Relationship between vocational qualifications and community well-being in remote communities of the Northern Territory

John Guenther (PhD candidate, Charles Darwin University)

Introduction

In November 2003 the Northern Territory Government released its *Workforce Employment and Training Strategy* (NT Government 2003a) for 2003 to 2005. One of the key features of this strategy, otherwise known as the *Jobs Plan* related to improving opportunities for Indigenous employment. The strategy noted that 60% of indigenous people live in settlements that have less than 1000 people and that the range of opportunities for employment are less than for other Territorians. It also noted that there were opportunities for employment in remote communities particularly in areas of tourism, mining, construction and horticulture. The action plan relating to this strategy highlights the important role of the Northern Territory Department of Employment, Education and Training (DEET) and the Northern Territory Department of Community Development, Sport and Cultural Affairs (DCDSCA) in achieving a range of education and employment related outcomes.

Given that education and training do have a positive impact on social well-being (ABS 2001; OECD 2001) it is worth considering whether the benefits apply to remote communities as they do more generally. The purpose of this paper therefore is to determine the *relationships* between vocational qualifications and indicators of community well-being[1] in remote, mainly Indigenous communities of the Northern Territory. By determining the correlation co-efficient between the proportion of the adult population with certificate qualifications and the proportion of the population with other characteristics it may be possible to determine the extent to which in increase in one variable is related to an increase or decrease in another.

The basis of the analysis presented is Australian Bureau of Statistics (ABS) 2001 Census data (ABS 2002) for remote Urban Centres and Localities (UC/Ls) where at least half the population is made up of Indigenous people. The analysis attempts to provide a statistical basis for an assessment of interrelated factors that work alongside vocational education and training (VET) outcomes—in terms of certificate qualifications held by individuals—in the context of capacity building in mainly Indigenous communities of the Northern Territory.

The paper does not attempt to identify 'problem' locations or try to restate the inequities between Indigenous and non-Indigenous Territorians in terms of education or employment. These are well documented in literature (ATSIC 1999; HREOC 2000; NTDE 1999; SCRGSP 2003). Nor does the analysis propose solutions to problems. It may however provide a basis for informed decision making about possible strategic directions of projects aimed at improving employment outcomes for Indigenous Territorians. It may also point to implications that may be considered in further research.

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[1] Community well-being is here defined in terms of the overall health of a community: social, civic, economic, environmental and individual.

Background

The relationship between VET and employment outcomes has been largely undisputed over recent years with benefits generally perceived in terms of economic returns for industry, enterprises and individuals (Ryan 2002, Smith 2001), in terms of increased innovation and competitiveness (NCVER 2003a), improved skills and employability (NCVER 2003b), career pathways for youth (Johns *et al* 2003) and in terms of meeting the demands for the so-called 'new economy' (Falk & Guenther 2002).

While the role of VET for Indigenous Australians is widely recognised at a strategic policy level (ANTA 2000a, 2000b; DEET 2001; DEST 2000; Parliament of Australia 2000) the practical implications of implementing programs in the diverse array of Indigenous communities is still under development[2] and according to some researchers, the tasks of improving the economic opportunities for Indigenous Territorians is increasing with time and needs further investigation (Catts & Gelade 2002; Taylor 2003). The participation rate of Indigenous Australians in VET programs is higher than that for non-Indigenous Australians, though pass rates and employment outcomes are lower (Saunders *et al* 2003).

The significance of the role of VET in the process of community capacity[3] building is only now beginning to emerge in strategic planning[4]. CRLRA (2001) found that the presence of social capital in communities enhanced the outcomes of VET and also that education and learning contributed to the building of community capacity. Other research has also highlighted the importance of VET's role in building community capacity. For example, a study of five rural school-community partnerships (Kilpatrick *et al* 2001) found that:

> …the development of VET-in-schools programs in rural communities, and the community-wide benefits that flow from such programs, represent an important vehicle for building community capacity.

The connection between learning and community capacity building is made repeatedly in the literature (Falk 2001; Falk, Golding & Balatti 2000; Kilpatrick, Bell & Kilpatrick 2000). Learning improves an individual's skills and knowledge, but it also contributes to their self-image and allows them to better participate in the community as a whole. Learning contributes to individuals' sense of belonging and better places them in a position to add to the combined resources of the community such that the shared sense of well-being across a range of measures is improved.

Quantitatively assessing the contribution of VET to the development of community capacity is difficult. Most of the research cited above is based on qualitative case studies, which demonstrate that there is a valid and verifiable connection between education and community well-being and capacity building. The extent and strength of the relationships between VET and various indicators of community well-being is not demonstrated. It is possible, however to use quantifiable indicators as proxies of dimensions of community

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[2] For example, the *Learning Lessons* (NTDE 1999) recommendations are still progressively being implemented in the Northern Territory.

[3] The concept of community capacity is here interpreted in terms of the ability of a community to manage change and sustain community led development.

[4] Falling under the umbrella of the Northern Territory Government's *Stronger Regions* program (DCDSCA 2003), for example the *Palmerston Partnership Agreement* (PCC 2003) recognises the role of education and training in the development of Palmerston City, both from a social and an economic point of view.

well-being and thereby draw some conclusions about the relationship between various socio-economic and demographic variables and those that relate to education and training. ABS (2001, 2002b) have summarised a range of well-being and social capital indicators and identified their source. Many of these are drawn from Census data (ABS 2002a). While it is recognised that there are limitations with the use of Census data, it does provide a comprehensive snap-shot of communities/regions at a given point in time. It is for this reason that this paper draws on community level Census data for analysis and reporting purposes.

Methodology

The approach taken for the analysis presented in this paper was to identify those UC/Ls in the Northern Territory that could be considered to be remote and mainly Indigenous. Urban Centres are defined by ABS as those places with populations above 1000, while localities are defined as places with populations between 200 and 999 (ABS 2002c). In the Northern Territory there were 62 placed defined in this way at the 2001 Census. Using the Accessibility and Remoteness Index of Australia (ARIA) there are 52 of these that can be described as remote localities[5] (DHAC 2001). Of these, based on a majority of Indigenous people in the population, 41 could be described as 'mainly Indigenous' (see Figure 1). The list of UC/Ls used along with ARIA values, population and percent of the population Indigenous is provided at Table 7, Appendix 1[6].

