

A comparative analysis of social mobility – Australia and Tasmania

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Introduction

This report provides an overview of social mobility in Tasmania compared with Australia, and other states and territories, by developing an indicator of absolute social mobility. Social mobility can be broadly defined as intergenerational improvement in income generating capacity which results in a change in social status. Social mobility can be measured in either absolute or relative terms. Absolute social mobility refers to changes in the proportion and number of the population whereas relative social mobility refers to the association between origin and destination social class categories.

The development of the indicator involves a two-step process; first ascertaining the population's level of educational attainment (as an independent variable to social mobility), and then incorporating the income variable for the population aged 40 to 49. While increased participation and achievement in post school education provides the potential for improved social mobility, tertiary or vocational educational attainment does not automatically transfer into improved social mobility. The opportunity needs to be realised through workforce participation (employment), as evident from occupational status and/or income generation.

The indicator for *potential* improved absolute social mobility can be expressed as a positive increase in the proportion of the population aged 40 to 49 with post school qualifications. Thus, the indicator for *realised* improved social mobility is a positive increase in the proportion of the population aged 40 to 49 earning above the median income over time.

Importantly, this indicator of social mobility is a measure of the 'best case scenario' as its measurement and analysis is restricted to the population aged 40 to 49 who are employed full time. Even in the 'best case scenario', Tasmania fairs comparatively worse than other jurisdictions in terms of realised social mobility which is explained by lower levels of educational attainment coupled with lower labour force attachment.

To develop the indicator of social mobility; educational attainment, labour force status and income variables are used from the ABS Census of Population and Housing (Australian Bureau of Statistics 2011a) for the years 1971, 1981, 1991, 2001 and 2011.

The Index of Dissimilarity (ID) is then applied to the indicator of social mobility to undertake comparative analysis between Tasmania and Australia and other states and territories with the purpose of identifying the extent of difference in social mobility between the jurisdictions. The ID generates a single figure index that identifies the minimum percentage of one population that would need to change for the frequency distributions of both populations to be the same. For this study, the ID is used to compare all states and territories with Australia in terms of 1) the distribution of the educational attainment of the population with tertiary, vocational or no post school qualifications, and 2) social mobility (educational attainment and income). The ID is also used to compare the level of attachment to the labour force between Tasmania and Australia, and to explain the exogenous impact of interstate migration on social mobility.

The structure of this report includes a concise executive summary of the key findings of the analysis of social mobility in Tasmania followed by a more detailed report of the process including the method and associated limitations, theoretical framework, findings and analysis.

Executive Summary

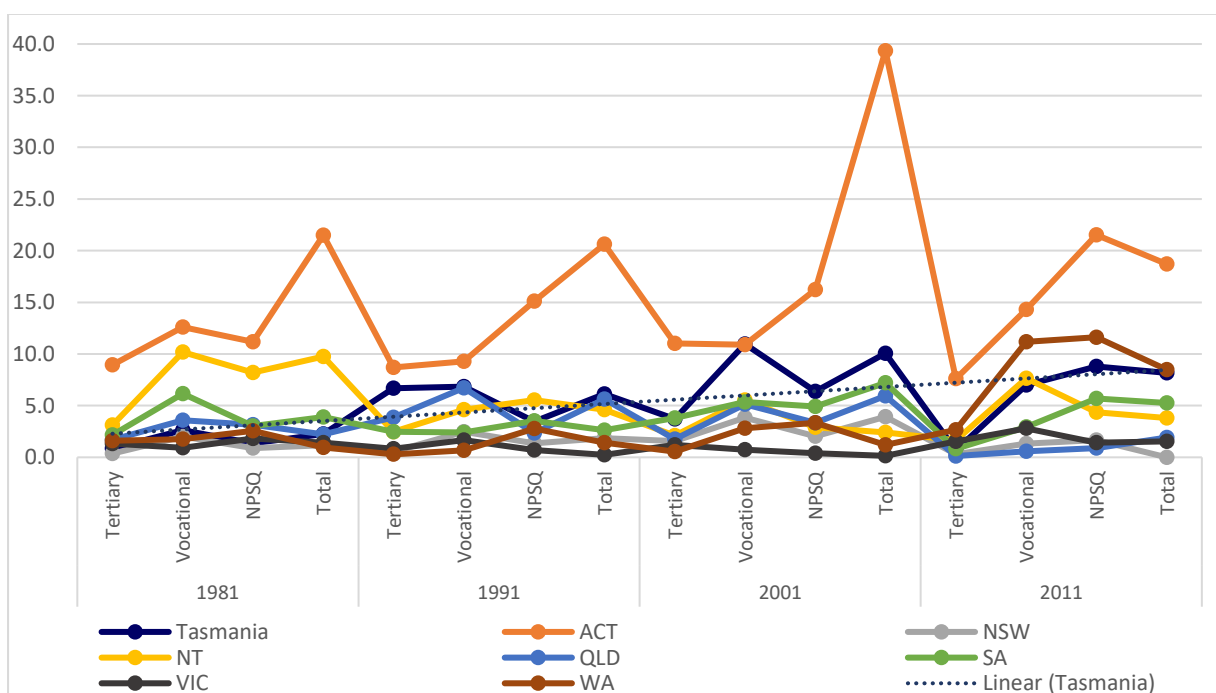
While Tasmania has experienced improved social mobility since 1981, it has been at a slower rate than Australia. In 2011, the proportion of the population¹ earning above the median income increased by 148 per cent since 1981, to 56.2 per cent (nationally the increase was 184 per cent to 64.4 per cent of the population earning above the median income).

Not only does Tasmania have reduced potential for improved social mobility due to lower levels of educational attainment, the opportunity to realise social mobility is also limited by lacklustre employment demand. However, former Tasmanians experience higher levels of social mobility when living interstate, particularly those who are tertiary qualified.

The catalyst for improved social mobility is tertiary education.

In terms of comparative performance for realised social mobility, using the ID, the least variance in income generation, and thus social mobility, between Tasmania and Australia exists for those with tertiary qualifications, suggesting that once tertiary qualifications are achieved, a comparable proportion of the population in their peak earning years (40 to 49) for all states and territories will be earning above the median income. However, much greater differences are apparent for those with vocational qualifications or no post school qualifications. For the total population aged 40 to 49, the extent of difference between Tasmania and Australia in terms of realised social mobility is the highest for all states and territories for all decades (apart from the ACT which is an anomaly). As shown in Figure 1, this difference has increased from 2.2 per cent to 8.2 per cent since 1981. The extent of difference for Tasmania is explained by a lower proportion of the population with tertiary qualifications.

Figure 1: ID of social mobility: income distribution by educational attainment between the states and territories and Australia, 1981 to 2011



Source: ABS Census, various years, author calculations

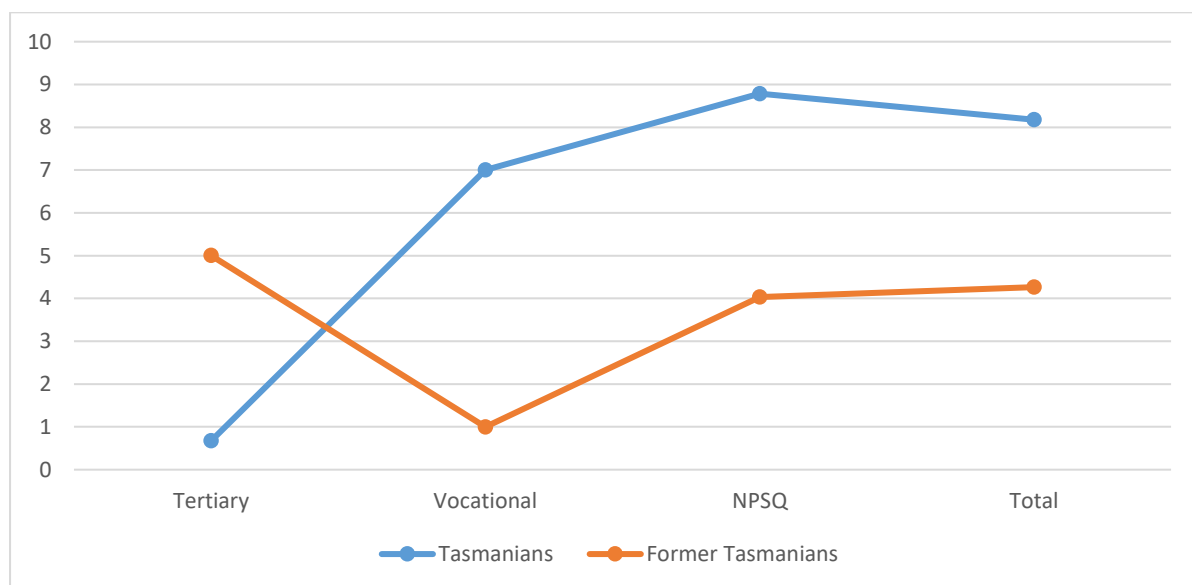
¹ References to the 'population' refer to those in the whole population aged 40 to 49 years

The ability to realise potential social mobility in Tasmania is impacted by the economic performance of the state and associated employment demand. Where labour force participation is increasing, hours worked is increasing and unemployment and those not in the labour force is decreasing, the potential for improved social mobility is heightened, particularly if employment demand is in industries and occupations requiring tertiary education qualifications.

As such, lower levels of social mobility in Tasmania is further explained by comparatively lower levels of tertiary qualifications combined with high levels of less than full time employment for both men and women, which is then compounded by the relatively higher proportion of women with tertiary qualifications and associated lower levels of labour force attachment.

However, evidence suggests that social mobility is greatest for former Tasmanians (those who lived in Tasmania five years prior to the 2011 Census) living interstate compared with both Tasmanians and Australians, particularly for those with tertiary qualifications. Former Tasmanians had higher levels of educational attainment than Tasmanians: 26.9 per cent held tertiary qualifications, 35.4 per cent had vocational qualifications and 37.7 per cent had no post school qualifications. 55 per cent of former Tasmanians were employed full time (compared with 51.6 per cent of Tasmanians). For each category of educational attainment there is greater realised social mobility for former Tasmanians than Tasmanians. 91.5 per cent of tertiary qualified former Tasmanians earned greater than the median income compared with Tasmanians (87 per cent) and Australians (86.5 per cent). Former Tasmanians have higher comparative realised social mobility than Tasmanians and Australians with 68.7 per cent of former Tasmanians earning more than the median income compared with 64.4 per cent of Australians. As the ID shows in Figure 2, former Tasmanians would have to change a smaller percent than Tasmanians to be equivalent to Australian social mobility.

Figure 2 Index of Dissimilarity of social mobility between Tasmanians and former Tasmanians and Australians, 2011



Source: ABS Census, 2011, author calculations

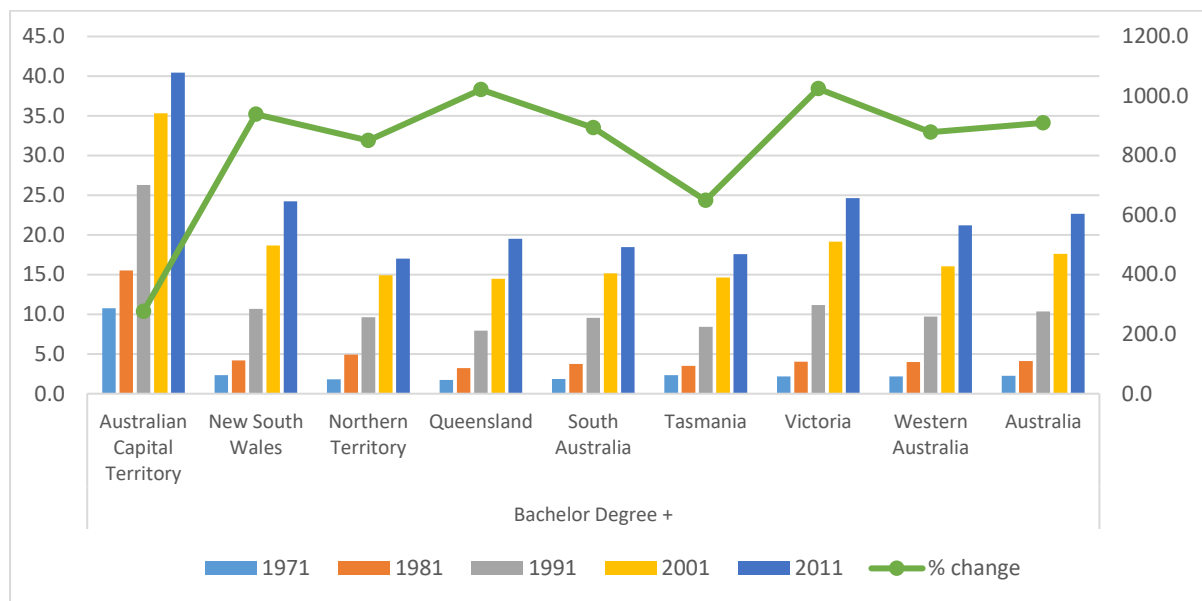
The indicator for realised absolute social mobility is developed based on full time employment, and as such is a measure of maximum or 'best case scenario' social mobility. In Tasmania case's, given the relatively higher proportion of the population not employed in a full time capacity, the potential for social mobility is not maximised. This could be explained by exogenous factors such as poor

economic performance and associated lacklustre employment demand as well as the lower level of tertiary qualifications.

Key educational attainment findings

In 2011, a greater proportion of the Tasmanian population aged 40 to 49 held post school qualifications and earned greater than the median Australian income than in 1981. This is most evident for those with tertiary qualifications. Even so, Tasmania has the lowest proportion of the population with tertiary qualifications (17.6 per cent, compared with 22.7 per cent nationally) and experienced the smallest percentage increase in the proportion of the population with tertiary qualifications (649.3 per cent since 1971 compared with 909.4 per cent nationally).

Figure 3 Proportion of population with tertiary qualifications and percentage change, 1971-2011



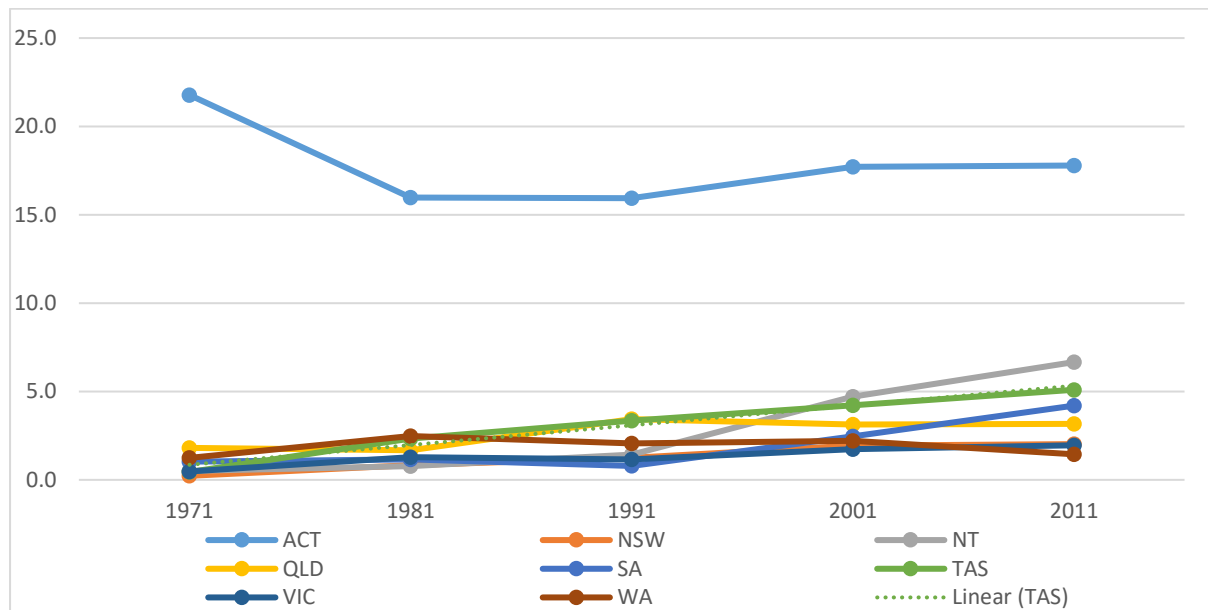
Source: ABS Census, various years, author calculations

The proportion of Tasmania's population aged 40 to 49 with post school qualifications increased 128.2 per cent to fifty per cent in the period 1971 to 2011 (behind only the Northern Territory), meaning that fifty per cent of the population had not achieved post school qualifications by the age of 40 to 49. However, this proportion is only slightly lower than the national rate of 54.2 per cent.

