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Economic, Social and Health Outcomes of the Transgender and Gender-Diverse Population in Australia

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ABSTRACT

Using data from the 2022 round of the HILDA Survey, regression models are estimated where the outcomes are variables that influence or are correlated with personal well-being, and the main independent variable distinguishes persons who identify as transgender or gender-diverse (TGD) from persons whose gender identity matches their sex assigned at birth (cisgender). Twelve outcomes covering the labour market, income and finances, crime victimisation, and health and subjective well-being are examined. TGD persons are found to fare worse than cisgender persons in all cases. For example, the differences between TGD persons and cisgender men and cisgender women in personal income are estimated to lie in the range of 59%–61% and 26%–33%, respectively. Similarly, the likelihood of a transgender person being the victim of physical violence is estimated to be 4.3 and 2.4 times greater than that of cisgender men and cisgender women, respectively. The relatively small size of the TGD subsample, however, means that results are not always statistically significant at the 95% confidence level. This is especially so when comparing TGD persons with cisgender women. Overall, these results strongly suggest that TGD persons in Australia face systemic disadvantages.

JEL Classification: J16

1 | Introduction

Recent decades have seen the emergence of substantial literature on the potential disadvantages faced by sexual minorities (Badgett et al. 2024). In contrast, there has been far less research into transgender and gender-diverse (TGD) populations. In the United States of America this has begun to change, in large part because of the inclusion of an optional module about sexual orientation and gender identity in the surveys administered as part of the Centres for Disease Control and Prevention's Behavioural Risk Factor Surveillance System (BRFSS). As might be expected, given the focus of the BRFSS on health-related behaviours, health conditions and use of health services, these data have spawned numerous studies that compare TGD and cisgender individuals (persons whose gender identity matches their sex assigned at birth) with respect to a range of different health outcomes (e.g., Caceres et al. 2020; Campbell and Rodgers 2022; Cicero et al. 2020; Downing and Przedworski 2018; Goldsen et al. 2022; Lagos 2018; Meyer et al. 2017). Research has also begun to emerge that compares the TGD population with the cisgender population on other aspects of disadvantage, such as employment, income and poverty (e.g., Badgett et al. 2019; Campbell et al. 2024; Carpenter et al. 2020, 2022; Ciprikis et al. 2020; Shannon 2022). Carpenter et al. (2020), for example, used data from the 2014–2017 BRFFS to estimate a series of cross-sectional regression models where the independent variable of interest was gender minority status, and the dependent variables were indicators of either employment status, household income, poverty or health. On each of these outcomes, transgender individuals were found to fare

significantly worse than otherwise similar men who were not transgenders.

Outside of the United States of America, research quantifying differences between the TGD and cisgender populations with respect to economic outcomes (as distinct from health-related outcomes) is far more scarce. Exceptions here are Geijtenbeek and Plug (2018) and Carpenter et al. (2025). Geijtenbeek and Plug (2018) identified transgender individuals from gender changes in Dutch administrative data and found transgender males had higher job-related earnings than comparable ciswomen but less than comparable cismen. Carpenter et al. (2025) used administrative data from New Zealand that enabled the identification of TGD persons from differences in gender recorded in birth records and on current driver's licences. They estimated gender minority gaps in both employment and annual labour earnings, with TGD groups consistently found to have much lower probabilities of employment than both cisgender men and cisgender women. TGD groups were also found to have much lower earnings than cisgender men but not markedly less than cisgender women.

This paper adds to this small body of literature by analysing data from Australia, another high-income country where the TGD population is widely presumed to face greater challenges than their cisgender counterparts, which in turn is reflected in relatively low levels of psychological well-being (e.g., Bretherton et al. 2021; Osmetti and Allen 2024; Saxby et al. 2025; Zwickl et al. 2021). Specifically, we analyse data from almost 11,000 respondents to the Household, Income and Labour Dynamics in Australia (HILDA) Survey, a household panel study that introduced two questions in wave 22 (conducted in 2022) about sex recorded at birth and current gender identity, thus enabling the identification of TGD persons.

We begin by reporting estimates of the size of the TGD population in Australia. We then report estimates from cross-section regression models where the main independent variable—gender identity—distinguishes between cisgender men, cisgender women, and TGD persons. Following the BRFSS analysis of Carpenter et al. (2020), we examine how these groups differ with respect to a range of outcomes after controlling for a range of personal characteristics. The range of outcomes examined here, however, is broader, including not only measures of labour force status, income and poverty, and self-reported health but also measures of job-related earnings, job satisfaction, whether a victim of violence or crime and life satisfaction. All of these outcomes are expected to influence and/or be correlated with personal well-being.

2 | Data and Methods

2.1 | The HILDA Survey

The HILDA Survey is a household panel study that was designed with the broad objective of providing researchers and policy-makers with a tool for examining a wide range of economic, demographic and social policy issues, but with a strong focus on work, income, family and health (Wooden et al. 2024). It commenced in 2001 with a stratified area-based sample of private dwellings from all non-remote regions of Australia. The initial responding sample involved members from 7682 households and each year, interviews are sought with all members of those original households aged 15 years or older, any children of those original sample members who have now turned 15, and any other persons who are co-residing with an original sample member or their children at the time of each interview. A refreshment sample was introduced in wave 11 that added a further 2153 participating households to the sample. Sample sizes vary each wave, reflecting deaths, changes in household composition and nonresponse. Annual reinterview rates have been relatively high, rising from 87% in wave 2% to 96% by wave 9. These rates did, however, decline slightly during the COVID-19 pandemic, and in wave 22 stood at 93.4%.