After the sample was selected a number of census variables were selected for correlation analysis (see Table 8, Appendix 2 for a complete list). Using a spreadsheet, the raw numbers were converted to appropriate percentages of the unit of measure. These were then tested using correlation tests with the percent of the population aged 15+ with certificates, and for comparison, with the percent of the population aged 15+ with bachelor qualifications. Chi-squared tests and t-tests were also carried out on some variables to determine significant differences between communities that had certificate qualifications above and below the median (2.5% of the 15+ population). It was found that a correlation co-efficient of ±0.5 was generally sufficient to produce significant differences using chi-squared tests or t-tests[7]. Some comparisons are also made with Census data using the Indigenous profile for the NT Bal Statistical Division (SD).

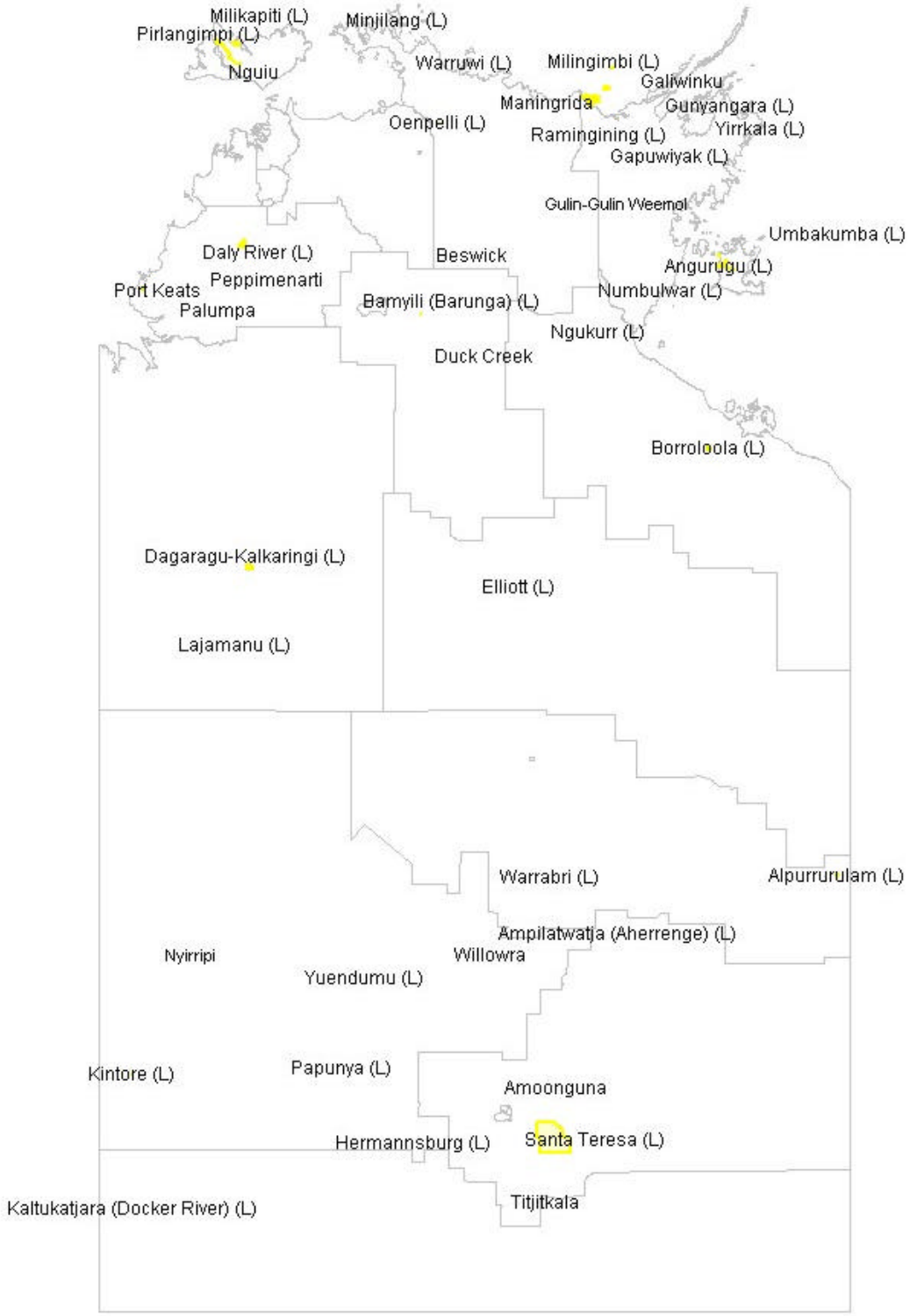
The analysis does not use attendance at TAFE as an indicator because of the lack of a visible TAFE brand in the Northern Territory. Further, attendance at TAFE may not be an accurate indicator of the participation as it applies to a community because in some cases a large proportion of training may be conducted away from the community.

[5] Remote localities are assigned an ARIA value above 5.80 on a scale of 1 to 12. In the Northern Territory, all these places are outside the Darwin SD.

[6] Names used are those assigned by the ABS

[7] Where $p<.1$

Figure 1. Northern Territory remote localities used for analysis (Source ABS 2002a)



Results

Results of the correlation analysis are shown in Table 1. The shaded cells indicate the probability that a significant relationship exists between one variable and another based on a correlation co-efficient value of ±0.5. Positive values indicate a positive relationship and negative values indicate a negative relationship.

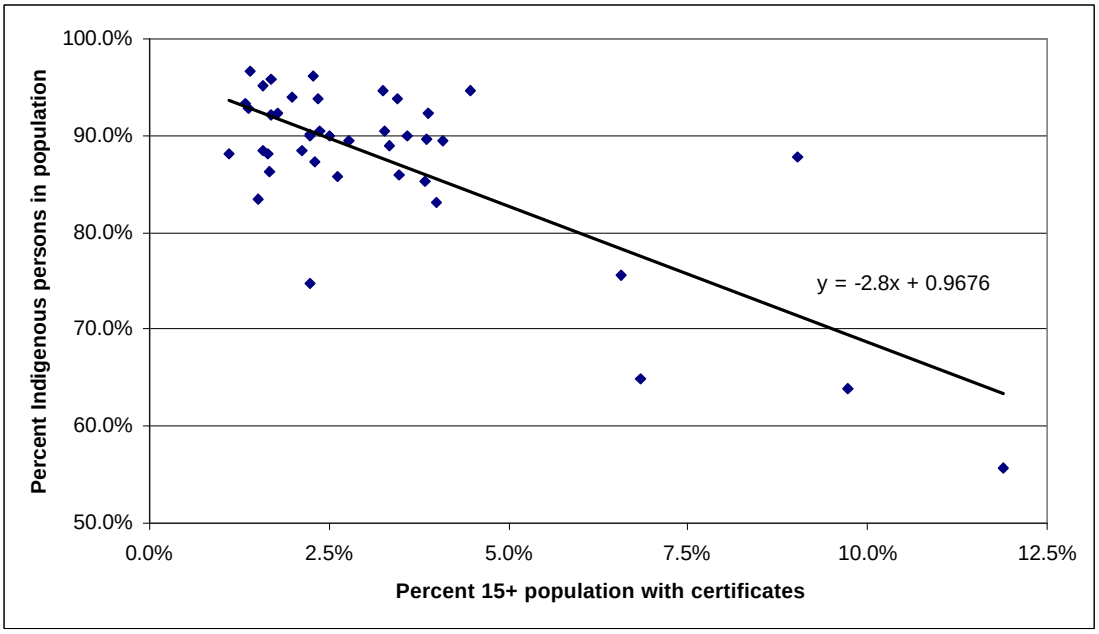
Table 1. Results of correlation analysis (shaded cells indicate r±0.5)

