

3.3.2 Approach enhancements

The Walby and Olsen approach previously applied in the 2009 and 2016 reports was extended to better account for the following two key issues.

Ageing effect in modelling based on the 2009 HILDA cohort

The 2009 and 2016 reports were both based on the cohort that responded to the 2007 wave of the HILDA survey. To account for possible effects of ageing of the cohort on the results, the analysis undertaken in this report uses the full HILDA sample (all employed people) rather than limiting the analysis to the same employed individuals surveyed in 2007. This approach ensures that changes over time reflect experiences of the whole sample rather than just those who were working in 2007. Using the full sample is considered to be a more accurate indication of the overall workforce experience in 2017.

Understanding the potential impact of other factors

Across the wage decomposition literature, there is no single set of accepted variables that should be included and Australian evidence about the potential determinants is mixed.³⁷ Factors selected for analysis in the 2009 and 2016 reports were assessed on the basis of a literature review, which included consideration of their policy relevance, in line with established methodologies.

Variables tested in our 2009 and 2016 reports are as follows:

³⁷ Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf.

Table 4: Variables tested in the 2009 and 2016 reports

Control variables	Variables tested to estimate employment likelihood	Variables tested to estimate wages
<ul style="list-style-type: none"> • State • Region • Size of firm • Size of industry • Satisfaction with work flexibility arrangements • Industry • Occupation • Trade union membership. 	<ul style="list-style-type: none"> • Gender • Age and age squared • Education scale • Marital status • Number of 0-4 year old children • Number of 5-9 year old children • Number of 10-14 year old children • Migrant status • Whether the respondent has a long term health condition • Whether the respondent has poor health • Currently attending full-time education • Currently attending part-time education • Number of years since left full-time education • Years of work experience, base and squared • Urban location. 	<ul style="list-style-type: none"> • Gender • Age and age squared • Education scale • Marital status • Number of 0-4 year old children • Number of 5-9 year old children • Number of 10-14 year old children • Years of work experience, base and squared • Whether in casual employment • Whether in part-time employment • Tenure with current employer in years • Usual hours of work in all jobs per week • Number of years not in the labour force • Number of years unemployed • Entitlement to paid maternity/paternity leave • Industry gender segregation • Occupation gender segregation • Number of on the job training hours completed per week • Inverse Mills Ratio from employment equation.

Additional factors

As part of updating the analysis, it was considered whether there may be additional significant factors that could help to explain the gender pay gap. To do so, available literature and research was considered to identify and test additional variables available from the HILDA data.

Table 5: Additional variables tested in this report (not previously tested in 2009 and 2016)

Issue	Overview
Unpaid care and work	<p>Unpaid care and work has been described as the missing link in analysis of gender pays in labour market outcomes.³⁸ It has been argued that unpaid care affects gender pay gaps.³⁹</p> <p>Hours of housework was tested as a proxy for unpaid care and work. This factor was found to be a significant driver of the gender pay gap.</p>
Firm characteristics	<p>A range of firm effects may impact gender pay gaps, including type of ownership, shares of women in management at different levels, whether the firm is subject to collective bargaining, and other factors.⁴⁰ Firm-specific characteristics can significantly influence pay gaps. For example, an analysis of European Structure of Earnings data in four post-transition Central European countries: Poland, Hungary, the Czech Republic and Slovakia, shows that gender wage gaps are smallest in the youngest firms (with firm age proxied by the maximum tenure of an employee at one of the firms)—suggesting that well established firms are less likely to have equal wage policies.⁴¹</p> <p>Although HILDA data on firms is limited, firm size was tested and found that it was not a significant contributor to the gender pay gap.</p>
Workplace culture, behaviours, and unobserved characteristics	<p>It is also well-accepted that workplace culture, behaviours, leadership influence, and unconscious bias can drive gender pay gaps. However, robust data is extremely limited.</p> <p>Notwithstanding data limitations, recent promotions as a potential proxy was tested and found that it was not a significant contributor to the gender pay gap.</p>

While additional variables were tested based on available data, it is acknowledged that there are potential factors that cannot be directly observed or measured. These are outlined further in the limitations section below.

³⁸ Ferrant, G., Pesando, L. and Nowacaka, K., 2014, *Unpaid care work: the missing link in the analysis of gender gaps in labour outcomes*. OECD Development Centre, viewed 4 April 2019, https://www.oecd.org/dev/development-gender/Unpaid_care_work.pdf.

³⁹ For example, Baert, S., 2013, *Career Lesbians: Getting Hired for Not Having Kids?*, IZA Discussion Papers, No. 7767, Institute of Labor Economics (IZA), Bonn.

⁴⁰ For example, Meng, X., 2004, 'Gender earnings gap: the role of firm specific effects', *Labour Economics*, 11(5), pp. 555-573.

⁴¹ Cukrowska-Torzewska, E. and Magda, I., 2019, *Gender wage gap in the workplace: Does the age of the firm matter?* IBS Working Paper 01/2019, University of Warsaw.

3.4 Limitations

The modelling approach provides a point-in-time analysis of the gender pay gap. While there are acknowledged limitations to the approach, it represents one contribution to the evidence base around the issue of pay equity. Results should be considered alongside other analytical approaches for a more complete picture of the links between gender and pay.

The analysis within this report is based on the sample of respondents included within the HILDA dataset. The sample of respondents to the HILDA survey is expanded with each consecutive wave of the survey through both exits and entries from the underlying sample of respondents. The HILDA user manual⁴² was used to apply appropriate weightings to control and adjust, to the extent permissible, for these sampling issues and to provide estimates for the Australian population.

The key limitations identified in undertaking this work are as follows:

Measurement error

Any analysis that draws on survey data will be impacted by measurement error because respondents may not respond accurately to questions or there may be errors in how those open ended responses are coded. However, Uhrig and Watson (2014) analysed five waves of both the British Household Panel Survey and the HILDA survey and found that the effect of measurement error, where it could be corrected, on the comparison of men's and women's wages was small.⁴³

Decomposition method

The data and methodology used for decomposition analysis impacts the results and different methodologies have strengths and weaknesses.⁴⁴ HILDA is the most appropriate data source for the Australian context. This decomposition analysis is undertaken with the Walby and Olsen (2002) methodology, which is an established approach for the Australian context.⁴⁵ A key feature of this approach is its ability to highlight variables with 'practical policy relevance to reduce gender wage gaps' while controlling for a range of irrelevant variables that impact wages but not gender, such as geography.⁴⁶ The analysis attempts to capture the statistical association between the gender pay gap and key explanatory variables modelled, but this cannot be definitively attributed and needs to be considered in the broader context of available evidence and key developments.

The core list of variables included for decomposition was based on prior research cited in our 2009 and 2016 reports and is retained for consistency and to facilitate comparison. Importantly, this includes working in the NGO or government sector which was statistically insignificant in 2017 (in contrast to previous waves) but is retained for completeness.

Impacts of other factors

There is a significant body of research on the financial differences between men and women such as the wealth gap, differences in lifetime earnings, and superannuation. These issues are outside the scope of this report.

Limitations of industrial and occupational segregation data

Industrial and occupational segregation are key factors tested in the analysis. For the purposes of this analysis, industrial and occupational segregation are measured based on the HILDA dataset.

HILDA collects information about the industry and occupation of employment by asking respondents to provide their current main job. This response is then coded by HILDA surveyors to the Australian

⁴² Summerfield, M., Bevitt, A., Fok, K., Hahn, M., La, N., Macalalad, N., O'Shea, M., Watson, N., Wilkins, R. and Wooden, M., 2019, *HILDA User Manual – Release 17*, Melbourne Institute, Applied Economic & Social Research.

⁴³ Uhrig, SCN., and Watson, N., 2014, *The impact of measurement error on wage decompositions: evidence from the British Household Panel Survey and the Household Income and Labour Dynamics in Australia Survey*, ISER Working Paper Series, No. 2014-24, University of Essex, Institute for Social and Economic Research (ISER), Colchester.

⁴⁴ Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf.

⁴⁵ Ibid.

⁴⁶ Ibid.

and New Zealand Standard Classification of Occupations (ANZSCO) and Australian and New Zealand Standard Industry Classification (ANZSIC).⁴⁷

There are acknowledged data quality issues associated with the coding of these variables.⁴⁸ Following a 2009 review, HILDA has changed how coding is undertaken - adopting ANZSCO and ANZSIC - and trained its surveyors and coders.⁴⁹ The ANZSCO and ANZSIC codes are 'likely to have a lower error rate' than the pre-2007 code frames, which used different classifications.⁵⁰ Despite these limitations, industrial and occupational data from HILDA is widely used in academic research, including papers specifically examining gender pay gaps⁵¹ and remains a valid and important data source for this type of decomposition.

Use of HILDA and WGEA Gender Equality datasets

For many of the issues and factors considered in this report and our analysis, there are different measures available through different datasets. Invariably, different datasets can provide different figures and results due to differences in methodologies (such as census data compared with surveys and other sampling approaches), quality and robustness of responses, and granularity.

For the purposes of consistency and availability of the breadth of indicators required to be tested within our analysis of the gender pay gap, the HILDA survey dataset was utilised as the primary input to our analysis. As a panel survey, HILDA tracks the same people over time, and provides key information about incomes, labour dynamics and family life.

In addition to the HILDA data, the WGEA Gender Equality data collection also provides detailed information that can be used to understand gender dynamics across industries, for example, industrial and occupational segregation. The WGEA Gender Equality data collection includes data collected from all private businesses with more than 100 or more employees annually from 2013-14. This captures more than four million employees - approximately 40 per cent of all employees in Australia - in a census. The WGEA Gender Equality data collection does not include public sector organisations, small businesses or any medium sized businesses with fewer than 100 employees.

While the WGEA Gender Equality data collection has not been utilised in the main statistical analysis (due to data scope reasons), it has been drawn on in preparing our analysis and presented alongside the analytical results. **Importantly, the WGEA and HILDA data (as well as other sources, such as ABS), all show that gender pay gaps persist in Australia and that gender segregation is persistent across industries and occupations.**

⁴⁷ Summerfield, M., Bevitt, A., Fok, K., Hahn, M., La, N., Macalalad, N., O'Shea, M., Watson, N., Wilkins, R. and Wooden, M., 2019, *HILDA User Manual – Release 17*, Melbourne Institute, Applied Economic & Social Research.

⁴⁸ Watson, N., and Summerfield, M., 2009, 'Quality of the Occupation and Industry Coding in the HILDA Survey', *HILDA Project Discussion Paper Series, No. 3/09*, Melbourne.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ For example, Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf and Watson, I, 2010, 'Decomposing the Gender Pay Gap in the Australian Managerial Labour Market', *Australian Journal of Labour Economics*, 13(1), pp. 47-79.

4 Drivers of the gender pay gap

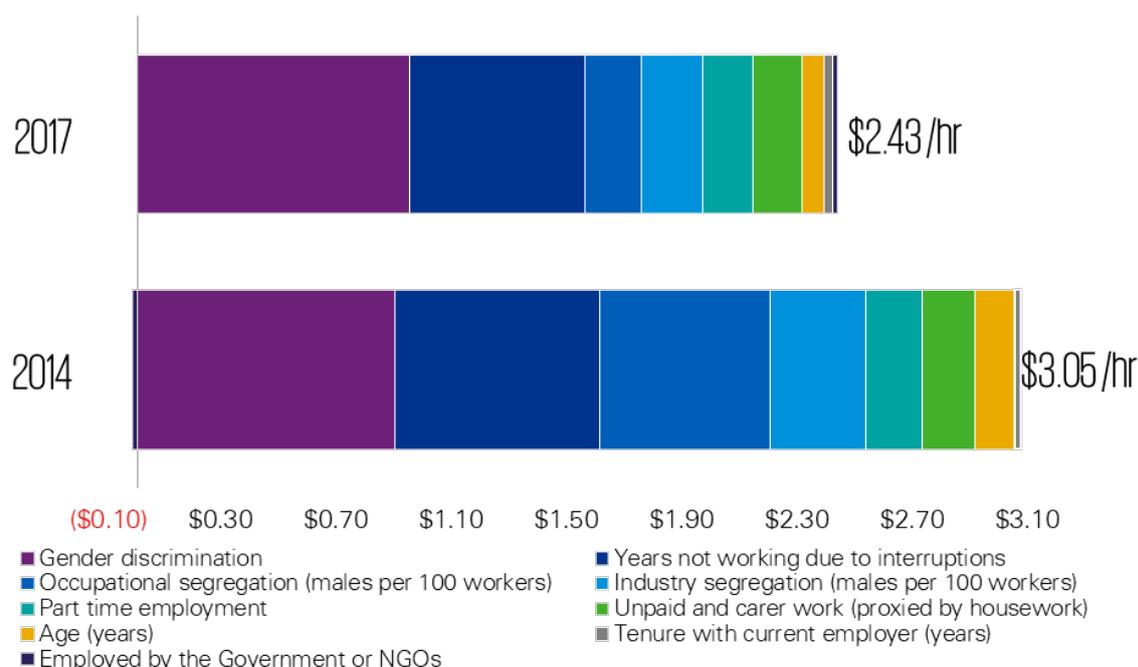
This section discusses the identified drivers of the hourly gender pay gap in Australia. While this analysis focuses on hourly gender pay gaps, gender pay gaps in weekly wages are related to hourly pay, and the drivers identified here are likely to also shape weekly gender pay gaps.

4.1 Drivers of the gender pay gap

Chart 3 shows the contribution of the various drivers modelled to the gender pay gap. It is important to note that the results show the contribution of different factors to the gender pay gap. A decrease in the contribution of a factor to the gender pay gap does not necessarily indicate that the value or nature of the underlying factor has changed, rather, that its significance in driving differences in pay has diminished.

The results show that the overall pay gap has reduced from \$3.05/hr in 2014 to \$2.43/hr in 2017 in today's dollars, however, the relative contribution of gender discrimination to the pay gap increased. In absolute terms, the results suggest that the impact of gender discrimination on pay increased slightly from \$0.90/hr in 2014 to \$0.95/hr in 2017.

Chart 3: Changes in the estimated gender pay gap between 2014 and 2017



Note: The chart shows the contribution of the various drivers modelled to the gender pay gap between 2014 and 2017. A decrease in the contribution of a factor to the gender pay gap does not necessarily indicate that the value or nature of the underlying factor has changed, rather, that its significance in driving differences in pay has diminished.

Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Wave 14 and 17 (HILDA Survey).

Table 6: Relative contribution of selected factors to the 2014 and 2017 Australian gender pay gap (today's dollars)

	Contribution			Dollar-equivalent		
	2014 (Wave 14)	2017 (Wave 17)	Change	2017 (Wave 14)	2017 (Wave 17)	Change
Gender discrimination	29%	39%	+10%	\$0.90	\$0.95	+\$0.05
Years not working due to interruptions	23%	25%	+2%	\$0.71	\$0.61	-\$0.10
Occupational segregation	20%	8%	-12%	\$0.60	\$0.19	-\$0.41
Industrial segregation	11%	9%	-2%	\$0.33	\$0.21	-\$0.12
Part-time employment	6%	7%	+1%	\$0.19	\$0.18	-\$0.01
Unpaid care and work (proxied by hours per week on housework)	6%	7%	+1%	\$0.18	\$0.17	-\$0.01
Age (years)	5%	3%	-2%	\$0.14	\$0.08	-\$0.06
Tenure with current employer	1%	1%	+0%	\$0.02	\$0.03	+\$0.01
Working in Government or NGO	-1%	1%	+2%	-\$0.02	\$0.02	+\$0.04
Total	100%	100%	NA	\$3.05	\$2.43	-\$0.62

Note: Results may add to more than 100% or the total due to rounding. The total gender pay gap has been derived from the difference between the average hourly wage for male and female wage earnings, with the decomposition undertaken for selected variables only. **As noted above, the results presented here are not directly comparable with the results reported in our 2016 report due to the refined methodology and change in sample size.**

Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Wave 14 and 17 (HILDA Survey).

The following sub sections discuss each driver in more detail.

4.1.1 Gender discrimination

The results show that the most significant component contributing to the gender pay gap in Australia continues to be gender discrimination, accounting for 39 per cent in 2017 (up from 29 per cent in 2014). The finding of the analysis that gender discrimination is the most significant driver of the gender pay gap is in line with a considerable body of evidence about the impact of discrimination on wage gaps in Australia and elsewhere.

Gender discrimination can be understood as the element of the gender pay gap that would remain if men and women had the same levels of the other factors.

Gender pay gaps can be understood as reflecting differences in human capital between men and women, as well as differential treatment.⁵² Over time, much of the difference in human capital (such as education) has been eliminated,⁵³ yet discrimination persists. Gender discrimination in the workforce is linked to practices such as workplace culture, hiring, promotion and access to training,⁵⁴ which can impact human capital accumulation. Gender discrimination can be systemic or overt.

A 2008 Senate Committee Report on the effectiveness of the *Sex Discrimination Act 1984* found that the Act had an impact on the most overt forms of sex discrimination but had less impact on systemic

⁵² Goldin, C., 2014, 'A Grand Gender Convergence: Its Last Chapter', *American Economic Review*, 104(4), pp. 1091-1119.

⁵³ Ibid.

⁵⁴ Chang, J., Connell, J., Burgess, J., and Travaglione, A., 2014, 'Gender Wage Gaps in Australian Workplaces: Are Policy Responses Working?', *Equality, Diversity and Inclusion*, 33(8), pp. 764-775.

discrimination.⁵⁵ This is supported by a 2016 study conducted by Glassdoor based on wage data shared on an opt-in basis to the Glassdoor website. The Glassdoor study highlighted that the variable levels of human capital endowment between men and women explain only a 'trivially small' part of the gender pay gap and this finding was consistent across all countries examined.⁵⁶ Importantly, the fact that worker characteristics explain components of the gender pay gap does not mean the gap is not real or is not caused by unfair barriers women face in the workplace.⁵⁷ The report goes on to say that:

“...if women are systematically excluded from certain occupations, or encouraged to work only in certain industries, or discouraged from pursuing particular college majors, these factors can statistically “explain” the gender pay gap but still represent social biases against women that most observers would consider unfair and worthy of criticism.”⁵⁸

The Glassdoor study also found that the proportion of the pay gap that can be explained by differences in skills and education is actually decreasing each year, as women have closed the gap in rates of higher education and labour force participation.