Similarly to the national population, vocational qualifications dominate the Tasmanian population with post school qualifications, with 32.4 per cent of the population aged 40 to 49 with vocational qualifications (behind only Queensland). The proportion of the population with vocational qualifications increased by 65.7 per cent since 1981 (again just behind Queensland). The national rate of growth was 57.7 per cent.

Since 1971, the educational attainment gap between Tasmania and Australia has been widening compared with other states and territories. Using the ID, to have an equivalent distribution of educational attainment as Australia, Tasmania's educational attainment distribution would need to change by 5.1 per cent, the highest of any state, compared with only 0.4 per cent in 1971 (see Figure). These findings suggest that Tasmania has a lower propensity for improved social mobility than any other state.

Figure 4. Index of Dissimilarity for educational attainment between states and territories and Australia, 1971-2011²

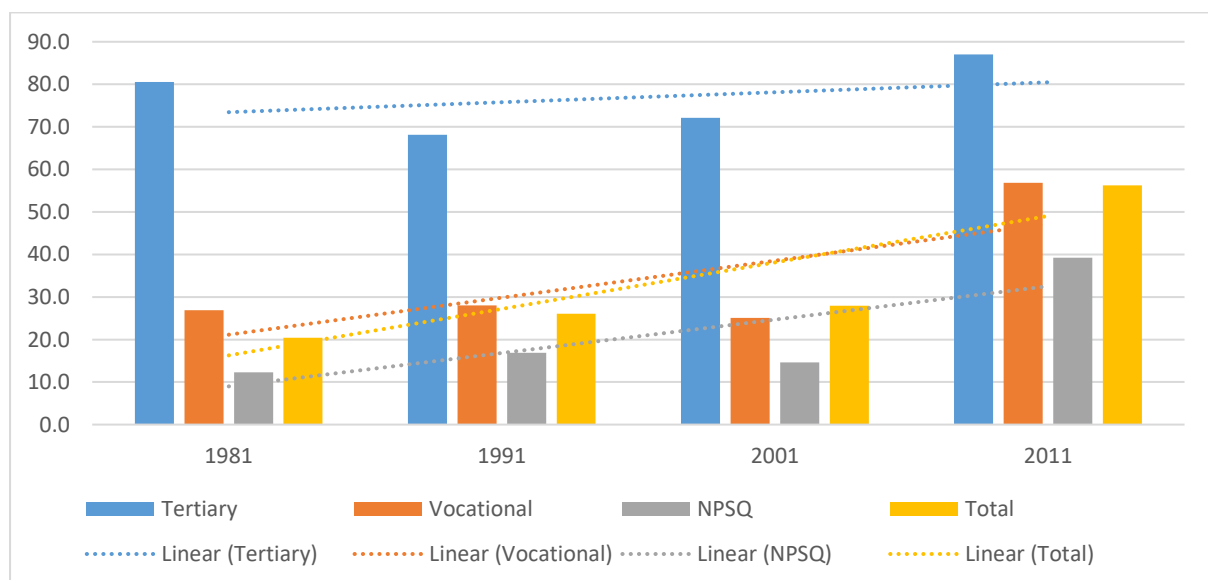


Source: ABS Census, various years, author calculations

Key income generation findings

The proportion of the Tasmanian population earning above the median income has been increasing for all categories of educational attainment since 1971, consistent with the national trend. The greatest proportion of the population earning above the median income is for those with tertiary qualifications (87 per cent in 2011) compared with the total population (56.2 per cent).

Figure 5: Proportion of population earning more than the median Australian (real) income, by educational attainment, 1981 to 2011, Tasmania



Source: ABS Census, various years, author calculations

² The ACT is an anomaly given the very high proportion of the population with post school qualifications for each decade.

While the greatest improvement in income generation is evident for those with vocational or no post school qualifications for both Tasmania and Australia, the proportion of the population earning greater than the median income is considerably lower than for those with tertiary qualifications.

Theoretical overview

Theoretically, social mobility is best understood as the change in social status relative to others within a given society, or the movement of individuals, families or groups, through a system of social hierarchy or stratification. Traditional theories of social mobility focus on the role of families and their structure as a unit of analysis for origin and destination in terms of movement (upward or downward) between social classes (Tach 2015). The approaches to measure social mobility are dependent on the socio-economic attainment used: social class, occupational status, individual earnings or family income. While sociologists prefer occupation, economists favour income to identify and measure social mobility. Unsurprisingly, the different approaches produce different outcomes. The bivariate approach to trends in social mobility limits the ability to isolate the attribution of causality to improved social mobility, despite occupation invariably incorporating educational attainment. Moreover, the composite nature of the occupation variable contributes to the inability to disaggregate causal attributes to social mobility, particularly when empirical evidence suggests that occupational education has a greater influence on intergenerational social mobility over time than associated occupational earnings, primarily due to gender differences (Hauser & Warren 1997; Torche 2015).

Social mobility can be further defined as absolute or relative. Absolute social mobility refers to the proportion and numbers of the population whereas relative social mobility refers to the association between origin and destination social class categories (Goldthorpe & Mills 2008; Torche 2015). Criticisms of absolute social mobility focuses on the potential for exogenous factors to impact on social mobility, where relative social mobility provides an indication of social fluidity (intergenerational change) which is more difficult to identify and measure and is largely influenced by endogenous factors.

Method

To develop the indicator of social mobility, post-school educational attainment, labour force status and income are incorporated using ABS Census of Population and Housing data for the years 1971, 1981, 1991, 2001 and 2011 for 40 to 49 year olds who are employed full time. 40 to 49 year olds are selected for three reasons. First, by the age of 40 most individuals should have completed their highest level of post-school qualifications. Second, 40 to 49 years olds have the highest of labour force participation rates for all age groups (see Table 1) and third, 40 to 49 years olds are more likely to be working in their prime earning capacity years (Woodhall 1987). By removing the part time, away from work and unemployed population, a more robust comparison is possible and results in a 'best case scenario' for identifying social mobility.

Table 1: Labour force participation rates, by age group, Tasmania

	1991			2001			2011		
	male	female	total	male	female	total	male	female	total
15-19	51.8	49.5	50.7	46.6	48.6	47.6	47.6	53.6	50.5
20-29	89.4	66.6	77.9	83.2	66.6	74.8	80.4	69.9	75.1
30-39	92.5	62.4	77.2	86.2	63.8	74.6	84.7	70.4	77.3
40-49	90.2	67.4	78.9	84.6	72.4	78.4	83.2	76.9	79.9
50-59	78.4	43.6	61.2	72.5	54.5	63.6	76.2	68.0	72.0
60-64	48.6	13.3	31.0	41.6	21.5	31.6	54.6	39.0	46.7
65+	8.1	3.2	5.3	8.5	3.3	5.5	13.5	6.7	9.8

Source: ABS Census, various years, author calculations

To enable utilisation of the Census data from different collection periods, a number of preparatory steps were required³.

- 1) Collation of post-school qualifications into bachelor degree or higher (tertiary), trade or technical qualification (vocational) and no post school qualifications (NPSQ) (See table 2)
- 2) Disaggregation by labour force status to focus on those employed full time only
- 3) Conversion of total income⁴ bands into annual income parameters⁵
- 4) Conversion of income bands into Real Income (in 2011-12 dollars)⁶
- 5) Collation of Real Income bands into low income, middle income and above the 2011 Australian median income of \$57,400⁷ (see Table 3).

³ 'Not stated' responses for all variables were removed from the data prior to analysis

⁴ Total income, also referred to as gross income, is the sum of income received from all sources before any deductions such as income tax, the Medicare Levy or salary sacrificed amounts are taken out. It includes wages, salaries, regular overtime, business or farm income (less operating expenses), rents received (less operating expenses), dividends, interest, income from superannuation, maintenance (child support), workers' compensation, and government pensions and allowances (including all payments for family assistance, labour market assistance, youth and student support, and support for the aged, carers and people with a disability).

⁵ Income was not collected in the 1971 Census. Income was collected as a weekly measure in the 1981 and 1991 Census' and as annual measure for the 2001 and 2011 Census'. Each of the Census' provided the alternate income parameter in brackets in the question form. As such, respondents should provide an estimate of average annual income, removing the concerns that weekly income can fluctuate for people whose incomes vary week to week, such as those who work casually, seasonally or as contractors, or those that go into and out of employment or the labour force.

⁶ Using the latest 16th series CPI which has a base of 100 in 2011-12, Real Income = Nominal Income in year X / CPI in year X x 100

⁷ The average wage for full time workers in 2011 was \$72 800 per annum and the median income (where 50 per cent of workers is under and 50 per cent over) was \$57 400. When part time workers are included the average wage drops to \$56 300, and the median drops to \$46,900 (Australian Bureau of Statistics 2011b)

Table 2 Collated post school qualifications – from Census'

	1971	1981	1991	2001	2011
Tertiary	Bachelor degree/Post-graduate diploma High degree	Higher degree Graduate diploma Bachelor degree	Higher Degree Post Graduate Diploma Bachelor Degree	Postgraduate Degree Level Graduate Diploma and Graduate Certificate Level Bachelor Degree Level	Postgraduate Degree Level Graduate Diploma and Graduate Certificate Level Bachelor Degree Level
Vocational	Trade Technician Tertiary (not Uni)	Diploma Certificate - trade Certificate - other	Undergraduate Diploma Associate Diploma Skilled vocational Basic vocational	Advanced Diploma and Diploma Level Certificate Level	Advanced Diploma and Diploma Level Certificate Level
No post school qualifications	Level not specified Field and level inadequately described Not applicable	Not classified Inadequately described No qualifications (but stated qualifications) No qualifications (so stated) Still at school Not stated Not applicable	Level of attainment inadequately described Level of attainment not stated Not applicable	Level of education inadequately described Level of education not stated Not applicable	Level of education inadequately described Level of education not stated Not applicable

Table 3 Real Income bands in 2011/12 dollars*

1981 (CPI = 29)			1991 (CPI = 59.3)			2001 (CPI = 74.7)			2011 (CPI = 99.8)		
Census bands	RI	RI	Census bands	RI	RI	Census bands	RI	RI	Census bands	RI	RI
< \$1,000	0	3445	< \$3,001	0	5059	\$1 - \$39	1	2783	\$1-\$199	1	10420
\$1,000 - \$2,000	3448	6897	\$3,001 - \$5,000	5061	8432	\$40 - \$79	2784	1953	\$200-\$299	10421	15630
\$2,001 - \$3,000	6900	10345	\$5,001 - \$8,000	8433	13491	\$80 - \$119	1954	8352	\$300-\$399	15631	20841
\$3,001 - \$4,000	10348	13793	\$8,001 - \$12,000	13492	20236	\$120 - \$159	8353	11137	\$400-\$599	20842	31262
\$4,001 - \$6,000	13797	20690	\$12,001 - \$16,000	20238	26981	\$160 - \$199	11138	13921	\$600-\$799	31263	41682
\$6,001 - \$8,000	20693	27586	\$16,001 - \$20,000	26983	33727	\$200 - \$299	13922	21418	\$800-\$999	41683	52103
\$8,001 - \$10,000	27590	34483	\$20,001 - \$25,000	33728	42159	\$300 - \$399	21419	27843	\$1,000-\$1,249	52104	65129
\$10,001 - \$12,000	34486	41379	\$25,001 - \$30,000	42160	50590	\$400 - \$499	27845	34805	\$1,250-\$1,499	65130	78155
\$12,001 - \$15,000	41383	51724	\$30,001 - \$35,000	50592	59022	\$500 - \$599	34806	41766	\$1,500-\$1,999	78156	104207
\$15,001 - \$18,000	51728	62069	\$35,001 - \$40,000	59024	67454	\$600 - \$699	41767	48727	>\$2,000	104208	+
\$18,001 - \$22,000	62072	75862	\$40,001 - \$50,000	67455	84317	\$700 - \$799	48728	55688			
\$22,001 - \$26,000	75866	89655	\$50,001 - \$60,000	84319	101180	\$800 - \$999	55689	69610			
>\$26,000	89659	+	\$60,001 - \$70,000	101182	118044	\$1,000 - \$1,499	69612	104416			
			> \$70,000	118046	+	>\$1,500	104418	+			

Orange = low income, Blue = middle income, Green = above median income

The indicator for *potential* improved absolute social mobility can be expressed as a positive increase in the proportion of the population aged 40 to 49 with post school qualifications. Thus, the indicator for *realised* improved social mobility is a positive increase in the proportion of the population aged 40 to 49 earning above the median income over time.

Social mobility can be further disaggregated by level of post school qualifications (tertiary or vocational) to ascertain further any causal attributes and undertake comparative analysis.

To explain any potential exogenous impact resulting from interstate migration (caused by relatively poor economic performance) on social mobility, analysis of the population aged 40 to 49 who lived in Tasmania five years prior to the 2011 Census compared with resident Tasmanians and Australians is conducted.

The Index of Dissimilarity (ID) is used to undertake comparative analysis of the extent of difference in absolute social mobility between Tasmania and Australia and other states and territories.

The ID provides an efficient way of summarizing differences and identifying anomalies. The ID is a simple technique used to compare differences and/or similarities between two or more populations. It generates a single figure index that identifies the minimum percentage of one population that would need to change for the frequency distributions of both populations to be the same (Jackson 2006; Rowland 2003). For this study, the ID is used to compare all states and territories with Australia in terms of 1) the distribution of the educational attainment of the population with tertiary, vocational or no post school qualifications, and 2) social mobility (educational attainment and income). The ID is also used to compare the level of attachment to the labour force between Tasmania and Australia, and to explain the exogenous impact of interstate migration.

The formula for this index in relation to the educational attainment example above is:

$$ID = \sum [Xb - Yb]/2$$

Where Xb represents percentage of Australians aged 40 to 49 of qualification X; Yb is the percentage of Tasmanians (or other jurisdictions) in the same circumstance; age 40 to 49 with qualification X; and ID is the minimum percentage of Australians or Tasmanians aged 40 to 49 with qualification X that would have to change their level of educational attainment to be the same.

Any other compositional category (e.g. labour force status or income) can be substituted for b to derive an index of dissimilarity for any other indicator. A result of 100 indicates complete dissimilarity, while an index of 0 indicates complete unity.

A limitation of the ID is that it is not always easy to determine what is a 'high' or 'low' result. In this report, the ID is used for the purposes of demonstrating the degree of segregation (dissimilarity) between Tasmania and Australia as compared with other states and territories.

Limitations

There are a number of limitations with this comparative analysis of social mobility between Tasmania and Australia and other jurisdictions.

The primary limitation is the focus on absolute rather than relative social mobility. Tasmania is likely to be impacted by exogenous variables such as interstate migration which disguises (either by under or over estimating) true social mobility whereas actual intergenerational social mobility is more likely to be identified and measured through relative social mobility and the familial relationships and attitudes to education and work.

In addition, while increased educational attainment provides the potential for improved social mobility, for it to be realised, participation in the workforce is required. This is dependent on the relative economic performance and employment demand as well as an appropriate match between education and training provision and job creation in the state. These exogenous variables impact both absolute and relative measures of social mobility, and are pertinent in Tasmania's evidence of social mobility improvement.

Another key limitation is the grouping of income bands to identify low, middle and above median income ranges. While the income bands have been converted to Real Income (in 2011/12 dollars) for comparative purposes, there is some overlap between the bands given the inability to achieve clear delineation. Furthermore, the Census income data includes non-wage income such as welfare assistance and private earnings (e.g. rent and dividends). Additionally, the 2011 median income identified by the ABS⁸ is for the entire working population (i.e. not restricted by age bands), and therefore not isolated to those in their peak earning years (those aged 40 to 49) as per this study.

To enable direct and meaningful comparison, the indicator is limited to the population employed full time, which is a relatively smaller proportion of the population aged 40 to 49 for all jurisdictions.

Given that the earnings of the proportion of the population who are employed part time, unemployed or not in the labour force, are likely to be less than those employed full time and less than the median income, this measure of absolute social mobility is indicative only and could be considered the 'best case scenario'. As such, the relative size of the proportion of the population employed full time should be taken into consideration in any analysis.