		Correlation percent 15+ population with…	
Category	**Variable**	**bachelor qualifications**	**certificates**
Population characteristics	Percent Indigenous	-0.342	-0.750
	Median age	0.119	0.562
Education	Percent 15+ population with certificates	0.073	
	Percent 15+ completing year 12	0.190	0.632
Labour force (15+ population)	Percent persons employed part time	-0.089	0.204
	Percent persons employed full time	0.196	0.716
	Percent persons employed	-0.002	0.546
	Percent males employed full time	0.209	0.697
	Percent males employed part time	-0.120	0.150
	Percent females employed full time	0.177	0.653
	Percent females employed part time	-0.035	0.257
Weekly income	Percent families with income >$799	0.504	0.245
	Percent individuals with income <$300	-0.446	-0.560
	Percent individuals with income >$299	0.550	0.648
Vehicles per dwelling	Percent with no vehicles	-0.551	-0.131
	Percent with 1 car	0.377	0.248
	Percent with 1+ cars	0.367	0.269
Occupations (Percent 15+ population)	Managers and administrators	0.288	0.343
	Professionals	0.436	0.222
	Associate professionals	0.432	0.522
	Tradespersons and related workers	0.151	0.511
	Advanced clerical and service workers	0.046	0.318
	Intermediate clerical, sales and service workers	0.122	0.385
	Intermediate production and transport workers	0.142	0.502
	Elementary clerical, sales and service workers	-0.207	0.403
	Labourers and related workers	-0.142	0.232
Industry of employment (Percent of 15+ employed)	Agriculture, forestry and fishing	0.013	0.587
	Mining	0.242	0.633
	Manufacturing	-0.046	0.676
	Electricity, gas and water supply	-0.160	0.242
	Construction	0.142	0.083
	Wholesale trade	0.138	0.413
	Retail trade	0.282	0.150
	Accommodation, cafes and restaurants	0.024	0.747
	Transport and storage	0.122	0.414
	Communication services	0.291	0.669
	Finance and insurance	-0.132	0.398
	Property and business services	0.194	-0.092
	Government administration and defence	-0.214	0.301
	Education	0.430	-0.098
	Health and community services	0.235	0.251
	Cultural and recreational services	0.066	0.167
	Personal and other services	0.105	-0.063
Information technology	Percent persons using the Internet	0.520	0.405
	Percent persons using computers	0.653	0.393

Population characteristics

The results suggest that an increase in the proportion of Indigenous persons in the population is associated with a decrease in the proportion of those holding certificates. (see Figure 2). It is apparent that the relationship shown would cease to be significant for the cluster of localities with 80%+ Indigenous population. Those communities with less than 2.5%[8] of the 15+ population with certificate qualifications have a significantly higher proportion of Indigenous persons in the population than places where 2.5% or more of the 15+ population hold certificates[9].

Figure 2. Scatter chart showing relationship between Indigenous population and certificate holders



The results show a positive correlation between median age of the population and the proportion of certificate holders (r=0.562). As the median age of the population increases there tends to be a corresponding increase in the proportion of certificate holders. However, there is also a strong relationship between median age and percent Indigenous persons in the population, where the correlation for these two variables 0.699. This suggests that the median age is more closely related to Indigenous population than certificate qualifications.

There were no significant relationships found for total population or household size with certificate holders. This suggests that the size of a community or the size of a household make no difference to the proportion of the population that have certificate qualifications. There were no significant correlations with any of the population variables and bachelor qualifications.

Education

There was a strong positive correlation (r=0.632) between the proportion of the 15+ population that had completed Year 12 schooling and the proportion of the population that held certificates (see Figure 3). This relationship suggests that in communities with

[8] 2.4% of the 15+ population represents the median value for certificate qualifications in the 41 UC/Ls

[9] T-test $p<.05$

higher levels of senior secondary completion, the proportion of certificate holders is likely to be higher as well. The equation shown on the chart suggests that for each 1% increase in the population that completes year 12 there will be about a corresponding 1% increase in the population that have certificates. Table 2 confirms this proposition. There was a significant difference[10] between the group of communities with certificate qualifications above and below the median.

Figure 3. Relationship between year 12 school completion and certificate qualifications