Further evidence for gender discrimination against women comes from a study of 4,600 workers across 800 employers using data from the Australian Workplace Relations Survey. This study found that there were no differences between women and men in the likelihood of 'asking' for a salary increase.⁵⁹ Women also did not appear to be more concerned than men about the impact of negotiation on their workplace relations. However, when they did ask, women were less successful in obtaining a pay rise than men were.⁶⁰

The magnitude of differences in earnings identified as being associated with gender discrimination is in line with other studies, including some conducted with different methodologies (see Appendix B). For example, an application of the Walby and Olsen technique in the United Kingdom showed that being female accounted for between 35 and 61 per cent of gender pay gaps in the period between 1995 and 2007.⁶¹

Other evidence, for example, Cassells et al. (2009) applied the Walby and Olsen technique to the 2007 (Wave 7) HILDA data and found that “simply being a woman”, that is gender discrimination, drives 60 per cent of the hourly gender wage gap.⁶²

In March 2017, the New Zealand Ministry for Women released a research report, *Empirical Evidence of the Gender Pay Gap in New Zealand*,⁶³ which revealed that the national gender pay gap has fluctuated around 12 per cent since 2012 and that progress has stalled despite considerable work to reduce the gap. The research found that traditional drivers such as type of work, family responsibilities, education, and age no longer explain the majority of the gender pay gap. Around 80 per cent of the gender pay gap is now due to factors other than the traditional drivers, which the Ministry for Women views primarily as behaviour and assumptions about women in work.⁶⁴

Interpreting the unexplained component of wage decompositions as gender discrimination is an accepted approach in the literature.⁶⁵ The unexplained component also includes other variations

⁵⁵ Standing Committee on Legal and Constitutional Affairs 2008, *Effectiveness of the Sex Discrimination Act 1984 in eliminating discrimination and promoting gender equality*, Department of the Senate, Australia.

⁵⁶ Chamberlain, A., 2016, *Demystifying the Gender Pay Gap, Evidence From Glassdoor Salary Data*.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Artz, B. and Goodall, A. H. and Oswald, A. J., 2016, *Do Women Ask?* IZA Discussion Paper No. 10183, viewed 15 August 2019, <https://ssrn.com/abstract=2840107>.

⁶⁰ Ibid.

⁶¹ Olsen, W., Gash, V., Vandecasteele, L., Walthery, P. and Heuvelman, H., 2010, *The gender pay gap in the UK 1995-2007: research report number 1*. UK: Government Equalities Office.

⁶² Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf.

⁶³ Ministry for Women, 2017, *Empirical Evidence of the Gender Pay Gap in New Zealand*.

⁶⁴ Ibid.

⁶⁵ Uhrig, SCN., and Watson, N., 2014, *The impact of measurement error on wage decompositions: evidence from the British Household Panel Survey and the Household Income and Labour Dynamics in Australia Survey*, ISER Working Paper Series, No. 2014-24, University of Essex, Institute for Social and Economic Research (ISER), Colchester.

between men and women that may not be controlled for in the model, any omitted variables and measurement error in the variables used in the model.⁶⁶ However, as Uhrig and Watson (2014) note:

“The portion of the wage gap that is unexplained by difference in characteristics or remunerative attributes of men and women represents a measure [of] discrimination existing in the labour market. Men and women’s wages would be approximately equal if there was no discrimination: a greater unexplained portion suggests greater discrimination”.⁶⁷

Importantly, gender discrimination and social norms also influence the other factors that drive gender pay gaps, such as industrial and occupational segregation.

This suggests that addressing underlying gender discrimination should be a target of policy efforts and initiatives in the private sector, including activities focused on highlighting the extent of gender pay gaps and the contribution of discrimination to these gaps and reducing discrimination directly through cultural change.

4.1.2 Years not working due to interruptions

While the total proportion of the gender pay gap explained by career interruptions increased between 2014 and 2017 from 23 per cent to 25 per cent respectively, the dollar equivalent decreased from \$0.71/hour to \$0.61/hour in today’s dollars, reflecting the lower total 2017 pay gap.

Career interruptions impact pay through those who have experienced disruption having shorter tenure and therefore lower levels of experience. Career interruptions may mean those taking time out of the workforce see their skills depreciate or miss opportunities to build their skills and attend training. Career interruptions can mean that individuals return to the workforce in lower status or lower paid roles.

There can be a number of reasons for career interruptions, including career breaks, study and unemployment. However, for women, time out of the workforce to care for young children or other family members is a key aspect. The incidence of these career interruptions are gendered and highly persistent.

Internationally, research demonstrates that career breaks have a negative impact on women’s wages when they return to the workforce and on their occupational mobility, though these impacts may attenuate as women age. Evidence from Belgium suggests that wage interruptions due to family and unemployment are penalised by lower wages upon return to the workforce, unlike periods out of wage employment for education, for example.⁶⁸ Career breaks for motherhood have been shown to have negative consequences for women’s occupational mobility in the United States, Germany and Sweden.⁶⁹ There is some evidence, from an analysis of the United States National Longitudinal Survey of Young Women, that the impact of parenthood on women’s occupational status, labour force participation and wages attenuate at older ages.⁷⁰

Closer to home in Australia, research on the ‘motherhood penalty’ demonstrates the impact of time out of the workforce. A 2010 panel model uses data from HILDA to show that in Australia there is an unexplained wage penalty associated with motherhood of around five per cent for one child, and nine per cent for two or more children.⁷¹ The paper shows that this arises over time through reduced wage growth.⁷² Mothers who return to work after 12 months parental leave following the birth of

⁶⁶ Ibid.

⁶⁷ Ibid, p. 27.

⁶⁸ Theunissen, G., Verbruggen, M., Forrier, A. and Sels, L. 2011, ‘Career Sidestep, Wage Setback? The Impact of Different Types of Employment Interruptions on Wages’, *Gender, Work & Organization*, 18(s1), e110-e1313.

⁶⁹ Aisenbrey, S., 2009, ‘Is There a Career Penalty for Mothers’ Time Out?: A Comparison of Germany, Sweden and the United States’, *Social Forces*, 88(2), pp. 573-605.

⁷⁰ Kahn, J., Garcia-Mangano, J., and Bianchi, S.M., 2014, ‘The Motherhood Penalty at Midlife: Long-Term Effects of Children on Women’s Careers’, *Journal of Marriage and Family*, 76(1), pp. 56-72.

⁷¹ Livermore, T., 2010, ‘The effect of motherhood on wages and wage growth: evidence for Australia’. 39th Australian Conference of Economists, pp. 1-26. Economic Society of Australia, Sydney.

⁷² Livermore, T., 2010, ‘The effect of motherhood on wages and wage growth: evidence for Australia’. 39th Australian Conference of Economists, pp. 1-26. Economic Society of Australia, Sydney.

their first child are subject to a wage penalty during the first year back at work of almost seven per cent.⁷³ This jumps to almost 12 per cent in the following year.⁷⁴

A 2014 study by Polachek and Xiang highlighted the variation in the wage gap depending on demographic variables such as marital status, children, and the spacing of children. The gap between single men and women was the smallest, at less than 10 per cent, while the gap between married men and women grew to approximately 40 per cent.⁷⁵ Polachek and Xiang (2014) suggest that this growth is due to the expectation and reality that women take the role as primary caregivers, which reduces their capacity to focus on lifetime work, and the associated earnings growth. This is because wage growth is most prominent during the period in which women generally have children. Men's wage profile grows most sharply at this stage, while women's wage profile remains stagnant. Thus, despite women's educational qualifications increasing, there is still a significant and maintained difference in the tenure and experience of women, resulting in a sustained wage gap.

However, women can also be penalised in anticipation of time out of the workforce. Recent evidence from a natural experiment in Germany - comparing women's wages before and after a change in requirements for large firms to pay for maternity leave based on the age and gender of their own workforce - suggests that firms were paying female workers less in anticipation of potential maternity career breaks.⁷⁶

In contrast, most men do not experience significant changes to their paid or domestic workloads following the birth of a child.⁷⁷ Evidence from Sweden highlights the potential positive impacts on female earnings when fathers do take leave. In Sweden, both men and women who take leave experience earnings reductions.⁷⁸ Each month that the father stays on parental leave increases maternal earnings by 6.7 per cent but a mother taking parental leave has no impact on fathers' earnings.⁷⁹ If fathers' leave is restricted to non-holiday periods - when it is arguably a better measure of spousal involvement than periods when both partners are home as is likely over the holidays - the impact on female earnings increases to 10 per cent.⁸⁰

Paid parental leave is one policy that can encourage women to stay in the workforce after the birth of a child. Paid parental leave encourages and supports women and men in their role as both employees and carers. Across OECD countries, paid parental leave entitlements vary in "length, generosity and flexibility".⁸¹ The United States remains the only country in the developed world that does not mandate employers to offer paid leave for new parents.⁸² Across the OECD, the share of men using parental leave remains low.⁸³ In Australia, a review of the Federal Government's Parental Leave scheme indicated parental leave is primarily taken by mothers.⁸⁴ The significance of career interruptions on gender pay gaps suggests that interventions aimed at reducing gender pay gaps need to consider parental leave and care. Potential approaches may include increasing men's access to paid parental leave or adopting shared care arrangements. Government, the private sector and the community could also play a role in shifting social expectations and normalising care by men.

⁷³ Australian Council for Trade Council, 2016, *The Gender Pay Gap over the Lifecycle*, viewed 15 February 2019, <https://www.actu.org.au/media/886499/the-gender-pay-gap-over-the-life-cycle-h2.pdf>.

⁷⁴ Ibid.

⁷⁵ Polachek S.W. and Xiang, J., 2014, *The Gender Pay Gap Across Countries: A Human Capital Approach*, Institute of Labor Economics (IZA), Bonn.

⁷⁶ Jessen, J., Jessen, R. and Kluge, J., 2019, 'Punishing Potential Mothers? Evidence for Statistical Employer Discrimination From a Natural Experiment', *Labour Economics* [in press].

⁷⁷ WGEA, 2016, *Unpaid care work and the labour market: Insight paper*, WGEA, Sydney.

⁷⁸ Johansson, E.A., 2010, *The effect of own and spousal parental leave on earnings*, IFAU Working Paper, Institute for Labour Market Policy Evaluation, Uppsala, viewed 4 April 2019, <https://www.ifau.se/globalassets/pdf/se/2010/wp10-4-the-effect-of-own-and-spousal-parental-leave-on-earnings.pdf>.

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ WGEA 2017, *Towards Gender Balanced Parental Leave*, August 2017.

⁸² Ibid.

⁸³ Ibid.

⁸⁴ Institute for Social Science Research, University of Queensland, 2014, 'Paid Parental Leave Scheme: Review Report', *Department of Social Services*.

4.1.3 Part-time employment

The impact of part-time work on the gender pay gap did not materially change between 2014 and 2017. Part-time employment accounted for six per cent of the 2014 gender pay gap and seven per cent of the 2017 gender pay gap. This finding is consistent with the relative lack of change in the gender composition of the part-time workforce over this time period. For example, among employees of WGEA reporting organisations, between 2015-16 and 2016-17 there was a 1.8 per cent decrease in the number of men who work full-time, while the number of women working full-time increased by just 0.2 per cent.⁸⁵

Women represent the majority of the Australian part-time work force. In 2019, 21 per cent of the Australian workforce are women working part-time.⁸⁶

Part-time work reduces current income and long-term earning potential,⁸⁷ as part-time workers may have fewer opportunities to develop their skills and miss out on promotional opportunities.⁸⁸

While lower levels of education and experience have been identified as helping to explain why part-time work contributes to gender pay gaps, a 2015 Australian study showed that part-time workers earn 6.9 per cent less than full-time workers, even after controlling for qualifications, experience, gender, industry, method of pay setting and casual status.⁸⁹

Those working part-time may also face part-time penalties or premiums depending on perceptions about employee productivity.⁹⁰ As women and men have become more similar in terms of their experience and education, the human capital contribution of wage differences has decreased. However, differences remain in how firms reward workers who require or prefer different amenities—particularly flexibility.⁹¹

As Harvard economist Claudia Goldin observes, 'A flexible schedule often comes at a high price'.⁹² Senior roles in some highly paid sectors pay workers a premium for their willingness to work extremely long hours at unpredictable times.⁹³ Part-time employees may be willing to accept lower wages for roles that meet their need or preference for non-standard work hours.⁹⁴

This evidence highlights the importance of considering the contribution of part-time work on gender pay gaps and the need to address the systems which may be resulting in part-time workers not being rewarded in line with those who work full-time.

4.1.4 Industrial and occupational segregation

Industrial and occupational segregation continues to contribute to the gender pay gap. In 2017, these factors together accounted for 17 per cent of the gender pay gap. This is a decrease from the 2014 decomposition, which found that occupational and industrial segregation together accounted for 31 per cent of the gap.

As noted above, there are some limitations to the industrial and occupational segregation data derived from the HILDA dataset. However, a key driver of the persistence of the pay gap is the limited success of efforts in changing masculine organisational cultures, attitudes and behaviours; resulting in continued overrepresentation of women in low paying occupations and industries. These factors are evident in the Australian labour force as indicated by the ABS, HILDA, WGEA, and other published data, making it clear that Australia has a highly gender-segregated labour market.

⁸⁵ WGEA, 2018, *Gender Equity Insights 2018: Inside Australia's Gender Pay Gap*, BCEC and WGEA Gender Equity Series.

⁸⁶ ABS, 2019, *Labour Force, January 2019*, cat. no. 6202.0.

⁸⁷ WGEA, 2016, *Unpaid care work and the labour market: Insight paper*, WGEA, Sydney.

⁸⁸ Abhayaratna, J., Andrews, L., Nuch, H. and Podbury, T., 2008, *Part Time Employment: The Australian Experience*. Staff Working Paper, Productivity Commission, Canberra.

⁸⁹ Preston, A. and Yu, S., 2013, 'Understanding the Part time/Full time wage gap in Australia', Paper presented at the AIRAANZ Conference, Perth, February in Joshua Chang, Julia Connell, John Burgess and Antonio Travaglione (2014), 'Gender wage gaps in Australian workplaces: are policy responses working', *Equality, Diversity and Inclusion*, 33(8), pp. 764-775.

⁹⁰ Goldin, C., 2014, 'A Grand Gender Convergence: Its Last Chapter', *American Economic Review*, 104(4), pp. 1091-1119.

⁹¹ Ibid.

⁹² Ibid.

⁹³ Guest, R. 2018, 'The Real Gender Pay Gap', *Policy*, 34(2), pp. 3-7.

⁹⁴ Preston, A. and Yu, S., 2015, 'Is there a part-time/full-time pay differential in Australia?', *Journal of Industrial Relations*, 57(1), pp. 24-47.

ABS labour force data indicates that between 2009 and 2017, the proportion of men in already male dominated **industries** of Transport, Postal and Warehousing, Construction and Mining increased, as did female representation in the already female dominated Health Care and Social Assistance sector.⁹⁵ Further, 2017-18 data published by WGEA data indicates that of 19 industries, just seven are gender-balanced (i.e., have at least 40 per cent women or 40 per cent men).⁹⁶ Women are particularly concentrated in Health Care and Social Assistance, Education and Training, and Retail Trade.⁹⁷

WGEA data also indicates that the total remuneration pay gap tends to be higher in gender segregated industries dominated by men. For example, in 2016-17 there was a 31.9 per cent pay gap in the Financial and Insurance Services Industry and a 27.4 per cent gender pay gap in the Construction Industry.⁹⁸ In contrast, the gap in the Administrative and Support Services Industry was 15.9 per cent, and the gap in Public Administration and Safety was just 4.9 per cent.⁹⁹

Different **occupational** classes also face varying rates of pay, with occupations dominated by women typically being lower paid.¹⁰⁰ The most senior roles are male dominated, though some progress has been made. As such, occupational segregation has often been cited as a key factor underlying the gender pay gap. Occupational segregation refers to the unequal distribution of women and men in particular occupations or categories and occurs in part because of social norms regarding the roles of men and women.¹⁰¹

As noted above, the analysis of HILDA data suggests that the relative contribution of occupational segregation to gender gap gaps decreased from 20 per cent in 2014 to eight per cent in 2017. ABS data indicates that women comprise 55 per cent of professionals in 2017 compared to 52 per cent in 2009, and 37 per cent of managers in 2017 compared to 34 per cent in 2009.¹⁰²

WGEA data also suggest these relatively small improvements in gender segregation by occupation do not account for the observed shift in the contribution of occupational segregation to gender pay gaps in this report. In the five years of WGEA reporting data, the proportion of full-time female managers has increased by 3.2 percentage points (or about double the rate of growth in the overall full-time workforce).¹⁰³ Further, analysis from WGEA indicates that based on current patterns, men and women will not be equally represented as managers until 2042 and will not be equally represented as CEOs until 2100.¹⁰⁴

Despite recent progress, WGEA data indicates that even if women have reached a certain occupational level, they will not receive the same salary level as their male peers.¹⁰⁵ For example, the top quarter of women managers earn only as much as the typical male manager.¹⁰⁶ WGEA data indicates the highest paid ten per cent of men are earning at least \$162,000 more than the highest paid ten per cent of women—a 27 per cent gender pay gap.¹⁰⁷ In the rental, hiring and real estate sector, pay gaps between the highest earning men and women are nearly 36 per cent—driven by men’s greater access to bonuses and commissions.¹⁰⁸

Importantly—even though women disproportionately work in and enter into particular occupations and industries which are lower paid, this decision can be shaped by social factors. This suggests that occupational and industrial segregation should continue to be targeted by any policy efforts designed

⁹⁵ Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.3.

⁹⁶ WGEA, 2018, *Australia’s gender equality scorecard: Key findings from the Workplace Gender Equality Agency’s 2017-18 reporting data*, Sydney.

⁹⁷ Workplace Gender Equality Agency, 2018, *Australia’s gender equality scorecard: Key findings from the Workplace Gender Equality Agency’s 2017-18 reporting data*, WGEA, Sydney.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Dockery, M. and Buchler, S. 2015, *Occupational segregation and women’s job satisfaction*, Bankwest Curtin Economics Centre Working Paper Series.

¹⁰¹ Ibid.

¹⁰² Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.6.

¹⁰³ WGEA and Bankwest Curtin Economics Centre, 2019, *Gender Equity Insights 2019: Breaking through the glass ceiling*, WGEA, Sydney.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

to tackle the wage gap, whether such policies focus on encouraging women's movement into better paid or male dominated occupations or industries, or whether they are focused on improving earnings in female dominated occupations or industries, or both.

4.1.5 Unpaid work

The results suggest the level of unpaid work undertaken by women relative to men (proxied by hours of housework undertaken each week) contributed to seven per cent of the gender pay gap in 2017. The impact of this driver was relatively consistent with the 2014 results. Unpaid work accounted for six per cent of the 2014 gender pay gap.

Unpaid work includes productive work consumed by individuals or the community. Recent research published by PricewaterhouseCoopers (PwC) estimated that Australian women spent substantially more time on unpaid care, with women undertaking 76 per cent of childcare, 67 per cent of domestic work, 69 per cent of care of adults and 57 per cent of volunteering.¹⁰⁹

Unpaid care and work is an inherently gendered issue, contributing to labour market inequalities and linked with employment quality, and increases the likelihood of part-time or insecure casual and contract work.^{110,111}

Importantly, the gender pay gap can further reinforce traditional gender roles by making it financially more 'rational' for households to prioritise a male's career.¹¹² While it is at times suggested in public discourse that women have 'chosen' to reduce their time in work, social norms regarding the distribution of unpaid care and work and factors such as job segmentation and pay can mean that these 'choices' are inherently constrained.¹¹³

Facilitating men's access to flexible work has the potential to enable them to increase their engagement in unpaid caring and domestic work, and free up women to access better opportunities in the paid employment market.¹¹⁴ In primary research with Australian working women, almost half (48 per cent) indicated that having access to care for dependents and a partner to share unpaid work responsibilities with was an important factor in their work success.¹¹⁵

4.1.6 Age

Age is a proxy for experience. Differences in male and female work experience (as proxied by their age) explained three per cent of the 2017 gender pay gap and five per cent of the 2014 gender pay gap.

