Life Course Centre

WORKING PAPER SERIES

No. 2026-03

March 2026

Pay disparities between male and female university graduates in Australia

Rethinking the role of fields of study

Tomasz Zając

Francisco Perales

Wojtek Tomaszewski

The Australian Research Council Centre of Excellence for Children and Families over the Life Course

Phone +61 7 3346 7477 **Email** lcc@uq.edu.au

lifecoursecentre.org.au

Australian Government
Australian Research Council

The University Of Queensland
AUSTRALIA

The University of Sydney

The University of Western Australia

The University of Melbourne

Research Summary

Why was the research done?

Despite recent progress, gender pay gaps between men and women remain a persistent feature of modern labour markets, being observed even amongst highly skilled population groups—such as university graduates. These gaps are the product of multiple interrelated factors—including discrimination, imbalanced family responsibilities, educational and labour-market segmentation, yet some of these factors have been examined more than others. Fields of study and their feminisation remain under-researched contributors.

What were the key findings?

Our results offer evidence of a substantial graduate gender pay gap in Australia, amounting to ~17% of annual average salaries among men. While standard socio-demographic factors fail to explain this gap, gendered differences in fields of study account for ~15% of it. Importantly, the magnitude of the graduate gender pay gap differs markedly by field of study (from ~2% to ~24% of average pay), being largest amongst graduates from gender-balanced fields.

What does this mean for policy and practice?

Our findings underscore the importance of considering fields of study in future scholarly research aimed at understanding gender pay disparities. Concerning education equity policy, they indicate that equity interventions aimed at countering the gendered nature of university field-of-study choices amongst high-school cohorts could help reduce the gap. However, policies that merely encourage young women to enter male-typed high-paying fields are not enough: while the gender-integration of these fields may be a desirable outcome in its own right, our results suggest it may not eradicate graduate gender pay gaps.

Citation

Zając, T., Perales, F., & Tomaszewski, W. (2026). 'Pay disparities between male and female university graduates in Australia: Rethinking the role of fields of study', Life Course Centre Working Paper Series, 2026-03. Institute for Social Science Research, The University of Queensland.

The authors

Tomasz Zając
The University of Queensland
Email: t.zajac@uq.edu.au
https://about.uq.edu.au/experts/26051

Francisco Perales
Griffith University
Email: f.peralesperez@griffith.edu.au

Wojtek Tomaszewski
The University of Queensland
Email: w.tomaszewski@uq.edu.au
https://about.uq.edu.au/experts/2541

Acknowledgements/Funding Sources

Acknowledgements: This project was funded by the Australian Research Council Centre of Excellence for Children and Families over the Life Course (project number CE140100027). The study uses data from the Person Level Integrated Data Asset (PLIDA) provided by the Australian Bureau of Statistics.

Disclaimer: The reported results are based, in part, on tax data supplied by the ATO to the ABS under the Taxation Administration Act 1953, which requires that such data is only used for the purpose of administering the Census and Statistics Act 1905. Any discussion of data limitations or weaknesses is in the context of using the data for statistical purposes, and is not related to the ability of the data to support the ATO's core operational requirements. Legislative requirements to ensure privacy and secrecy of these data have been followed. For access to PLIDA/MADIP data under Section 16A of the ABS Act 1975 or enabled by section 15 of the Census and Statistics (Information Release and Access) Determination 2018, source data are de-identified and so data about specific individuals has not been viewed in conducting this analysis. In accordance with the Census and Statistics Act 1905, results have been treated where necessary to ensure that they are not likely to enable identification of a particular person or organisation. The data cannot be shared. Ethics approval for the research was granted by The University of Queensland's Office of Research Ethics (project number 2019002985).

We acknowledge the Traditional Custodians of the lands on which we work and live across Australia. We pay our respects to Elders past and present and recognise their continued connections to land, sea and community.

Pay disparities between male and female university graduates in Australia: Rethinking the role of fields of study

Tomasz Zając[1 2], Francisco Perales[3], and Wojtek Tomaszewski[1 2]

[1]The University of Queensland, Australia

[2] Australian Research Council Centre of Excellence for Children and Families Over the Life Course, The University of Queensland, Brisbane, QLD, Australia

[3] Griffith University, Australia

Abstract: Despite recent progress, gender pay gaps between men and women remain a persistent feature of modern labour markets, being observed even amongst highly skilled population groups—such as university graduates. These gaps are the product of multiple interrelated factors—including discrimination, imbalanced family responsibilities, educational and labour-market segmentation, yet some of these factors have been examined more than others. This study offers a comprehensive examination of gender pay gaps amongst university graduates in Australia, focusing on one under-researched contributor: fields of study and their feminisation rates. Leveraging rich and robust population-level administrative data from the Person Level Integrated Data Asset (PLIDA) (n=549,893 graduates) and multilevel regression models, we first revisit key mechanisms underpinning the graduate gender pay gap within the Australian context. We then deploy this unique dataset to offer novel empirical contributions to the international literature—including the mediating and moderating effect of field of study in the relationship between gender and earnings, and their interaction with occupational gender segregation. Our results offer evidence of a substantial graduate gender pay gap in Australia, amounting to ∼17% of annual average salaries among men. While standard socio-demographic factors fail to explain this gap, gendered differences in fields of study account for ∼15% of it. Importantly, the magnitude of the graduate gender pay gap differs markedly by field of study (from ∼2% to ∼24% of average pay), being largest amongst graduates from gender-balanced fields. These findings bear important implications for equity policy and practice pertaining to both high education and the labour market.

Keywords: Australia; Gender pay gap; University graduates; Fields of study.

1 Introduction

In many countries, including Australia, the gender pay gap is a glaring reminder of entrenched gender inequality. The gender pay gap refers to the difference between women's and men's earnings and summarises women's relative financial position within the paid workforce (Workplace Gender Equality Agency, 2019). While Australia and other countries have noted downward trends over the past decades, a sizeable gender pay gap remains in most developed nations (Eurofound, 2021). According to the OECD, in 2023, the median unadjusted gross earnings of women working full-time in Australia were 11.3% lower than those of men, situating Australia close to the OECD average (11.3%) and to countries such as Ireland (11.8%), Slovakia (11.7%) and Poland (10.8%) (OECD, 2025). The factors underpinning the production and reproduction of this gender gap in earnings remain a matter of intense scholarly debate. In traditional economic perspectives, human-capital differentials have been recurrently invoked as a plausible explanation. Broadly speaking, this perspective posits that gender differences in earnings are the result of different employment-related investments by men and women, stemming from intrinsic gender-based time-use preferences and women's specialization in reproductive labour (Lips, 2013). However, this explanation has been undermined by the reversal of the gender gap in university-degree attainment—with women now surpassing men—failing to close of the gender pay gap (Bar-Haim et al., 2023). Sociological perspectives, on the other hand, emphasize the role of societal-level processes and institutions external to the individual, such as gender-based employer discrimination, insufficient government supports to parents, or the devaluation of female-typed lines of work (Lips, 2013; Perales, 2013).

Importantly, the gender pay gap is not uniform. Counter to human-capital theory, the largest pay disparities are often observed amongst highly educated employees and employees with supervisory or managerial responsibilities (Eurofound, 2021; Kim A. Weeden et al., 2016). Notwithstanding, according to an OECD study, Australia is one of the few developed countries where the gender pay gap is smaller among university graduates than among those with lower attainment levels. Despite this, university-educated women in Australia still earn substantially less than men—nearly 20% less in full-year full-time earnings (Encinas-Martín & Cherian, 2023). Furthermore, Australian official statistics reveal substantial gender pay disparities in starting graduate salaries—2.5% among those who completed undergraduate

studies and 13% among those who completed postgraduate courses (Workplace Gender Equality Agency, 2021).

Examining the relative wages of male and female *university graduates*, specifically, is paramount for several reasons. First, university graduates represent the most highly skilled individuals and those who have made the greatest commitments to education. Gender-based pay disparities amongst this cohort therefore point to system-level inefficiencies in time investments and society's inability to maximize the returns to education (Wodon & de la Brière, 2018). Second, gendered pay disparities amongst the highly skilled provide an important test of human-capital arguments (Combet & Oesch, 2019). Gaps in the early career outcomes of university-educated men and women who recently graduated from the same fields and with the same qualifications would suggest that factors other than gendered skill investments underpin women's disadvantaged labour-market position.

Within this context, the present study offers a novel examination of gender differences in the labour-market outcomes of recent graduates from Australian universities. In doing so, it brings to the fore a relatively under-researched—yet important—factor: fields of study. Within this space, there is ample evidence that graduates' labour-market outcomes vary markedly across fields of study (see e.g. Kim et al., 2015; Webber, 2016; Zając et al., 2023) and that men and women are unevenly distributed across such fields (e.g. Joy, 2003; Olitsky, 2014). Further, emerging evidence demonstrates that the confluence of these factors (i.e., men selecting themselves into more lucrative fields of study) may be a significant contributor to gender-based earnings disparities (Bobbitt-Zeher, 2007; Goldin et al., 2017; Joy, 2000; Zhang, 2008). However, studies exploring gender gaps in labour-market outcomes amongst graduates within the same field remain scarce (e.g., Sánchez-Mangas & Sánchez-Marcos, 2021; Zając et al., 2024).

Altogether, the present study makes three key contributions to knowledge. First, it pays particular attention to several under-researched channels potentially contributing to the gender gap in graduate earnings—including fields of study and their feminisation rates. Second, it offers additional evidence for a new country context—Australia. Third, it leverages rich administrative data that enable tracking the longitudinal outcomes of the full population of Australian graduates who completed their studies between 2005 and 2011 (n=3,107,085 observations from 565,318 graduates). The unprecedented scale of the data at hand allows for

more granular classifications of fields of study than in most existing research. All in all, our analyses provide novel insights into four interrelated research directions: (i) the mediating effect of field of study in the relationship between gender and earnings; (ii) the moderating effect of field of study in the relationship between gender and earnings, (iii) the relationship between field-of-study feminisation and gender pay disparities, and (iv) whether the field-of-study effect is independent of the effects of occupational gender segregation.

The remainder of this manuscript is organised as follows. Section 2 provides a review of the relevant literature and a conceptual framework for the study. It also discusses the current study's contributions. Section 3 describes the data and analytic approach employed in the analysis. Section 4 presents the results of our empirical analyses. Finally, Section 5 summarises the key findings and discusses their implications for policy, practice and future research.

2 Literature review

2.1 Sources of the graduate gender pay gap – a conceptual framework

Gender pay disparities have been the subject of decades of interdisciplinary research. Similar to the broader literature on overall gender pay gaps, previous studies have unveiled multiple channels and mechanisms whereby gender—at both the individual and aggregate level—influences graduate earnings (Blau & Kahn, 2017). Figure 1 illustrates these pathways. The diagram captures not only the direct influence of gender on wages (via direct discrimination) but also core intermediate factors that are shaped by gender and can subsequently affect wages (gender differences in personal circumstances, fields of study, and labour-market segment). The graph portrays both direct relationships between gender and these other factors (solid lines) as well as moderating relationships between them (dashed lines).

[FIGURE 1]

As we elaborate on below, some of these pathways have been extensively researched. This is the case, for example, for occupational segregation (England et al., 2020; Perales, 2013) or parenthood (Goldin et al., 2024), a core aspect of personal circumstances. Others, however, have received far less attention—either overall or amongst graduates, more specifically. This includes the pathway of key interest to the present study, field of study, which is represented by purple lines within Figure 1. While earlier studies have documented gendered enrolment

patterns *across* more or less lucrative fields of study, gender pay gaps *within* fields of study remain under-researched. As noted earlier, these within-field-of-study gaps may be particularly informative of gender inequities. Given the interconnectedness of different factors shaping the graduate gender pay gap, the next section offers an overview to help situate the theoretical role of field of study.

2.2 Explaining the gap: Foundational perspectives

The most simple and direct pathway connecting graduates' gender and their wages is Pathway A in Figure 1, which denotes direct pay discrimination against women. In Australia, as in other countries, gender-based discrimination pertaining to employment and the workplace is explicitly outlawed. As denoted in the Sex Discrimination Act 1984 (Cth), employers are obliged to offer the same salary for the same work, regardless of employees' gender (Sex Discrimination Act 1984 (Cth), n.d.). Nevertheless, empirical studies demonstrate that the gender wage gap—especially among high-income earners, who usually require university qualifications—cannot be entirely explained by differences in personal characteristics (Barón & Cobb-Clark, 2010). This finding suggests that gender-based discrimination contributes to the gender pay gap (Watson, 2010), ostensibly through employers' 'taste-based discrimination' (Becker, 1995; Berson, 2016) and different treatment of women compared to men. For example, employers may fail to offer promotions to women (the so-called 'glass ceiling' effect) (Kee, 2006) or offer smaller pay raises when promotions are offered (Booth et al., 2003).

Other mechanisms linking gender to graduate wages are less direct. Figure 1 shows the intervening role of personal circumstances. In this respect, the uneven allocation between men and women of both care work (for children and ill, disabled or aging adults) and housework has been argued to play a key role. Women remain responsible for a disproportionate share of unpaid care and domestic work (Pathway B) and, as a result, they are more likely than men to prioritise flexible jobs and career paths over more lucrative ones (Alonso et al., 2019; Baxter et al., 2023; Sierminska & Girshina, 2017; UN Women, United Nations Entity for Gender Equality and the Empowerment of Women, 2019). Indeed, the burden of care work can result in 'occupational downgrading', a situation whereby women accept lower pay and poorer work conditions (Pathway C) or jobs that do not fully utilise their skills (Pathway I) to meet caring responsibilities (Hegewisch & Gornick, 2011). Likewise, changes in personal circumstances, such as the arrival of a new child, tend to affect men and women differently (Pathway D). For

example, men's work hours increase when they become fathers, whereas women's work hours decrease (Bari, 2024; Kim A. Weeden et al., 2016). Similarly, women experience a lasting fall in their wages following motherhood (the so-called 'motherhood penalty'), whereas men enjoy an increase in theirs (the 'fatherhood premium') (Goldin et al., 2024). Altogether, for most couples, parenthood entrenches gender pay gaps and men's status as household breadwinners (Steinbring et al., 2024). While these patterns of unequal care and housework distribution are likely rooted in traditional gender roles and expectations (Ferrant et al., 2014), they can also stem from households maximising their combined income through "specialisation". Although the general processes described within this paragraph apply to all men and women, dedicated studies focusing on graduates have reported comparable patterns (Ginn & Arber, 2002; Wiswall & Zafar, 2018).