Data are collected via both personal interviews (either face-to-face or by telephone) and a self-complete questionnaire (SCQ). In total, 15,954 interviews were conducted in wave 22, and 14,814 of these interviewees (93%) returned a completed SCQ.

2.2 | The Measurement of Gender Identity

While the HILDA Survey provides repeated observations of the same individuals over time, this analysis was restricted to data collected in one wave. The reason for this is that it was only in wave 22 that questions about sex recorded at birth and gender identity were included. Both of these questions were included in the SCQ. The sex recorded at birth question provided three response options—'Male', 'Female' and 'Another term (please specify)'. The latter should capture persons with variations of sex characteristics that were evident at birth (i.e., intersex). The gender identity question reads: 'How do you describe your gender?' This was accompanied by the following explanatory note: 'Gender refers to your current gender, which may be different to sex recorded at birth and may be different to what is indicated on legal documents'. Respondents could then choose between five mutually exclusive options: (i) Man or male; (ii) Woman or female; (iii) Non-binary; (iv) I prefer to use a different term (please specify); and (v) Prefer not to answer. This format precisely follows what was recommended by the Australian Bureau of Statistics [ABS] (2021).

Respondents can then be assigned to either a cisgender category, a trans and gender-diverse category (TGD) (or what others have labelled gender non-conforming), or an inadequately described category using a two-step method involving the interaction of responses to the gender identity question with those provided to the sex recorded at birth question (see Australian Bureau of Statistics [ABS] 2021).

2.3 | Method

Following Carpenter et al. (2020), we estimated cross-sectional regression equations that specify Y_i, some observed outcomes for individual i, as a function of that individual's gender identity and a vector of other selected characteristics. We represented gender identity by binary variables that take value one if respondent i is classified as a cisgender man (and 0 if otherwise) and value one if respondent i is classified as a cisgender woman

(and 0 if otherwise). TGD individuals thus form the reference group. We also included a variable identifying persons whose gender identity could not be established from their survey answers (the inadequately described group).

Unlike Carpenter et al. (2020), who estimated linear (or log-linear) probability models, we varied the estimator used to suit the outcome variable. We thus estimated linear models where the outcome variable was continuous, logit models where the outcome was binary, multinomial logit models where the outcome variable involved more than two possible destinations that have no natural ordering, and ordered logit models where the outcome was both discrete and ordinal.

Again, following Carpenter et al. (2020), the sample for these analyses was restricted to persons aged 18 to 64 who completed the SCQ (and thus responded to the questions used to measure gender identity). This provided a maximum sample size of 10,732 observations.

All regressions were weighted. As described in the HILDA Survey User Manual (Summerfield et al. 2023), the weight used is a cross-section weight that adjusts estimates for both the probability of initial selection into the sample and nonrandom response and attrition (including nonresponse to the SCQ). In addition, the weights ensure the estimates are calibrated to known population benchmarks (such as age and sex composition) derived from the 5-yearly Population Census and the monthly population survey conducted by the Australian Bureau of Statistics.

2.4 | Outcome Variables

We examined outcomes covering the labour market, income and finances, whether the victim of a crime, health, and subjective well-being.

Three types of labour market outcomes were analysed: (i) labour force status, which traditionally involves the three categories of employed, unemployed and not in the labour force, but we go further and among the employed distinguish between the fully employed and the underemployed (defined by whether the number of hours usually worked each week was less than preferred); (ii) among those currently employed, a subjective measure of overall job satisfaction scored on a 0–10 scale; and (iii) among wage and salary earners, usual hourly earnings (constructed by dividing usual gross weekly earnings in all jobs by usual hours worked per week in all jobs).

For income and finances, we considered four outcomes: (i) annual household disposable income, adjusted for household size (i.e., equivalised using the modified OECD scale) and based on income during the 2021/22 financial year; (ii) annual personal disposable income; (iii) a binary indicator of whether living in poverty (as indicated by an equivalised household disposable income that is below 50% of the weighted sample median); and (iv) a subjective measure of satisfaction with one's financial situation (scored on a 0–10 scale).

We also considered two measures identifying whether the respondent reported being the victim of physical violence (e.g., an assault) or of a property crime (e.g., theft, housebreaking) at any time during the preceding 12 months.

Finally, we considered three measures of health and subjective well-being: (i) the 5-item measure of general health (GH) from the 36-item Short Form Health Survey (SF-36) (Ware et al. 2000), which is scored on a 0–100 scale; (ii) the five-item mental health inventory (MHI-5), also a subscale from the SF-36 and also scored on a 0 to 100 scale; and (iii) a single-item measure of overall life satisfaction scored on 0 to 10 scale.