Gender pay gaps vary across the working lives of men and women. The average gender pay gap between women and men working full-time increases with age up to the mid-30s in favour of men, before decreasing slightly to 15.6 per cent in the mid-40s. The average gender pay gap then increases again to 17.7 per cent for the 65 years and over age group.

The average gender pay gap is smallest for employees aged 20 years and under and sharply increases for those aged between 35 and 44 years. The gender pay gap is at its widest for the 45 to 54 years age group. Women in this age group are more likely than men to have spent time out of the workforce to care for children. As a result of the extra time women spend in unpaid care work, they have fewer promotion opportunities and are less likely than men to hold highly compensated jobs.

¹⁰⁹ PwC, 2017, *Understanding the unpaid economy*, viewed 4 April 2019, <https://www.pwc.com.au/australia-in-transition/publications/understanding-the-unpaid-economy-mar17.pdf>.

¹¹⁰ Ferrant, G., Pesando, L. and Nowacaka, K., 2014, *Unpaid care work: the missing link in the analysis of gender gaps in labour outcomes*. OECD Development Centre, viewed 4 April 2019, https://www.oecd.org/dev/development-gender/Unpaid_care_work.pdf.

¹¹¹ WGEA, 2016, *Unpaid care work and the labour market: Insight paper*, WGEA, Sydney.

¹¹² Schieder, J. and Gould, E., 2016, "'Women's work' and the gender pay gap", *Economic Policy Institute*, viewed 4 April 2019, <https://www.epi.org/publication/womens-work-and-the-gender-pay-gap-how-discrimination-societal-norms-and-other-forces-affect-womens-occupational-choices-and-their-pay/>.

¹¹³ Preston, A. and Yu, S., 2015, 'Is there a part-time/full-time pay differential in Australia?' *Journal of Industrial Relations*, 57(1): pp. 24-47.

¹¹⁴ WGEA, 2013, *Engaging Men in Flexible Work*, WGEA, Sydney.

¹¹⁵ Baird, M., Cooper, R., Hill, E., Probyn, E. and Vromen, A., 2018, *Women and the Future of Work: Report 1 of the Australian Women's Working Futures Project*, University of Sydney.

The following graph illustrates the hourly gender pay gap by several age groups: 15-24 year olds; 25-34 year olds; 35-44 year olds; 45-54 year olds; 55-64; and 65-74 year olds.

Chart 4: Hourly gender pay gap by age (2017)



Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Waves 2 - Wave 17 (HILDA Survey).

4.1.7 Tenure

The impact of tenure with a current employer on the gender pay gap has remained relatively constant, at one per cent in 2014 and 2017.

4.1.8 Working in government or NGO sector

In 2017, working in government or the NGO sector was a statistically insignificant and relatively small driver of the gender pay gap, accounting for one per cent of the gender pay gap.¹¹⁶ In 2014, working in government or the NGO sector accounted for negative one per cent of the gender pay gap - that is, gender pay gaps were slightly smaller in the government or NGO sectors. While the impact of working in the NGO and government sector is relatively minor compared to other drivers of the gender pay gap, evidence about why gender pay gaps are smaller in these sectors is illustrative of potential ways to minimise such gaps in the broader economy.

In Australia, workers in the public sector earn around 5.1 per cent more per hour than those in the private sector with similar characteristics - and this premium is slightly higher for females (5.5 per cent) than males (4.6 per cent).¹¹⁷ Since 1998, the gender pay gap has hovered between 17.4 per cent and 22.1 per cent in the private sector and between 13.5 per cent and 10.4 per cent in the public sector.¹¹⁸

Gender pay gaps in non-profits are less clear. Data collected by the Center for Global Development shows that non-profits involved in international development still have some way to go in terms of gender equality. The data showed that key women appear to be paid less on average than key men and that only two out of ten think tanks and NGOs pay more or the same on average to listed women as to men.¹¹⁹

An explanation for the lower gender pay gap in the public sector - and therefore an opportunity for employers seeking to close the pay gap - is the higher levels of transparency around pay and higher levels of union membership relative to the private sector. Research suggests that greater transparency is linked to lower gender pay gaps. An economic study of the impact of this legislation in California, Colorado, Illinois and Maine found increased wage equality linked to pay transparency. The gap was closed by three per cent when anti-pay secrecy laws were applied, which translates to an

¹¹⁶ While working in government or the NGO sector was not a significant driver of gender pay gaps in 2017, it is retained as a factor in the decomposition analysis for consistency with previous reports and to facilitate comparisons over time.

¹¹⁷ Mahuteau, S., Mavromaras, K., Richardson, S. and Zhu, R., 2017, *Public-Private Sector Wage Differentials in Australia*, IZA Discussion Papers, No. 10719, Institute of Labor Economics (IZA), Bonn.

¹¹⁸ WGEA, 2019, *Australia's Gender Pay Gap Statistics*, February 2019.

¹¹⁹ Center for Global Development, 2018, 'Assessing the Gender Gap at NonProfits in Global Development', viewed 18 June 2019, <https://www.cgdev.org/blog/assessing-gender-gap-nonprofits-global-development>.

average of \$1,100 pay increase in annual earning for women in the private sector.¹²⁰ For women with college degrees, prohibiting pay secrecy was associated with a reduction in the gender pay gap of five to 12 per cent.¹²¹

Ensuring that workers have freedom of association, the right to organise and bargain collectively, as well as the ability to collectively raise grievances have all been shown to reduce the gender wage gap. By setting clear pay standards, collective bargaining agreements reduce the amount of discretion employers have to pay workers. In the UK, the wages of unionised women are on average 30 per cent higher than those of non-unionised women.¹²² In the US, the wage gap between men and women is 11 per cent for unionised women, compared to 22 per cent on average.¹²³

4.2 Intersectionality and gender pay gaps

Intersectionality describes the way that multiple aspects of a person's identity overlap with each other and contribute to specific types of discrimination. Gender can intersect with other factors and characteristics such as disability, socio-economic status, age and ethnicity. Inequalities on the basis of gender can be heightened by interactions between gendered outcomes and other forms of disadvantage and discrimination.

Interactions between individual characteristics can have significant impacts on gender pay gaps. For example, research from the United States looks at women's earnings as a percentage of a (white) man's earnings, and finds that in 2018, the gender pay gap for all women, compared to white men was 19.9 per cent, but rose to 34.7 per cent for black women, and 38.4 per cent for Hispanic women.¹²⁴ The gap can be exacerbated even further in different parts of the United States. For example, black women in Louisiana are paid just 48 cents for every dollar paid to white men.¹²⁵ More work is needed to understand how intersectionality impacts gender pay gaps in Australia.

¹²⁰ Fetisova, O, 2014, *Effects of Anti-Secrecy Pay Laws on the Gender Wage Gap*, viewed 18 February 2019, http://econserver.umd.edu/~edinger/undergraduate/Fetisova_Honors_Thesis2014.pdf.

¹²¹ Kim, M, 2015, *Pay Secrecy and the Gender Gap in the United States*, University of Massachusetts, Boston.

¹²² International Trade Union Confederation, 2018, *ITUC Economic and Social Policy Brief: The Gender Wage Gap*, Economic and Social Policy.

¹²³ Ibid.

¹²⁴ Hegewisch, A. and Hartmann, H. 2019, *The Gender Wage Gap: 2018 Earnings Differences by Race and Ethnicity*. Fact Sheet, viewed 24 July 2019, <https://iwpr.org/publications/gender-wage-gap-2018/>.

¹²⁵ National Partnership for Women & Families, 2019, *Black Women and the Wage Gap*. Fact Sheet, viewed 19 April 2019, <http://www.nationalpartnership.org/our-work/resources/workplace/fair-pay/african-american-women-wage-gap.pdf>.

5 Opportunities for change

This section discusses potential strategies and the associated benefits of closing the gender pay gap, based on the results of this study and the available domestic and international experience.

5.1 Background

There is a growing evidence base on workplace gender equality in Australia. Such evidence is a critical input to the policy and public discussion, alongside the various legislative, organisational, and community initiatives underway to close the gap. It is essential to invest in building this evidence base further to continue the critical conversation and encourage governments, industries, peak bodies, organisations and individuals to continue working to close the gender pay gap.

The results of this updated report confirm that a number of complex and interrelated factors contribute to the gender pay gap. These can be broadly grouped into the following three areas:

Gendered segregation in industries and occupations is an important driver. Women are over-represented in lower paid roles and positions and underrepresented in more senior roles and managerial roles (vertical segregation). At an industrial level, horizontal segregation - a concentration of genders into particular sectors - can arise through historical stereotyping and social norms regarding appropriate male and female work, workplace culture and bias, leadership and experiences of bullying and harassment.¹²⁶

Factors relating to **care, family responsibilities and workforce participation** include the modelled factors of the proportion working part-time, hours of unpaid care and work (proxied by hours of housework) and years not working due to interruptions. Not all decisions relating to part-time work, time out of the workforce and division of unpaid work are based on traditional gender roles and the presence of children. For example, career interruptions arise for a range of reasons unrelated to children and family responsibilities such as unemployment or illness. However, the evidence suggests that these pressures are significant for women's work and life choices. Women are more likely than men to take unpaid leave to fulfil care requirements, to take up part-time work and spend a far greater proportion of their time undertaking unpaid work than men (64.4 per cent of their average work day compared with 36.1 per cent of an average work day).¹²⁷

Gender discrimination is interpreted as the element of the gender pay gap that would remain if men and women had the same levels of the other factors.

5.2 Opportunities

This analysis shows that closing the primary drivers of the gender pay gap is equivalent to \$445 million per week, or about \$23 billion per year.

These findings are in line with a 2018 KPMG report, *Ending workforce discrimination against women*, which found that halving the gender pay gap in Australia and reducing entrenched discrimination against women in the workforce could result in a massive payoff to society valued at \$60 billion in GDP by 2038. The 2018 report also uses economic modelling to show that taking focused steps to increase female participation rates could deliver a \$140 billion lift in living standards by 2038.¹²⁸

Continued coordination of efforts across government, business, and the community in closing the gap has the potential to deliver important economic and social benefits for women, families, and the

¹²⁶ Senate Standing Committees on Finance and Public Administration, 2017, *Gender segregation in the workplace and its impact on women's economic equality*, Canberra.

¹²⁷ Australian Human Rights Commission, 2018, *Face the Facts: Gender Equality*, viewed 15 February 2019, https://www.humanrights.gov.au/sites/default/files/2018_Face_the_Facts_Gender_Equality.pdf.

¹²⁸ KPMG, 2018, *Ending workforce discrimination against women*, viewed 16 February 2019, available at: <https://assets.kpmg/content/dam/kpmg/au/pdf/2018/ending-workforce-discrimination-against-women-april-2018.pdf>; see also <https://home.kpmg/au/en/home/media/press-releases/2018/04/improving-workforce-participation-rates-for-woman-could-boost-gdp-26-april-2018.html>.

community and economy more broadly. As a means to illustrate the potential scale of opportunity from addressing the gender pay gap, the following table outlines:

- the size of the task to reduce the contribution of each driver of the gender pay gap to zero;
- the associated potential increase in female earnings across the economy, based on the modelling results, HILDA and ABS data; and
- potential strategies that may contribute to the realisation of this change (identified based on available research and consultation with DCA and WGEA, though these are not exhaustive).

Due to the nature of available data, this information should be considered an illustration only and is not intended as an indication of the potential effect of any of the strategies identified.

Table 7: Potential opportunities for improvement

PRIMARY UNDERLYING DRIVER				
GENDER DISCRIMINATION				
Contributing Factor (Modelled)	Estimated Impact on the Gender Pay Gap	Dollar Equivalent	Level of Change to Reduce to Zero	Examples of Opportunities to Effect Change
Gender discrimination	-\$0.95/hr (-39%)	+\$182m per week	Removal of gender discrimination in workplaces and the community.	Addressing discrimination in work practices such as hiring, promotion and access to training ¹²⁹ Increased pay transparency and reporting on gender pay gaps ¹³⁰ Undertaking gender pay gap audits and acting on findings. ¹³¹

PRIMARY UNDERLYING DRIVER				
GENDER SEGREGATION IN INDUSTRIES AND OCCUPATIONS				
Contributing Factor (Modelled)	Estimated Impact on the Gender Pay Gap	Dollar Equivalent	Level of Change to Reduce to Zero	Examples of Opportunities to Effect Change
Industrial segregation	-\$0.21/hr (-9%)	+\$77m per week	Removal of the components of segregation that are associated with gender pay gaps such as gendered barriers to entry and progression.	Breaking down social norms regarding what roles and industries are appropriate for men and women
Occupational segregation	-\$0.19/hr (-8%)			Increasing the share of women in leadership positions, including through targets or quotas ¹³² or other diversity policies ¹³³ Developing networks of advocates for gender equality among men and women who can address barriers and affect change.

¹²⁹ Chang, J., Connell, J., Burgess, J., and Travaglione, A., 2014, 'Gender Wage Gaps in Australian Workplaces: Are Policy Responses Working?', *Equality, Diversity and Inclusion*, 33(8), pp. 764-775.

¹³⁰ PayScale, 2018, *The State of the Gender Pay Gap in 2018: How Large It Is, How Much It Grows As Workers Climb The Corporate Ladder, and How Career Disruptions Perpetuate The Gender Pay Gap*, April 2018; France 24, 2018, 'Scrap gender pay gap or face fines, France tells firms', viewed 4 March 2019, <https://www.france24.com/en/20180307-france-women-equal-pay-scrap-gender-gap-or-face-fines-firms-philippe-work-labour-reform>.

¹³¹ WGEA, 2018, *Gender Equity Insights 2018: Inside Australia's Gender Pay Gap*, March 2019.

¹³² Ceda, 2013, *Women in Leadership: Understanding the Gender Gap*, Ceda: Melbourne.

¹³³ In Australia the number of women on the Boards of ASX-listed companies grew from 8.3 per cent in 2009 to 26.2 per cent in 2017 due in part to a diversity policy implemented by the ASX Corporate Governance Council in 2010. Australian Human Rights Commission 2018, *Face the Facts: Gender Equality*, November 2018.



PRIMARY UNDERLYING DRIVER

CARE, FAMILY RESPONSIBILITIES AND WORKFORCE PARTICIPATION

Contributing Factor (Modelled)	Estimated Impact on the Gender Pay Gap	Dollar Equivalent	Level of Change to Reduce to Zero	Examples of Opportunities to Effect Change
Proportion working part time	-\$0.18/hr (-7%)	+\$186m per week	Reduction in the 27 percentage point gender difference in the proportion of men (19 per cent) and women (46 per cent) working part-time, met by more men working part-time or fewer women working part-time.	Improving work life balance, increasing availability of flexible work ¹³⁴ Increasing availability of childcare or decreasing cost ¹³⁵ Enhancing availability and uptake of shared parental care Reducing disincentives to increasing workforce participation through personal tax, family payment and childcare support systems ¹³⁶
Hours of unpaid care and work (proxied by hours of housework)	-\$0.18/hr (-7%)		Reduction in the 5.21 hour gender gap in average unpaid hours of work, met through increase in male unpaid work hours.	Changing workplace culture and addressing unconscious bias.
Years not working due to interruptions	-\$0.61/hr (-25%)		Reduction in the 2.35 year gender difference in the number of years not working due to interruptions, met by more men taking on family duties or women minimising time out of the workforce.	

Note: The decomposition analysis also includes age (years), tenure with a current employer and working in government or an NGO. These factors together account for five per cent of the total gender pay gap but are not considered primary drivers for the purpose of this analysis.

The figures in the table are based on the modelled results and assume for the purposes of illustration that other factors are held constant. In practice, changes in any factor would likely be associated with changes in other factors. These dependencies are not able to be estimated.

Different policies and interventions would have different impacts, implementation costs and benefits. Due to available data, it is not possible to attribute the precise impacts, and further, many of the strategies identified have not been appraised in detail in the available literature or data.

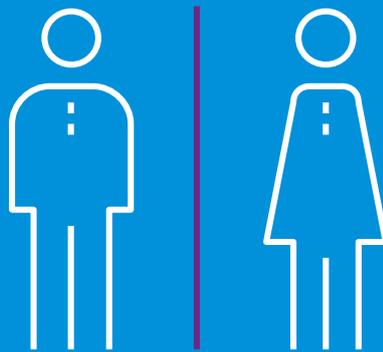
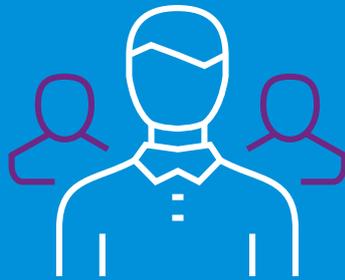
Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Wave 17 (HILDA Survey).

¹³⁴ WGEA, 2013, *Engaging Men in Flexible Work*, August 2013.

¹³⁵ The Productivity Commission (2014) has estimated that around 165,000 parents (on a full-time equivalent basis) would like to work, or work more hours, but are not able to do so because they are experiencing difficulties with the cost of, or access to, suitable child care.

¹³⁶ KPMG, 2018, *The Cost of Coming Back: Achieving a Better Deal for Working Mothers*, viewed 19 February 2019, <https://home.kpmg/au/en/home/insights/2018/10/working-mothers-returning-to-work.html>.

Appendices



Appendix A. Trends in drivers of the gender pay gap

This section provides an overview of the Australian labour force and underlying trends in the significant drivers of the Australian gender pay gap identified in this study. Such trends are important to note from two perspectives. Firstly, many drivers are inherently gendered issues themselves (for example, some industry and occupational segregations). Further, it is important to understand trends in the context of the relative importance of those factors to the gender pay gap.

A.1 Labour force participation

Overall, women currently comprise 46.9 per cent of all employees in Australia, up slightly from 46.4 per cent in 2016.¹³⁷ Women are disproportionately represented in part-time work (accounting for 71 per cent of the workforce) and under-represented in full-time work (accounting for 36.7 per cent of the workforce).¹³⁸

There has been significant increases in women's labour force participation, educational attainment, and total earnings over the last few decades. The labour force participation rate increased to a record high of 65.7 per cent in March 2018.¹³⁹ Over the last 40 years, male labour force participation declined from 79.5 per cent to 70.8 per cent, while female participation increased from 43.5 per cent to 60.5 per cent.¹⁴⁰

Table A-1: Labour Force Participation Rates

	Mar 2009 (%)	Mar 2016 (%)	Mar 2018 (%)
Male	72.4	70.8	70.8
Female	59.1	59.3	60.5

Source: Australian Bureau of Statistics (ABS) 2016, Labour Force, Australia, July 2016, cat.no. 6202.1 (Seasonally adjusted figures).