⁸ ABS, Employee Earnings, Benefits and Trade Union Membership, Australia, August 2011, Cat. No 6310.0

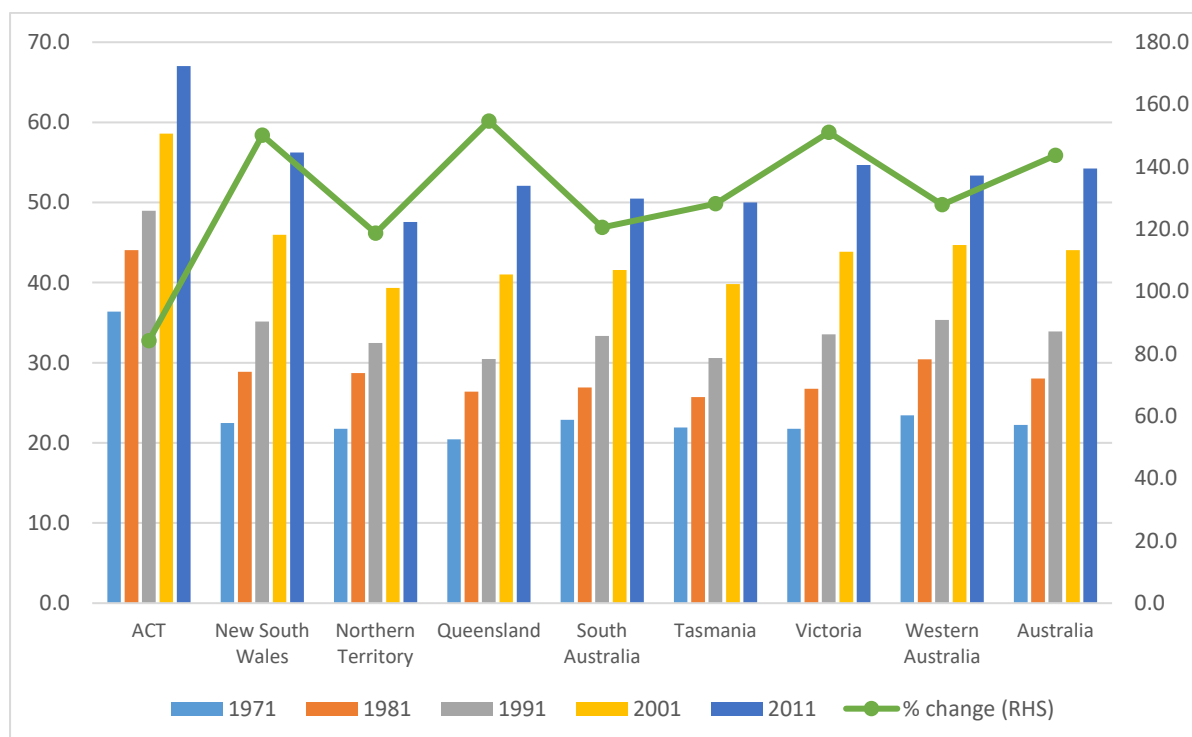
Findings

Step 1: Educational attainment

Since 1971, the proportion of the population aged 40 to 49 with post-school qualifications increased consistently for all states and territories. In 1971, 22.3 per cent of the Australian population had completed post school qualifications. By 2011, this increased to 54.2 per cent. The ACT had the highest proportion of the population with post school qualifications (67.0 per cent), increasing by 84.2 per cents since 1971. The Northern Territory had the lowest proportion with post school qualifications (47.6 per cent), however the proportion increased by 118.7 per cent since 1971. The greatest improvement in the proportion of the population with post school qualifications aged 40 to 49 was experienced by Queensland (154.7 per cent) followed by Victoria (151.0 per cent) and NSW (150.2 per cent).

In Tasmania's case, by 2011, 50 percent of the population aged 40 to 49 had achieved a post school qualification, up from 21.9 per cent in 1971, an increase of 128.2 per cent.

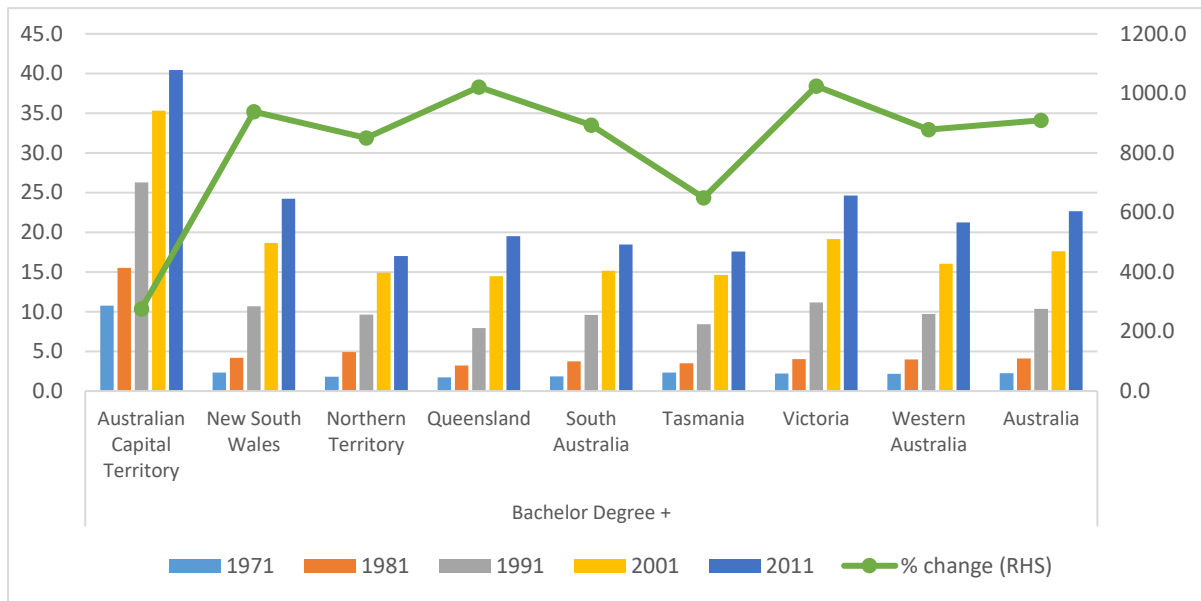
Figure 6 Proportion of the population with post school qualifications, and percentage change, 1971 to 2011



Source: ABS Census, various years, author calculations

Post school qualifications can be disaggregated by tertiary (bachelor degree or higher qualifications) and vocational (trade or technical diplomas or certificates). In Australia, the proportion of the population with tertiary qualifications increased by 909.4 per cent between 1971 and 2011 from 2.2 per cent to 22.7 percent of the population aged 40 to 49. The ACT has the highest proportion with tertiary qualifications (40.5 per cent), increasing 276.1 per cent since 1971 and the Northern Territory has the lowest (17 per cent), however, the NT improved 850.5 per cent since 1971. Victoria experienced the greatest increase in the proportion of the population with tertiary qualifications to 24.6 per cent (a 1024.5 percentage increase). Tasmania experienced to smallest percentage change of 649.3 since 1971, to 17.6 per cent of the population with tertiary qualifications.

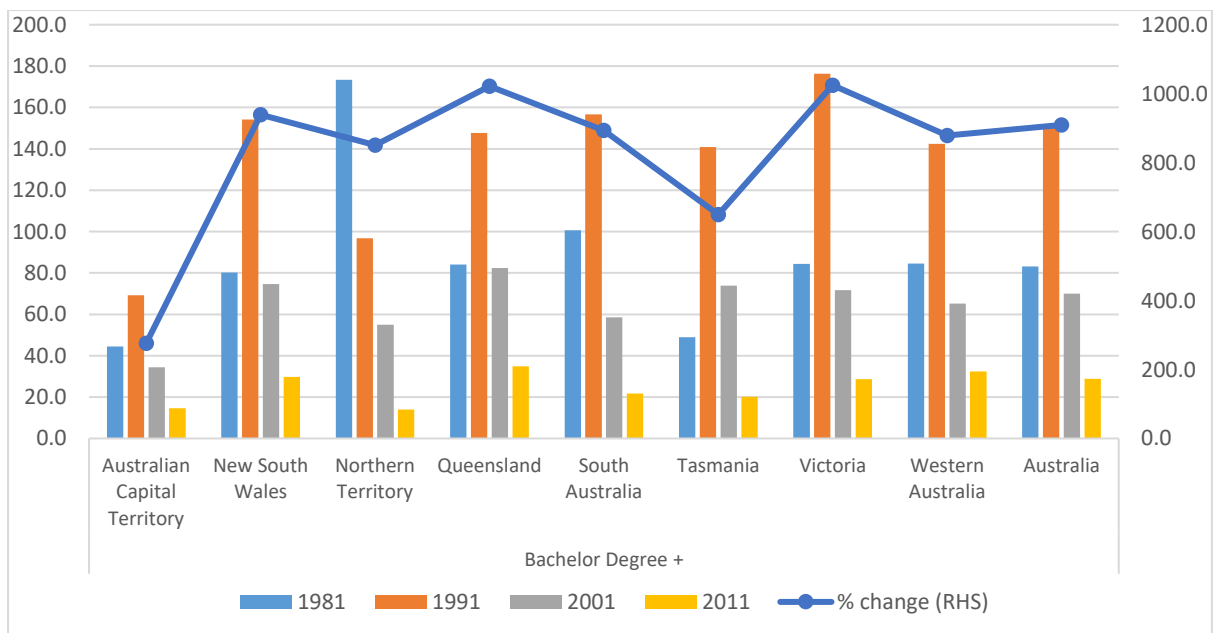
Figure 7 Proportion of population with tertiary qualifications and percentage change, 1971 to 2011



Source: ABS Census, various years, author calculations

The change in the proportion of the population with tertiary qualifications was not a linear process and differed each decade, consistent with policy positions and age, period and cohort effects. The decade with the greatest percentage change was experienced in the 10 years from 1981 to 1991 for all jurisdictions apart from the Northern Territory. This is consistent with the Gough Whitlam introduction of free tertiary education from 1974 to 1988 as well as a structural shift in the economy away from the traditional industry sectors and the participation of women in higher education. Since 1991, the percentage increase in the proportion of the population with tertiary qualifications has been declining.

Figure 8 Percentage change of population with tertiary qualifications, by decade

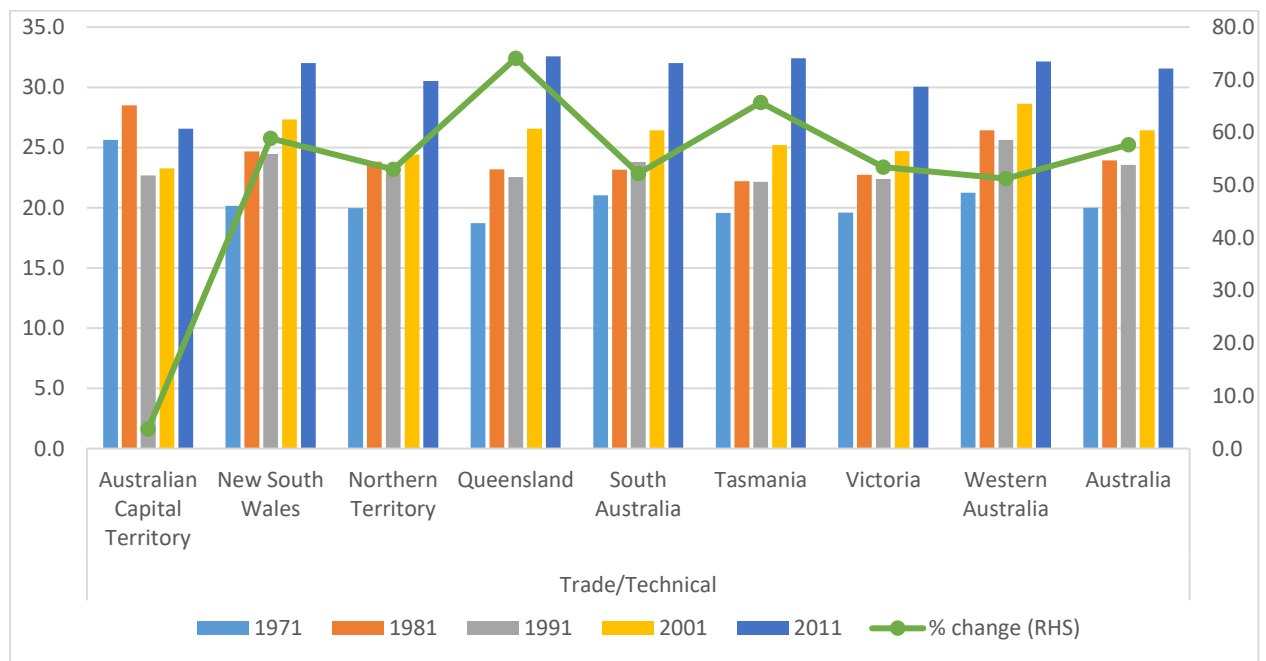


Source: ABS Census, various years, author calculations

Similar to the tertiary educated population, the proportion of the population with vocational qualifications has also increased since 1971, but not at the same rate as those with tertiary qualifications. In Australia, by 2011, 31.6 per cent of the population aged 40 to 49 held vocational qualifications, increasing by 57.7 per cent since 1971. The greatest increase was experienced in Queensland (74.1 per cent) and Tasmania (65.7 per cent). In 2011, Queensland had the highest proportion with vocational qualifications (32.6 per cent) followed by Tasmania (32.4 per cent) and Western Australia (32.1 per cent).

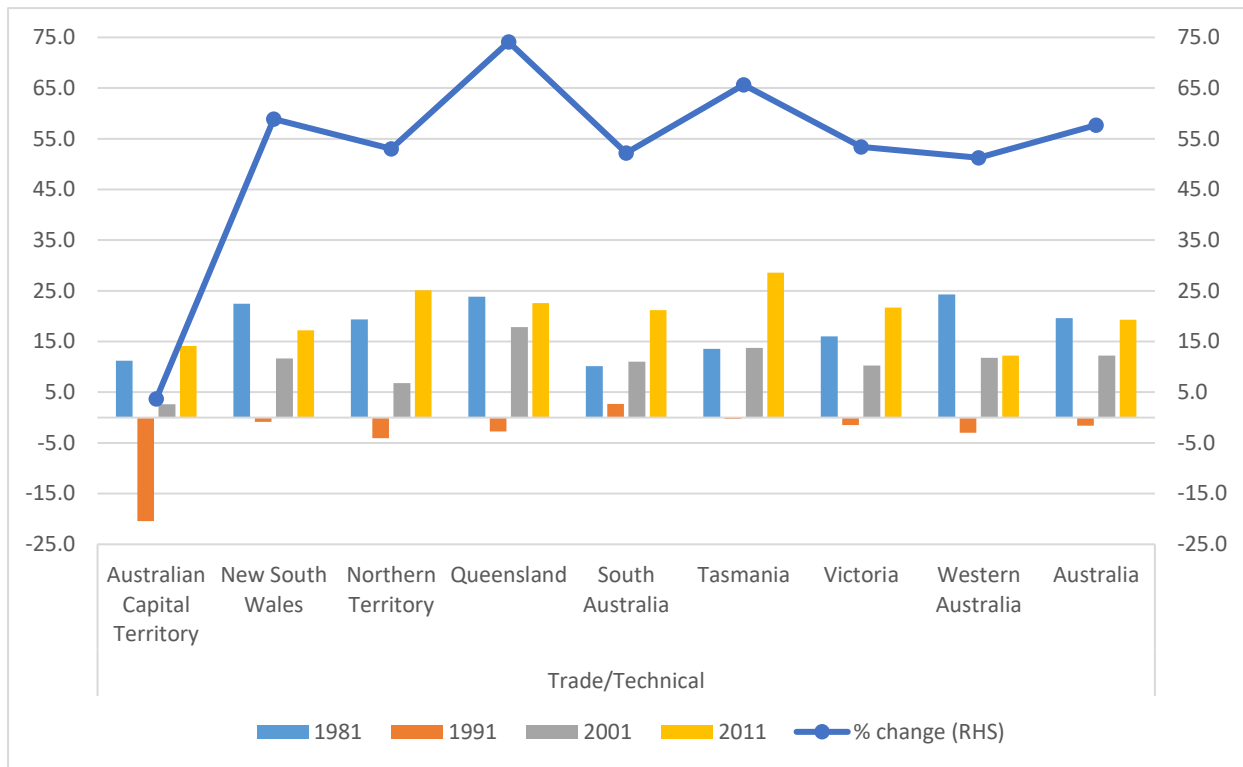
Again, the percentage change differs by decade. Unsurprisingly, the decade 1981 to 1991 experienced a decline in the proportion of the population with vocational qualifications, consistent with the policy push for tertiary education over the same period. However, in contrast to the tertiary educated population, the percentage change since 1991 has been increasing. This is consistent with changes within the economy to be dominated by service based industries not requiring tertiary qualifications (eg care based and tourism related industries) and a cyclical mining and construction boom increasing demand for vocational qualifications.