2.5 | Control Variables

Selection of control variables was guided by Carpenter et al. (2020). Our regression models thus initially included controls for a large set of individual characteristics. These are the following: age (represented by four dummy variables identifying age categories); educational qualifications (three dummies); marital/partnering status; the presence of own dependent children aged either 0–4 years and 5–14 years; the number of adults in the household; whether an Indigenous Australian; whether born overseas and if so, whether from one of the main English-speaking countries or another country; State; location type (major city vs. inner regional area vs. outer regional or remote area); survey mode (face-to-face vs. telephone); and presence of another adult during the interview. The analyses of job satisfaction and hourly earnings also included controls for the presence of a long-term health condition or disability, as well as a series of variables describing the (main) job. These job-related variables were the following: usual hours worked per week (in quadratic form); whether has more than one job; proportion of hours worked from home; tenure with current employer (5 dummies); trade union membership; supervisory responsibilities; occupation (7 dummies); firm size (4 dummies); sector (public vs. private); and industry (18 dummies).

Many of these controls, however, may be mediator variables, potentially leading to biased estimates. For example, if TGD persons are also disadvantaged at school and hence less likely to finish school or obtain post-school qualifications, controlling for educational attainment would remove the effect of that channel on our estimates of gender differences in employment, earnings and income. We thus also present results from an alternative specification involving minimal controls—just age, origin (i.e., indigeneity and immigrant status), and survey mode.

Sample means (and standard deviations) for all variables are presented in Appendix A.

3 | Results

3.1 | The Size of the TGD Population in Australia

Table 1 presents a summary of the sample disaggregated by gender identity. We report distributions for both the entire HILDA Survey sample (i.e., all persons aged 15 years or older) as well as for the subsample of persons aged 18 to 64 years, the target group for our analysis. We also present both the raw frequencies and associated percentage distribution, as well as the percentage distribution after the application of the appropriate population

TABLE 1 | Distribution of HILDA survey sample by gender identity.

	Persons aged 15 years or older			Persons aged 18 to 64 years		
	N	**%**	**Weighted %**	***N***	**%**	**Weighted %**
Cisgender man	6604	45.4	47.9	4880	45.5	47.7
Cisgender woman	7665	52.6	50.4	5628	52.4	50.3
Transgender or gender-diverse	215	1.5	1.5	175	1.6	1.6
Inadequately described	79	0.5	0.6	49	0.5	0.5
Total	14563	100.0	100.0	10732	100.0	100.0

weight provided in the data set. Note that due to small sample sizes, we do not distinguish between transgender men, transgender women and gender nonconforming individuals.

As can be seen, the TGD population are estimated to represent about 1.5% of the Australian adult population and 1.6% of the population aged 18–64 years. These fractions will, however, be underestimates if TGD individuals are over-represented among the inadequately described group, and in theory, the true estimate might be as high as 2.1% (if all of those that fall into the inadequately described group were transgender or gender-diverse). That said, as discussed later, the characteristics of persons within this small, inadequately described group are quite different from those assigned to the TDG group.

Estimates in the range of 1.5%–1.6% are considerably higher than the 0.5% estimate for the United States of America suggested by the BRFSS data (Carpenter et al. 2020; Herman et al. 2022). They do, however, fall within the range of estimates of self-reported TGD populations from previous survey-based studies (Goodman et al. 2019), albeit towards the upper end. Possible explanations for the higher proportions reported here include differences in both survey mode and the questions used to identify TGD status. Use of a self-administered survey instrument, rather than the interview approach used in the BRFSS, might be more likely to elicit honest responses, resulting in higher estimates of the TGD population if TGD persons are reticent or fearful about openly identifying as transgender. Perhaps more significant are the differences in the way information on gender identity is collected in the two surveys. Participants in the BRFSS have posed a single question asking whether they consider themselves to be transgender. In contrast, the HILDA Survey uses a two-step approach, which testing in other settings has suggested is superior (The GenIUSS Group 2014).[1] Further, the approach adopted in the HILDA Survey does not mention the term transgender, which we suggest will do better at eliciting more accurate and honest answers from the TGD minority. That said, we recognise that the HILDA Survey sample is relatively small, especially compared with the BRFSS, and thus even a small number of cisgender respondents inaccurately reporting as identifying with a sex different to that recorded at birth can lead to estimates that greatly overstate the size of the TGD population (Carpenter et al. 2020).

3.2 | Gender Identity and Well-Being: Regression Results

We now turn to the results from the estimation of our cross-sectional regression models. All analyses are restricted to the sub-sample of persons aged 18–64, and thus what roughly approximates the working-age population. Each table of results presents estimated coefficients on the two gender identity variables from two specifications: one that only includes the minimal set controls and one that includes the extended set. However, it turns out that the choice of controls has relatively little effect on the results: in all cases, the two specifications deliver estimated coefficients on the gender identity variables that are similar in size.