A.2 Total earnings

The distribution of income across the employed is skewed. Women are disproportionately represented in lower income brackets, accounting for around 60 per cent of the workforce earning \$799/week or less. Conversely, women are under-represented in high income brackets, accounting for only 28 per cent of the workforce earning \$2,000 or more per week (though this was up from 24 per cent in 2011).

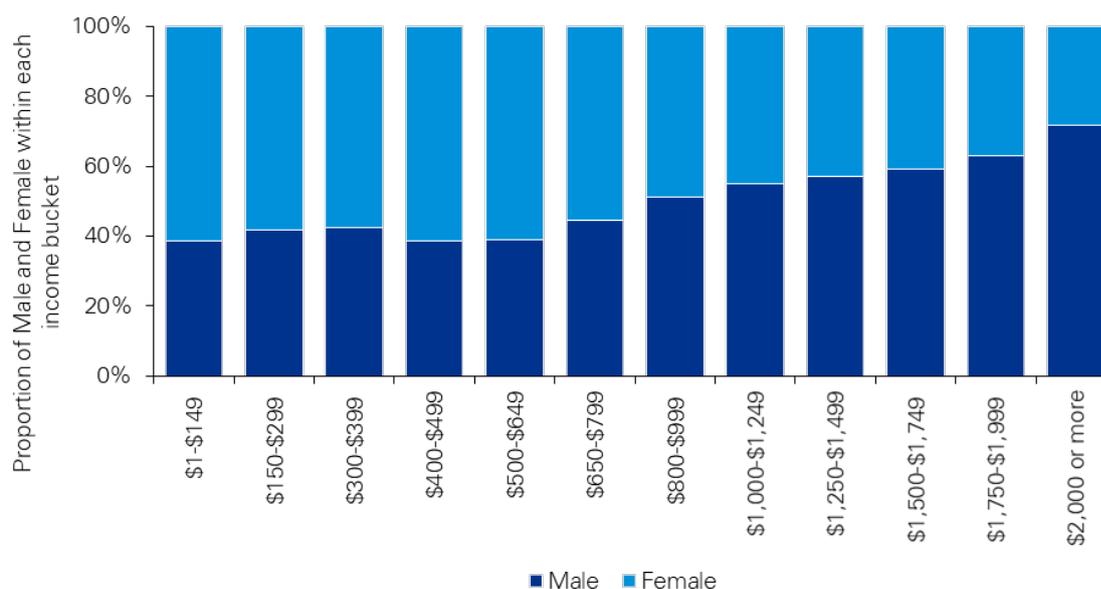
¹³⁷ ABS, 2018, Characteristics of Employment Australia, August 2018, cat. no. 6333.0.

¹³⁸ Ibid.

¹³⁹ ABS, 2018, 'Labour force participation rate at all-time high', April 2018.

¹⁴⁰ ABS, 2019, Labour Force, Australia, March 2018, cat.no. 6202.1 (Seasonally adjusted figures).

Chart A- 1: Income Distribution by Gender, 2016



Source: ABS 2016, Census of Population and Housing.

A.3 Skills differentials

Three potential factors contribute to skills differentials, namely:

- differing educational qualifications and levels of educational attainment;
- differing levels of on-the-job training; and
- differing work tenure and experience.

These issues are outlined in the sub sections below.

A.3.1 Educational attainment

Levels of educational attainment for women increased between 2006 and 2018. On average, across males and females, levels of non-school level qualification increased from 36 per cent to 92 per cent.¹⁴¹ Further, the gap between females and males decreased over this period, from 8.1 per cent in 2006 to 1.5 per cent in 2018.¹⁴²

¹⁴¹ ABS 2006, Census of Population and Housing and ABS, Qualifications and Work, Australia 2015 (Cat. No. 4235.0), ABS, Education and Work 2018 (Cat. No. 6227.0).

¹⁴² Ibid.

Table A-1: Share of population with non-school qualifications, by gender (2006, 2015, 2018)

Non-school qualifications	Postgraduate degree	Graduate diploma or certificate	Bachelor degree	Advanced diploma or diploma	Certificate	Total
Female educational attainment						
Share of female population 2018 (%)	10.9	5.6	34.0	18.9	22.2	91.6
Share of female population 2015 (%)	6.2	5.4	18.4	11.4	17.9	59.3
Share of female population 2006 (%)	2.0	1.6	11.5	7.4	9.8	32.3
Male educational attainment						
Share of male population 2018 (%)	10.4	3.3	26.8	14.2	38.4	93.1
Share of male population 2015 (%)	6.9	3.1	15.3	8.4	26.0	59.7
Share of male population 2006 (%)	2.8	1.0	9.7	5.7	21.2	40.4

Source: Australian Bureau of Statistics (ABS) 2006, Census of Population and Housing and Australian Bureau of Statistics (ABS), Qualifications and Work, Australia 2015 (Cat. No. 4235.0), Australian Bureau of Statistics (ABS), Education and Work 2018 (Cat. No. 6227.0).

A.3.2 Work-related training and adult learning

Skills endowment can also be increased through training and learning programs. However, data shows that rates of participation are decreasing overall. Just under 41 per cent of Australians aged 15 to 74 years participated in formal and/or non-formal learning in 2016-17. This was down from 46.4 per cent (2013) and 48.9 per cent (2005).¹⁴³

That said, women tend to have higher participation rates in on-the-job training, with 42.3 per cent of women participating, compared to the 39.4 per cent of men.¹⁴⁴ This was despite the statistics showing that participation in on-the-job training was lower for individuals who were employed part-time, worked in smaller organisations, operated at a lower occupational level, or worked in the private sector.¹⁴⁵

The data suggests that while women are more likely to participate in training and learnings than men, they can face greater barriers to doing so.

¹⁴³ ABS 2016-17, Work-Related Training and Adult Learning, Australia, 2016-17 (Cat No. 4234.0).

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

A.3.3 Work experience and career disruptions

In addition to formal education and on-the-job training, time spent in employment and tenure with an employer can make a positive contribution to an individual's human capital. This is linked to changes in productivity as individuals gain more employment experience and acquire higher levels of firm-specific knowledge, expertise and skills. For women, the data shows that the average number of years of work experience is often lower due to disruptions in work histories, typically due to fulfilling primary carer duties for their children.¹⁴⁶

Chart A-2 below indicates that the difference in average years of work experience between men and women across almost all age groups changed marginally. Overall, it appears that the average years of work experience for women has decreased across most age groups, aside from those women aged 65 and over. This may reflect changes in the structure of the Australian labour market between the years of the HILDA waves under consideration, or changes in the broader environment.

Chart A-2: Difference in average years of work experience for men and women by age (2014, and 2017)

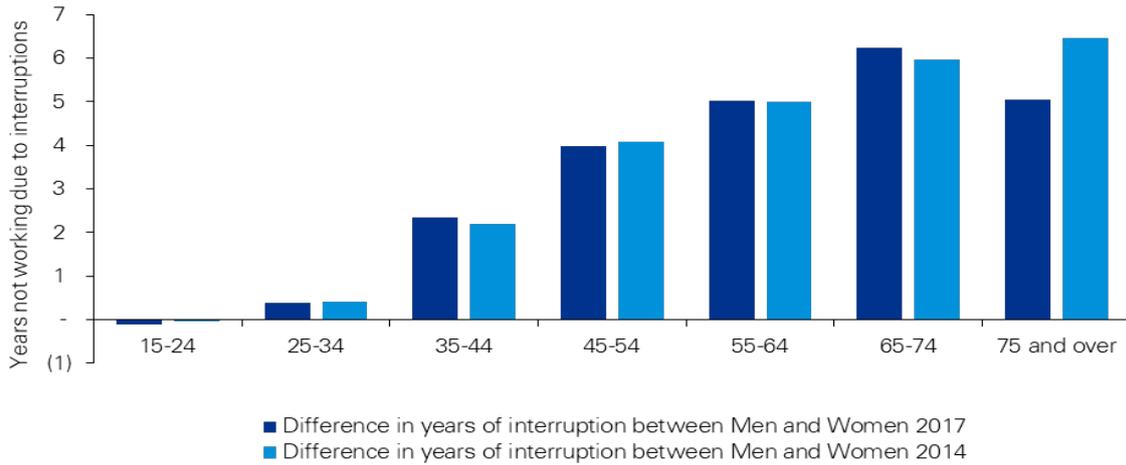


Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Waves 14, and 17.

When assessed alongside Chart A-3 below, it can be observed that as the gap between women's and men's years of work experience widens, so too do the years not working due to interruptions. This supports the statement above that women have less years of work experiences due to experiencing more career disruptions.

¹⁴⁶ Hosking, A., 2007, *The Effects of Motherhood and Job Transitions on Female Earnings in Australia*, Conference Paper for the non-refereed stream of the 2007 HILDA Survey Research Conference, 19-20 July 2007, The University of Melbourne, p. 8.

Chart A-3: Difference in number of years not working due to interruptions for men and women (2014, and 2017)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Waves 14, and 17.

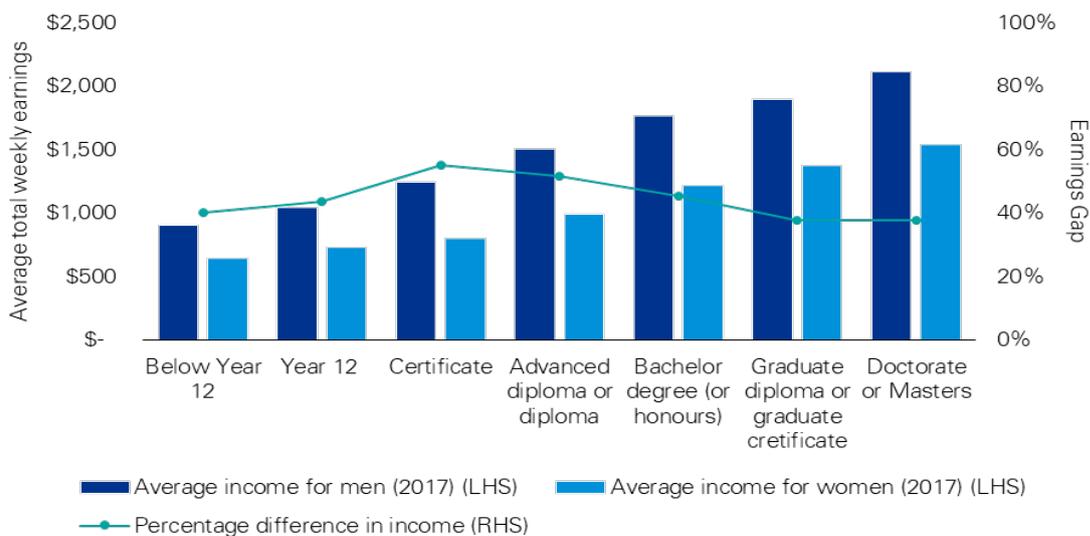
A.3.4 Returns to investment in human capital

The theory of returns to investment in human capital is focused on the impact of education on employment and income.

Education and income

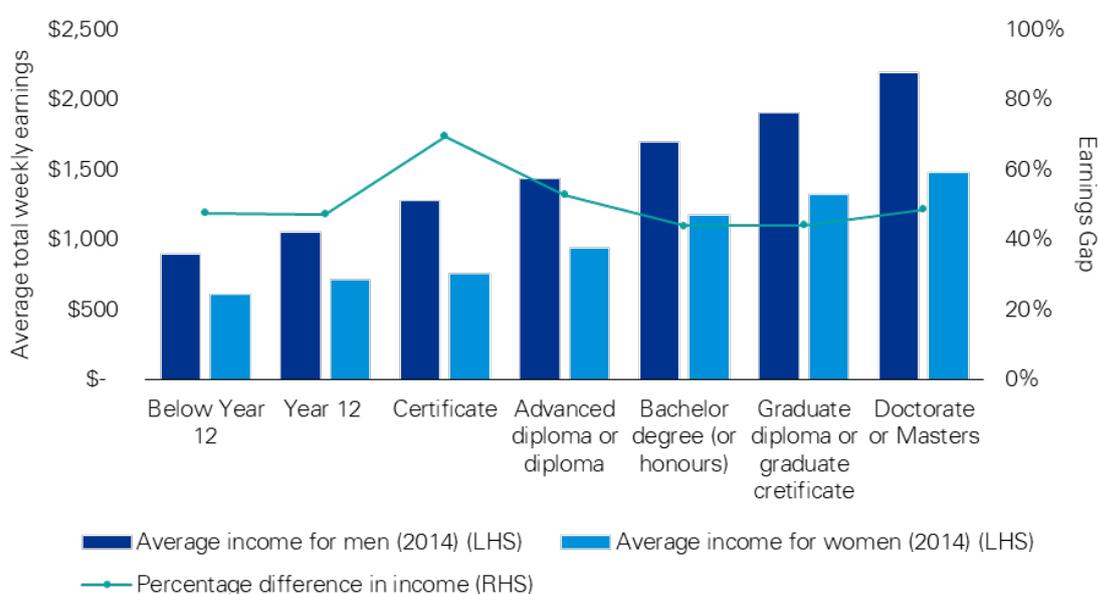
Looking at the income earned by full-time and part-time males and females with different educational qualifications (without controlling for other differences) suggests that for all educational levels, women earn less income than men on average. The charts below shows that there is a significant gap in average weekly income levels between men and women across all levels of educational attainment, with the percentage difference in weekly income being greatest for women with a certificate. Since 2009, the wage gap for women holding certificate level education or lower has increased. Overall, while the percentage difference is more marked for women with lower levels of educational attainment, the data shows that average individual income for women has remained static for lower levels of educational attainment (Certificate and below) but has improved between 2009 and 2017 for higher levels of educational attainment (diploma and above), despite dipping in 2014.

Chart A-4: Average individual weekly income for women and men in the workforce, by educational attainment (2017)



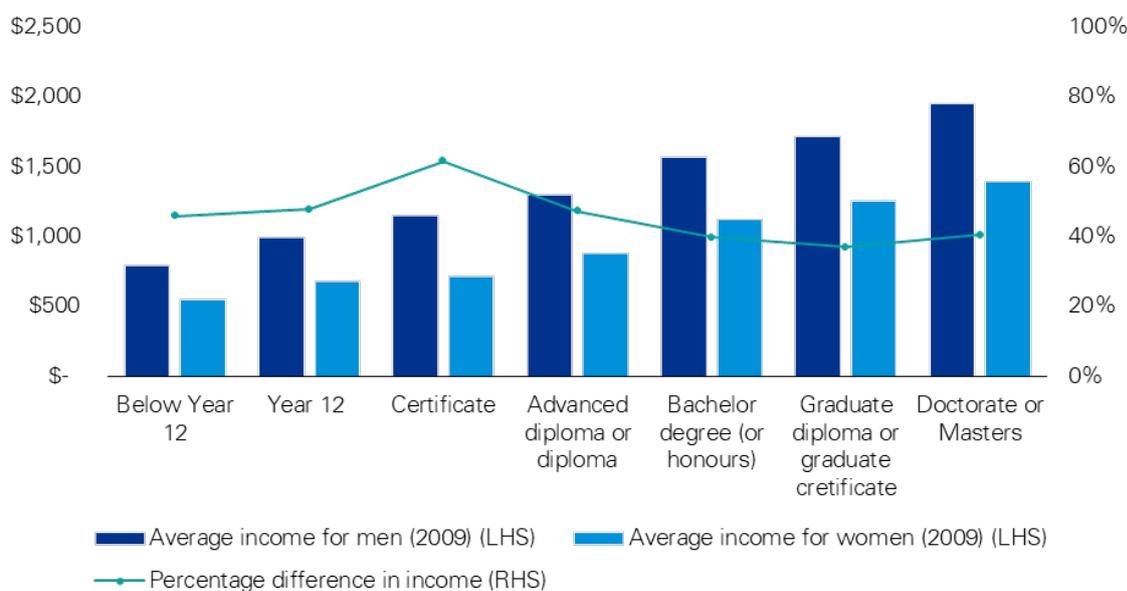
Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 17.

Chart A- 5: Average individual weekly income for women and men in the workforce, by educational attainment (2014)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 14.

Chart A- 6: Average individual income for women and men in the workforce, by educational attainment (2009)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 7.

Education and labour market status

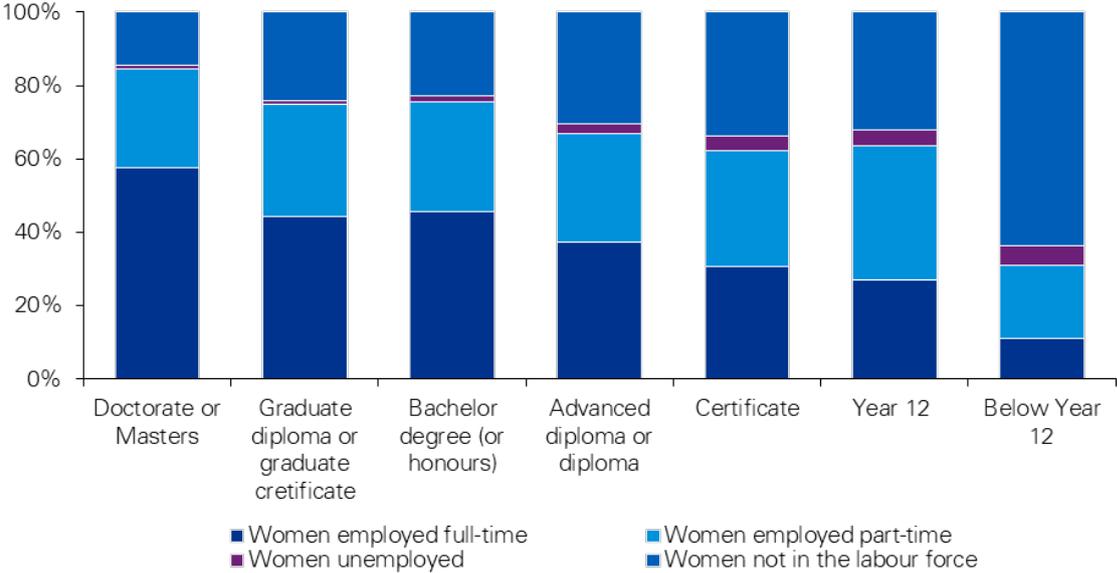
A number of studies have also used differences in the employment rates between women and men with similar qualifications as an indicator of gendered returns to education. Chart A-7 shows that across all levels of education, the share of women with full-time employment is lower than that of men with the same level of education. The gap is largest for women with lower levels of education.

Despite women reaching higher levels of educational attainment, there has not been an associated decrease in the pay gap between women and men.