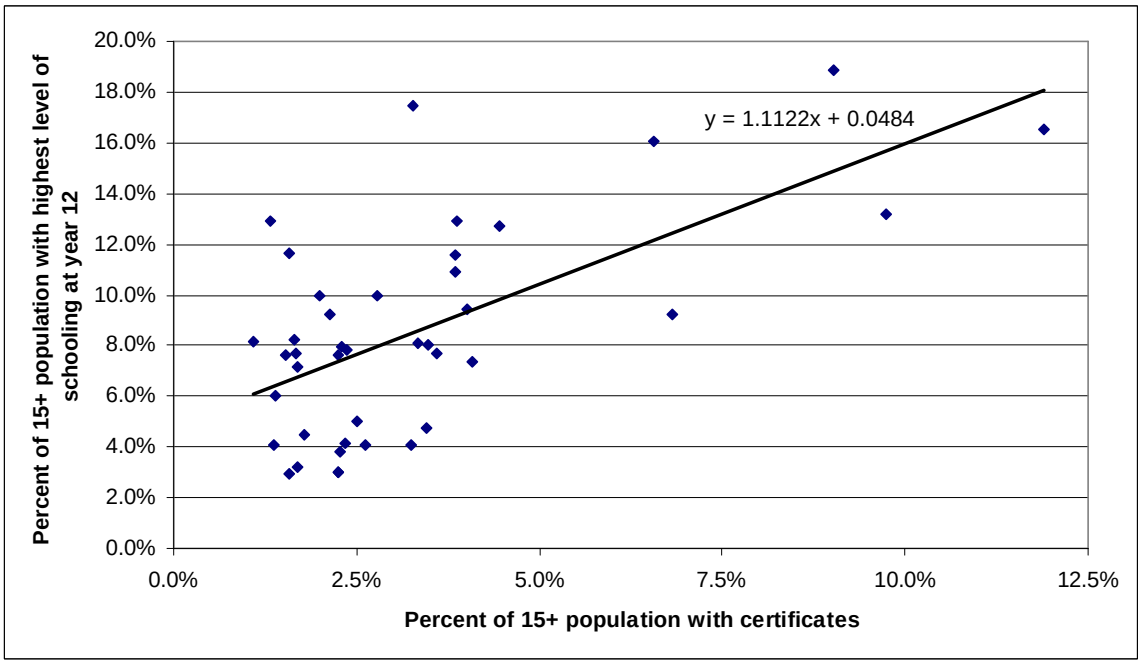


Table 2. Impact of year 12 completion on certificate qualifications

UC/Ls	Number of UC/Ls	Average percent of population holding certificates	Average percent of population that completed year 12
Above the median (>=2.5%)	20	4.8%	10.4%
Below the median (<2.5%)	21	1.8%	6.7%

There were no significant correlations found for other levels of school completion up to year 11 and no relationship between certificate holders and people who had not attended school. There were no significant correlations with highest level of schooling completed and bachelor qualifications for any level of schooling completed.

Employment

Table 1 demonstrates that a relationship exists between certificate qualifications and males and females in full time employment. Figure 4 demonstrates the extent of the relationship for both males and females combined. The equation shown on the chart suggests that for each 1% increase in the proportion of the population with certificate qualifications, there is a corresponding (approximate) 2% increase in full time employment[11]. Table 3 confirms the significant differences for full time employment for

[10] T-test, $p<.05$

[11] This does not imply causation. It may be that for every 2% increase in jobs the number of certificate holders increases by 1%.

both males and females between communities with certificates above and below the median for the sample. The difference equates to about 44 full-time jobs[12] in a community of 1000 people, which are attributable to the 3.0% difference in certificate qualifications shown in Table 2. The relationships do not extend to part time employment for either males or females. Nor do any relationships exist for labour force status and bachelor qualifications (see Table 1).

Figure 4. Relationship between full time employment and certificate qualifications

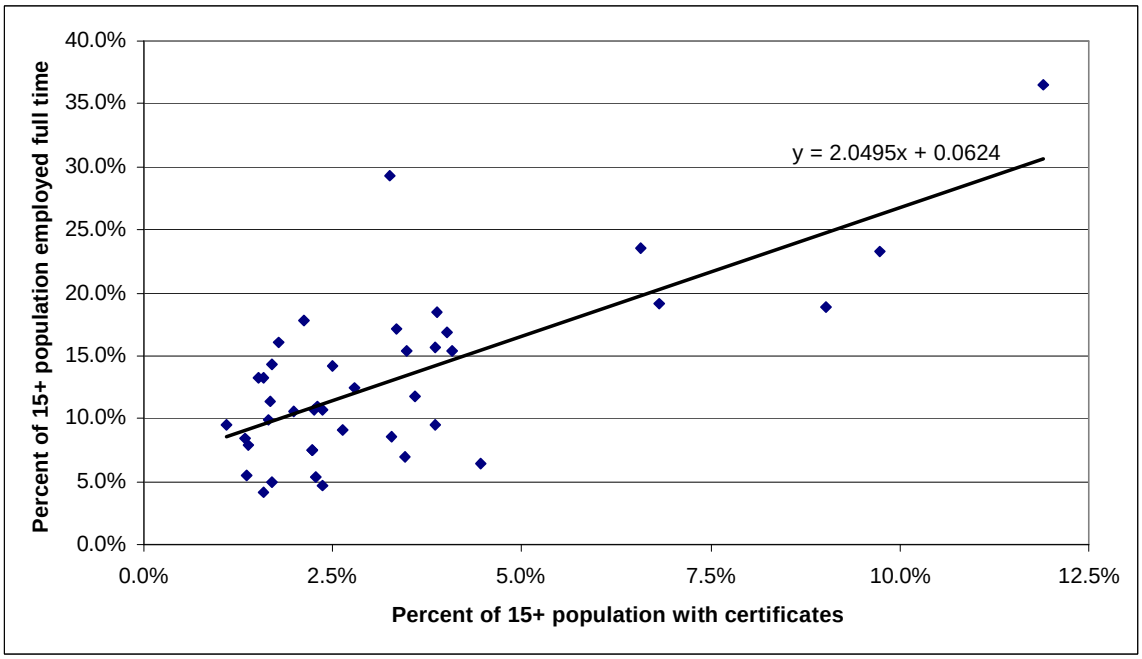


Table 3. Impact of certificates on full time and part time employment

Labour force status/gender	Percent employed: above median (>=2.5% with certificates)	Percent employed: below median (<2.5% with certificates)	Significant difference?[13]
Percent persons employed full time	16.4%	9.7%	Yes
Percent employed	39.7%	27.1%	Yes
Percent males full time	18.9%	10.8%	Yes
Percent males part time	24.6%	18.1%	No
Percent females full time	14.0%	8.7%	Yes
Percent females part time	18.9%	13.1%	No

Income

Table 1 indicates that a relationship exists for both bachelor qualifications and certificates with individual weekly income levels above $299. The relationship is shown in Figure 5, where the equation shown indicates that a 1% increase in certificate holders is associated with a more than 2% increase in the proportion of people in communities on incomes above $299[14] per week[15]. On average, in localities where the proportion of certificate