We begin, in Table 2, with results from analyses of labour market outcomes. Focusing first on labour force status, estimation of a multinomial logit model indicates that compared to TGD individuals, cisgender men are far less likely to be both underemployed and outside the labour force, and the magnitude of these differences is substantial. The estimated coefficients convert to relative risk ratios in the range of 0.402 to 0.446 for underemployment and 0.304 to 0.315 for not in the labour force. In other words, the likelihood of a cisgender man reporting being underemployed is between 2.2 (1/0.446) and 2.5 times (1/0.402) less that of an otherwise comparable TGD individual, while the probability of being neither employed nor looking for work is between 3.2 (1/0.315) and 3.3 times (1/0.304) less. There are, however, no differences between cisgender men and TGD persons in the likelihood of being unemployed (i.e., without work but actively seeking work). In contrast, differences between TGD persons and cisgender women, while still very sizeable, are not statistically significant. We can use these estimates to calculate the predicted probability of each labour market outcome for each gender group, holding all other variables in the model at their means. The estimates using the extended list of controls result in a predicted probability of a TGD person being fully employed (i.e., employed in a job where the number of hours usually worked equals or exceeds the number preferred) of just 63.0%, which compares with 82.6% for cisgender men and 71.1% for cisgender women. At the other extreme, the predicted probability that a TGD person is neither employed nor actively seeking work is 26.7%, which compares with 10.6% and 19.6% for cisgender men and cisgender women, respectively. The specification with minimal controls delivers results that are even less favourable for TGD persons, with the predicted probability of being fully employed declining to 60.9% and the predicted probability of economic inactivity rising to 29.1%.

We also find a significant and large difference in the hourly wages of cisgender men and TGD individuals (in the range of 15.4% to 16.7%) but no significant difference between cisgender women and TGD persons.

TABLE 2 | Gender identity and labour market outcomes (persons aged 18–64): Weighted regression results.

Gender identity (reference group = TGD)	Labour force status (multinomial logit)			Job satisfaction: Employed (ordered logit)	Hourly earnings: Employees (log linear)
	Underemployed	Unemployed	Not in the labour force		
Specification 1 (Minimal controls)					
Cisgender man	−0.807** (0.325) [0.446]	−0.014 (0.449) [1.014]	−1.154** (0.239) [0.315]	0.195 (0.201) [1.215]	0.167** (0.048)
Cisgender woman	−0.133 (0.317) [0.876]	−0.443 (0.446) [0.642]	−0.491 (0.235) [0.612]	0.295 (0.200) [1.343]	0.091 (0.048)
R^2					0.118
Pseudo R^2		0.0594		0.002	
F statistic					57.5**
χ^2		657.9**		33.43**	
N		10,541		8513	7850
Specification 2 (Extensive controls)					
Cisgender man	−0.910** (0.338) [0.402]	−0.027 (0.445) [0.973]	−1.190** (0.243) [0.304]	0.271 (0.236) [1.311]	0.154** (0.046)
Cisgender woman	−0.203 (0.329) [0.817]	−0.347 (0.451) [0.707]	−0.429 (0.239) [0.651]	0.343 (0.234) [1.409]	0.044 (0.045)
R^2					0.393
Pseudo R^2		0.1109		0.019	
F statistic					45.5**
χ^2		1083.1**		325.1**	
N		10,273		8027	7417

Note: The table reports coefficient estimates, standard errors (in curved brackets) and, where appropriate, odds ratios (in squared brackets). The 'minimal controls' specification only includes controls for age, origin, and survey mode. The 'extensive controls' specification includes controls for additional socio-demographic characteristics. The extended models of job satisfaction and hourly earnings also include controls for disability and job characteristics. The samples for these latter two models are restricted to employed persons and wage and salary earners, respectively.

**$p < 0.01$; *$p < 0.05$.

Finally, while employed TGD persons are, on average, less satisfied with their jobs than their cisgender peers, the differences are far from statistically significant.

We next turn, in Table 3, to analyse measures of income and financial well-being. We considered two measures of income: (i) annual household disposable (i.e., after tax) equivalised (i.e., adjusted for household size) income; and (ii) annual personal disposable income. In the case of annual personal income, the estimated mean differences are very large—in the range of 59.1%–61.4% when compared with cisgender men and 26.3% to 32.6% when compared with cisgender women. Differences in household incomes, while still sizeable, are smaller, reflecting the fact that many TGD persons (especially young people) live in households with persons receiving relatively high incomes. As a result, the likelihood of TGD persons being classified as living in relative poverty (defined as living in a household where equivalised disposable income is below 50% of the population median) is not significantly greater than for cisgender men and women. Nevertheless, the very low levels of personal income translate into scores on a subjective measure of satisfaction with one's financial situation that are lowest (and significantly so) for the TGD population.

Next, we report, in the first two columns of Table 4, results from logistic regressions of the likelihood of reporting being the victim of physical violence and the victim of property crime during the preceding 12 months. Estimates again suggest large differences but which are only statistically significant for physical violence. The estimated odds ratio indicates that the relative risk of a TGD person reporting being the victim of physical violence is around 4.4 times (1/0.230 = 4.35 and 1/0.227 = 4.41) greater that of a cisgender man and around 2.4 times greater than that of a cisgender woman (1/0.416 = 2.40 and 1/0.408 = 2.45).

Finally, we also report in Table 4 results from the estimation of regression models where the outcomes are two subjective measures of health and one measure of overall well-being (or life satisfaction). On all three of these measures, the TGD population are significantly worse off than both cisgender men and cisgender women. For example, in the case of the mental health measure (which is a 0–100 index), TGD persons score an average of 8.4 or 8.8 points lower than cisgender men (or close to 0.5 of a standard deviation) and 5.6 to 6.2 points lower than cisgender women (or around 0.3 of a standard deviation). Differences of even larger magnitudes are found for the measure of general health (almost 10 points lower than a cisgender man and around 8 points lower than a cisgender woman).