Labour-market segregation is another key mechanism contributing to gender pay gaps, overall and amongst graduates more specifically. It is well established that occupations and industries differ markedly in terms of their remuneration (Pathway J in Figure 1) (Card et al., 2023; OECD, 2023c); that men and women tend to work in different occupations/industries (Charles & Grusky, 2004); and that women gravitate towards comparatively lower-paid occupations/industries (England et al., 2020). These factors synergise to generate pay disparities between men and women favouring the former. Labour-market segregation may be generated by gendered career trajectories (Pathway E), educational choices (Pathway F) and university-to-work transitions (line Pathways G and H). For example, a study based on the European Labour Force Survey demonstrated links between studying female-typed courses and working in female-typed occupations (Smyth & Steinmetz, 2008). Multiple theoretical perspectives address the overrepresentation of women in lower-paid occupations and industries. Some perspectives argue that women self-select into safer or family-friendly occupations/industries (see e.g., the compensating differentials perspective, (Lavetti, 2023; Rosen, 1986)). Others propose that society undervalues (or devalues) lines of work that are perceived to be "women's work"—such as nursing or childcare (Levanon et al., 2009)—arguably due to cultural beliefs portraying men as more competent and status-worthy than women (Perales, 2013). For example, in the US, Levanon et al. (2009) report negative correlations between occupations' feminisation rates and average earnings in the occupation. Further, Levanon and colleagues (2009) demonstrate that—over time—average pay in an occupation falls as its feminisation rate increases (rather than the reverse), which supports

devaluation arguments. More recent studies have also documented links between occupational feminisation and the magnitude of the gender pay gap (Pathway K). Some of these studies report larger gaps in gender-neutral compared to male- or female-dominated occupations (Bartnik et al., 2022). The effects of occupational segregation on wage disparities have been reported also in studies focused on university graduates across different countries, including the US (Mandel, 2018), Southern Europe (Figueiredo et al., 2015), and Germany (Leuze & Strauß, 2016).

2.3 Explaining the gap: The role of fields of study

A somewhat separate literature has turned the spotlight on the role of fields of study when explaining gender pay gaps. Given the interest in *university* fields of study, unlike the foundational perspectives discussed so far, this strand of work has focused more explicitly on graduates. Two distinct yet interrelated fields of enquiry coexist here, focusing on *between-field* and *within-field* differences in labour market outcomes.

2.3.1 Between-field differences

Existing studies have noted marked differences in average pay across individuals who completed different university fields of study (Pathway M in Figure 1). For example, graduates from fields such as STEM and business tend to receive higher annual, monthly and/or hourly wages than graduates from other fields (Altonji et al., 2012; Gerber & Cheung, 2008; Kim et al., 2015; Webber, 2016; Zając, Żółtak, et al., 2023). For university fields of study to contribute to the graduate gender pay gap, men and women need to be differentially distributed amongst higher-paid (men) and lower-paid (women) fields. This segregation process is captured by Pathway F in Figure 1 (Barone, 2011; England & Li, 2006; Ganley et al., 2018). In Australia, this is certainly the case, with women being overrepresented in comparatively low-pay fields (such as education and society and culture) and underrepresented in comparatively high-pay fields (such as information technology and engineering) (Workplace Gender Equality Agency, 2021). The roots of these imbalances are a matter of ongoing debate. Different perspectives emphasize factors including gendered educational preferences and aspirations amongst young people; social scripts pressuring boys and girls into "gender-appropriate" educational tracks; and discrimination against youth who enter or aspire to enter gender-atypical career pathways (Alon & DiPrete, 2015; Barone & Assirelli, 2020). Along these lines, a seminal study by

Charles and Bradley (2009) describes two cultural forces contributing to persistent gender segregation in education: gender-essentialist ideology (the belief that men and women possess inherently different skills and preferences) and the existence of self-expressive value systems in individualised societies (which encourage individuals to pursue fields aligning with their gendered identities, reinforcing traditional gender roles). Further, women who enter male-typed university fields often face barriers navigating and succeeding in their studies. For example, women face greater risks of dropping out of STEM university programs than other programs (Kaganovich et al., 2023; Pedersen & Nielsen, 2024; Weeden et al., 2020).

2.3.2 Within-field differences

As noted in the previous section, ample evidence indicates that gender segregation across fields of study, together with women's sorting into less lucrative fields, explains part of the graduate gender pay gap (Bobbitt-Zeher, 2007; Francesconi & Parey, 2018; Machin & Puhani, 2003). However, this is not the only way in which gender and field of study synergise to entrench pay disparities between male and female graduates. Indeed, a much smaller and more recent literature is beginning to document how gender pay gaps can be observed even amongst cohorts of individuals who graduated from the same fields of study (Pathway N in Figure 1). For example, Francesconi and Parey (2018) document heterogeneity in the magnitude of the gender pay gap by field of study among graduates in Germany, with the largest differentials emerging among graduates from economics/business and STEM programs. Similarly, for a broader sample of recent graduates from 11 Western European countries, Sánchez-Mangas and Sánchez-Marcos (Sánchez-Mangas & Sánchez-Marcos, 2021) reported significant variation across fields of study in the gender gap in wages. At labour-market entry, this gap was most pronounced amongst STEM graduates. Thereafter, female graduates in Economics, Business, and Law exhibited the flattest wage-growth trajectories relative to their within-field male peers. In Italy, Galos and Kulic (2023) examined within-field differences in gender gaps in employment rates and earnings, linking these gaps to field-of-study feminisation rates (as described in more detail below). Most recently, Zając and colleagues (2024) used Polish administrative data to document gender gaps in salaries within STEM fields. Their analyses revealed larger gaps within comparatively more lucrative fields (e.g., engineering and mathematics), and smaller gaps within other fields (e.g., biology or earth sciences).

2.4 The present study: Aims and contributions

The previous sections have summarised how university field of study can be an important factor contributing to the entrenchment of graduate gender pays gaps, operating in conjunction with multiple other individual- and aggregate-level mechanisms. As noted, a well-established body of work points to gender segregation *between* higher- and lower-paid fields as an important pathway. Yet recent studies indicate that gender pay gaps *within* fields of study merit further attention. Within this context, the present study makes several contributions that extend the available body of evidence.

First, existing research on fields of study and their influence on subsequent labour-market outcomes—including earnings and gender pay gaps—often relies on small-scale survey data featuring modest sample sizes, overall and for certain fields of study. Such data prevent detailed field-of-study categorizations and encourage reliance on crudely aggregated categories, which obscures more detailed and nuanced understandings. For example, studies often group fields of study into 'STEM', 'business', 'social science', and 'arts and humanities', or even cruder categorizations (Borgen & Mastekaasa, 2018; Zając, Żółtak, et al., 2023). Therefore, research to date has rarely considered the full breadth and detail of existing university study fields—particularly smaller and/or emerging fields. Importantly, differences in the magnitude of gender pay disparities across narrow fields of study *within* aggregated categories such as "STEM fields" have been shown to be substantial (Zając et al., 2024). The lack of large-scale data also impairs researchers' ability to detect statistically significant differences and effects (i.e., it increases the likelihood of Type-II estimation errors). In contrast, our analyses are based on population-level data encompassing a vast cohort encompassing over half a million individuals graduating from all Australian universities between 2005 and 2011. We leverage these unique and powerful data to revisit the multiple ways in which field of study has been previously connected to gender and earnings, including analyses of (i) the mediating effect of field of study in the relationship between gender and earnings; (ii) the moderating effect of field of study in the relationship between gender and earnings, (iii) the relationship between field-of-study feminisation and gender pay disparities, and (iv) whether the field-of-study effect is independent of the effects of occupational gender segregation.

Second, our focus on Australia allows us to generate evidence on these issues for a new country context. Indeed, to our knowledge, Australian studies focusing on the contributing role

of field of study to the gender pay gap are few and far apart. There are nevertheless some exceptions. These exceptions include official statistics on gender pay disparities published by the Workplace Gender Equality Agency (Workplace Gender Equality Agency, 2021) and a recent research study by Liu et al. (2023), which examines gender pay gaps across STEM fields. Our analyses use new and robust data from PLIDA to validate and expand on their findings, lifting the Australian evidence to international standards. While earlier literature has concentrated on countries such as Germany, Italy or the United States, we argue that Australia represents an interesting additional case study. While Australia is close to the OECD average in the gender gap in median gross earnings for full-time workers, it stands out in other respects. For instance, Australia has one of the highest rates of higher education attainment in the world, with 40% of the population aged 25-64 having completed a university degree (OECD, 2023b). Furthermore, while women aged 25 to 34 in most OECD countries are more likely than their male peers to have a university degree, this gap is particularly large in Australia (65% vs 48% in 2023) (OECD, 2023a). Yet, importantly, university graduates in Australia enjoy one of the smallest wage premiums compared to individuals with upper-secondary qualifications across the OECD (OECD, 2024). Providing new evidence for Australia therefore offers a meaningful case study to test the generalisability of existing findings in a new institutional context.

Third, we expand the existing evidence—both Australian and international—by focusing on several aspects of the relationships between field of study, gender and wages that remain poorly understood. In particular, as noted before, we still know comparatively little about *within-field-of-study* gender differences in earnings. This includes an understanding of which fields feature greater or lower wage parity between male and female graduates, and the reasons for it. A potential factor in this space that remains under-researched is field-of-study feminisation; that is, the percentage of graduates from a field who are female (Galos & Kulic, 2023). A wealth of evidence documents how *occupational* segregation exerts independent effects on wages (Perales, 2013) and the gender pay gap (Bartnik et al., 2022; Brynin & Perales, 2016), with research indicating that society devalues female-type lines of work (Levanon et al., 2009) and that pay gaps are greater in gender-balanced occupations (Bartnik et al., 2022). We contend that feminised fields of study may be susceptible to the same sort of processes, potentially interplaying with occupational feminisation.

On the one hand, female-typed fields may be subject to societal undervaluation (or devaluation), ultimately leading to comparatively lower pay in such fields. Likewise, feminised *fields* (e.g., education) may disproportionately open opportunities for employment in female-typed *occupations* (e.g., primary-school teacher). Therefore, occupational feminisation may mediate any negative relationship between field-of-study feminisation and pay. On the other hand, men can be penalised more (relative to other men) than women (compared to other women) for choosing a feminised field, resulting in smaller gender pay gaps in highly feminised fields analogous to propositions made in the occupational segregation literature (Bartnik et al., 2022). While these propositions are persuasive, our review of the literature yielded a single empirical contribution considering these matters; specifically, a recent study for Italy by Galos and Kulic (2023). Their pioneer study revealed vast within-field differences in gender gaps in employment rates and earnings, providing evidence that these gaps are related to field-of-study feminisation rates. Gaps were most pronounced in more gender-balanced fields compared to male- or female-typed fields, and the relationship between field-of-study feminisation and the gender pay gap was comparatively weaker in "nurturing" fields of study (such as psychology, social work, pedagogy, and nursing). However, this study did not account for the full array of potential interconnections between *field-of-study* and *occupational* segregation described before, being therefore silent about whether their effects on wages and the gender pay gap operate jointly or independently.

3 Methods

3.1 Dataset and sample selection

To provide a comprehensive analysis of the sources of the gender pay gap amongst Australian graduates, with a focus on fields of study and their feminisation rate, we leverage unique population-level data from the Person Level Integrated Data Asset (PLIDA). PLIDA is a national integrated administrative dataset managed by the Australian Bureau of Statistics (ABS) that integrates individual- and household-level information collected by multiple Australian Government departments into a single longitudinal micro-level dataset. For the analyses within this paper, the core PLIDA modules used are the Higher Education Information Management System (HEIMS) module, which contains information on university graduates, and the Australian Taxation Office (ATO) module containing data on occupation and personal

income tax. Leveraging these PLIDA modules, we construct an analytic dataset containing full cohorts of domestic students graduating from Australian higher-education institutions between 2005 and 2011 and track their labour-market trajectories annually over the 2011−2016 period (*n*=549,893 individuals and 2,790,809 person-year observations).

3.2 Measures

Income from personal exertion (i.e., labour income) is used as the outcome variable in our analyses. This measure is obtained from ATO data and captures income received as an employee or for any service rendered over a financial year. This income measure was adjusted for inflation and is expressed in 2016 Australian dollars. As shown in Table 1, the average employment income in the pooled sample is A$67,029 (SD=A$38,230). Gender is a focal explanatory variable. Information on individuals' self-declared gender is obtained from HEIMS records collated by HE institutions. Using this definition, 62% of the sample are women, while 38% are men (no other gender options were available).