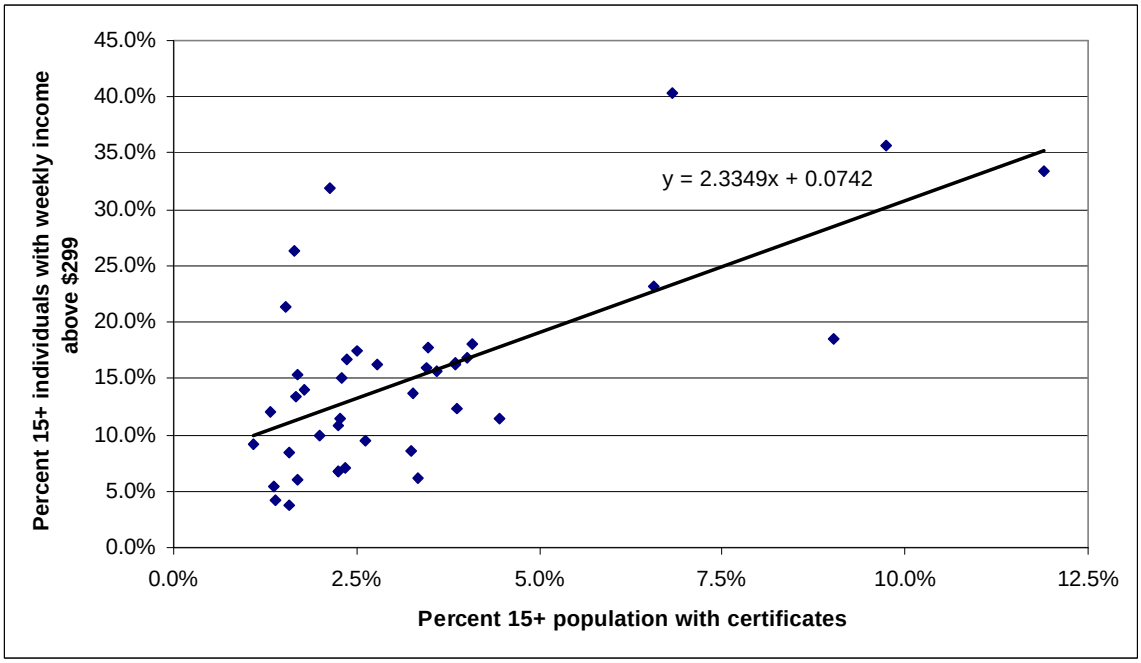
[12] Based on a 15+ population of 650 and a difference of 6.7% in full time employment.

[13] T-test, p<.05

[14] Individual income above $299 represents a level above the median for the SD (See Table 9, Appendix 3)

qualifications was above the median (2.4%) 18.2% of individuals in the population had incomes above $299, while in those locations with less than the median certificate holders only 12.2% of individuals had incomes above $299[16]. The relationship between bachelor qualifications and weekly individual income is greatest at income levels above $699 per week (r=.627).

Figure 5. Relationship between individual income above $299 per week and certificates



There is no relationship between weekly family income and certificate holders for any level of income. However, for bachelor qualifications at family incomes above $799 per week there is a positive relationship (r=.504) such that for ever 1% increase in bachelor qualifications there is almost a 3% increase in the proportion of the families with incomes above $799 per week.

Vehicles

Table 1 suggests that there is no relationship between the number of vehicles in a household and the proportion of the 15+ population with certificate qualifications. However the table does show that there is a negative relationship between bachelor qualifications and the proportion of households with no vehicles (r=-.551). This association suggest that in communities where there are higher levels of bachelor qualifications there should be fewer proportions of households without a vehicle.

Occupations

Table 1 identified three positive relationships between certificate qualifications and occupations:

- Associate professionals (r=0.522);
- Tradespersons and related workers (r=.511); and

[15] As with all these relationships, causation is not implied by these results.

[16] The difference is significant using a t-test to compare the two groups, p<.05

- Intermediate production and transport workers (r=.502)

By contrast there were no associations between bachelor qualifications and any occupation. Perhaps more significant is the finding indicated in Figure 6, which shows that for every 1% increase in certificate holders there is about a 3% increase in the proportion of 15+ population employed in any occupation.

Figure 6. Relationship between certificate qualifications and employment in any occupation

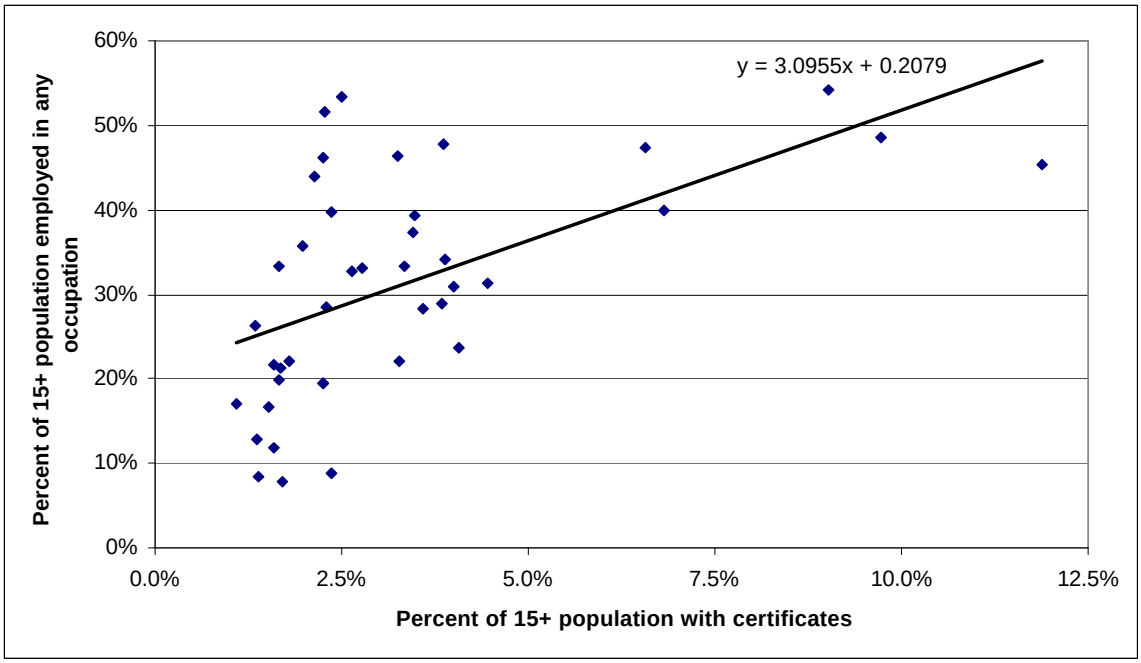


Table 4 shows the impact of certificate qualifications on communities where the proportion of the population with certificates is either above or below the median (2.5%). There is a significant difference in the proportion of occupations held in six out of nine occupational categories. Overall, in communities where the proportion of certificate holders exceeded 2.5%, there were 13.5% more people employed in any occupation, compared with other communities. This equates to about 88 full-time or part-time jobs in a community of 1000 people and includes employment in Community Development and Employment Programs (CDEP).