Figure 9 Proportion of population with vocational qualifications and percentage change, 1971 to 2011



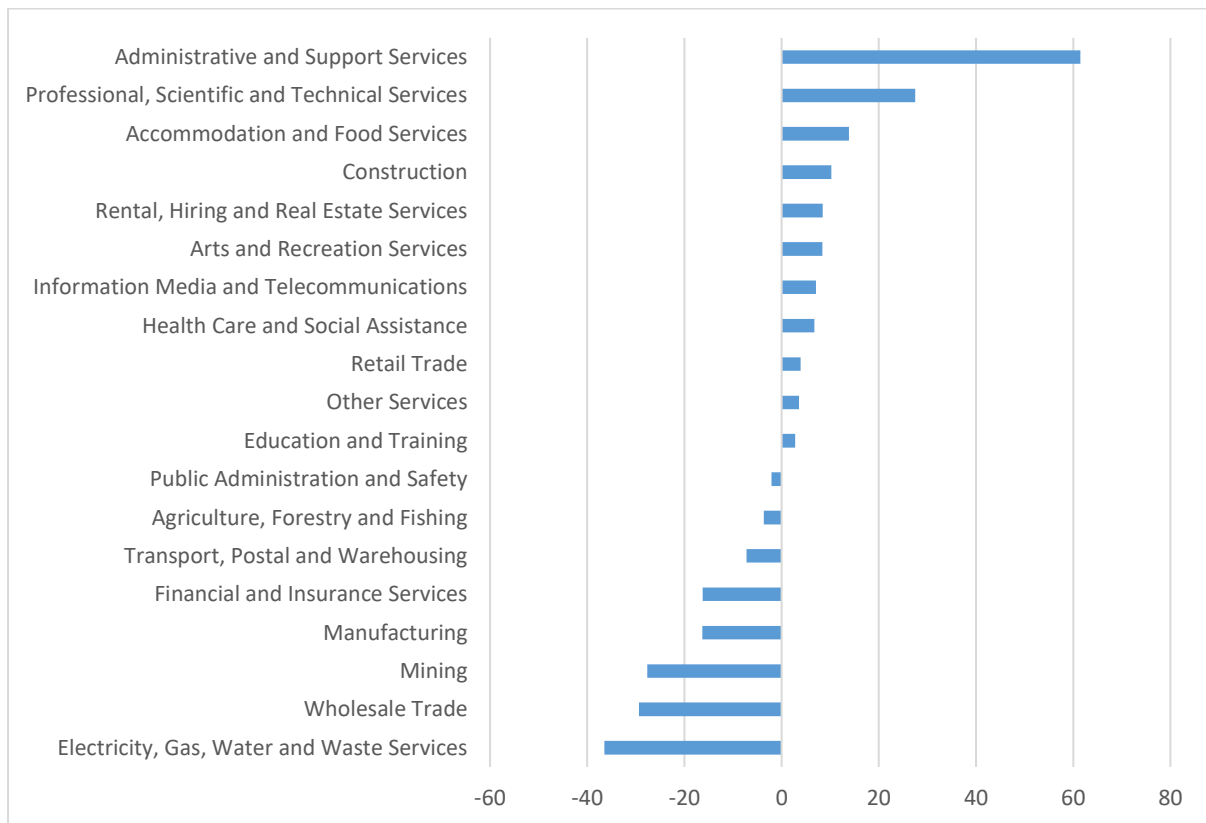
Source: ABS Census, various years, author calculations

Figure 10 Percentage change of population with vocational qualifications, by decade



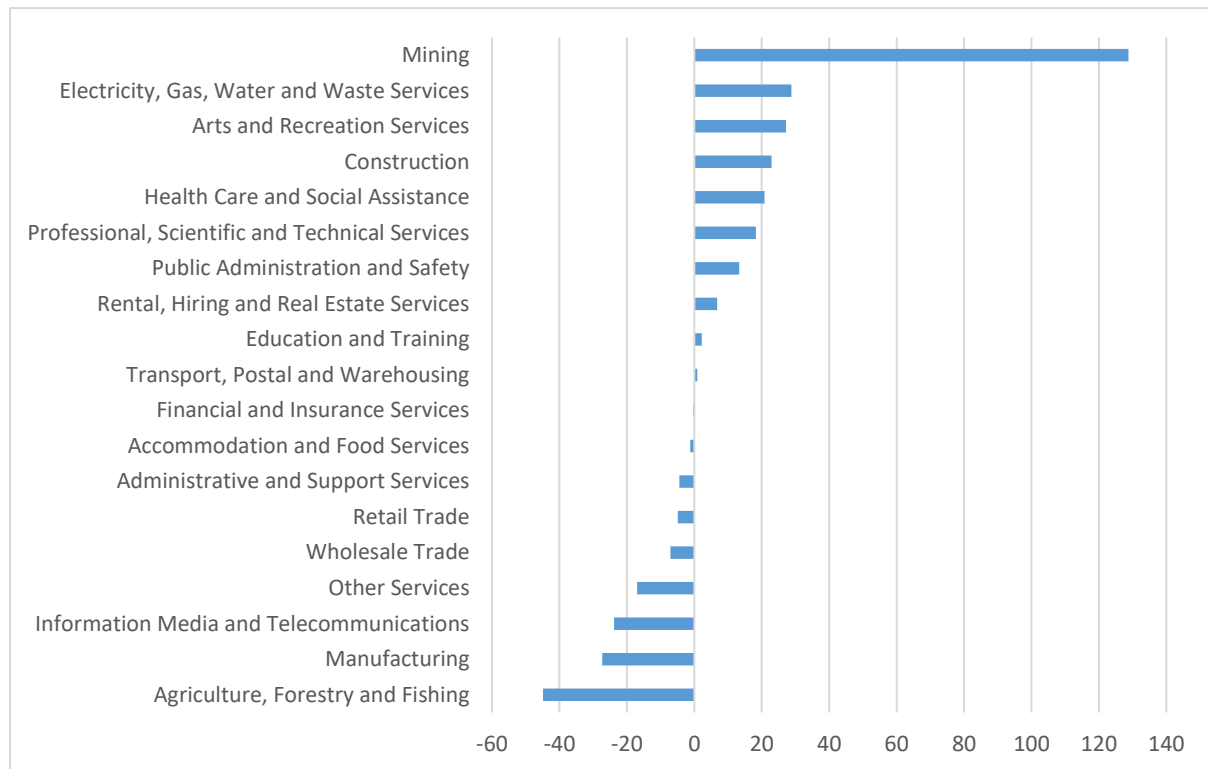
Source: ABS Census, various years, author calculations

Figure 11 Percentage change in the proportion of employment by industry sector, 1991 to 2001



Source: ABS, Labour Force, Australia, Detailed, Quarterly, Feb 2015, Cat. No. 6291.0.55.003

Figure 12 Percentage change in the proportion of employment by industry sector, 2001 to 2011

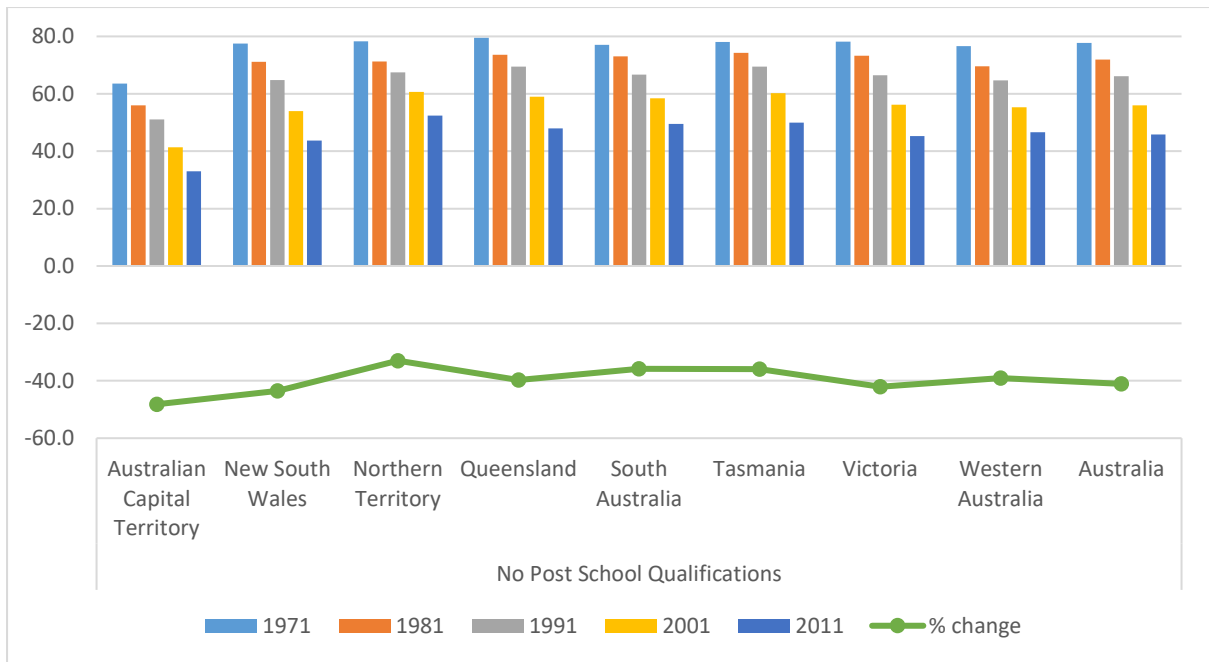


Source: ABS, Labour Force, Australia, Detailed, Quarterly, Feb 2015, Cat. No. 6291.0.55.003

Despite the fluctuations over the decades and the differences between the type of post school qualifications (tertiary versus vocational), the proportion of the population with no post school qualifications has been declining consistently in a linear fashion, with the percentage change increasing each decade for most jurisdictions.

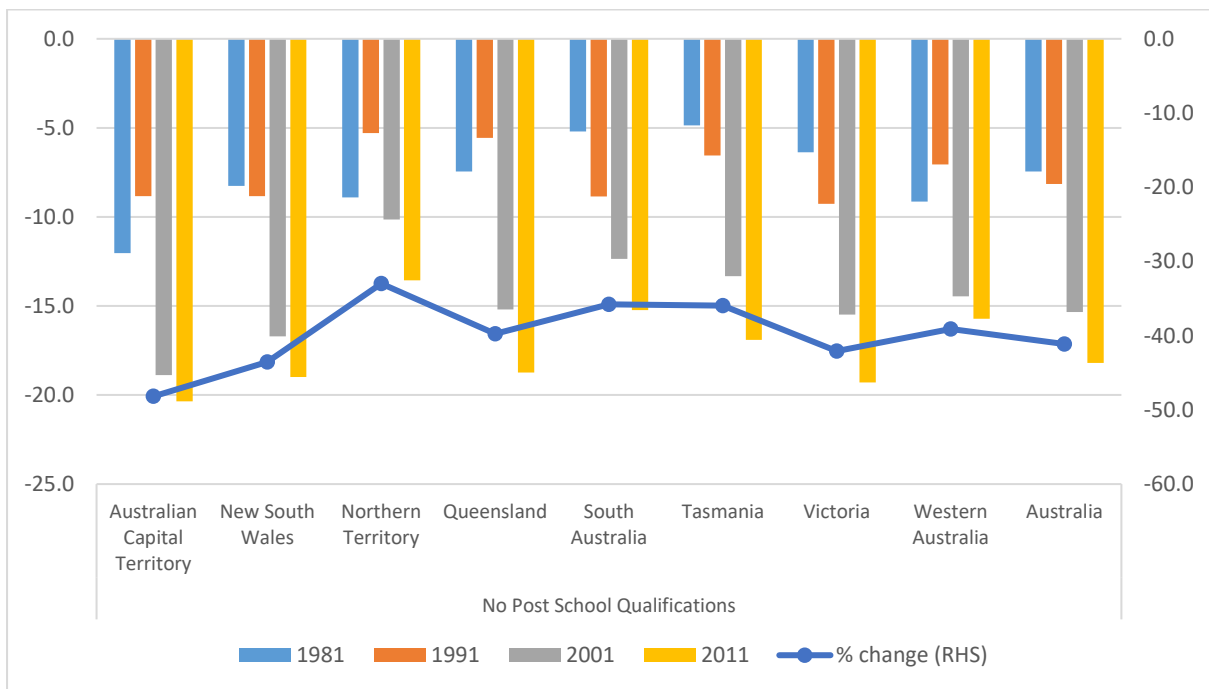
Of the states, Tasmania has the highest proportion of 40 to 49 years olds with no post school qualifications (50 percent) but has improved 36 per cent since 1971, just slightly better than South Australia.

Figure 13 Proportion of population with no post school qualifications and percentage change, 1971 to 2011



ABS Census, various years, author calculations

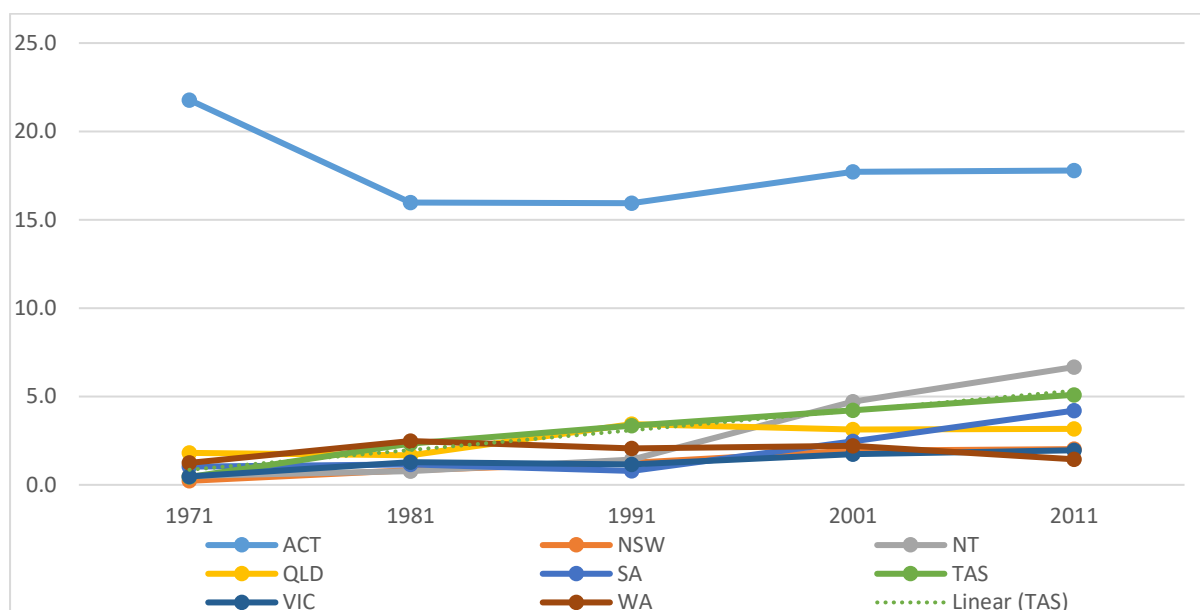
Figure 14 Percentage change of population with no post school qualifications, by decade



Source: ABS Census, various years, author calculations

The difference in educational achievement between the states and territories compared with Australia over time can be measured using the Index of Dissimilarity (ID). In this case, the ID measures the degree to which each jurisdiction would have to change one category (tertiary, vocational or no post school qualifications) to be equivalent to the national distribution. As is evident, in Figure, the degree of change required for Tasmania to have an equivalent educational attainment distribution to Australia has been increasing since 1971. By 2011, the extent of change required is 5.1 per cent compared with 0.4 per cent in 1971.

Figure 14 Index of Dissimilarity for educational attainment between states and territories and Australia, 1971-2011⁹



Source: ABS Census, various years, author calculations

As can be expected there are considerable gender differences in this aggregate view (see Appendix A for figures disaggregating findings by gender). At a national level, while both men and women have improved the proportion of 40 to 49 year olds with tertiary qualifications, women have done so more than men. 24.2 per cent of women have tertiary qualifications, an increase of 2217.0 per cent since 1971, compared with 21.0 per cent of men (a 523.1 percentage increase). Both men and women experienced the greatest increase in the 10 years between 1981 and 1991, yet the rate of improvement has been declining since. Of the states, Tasmania has the lowest proportion of the population with tertiary education for both men and women (15 and 20 per cent respectively) and the rate of increase is the slowest (314.0 and 1,887.8 per cent respectively).