Other key explanatory variables include field of study, occupation, field-of-study feminisation, and occupational feminisation. Field of study is operationalised in two ways. In the first stage of the analysis, we use the highest level of the Australian Standard Classification of Education (ASCED); that is, broad fields of study (2-digit codes). In the ASCED, there are ten broad higher-education fields: natural and physical sciences (7.6% of the sample), information technology (3.2%), engineering and related technologies (5.8%), architecture and building (2.6%), agriculture, environmental and related studies (1.7%), health (18.8%), education (12.7%), management and commerce (19.1%), society and culture (20.1%), and creative arts (8.4%). In the second stage of the analysis, we use narrow levels of the ASCED (4-digit codes) to split the sample into 65 field-of-study groups when calculating their feminisation rate. The resulting variable is a continuous measure capturing the proportion of graduates in each narrow field of study who are women. We take a similar approach to derive occupational feminisation. We use minor groups (3-digit codes) from the Australian and New Zealand Standard Classification of Occupations (ANZSCO) to split the sample into 100 groups and calculate the proportion of incumbents in each group who are women.

Our multivariate models (described below) are adjusted for a set of variables that may confound the relationships between gender, field of study, and post-graduation labour income. These controls include time-varying variables capturing individuals' age group (seven

categories), state of residence (eight categories), receipt of business income (yes; no),[1] and being currently enrolled in further education (yes; no).[2] Controls also include time-invariant variables identifying graduates who completed dual/multiple degrees (yes; no), graduation year (2005 to 2011), and a set of five variables capturing disadvantaged social backgrounds resembling those used by the Australian Government (Tomaszewski et al., 2018). The latter are:

- Low socio-economic status (Low SES) – individuals who, in the year before commencing university, lived in the 20% of areas with the lowest values in the Socio-Economic Index for Areas (SEIFA) Index of Education and Occupation.
- Regional/remote (RR) – individuals who, in the year before commencing university lived in areas other than major cities, based on the ABS' Remoteness Areas classification.
- NESB – foreign-born individuals who, during their studies, reported coming from a household in which a language other than English was spoken.
- Living with a disability – individuals who, during their studies, self-reported having a disability.
- Indigenous status – those who identified as being of Aboriginal and/or Torres Strait Islander descent in their interactions with the Australian Government.

In addition, all models include a set of fixed effects for the universities in which graduates completed their studies to capture institutional effects (e.g., the prestige of the institution).

3.3 Analytic approach

Using the longitudinal PLIDA data, we fit a series of random-effect linear regression models of graduates' labour income in the first to tenth years after their graduation. The first three models focus on the *mediating* effect of field of study in the relationship between gender and wages. They quantify the "raw" gender pay gap (Model 1), as well as the adjusted gender pay gap after inclusion in the model of base controls (Model 2) and fields of study (Model 3). We

[1] This variable allows us to control for the fact that people running a business are less likely to have employment income.

[2] This variable accounts for the fact that individuals continuing education might not fully participate in the labour market.

then investigate the *moderating* effect of field of study in Model 4, which assesses the magnitude of the gender pay gap across different fields of study through "gender × field of study" interactions. These models take the following functional forms:

$$\mathrm{LI_{gt}} = \alpha + \beta_1 \mathrm{G_g} + \mathrm{u_g} + \mathrm{e_{gt}} \quad \text{(Model 1)}$$

$$\mathrm{LI_{gt}} = \alpha + \beta_1 \mathrm{G_g} + \beta_2 \mathrm{C_{gt}} + \mathrm{u_g} + \mathrm{e_{gt}} \text{ (Model 2)}$$

$$\mathrm{LI_{gt}} = \alpha + \beta_1 \mathrm{G_g} + \beta_2 \mathrm{F_g} + \beta_3 \mathrm{C_{gt}} + \mathrm{u_g} + \mathrm{e_{gt}} \text{(Model 3)}$$

$$\mathrm{LI_{gt}} = \alpha + \beta_1 \mathrm{G_g} + \beta_2 \mathrm{F_g} + \beta_3 (\mathrm{G} \times \mathrm{F})_{\mathrm{gt}} + \beta_4 \mathrm{C_{gt}} + \mathrm{u_g} + \mathrm{e_{gt}} \text{(Model 4)}$$

...where subscripts *g* and *t* denote graduates and time points, respectively; *LI* is labour income, α is the model's grand intercept; G_g is an explanatory variable capturing individuals' gender; F_g represents broad field of study; C_{gt} is the base set of control variables; β_1 to β_4 are coefficients (or vectors of coefficients) to be estimated; *u* is an individual-level random effect (or random intercept) capturing unobserved effects and assumed to be normally distributed and orthogonal to the model variables; and *e* is an individual-level stochastic regression error.

In subsequent analyses, we further investigate the intervening role of field-of-study and occupational feminisation. First, we study the *mediating* role of field-of-study feminisation rate (FFR) by substituting the categorical variable capturing broad fields of study with the continuous-level field-of-study feminisation variable described before. Second, we assess the *mediating* role of occupational feminisation rate (OFR) through the inclusion of the relevant continuous-level variable. This enables us to ascertain whether the wage effects of field-of-study feminisation are independent of the wage effects of occupational feminisation. Since previous studies suggest non-linear relationships between feminisation rates and the gender pay gap (see e.g., Perales, 2013), we also include square terms for the feminisation rates in these models. Since feminisation may have differing wage impacts on men and women (Perales, 2013; Brynin and Perales, 2016), this part of the analysis features gender-specific models. These models have the following functional form:

$$\mathrm{I_{gt}} = \alpha + \beta_1 \mathrm{FFR_g} + \beta_2 \mathrm{FFR_g^2} + \beta_3 \mathrm{C_{gt}} + \mathrm{u_g} + \mathrm{e_{gt}} \quad \text{(Model 5)}$$

$$\mathrm{I_{gt}} = \alpha + \beta_1 \mathrm{FFR_g} + \beta_2 \mathrm{FFR_g^2} + \beta_3 \mathrm{OFR_g} + \beta_4 \mathrm{OFR_g^2} + \beta_5 \mathrm{C_{gt}} + \mathrm{u_g} + \mathrm{e_{gt}} \quad \text{(Model 6)}$$

To ease interpretation, we present and discuss the results of more complex models using predictive margins and average marginal effects (AMEs).

4 Results

4.1 Descriptive patterns

Table 1 shows descriptive statistics on our cohort of Australian graduates, stratified by gender. The table also shows the results of Chi^2 significance tests comparing the variable distributions between men and women. The results reveal gender differences in graduates' age distribution ($Chi^2=1.83\times10^4$; $p<0.001$). In particular, the share of mature-age graduates older than 40 years is significantly greater amongst women (11.7%) than men (5.4%). This pattern of results aligns with previous literature indicating that women may delay education participation and completion due to childbearing and household responsibilities (Chesters et al., 2020; Perales & Chesters, 2017). The results also show that, amongst graduates, women are slightly more likely to come from rural backgrounds than men (23.8% compared to 19.9%, $Chi^2=5858$; $p<0.001$). Gender differences appear less pronounced in relation to other factors, including disability (4.4% women vs 4.1% men), NESB (7.4% vs 9.0%), Indigenous status (1.4% vs 1.0%), multiple-degree attainment (8.9% vs 9.8%), business-income receipt (7.5% vs 9.0%), further university enrolment (4.1% vs 12.8%), state/territory of residence, and observation year. Nevertheless, given the large cohort size, all differences are statistically significant.

Critically to our analyses, we observed stark and statistically significant differences between male and female graduates in their broad fields of study ($Chi^2=3.80\times10^5$; $p<0.001$). The degree of over/under-representation of women across fields is better captured in Figure 2, which shows the percentage of graduates in that field who are women. While women make up 61.6% of all graduates, they are overrepresented among graduates of Education (78.6% women), Health (77.3%), Society and Culture (69.3%), and Creative Arts (66.5%). Conversely, women are under-represented in Engineering and Related Technologies (14.5% women), Information Technology (16.7%) and Architecture and Building (40.3%). Other fields appear to be more gender balanced, including Natural and Physical Sciences (57% women), Management and Commerce (52.3%) and Agriculture, Environmental and Related Studies (50.8%).

[FIGURE 2]

Importantly, Table 1 also reveals visible differences in mean graduate income between women (mean=A$62,000 per annum) and men (mean=A$74,900 per annum) in the pooled sample. That is, women earn, on average, A$12,900 or 17.1% less than men. However, the magnitude of the gender gap varies significantly across fields of study, as revealed by Figure 3. It is smallest in both absolute and relative terms amongst graduates of Creative Arts (A$900, 1.8%), followed by Information Technology (A$7,100 9.2%), Natural and Physical Sciences (A$7,030, 11.1%) and Society and Culture (A$9,220, 13.5%). In contrast, the gap is greatest amongst graduates of Architecture and Building (A$17,130, 24.2%), Health (A$17,000, 19.4%), Agriculture Environmental and Related Studies (A$12,420, 18.1%) and Education (A$11,850, 16.5%).

[FIGURE 3]

Overall, these raw descriptive statistics revealed marked differences in both income and field of study between men and women graduates, but fewer differences in their personal and contextual characteristics. In the next sections, we deploy panel regression models to explore these associations in greater detail.

4.2 Regression modelling

4.2.1 Mediating effects of field of study

We begin our regression analyses by examining the potential mediating role of field of study in the relationship between gender and earnings—that is, the extent to which gender segregation across study fields explains pay disparities between men and women graduates. These analyses are presented in Models 1 to 3 in Table 2. Here, the key coefficient of interest is the 'woman' dummy variable. If the inclusion of additional covariates to the model moves this coefficient towards zero, this would constitute evidence of mediation by the new covariates.

Results from Model 1 confirm the existence of a significant "raw" (i.e., unadjusted) gender pay gap of nearly A$12,000 amongst recent Australian graduates—consistent with the descriptive evidence in the previous section. The results from Model 2 reveal that the estimated gap does not decrease significantly ($p>0.05$ in a Wald test) after the introduction of the control variables described in Section 3.2, remaining close to A$12,000. In contrast, the estimated effect of gender decreases both substantially and significantly ($p<0.001$ in a Wald test) to just

over A$10,200 when fields of study are added to the model in Model 3, a 15% reduction. This pattern of results demonstrates the existence of a mediating effect of field of study on the relationship between gender and income.

Nevertheless, even in the presence of field of study and institution fixed effects (key indicators of human capital) and an array of socio-demographic controls, the difference between male and female graduates remains large. As previously noted, the estimated income penalty associated with being a woman, net of all controls, is over A$10,000 per annum, or 15% of the average annual labour income for the cohort. These results resonate with discrimination theory (Watson, 2010), although they could also be partially attributed to omitted variables—some of which we consider below.

4.2.2 Moderating effects of field of study

Having established that field of study plays a mediating role in the gender pay gap, we now examine whether it also plays a moderating role in the relationship between gender and earnings. In other words, we consider whether the magnitude of the gender pay gap differs across fields of study. To accomplish this, we add interaction terms between the gender and field-of-study variables to the fully specified model from the last section. The results are presented in Model 4 within Table 2. Here, significant coefficients on the interaction terms would constitute evidence of statistical moderation.

The results indicate that all nine interaction terms are statistically significant at conventional levels, which strongly demonstrates that the magnitude of the gender pay gap differs across study fields. The magnitude of the interaction coefficients capturing field-specific contributions to the gender gap reflect deviations from the magnitude of the gap in the reference category; that is, Natural and Physical Sciences. To better illustrate the relative magnitude of the gap across all 10 fields of study, the top panel in Figure 4 plots the average marginal predictions (calculated by subtracting the average predicted income of female graduates from the average predicted income for male graduates and dividing the differences by the latter). In relative terms, the gender gap is most pronounced among graduates of Architecture and Building (23.6%), Health (18.6%), and Agriculture, Environmental and Related Studies (18.4%) and least pronounced in Information Technology (10.8%), Natural and Physical Sciences (10.3%), and Creative Arts (2.9%). The bottom panel in Figure 4 plots

the absolute dollar differences instead, yielding a similar raking of fields of study and a range going from A$16,300 (Health) to A$1,500 (Creative Arts).

These results serve to underscore how stark differences in the circumstances of women (and men) graduating from different fields of studies are, both in terms of absolute and relative pay, and the need to dwell further into the mechanisms contributing to these disparities. In the next section, we turn our attention to two interrelated and under-researched factors: field-of-study feminisation and occupational feminisation.

[TABLE 2 & FIGURE 4]

4.2.3 The role of feminisation

A final set of panel regression models provides novel empirical evidence on the role of feminisation. To accomplish this, in Models 5 and 6, we replace the variable capturing categorical fields of study with a continuous variable capturing field-of-study feminisation (4-digit codes, *n*=65 fields). Model 5 investigates the independent effect of field-of-study feminisation on income. In turn, Model 6 adds a term capturing occupational feminisation. Including both feminisation measures allows us to evaluate whether the effect of field-of-study feminisation is independent from the effect of occupational feminisation. The strong connections between field-of-study and occupational feminisation are exemplified in Appendix Table A1, which shows the most typical occupational destinations for graduates from each field of study. For example, the most feminised field-of-study, Nursing (89% female), largely feeds into highly feminised occupations such as midwifery and nursing (71% female), health and welfare support workers (71% female) and personal carers and assistants (79% female). To allow for gender-specific effects of feminisation measures, we estimate both models separately for men (Models 5a and 6a) and women (Models 5b and 6b).

Table 3 presents the results from all four model variants. The results from Models 5a and 5b indicate that, for both men and women, the relationship between field-of-study feminisation and earnings is non-linear. Both the linear and quadratic coefficients are larger in magnitude amongst women, suggesting stronger non-linearities for this group. To ease interpretation of these complex patterns of association, Figure 5 shows men's and women's predicted incomes at various levels of field-of-study feminisation. The graph shows a clear U-shaped (i.e., convex) relationship between feminisation and women graduates' pay. Increases

in feminisation initially decrease women's pay and, after a turning point, they begin to increase it. The estimated turning point, pointing to the field-of-study feminisation rate where predicted pay is lowest, amounts to 66% for women graduates. All in all, women's wages are highest in male-dominated fields of study, followed by female-dominated fields of study, and lowest in gender-integrated fields. For men graduates, the relationship is virtually linear, with increases in the share of women in men's fields of study always lowering pay—albeit at a decreasing rate. Combined, these gendered patterns result in the widest estimated wage gender differentials amongst graduates of gender-balanced fields of study of over A$11,000 or almost 16% of male pay, and the smallest differences in segregated fields of study (see Figure 6).