Women are more likely to be engaged in higher education, so it is possible that a greater proportion of women than men are in jobs that are not suited to their level of educational attainment. However, an

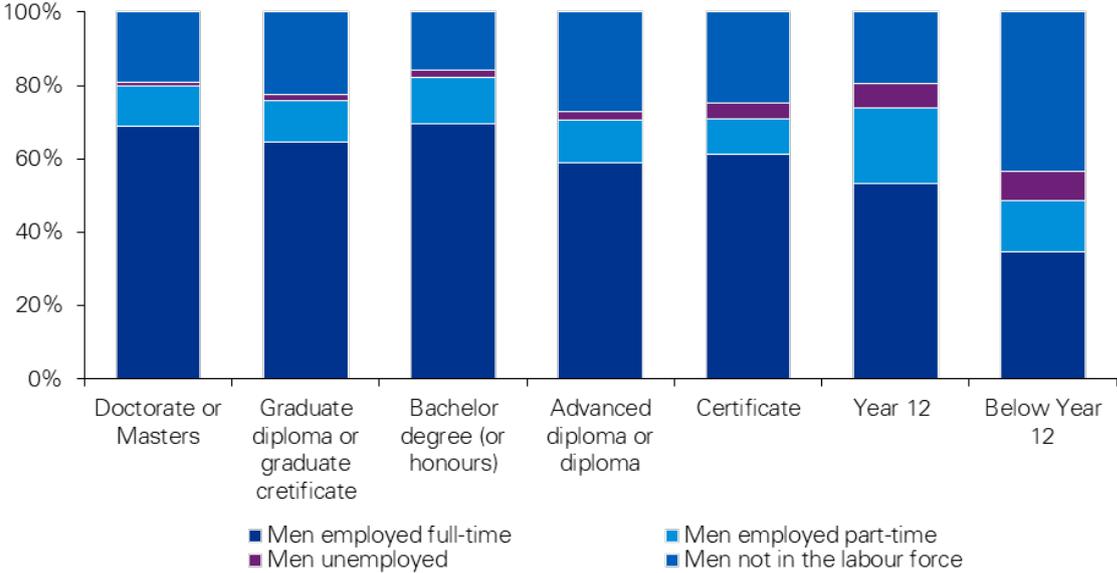
analysis of data from Graduate Destination Surveys indicates that gender differences in education make a minute contribution to the 'endowment effect' in the gender pay gap decomposition'.¹⁴⁷

Chart A- 7: Labour status of women by highest educational qualification (2017)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 17.

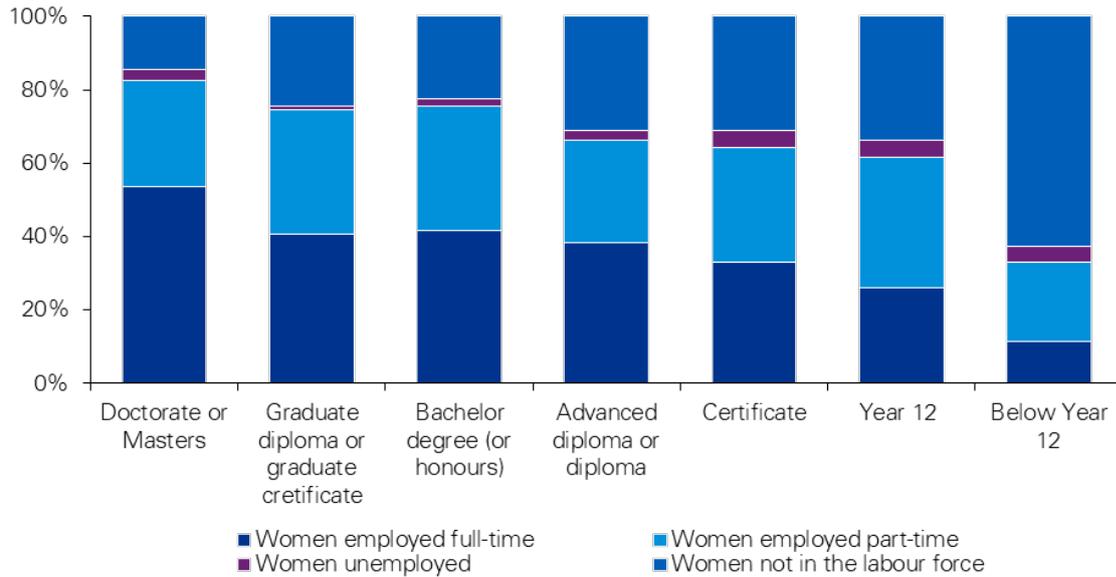
Chart A- 8: Labour status of men by highest educational qualification (2017)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 17. Comparing the labour market status for women across 2014 and 2017, there was a larger proportion of women in full-time employment at higher educational levels (diploma and above) in 2017. This trend was not observed for men, whose share of full-time employment mostly remained static.

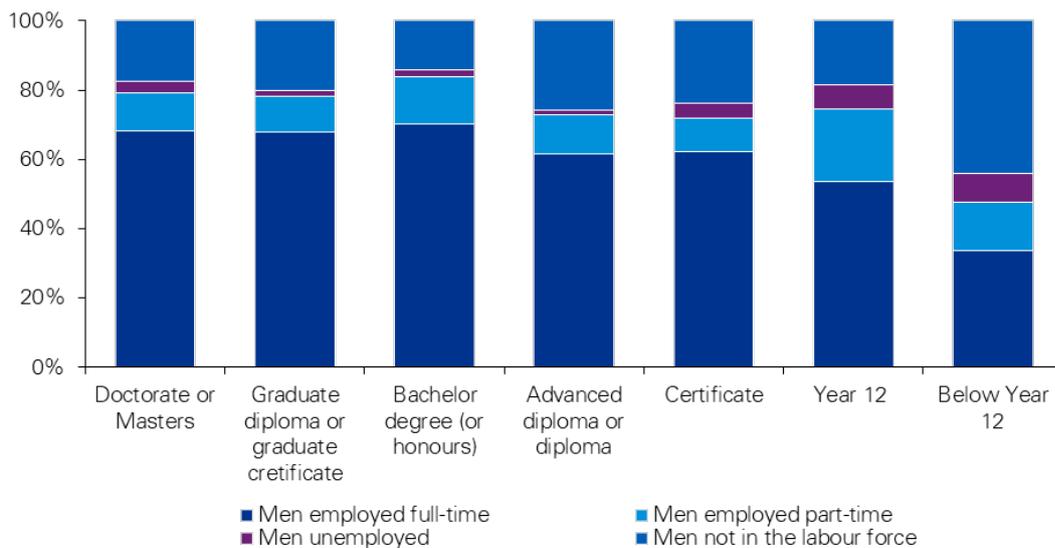
¹⁴⁷ Li, I.W. and Miller, P.W., 2012, *Gender discrimination in the Australian graduate labour market*, IZA Discussion Papers, No. 6595, Institute of Labor Economics (IZA), Bonn.

Chart A- 9: Labour market status of women by highest educational qualification (2014)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 14.

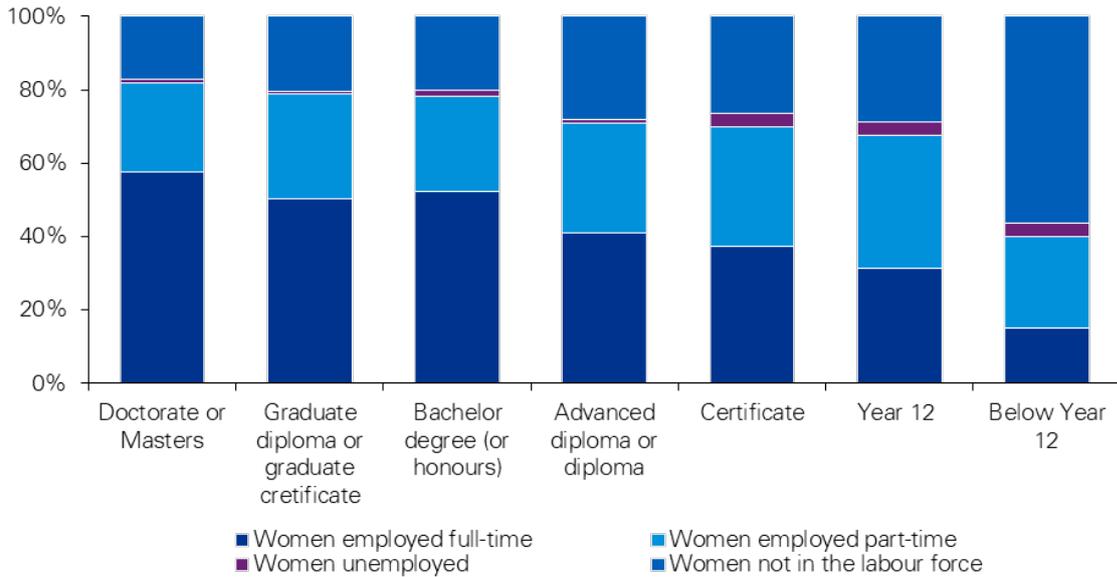
Chart A- 10: Labour market status of men by highest education qualification (2014)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 14.

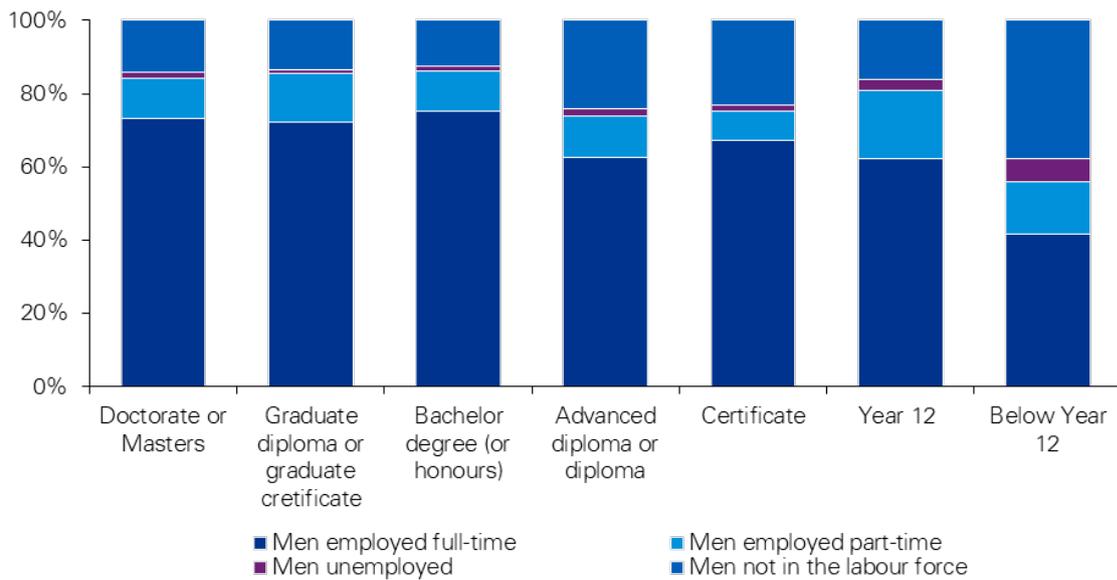
Comparing the labour market status for women across 2007 and 2014, there was a larger proportion of women in full-time employment across all educational levels in 2007. However, this trend was also observed for men. Additionally, for higher educational levels, there appears to be an increase from 2007 to 2014 in the proportion of women who are employed part-time.

Chart A- 11: Labour status of women by highest educational qualification (2007)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 7.

Chart A- 12: Labour status of men by highest education qualification (2007)



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 7.

A.4 Labour market rigidities

A.4.1 Gender discrimination

Labour market discrimination occurs when there are different earnings and employment opportunities across equally skilled workers employed in the same job due to differences in workers' demographics, in this case gender.¹⁴⁸ Labour discrimination can be characterised as a form of market failure as it prevents women from reaching their full economic potential. Moreover, labour discrimination reduces the measurable output of women that is recognised by companies at the firm-level and by the economy through unequal returns to human capital endowments.

This discrimination can be overt or systemic in nature. The existence of more embedded and structural discrimination, evident through wage gap decomposition studies, has remained fairly constant in the last two decades. As highlighted in the 2009 Report, research continues to find that there are differences in the returns to human capital endowments, including education, training and labour force experience. Many studies conclude that lower rates of return to education and experience are indicative of discrimination in the workplace. For example, Langford (1995) found that 24 per cent of the wage gap was a result of human capital differences, while 50-60 per cent was due to employer discrimination.¹⁴⁹

The 2008 Senate Committee Report on the effectiveness of the *Sex Discrimination Act 1984* found that the Act had an impact on the most overt forms of sex discrimination but had lesser impact on systemic discrimination.¹⁵⁰ This is supported by a 2016 study conducted by Glassdoor which highlighted that the variable levels of human capital endowment between men and women explain only a 'trivially small' part of the gender pay gap, which was consistent across all countries examined.¹⁵¹ The Glassdoor study argues that simply because the pay gap between the genders declines when worker characteristics are controlled, this does not mean the gap is not real or is not caused by unfair barriers women face in the workplace.¹⁵² The report goes on to say that:

"...if women are systematically excluded from certain occupations, or encouraged to work only in certain industries, or discouraged from pursuing particular college majors, these factors can statistically "explain" the gender pay gap but still represent social biases against women that most observers would consider unfair and worthy of criticism."¹⁵³

The Glassdoor study also found that the proportion of the pay gap that can be explained by differences in skills and education is actually decreasing each year as women have closed the gap in rates of higher education and labour force participation. Indeed, the 2019 Glassdoor report found that only 24 per cent of the pay gap in Australia can be explained by differences in education and experience.¹⁵⁴ Instead, the report found the vast majority of the explainable gender gap today is caused by the sorting of men and women into systematically different occupations and industries throughout the economy. The data indicated that the type of occupation and industry explains 37 per cent, or the greatest proportion, of the gender pay gap in Australia.¹⁵⁵ This was reflected globally as, 'the biggest factor contributing to the gender pay gap in most countries continues to be occupational and industry sorting.'¹⁵⁶

A.4.2 Labour market segmentation

Labour market segmentation refers to differences in the share of male and female representation in different industries and occupations across the economy. These can include part-time work, industry segregation, occupational segregation, and employer type.

¹⁴⁸ Boras, G.J., 2008, *Labor Economics*, McGraw-Hill/Irwin, 4th edition.

¹⁴⁹ Langford, M., 1995, *The Gender Wage Gap in the 1990s*, Australian Economic Papers, Vol. 34 (64). pp. 62-85.

¹⁵⁰ Standing Committee on Legal and Constitutional Affairs 2008, *Effectiveness of the Sex Discrimination Act 1984 in eliminating discrimination and promoting gender equality*, Department of the Senate, Australia.

¹⁵¹ Ibid.

¹⁵² Chamberlain, A., 2016, *Demystifying the Gender Pay Gap, Evidence From Glassdoor Salary Data*, March.

¹⁵³ Ibid.

¹⁵⁴ Chamberlain, A. et al., 2019, *Progress on the Gender Pay Gap: 2019*, March.

¹⁵⁵ Ibid.

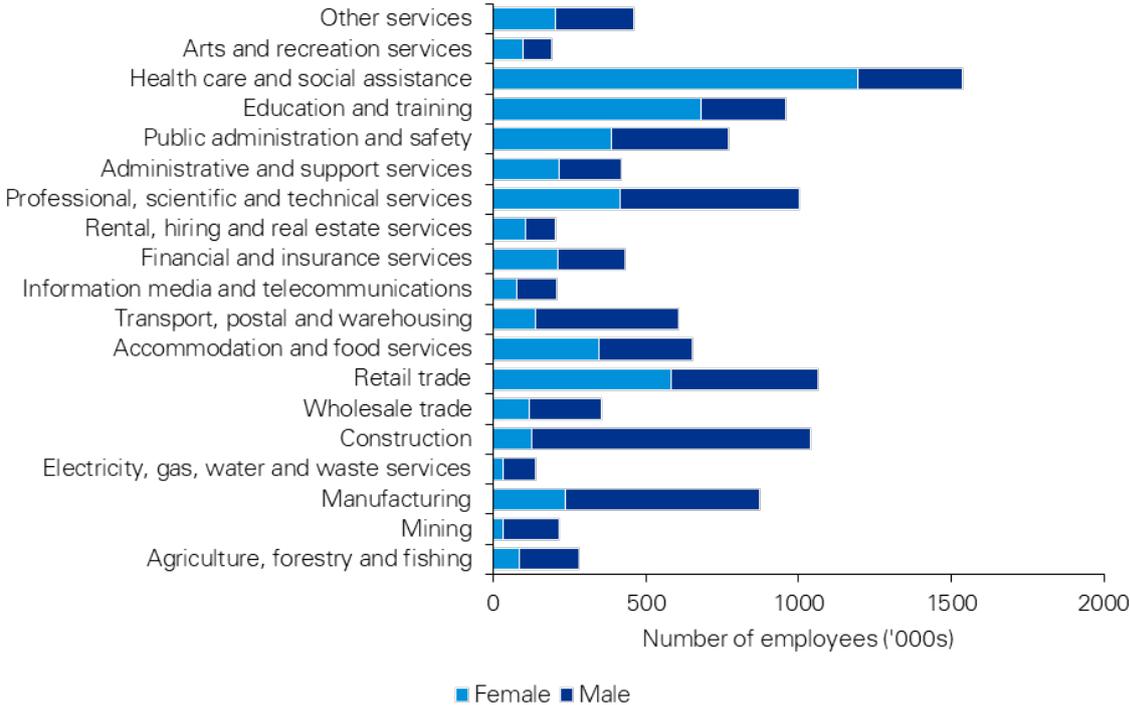
¹⁵⁶ Ibid.

A.4.2.1 Industrial segregation

Industry segregation occurs when females and males are more concentrated in different industry sectors. This is a significant factor underlying the gender pay gap, particularly when women’s employment is concentrated in lower paid sectors.

Chart A-13 below shows that in 2017, males continued to dominate an array of higher paid sectors including the transport, postal and warehousing, construction and mining sectors. Male representation across these sectors has increased relative to 2009. Women still make up the majority of the health care and social assistance, and education and training sectors. These sectors traditionally attract lower incomes. Female representation in the health care and social assistance sector has markedly increased relative to 2009.