Table 4. Impact of certificates in UC/Ls on employment in occupations

	Percent employed		
Occupation	**above median (>=2.5% with certificates)**	**below median (<2.5% with certificates)**	**Significant difference?[17]**
Managers and administrators	2.0%	1.6%	No
Professionals	5.4%	4.7%	No
Associate professionals	3.7%	2.1%	Yes
Tradespersons and related workers	2.1%	0.9%	Yes
Advanced clerical and service workers	0.4%	0.2%	Yes
Intermediate clerical, sales and service workers	4.8%	2.5%	Yes
Intermediate production and transport workers	2.6%	1.1%	Yes
Elementary clerical, sales and service workers	2.8%	1.8%	Yes
Labourers and related workers	14.2%	9.5%	No
All occupations	37.9%	24.4%	Yes

Industry of employment

Table 1 identified five positive relationships between certificate qualifications and specific industries of employment:

- Agriculture, forestry and fishing (r=.587)
- Mining (r=.633)
- Manufacturing (r=.676)
- Accommodation, cafes and restaurants (r=.747)
- Communication services (r=.669).

By contrast bachelor qualifications did not produce any significant relationships with industry of employment. The relationships for certificate qualifications suggest that a positive linkage between VET qualifications and these industries, but as Table 5 shows, the proportion of people employed in each industry category (except government administration and defence) is very low. In practical terms, setting aside the government category which is most heavily affected by CDEP, in a community of 1000 people the significant differences in the table account for about 17 mostly private sector full and part-time jobs[18]. The relationship between certificate qualifications and employment in any industry is shown in Figure 7, which shows that for every 1% increase in certificate qualifications there is almost a 3% increase in employment in any industry. This is broadly consistent with the relationship with occupations (see Figure 6).

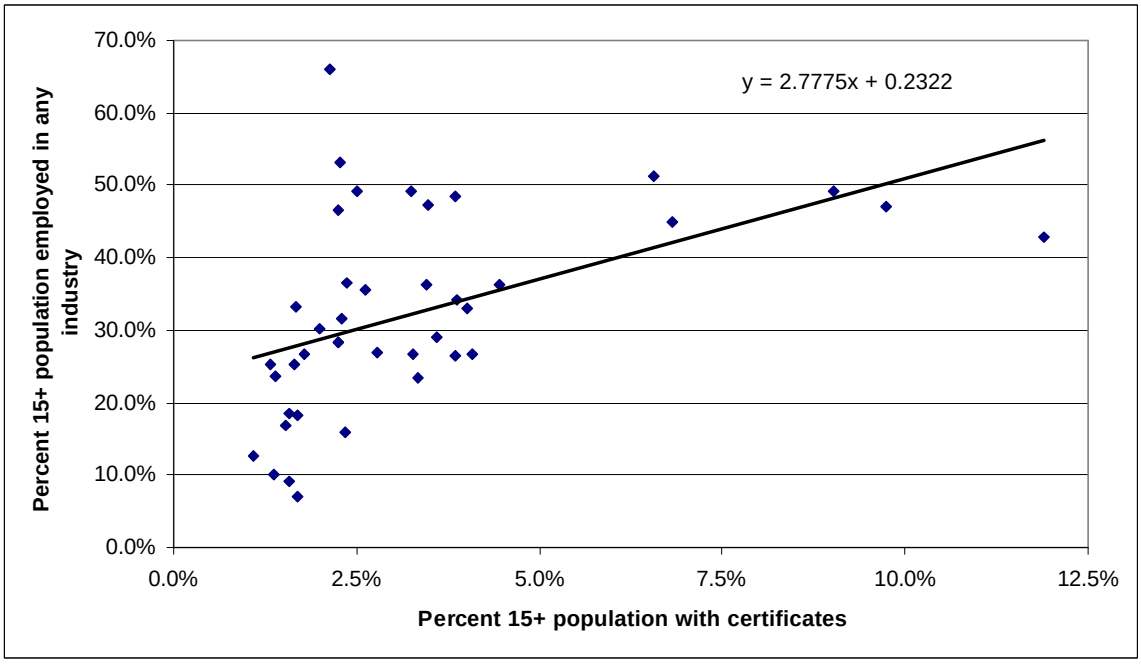
[17] T-test, p<.1

[18] Taking off the 8.8% difference attributable to 'government administration and defence' from the total leaves a difference of 2.6% between those communities with 2.5% or more certificates and those below that figure, based on an overall 65% of people aged 15+ in the population.

Table 5. Impact of certificate qualifications on industry of employment

Industry of employment	Percent employed: above median (>=2.5% with certificates)	Percent employed: below median (<2.5% with certificates)	Significant difference?
Agriculture, forestry and fishing	0.8%	0.2%	No
Mining	0.2%	0.0%	No
Manufacturing	0.2%	0.0%	Yes
Electricity, gas and water supply	0.3%	0.0%	No
Construction	1.0%	1.2%	No
Wholesale trade	0.2%	0.0%	Yes
Retail trade	2.0%	2.1%	No
Accommodation, cafes and restaurants	0.6%	0.0%	Yes
Transport and storage	0.6%	0.2%	No
Communication services	0.1%	0.0%	Yes
Finance and insurance	0.2%	0.1%	No
Property and business services	0.3%	1.2%	No
Government administration and defence	20.7%	11.9%	Yes
Education	3.9%	4.0%	No
Health and community services	3.4%	3.1%	No
Cultural and recreational services	0.5%	0.7%	No
Personal and other services	3.3%	2.1%	No
Total	38.2%	26.8%	Yes

Figure 7. Relationship between certificates and employment in any industry



Information technology

Table 1 shows that there are no significant relationships between certificate qualifications and information technology[19]. However it does show significant positive relationships for

bachelor qualifications and information technology use. The results suggest that as the proportion of bachelor qualifications increase, so too does the use of computers and the Internet.

Discussion and implications

The data used in analysis here is drawn from 41 urban centres and localities that can be considered remote and mainly Indigenous. The purpose of the analysis was to determine whether, in this context, vocational qualifications (in the form of certificates) make any difference to a number of socio-economic factors. In particular, the analysis points to the relationship between vocational education and employment, wealth, income and by implication, sustainable social and economic capacity, which has earlier been discussed in terms of 'well-being'.