Women also increased the proportion of the population with vocational qualifications, but not at the same rate as tertiary qualifications, while there has been a slight improvement for men. In 2011, in Australia, 27 per cent of women held a vocational qualification compared with 15 per cent in 1971 (a 221.8 percentage increase). Whereas for men, 36.3 per cent of men held a vocational qualification in 2011, compared with 31.0 per cent in 1971 (a 17 percentage increase). This is consistent with the rapid increase of participation in education and the labour force by women. In Tasmania's case, 26.9 per cent of women held a vocational qualification (close to the national rate), however the percentage increase was the lowest at 190.2 over the five decades. For men, Tasmania had a greater proportion of the population with vocational qualifications (38.3 per cent) compared with the national rate and had also improved at a greater rate than the national rate (30.6 per cent compared with 17.0 for the five decades) which offsets the poorer improvement in tertiary education.

The percentage changes by decade differ considerably for men and women. For women, the greatest change was experienced in the decade 1971 to 1981, consistent with the increased demand for feminised occupations such as teachers, nurses and secretaries requiring vocational qualifications only. Since the significant drop in the decade to 1991, the percentage change has been

⁹ The ACT is an anomaly given the very high proportion of the population with post school qualifications for each decade.

increasing, and did so considerably from 2001 to 2011. This is consistent with another significant increase in demand for feminised occupations, particularly in care – child care, aged care and disability care as well as health services. Increased demand for these qualifications should be expected to continue given the ageing population, increasing policy effort surrounding child care combined with a baby boom during the 2000s and the roll out of the National Disability Service (NDS). The scenario for men with vocational qualifications differs considerably, with improvements fluctuating each decade, but by small amounts only.

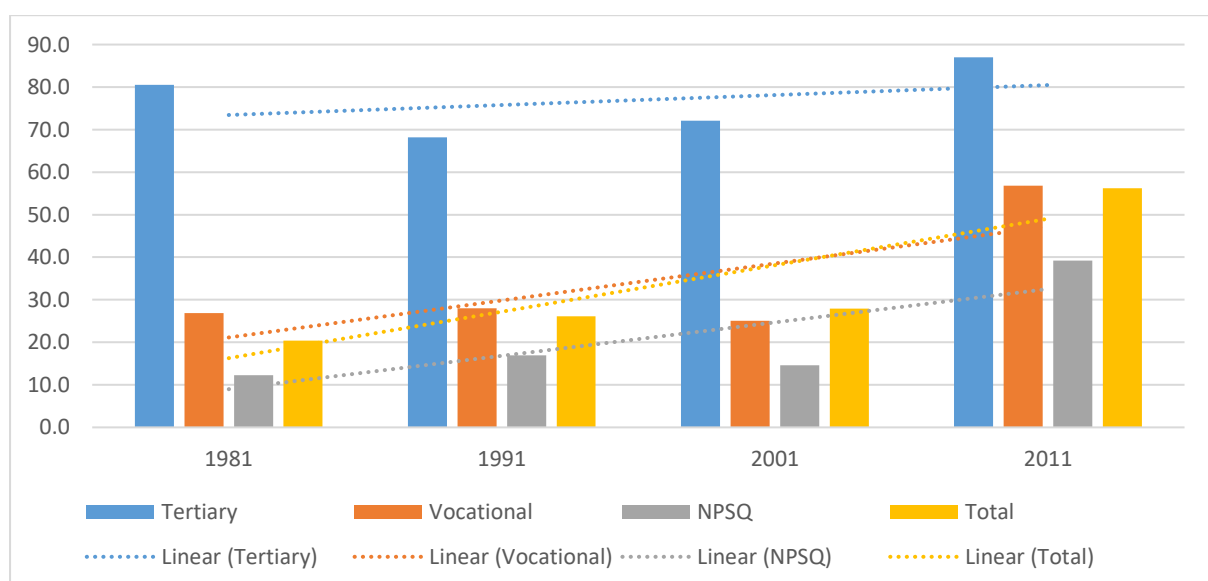
For both men and women there has been a persistent decline in the proportion of the population with no post school qualifications over the five decades. For all jurisdictions the greatest improvement for women occurred in the decade 2001 to 2011, and men from 1991 to 2001. Of the states, for men Tasmania has the second highest proportion with no post school qualifications behind South Australia (46.8 per cent and 47.0 per cent respectively). For women, Tasmania has the highest proportion with no post school qualifications (53.0 per cent). Continued supply side education policy efforts to increase participation in post school education, particularly for the long term, and hidden, unemployed will likely see the number and proportion of people with no post school qualifications continue to decline and a likely corresponding increase in vocational qualifications rather than tertiary qualifications.

Step 2: Incorporating the income variable

By adding the income variable, it is possible to identify the extent of realised improvements in absolute social mobility and undertake a comparison with other jurisdictions.

The proportion of the Tasmanian population earning more than the median income has been increasing for all categories of educational attainment since 1981. This is consistent with the national trend. The proportion of tertiary educated Tasmanians earning more than the median income increased from 80.5 per cent in 1981 to 87.0 per cent in 2011 while for the whole population only 56.2 per cent of the population earned above the medium income (increasing from 20.4 per cent in 1981).

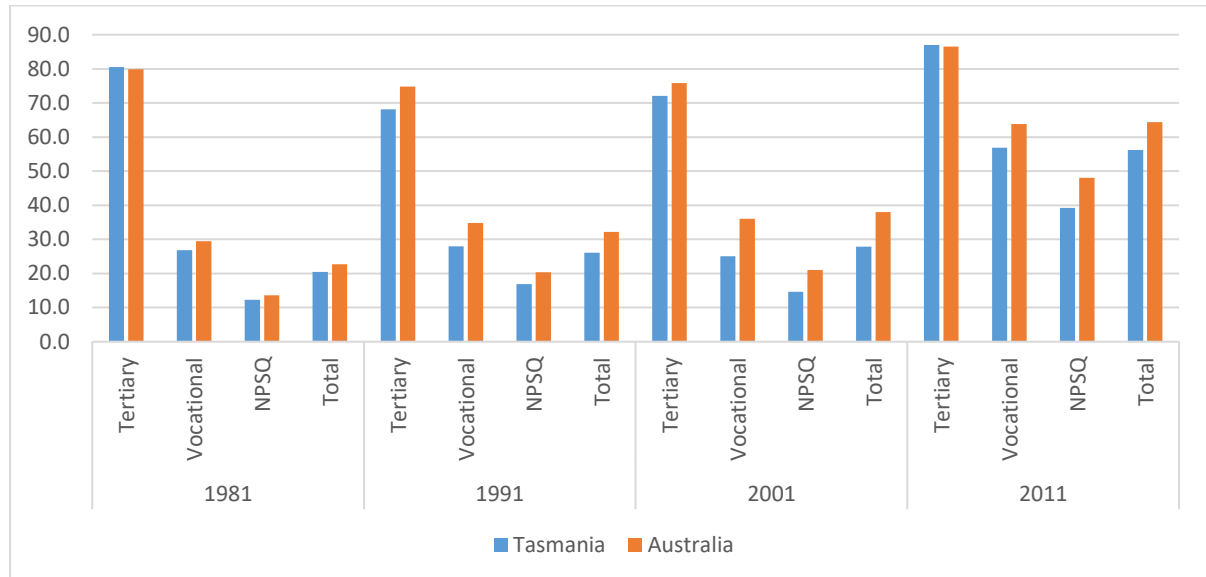
Figure 15 Proportion of population earning more than the median Australian (real) income, by educational attainment, 1981 to 2011, Tasmania



Source: ABS Census, various years, author calculations

The rate of change is also comparable for each category of educational attainment. In each decade, for each category, the rate of change for Tasmania is slightly lower than that of the nation.

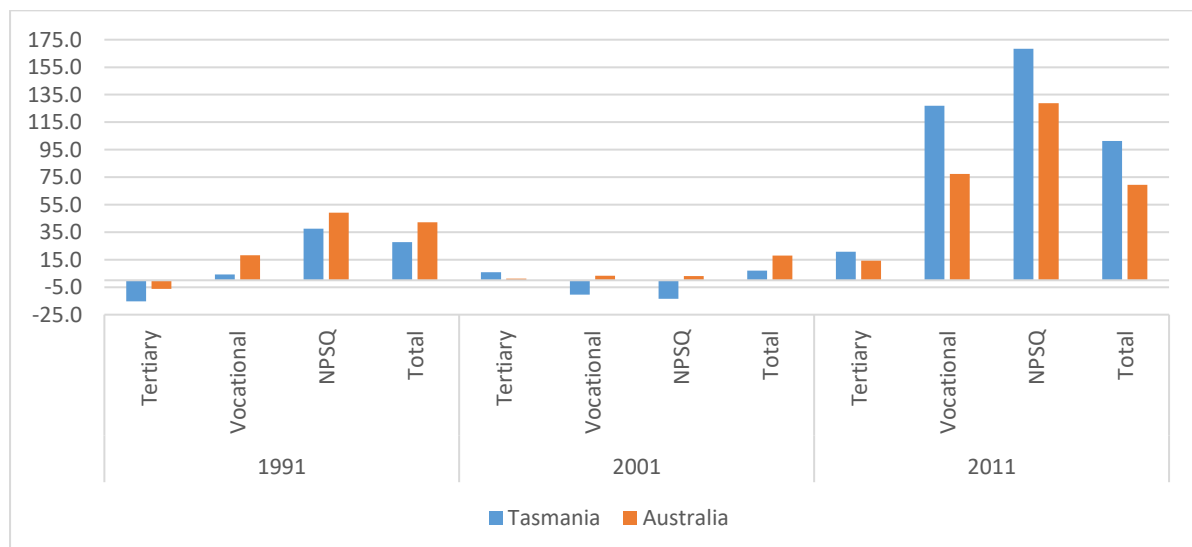
Figure 16 Proportion population earning more than the median income, by educational attainment, 1981 to 2011, Tasmania and Australia



Source: ABS Census, various years, author calculations

The greatest increase for both Tasmania and Australia was experienced in the decade 2001 to 2011, however this could be partly explained by the lower income band variable capturing a greater proportion of the population earning above the median income (see the limitations in the Method section). While the greatest improvement in income generation is evident for those with vocational or no post school qualifications for both Tasmania and Australia, the proportion of the population earning greater than the median income is considerably lower than for those with tertiary qualifications.

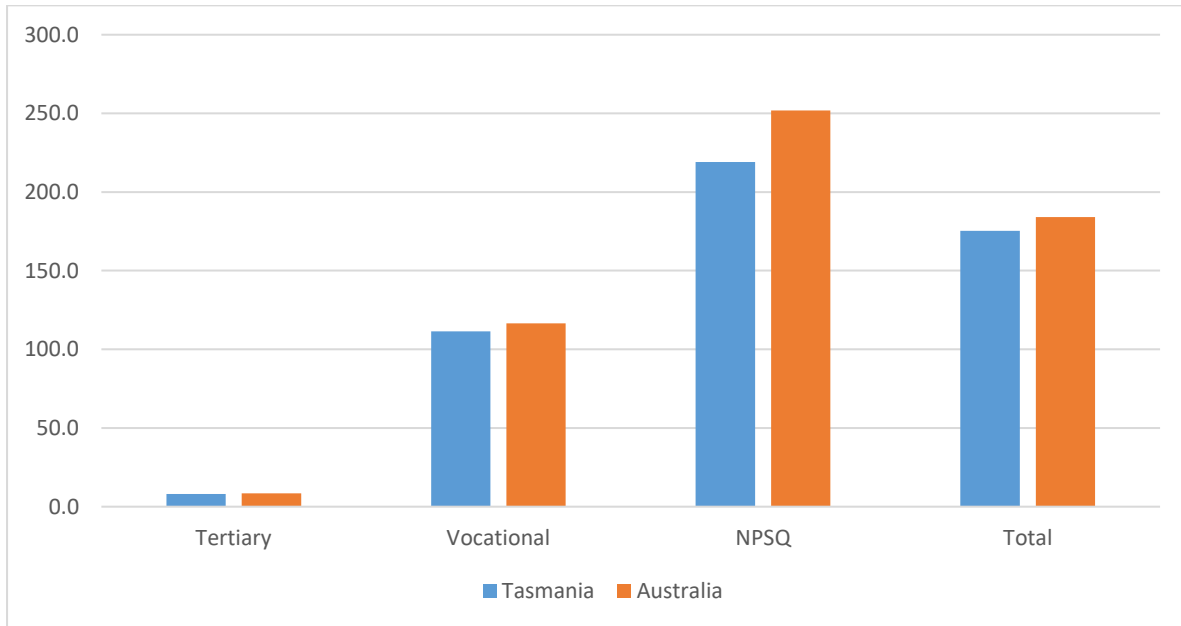
Figure 17 percentage change in proportion of population earning above the median income, by educational attainment, Tasmania and Australia



Source: ABS Census, various years, author calculations

The smallest change in realised social mobility exists for those with tertiary qualifications for both Tasmania and Australia (8.1 and 8.4 per cent respectively). These findings are consistent with social mobility theory which suggests that intergenerational improvement in social mobility is least for those who already hold tertiary qualifications (for both absolute and relative social mobility) (Goldthorpe & Mills 2008; Lambert, Prandy & Bottero 2007; Li & Devine 2011; Torche 2015)

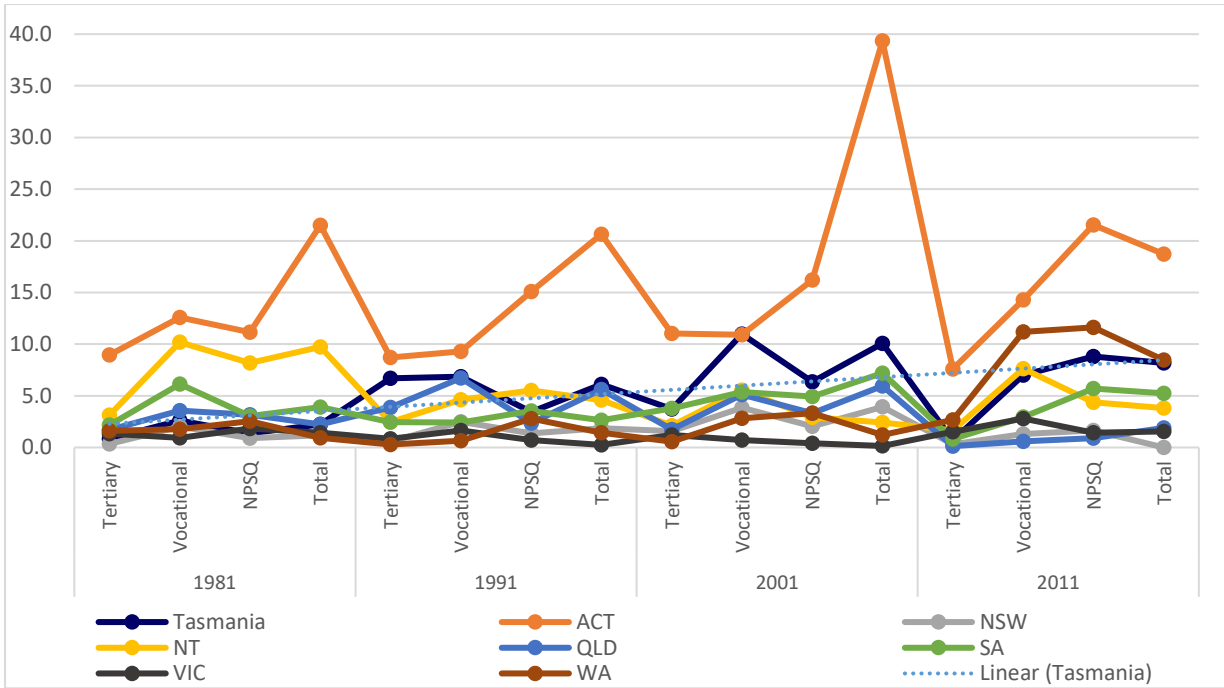
Figure 18 Percentage change in proportion of population earning above median income since 1981, Tasmania and Australia



Source: ABS Census, various years, author calculations

In terms of comparative performance for realised social mobility, using the ID, the least variance in income generation between Tasmania and Australia exists for those with tertiary qualifications, suggesting that once tertiary qualifications are achieved, a comparable proportion of the population in their peak earning years (40 to 49) for all states and territories will be earning above the median income. However, much greater differences are apparent for those with vocational qualifications or no post school qualifications. For the total population aged 40 to 49, the extent of difference between Tasmania and Australia in terms of realised social mobility is the highest for all states and territories for all decades (apart from the ACT which is an anomaly as previously explained). The extent of difference for Tasmania is explained by a lower proportion of the population with tertiary qualifications. As evident in Figure, this difference has increased from 2.2 per cent to 8.2 per cent since 1981.