Given these findings, it would be expected that TGD persons would also report lower levels of overall satisfaction with their lives. The final columns in Table 4 present results that support this hypothesis. TGD persons report mean life satisfaction scores (on a 0 to 10 scale) that are in the range of 0.33 to 0.45 of a point less than cisgender persons. Nevertheless, the high level of imprecision attached to these estimates means that the difference with respect to cisgender men is not statistically significant.

TABLE 3 | Gender identity and income and financial well-being (persons aged 18–64): Weighted regression results.

Gender identity (reference group = TGD)	Household equivalised disposable annual income (log linear)	Personal disposable annual income (log linear)	In poverty (logit)	Satisfaction with financial situation (ordered logit)
Specification 1 (Minimal controls)				
Cisgender man	0.216** (0.059)	0.614** (0.122)	−0.512 (0.300) [0.600]	0.623** (0.196) [1.865]
Cisgender woman	0.175** (0.058)	0.326** (0.121)	−0.458 (0.298) [0.633]	0.683** (0.196) [1.981]
R^2	0.024	0.124		
Pseudo R^2			0.029	0.004
F statistic	15.51**	66.26**		
χ^2			140.1**	95.89**
N	10,543	10,319	10,561	10,553
Specification 2 (Extensive controls)				
Cisgender man	0.160** (0.053)	0.591** (0.111)	−0.469 (0.334) [0.626]	0.598** (0.199) [1.818]
Cisgender woman	0.106* (0.053)	0.263* (0.110)	−0.397 (0.333) [0.672]	0.636** (0.199) [1.889]
R^2	0.175	0.198		
Pseudo R^2			0.107	0.023
F statistic	66.53**	47.60**		
χ^2			500.8**	596.6**
N	10,276	10,055	10,293	10,285

Note: The table reports coefficient estimates, standard errors (in curved brackets) and, where appropriate, odds ratios (in squared brackets). The 'minimal controls' specification only includes controls for age, origin, and survey mode. The 'extensive controls' specification includes controls for additional socio-demographic characteristics.
**$p < 0.01$; *$p < 0.05$.

TABLE 4 | Gender identity and victimisation, health and subjective well-being (persons aged 18–64): Weighted regression results.

Gender identity (reference group = TGD)	Victim of physical violence (logit)	Victim of property crime (logit)	Mental health (linear)	General health (linear)	Life satisfaction (ordered logit)
Specification 1 (Minimal controls)					
Cisgender man	−1.470** (0.509) [0.230]	−0.391 (0.475) [0.676]	8.752** (1.830)	9.867** (2.147)	0.330 (0.204) [1.391]
Cisgender woman	−0.877 (0.502) [0.416]	−0.527 (0.484) [0.590]	6.150** (1.822)	8.016** (2.146)	0.434* (0.203) [1.543]
R^2			0.033	0.025	
Pseudo R^2	0.0428	0.0117			0.0033
F statistic			19.52**	15.02**	
χ^2	71.62**	31.09**			48.19**
N	10517	10531	10551	10525	10559
Specification 2 (Extensive controls)					
Cisgender man	−1.481** (0.480) [0.227]	−0.350 (0.495) [0.705]	8.439** (1.764)	9.896** (2.037)	0.351 (0.214) [1.420]
Cisgender woman	−0.896 (0.460) [0.408]	−0.529 (0.503) [0.589]	5.583** (1.758)	7.852** (2.035)	0.451* (0.213) [1.569]
R^2			0.0736	0.0559	
Pseudo R^2	0.1139	0.0442			0.020
F statistic			16.66**	12.28**	
χ^2	174.6**	115.3**			340.9**
N	10203	10264	10283	10257	10291

Note: The table reports coefficient estimates, standard errors (in curved brackets) and, where appropriate, odds ratios (in squared brackets). The 'minimal controls' specification only includes controls for age, origin, and survey mode. The 'extensive controls' specification includes controls for additional socio-demographic characteristics.
**$p < 0.01$; *$p < 0.05$.

4 | Discussion

The results of this cross-sectional analysis of population survey data for Australia strongly support the hypothesis that TGD persons face significant disadvantages. This is reflected in extremely large differences between the TGD and cisgender populations with respect to measures of self-reported health, annual income, and the likelihood of experiencing physical violence. These findings align broadly with US research, although the magnitude of differences, especially in the case of self-reported health, seem mostly larger in these Australian data.

Our study is unique in reporting measures of both household income and individual income, with our findings leading to the conclusion that a focus on household income will understate the income disadvantage faced by TGD individuals.

Interestingly, while there are large differences between TGD persons and cisgender men in labour market outcomes, the differences with cisgender women (who typically face worse labour market outcomes than cisgender men) failed to achieve statistical significance. A similar conclusion is suggested by the US study of Carpenter et al. (2020), who found the probability of being employed was no lower among transgender people than cisgender women. Similarly, we found evidence of an hourly earnings penalty for TGD workers that was very large when compared with cisgender men (15%–17%) but much smaller (and not significant) when compared with cisgender women. Again, this finding is broadly consistent with what has been found in research conducted in other countries (Geijtenbeek and Plug 2018).