Chart A- 13: Number of persons employed by ANZSIC division, May 2017

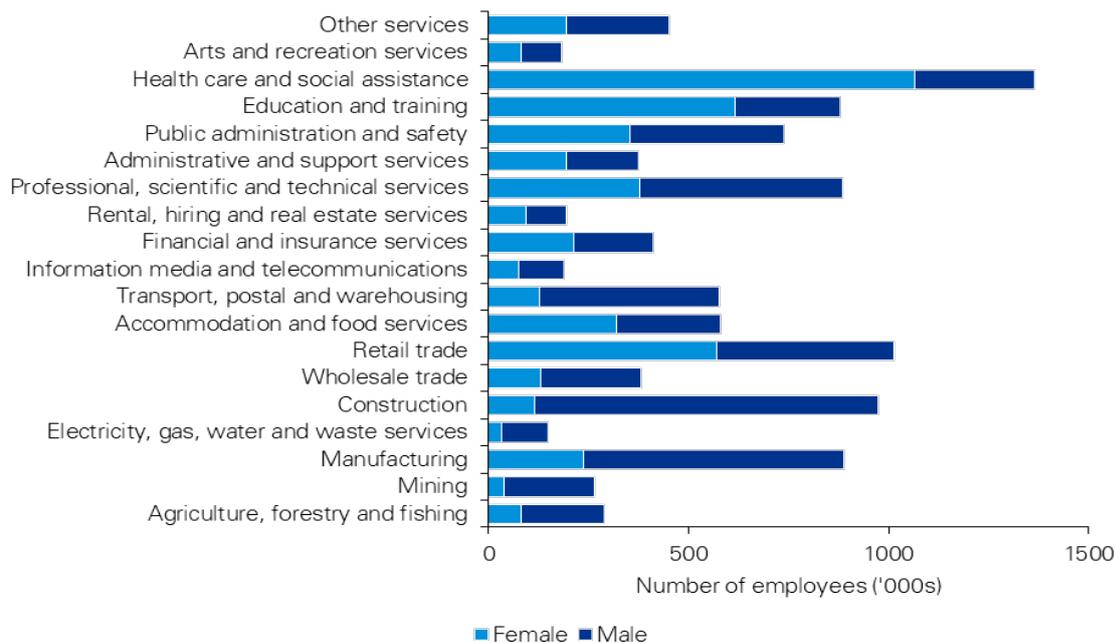


Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.3.

2018 data shows very similar trends, with the only notable difference being a drop in the proportion of women in the mining sector.

Chart A-14 below shows that in 2014, males continued to dominate an array of higher paid sectors including the transport, postal and warehousing, construction and mining sectors, whilst women comprised the majority of the health care and social assistance, and education and training sectors, which traditionally attract lower incomes. Women also demonstrated greater penetration as a percentage of the total workforce (compared to 2009) in the administrative and support services, and arts and recreation sectors, which traditionally attract lower incomes.

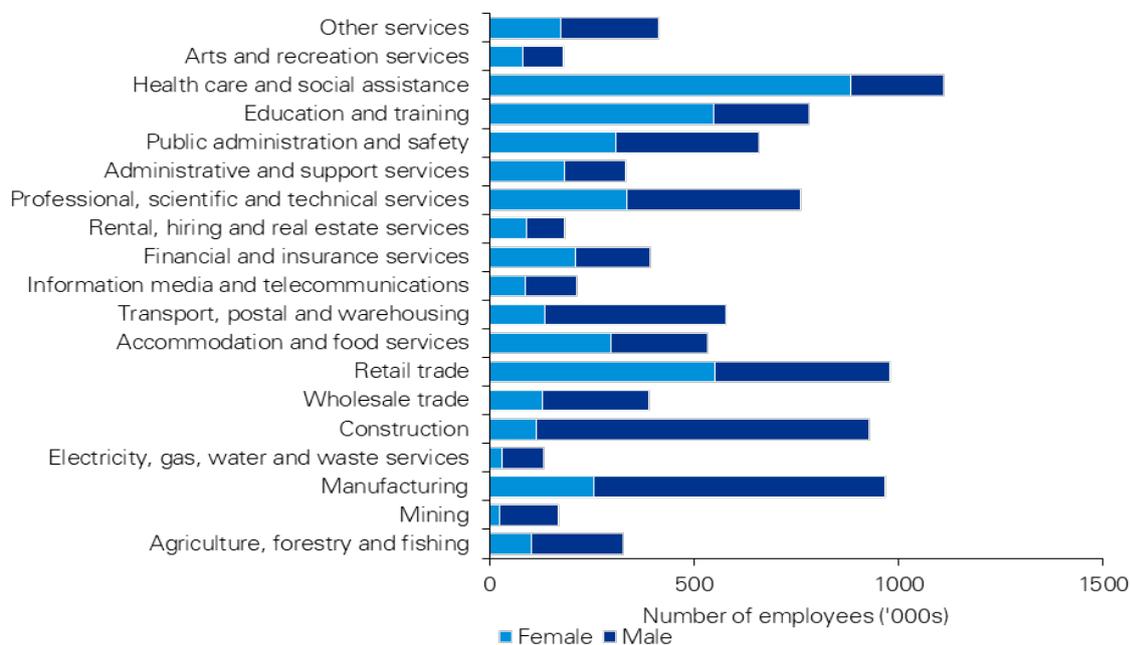
Chart A- 14: Number of persons employed by ANZSIC division, May 2014



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.3.

Chart A-15 below shows that in 2009 males dominated an array of higher paid sectors including the transport, postal and warehousing, construction and mining sectors, whilst women comprised the majority of the health care and social assistance, and education and training sectors, which traditionally attract lower incomes.

Chart A- 15: Number of persons employed by ANZSIC division, May 2009¹⁵⁷



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.3.

¹⁵⁷ ABS data is not available for 2007, and so the data coinciding with the 2009 report has been presented.

ABS data between 2009 and 2017 shows that in Australia, the industries with the largest gender pay gaps included the mining; transport, postal and warehousing; finance and insurance, and health and community services sectors. The industries where the gap between male and female earnings is the smallest are the accommodation and food services, retail trade, and public administration and security sectors.¹⁵⁸

A.4.2.2 Occupational segregation

Segregation by occupation is another labour market rigidity that has been found to contribute to the gender pay gap. Chart A-16 shows there is a clear difference in male and female employment by occupation.

Occupational segregation is partially explained by differences in education levels. Men are more likely than women to hold certificate type qualifications that lead to careers in manufacturing, construction work, mining and transport. By contrast, women who do not have university qualifications are much less likely to hold certificates and diplomas, meaning that women will be more likely to be placed in lower skilled jobs, both within an occupational class and across occupations that generally attract lower incomes. Further, even when women are equally qualified – in terms of level of qualifications – there are often barriers to pay equity, as seen in the social and community services (SACS) industry.

Different occupational classes also face varying rates of pay, with occupations dominated by women typically being lower paid. As such, occupational segregation has often been cited as a key factor underlying the gender pay gap. The component of the wage differential attributable to occupational distribution is relatively large, and reflects the impacts of gender discrimination and stereotyping in the labour force.

Chart A- 16: Occupational segregation by gender, May 2017

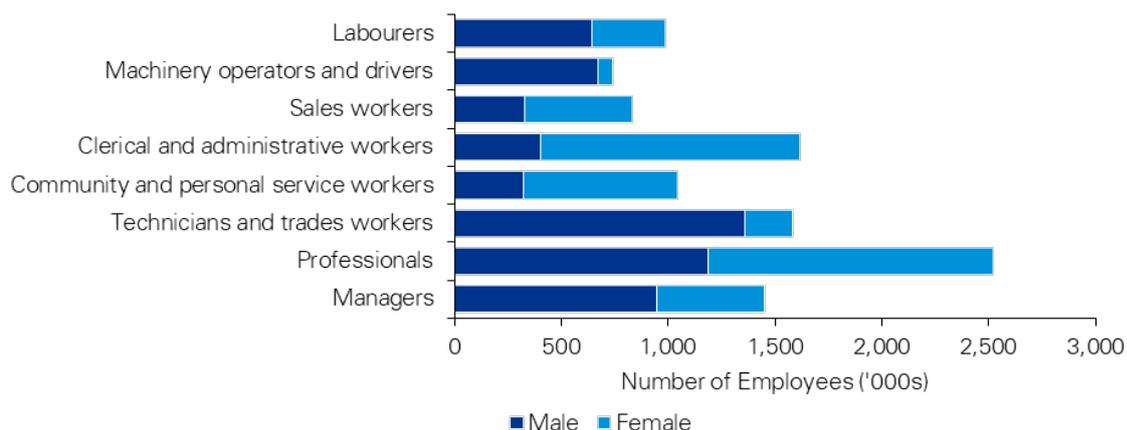


Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.6.

As can be seen, in 2017 females were much more highly represented compared to males as community and personal services workers and clerical and administrative workers. Compared to earlier years, however, females have increased their representation as professionals and managers, comprising 55 per cent of professionals in 2017 compared to 52 per cent in 2009, and 37 per cent of managers in 2017 compared to 34 per cent in 2009.

¹⁵⁸ Australian Government 2005, *Equal Opportunity for Women in the Workplace Agency*, March.

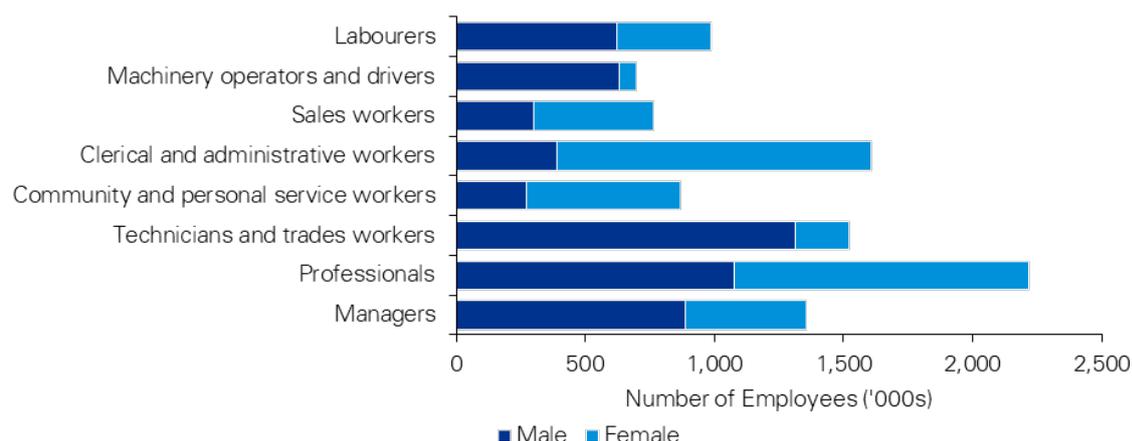
Chart A- 17: Occupational segregation by gender, May 2014



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.6.

Relative to the 2009 findings, females in 2014 still dominated the clerical and administrative, community and personal service, and sales occupational classes. Males continued to dominate the technicians and trades, machinery operators and drivers, and labourer occupational classes.

Chart A- 18: Occupational segregation by gender, May 2009¹⁵⁹



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.6.

Building on the 2009 segregation data above, disaggregation of occupations by earnings based on 2009 ABS data show that females are more heavily concentrated in the lower income brackets than males across all occupations. This is particularly pronounced within the occupation of clerical and administrative workers, community and personal service, and sales workers. This suggests, even in the occupations where females dominate in quantum, there are challenges around negotiating higher levels pay that are often linked to underlying perceptions regarding gender norms.

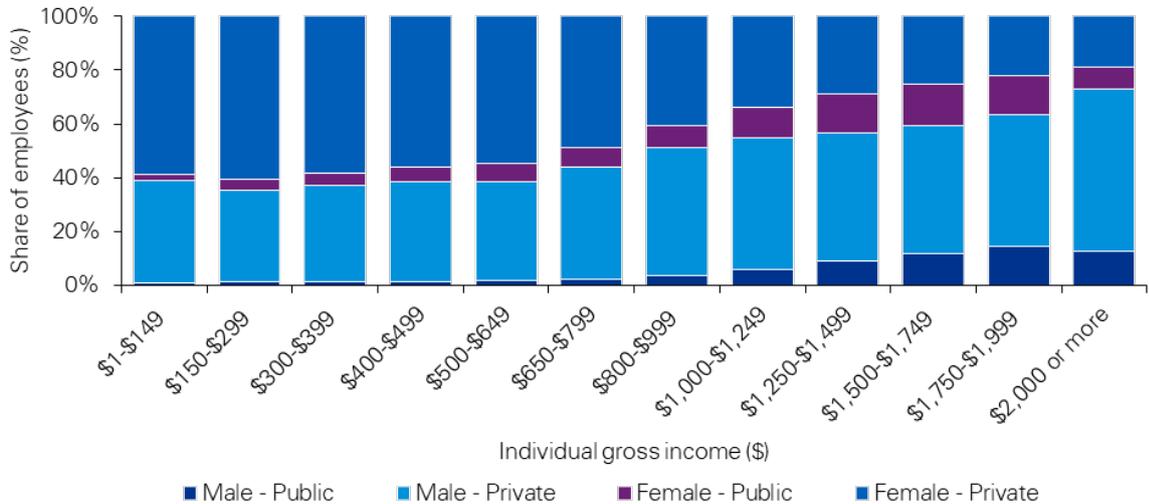
A.4.2.3 Employer type segmentation

The gap between male and female pay also varies distinctly between the private sector, government and non-government organisations (NGOs). Today, males continue to comprise a significantly larger proportion of higher income earning groups. A larger share of men in the public and private sectors falls into the higher income earning brackets than women.

¹⁵⁹ ABS data is not available for 2007, and so the data coinciding with the 2009 report has been presented.

The chart below shows that the proportion of women earning \$1,250 and above has increased in both the private and public sectors between 2011 and 2016. Nevertheless, the number of women in the lower pay brackets has also increased.

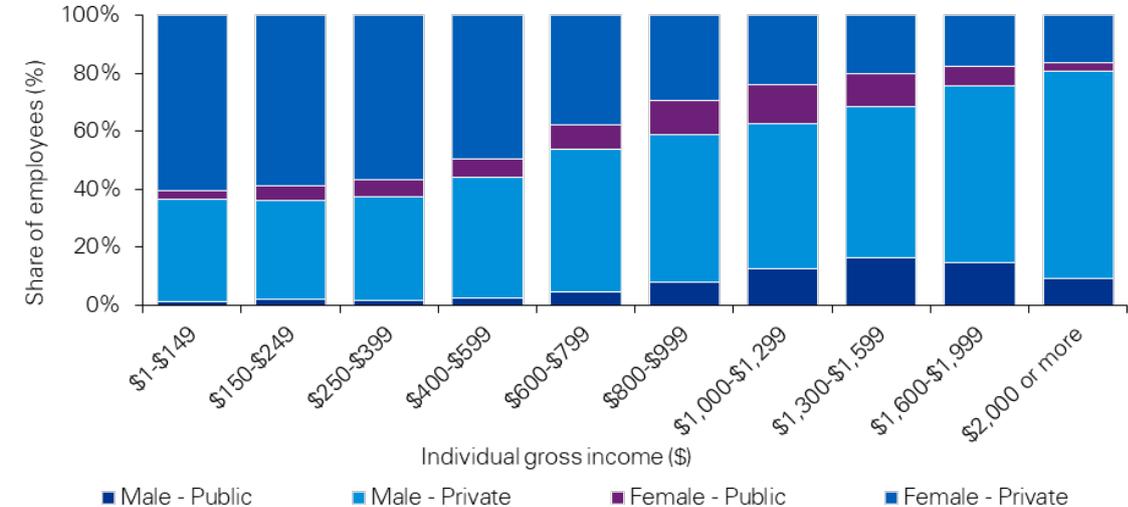
Chart A- 19: Share of public and private sector employees, by individual gross income, by sex, 2016



Source: Australian Bureau of Statistics (ABS) 2016, Census of Population and Housing.

Chart A-20 below shows that the proportion of men and women earning greater than \$1,300 a week was unchanged between 2011 and 2006. In fact, the distribution of public and private sector earnings between men and women is identical to distribution in 2006.

Chart A- 20: Share of public and private sector employees, by individual gross income, by sex, 2011¹⁶⁰

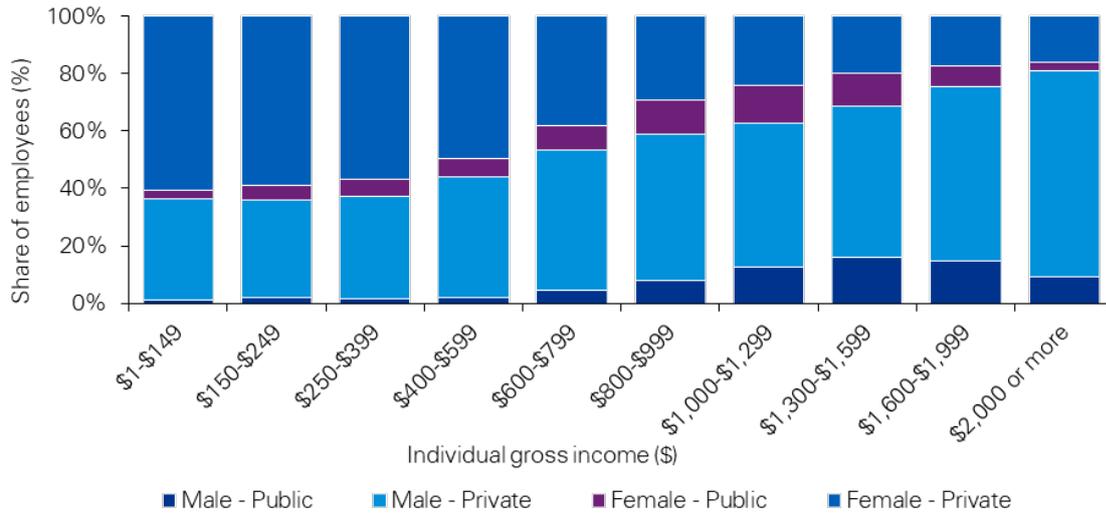


Source: Australian Bureau of Statistics (ABS) 2011, Census of Population and Housing.

Chart A-21 below shows that in the public sector in 2006, 36 per cent of men earned over \$1,300 a week, compared with only 16 per cent of women in the public sector. The share of women earning higher incomes is considerably smaller in the private sector, with only eight per cent of women employed by private companies earning over \$1,300 a week in 2006. By comparison, 22 per cent of men in the private sector earned over \$1,300 a week in 2006.

¹⁶⁰ Between 2011 and 2016 the ABS modified the income brackets that were reported, and this has resulted in more, and differing, measures between these years.

Chart A- 21: Share of public and private sector employees, by individual gross income, by sex, 2006

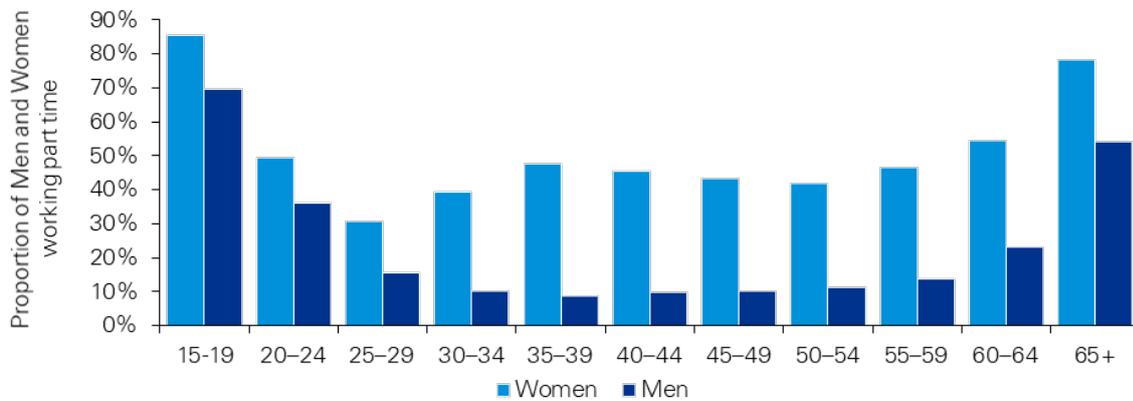


Source: Australian Bureau of Statistics (ABS) 2006, Census of Population and Housing.