A possible criticism of the analysis might be that the data is not representative of remote indigenous communities, given that it is limited to communities with greater than 200 persons. A review of selected comparable statistics from the ABS Indigenous profile (ABS 2002d) shows that the sample comprises approximately half the Indigenous population of the entire Statistical Division and most of the statistics are comparable to those shown for Indigenous persons in the region (see Table 9, Appendix 3).

The problem of causation

While it could be deduced with many of the relationships shown that one factor leads to another (for example 'certificate qualifications lead to full time employment') the statistics do not prove causation one way or another. However the significant correlations shown *do* demonstrate that there is either a positive or negative relationship between two factors. Given also that the analysis has identified several factors that appear to be related speculation is bound to arise as to which factor contributes the most to an independent variable. Multiple regression analysis may shed some light on this.

Multiple regression: factors most likely to influence employment

Given the relationships between education, certificates, indigenous population and employment, multiple regression analysis and anova tests reveal that there is a significant relationship between the four variables such that certificates are most influential, followed by indigenous status, followed by year 12 completion (see Appendix 4, Table 10). The implication is that certificate qualifications are the most influential factor contributing to full-time employment.

Multiple regression: factors most likely to influence income

Taking individual weekly income above $299 as an independent variable and testing against dependent variables of certificates, indigenous population, employment and median age, multiple regression and anova tests show a significant relationship between the four variables. Indigenous status, followed by year 12 completion, full time employment, median age and finally certificate qualifications was the order of influence (see Appendix 4, Table 11). This analysis suggests that certificate qualifications are only a minor contributor to income.

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[19] However the group of communities with above the median level of certificates was more likely to use the Internet than the other group. T-test, $p<.05$

Unravelling the effect of CDEP

The effect of CDEP on the employment data is evident from the high proportion of employment in the 'government, administration and defence' category, which accounts for 2379 (50%) of all jobs[20] across the 41 UC/Ls. Based on 2001 Indigenous profile data (ABS 2002d), 63% of Indigenous employment in the NT Bal SD is under the umbrella of CDEP. Much, though not all of the CDEP employment profile could be accounted for by the 34% of all jobs that are classified as 'labourers and related workers'. It has been noted earlier that there is neither a relationship between certificate qualifications and government, administration and defence or certificate qualifications and 'labourers and related workers' (see Table 1). Clearly, however there are CDEP participants who fit into other occupational categories. Unravelling the impact of CDEP on training would require a more detailed analysis of data, which is not readily available or directly comparable to ABS Census data.

There is a broad distinction in the wider community between CDEP employment and 'real jobs' (Ah Kit 2003, NLC 2003; Stirling 2003), the assumption being that CDEP does not generally lead to employment and that training provided in CDEP is 'training for training's sake' or of limited value (Buchan 2003; NT Government 2003b). There are however examples of CDEP programs that do lead to 'real' jobs and self-sustaining enterprise (ABC 2003a, 2003b; Collins 2000). A positive socio-economic impact of CDEP on socio-economic well-being cannot be ruled out (Altman & Gray 2000) but there is a divergence of opinion about the value of CDEP, even among Indigenous leaders (ATSIC 1998; Spicer 1997; Yunupingu 2003).

What does the data suggest about vocational training?

Without making too many assumptions about 'what comes first: training or the job?', it is fair to say that in the remote localities of this analysis there was a strong tendency for training to go hand in hand with jobs. It is most likely that there is a co-dependent relationship between the two factors. It was previously shown that for a 1% increase in certificate qualifications there is a 2% increase in full-time employment. What this suggests is that for every two full-time jobs created in a community, one requires certificate qualifications or related skills.

The other thing that comes through clearly from the data is that the kind of jobs associated with certificate skills in remote communities are those described as associate professional, tradespersons and intermediate production and transport workers. Generally speaking, associate professional occupations are associated with higher levels of vocational training; Australian Qualifications Framework (AQF) Certificate IV, Diploma), tradespersons are associated with middle level skills (AQF Certificate III, IV) and intermediate production and transport workers are associated with lower skill levels (AQF Certificate II) (Ryan 1999). It could therefore be reasonably anticipated that an emphasis on skills in these areas should be reflected in the profile of VET provision in remote areas. However, Indigenous profile Census data (see Table 6) suggests that Indigenous people are most likely (though not exclusively) to be employed in the lower skill areas. The table suggests that non-Indigenous people are about four times more likely to be employed as tradespersons or related workers than Indigenous persons and twice as likely to be employed as associate professionals.

[20] Excluding those not classified or not stated.

Table 6. Employment by occupational category, NT Bal SD (Source: ABS 2002d) compared with overall employment in the 41 UC/Ls

Occupation	Percent of Indigenous persons employed	Percent of non-Indigenous persons employed	Percent of employment in the 41 UC/Ls
Managers and administrators	2.5%	8.8%	5.8%
Professionals	9.6%	19.2%	17.5%
Associate professionals	7.3%	13.5%	10.3%
Tradespersons and related workers	3.6%	14.4%	5.3%
Advanced clerical and service workers	0.8%	3.1%	1.2%
Intermediate clerical, sales and service workers	13.6%	15.3%	12.4%
Intermediate production and transport workers	6.1%	7.6%	6.2%
Elementary clerical, sales and service workers	5.2%	8.0%	7.0%
Labourers and related workers	41.4%	8.3%	34.2%
Total	100.0%	100.0%	100.0%

The Indigenous Profile data (ABS 2002d) therefore suggests that the bulk of higher skilled jobs in remote areas of the Northern Territory are being filled by non-Indigenous people. It would be reasonable to expect a similar mix of Indigenous/non-Indigenous employment in the 41 UC/Ls. The table shows that overall employment in occupational categories sits somewhere between the Indigenous and non-Indigenous profile for the SD.

Job demand and training

The implication of the foregoing discussion is that among the higher skilled occupations, a disproportionately large proportion of the jobs in the 41 UC/Ls are being taken by non-Indigenous people. If, as the data suggests there are 'real' jobs in these communities the logical approach to meeting job demand, notwithstanding the multiple barriers that exist—most notably problems associated with school retention and literacy and numeracy (Kilpatrick *et* al 2001; Long *et al* 1999; NTDE 1999)—would be to upskill local people for local jobs. Consequently, it could be argued, that training can and should be applied to remote communities with a longer term view of meeting the employment demands of remote areas, with local people.