Figure 19 ID of income distribution by educational attainment between the states and territories and Australia



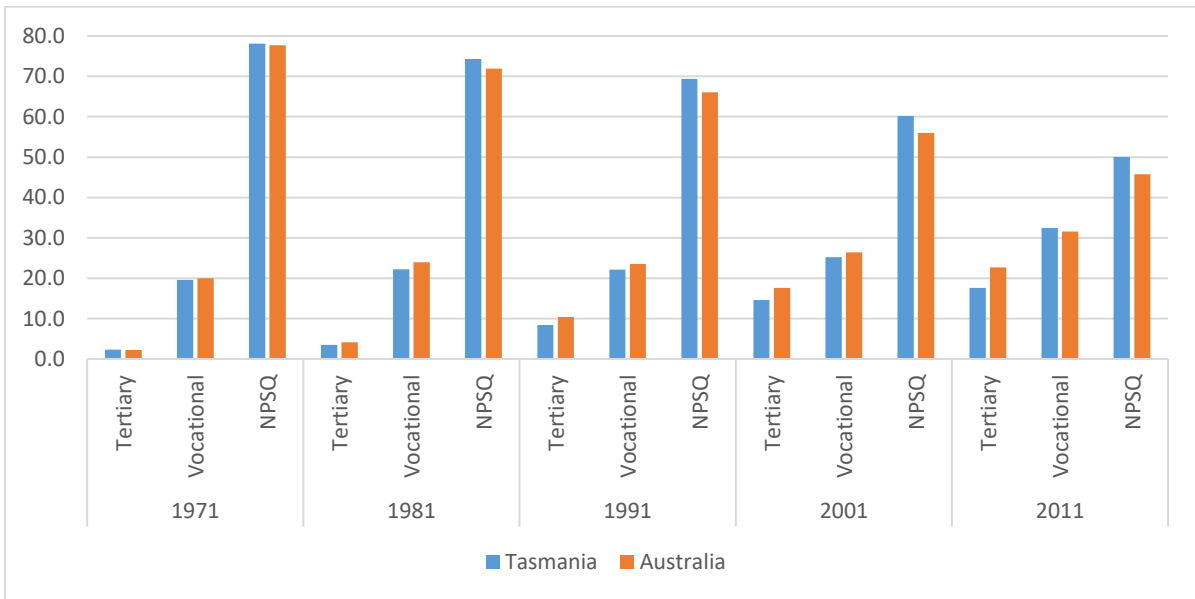
Source: ABS Census, various years, author calculations

Discussion

This analysis provides evidence that improved absolute social mobility is apparent in Tasmania, however it is less so than all other Australian states and territories. Since 1981, a greater proportion of the Tasmanian population aged 40 to 49 hold post school qualifications and earn greater than the median Australian income. This is most evident for those with tertiary qualifications.

In 2011, the proportion of the Tasmanian population aged 40 to 49 with tertiary qualifications was comparatively lower than the Australian rate (17.6 per cent compared with 22.7 per cent), contributing to the overall lower level of social mobility in Tasmania.

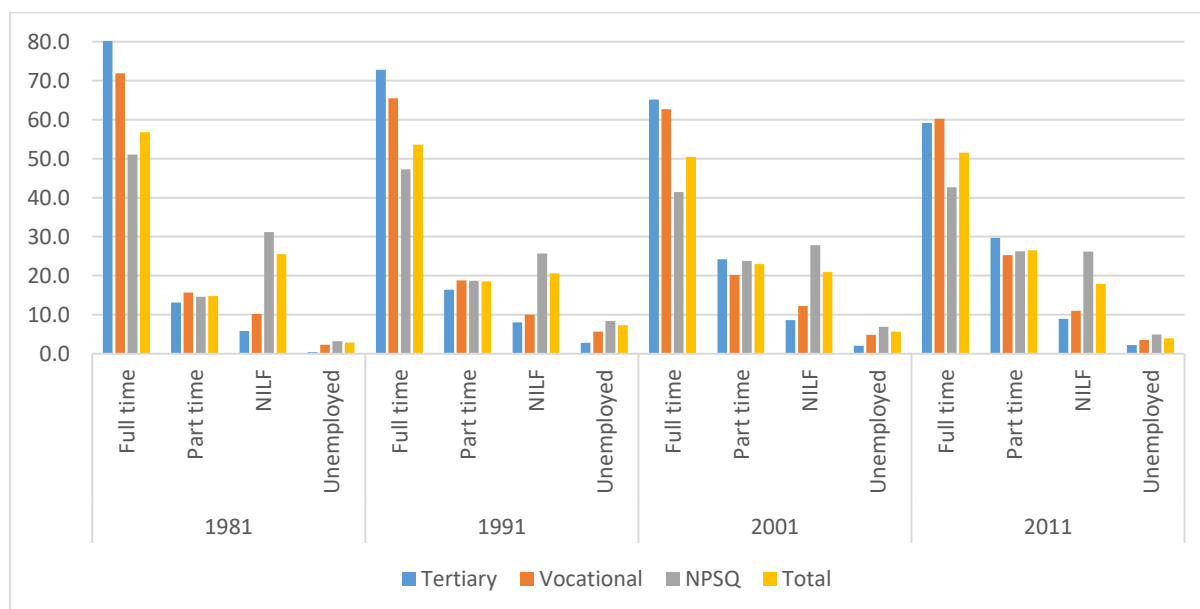
Figure 21 Proportion of population by educational attainment, Tasmania and Australia, 1971 to 2011



Source: ABS Census, various years, author calculations

The lower social mobility for the total population is further compounded by lower levels of attachment to the labour force for each category of educational attainment. Since 1981, the proportion of the population employed full time has decreased as has those not in the labour force while the proportion of the population employed part time has increased. These changes can be explained by gender differences.

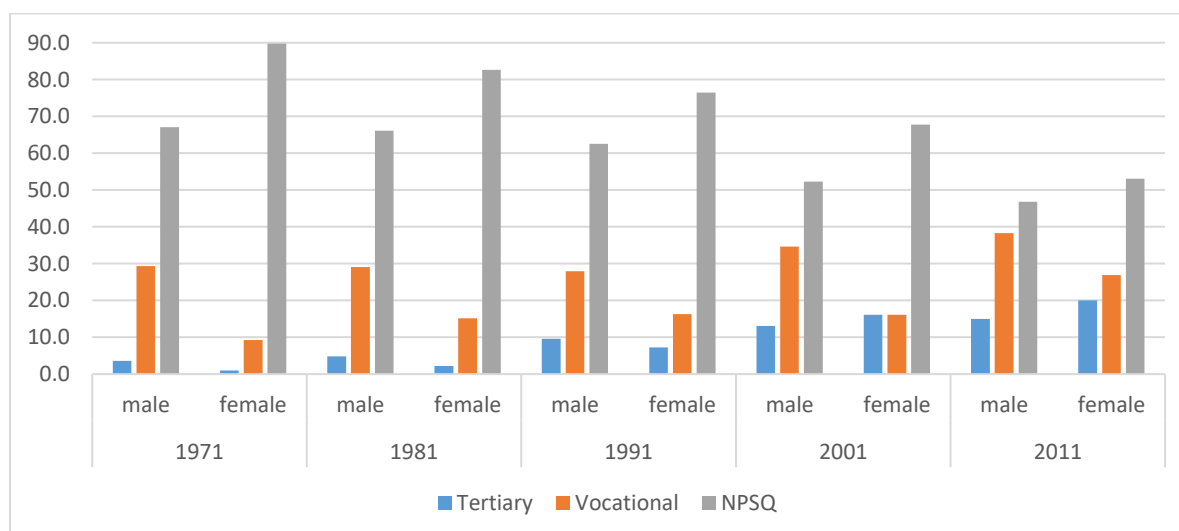
Figure 22 Proportion of population by labour force status and educational attainment, Tasmania, 1981 to 2011



Source: ABS Census, various years, author calculations

As previously discussed, levels of educational attainment differ by gender. Women are more likely to be tertiary qualified than men, and men are more likely to be vocationally qualified, however, women are also more likely to not hold any post school qualifications. In 2011, 20 per cent of females compared with 15 per cent of males held tertiary qualifications.

Figure 23 Proportion of population by educational attainment, males and females, Tasmania, 1971 to 2011



Source: ABS Census, various years, author calculations

When attachment to the labour force is incorporated, the impact on realised absolute social mobility is evident. Men generally have lower levels of attachment to the labour force than women for all levels of educational attainment when compared with the national average. This difference has been increasing since 1981. Consistent with Australia, part time employment for men in Tasmania has been increasing, as has the proportion not in the labour force.

Table 4 Labour force status by educational attainment, males, Tasmania and Australia, 1981 to 2011

Males	Tertiary		Vocational		NPSQ		Total		
	Tas	Aus	Tas	Aus	Tas	Aus	Tas	Aus	
1981	Full time	92.6	89.7	87.2	87.7	81.5	80.8	83.7	83.6
	Part time	5.9	7.5	6.4	6.3	5.9	6.7	6.0	6.6
	NILF	1.2	1.9	3.6	3.8	8.2	8.6	6.5	6.6
	Unemployed	0.3	1.0	2.8	2.2	4.4	3.9	3.7	3.2
1991	Full time	86.6	87.2	80.4	81.9	70.3	72.7	74.8	77.4
	Part time	7.2	6.5	7.5	6.7	6.9	7.0	7.1	6.8
	NILF	3.7	2.9	5.4	4.6	11.7	10.7	9.1	7.8
	Unemployed	2.6	3.4	6.8	6.7	11.1	9.7	9.0	7.9
2001	Full time	83.5	84.4	74.3	78.8	60.0	65.5	68.2	73.7
	Part time	9.2	8.4	10.8	9.4	10.6	10.2	10.5	9.6
	NILF	5.5	4.3	9.4	7.5	19.9	17.3	14.2	11.4
	Unemployed	1.9	2.9	5.5	4.3	9.5	7.0	7.0	5.3
2011	Full time	77.7	83.8	76.3	80.6	59.6	65.8	69.1	75.5
	Part time	14.0	9.3	12.0	9.8	12.5	10.9	12.5	10.1
	NILF	5.7	4.2	8.2	6.6	22.0	18.5	14.0	10.7
	Unemployed	2.6	2.7	3.5	3.0	5.8	4.8	4.4	3.6

Source: ABS Census, various years, author calculations

The proportion of females employed full time in Tasmania is consistently less than the Australia proportion since 1991 for all categories of educational attainment and greater for those employed part time.

Table 5 Labour force status by educational attainment, females, Tasmania and Australia, 1981 to 2011

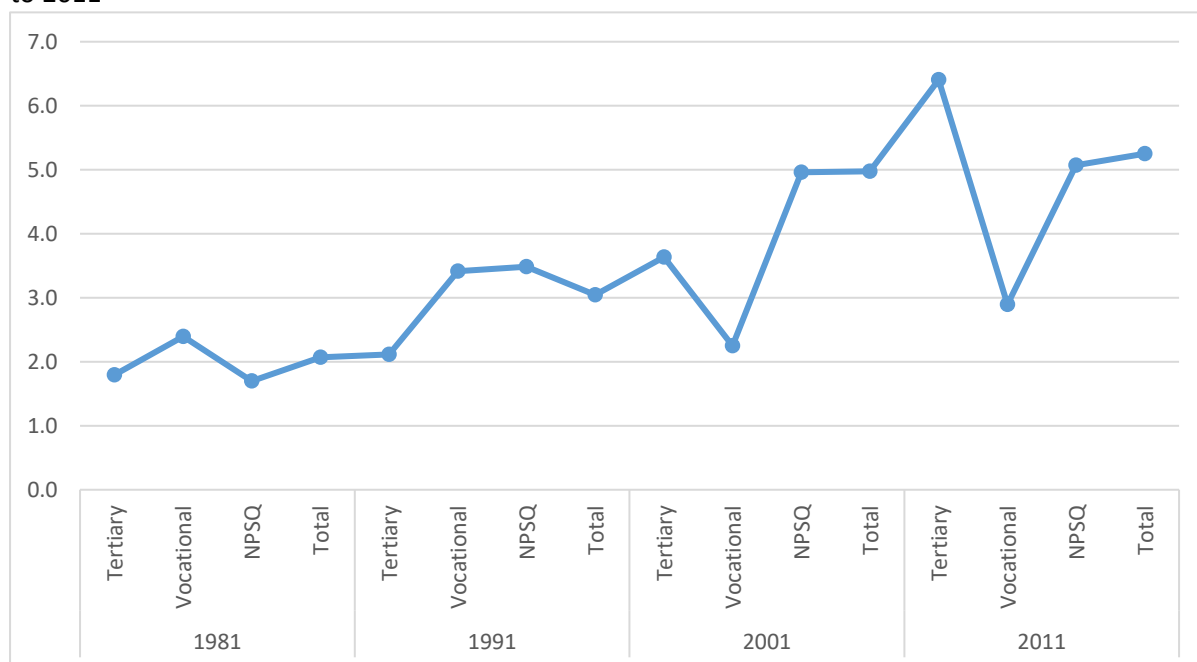
Females	Tertiary		Vocational		NPSQ		Total	
	Tas	Aus	Tas	Aus	Tas	Aus	Tas	Aus
1981								
Full time	53.2	51.4	41.6	40.9	26.1	30.9	29.1	32.9
Part time	29.7	29.2	33.9	30.2	21.7	20.2	23.8	21.9
NILF	16.4	17.3	23.0	27.3	50.0	46.8	45.1	43.2
Unemployed	0.7	2.1	1.4	1.6	2.2	2.1	2.1	2.0
1991								
Full time	54.0	55.6	39.7	43.2	28.1	34.0	31.9	37.4
Part time	29.0	28.1	38.4	34.2	28.5	27.1	30.2	28.3
NILF	13.9	13.0	18.0	18.7	37.4	33.2	32.4	29.0
Unemployed	3.1	3.4	3.8	4.0	6.1	5.7	5.5	5.2
2001								
Full time	50.7	52.7	38.9	40.5	27.9	32.8	33.4	37.9
Part time	36.1	32.2	39.6	37.0	33.5	30.8	34.9	32.2
NILF	11.1	12.8	18.1	18.7	33.6	32.2	27.4	26.1
Unemployed	2.1	2.3	3.5	3.7	5.0	4.3	4.3	3.8
2011								
Full time	46.1	48.7	38.9	40.1	29.3	33.5	35.5	39.2
Part time	40.8	35.1	42.9	38.8	37.1	32.9	39.4	35.1
NILF	11.2	13.5	14.6	17.2	29.4	29.6	21.6	22.0
Unemployed	1.9	2.7	3.6	3.9	4.2	4.0	3.5	3.6

Source: ABS Census, various years, author calculations

A comparative analysis of labour force attachment by educational attainment between Tasmania and Australia using the Index of Dissimilarity reveals significant differences in the distribution of labour force attachment between Tasmania and Australia which has been increasing since 1981. In 2011, the greatest difference in labour force status is for those with tertiary qualifications and the least for those with vocational qualifications, however the extent of difference for each category of educational attainment has been increasing since 1981. These difference can be explained by gender differences in both educational attainment and labour force status but also by employment demand in Tasmania over the period.

The comparatively high levels of less than full time employment for both men and women combined with a relatively greater proportion of tertiary qualified women, and associated lower level of attachment to the labour force contributes to the unrealised potential for improved social mobility in Tasmania.