Models 6a and 6b add the variable capturing the feminisation rate of graduates' occupations. This exhibits a U-shaped relationship with income, both amongst men and women graduates. More importantly, adding occupational feminisation to the model flattens the predicted curve for field-of-study feminisation, reducing both the initial penalty and the rebound (see Figure 3). However, the effects of the field-of-study feminisation rate remain quite pronounced. Overall, this suggests that—while some mediation by occupational feminisation occurs—the effects of field-of-study feminisation on graduate pay and the graduate gender pay gap are largely independent of those of occupational feminisation.

[TABLE 3, FIGURE 5, & FIGURE 6]

5 Discussion

The gender pay gap remains an entrenched feature of labour markets in developed countries, including Australia. Indeed, pay differences between men and women extend to even the most highly skilled population groups, such as university graduates. In this study, we leveraged a novel population-level dataset (PLIDA) tracking the labour-market trajectories of all individuals graduating from Australian universities from 2005 to 2011 (n=549,893 individuals) to reassess the graduate gender pay gap and unpack the contributing role of fields of study. Using these unique and powerful data, we were able to provide a more encompassing picture of these relationships than previously possible. For instance, PLIDA's population-wide coverage allowed us to add nuance by considering more granular field-of-study categories than typically used in earlier studies (Zając et al., 2024) and more robust estimates (e.g., by ruling out Type-II estimation errors, Zając, Tomaszewski, et al., 2023).

An initial contribution of the present study was to expand the available body of evidence on the extent and drivers of the graduate gender pay gap to a new country, Australia, characterised by high higher-education attainment—especially amongst women. Our analyses provide a timely and robust estimate of the graduate gender pay gap in the first 10 years post-graduation of $12,900, or 17.1% of average pay among men. Importantly, adjusting for a large set of controls did not substantially alter the magnitude of this estimated gap—which amounts to $11,890 or 15.9% of average pay among men in adjusted models. While our analyses are not causal and could be subject to omitted-variable or selection bias, this pattern of results is generally consistent with claims made by discrimination-based theories (Watson, 2010) and previous evidence of labour-market disadvantage amongst women graduates (Barón & Cobb-Clark, 2010). Considering the role of fields of study, our focus within this paper, revealed important nuances and additional insights. Importantly, the data showed marked gender differences in field-of-study choices amongst Australian graduates, with women overrepresented in Education and Health and under-represented in Information Technology and Engineering and related Technologies. This distribution echoes previous scholarship on educational gender segregation, including previous evidence from Europe (Barone, 2011) and the US (Ganley et al., 2018). An initial mediation-type analysis confirmed that these gender differences in field of study are core to the graduate gender pay gap, explaining approximately 15% of it, *ceteris paribus*. This finding echoes the results previous reported for other countries, including Germany and the U.S. (Bobbitt-Zeher, 2007; Francesconi & Parey, 2018). On the one hand, this finding may be interpreted as lending some support to perspectives that attribute (part of) the gender pay gap to women's human-capital investments, including choices for less productive fields of study (Bobbitt-Zeher, 2007; Zhang, 2008). On the other hand, a perhaps more powerful implication is that—after the inclusion of field of study—an unexplained gender gap of A$10,200 remains. This adds further weight to the discrimination perspectives discussed before: despite similar human-capital investments in the form of field-of-study choices, women graduates are still underpaid relative to their male peers.

Our subsequent moderation analyses, which represent a novel contribution to the international literature, revealed that this is far from the full picture. Indeed, we find that gender pay gaps vary markedly across different fields of study, ranging from approximately 2.9% (A$1,500, Creative Arts) to 23.6% of male earnings (A$16,100, Architecture and Building). Eyeballing the fields where gaps are larger/smaller does not suggest any discernible pattern in

relations to aspects deemed important by previous studies, such belonging to the STEM category or average income (Zając et al., 2024). To further explore the factors underpinning these differences in the magnitude of gender pay gaps across fields of study, we relied on labour-market segmentation ideas (Levanon et al., 2009; Perales, 2013) and a built on a pioneer study by Galos and Kulic (2023). Specifically, we tested the novel proposition that field-of-study feminisation may explain pay-gap divergences. Our models yielded evidence consistent with devaluation perspectives (Levanon et al., 2009), revealing that graduates from more feminised fields of study tend to earn lower wages than graduates from less feminised fields. Overall, this suggests that—as previously argued in relation to feminised industries, occupations and job roles (Bartnik et al., 2022)—fields of study associated with women and femininity may be socially undervalued, resulting in lower remuneration. Importantly, the reported relationship remained statistically significant even after adjusting the models for occupational feminisation, which was shown to be strongly correlated with field-of-study feminisation. This reveals that the effect on earnings of field-of-study feminisation is not the product of graduates from feminised fields working in feminised occupations. Critically, the shape of the 'field-of-study feminisation → pay' relationship differs by gender. For men graduates, it is virtually linear, suggesting that greater levels of field-of-study feminisation are always associated with lower pay over the entire feminisation distribution. For women female graduates, however, more gender-balanced fields of study attract lower remuneration than more highly feminised fields. As a result, gender pay gaps are largest in gender-integrated study fields. This pattern of results is consistent with that reported by previous studies focusing on occupational feminisation (Bartnik et al., 2022) and with the field-of-study feminisation findings reported for Italy by Galos and Kulic (2023). It is possible that such pattern is explained by women being more likely to directly compete with men (and largely lose out) when they graduate from gender-balanced study fields. Other processes, such as gendered sorting into detailed fields of study and flexible working arrangements (e.g., part-time work), could also contribute to these results. Indeed, as Bartnik et al. (2022) document, gender-balanced fields have the highest gender pay gaps, but also the lowest share of the gap attributed to unexplained differences in the returns to human capital. All in all, further research examining potential explanations is warranted.

Despite the novelty and significance of our findings, some data-driven limitations need to be acknowledged and considered by future studies in this space. Chiefly, while offering

many analytic advantages, the administrative nature of the PLIDA data limits the spread of information available for analysis. For example, PLIDA's labour-income information is limited to an annual measure and no information on work hours is included. As a result, we cannot derive measures of hourly wages that may arguably be more appropriate measure for documenting unequal treatment of men and women in the labour market (Booth et al., 2003; Kee, 2006). Likewise, the analyses could benefit from the availability of information on graduates' industry of work (an additional dimension of labour-market segregation, Blau & Kahn, 2017), educational achievement (which can affect how job applicants are perceived in gendered ways, Quadlin, 2018), specific skills (which can also independently influence income, Christl & Köppl–Turyna, 2020), and personal circumstances that might affect economic activity (such as marital or parenthood status, Hegewisch & Gornick, 2011). Future studies relying on administrative or survey datasets that incorporate these additional factors are thus welcome.

Notwithstanding these limitations, our findings bear important implications for future research in this space, as well as for equity policies pertaining to both higher education and the labour market. Critically, our analyses showcase how fields of study bear a strong influence on graduate wages, over and above the combined influences of key individual (e.g., age, disability, ethnicity, etc.) and institutional (e.g., specific universities) factors. This finding underscores the importance of accounting for fields of study in future scholarly research aimed at understanding the relationships between gender, education and earnings, a course of action that is not currently the norm. Concerning education equity policy, it is important to note that the tracking of men and women into different fields of study contributes to approx. 15% of the overall graduate gender pay gap. Therefore, equity interventions aimed at countering the gendered nature of university field-of-study choices amongst high-school cohorts could help reduce the gap. The interventions could involve counselling aimed at correcting students' misperceptions of the profitability of various university pathways (Barone et al., 2017).

Importantly, our results also raise awareness about the fact that—while manifesting across the board—gender pay gaps differ markedly across fields of study, being greatest amongst graduates of gender-balanced fields. This novel piece of evidence warns against simplistic policies aimed at encouraging young women entering male-typed or pursuing generally high-paying fields: while the gender-integration of these fields may be a desirable

outcome in its own right, our results suggest that it may not eradicate graduate gender pay gaps. Further research querying why graduate gender gaps are greatest when graduates come from certain disciplines (e.g., those related to architecture or health) and/or gender-integrated study fields is required to devise targeted field-specific interventions. Consistent with lessons learned from the occupational sex-segregation literature (Levanon et al., 2009; Perales, 2013) our analyses point to a devaluation of female-typed fields of study in pay-allocation processes. Indeed, our results demonstrate that the potential devaluation of female-typed fields of study operates independently from the devaluation of female-typed occupations. This finding, coupled with the fact that fields of study occupy a higher "upstream" position in the causal pathway to pay than occupations, we conclude that further scholarly and policy attention should be paid to the detrimental effects of field-of-study feminisation on the subsequent pay of both men and women graduates. Graduate gender pay gaps remain an embarrassing feature of modern labour markets. Paying greater attention to fields of study is part of the solution.

6 References

Alon, S., & DiPrete, T. (2015). Gender Differences in the Formation of a Field of Study Choice Set. *Sociological Science*, *2*, 50–81. https://doi.org/10.15195/v2.a5

Alonso, C., Brussevich, M., Dabla-Norris, E., Kinoshita, Y., & Kochhar, K. (2019). Reducing and Redistributing Unpaid Work: Stronger Policies to Support Gender Equality. *IMF Working Papers*, *19*(225). https://doi.org/10.5089/9781513514536.001

Altonji, J. G., Blom, E., & Meghir, C. (2012). Heterogeneity in human capital investments: High school curriculum, college major, and careers. *Annual Review of Economics*, *4*(1), 185–223. https://doi.org/10.1146/annurev-economics-080511-110908

Bar-Haim, E., Chauvel, L., Gornick, J. C., & Hartung, A. (2023). The Persistence of the Gender Earnings Gap: Cohort Trends and the Role of Education in Twelve Countries. *Social Indicators Research*, *165*(3), 821–841. https://doi.org/10.1007/s11205-022-03029-x

Bari, L. (2024). Gendered Divergence in the Impact of Parenthood on Wages: The Role of Family Size, Human Capital and Working Time. *Journal of Family and Economic Issues*, *45*(3), 546–561. https://doi.org/10.1007/s10834-023-09917-9

Barón, J. D., & Cobb-Clark, D. A. (2010). Occupational Segregation and the Gender Wage Gap in Private- and Public-Sector Employment: A Distributional Analysis*. *Economic Record*, *86*(273), 227–246. https://doi.org/10.1111/j.1475-4932.2009.00600.x

Barone, C. (2011). Some Things Never Change: Gender Segregation in Higher Education across Eight Nations and Three Decades. *Sociology of Education*, *84*(2), 157–176. https://doi.org/10.1177/0038040711402099

Barone, C., & Assirelli, G. (2020). Gender segregation in higher education: An empirical test of seven explanations. *Higher Education*, *79*(1), 55–78. https://doi.org/10.1007/s10734-019-00396-2

Barone, C., Schizzerotto, A., Abbiati, G., & Argentin, G. (2017). Information Barriers, Social Inequality, and Plans for Higher Education: Evidence from a Field Experiment. *European Sociological Review*, jcw062. https://doi.org/10.1093/esr/jcw062

Bartnik, D., Gabriel, P. E., & Schmitz, S. (2022). The impact of occupational feminization on the gender wage gap and estimates of wage discrimination. *Applied Economics Letters*, *29*(17), 1605–1609. https://doi.org/10.1080/13504851.2021.1949429

Baxter, J., Campbell, A., & Lee, R. (2023). Gender Gaps in Unpaid Domestic and Care Work: Putting The Pandemic in (a Life Course) Perspective. *Australian Economic Review*, *56*(4), 502–515. https://doi.org/10.1111/1467-8462.12538

Becker, G. S. (1995). *The economics of discrimination* (2. ed). Univ. of Chicago Press.

Berson, C. (2016). Local labor markets and taste-based discrimination. *IZA Journal of Labor Economics*, *5*(1), 5. https://doi.org/10.1186/s40172-016-0045-9

Blau, F. D., & Kahn, L. M. (2017). The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature*, *55*(3), 789–865. https://doi.org/10.1257/jel.20160995

Bobbitt-Zeher, D. (2007). The Gender Income Gap and the Role of Education. *Sociology of Education*, *80*(1), 1–22. https://doi.org/10.1177/003804070708000101

Booth, A. L., Francesconi, M., & Frank, J. (2003). A sticky floors model of promotion, pay, and gender. *European Economic Review*, *47*(2), 295–322. https://doi.org/10.1016/S0014-2921(01)00197-0

Borgen, N. T., & Mastekaasa, A. (2018). Horizontal stratification of higher education: The relative importance of field of study, institution, and department for candidates' wages. *Social Forces*, *97*(2), 531–558. https://doi.org/10.1093/sf/soy075

Brynin, M., & Perales, F. (2016). Gender Wage Inequality: The De-gendering of the Occupational Structure. *European Sociological Review*, *32*(1), 162–174. https://doi.org/10.1093/esr/jcv092

Card, D., Rothstein, J., & Yi, M. (2023). *Industry Wage Differentials: A Firm-Based Approach* (No. w31588; p. w31588). National Bureau of Economic Research. https://doi.org/10.3386/w31588

Charles, M., & Bradley, K. (2009). Indulging Our Gendered Selves? Sex Segregation by Field of Study in 44 Countries. *American Journal of Sociology*, *114*(4), 924–976. https://doi.org/10.1086/595942

Charles, M., & Grusky, D. B. (2004). *Occupational ghettos: The worldwide segregation of women and men*. Stanford Univ. Press.