Very differently, and somewhat surprising given evidence of discrimination faced by the transgender minority in the workplace (Davis and Yeung 2022), among employed persons, there were no significant differences, either with cisgender men or cisgender women, with respect to job satisfaction.

Differences in a measure of life satisfaction also appeared to be relatively modest and, in the case of cisgender men, not statistically significant. One possible explanation for this finding lies in a tendency for most people to be resilient and thus adapt to their life circumstances. As a result, measures of cognitive well-being, such as life satisfaction, do not have the same amount of variation, both over time and across individuals, that other indicators of well-being do. In this context, differences in the order of 0.4 on a 0 to 10 scale may be judged to be sizeable.

When interpreting these results, however, it must be recognised that the sample used here is relatively small. As a result, many of the estimates reported are imprecise, and thus, it may be that some of the nonsignificant differences (e.g., with respect to job satisfaction) would have been statistically significant if the sample were much larger. The small sample size also means we were unable to make inferences about differences within the TGD population (i.e., between trans men, trans women, and those identifying as nonbinary).

Interpretation of results may also be affected by the small sub-group of persons who responded that they preferred not to answer the gender identity question and thus could not be assigned any gender identity. This was handled by including

a separate 'inadequately described' group in the regression analyses. The estimates for this group have not been reported in detail here, but in all cases, were associated with large standard errors, and hence, in most cases, differences with cisgender persons were far from statistically significant. Nevertheless, this group is not a random cross-section of the population. We were especially concerned that this group might be dominated by TGD persons who were reticent about revealing their gender identity to the HILDA Survey research team.

With these caveats in mind, we reiterate that our results strongly support the hypothesis that TGD individuals in Australia face widespread disadvantages. On all twelve of the outcomes considered, point estimates indicate that TGD individuals fare worse than cisgender persons, and in most cases, the magnitudes of these differences were large. These differences were mostly smaller when making comparisons with cisgender women than with cisgender men but were still typically large (albeit not always statistically significant). Such findings reinforce the call made by others in different contexts for greater social action aimed at changing public attitudes and reducing discrimination that targets TGD people. Furthermore, and as recommended by others (e.g., Saxby et al. 2025), there is also a clear need for more research identifying and quantifying the pathways driving gender minority disadvantage. The main obstacle here, however, is the small sample sizes inherent in surveys when the population of interest is a relatively small minority. For this reason, Australia's Population Census offers the most potential, but that will require the gender identity questions developed and recommended by the Australian Bureau of Statistics (and now routinely included in the HILDA Survey) to be implemented in the next Census.

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Data Availability Statement

Data that support the findings of this study are available through the DSS Longitudinal Studies Dataverse (https://dataverse.ada.edu.au/dataverse/DSSLongitudinalStudies). Access is subject to obtaining a license from the Australian Government Department of Social Services.

Endnotes

[1]The US Census Bureau Household Pulse Survey uses a similar two-step approach and it too suggests much higher estimates of the size of the TGD population than the BRFSS. Carpenter et al. (2022), for example, analysed data from this survey that were collected in 2021 and reported that non-cisgender individuals comprised 2.3% of their weighted sample of persons aged 18–64.

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Appendix A

Sample Characteristics (Means and Standard Deviations) by Gender Identity: Persons Aged 18–64 Years