A.4.2.4 Part-time employment

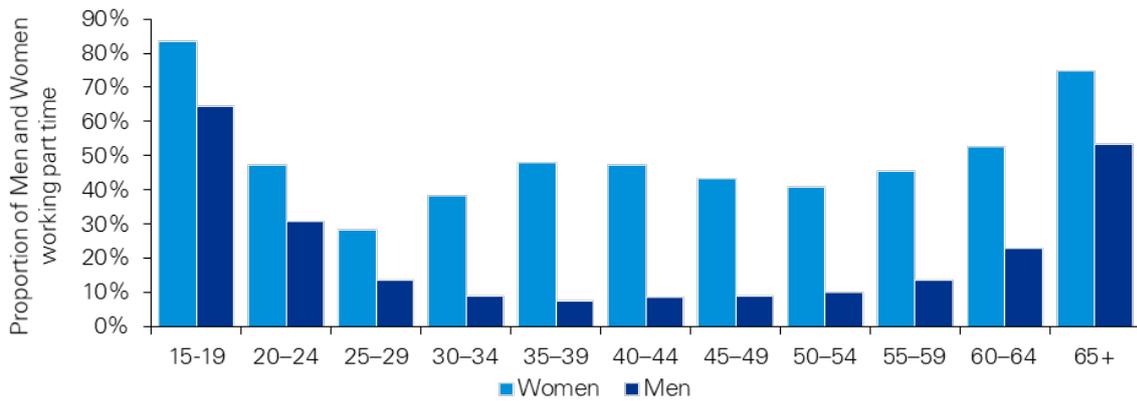
The data shows that between 2014 and 2017 there was generally a trend across both genders towards greater shares of the 15-39 age group working part-time. Meanwhile women in the 40-64 age brackets experienced decreasing rates of part-time work, indicating that these women were more likely to be working full-time. This can be seen in Charts A-22 and A-23.

Chart A- 22: Share of employed persons working part-time, by age and sex, 2017



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.9.

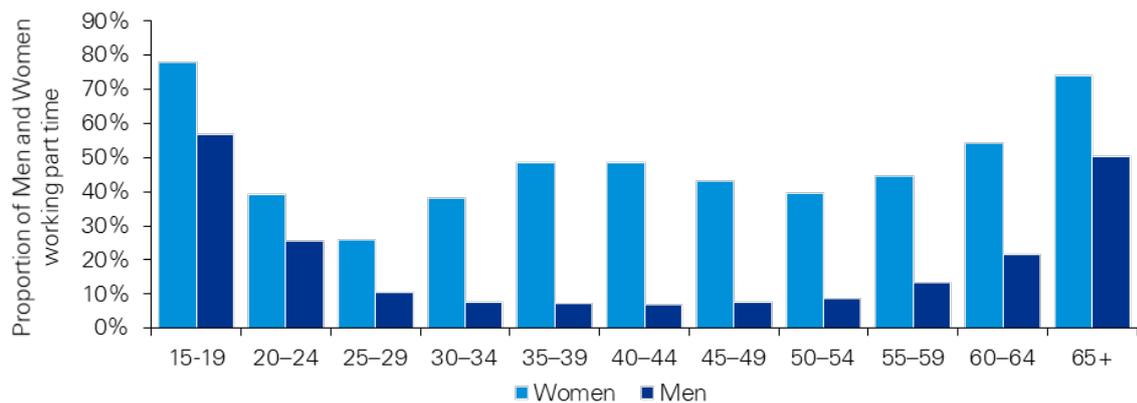
Chart A- 23: Share of employed persons working part-time, by age and sex, 2014



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.9

Between 2009 and 2014 the proportion of men and women engaged in part-time work remained mostly static, notwithstanding a drop for those aged 15-29 in both genders.

Chart A- 24: Share of employed persons working part-time, by age and sex, 2009¹⁶¹

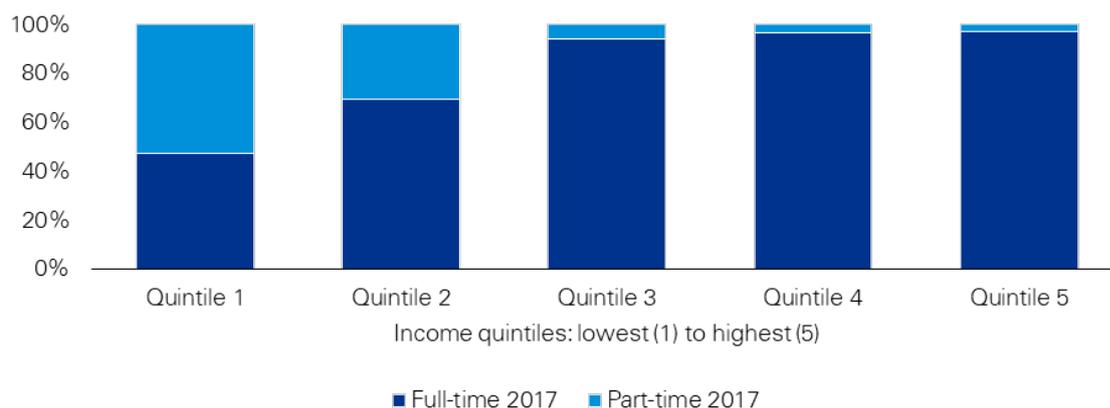


Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0001 Table 1.9.

Charts A-25 and A-26 demonstrate that not only are greater shares of women working part-time by age, but they are also more highly represented as part-time workers across all income quintiles.

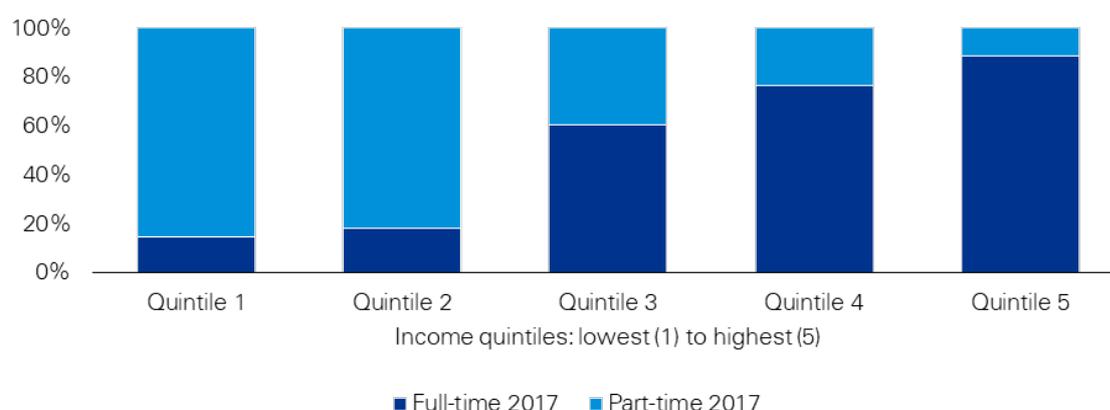
¹⁶¹ ABS data is not available for 2007, and so the data coinciding with the 2009 report has been presented.

Chart A- 25: Distribution of male employees in full-time and part-time work across income quintiles, 2017



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 17.

Chart A- 26: Distribution of female employees in full-time and part-time work across income quintiles, 2017



Source: KPMG analysis of the Household Income and Labour Dynamics in Australia (HILDA) Survey, Wave 17.

A.4.2.5 Unpaid care and work

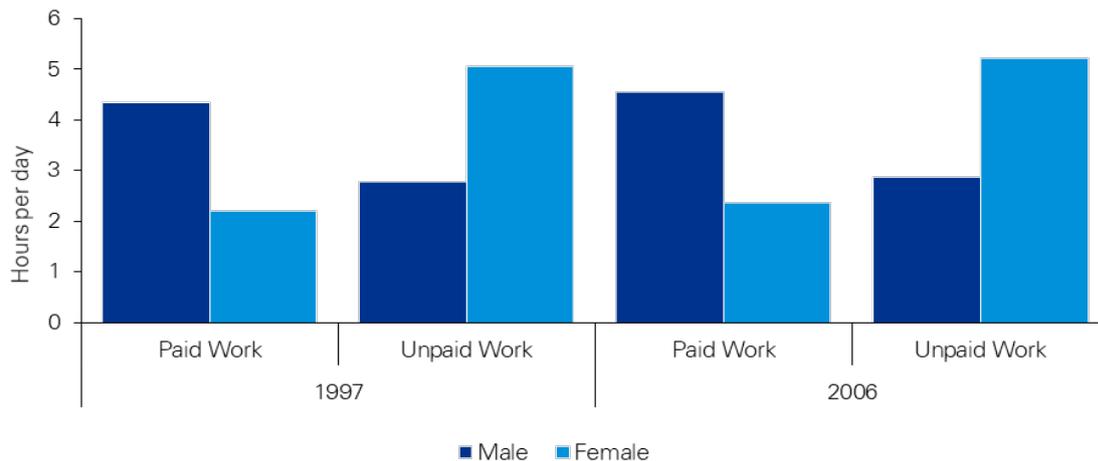
The amount of unpaid work an individual performs is likely to impact the amount of time they are able to spend working for employment related purposes. Unpaid work is comprised of domestic activities, childcare, the purchasing of goods and services and voluntary work and care.

ABS data shows that women perform a disproportionate amount of unpaid work compared to men. Data on unpaid work is currently only available for 1997 and 2006 as the ABS' 'Work, Life and Family Survey' was discontinued in 2012 in response to the need to find savings.¹⁶² This survey is expected to recommence in 2019. Nevertheless, results from 1997 and 2006 clearly demonstrate that not only do women do more unpaid work than men, they also do more unpaid work than men do paid work. Analysis of this data has suggested that female unpaid work makes up 20% of the total Australian economy.¹⁶³

¹⁶² Women's Agenda, 2013, 2019, *Too Late for ABS Data on Unpaid Work: Researchers and Industry Bodies*, viewed 4 March 2019, available at: <https://womensagenda.com.au/latest/2019-too-late-for-abs-data-on-unpaid-work-researchers-and-industry-bodies/>.

¹⁶³ PwC, 2017, *Understanding the Unpaid Economy*, viewed 4 March 2019, available at: <https://www.pwc.com/australia-in-transition/publications/understanding-the-unpaid-economy-mar17.pdf>.

Chart A- 27: Hours of paid and unpaid work per day by gender, 1997 and 2006



Source: Australian Bureau of Statistics (ABS) 2018, Gender Indicators, Electronic Delivery, 41250DS0010 Table 10.1

Appendix B. Detailed approach

This appendix provides supporting information to the discussion of the approach in Section 3.

B.1 Overview

Consistent with KPMG’s 2009 and 2016 reports, this report applies the Walby and Olsen technique, tailored for the Australian context, and updated with 2017 HILDA data.

This approach was originally developed and applied in the United Kingdom (UK). It estimates the factors that impact wages and simulates the changes that would arise if women’s levels of these attributes were in line with men. The analysis assumes that wages are broadly equivalent to the value of a person’s output.¹⁶⁴ The approach is documented across the following academic papers:

- Walby, S. (University of Leeds) and Olsen, W. (University of Manchester) 2004, *Modelling Gender Pay Gaps*;
- Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., National Centre for Social and Economic Modelling (NATSEM) 2009, *The Impact of a Sustained Gender Pay Gap on the Australian Economy*; and
- Watson, I. Australian Journal of Labour Economics 2010, *Decomposing the Gender Pay Gap in the Australian Managerial Labour Market*.

The underlying rationale of the methodology is that it attempts to isolate the impact of gender discrimination (the target variable) by simulating the hypothetical changes needed to bring women’s levels of these variables in line with those of men,¹⁶⁵ while controlling for as many other known external factors on difference between equivalent male and female employee’s pay as is practical within the constraints of available published data.

The Walby and Olsen approach was applied through three steps:

Table B-1: Walby and Olsen Approach

Step	Description	Section
Likelihood of being in the labour force	The first step involves modelling the probability of selection into the labour force, based on a range of potential explanatory variables and addressing for selection bias.	B.3
Factors affecting hourly wages	Estimates the factors that affect the hourly wages earned by a person in the workforce. A number of potential explanatory variables were included. Further, this analysis controls for approximately 40 variables, including (but not limited to) parental status, industry and educational attainment.	B.4

¹⁶⁴ It is important to note that the implication is *not* that women are currently paid less than men because they are not as productive and is in no way a reflection on the current contribution or value of the work of women. Instead, wages are used as a substitute for productivity, which is widely recognised as an acceptable proxy. See Walby, S. and Olsen, W., 2002, *The impact of women’s position in the labour market on pay and implications for UK productivity*. Report to Women and Equality Unit, pp. 18-20.

¹⁶⁵ Olsen, W. and Walby, S., 2004, *Decomposing the Gender Pay Gap*, Working Paper No. 17, Manchester, UK: Equal Opportunities Commission, pp. 24.

Step	Description	Section
Decomposition of the gender pay gap	To estimate the effect of the gender differences on pay, and the implications of this for broader economic output, the methodology established by Walby and Olsen (2002) was used to break down the contributors of the gender wage gap and estimate the gross effect of each underlying factor on the wage gap. This makes it possible to estimate the change in earnings that would occur 'if women's conditions changed to reflect the best or the average situation among men' (Olsen and Walby, 2004, p. 66).	B.5

The following sections discuss the data sources and steps taken to apply the above methodology.

B.2 Data

Overview – HILDA survey

KPMG used the 2017 wave of the HILDA Survey data to underpin the modelling in this study. The HILDA Survey is a household-based longitudinal survey which began in 2001 and is collected and published annually by the Melbourne Institute in conjunction with the Department of Social Services.

HILDA comprises a sample of over 9,500 households and over 23,000 individuals, with interviews conducted annually with all adult members of each household followed over time to enable longitudinal analysis.¹⁶⁶ The HILDA Survey is a favourable source of data for this study due to the extent of the sample size and granularity of indicators collected, which include:

- labour force status and individual characteristics;
- information on child care and caring responsibilities for individuals;
- family composition, including financially and non-financially dependent children (resident and non-resident), and information on labour force status of, and financial support from, the other parent;
- employment history and status information, including on labour market interruptions;
- information on working from home and other flexible workplace practices;
- detailed information on employment status, and reasons why individuals may work part-time hours (e.g. family or personal responsibilities, preferences etc);
- job satisfaction and likelihood individuals will quit or be dismissed;
- employer industry, size, and characteristics; and
- educational history, current educational activities, and work related training opportunities.

¹⁶⁶ For more information see Summerfield, M., Bevitt, A., Fok, K., Hahn, M., La, N., Macalalad, N., O'Shea, M., Watson, N., Wilkins, R. and Wooden, M., 2019, *HILDA User Manual – Release 17*, Melbourne Institute, Applied Economic & Social Research.

Variable extraction

Given the scale of the HILDA dataset and the targeted nature of this study, a structured approach to identify and extract the necessary variables was undertaken prior to developing the statistical model. Using the list of variables referenced in the 2009 and 2016 KPMG Reports as basis, the following list of variables were identified and extracted.

Variable Name	HILDA Identifier
State	QHHSTATE
Region	QHHRA
Size of firm	QJBMWPS
Size of industry	QJBMEMSZ
Satisfaction with work flexibility arrangements	QJBMSFLX
Industry	QJBMI62
Occupation	QJBMO62
Trade union membership	QJBMTABS
Gender	QHGSEX
Age	QHGAGE
Education	QEDHISTS
Marital Status	QMRCURR
Number of 0-4 year old children	QHH0_4
Number of 5-9 year old children	QHH5_9
Number of 10-14 year old children	QHH10_14
Country of Birth	QANBCOB
Whether the respondent has a long term health condition	QHEALTH
Whether the respondent has poor health	QGH1
Per cent of time spent in full time education last financial year	QCAPEFT
Per cent of time spent in part time education last financial year	QCAPEPT
Number of years since left full-time education	QEHTSE
Years of work experience	QEHTJB
Whether employed part-time	QESDTL
Whether employed on a casual basis	QJBCASAB
Tenure with current employer in years	QJBEMPT
Usual hours of work in all jobs per week	QJBHRUC
Usual hours of housework per week	QLSHRHW
Number of years not in the labour force	QEHTO
Number of years unemployed	QEHTUJ
Entitlement to paid maternity/paternity leave	QJOWPPML
Number of on the job training hours completed per week	QJTTHRS
Employer Type	QJBMMPPLY
Weekly gross income	QWSCEI

Construction of model variables

Once key variables were extracted, an Excel 'data dictionary' was then constructed to inform the model how to interpret certain variables where the raw survey response cannot be directly applied.

For example, the raw response for the variable 'Age' can be directly applied as the response is in the form of a whole number, while the raw response for the variable 'Employer Type' contains a mixture of numbers and words and requires the use of a data dictionary to translate into a format compatible with the modelling application.

Within the construction process, a number of composite variables were created using data from the HILDA survey and other sources such as the ABS Labour Survey. The table below provides further details on the approach to construct each composite variable, as well as mapping of the final list of variables.