Figure 24 ID of labour force status by educational attainment between Tasmania and Australia, 1981 to 2011



Source: ABS Census, various years, author calculations

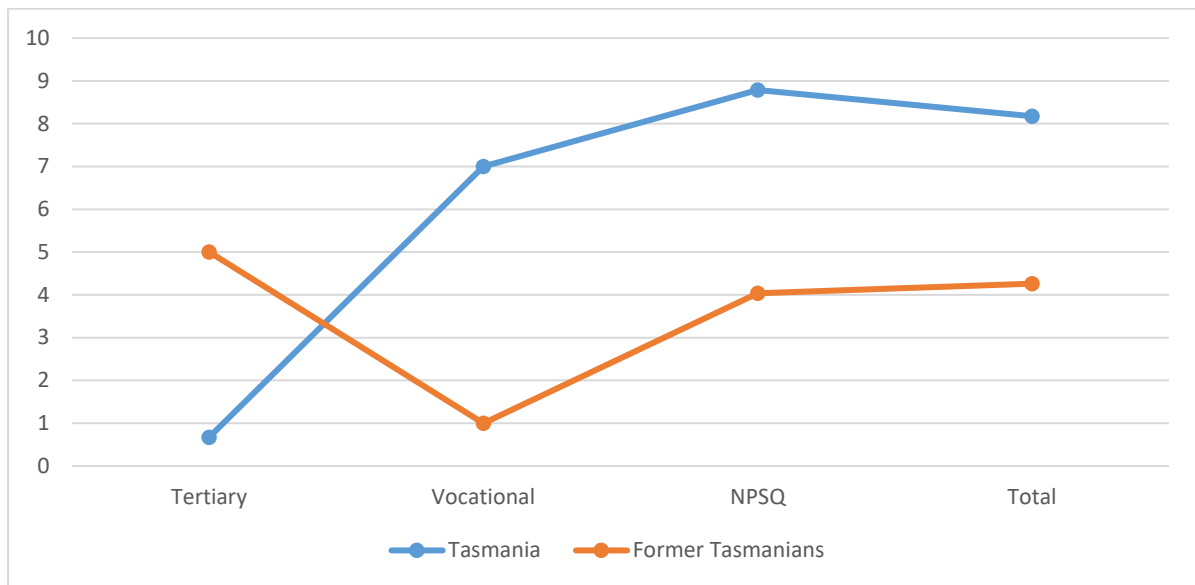
Given the indicator for realised absolute social mobility is developed based on full time employment, it is a measure of maximum or ‘best case scenario’ realised social mobility. In Tasmania case’s, given the relatively higher proportion of the population not employed in a full time capacity, the potential for social mobility is not maximised. This could be explained by exogenous factors such as poor economic performance and associated lacklustre employment demand.

To attempt to explain any exogenous impact on absolute social mobility in Tasmania resulting from relative economic performance and associated outward migration, an analysis of 40 to 49 year olds who lived in Tasmania five years prior to the 2011 Census was undertaken.

Of the 3,685 former Tasmanians aged 40 to 49, 26.9 per cent held tertiary qualifications, 35.4 per cent had vocational qualifications and 37.7 per cent had no post school qualifications. 2,026 former Tasmanians were employed full time (55 per cent). Of these, 31.5 per cent were tertiary qualified, 36.5 per cent vocationally qualified and the remainder had no post school qualifications (32 per cent).

For each category of educational attainment there is greater realised social mobility for former Tasmanians than Tasmanians. Using the ID, to be equivalent to the national income distribution for educational attainment, more Tasmanians would have to change their income than former Tasmanians for all education categories, except those with tertiary qualifications. 91.5 per cent of tertiary qualified former Tasmanians earned greater than the Australian median (real) income compared with Tasmanians (87 per cent) and Australians (86.5 per cent). For those with vocational qualifications, social mobility is almost equivalent for Tasmanians, former Tasmanians and Australians. Overall, former Tasmanians have higher comparative social mobility than Tasmanians and Australians with 68.7 per cent of former Tasmanians earning more than the median income compared with 64.4 per cent of Australians.

Figure 25 Index of Dissimilarity of social mobility between Tasmanians and former Tasmanians and Australians, 2011



Source: ABS Census, various years, author calculations

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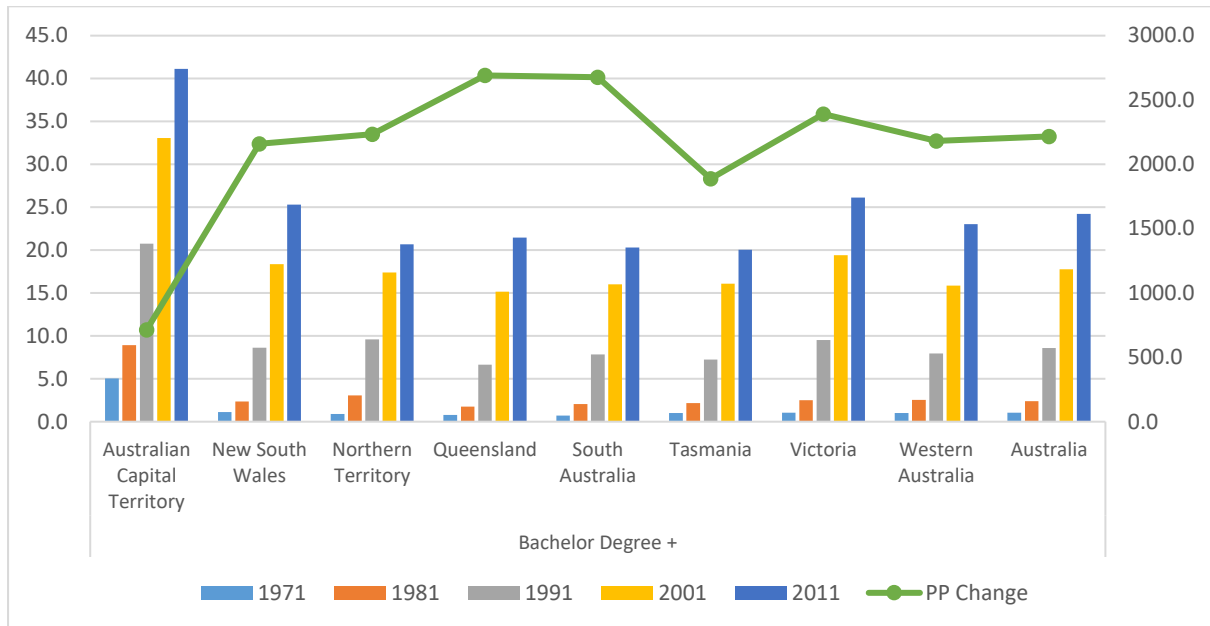
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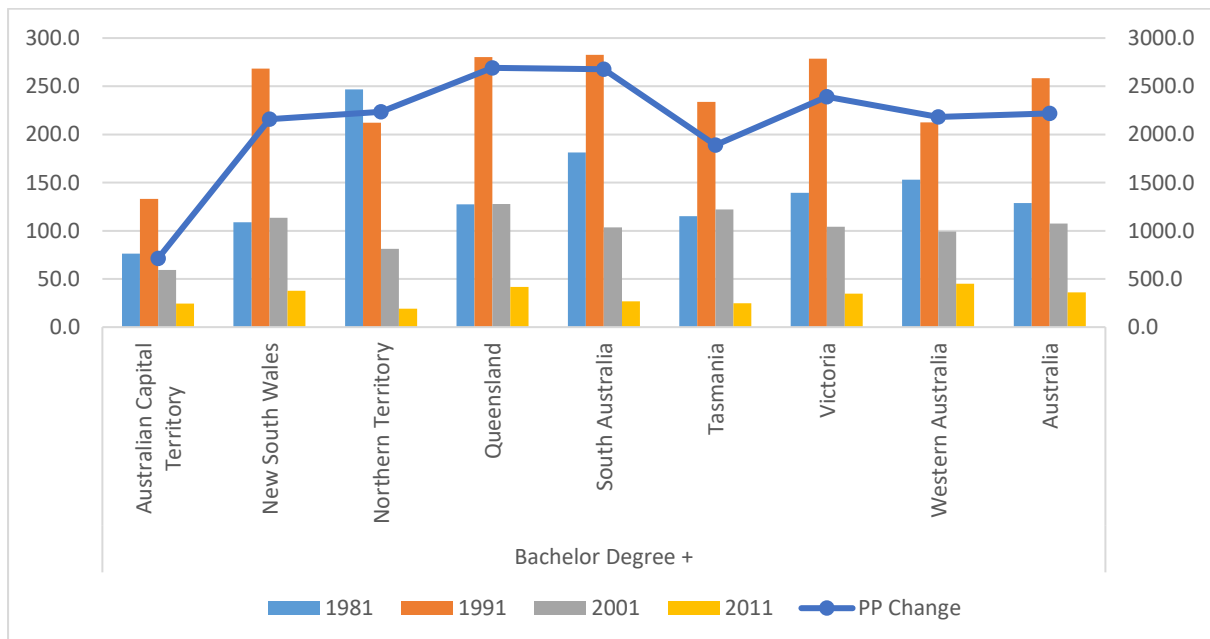
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Appendix A. Figures disaggregated educational attainment by gender

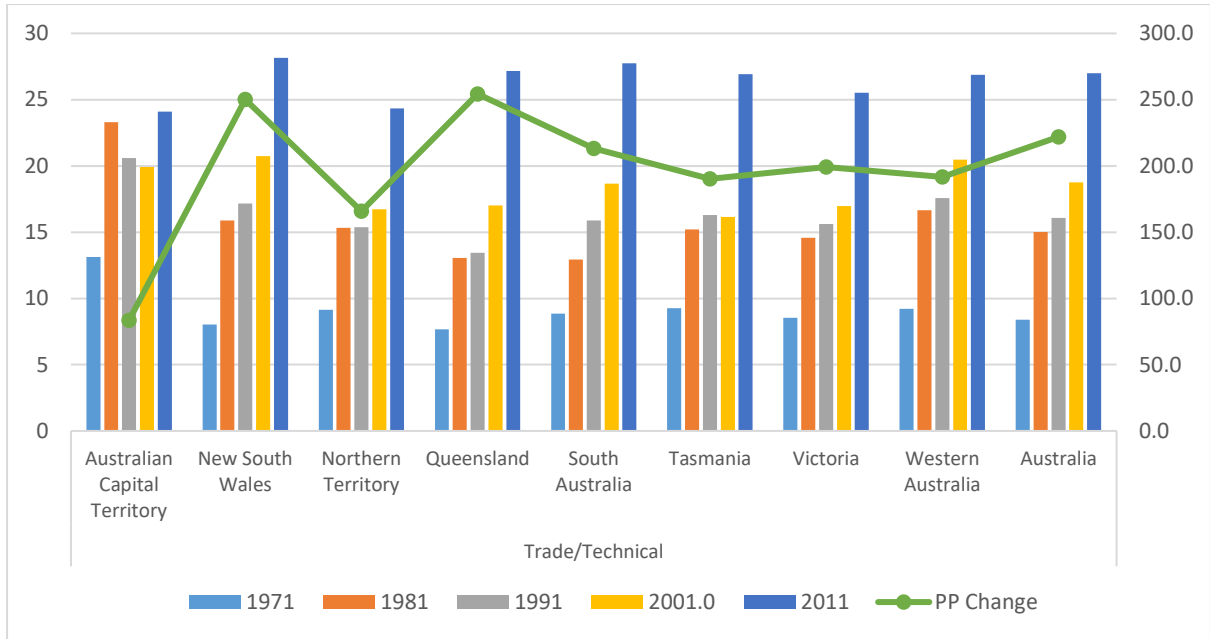
Proportion of population with tertiary qualifications and percentage change, females, 1971-2011



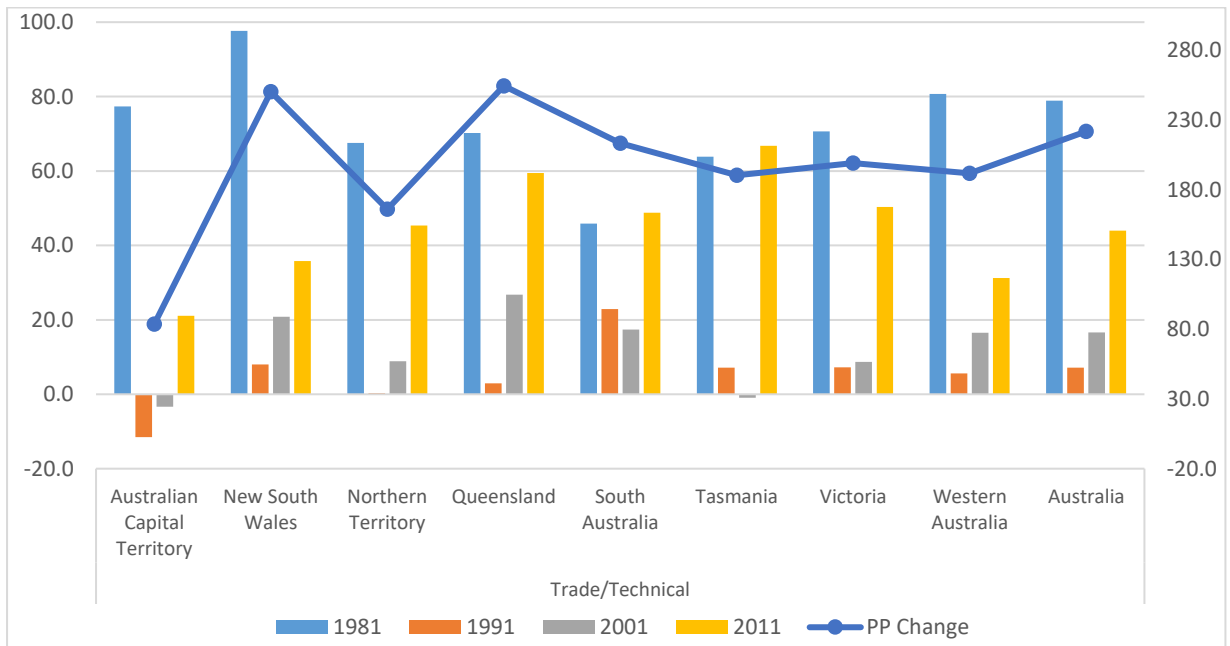
Percentage change of population with tertiary qualifications, females, by decade



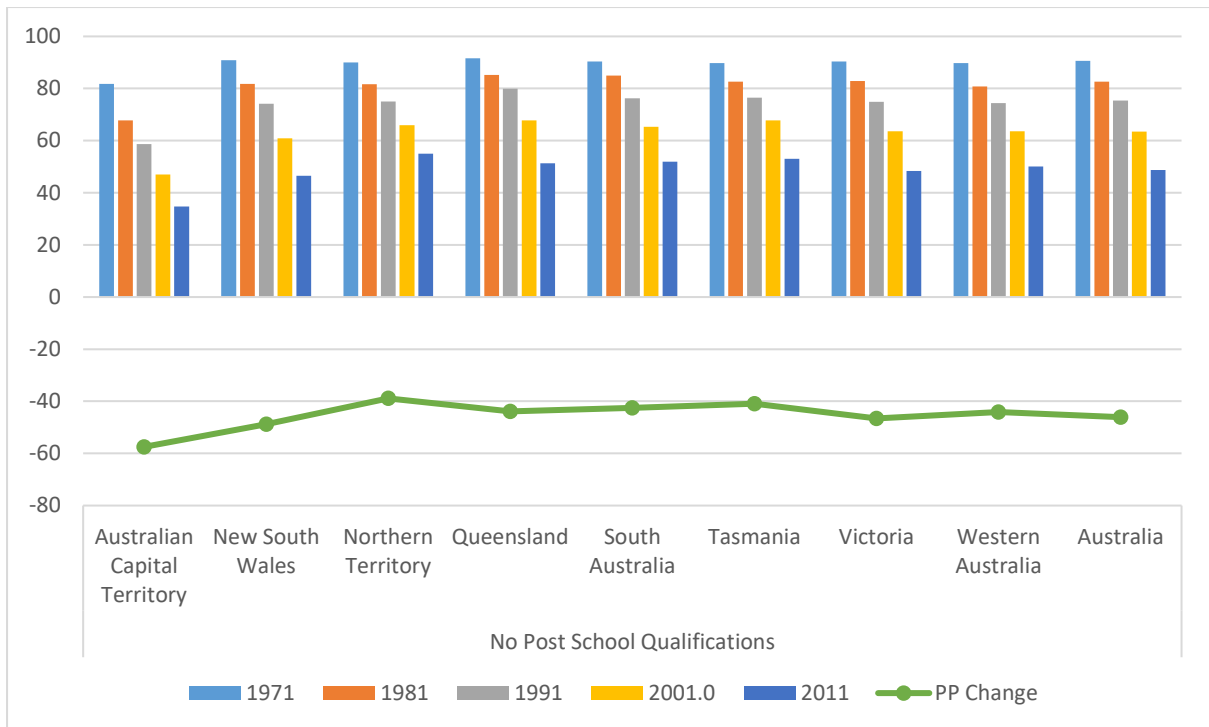
Proportion of population with vocational qualifications and percentage change, Females, 1971-2011