Variable	(1) Cisgender men	(2) Cisgender women	(3) TGD	(4) All persons
All persons aged 18–64				
Labour force status				
Fully employed	0.80 (0.40)	0.69 (0.46)	0.62 (0.49)	0.74 (0.44)
Underemployed	0.05 (0.21)	0.09 (0.28)	0.11 (0.32)	0.07 (0.25)
Unemployed	0.03 (0.18)	0.03 (0.16)	0.04 (0.20)	0.03 (0.17)
Not in the labour force	0.12 (0.32)	0.20 (0.40)	0.23 (0.42)	0.16 (0.37)
Ln hourly earnings ($AU)	3.67 (0.50)	3.60 (0.44)	3.43 (0.42)	3.63 (0.47)
Job satisfaction (0–10)	7.87 (1.40)	7.89 (1.52)	7.81 (1.52)	7.87 (1.48)
Ln household equivalised disposable annual income ($AU)	11.04 (0.59)	11.00 (0.58)	10.81 (0.68)	11.02 (0.60)
Ln personal disposable annual income ($AU)	10.93 (0.88)	10.64 (0.91)	10.24 (1.32)	10.76 (0.93)
Satisfaction with financial situation (0–10)	7.06 (1.92)	7.04 (2.01)	6.45 (2.30)	7.01 (1.99)
Victim of physical violence	0.01 (0.11)	0.02 (0.13)	0.05 (0.21)	0.02 (0.13)
Victim of property crime	0.04 (0.19)	0.03 (0.17)	0.04 (0.20)	0.03 (0.18)
Mental health (0–100)	71.2 (18.0)	68.1 (18.5)	60.8 (20.1)	69.3 (18.5)
General health (0–100)	66.4 (19.5)	65.2 (20.8)	57.8 (21.6)	65.6 (20.3)
Life satisfaction (0–10)	7.90 (1.31)	7.93 (1.34)	7.58 (1.55)	7.90 (1.34)
Age (years)				
18–24	0.14 (0.00)	0.12 (0.00)	0.26 (0.03)	0.08 (0.04)
25–34	0.23 (0.01)	0.25 (0.01)	0.38 (0.04)	0.33 (0.07)
35–44	0.22 (0.01)	0.22 (0.01)	0.18 (0.03)	0.16 (0.05)
45–54	0.20 (0.01)	0.21 (0.01)	0.09 (0.02)	0.22 (0.06)
55–64	0.21 (0.01)	0.21 (0.01)	0.10 (0.02)	0.20 (0.06)
Origin				
Australia-born: Indigenous	0.03 (0.18)	0.04 (0.19)	0.05 (0.21)	0.04 (0.19)
Australia-born: Non-indigenous	0.79 (0.41)	0.78 (0.41)	0.81 (0.40)	0.79 (0.41)
Immigrant from a main English-speaking country	0.08 (0.27)	0.07 (0.25)	0.04 (0.20)	0.07 (0.26)
Immigrant from another country	0.09 (0.29)	0.11 (0.32)	0.11 (0.31)	0.10 (0.31)
Partner status				
Married	0.46 (0.50)	0.46 (0.50)	0.24 (0.43)	0.45 (0.50)
Cohabiting	0.21 (0.41)	0.22 (0.41)	0.32 (0.50)	0.22 (0.41)
Single	0.32 (0.47)	0.32 (0.47)	0.45 (0.50)	0.34 (0.47)
Educational attainment				
Year 11 or less	0.15 (0.35)	0.13 (0.33)	0.15 (0.36)	0.14 (0.35)
Year 12	0.18 (0.39)	0.17 (0.37)	0.15 (0.36)	0.18 (0.38)
Certificate or diploma	0.38 (0.49)	0.32 (0.47)	0.41 (0.49)	0.35 (0.48)
University degree or higher	0.29 (0.45)	0.39 (0.49)	0.28 (0.45)	0.34 (0.47)
Own dependent children				
0–4 years	0.16 (0.17)	0.20 (0.08)	0.20 (0.40)	0.17 (0.37)
5–14 years	0.23 (0.42)	0.27 (0.45)	0.18 (0.38)	0.25 (0.43)
No children aged < 15	0.68 (0.47)	0.64 (0.48)	0.67 (0.47)	0.66 (0.48)
# of adults in household	2.35 (1.06)	2.31 (1.01)	2.33 (1.00)	2.35 (1.03)

(Continues)

Variable	(1) Cisgender men	(2) Cisgender women	(3) TGD	(4) All persons
Place of residence				
Major city	0.62 (0.48)	0.63 (0.48)	0.68 (0.47)	0.62 (0.48)
Inner regional	0.28 (0.45)	0.27 (0.44)	0.25 (0.43)	0.27 (0.44)
Outer regional or remote	0.10 (0.30)	0.10 (0.31)	0.07 (0.25)	0.11 (0.31)
State				
New South Wales	0.28 (0.45)	0.28 (0.45)	0.30 (0.46)	0.28 (0.45)
Victoria	0.26 (0.44)	0.26 (0.44)	0.29 (0.45)	0.26 (0.44)
Queensland	0.23 (0.42)	0.22 (0.42)	0.19 (0.39)	0.22 (0.42)
Western Australia	0.09 (0.28)	0.09 (0.29)	0.07 (0.26)	0.09 (0.28)
South Australia	0.08 (0.28)	0.09 (0.28)	0.09 (0.29)	0.08 (0.28)
Tasmania	0.04 (0.19)	0.04 (0.19)	0.02 (0.13)	0.03 (0.18)
Australian Capital Territory	0.02 (0.15)	0.02 (0.15)	0.03 (0.18)	0.02 (0.15)
Northern Territory	0.00 (0.07)	0.01 (0.08)	0.01 (0.08)	0.01 (0.08)
Interviewed by phone	0.28 (0.45)	0.29 (0.45)	0.27 (0.45)	0.31 (0.46)
Other adults present during interview	0.28 (0.45)	0.26 (0.44)	0.26 (0.44)	0.26 (0.44)
Employed persons aged 18–64				
Employment contract type				
Permanent employees	0.66 (0.47)	0.65 (0.48)	0.53 (0.50)	0.65 (0.48)
Fixed-term contract employee	0.06 (0.24)	0.09 (0.28)	0.06 (0.24)	0.07 (0.26)
Casual employee	0.13 (0.34)	0.17 (0.38)	0.27 (0.45)	0.16 (0.36)
Self-employed	0.15 (0.36)	0.09 (0.29)	0.13 (0.34)	0.12 (0.33)
Other employment type	0.00 (0.04)	0.00 (0.03)	0.00 (0.00)	0.00 (0.03)
Usual hours worked per week	40.4 (12.4)	32.4 (12.1)	32.3 (13.7)	36.5 (13.1)
Multiple job holder	0.07 (0.26)	0.10 (0.30)	0.09 (0.29)	0.09 (0.28)
Proportion of hours worked from home	0.15 (0.29)	0.20 (0.33)	0.21 (0.35)	0.18 (0.31)
Supervisory responsibilities	0.48 (0.50)	0.42 (0.49)	0.48 (0.50)	0.45 (0.50)
Trade union member	0.14 (0.35)	0.19 (0.39)	0.19 (0.39)	0.16 (0.37)
Restrictive long-term health condition or disability	0.14 (0.35)	0.19 (0.39)	0.29 (0.46)	0.17 (0.37)
Job tenure				
< 1 year	0.20 (0.40)	0.22 (0.42)	0.34 (0.48)	0.22 (0.41)
1 to < 2 years	0.09 (0.29)	0.10 (0.30)	0.13 (0.34)	0.10 (0.30)
2 to < 5 years	0.24 (0.43)	0.23 (0.42)	0.24 (0.43)	0.24 (0.43)
5 to < 10 years	0.18 (0.39)	0.20 (0.40)	0.15 (0.36)	0.19 (0.39)
10 to < 20 years	0.18 (0.39)	0.16 (0.37)	0.11 (0.31)	0.16 (0.37)
20 or more years	0.10 (0.30)	0.09 (0.28)	0.02 (0.15)	0.09 (0.28)
Occupation group				
Managers	0.18 (0.38)	0.12 (0.33)	0.13 (0.34)	0.15 (0.36)
Professionals	0.23 (0.42)	0.33 (0.47)	0.23 (0.42)	0.28 (0.45)
Technicians and trades workers	0.21 (0.41)	0.04 (0.19)	0.08 (0.27)	0.13 (0.33)
Community and personal service	0.07 (0.25)	0.17 (0.38)	0.15 (0.36)	0.12 (0.33)
Clerical and administrative	0.06 (0.24)	0.19 (0.39)	0.12 (0.32)	0.12 (0.33)
Sales workers	0.05 (0.21)	0.08 (0.27)	0.15 (0.36)	0.06 (0.24)
Machinery operators and drivers	0.11 (0.31)	0.01 (0.12)	0.05 (0.21)	0.06 (0.34)
Labourers	0.09 (0.29)	0.06 (0.24)	0.10 (0.30)	0.08 (0.27)