Chesters, J., Cuervo, H., & Fu, J. (2020). Re-engagement with education over the life course: Motivations and barriers. *International Journal of Lifelong Education*, *39*(2), 154–167. https://doi.org/10.1080/02601370.2020.1720330

Christl, M., & Köppl–Turyna, M. (2020). Gender wage gap and the role of skills and tasks: Evidence from the Austrian PIAAC data set. *Applied Economics*, *52*(2), 113–134. https://doi.org/10.1080/00036846.2019.1630707

Combet, B., & Oesch, D. (2019). The Gender Wage Gap Opens Long before Motherhood. Panel Evidence on Early Careers in Switzerland. *European Sociological Review*, *35*(3), 332–345. https://doi.org/10.1093/esr/jcz009

Encinas-Martín, M., & Cherian, M. (2023). *Gender, Education and Skills: The Persistence of Gender Gaps in Education and Skills*. OECD. https://doi.org/10.1787/34680dd5-en

England, P., Levine, A., & Mishel, E. (2020). Progress toward gender equality in the United States has slowed or stalled. *Proceedings of the National Academy of Sciences*, *117*(13), 6990–6997. https://doi.org/10.1073/pnas.1918891117

England, P., & Li, S. (2006). Desegregation Stalled: The Changing Gender Composition of College Majors, 1971-2002. *Gender & Society*, *20*(5), 657–677. https://doi.org/10.1177/0891243206290753

Eurofound. (2021). *Understanding the gender pay gap: What role do sector and occupation play?* (European Jobs Monitor Series). Publications Office of the European Union.

Ferrant, G., Pesando, L. M., & Nowacka, K. (2014). *Unpaid Care Work: The missing link in the analysis of gender gaps in labour outcomes*. OECD Publishing. https://doi.org/10.1787/1f3fd03f-en

Figueiredo, H., Rocha, V., Biscaia, R., & Teixeira, P. (2015). Gender pay gaps and the restructuring of graduate labour markets in Southern Europe. *Cambridge Journal of Economics*, *39*(2), 565–598. https://doi.org/10.1093/cje/bev008

Francesconi, M., & Parey, M. (2018). Early gender gaps among university graduates. *European Economic Review*, *109*, 63–82. Scopus. https://doi.org/10.1016/j.euroecorev.2018.02.004

Galos, D. R., & Kulic, N. (2023). Variations of Gender Gaps in the Labour Market Outcomes of Graduates across Fields of Study: A (Combined) Test of Two Theories. *Sociology*, *57*(4), 882–903. https://doi.org/10.1177/00380385221122400

Ganley, C. M., George, C. E., Cimpian, J. R., & Makowski, M. B. (2018). Gender Equity in College Majors: Looking Beyond the STEM/Non-STEM Dichotomy for Answers Regarding Female Participation. *American Educational Research Journal*, *55*(3), 453–487. https://doi.org/10.3102/0002831217740221

Gerber, T. P., & Cheung, S. Y. (2008). Horizontal Stratification in Postsecondary Education: Forms, Explanations, and Implications. *Annual Review of Sociology*, *34*(2008), 299–318. https://doi.org/10.2307/29737792

Ginn, J., & Arber, S. (2002). Degrees of Freedom: Do Graduate Women escape the Motherhood Gap in Pensions? *Sociological Research Online*, *7*(2), 1–17. https://doi.org/10.5153/sro.717

Goldin, C., Kerr, S. P., & Olivetti, C. (2024). The parental pay gap over the life cycle: Children, jobs, and labor supply. *Journal of Economic Dynamics and Control*, *169*, 104963. https://doi.org/10.1016/j.jedc.2024.104963

Goldin, C., Kerr, S. P., Olivetti, C., & Barth, E. (2017). The Expanding Gender Earnings Gap: Evidence from the LEHD-2000 Census. *American Economic Review*, *107*(5), 110–114. https://doi.org/10.1257/aer.p20171065

Hegewisch, A., & Gornick, J. C. (2011). The impact of work-family policies on women's employment: A review of research from OECD countries. *Community, Work & Family*, *14*(2), 119–138. https://doi.org/10.1080/13668803.2011.571395

Joy, L. (2000). Do Colleges Shortchange Women? Gender Differences in the Transition from College to Work. *American Economic Review*, *90*(2), 471–475. https://doi.org/10.1257/aer.90.2.471

Joy, L. (2003). Salaries of Recent Male and Female College Graduates: Educational and Labor Market Effects. *Industrial and Labor Relations Review*, *56*(4), 606. https://doi.org/10.2307/3590959

Kaganovich, M., Taylor, M., & Xiao, R. (2023). Gender Differences in Persistence in a Field of Study: This Isn't All about Grades. *Journal of Human Capital*, *17*(4), 503–556. https://doi.org/10.1086/726629

Kee, H. J. (2006). Glass Ceiling or Sticky Floor? Exploring the Australian Gender Pay Gap. *Economic Record*, *82*(259), 408–427. https://doi.org/10.1111/j.1475-4932.2006.00356.x

Kim A. Weeden, Youngjoo Cha, & Mauricio Bucca. (2016). Long Work Hours, Part-Time Work, and Trends in the Gender Gap in Pay, the Motherhood Wage Penalty, and the

Fatherhood Wage Premium. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *2*(4), 71–102. https://doi.org/10.7758/rsf.2016.2.4.03

Kim, C., Tamborini, C. R., & Sakamoto, A. (2015). Field of study in college and lifetime earnings in the United States. *Sociology of Education*, *88*(4), 320–339. https://doi.org/10.1177/0038040715602132

Lavetti, K. (2023). Compensating Wage Differentials in Labor Markets: Empirical Challenges and Applications. *Journal of Economic Perspectives*, *37*(3), 189–212. https://doi.org/10.1257/jep.37.3.189

Leuze, K., & Strauß, S. (2016). Why do occupations dominated by women pay less? How 'female-typical' work tasks and working-time arrangements affect the gender wage gap among higher education graduates. *Work, Employment and Society*, *30*(5), 802–820. https://doi.org/10.1177/0950017015624402

Levanon, A., England, P., & Allison, P. (2009). Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950-2000 U.S. Census Data. *Social Forces*, *88*(2), 865–891. https://doi.org/10.1353/sof.0.0264

Lips, H. M. (2013). The Gender Pay Gap: Challenging the Rationalizations. Perceived Equity, Discrimination, and the Limits of Human Capital Models. *Sex Roles*, *68*(3–4), 169–185. https://doi.org/10.1007/s11199-012-0165-z

Machin, S., & Puhani, P. A. (2003). Subject of degree and the gender wage differential: Evidence from the UK and Germany. *Economics Letters*, *79*(3), 393–400. https://doi.org/10.1016/S0165-1765(03)00027-2

Mandel, H. (2018). A Second Look at the Process of Occupational Feminization and Pay Reduction in Occupations. *Demography*, *55*(2), 669–690. https://doi.org/10.1007/s13524-018-0657-8

OECD. (2023a). *Adults' educational attainment distribution, by age group and gender* [Dataset]. http://data-explorer.oecd.org/s/2et

OECD. (2023b). *Education at a Glance 2023: OECD Indicators*. OECD. https://doi.org/10.1787/e13bef63-en

OECD. (2023c). *OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market*. OECD. https://doi.org/10.1787/08785bba-en

OECD. (2024). *Education at a Glance 2024: OECD Indicators*. OECD. https://doi.org/10.1787/c00cad36-en

OECD. (2025). *Gender wage gap (indicator)*. https://doi.org/10.1787/7cee77aa-en

Olitsky, N. H. (2014). How Do Academic Achievement and Gender Affect the Earnings of STEM Majors? A Propensity Score Matching Approach. *Research in Higher Education*, *55*(3), 245–271. https://doi.org/10.1007/s11162-013-9310-y

Pedersen, J. V., & Nielsen, M. W. (2024). Gender, self-efficacy and attrition from STEM programmes: Evidence from Danish survey and registry data. *Studies in Higher Education*, *49*(1), 47–61. https://doi.org/10.1080/03075079.2023.2220702

Perales, F. (2013). Occupational sex-segregation, specialized human capital and wages: Evidence from Britain. *Work, Employment and Society*, *27*(4), 600–620. https://doi.org/10.1177/0950017012460305

Perales, F., & Chesters, J. (2017). The returns to mature-age education in Australia. *International Journal of Educational Research*, *85*, 87–98. https://doi.org/10.1016/j.ijer.2017.07.003

Quadlin, N. (2018). The Mark of a Woman's Record: Gender and Academic Performance in Hiring. *American Sociological Review*, *83*(2), 331–360. https://doi.org/10.1177/0003122418762291

Rosen, S. (1986). Chapter 12 The theory of equalizing differences. In *Handbook of Labor Economics* (Vol. 1, pp. 641–692). Elsevier. https://doi.org/10.1016/S1573-4463(86)01015-5

Sánchez-Mangas, R., & Sánchez-Marcos, V. (2021). Wage Growth across Fields of Study among Young College Graduates: Is There a Gender Gap? *CESifo Economic Studies*, *67*(3), 251–274. https://doi.org/10.1093/cesifo/ifaa021

Sex Discrimination Act 1984 (Cth).

Sierminska, E., & Girshina, A. (2017). *Wealth and gender in Europe.* European Commission, Directorate General for Justice. https://data.europa.eu/doi/10.2838/39491

Smyth, E., & Steinmetz, S. (2008). Field of study and gender segregation in European labour markets. *International Journal of Comparative Sociology*, *49*(4–5), 257–281. Scopus. https://doi.org/10.1177/0020715208093077

Steinbring, R., Perales, F., Baxter, J., & Lam, J. (2024). Taking the long view: Long-term couple earnings arrangements across the transition to parenthood. *Australian Journal of Social Issues*, *59*(1), 4–19. https://doi.org/10.1002/ajs4.264

Tomaszewski, W., Kubler, M., Perales, F., Western, M., Rampino, T., & Xiang, N. (2018). *Review of identified equity groups*. The University of Queensland.

UN Women, United Nations Entity for Gender Equality and the Empowerment of Women (Ed.). (2019). *Families in a changing world*. UN Women.

Watson, I. (2010). *Decomposing the Gender Pay Gap in the Australian Managerial Labour Market*. *13*(1).

Webber, D. A. (2016). Are college costs worth it? How ability, major, and debt affect the returns to schooling. *Economics of Education Review*, *53*, 296–310. https://doi.org/10.1016/j.econedurev.2016.04.007

Weeden, K. A., Gelbgiser, D., & Morgan, S. L. (2020). Pipeline Dreams: Occupational Plans and Gender Differences in STEM Major Persistence and Completion. *Sociology of Education*, *93*(4), 297–314. https://doi.org/10.1177/0038040720928484

Wiswall, M., & Zafar, B. (2018). Preference for the Workplace, Investment in Human Capital, and Gender*. *The Quarterly Journal of Economics*, *133*(1), 457–507. https://doi.org/10.1093/qje/qjx035

Wodon, Q. T., & de la Brière, B. (2018). *Unrealized Potential: The High Cost of Gender Inequality in Earnings. The Cost of Gender Inequality.* World Bank. http://hdl.handle.net/10986/29865

Workplace Gender Equality Agency. (2019). *International Gender Equality Reporting Schemes*. Workplace Gender Equality Agency. https://www.wgea.gov.au/sites/default/files/documents/2019-04-4%20International%20reporting%20schemes_Final_for_web_0.pdf

Workplace Gender Equality Agency. (2021). *Higher education enrolments and graduate labour market statistics*. https://www.wgea.gov.au/sites/default/files/documents/Grad_factsheet_2021.pdf

Zając, T., Magda, I., Bożykowski, M., Chłoń-Domińczak, A., & Jasiński, M. (2024). Gender pay gaps across STEM fields of study. *Studies in Higher Education*, 1–14. https://doi.org/10.1080/03075079.2024.2330667

Zając, T., Tomaszewski, W., Perales, F., & Xiang, N. (2023). Diverging labour market trajectories of Australian graduates from advantaged and disadvantaged social backgrounds: A longitudinal analysis of population-wide linked administrative data. *International Labour Review*, *162*(4), 561–585. https://doi.org/10.1111/ilr.12391

Zając, T., Żółtak, T., Bożykowski, M., & Jasiński, M. (2023). All that glitters is not gold—Mixed early labour market outcomes of STEM graduates in Poland. *European Journal of Education*, *58*(3), 477–497. https://doi.org/10.1111/ejed.12564

Zhang, L. (2008). Gender and Racial Gaps in Earnings among Recent College Graduates. *The Review of Higher Education*, *32*(1), 51–72. https://doi.org/10.1353/rhe.0.0035

7 Tables and figures

Table 1. Descriptive statistics

	Men	Women	Total
Income (in A$1,000), mean	74.9	62.1	67.0
Field of study, %			
Natural and Physical Sciences	8.51	7.02	7.59
Information Technology	6.95	0.87	3.2
Engineering and Related Technologies	12.97	1.37	5.82
Architecture and Building	4.09	1.75	2.64
Agriculture Environmental and Related Studies	2.23	1.43	1.74
Health	11.1	23.51	18.8
Education	7.09	16.21	12.7
Management and Commerce	23.72	16.21	19.1
Society and Culture	16.06	22.61	20.1
Creative Arts	7.29	9.02	8.36
Age group, %			
25 years or less	13.3	15.11	14.4
26-30 years	50.28	48.38	49.1
31-35 years	22.7	19.37	20.7
36-40 years	6.02	5.47	5.68
41-45 years	3.4	4.04	3.8
46-50 years	2.01	3.28	2.79
51+ years	2.29	4.35	3.56
Multiple degrees, %	9.82	8.86	9.23
Low socio-economic status background, %	11.07	12.65	12.1
Disability/long-term condition, %	4.09	4.43	4.3
Non-English-speaking background, %	8.98	7.37	7.99
Regional or remote area, %	19.91	23.84	22.3
Indigenous, %	0.99	1.41	1.25
Graduation year, %			
2005	11.18	11.74	11.5
2006	12.8	13.02	12.9
2007	15.44	15.47	15.5
2008	16.05	15.75	15.9
2009	16.86	16.77	16.8
2010	15.05	14.77	14.9
2011	12.62	12.49	12.5
State of residence			
New South Wales	31.59	31.08	31.3
Victoria	27.95	27.28	27.5
Queensland	17.5	18.77	18.3
South Australia	6.68	6.92	6.83
Western Australia	10.19	10.04	10.1
Tasmania	1.71	1.89	1.82
Northern Territory	0.72	0.94	0.85

Australian Capital Territory	3.67	3.06	3.3
Business income, %	8.88	7.51	8.04
Enrolled in new university course, %	12.77	14.14	13.6

Notes: PLIDA data (2011-2016). Descriptive statistics are for the pooled sample over all data years.