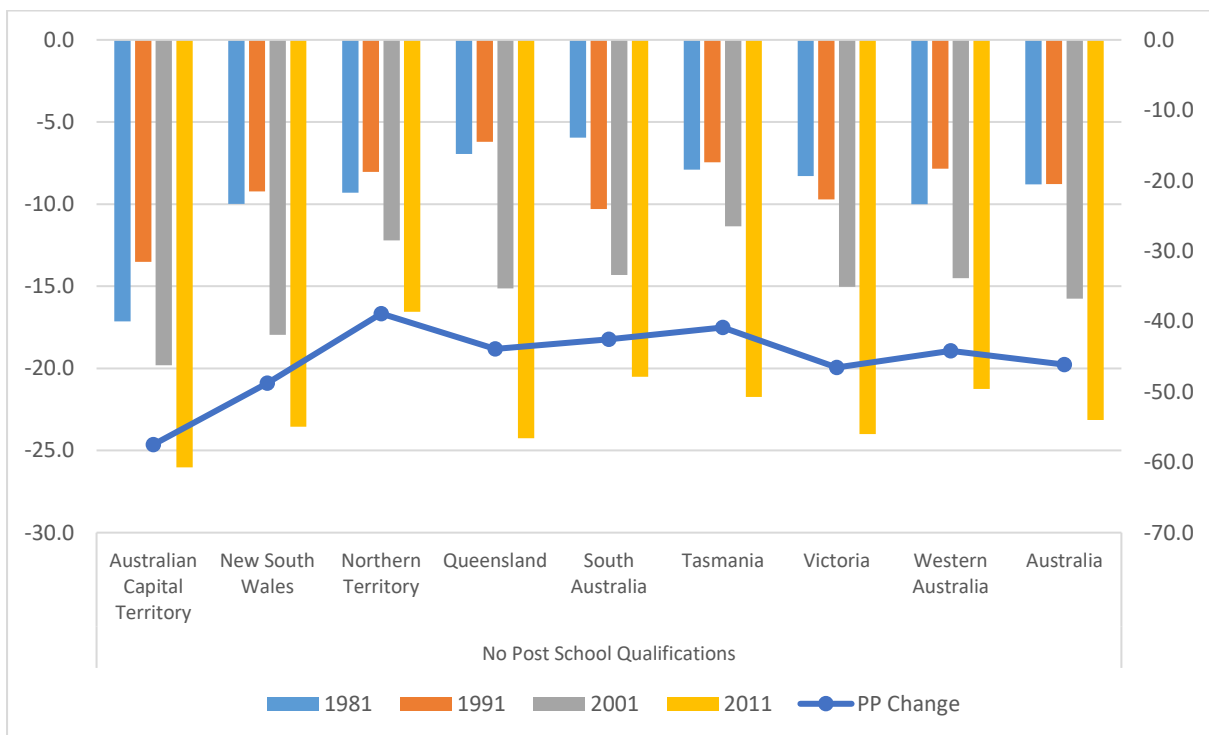
Percentage change of population with vocational qualifications, female, by decade



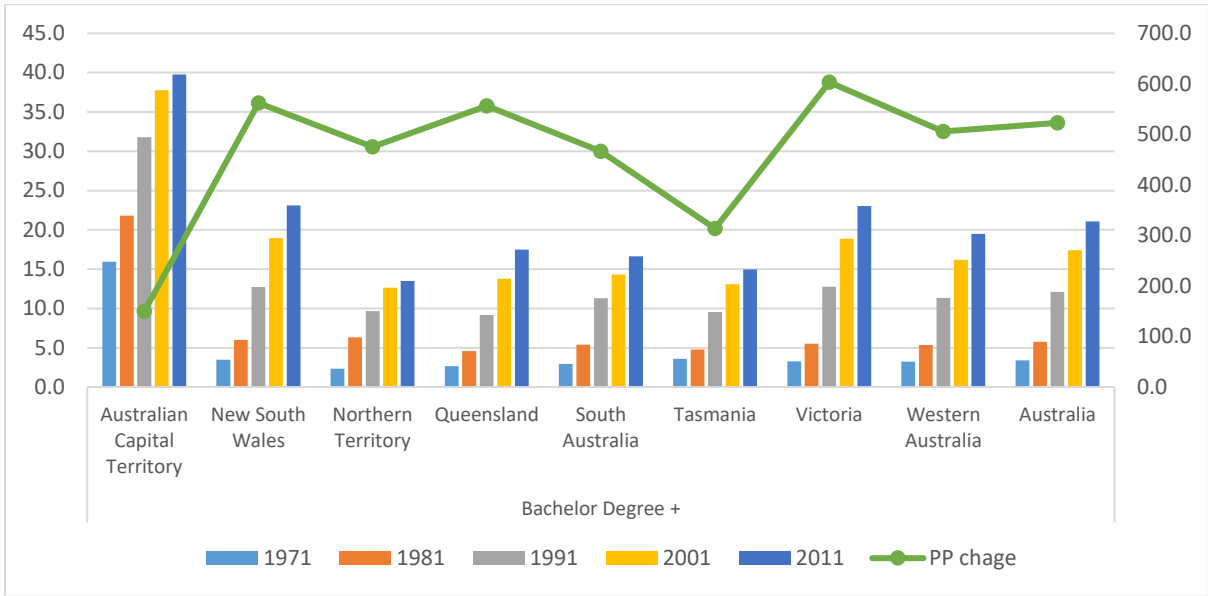
Proportion of population with no post school qualifications and percentage change, females, 1971-2011



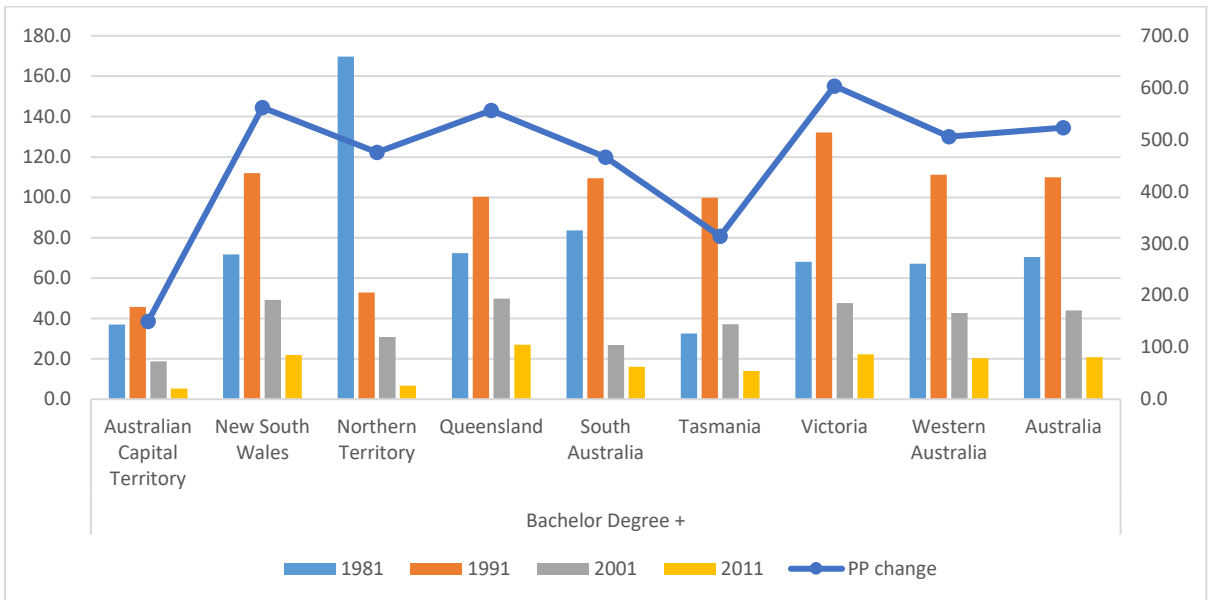
Percentage change of population with no post school qualifications, females, by decade



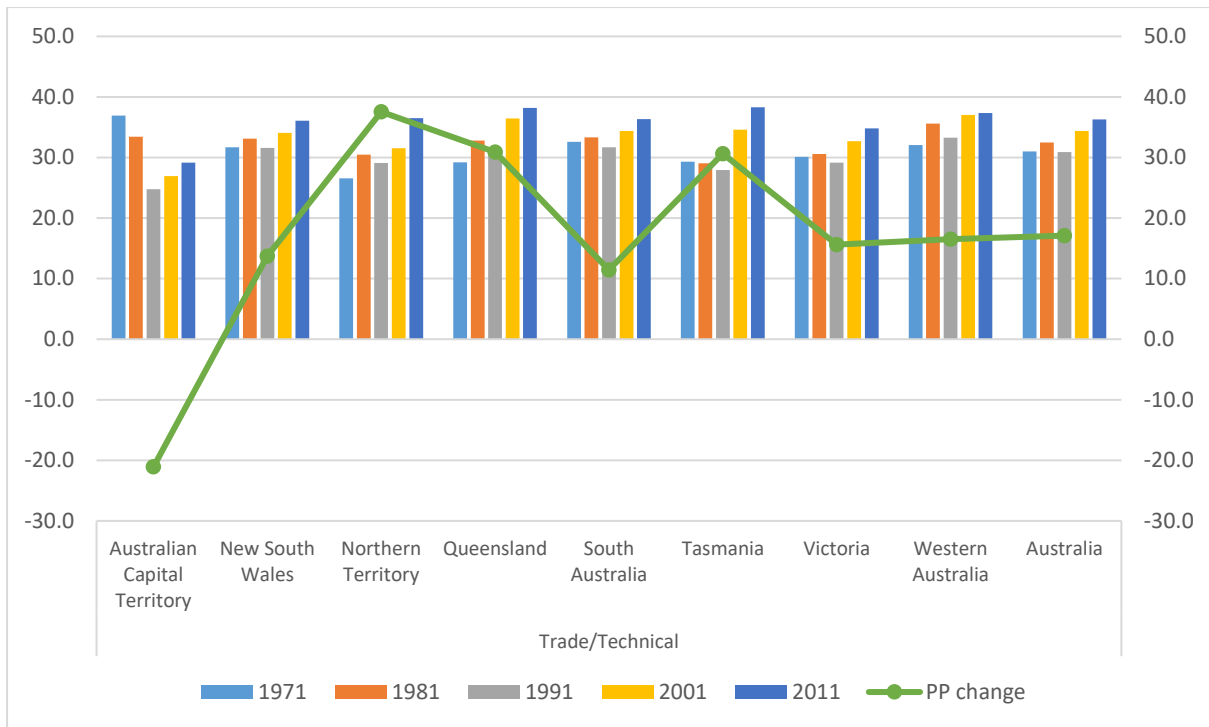
Proportion of population with tertiary qualifications and percentage change, males, 1971-2011



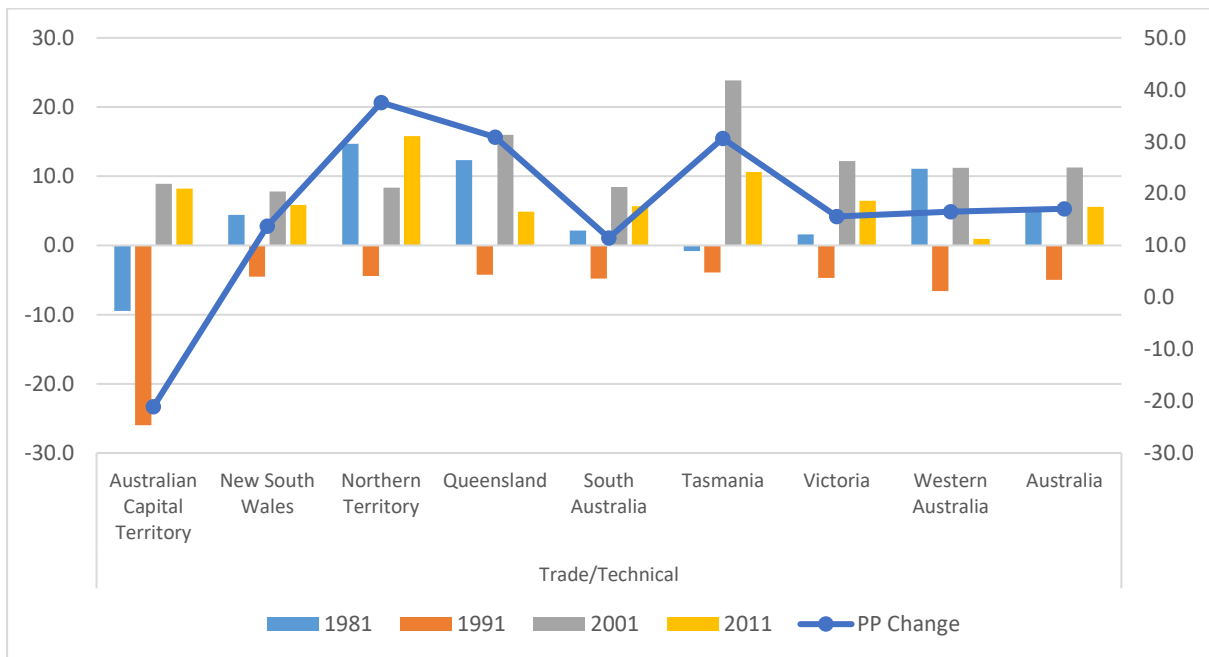
Percentage change of population with tertiary qualifications, males, by decade



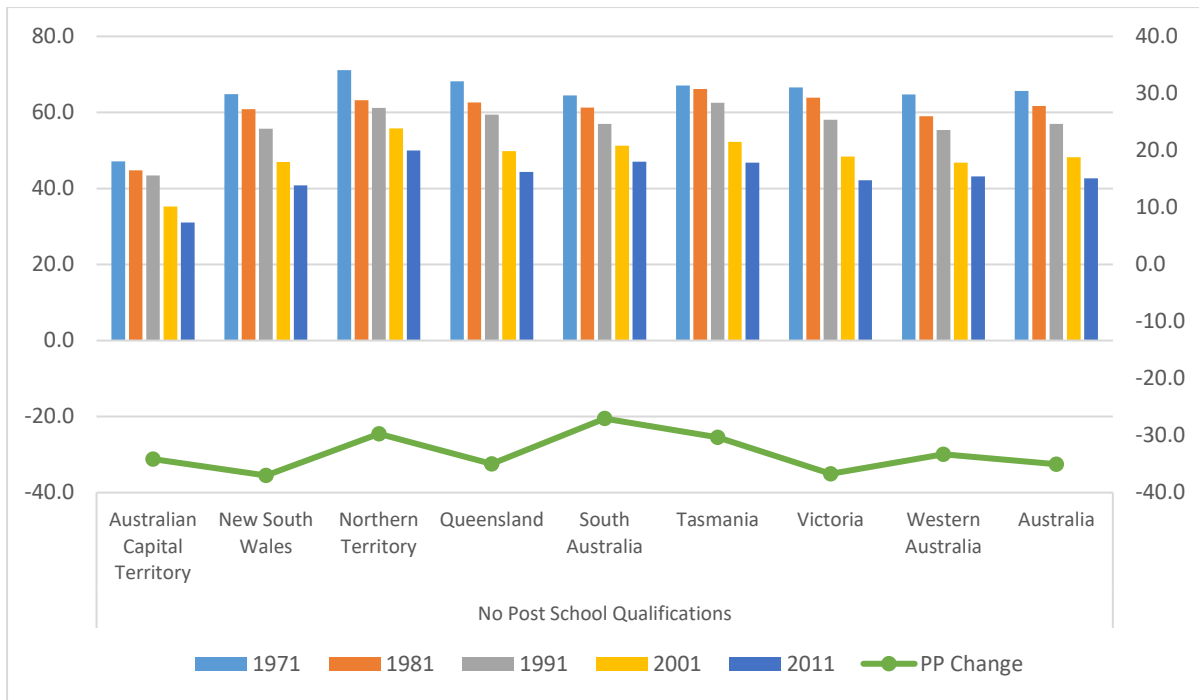
Proportion of population with vocational qualifications and percentage change, males, 1971-2011



Percentage change of population with vocational qualifications, males, by decade



Proportion of population with no post school qualifications and percentage change, males, 1971-2011



Percentage change of population with no post school qualifications, males, by decade