(Continues)

Variable	(1) Cisgender men	(2) Cisgender women	(3) TGD	(4) All persons
Employer (firm) size				
Less than 20 employees	0.30 (0.46)	0.23 (0.42)	0.25 (0.44)	0.27 (0.45)
20–99 employees	0.16 (0.36)	0.13 (0.34)	0.17 (0.37)	0.14 (0.35)
100–499 employees	0.12 (0.33)	0.12 (0.32)	0.10 (0.30)	0.12 (0.32)
500 or more employees	0.40 (0.49)	0.49 (0.50)	0.42 (0.50)	0.44 (0.50)
Firm size unknown	0.02 (0.13)	0.03 (0.18)	0.06 (0.24)	0.03 (0.16)
Public sector firm	0.17 (0.38)	0.29 (0.45)	0.16 (0.36)	0.22 (0.42)
Industry				
Agriculture, forestry and fishing	0.03 (0.17)	0.01 (0.10)	0.02 (0.15)	0.02 (0.15)
Mining	0.03 (0.18)	0.01 (0.09)	0.00 (0.00)	0.02 (0.15)
Manufacturing	0.11 (0.32)	0.04 (0.19)	0.09 (0.28)	0.07 (0.26)
Electricity, gas, water and waste	0.02 (0.13)	0.01 (0.07)	0.00 (0.00)	0.01 (0.10)
Construction	0.15 (0.36)	0.02 (0.15)	0.06 (0.23)	0.09 (0.29)
Wholesale trade	0.03 (0.18)	0.02 (0.12)	0.04 (0.20)	0.02 (0.15)
Retail trade	0.07 (0.25)	0.09 (0.29)	0.14 (0.35)	0.08 (0.27)
Accommodation and food	0.04 (0.20)	0.05 (0.23)	0.13 (0.34)	0.05 (0.22)
Transport, postal and warehousing	0.06 (0.24)	0.02 (0.14)	0.02 (0.15)	0.04 (0.20)
Information media and telecommunications	0.01 (0.12)	0.01 (0.11)	0.02 (0.13)	0.01 (0.11)
Financial and insurance services	0.04 (0.20)	0.04 (0.19)	0.01 (0.09)	0.04 (0.19)
Rental, hiring and real estate	0.01 (0.09)	0.01 (0.12)	0.02 (0.13)	0.01 (0.11)
Professional, scientific and technical services	0.09 (0.29))	0.08 (0.26)	0.05 (0.21)	0.08 (0.27)
Administrative and support services	0.03 (0.16)	0.03 (0.17)	0.06 (0.24)	0.03 (0.17)
Public administration and safety	0.08 (0.26)	0.07 (0.25)	0.02 (0.15)	0.07 (0.25)
Education and training	0.06 (0.24)	0.15 (0.36)	0.10 (0.29)	0.10 (0.31)
Health care and social assistance	0.08 (0.27)	0.30 (0.46)	0.17 (0.38)	0.19 (0.39)
Arts and recreation services	0.02 (0.13)	0.01 (0.11)	0.02 (0.13)	0.02 (0.12)
Other services	0.04 (0.19)	0.03 (0.18)	0.03 (0.18)	0.04 (0.19)

Notes: All variables are binary variables unless indicated otherwise. Figures in parentheses are standard deviations. Included in total, but not reported separately, are persons whose gender identity was not adequately described.