Table 2. Abridged results from random-effect regression models of annual labour income (in A$1,000)

	(1) β	(2) β	(3) β	(4) β
Woman *(ref. Man)*	–11.93***	–11.89***	–10.22***	–6.17***
Field of study *(ref. Natural and Physical Sciences)*				
Information Technology			12.19***	14.09***
Engineering and Related Technologies			26.74***	29.39***
Architecture and Building			3.31***	8.01***
Agriculture, Environment and Related Studies			2.60***	5.84***
Health			20.25***	27.17***
Education			5.83***	9.32***
Management and Commerce			12.00***	14.88***
Society and Culture			4.52***	5.28***
Creative Arts			–6.97***	–10.51***
Interactions				
Woman × Information Technology				–1.83**
Woman × Engineering and Related Technologies				–6.55***
Woman × Architecture and Building				–9.96***
Woman × Agriculture, Environment & Related St.				–5.95***
Woman × Health				–10.10***
Woman × Education				–5.62***
Woman × Management and Commerce				–5.22***
Woman × Society and Culture				–1.85***
Woman × Creative Arts				4.72***
Base controls	No	Yes	Yes	Yes
Institution fixed effects	No	Yes	Yes	Yes
N (observations)	2,790,809	2,790,809	2,790,809	2,790,809
N (individuals)	549,893	549,893	549,893	549,893

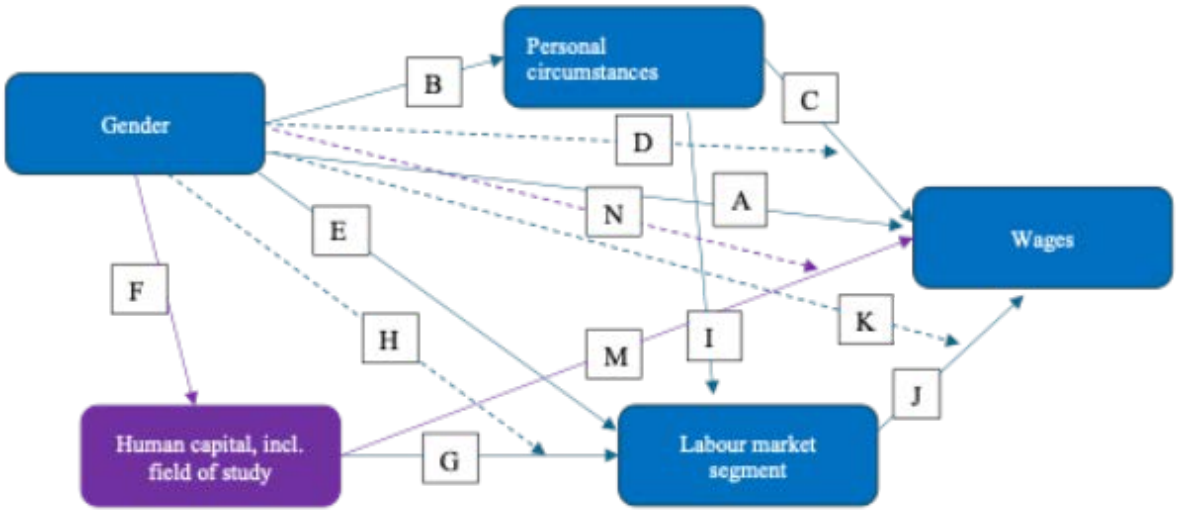
Notes: PLIDA data (2011-2016). Unstandardized model coefficients. Base controls: Age, socio-economic status, non-English-speaking background, regional or remote area, Indigenous background, dual/multiple degree, graduation year, state of residence, receiving business income, enrolment in further education. Statistical significance (two-sided tests): * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Full sets of results available in Appendix Table A2.

Table 3. Abridged results from random-effect regression models of annual labour income (in A$1,000), by gender: field-of-study and occupational feminisation

	(5a) Men β	(5b) Women β	(6a) Men β	(6b) Women β
Field-of-study feminisation				
Linear term	–53.97***	–104.79***	–40.75***	–91.89***
Square term	27.06***	79.47***	16.79***	69.05***
Occupational feminisation				
Linear term			–23.73***	–23.24***
Square term			19.35***	18.39***
Base controls	Yes	Yes	Yes	Yes
Institution fixed effects	Yes	Yes	Yes	Yes
N (observations)	1,070,687	1,720,122	1,070,687	1,720,122
N (individuals)	212,637	337,256	212,637	337,256

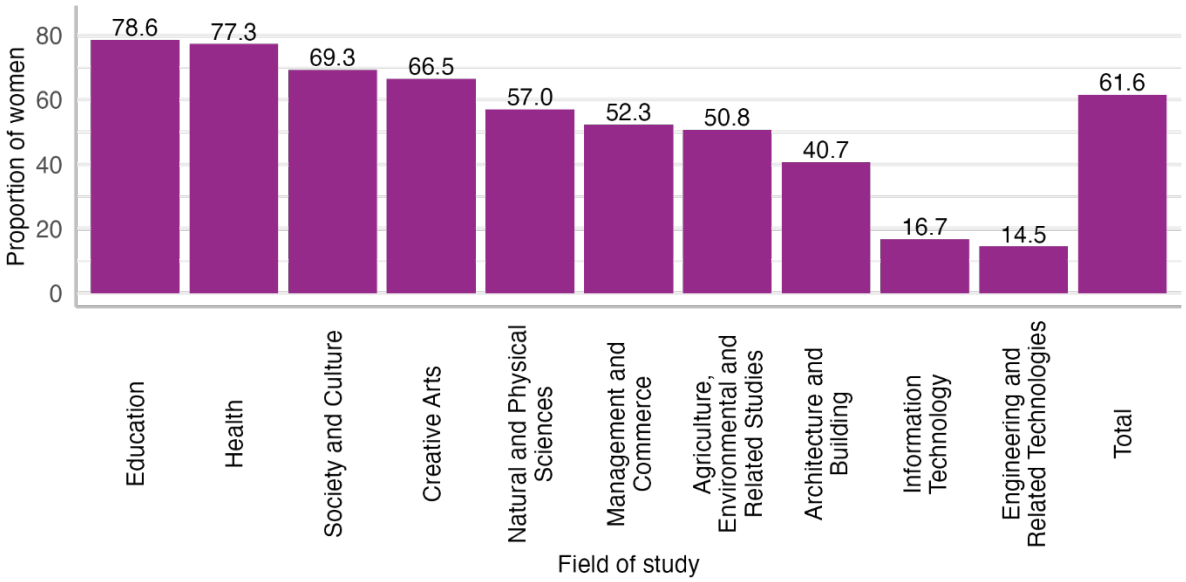
Notes: PLIDA data (2011-2016). Field-of-study feminisation: Proportion of graduates in the four-digit field-of-study who are women. Occupational feminisation: Proportion of graduates in the two-digit occupation who are women. Base controls: Age, socio-economic status, non-English-speaking background, regional or remote area, Indigenous background, dual/multiple degree, graduation year, state of residence, receiving business income, enrolment in further education. Statistical significance (two-sided tests): * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Full sets of results available in Appendix Table A3.

Figure 1. Conceptual framework



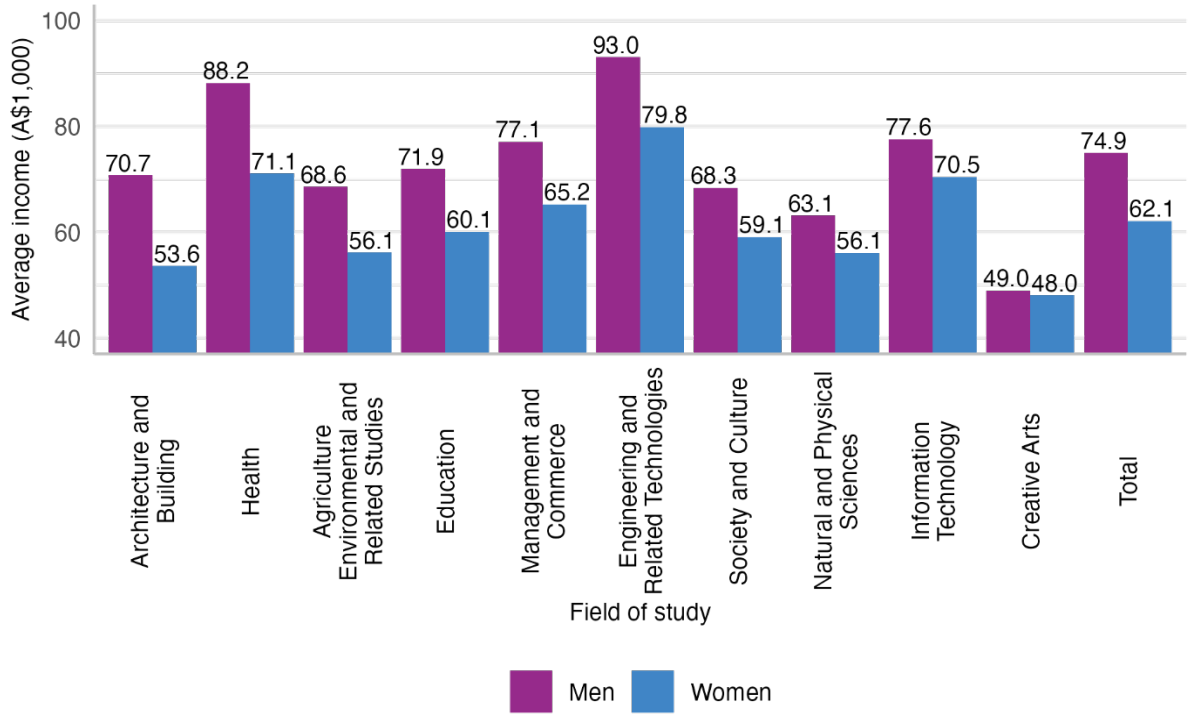
Notes: Boxes represent factors whereas lines represent relationships between factors. Direct relationships are denoted by solid lines, whereas moderating relationships are denoted by dashed lines.

Figure 2. Proportion of graduates who are women, by field of study



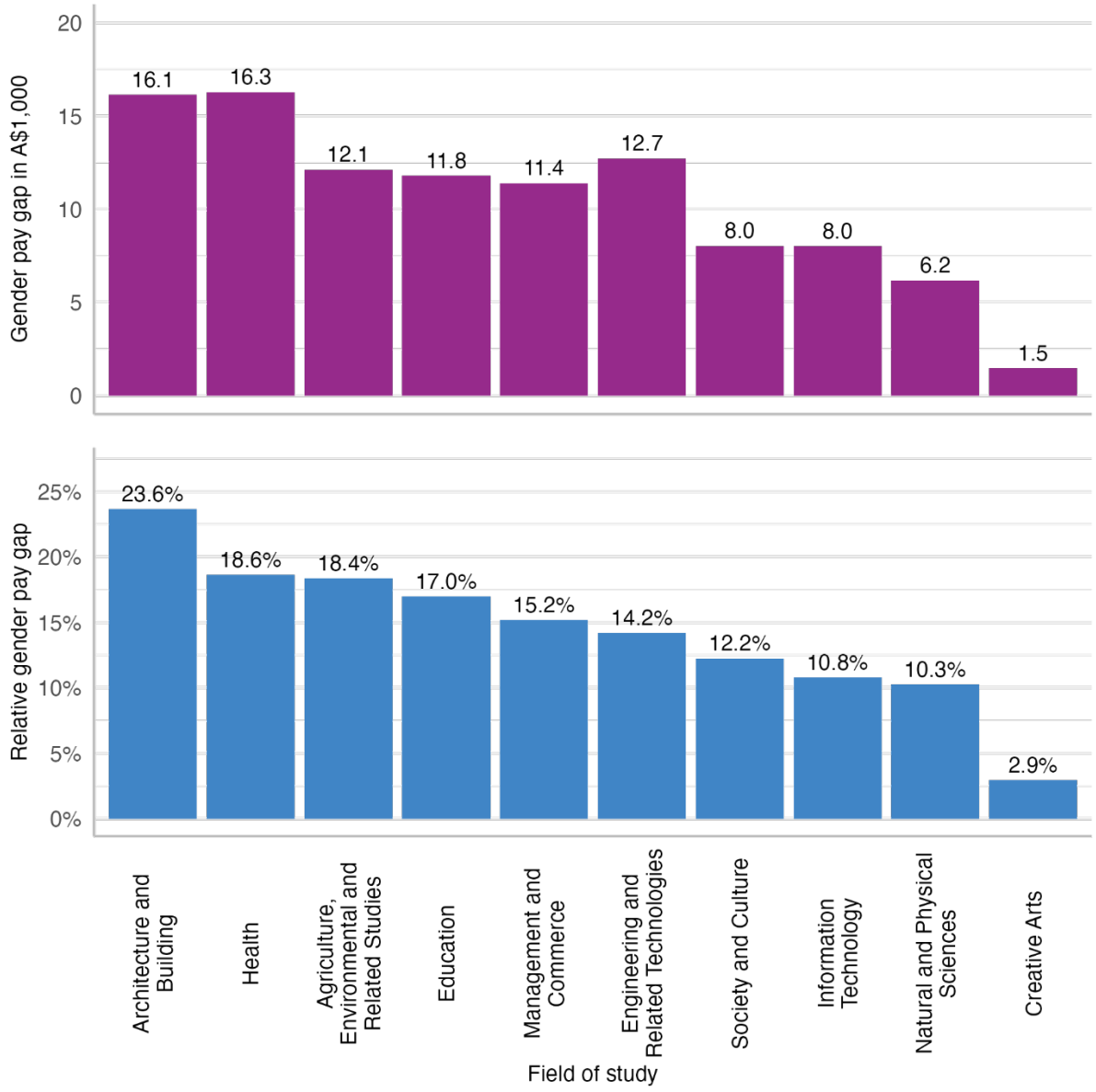
Notes: PLIDA data (2011-2016).