Variable name	Constructed	Construction rationale	Variable mapping
Gender	No	N/A	Mapping not needed
Age	No	N/A	Mapping not needed
Age squared	Yes – multiplied every age data point by itself	This is standard practice in undertaking regression to model more accurately the effect of age	Mapping not needed
State	No	N/A	This is a control variable. Dummy variable = 1 for all states
Region	No	N/A	This is a control variable. Dummy variable = 1 for all Regions
Size of firm	No	N/A	This is a control variable. Dummy variable = 1 for all firm size responses
Industry Segregation	Yes – using HILDA variable QJBMEMSZ with ABS labour force data	This index uses the proportion of male employees per 100 employees as a proxy to quantify the extent of gender segregation with Australian industries.	Against each Australian and New Zealand Standard Industry Classification (ANZSIC) code, the percentage of male to total employees is calculated.
Occupation Segregation	Yes – using HILDA variable QJBMEMSZ with ABS labour force data	This index uses the proportion of male employees per 100 employees as a proxy to quantify the extent of gender segregation within specific occupations.	Against each Australian and New Zealand Standard Occupation Classification (ANZSOC) code, the percentage of male to total employees is calculated.
Satisfaction with work flexibility arrangements	No	N/A	This is a control variable. Dummy variable = 1 for all firm size responses
Trade union membership	No	N/A	Dummy variable = 1 if union member

Variable name	Constructed	Construction rationale	Variable mapping
Education	Yes – using HILDA variables QEDHISTS and QEDHIGH1	This index converts into numerical category the highest level of education completed.	Detailed mapping provided in a separate table below.
Marital Status	No	N/A	Dummy variable = 1 if married or de facto
Number of 0-4 year old children	No	N/A	Mapping not needed
Number of 5-9 year old children	No	N/A	Mapping not needed
Number of 10-14 year old children	No	N/A	Mapping not needed
Country of Birth	No	N/A	Dummy variable = 1 if born in 'Other' of 'Main English Speaking'
Whether the respondent has a long term health condition	No	N/A	Dummy variable = 1 if has long term health condition
Whether the respondent has poor health	No	N/A	Dummy variable = 1 if has poor health condition
Per cent of time spent in full time education last financial year	No	N/A	Mapping not needed
Per cent of time spent in part time education last financial year	No	N/A	Mapping not needed
Number of years since left full-time education	No	N/A	Mapping not needed
Years of work experience	No	N/A	Mapping not needed
Whether employed part-time	No	N/A	Dummy variable = 1 if employed part time
Whether employed on a casual basis	No	N/A	Dummy variable = 1 if casually employed
Tenure with current employer in years	No	N/A	Mapping not needed
Usual hours of work in all jobs per week	No	N/A	Mapping not needed
Usual hours of housework per week	No	N/A	Mapping not needed

Variable name	Constructed	Construction rationale	Variable mapping
Number of years not in the labour force	No	N/A	Mapping not needed
Number of years unemployed	No	N/A	Mapping not needed
Entitlement to paid maternity/paternity leave	No	N/A	Dummy variable = 1 if employee entitled to maternity leave in current job
Number of on the job training hours completed per week	No	N/A	Mapping not needed
Employer Type	No	N/A	Dummy variable = 1 if employer is government business enterprise, commercial statutory authority, other government organisation, private sector not-for-profit, or other non-commercial organisations
Hourly gross income	Yes – using HILDA variables QWSCEI and QJBHRUC	Weekly gross income divided by weekly total number of hours worked	Mapping not needed

B.3 Step 1 – Addressing selection bias in the likelihood of an individual being in the labour force

Overview

Selection bias is a common challenge when drawing insights from survey responses. It is the notion that the sample (individual or group) could be selected in a way that proper randomisation is not achieved, as such does not provide an appropriate representation of the underlying population, and by association any inference drawn from the sample may lead to erroneous conclusions.

As such, it is important that a correction process is undertaken to minimise the impact of sample selection bias. KPMG has opted to apply the Heckman technique to correct this potential bias within the sample, this approach is underpinned by a pair of equations, explained in more detail below.

Equation estimated

The first equation had as the dependent variable a dummy variable equal to one if the person (of working age) was employed full or part-time, and equal to zero otherwise. The specification of the equation is given by:

$$\Pr(emp_i = 1 | Z) = \Phi(Z_\gamma) \quad (1)$$

Where emp_i indicates the employment dummy variable, Z is a vector of explanatory variables, γ is a vector of unknown parameters, and Φ is the cumulative distribution function of the standard normal equation.

After the employment equation was estimated, the Inverse Mills Ratio, λ , was obtained by using the regression equation results to calculate the employment probability for every individual in the sample. This variable is included in the second stage to correct for self-selection into or out of employment.

Variable selection

Our approach in estimating the employment equation is consistent with previous studies and the underlying methodology, whereby a number of HILDA variables were selected via a generalised linear model following with a non-zero weekly gross income as the response variable, using a binomial distribution with a probit link function, to form the vector of explanatory variables.

In addition to the above, an approach to apply the HILDA to Australian population weighting was confirmed with The Melbourne Institute of Applied Economics and Social Research and applied in this test.

The following table outlines the variables used in the employment equation.

Variable name
Gender
Age
Age squared
Region (remoteness)
Education scale
Marital status
Number of 0-4 year old children
Number of 5-9 year old children
Number of 10-14 year old children
Country of birth
Whether the respondent has a long term health condition
Whether the respondent has poor health
Per cent of time spent in full time education last financial year
Per cent of time spent in part time education last financial year
Number of years since left full-time education
Years of work experience
Years of work experience squared
HILDA to Australian population weighting - QHHWTRP

Results and diagnostics

The following table outline the diagnostic table of the GLM, and shows that the variables selected to estimate the likelihood of a respondent being employed are statistically significant, i.e. p-value of less than 0.05.

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-3.08261	0.11859	-25.9939	5.81E-149
Gender	-0.07487	0.023686	-3.16077	0.001574
Age	0.081398	0.006837	11.90603	1.10E-32
Age squared	-0.00151	6.96E-05	-21.6629	4.59E-104
Highest education level achieved including tertiary	0.116986	0.008935	13.09266	3.63E-39
Highest non-tertiary education achieved	0.087318	0.007299	11.96317	5.54E-33
Number of 0-4 year old children	-0.34311	0.022415	-15.3071	6.86E-53
Number of 5-9 year old children	-0.1922	0.022412	-8.57575	9.84E-18
Number of 10-14 year old children	-0.06606	0.022998	-2.87222	0.004076
Country of birth	-0.06275	0.031077	-2.01919	0.043467
Whether the respondent has a long term health condition	-0.34696	0.027795	-12.4828	9.27E-36
Whether the respondent has poor health	-0.24026	0.034672	-6.92952	4.22E-12
Per cent of time spent in full time education last financial year	-0.00335	0.00047	-7.11771	1.10E-12
Per cent of time spent in part time education last financial year	0.003922	0.000662	5.927208	3.08E-09
Number of years since left full-time education	-0.02873	0.004215	-6.81767	9.25E-12
Years of work experience	0.082768	0.004111	20.13375	3.74E-90
Years of work experience squared	-0.00034	7.81E-05	-4.36622	1.26E-05

B.4 Step 2 – Factors affecting hourly wages

Overview

Once the first equation has been estimated, the Inverse Mills Ratio (IMR) is calculated for the vector of explanatory variables, designed to be included as an independent variable to correct for underlying sample selection bias. The IMR is then included in the vector of explanatory variables in the second step of two-step approach, to estimate the variables with a significant relationship with the hourly wage.

Equation estimated

The second step of the process involves estimating the wage equation. Here the dependent variable is the log of the hourly wage rate. The wage equation may be specified as:

$$w^* = X\beta + u \quad (2)$$

where w^* is an underlying wage offer, which is not observed if the individual does not work.

The conditional expectation of wages given the person works is, as such, given by:

$$E[w | X, D = 1] = X\beta + E[u | X, D = 1] \tag{3}$$

based on the assumption that the error terms are jointly normal, the wage equation is expressed as:

$$E[w | X, D = 1] = X\beta + \rho\sigma_u\lambda(Z\gamma) \tag{4}$$

Where ρ is the correlation between unobserved determinants of the propensity to work, ε , and unobserved determinants of wage offers u , σ_u is the standard deviation of u , and λ is the Inverse Mills Ratio evaluated at $Z\gamma$.

If the IMR is not statistically significant, as in this case, 'one can conclude that the selection bias is not an important issue and modelling the earnings can proceed without the need for including the correction term'.¹⁶⁷

Variables tested

The second GLM used is of negative binomial distribution with a log link function, and it is intended to estimate the effects of each explanatory variable on the hourly wage.

The following table outlines all variables tested as part of this GLM.

Variable name
Gender
Age
Age squared
Highest education level achieved including tertiary
Highest non-tertiary education achieved
Marital status
Number of 0-4 year old children
Number of 5-9 year old children
Number of 10-14 year old children
Years of work experience
Years of work experience squared
Whether employed on a casual basis
Whether employed part time
hilda17_raw\$qjbempt_R
Usual hours of work in all jobs per week
Total time not in the labour force
Total time unemployed
Entitlement to paid maternity/paternity leave
Employer Type (government vs private)
Whether part of a union
Size of firm
Size of industry

¹⁶⁷ Watson, I, 'Decomposing the Gender Pay Gap in the Australian Managerial Labour Market', *Australian Journal of Labour Economics*, 13(1), p. 58.

Variable name

Satisfaction with flexibility of work arrangements

Industry

Industry segregation index

Occupation

Occupation segregation index

Hours of housework performed per week

Hours of on the job training received last year

Whether promoted at work last year

Inverse Mills Ratio derived from the employment equation

Results and diagnostics

The following table outline the diagnostic table of the GLM, and shows that the variables selected to estimate the likelihood of a respondent being employed are statistically significant, i.e. p-value of less than 0.05.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.982478	0.416456	2.359141	0.018337
Gender	0.115943	0.019811	5.852457	5.00E-09
Age	0.045033	0.006256	7.198096	6.55E-13
Age squared	-0.00038	7.99E-05	-4.6991	2.65E-06
Highest education level achieved including tertiary	0.023994	0.008531	2.81254	0.004925
Highest non-tertiary education achieved	0.075876	0.00531	14.28822	7.35E-46
Marital status	0.071845	0.018945	3.792278	0.00015
Number of 0-4 year old children	0.057218	0.016674	3.431604	0.000602
Number of 5-9 year old children	0.011405	0.016003	0.71265	0.476079
Number of 10-14 year old children	-0.01673	0.015819	-1.05781	0.290167
Years of work experience	0.006427	0.003546	1.812666	0.069913
Years of work experience squared	-0.00019	8.27E-05	-2.30599	0.021131
Whether employed on a casual basis	0.016773	0.022871	0.733402	0.46333
Whether employed part time	-0.07505	0.028225	-2.65884	0.007854
Tenure with current employer (years)	0.00518	0.001188	4.359012	1.32E-05
Usual hours of work in all jobs per week	-0.01029	0.000969	-10.6217	3.26E-26
Total time not in the labour force	-0.01419	0.003291	-4.31219	1.63E-05
Total time unemployed	-0.04634	0.00625	-7.41425	1.32E-13
Entitlement to paid maternity/paternity leave	0.081873	0.018716	4.374452	1.23E-05
Employer Type (government vs private)	-0.01169	0.020846	-0.56074	0.57499
Whether part of a union	-0.00781	0.021935	-0.35594	0.721895
Size of firm	-0.07622	0.150107	-0.50776	0.61163

	Estimate	Std. Error	t value	Pr(> t)
Size of industry	0.079454	0.017551	4.526965	6.05E-06
Satisfaction with flexibility of work arrangements	0.005488	0.020681	0.265355	0.790742
Industry	-0.06325	0.077705	-0.81395	0.415692
Industry segregation index	0.127321	0.045742	2.783478	0.005388
Occupation	0.256842	0.348844	0.736266	0.461586
Occupation segregation index	0.087508	0.042275	2.069946	0.038483
Hours of housework performed per week	-0.00121	0.000421	-2.87879	0.004001
Hours of on the job training received last year	0.004684	0.002699	1.735157	0.082744
Whether promoted at work last year	0.030925	0.027619	1.119721	0.26286
Inverse Mills Ratio derived from the employment equation	-0.00196	0.023358	-0.08379	0.933227 ¹⁶⁸

¹⁶⁸ If the IMR is not statistically significant, as in this case, 'one can conclude that the selection bias is not an important issue and modelling the earnings can proceed without the need for including the correction term', Watson, I, 2010, 'Decomposing the Gender Pay Gap in the Australian Managerial Labour Market', *Australian Journal of Labour Economics*, 13(1), p. 58.

B.5 Step 3 – Decomposition of the gender pay gap

Overview

The purpose of the decomposition step is to estimate and isolate the effects of gender discrimination on the gender pay gap. A number of factors need to be taken into account when considering the most appropriate decomposition technique, two examples of this include:

- **Feedback effect:** where pre-labour market characteristics may come into play, including the different choices of education, career, family and market participation between male and females; and
- **Policy Relevance:** components of the wage gap should have practical policy relevance, to better inform the support policy responses to address the gender pay gap going forward.

A number of decomposition techniques were considered as listed in Section 3.1 of this report. Given the objectives of this study, the Walby and Olsen technique was selected, with the GLM outputs generated from Step 2 used as a key input.

Approach

The Walby and Olsen technique was selected due to a number of key reasons, including:

- it allows key factors of policy relevance to be brought into the limelight, while pushing control variables into the background;
- it minimises the effects of offsetting factors which are not centrally relevant; and
- it highlights the gender discrimination component of the pay gap, and enables comparison of this component with other components of gender pay gap¹⁶⁹.

This approach involves simulating the hypothetical changes needed to bring women's levels of wage components into line with those of men.

In an example, in 2017, the mean years of tenure with their current employer for women was 6.4 years and for men this was seven years, an increase of 0.6 years would be required in order to bring women's years of tenure with current employers in line with the level of men. This extra 0.6 years of tenure is then multiplied by the corresponding coefficient (reward) for every extra year of tenure, which according to the GLM undertaken in step 2 is 0.00518 (0.5 per cent). This gives a simulated effect of 0.0033 (0.6×0.00518). This means that if women had the equivalent average amount of tenure as men, their wage rate would increase by 0.0033 (0.3 per cent).

Results

The results of the decomposition analysis form the main results are presented in Section 4 of this report.

B.6 Limitations

The modelling approach provides a point-in-time analysis of the gender pay gap and one input to the evidence base associated with the issue of pay equity. While there are acknowledged limitations to the approach, it represents one contribution to the evidence base and should be considered alongside other analytical approaches for a more complete picture of the links between gender and pay.

The analysis within this Report is based on the sample of respondents included within the HILDA dataset. The sample of respondents to the HILDA survey is expanded with each consecutive wave of the survey through both exits and entries from the underlying sample of respondents. In undertaking this analysis, the HILDA user manual¹⁷⁰ was used to apply appropriate weightings to control and adjust, to the extent permissible, for these sampling issues and to provide estimates for the Australian population.

¹⁶⁹ Olsen, W. and Walby, S., 2004, *Decomposing the Gender Pay Gap*, Working Paper No. 17, Manchester, UK: Equal Opportunities Commission, p. 24.

¹⁷⁰ Summerfield, M., Bevitt, A., Fok, K., Hahn, M., La, N., Macalalad, N., O'Shea, M., Watson, N., Wilkins, R. and Wooden, M., 2019, *HILDA User Manual – Release 17*, Melbourne Institute, Applied Economic & Social Research.

The key limitations identified in undertaking this work are as follows:

Measurement error

Any analysis that draws on survey data will be impacted by measurement error because respondents may not respond accurately to questions or there may be errors in how those open ended responses are coded. However, Uhrig and Watson (2014) analysed five waves of both the British Household Panel Survey and the HILDA survey and found that the effect of measurement error, where it could be corrected, on the comparison of men's and women's wages was small.¹⁷¹

Decomposition method

The data and methodology used for decomposition analysis impacts the results, and different methodologies have strengths and weaknesses.¹⁷² HILDA is the most appropriate data source for the Australian context. This decomposition analysis is undertaken with the Walby and Olsen (2002) methodology, which is an established approach for the Australian context.¹⁷³ A key feature of this approach is its ability to highlight variables with 'practical policy relevance to reduce gender wage gaps' whilst controlling for a range of irrelevant variables that impact wages but not gender, such as geography.¹⁷⁴ The analysis attempts to capture the statistical association between the gender pay gap and key explanatory variables modelled, but this cannot be definitively attributed and needs to be considered in the broader context of available evidence and key developments.

The core list of variables included for decomposition was based on prior research cited in our 2009 and 2016 reports and are retained for consistency and to facilitate comparison. Importantly, this includes working in the NGO or government sector which was statistically insignificant in 2017 (in contrast to previous waves) but is retained for completeness.

Impacts of other factors

There is a significant body of research on differences between men and women such as the wealth gap, differences in lifetime earnings, and superannuation. These issues are outside the scope of this report.

Limitations of industrial and occupational segregation data

Industrial and occupational segregation are key factors tested in the analysis. For the purposes of this analysis, industrial and occupational segregation are measured based on the HILDA dataset.

HILDA collects information about the industry and occupation of employment by asking respondents to provide their current main job. This response is then coded by HILDA surveyors to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) and Australian and New Zealand Standard Industry Classification (ANZSIC).¹⁷⁵

There are acknowledged data quality issues associated with the coding of these variables following a 2009 review.¹⁷⁶ Since this analysis, HILDA has changed how coding is undertaken - adopting ANZSCO and ANZSIC - trained its surveyors and coders. The ANZSCO and ANZSIC codes are 'likely to have a lower error rate' than the pre-2007 code frames, which used different classifications.¹⁷⁷ Despite these limitations, industrial and occupational data from HILDA is widely used in academic

¹⁷¹ Uhrig, SCN., and Watson, N., 2014, *The impact of measurement error on wage decompositions: evidence from the British Household Panel Survey and the Household Income and Labour Dynamics in Australia Survey*, ISER Working Paper Series, No. 2014-24, University of Essex, Institute for Social and Economic Research (ISER), Colchester.

¹⁷² Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf.

¹⁷³ Ibid.

¹⁷⁴ Ibid.

¹⁷⁵ Summerfield, M., Bevitt, A., Fok, K., Hahn, M., La, N., Macalalad, N., O'Shea, M., Watson, N., Wilkins, R. and Wooden, M., 2019, *HILDA User Manual – Release 17*, Melbourne Institute, Applied Economic & Social Research.

¹⁷⁶ Watson, N., and Summerfield, M., 2009, 'Quality of the Occupation and Industry Coding in the HILDA Survey', *HILDA Project Discussion Paper Series, No. 3/09*, Melbourne.

¹⁷⁷ Ibid.

research, including papers specifically examining gender pay gap¹⁷⁸ and remains a valid and important data source for this type of decomposition.

Use of HILDA and WGEA Gender Equality datasets

For many of the issues and factors considered in this report and our analysis, there are different measures available through different datasets. Invariably, different datasets can provide different figures and results due to differences in methodologies (such as census data compared with surveys and other sampling approaches), quality and robustness of responses, and granularity.

For the purposes of consistency and availability of the breadth of indicators required to be tested within our analysis of the gender pay gap, the HILDA survey dataset was utilised as the primary input to our analysis. As a panel survey, HILDA tracks the same people over time, and provides key information about incomes, labour dynamics and family life.

In addition to the HILDA data, the WGEA Gender Equality data collection also provides detailed information that can be used to understand gender dynamics across industries, for example, industrial and occupational segregation. The WGEA Gender Equality data collection includes data collected from all private businesses with more than 100 or more employees annually from 2013-14. This captures more than four million employees - approximately 40 per cent of all employees in Australia - in a census. The WGEA Gender Equality data collection does not include public sector organisations, small businesses or any medium sized businesses with fewer than 100 employees.

While the WGEA Gender Equality data collection has not been utilised in the main statistical analysis (due to data scope reasons), it has been drawn on in preparing our analysis and presented alongside the analytical results. **Importantly, the WGEA and HILDA data (as well as other sources, such as ABS), all show that gender pay gaps persist in Australia and that gender segregation is persistent across industries and occupations.**

¹⁷⁸ For example, Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., 2009, 'The impact of a sustained gender wage gap on the Australian economy', *Report to the Office for Women, Department of Families, Community Services, Housing and Indigenous Affairs*, available at: http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf and Watson, I, 2010, 'Decomposing the Gender Pay Gap in the Australian Managerial Labour Market', *Australian Journal of Labour Economics*, 13(1), pp. 47-79.



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