Figure 3. Average annual income, by gender and field of study



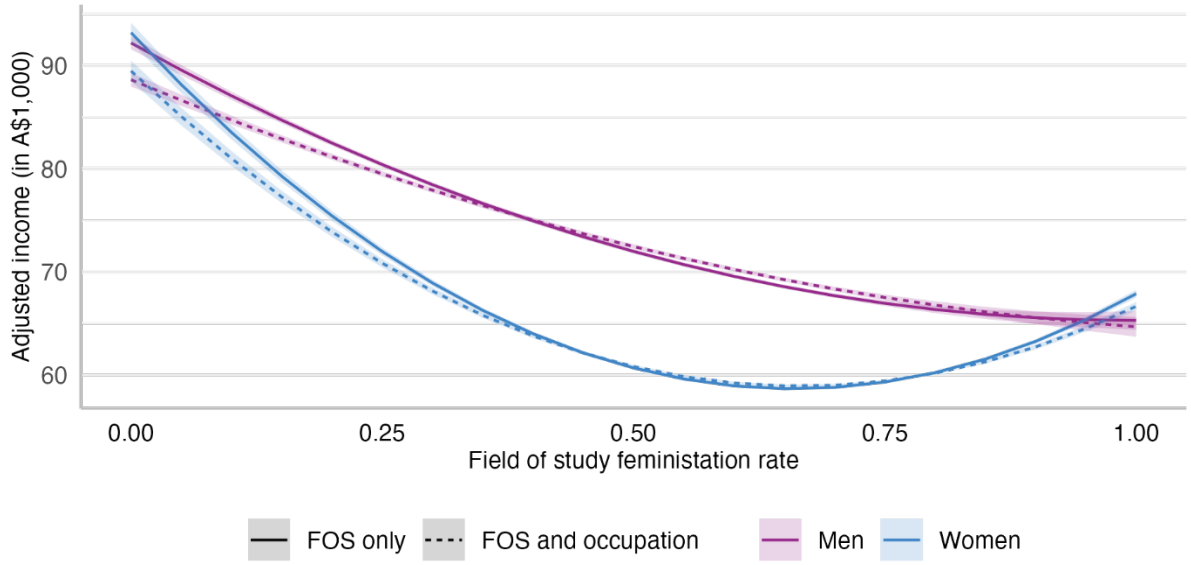
Notes: PLIDA data (2011-2016). Average annual income in the pooled sample.

Figure 4. Predicted gender pay gap by field of study, absolute (in A$1,000) and relative (% of male pay) differences



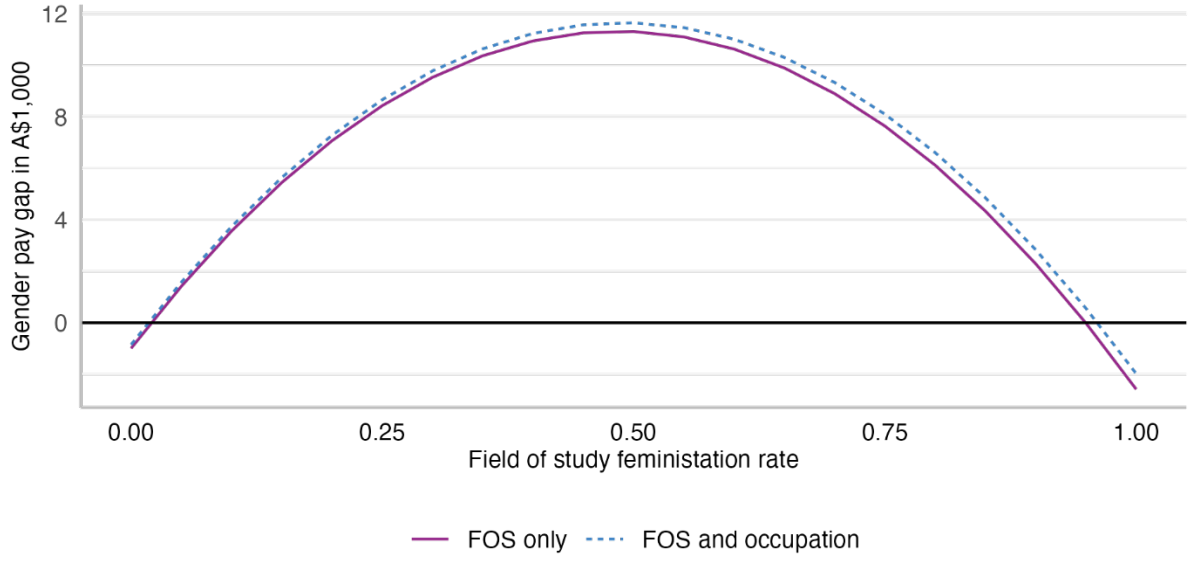
Notes: PLIDA data (2011-2016). Predictions are based on estimates from Model 4 in Table 1. The absolute gender pay gap represents the difference between the average predicted incomes for men and women, net of the control variables. The relative gender pay gap is the absolute gender pay gap divided by the average salary for men. Categories ordered by relative-gap magnitude.

Figure 5. Predicted annual labour income by field-of-study feminisation with and without controlling for occupational feminisation, by gender



Notes: PLIDA data (2011-2016). Based on estimates from Models 5a to 6b in Table 3.

Figure 6. Predicted gender pay gap, by field-of-study feminisation with and without controlling for occupational feminisation



Notes: PLIDA data (2011-2016). Gender pay gap calculated using predictions based on estimates from Models 5a to 6b in Table 3.

Online Appendix

Table A1. Most-common occupational destinations for detailed fields of study

Narrow field of study	% women	Top destination	2nd destination	3rd destination
Nursing	89%	Midwifery and nursing professionals (90% women) 91.5% of graduates	Health and welfare support workers (71% women) 1.3% of graduates	Personal carers and assistants (79% women) 1.2% of graduates
Human Welfare Studies and Services	87%	Health and welfare professionals (83% women) 59.2% of graduates	Health and welfare support workers (71% women) 9.8% of graduates	School teachers (77% women) 3.8% of graduates
Librarianship, Information Management and Curatorial Studies	86%	Information and organisation professionals (50% women) 43.5% of graduates	Miscellaneous technicians and trades workers (47% women) 10.6% of graduates	Miscellaneous clerical and administrative workers (68% women) 5.9% of graduates
Complementary Therapies	82%	Health therapy professionals (77% women) 23.1% of graduates	Sales assistants and salespersons (64% women) 5.2% of graduates	General clerks (77% women) 5.1% of graduates
Veterinary Studies	80%	Natural and physical science professionals (57% women) 82.7% of graduates	Animal attendants and trainers, and shearers (87% women) 3.2% of graduates	Agricultural, medical and science technicians (61% women) 1% of graduates
Behavioural Science	80%	Social and welfare professionals (83% women) 29.2% of graduates	School teachers (77% women) 7.6% of graduates	General clerks (77% women) 5.3% of graduates
Rehabilitation Therapies	80%	Health therapy professionals (77% women) 80.3% of graduates	Health diagnostic and promotion professionals (71% women) 2.9% of graduates	School teachers (77% women) 1% of graduates
Teacher Education	79%	School teachers (77% women) 79.5% of graduates	Child carers (94% women) 2.1% of graduates	Tertiary education teachers (54% women) 1.6% of graduates
Curriculum and Education Studies	78%	School teachers (77% women) 60.5% of graduates	General clerks (77% women) 2.9% of graduates	Child carers (94% women) 2.2% of graduates
Health	78%	Health diagnostic and promotion professionals (71% women) 17.4% of graduates	Health therapy professionals (77% women) 13.7% of graduates	School teachers (77% women) 5.4% of graduates

Public Health	76%	Health diagnostic and promotion professionals (71% women) 20.8% of graduates	Natural and physical science professionals (57% women) 7.1% of graduates	School teachers (77% women) 5.3% of graduates
Tourism	74%	Miscellaneous hospitality, retail and service managers (60% women) 6.8% of graduates	School teachers (77% women) 6.8% of graduates	General clerks (77% women) 6.7% of graduates
Visual Arts and Crafts	73%	School teachers (77% women) 15.2% of graduates	Sales assistants and salespersons (64% women) 7.1% of graduates	Architects, designers, planners and surveyors (50% women) 6% of graduates
Studies in Human Society	72%	School teachers (77% women) 13.8% of graduates	General clerks (77% women) 7% of graduates	Social and welfare professionals (83% women) 6.6% of graduates
Creative Arts, nec	71%	School teachers (77% women) 17% of graduates	Architects, designers, planners and surveyors (50% women) 10.5% of graduates	Sales assistants and salespersons (64% women) 5.6% of graduates
Other Society and Culture	71%	School teachers (77% women) 19.8% of graduates	General clerks (77% women) 7.7% of graduates	Contract, program and project administrators (63% women) 7% of graduates
Language and Literature	70%	School teachers (77% women) 18.6% of graduates	General clerks (77% women) 6.8% of graduates	Contract, program and project administrators (63% women) 5% of graduates
Society and Culture	69%	School teachers (77% women) 14.7% of graduates	General clerks (77% women) 7.3% of graduates	Legal professionals (64% women) 5% of graduates
Communication and Media Studies	69%	Media professionals (61% women) 14.7% of graduates	Sales, marketing and public relations professionals (67% women) 13.9% of graduates	Advertising, public relations and sales managers (64% women) 8.2% of graduates
Radiography	67%	Health diagnostic and promotion professionals (71% women) 84.2% of graduates	Medical practitioners (57% women) 4.2% of graduates	Agricultural, medical and science technicians (61% women) 1.2% of graduates
Pharmacy	67%	Health diagnostic and promotion professionals (71% women) 87.2% of graduates	Sales assistants and salespersons (64% women) 3.5% of graduates	Natural and physical science professionals (57% women) 1% of graduates

Dental Studies	67%	Health therapy professionals (77% women) 56.7% of graduates	Health and welfare support workers (71% women) 30.7% of graduates	Personal carers and assistants (79% women) 3.3% of graduates
Creative Arts	66%	School teachers (77% women) 11% of graduates	Tertiary education teachers (54% women) 8.4% of graduates	Media professionals (61% women) 7.9% of graduates
Political Science and Policy Studies	62%	Contract, program and project administrators (63% women) 11% of graduates	General clerks (77% women) 10.1% of graduates	Legal professionals (64% women) 8.6% of graduates
Law	61%	Legal professionals (64% women) 55.2% of graduates	Miscellaneous clerical and administrative workers (68% women) 5.3% of graduates	Accountants, auditors and company secretaries (49% women) 3.9% of graduates
Other Health	61%	School teachers (77% women) 15.5% of graduates	Health and welfare support workers (71% women) 14.5% of graduates	Health diagnostic and promotion professionals (71% women) 12.1% of graduates
Sales and Marketing	61%	Advertising, public relations and sales managers (64% women) 17.6% of graduates	Sales, marketing and public relations professionals (67% women) 16.4% of graduates	Information and organisation professionals (50% women) 5.5% of graduates
Biological Sciences	61%	Natural and physical science professionals (57% women) 25% of graduates	School teachers (77% women) 7.2% of graduates	Agricultural, medical and science technicians (61% women) 6% of graduates
Other Natural and Physical Sciences	60%	Natural and physical science professionals (57% women) 25% of graduates	School teachers (77% women) 7.2% of graduates	Agricultural, medical and science technicians (61% women) 6.1% of graduates
Graphic and Design Studies	59%	Architects, designers, planners and surveyors (50% women) 43.1% of graduates	Sales assistants and salespersons (64% women) 5.6% of graduates	School teachers (77% women) 5% of graduates
Performing Arts	57%	School teachers (77% women) 22.7% of graduates	Arts professionals (54% women) 13.2% of graduates	Miscellaneous education professionals (70% women) 9.9% of graduates
Medical Studies	57%	Medical practitioners (57% women) 87.7% of graduates	Health diagnostic and promotion professionals (71%	Health therapy professionals (77%

			women) 5.4% of graduates	women) 0.4% of graduates
Agriculture	56%	Natural and physical science professionals (57% women) 24.7% of graduates	Farm, forestry and garden workers (38% women) 6.8% of graduates	School teachers (77% women) 6.5% of graduates
Justice and Law Enforcement	56%	Defence force members, fire fighters and police (35% women) 36% of graduates	Miscellaneous clerical and administrative workers (68% women) 7% of graduates	General clerks (77% women) 6.4% of graduates
Natural and Physical Sciences	55%	Natural and physical science professionals (57% women) 18.1% of graduates	School teachers (77% women) 9.4% of graduates	Tertiary education teachers (54% women) 5% of graduates
Education, nec	55%	School teachers (77% women) 46% of graduates	Human resource and training professionals (75% women) 7.2% of graduates	Tertiary education teachers (54% women) 3.6% of graduates
Business and Management	54%	Accountants, auditors and company secretaries (49% women) 15% of graduates	Advertising, public relations and sales managers (64% women) 5.7% of graduates	Human resource and training professionals (75% women) 5.7% of graduates
Accounting	53%	Accountants, auditors and company secretaries (49% women) 59.9% of graduates	Accounting clerks and bookkeepers (68% women) 6% of graduates	Business administration managers (63% women) 3.4% of graduates
Environmental Studies	50%	Natural and physical science professionals (57% women) 38.9% of graduates	General clerks (77% women) 4.1% of graduates	Miscellaneous specialist managers (49% women) 3.7% of graduates
Philosophy and Religious Studies	50%	Social and welfare professionals (83% women) 35.1% of graduates	School teachers (77% women) 12% of graduates	Tertiary education teachers (54% women) 6.2% of graduates
Architecture and Urban Environment	50%	Architects, designers, planners and surveyors (50% women) 53.5% of graduates	Building and engineering technicians (29% women) 9.5% of graduates	Sales assistants and salespersons (64% women) 3.1% of graduates
Manufacturing Engineering and Technology	49%	Engineering professionals (14% women) 25.2% of graduates	Architects, designers, planners and surveyors (50% women) 18.3% of graduates	Business and systems analysts, and programmers (14% women) 9.6% of graduates
Other Management and Commerce	49%	Accountants, auditors and company secretaries (49%	Information and organisation professionals (50%	General clerks (77% women) 4.3% of graduates

		women) 31.9% of graduates	women) 5.5% of graduates	
Sport and Recreation	48%	School teachers (77% women) 9.8% of graduates	Sports and fitness workers (47% women) 9.1% of graduates	Ntural and physical science professionals (57% women) 6.9% of graduates
Management and Commerce	47%	Accountants, auditors and company secretaries (49% women) 32.9% of graduates	Information and organisation professionals (50% women) 5.1% of graduates	Financial and insurance clerks (49% women) 4.5% of graduates
Chemical Sciences	46%	Natural and physical science professionals (57% women) 31.7% of graduates	Agricultural, medical and science technicians (61% women) 11.5% of graduates	Tertiary education teachers (54% women) 7.6% of graduates
Forestry Studies	43%	Natural and physical science professionals (57% women) 46.7% of graduates	Construction, distribution and production managers (17% women) 4.8% of graduates	General clerks (77% women) 4.2% of graduates
Other Agriculture, Environmental and Related Studies	41%	Natural and physical science professionals (57% women) 15.8% of graduates	Farm, forestry and garden workers (38% women) 9.9% of graduates	Financial and insurance clerks (49% women) 5.9% of graduates
Horticulture and Viticulture	40%	Natural and physical science professionals (57% women) 18.1% of graduates	Horticultural trades workers (36% women) 10.8% of graduates	Farmers and farm managers (23% women) 6% of graduates
Economics and Econometrics	39%	Information and organisation professionals (50% women) 15% of graduates	Accountants, auditors and company secretaries (49% women) 11.6% of graduates	Financial and insurance clerks (49% women) 6.9% of graduates
Earth Sciences	38%	Natural and physical science professionals (57% women) 63.3% of graduates	Engineering professionals (14% women) 3.4% of graduates	School teachers (77% women) 2.9% of graduates
Mathematical Sciences	37%	Information and organisation professionals (50% women) 14.9% of graduates	Accountants, auditors and company secretaries (49% women) 10.8% of graduates	School teachers (77% women) 10.3% of graduates
Banking, Finance and Related Fields	32%	Accountants, auditors and company secretaries (49% women) 22.2% of graduates	Financial brokers and dealers, and investment advisers (24% women) 12.9% of graduates	Financial and insurance clerks (49% women) 12.4% of graduates

Process and Resources Engineering	25%	Engineering professionals (14% women) 67.1% of graduates	Natural and physical science professionals (57% women) 6.8% of graduates	Construction, distribution and production managers (17% women) 2.2% of graduates
Information Systems	23%	Business and systems analysts, and programmers (14% women) 21.6% of graduates	ICT network and support professionals (9% women) 9% of graduates	ICT managers (27% women) 8.5% of graduates
Physics and Astronomy	19%	Natural and physical science professionals (57% women) 31.7% of graduates	Tertiary education teachers (54% women) 8.3% of graduates	Engineering professionals (14% women) 8% of graduates
Geomatic Engineering	16%	Architects, designers, planners and surveyors (50% women) 66.2% of graduates	Engineering professionals (14% women) 4.3% of graduates	Building and engineering technicians (29% women) 4.2% of graduates
Other Information Technology	16%	Business and systems analysts, and programmers (14% women) 25.2% of graduates	ICT network and support professionals (9% women) 9.6% of graduates	ICT managers (27% women) 7.1% of graduates
Other Engineering and Related Technologies	16%	Engineering professionals (14% women) 65.9% of graduates	Construction, distribution and production managers (17% women) 3.4% of graduates	Architects, designers, planners and surveyors (50% women) 2.7% of graduates
Information Technology	15%	Business and systems analysts, and programmers (14% women) 29.1% of graduates	ICT network and support professionals (9% women) 12.1% of graduates	ICT managers (27% women) 8.4% of graduates
Fisheries Studies	14%	Natural and physical science professionals (57% women) 15% of graduates	Agricultural, medical and science technicians (61% women) 11.8% of graduates	Farm, forestry and garden workers (38% women) 7.4% of graduates
Aerospace Engineering and Technology	14%	Engineering professionals (14% women) 33.4% of graduates	Air and marine transport professionals (14% women) 21% of graduates	Miscellaneous specialist managers (49% women) 3.6% of graduates
Engineering and Related Technologies	14%	Engineering professionals (14% women) 64.6% of graduates	Business and systems analysts, and programmers (14% women) 5.4% of graduates	ICT network and support professionals (9% women) 3.8% of graduates
Civil Engineering	14%	Engineering professionals (14%	Construction, distribution and production managers	Other (52% women) 1.3% of graduates

		women) 80.3% of graduates	(17% women) 4% of graduates	
Building	12%	Construction, distribution and production managers (17% women) 37.4% of graduates	Contract, program and project administrators (63% women) 11.6% of graduates	Building and engineering technicians (29% women) 11.2% of graduates
Computer Science	12%	Business and systems analysts, and programmers (14% women) 37.9% of graduates	ICT network and support professionals (9% women) 8.5% of graduates	ICT managers (27% women) 5.6% of graduates
Electrical and Electronic Engineering and Technology	10%	Engineering professionals (14% women) 40.4% of graduates	Business and systems analysts, and programmers (14% women) 15.4% of graduates	ICT network and support professionals (9% women) 8.5% of graduates
Mechanical and Industrial Engineering and Technology	8%	Engineering professionals (14% women) 70.9% of graduates	Construction, distribution and production managers (17% women) 4.6% of graduates	Other (52% women) 1.8% of graduates

Table A2. Results from random-effect regression models of annual labour income (in A$1,000)

	(1) β	(2) β	(3) β	(4) β
Woman *(ref. Man)*	–11.93***	–11.89***	–10.22***	–6.17***
Field of study *(ref. Natural and Physical Sciences)*				
Information Technology			12.19***	14.09***
Engineering and Related Technologies			26.74***	29.39***
Architecture and Building			3.31***	8.01***
Agriculture, Environment and Related Studies			2.60***	5.84***
Health			20.25***	27.17***
Education			5.83***	9.32***
Management and Commerce			12.00***	14.88***
Society and Culture			4.52***	5.28***
Creative Arts			–6.97***	–10.51***
Interactions				
Woman × Information Technology				–1.83**
Woman × Engineering and Related Technologies				–6.55***
Woman × Architecture and Building				–9.96***
Woman × Agriculture, Environment & Related St.				–5.95***
Woman × Health				–10.10***
Woman × Education				–5.62***
Woman × Management and Commerce				–5.22***
Woman × Society and Culture				–1.85***
Woman × Creative Arts				4.72***
Time since graduation *(ref. 1 year)*				
2 years		4.78***	4.81***	4.81***
3 years		8.46***	8.54***	8.54***
4 years		11.99***	12.12***	12.11***
5 years		15.07***	15.22***	15.22***

6 years	17.76***	17.92***	17.92***
7 years	19.73***	19.91***	19.91***
8 years	21.28***	21.50***	21.50***
9 years	22.95***	23.20***	23.19***
10 years	24.94***	25.20***	25.19***
Age group *(ref. 25 years or less)*			
26-30 years	3.70***	3.53***	3.53***
31-35 years	4.92***	4.61***	4.61***
36-40 years	5.53***	5.12***	5.13***
41-45 years	7.28***	6.76***	6.79***
46-50 years	7.31***	6.72***	6.75***
51+ years	4.24***	3.63***	3.66***
Low socio-economic status background	–0.78***	2.46***	2.41***
Disability/long-term condition	–0.08	–0.43***	–0.42***
Non-English-speaking background	–7.06***	–6.22***	–6.21***
Regional or remote area	–1.62***	–4.11***	–4.14***
Indigenous	–0.35**	–0.81***	–0.77***
Low socio-economic status background	–0.24	0.48	0.50
Graduation year *(ref. 2005)*			
2006	0.32	0.01	0.01
2007	1.43***	0.78***	0.79***
2008	0.68***	–0.12	–0.10
2009	–0.06	–0.90***	–0.89***
2010	–0.47**	–1.31***	–1.30***
2011	–0.88***	–1.89***	–1.90***
State of residence *(ref. New South Wales)*			
Victoria	–3.43***	–3.54***	–3.53***
Queensland	–1.32***	–1.74***	–1.73***
South Australia	–6.35***	–6.42***	–6.43***
Western Australia	3.90***	3.39***	3.40***

Tasmania		–5.87***	–6.10***	–6.10***
Northern Territory		6.90***	6.77***	6.77***
Australian Capital Territory		3.71***	3.85***	3.87***
Business income		–14.20***	–13.90***	–13.90***
Enrolled in new university course		–9.43***	–9.31***	–9.32***
Institution fixed effects	No	Yes	Yes	Yes
N (observations)	2,790,809	2,790,809	2,790,809	2,790,809
N (individuals)	549,893	549,893	549,893	549,893

Notes: PLIDA data (2011-2016). Unstandardized model coefficients. Statistical significance (two-sided tests): * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table A3. Results from random-effect regression models of annual labour income (in A$1,000), by gender: field-of-study and occupational feminisation

	(5a) Men β	(5b) Women β	(6a) Men β	(6b) Women β
Field-of-study feminisation				
Linear term	–53.97***	–104.79***	–40.75***	–91.89***
Square term	27.06***	79.47***	16.79***	69.05***
Occupational feminisation				
Linear term			–23.73***	–23.24***
Square term			19.35***	18.39***
Time since graduation *(ref. 1 year)*				
2 years	5.70***	4.12***	5.70***	4.12***
3 years	10.20***	7.20***	10.19***	7.20***
4 years	14.87***	9.96***	14.87***	9.96***
5 years	19.26***	12.20***	19.26***	12.19***
6 years	23.38***	13.99***	23.38***	13.99***
7 years	26.73***	15.14***	26.73***	15.14***
8 years	29.74***	15.96***	29.74***	15.96***
9 years	33.10***	16.83***	33.11***	16.84***
10 years	36.81***	17.91***	36.83***	17.91***
Age group *(ref. 25 years or less)*				
26-30 years	4.43***	3.63***	4.42***	3.63***
31-35 years	8.73***	2.32***	8.73***	2.32***
36-40 years	11.03***	1.61***	11.04***	1.61***
41-45 years	10.78***	4.96***	10.80***	4.95***
46-50 years	8.38***	6.72***	8.41***	6.71***
51+ years	2.21***	5.49***	2.23***	5.48***
Low socio-economic status background	0.17	0.35*	0.33	0.39*
Disability/long-term condition	–1.86***	0.46**	–1.89***	0.46**
Non-English-speaking background	–8.91***	–5.56***	–8.91***	–5.55***
Regional or remote area	–4.78***	–1.39***	–4.75***	–1.40***
Indigenous	–0.50*	–0.49***	–0.58*	–0.50***
Low socio-economic status background	–0.96	1.24**	–0.89	1.28**
Graduation year (ref. 2005)				
2006	0.12	0.32	0.10	0.31
2007	1.73***	1.09***	1.70***	1.07***
2008	0.27	0.84***	0.25	0.83***
2009	–0.69*	0.38*	–0.70*	0.37*
2010	–1.41***	0.23	–1.45***	0.21
2011	–1.86***	–0.30	–1.90***	–0.32
State of residence *(ref. New South Wales)*				
Victoria	–5.02***	–2.30***	–5.02***	–2.30***
Queensland	–1.44***	–1.19***	–1.48***	–1.19***

South Australia	–6.83***	–5.76***	–6.86***	–5.75***
Western Australia	5.30***	2.59***	5.25***	2.57***
Tasmania	–7.18***	–4.70***	–7.21***	–4.71***
Northern Territory	6.74***	7.09***	6.71***	7.10***
Australian Capital Territory	2.00***	4.94***	2.06***	4.97***
Business income	–14.35***	–13.68***	–14.36***	–13.68***
Enrolled in new university course	–10.60***	–8.77***	–10.58***	–8.77***
Institution fixed effects	Yes	Yes	Yes	Yes
N (observations)	1,070,687	1,720,122	1,070,687	1,720,122
N (individuals)	212,637	337,256	212,637	337,256

Notes: PLIDA data (2011-2016). Field-of-study feminisation: Proportion of graduates in the four-digit field-of-study who are women. Occupational feminisation: Proportion of graduates in the two-digit occupation who are women. Statistical significance (two-sided tests): * $p<0.05$, ** $p<0.01$, *** $p<0.001$.