Enterprise development and training

While meeting the employment needs of local communities with local people through training and skill development may lead to an increased proportion of local people being employed, it does not in itself add to the wealth of the community. New employment initiatives either in the form of major projects such as 'AdRail' (NLC 2003) or smaller local enterprises are required to increase participation in the labour force. In some cases this could be achieved through CDEP (ABC 2003a; ATSIC 1998). The provision and integration of vocational employment programs for such projects is recognised as a key to their success (Lange 2003). Partnerships between Indigenous and non-Indigenous stakeholders appears to be a key to the success of enterprise development projects (NT Government 2003b).

Provision of government services

The Northern Territory Department of Health and Community Services (THS 2001) strategic direction for 2001-2005 specifically directs provision of health services into regional 'health zones' with one of the direct goals being to 'strengthen community capacity'. The clear intent is to relocate the control and delivery of health services to remote areas of the Territory. The implications for this strategic direction on training are significant, because it necessarily involves upskilling of people in the regions to meet the resulting skills shortage[21]. There are few other examples however, where governments have sought to transfer the locus of service provision to remote areas with community capacity considerations in mind.

Secondary education completion

The relationship between senior secondary completions and certificate qualifications is clearly significant for vocational training. The relationship suggests that as the supply of senior secondary students who have completed year 12 increases so too does the supply of those with certificates. It may also suggest that there is a complementary linkage between successful secondary completions and VET (Future Directions 2003) such that a quality VET program encourages students to stay at secondary schools.

Comparison with bachelor qualifications

A comparison of the results with those for bachelor qualifications reveals some notable differences. While there are relationships between certificate qualifications and employment, occupations and industries of employment shown in the analysis, no significant relationships were found for any of these variables with bachelor qualifications. This suggests that for these remote communities of the Northern Territory certificate qualifications are far more significant for employment than bachelor qualifications. However, bachelor qualifications were associated positively with higher levels of family income, negatively with families without vehicles and positively with use of information technology. These relationships are not surprising given the earlier suggestion that non-Indigenous people were more likely to fill higher skill level and presumably higher paid positions and is consistent with Indigenous Profile data (ABS 2002d), which shows that in the NT Bal SD 0.5% of the Indigenous population had bachelor qualifications compared with 11.2% of non-Indigenous people (see also Table 9).

Conclusions

The analysis of 2001 Census data for the 41 remote and mainly Indigenous urban centres and localities of the Northern Territory shows that there is a strong relationship in these places between vocational qualifications and community well-being. It has been demonstrated that vocational qualifications are related to a number of variables that are either directly or indirectly proxies for community well-being. The analysis shows that there is a clear relationship between certificate qualifications and full-time employment such that for each 1% increase in certificate qualifications there is approximately a 2% increase in full-time employment. There is also a relationship with income such that those

[21] The 2003 *Report of the review of the DHCS* suggests that progress toward achievement of goals of Strategy 21 are not as well advanced as they could be. It states: "Training and development of staff is haphazard". (BHC 2003:149) and points to problems associated with the rollout of Primary Health Care Access Program (PHCAP)zones.

individuals with certificate qualifications are more likely to have incomes above the median level of $299 per week. There are also relationships between certificate qualifications and the types of occupations and types of industries people in remote communities are employed in. Further, there was a relationship found between secondary education (year 12) completion and certificate qualifications.

The negative relationship between the proportion of Indigenous persons in the population and certificate qualifications, even in these mainly Indigenous communities, suggests that non-Indigenous people are more likely to be employed as a result of their qualifications, particularly in those areas where higher qualifications are required. The data does not suggest to what extent CDEP influences or is influenced by certificate qualifications and the lack of correlation between certificate qualifications and the 'government administration and defence' industry category does suggest that CDEP participation is not a factor that is not associated with certificate qualifications. However in terms of employment those communities with higher levels of VET qualifications are likely to benefit from additional 'real jobs'. The analysis suggests that in a community of 1000 people and additional 3% of the population having VET qualifications is associated with an additional 88 jobs, 44 of which are full time and 17 of which are in the private sector.

There are several implications that emerge from these findings. While VET provision cannot be shown in this analysis to bring about improvements in community well-being the strong association between certificate qualifications and a number of factors—particularly employment and income—points to the important role of VET in building community capacity. It is clear that 'successful' employment initiatives will have a major VET component. The relationship between certificate qualifications and year 12 completions points to the ongoing need for strategies that promote student retention but may also point to the complementary role that VET in schools programs can play in promoting student retention.

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Appendix 1: List of Urban Centres and Localities used for analysis

Table 7. UC/Ls used for analysis, together with ARIA values, 2001 population and percent of the population Indigenous

UCL code	UCL name	ARIA value	Population 2001	Percent Indigenous
700290	Alpurrurulam (L)	12	356	93.8%
700500	Ampilatwatja (Aherrenge) (L)	12	302	88.1%
700600	Angurugu (L)	12	758	95.1%
700800	Bamyili (Barunga) (L)	8.58	346	93.4%
701200	Beswick	9.1	357	89.9%
701400	Borroloola (L)	12	769	63.8%
701700	Dagaragu-Kalkaringi (L)	12	620	85.8%
701800	Daly River (L)	7.89	621	55.7%
702100	Duck Creek	12	230	96.1%
702400	Elliott (L)	12	419	64.9%
702600	Galiwinku	12	1463	92.1%
702640	Gapuwiyak (L)	12	668	89.5%
702690	Gulin-Gulin Weemol	12	245	94.7%
702800	Hermannsburg (L)	8.34	460	86.3%
703440	Kaltukatjara (Docker River) (L)	12	297	83.5%
703800	Kintore (L)	12	682	95.7%
703900	Lajamanu (L)	12	705	88.1%
704000	Maningrida	11.33	1645	83.2%
704200	Milikapiti (L)	11.02	450	86.0%
704400	Milingimbi (L)	11.74	992	92.3%
704450	Minjilang (L)	11.74	204	90.2%
704450	Amoonguna	6.26	246	74.8%
704600	Nguiu	10.16	1310	92.3%
704800	Ngukurr (L)	11.74	933	90.5%
705200	Numbulwar (L)	9.62	717	90.5%
705300	Nyirripi	12	245	93.9%
705400	Oenpelli (L)	9.62	858	87.3%
705530	Palumpa	10.24	389	88.9%
705600	Papunya (L)	10.44	261	88.5%
705650	Peppimenarti	9.8	210	90.0%
705870	Pirlangimpi (L)	11.02	369	87.8%
706000	Port Keats	10.75	1048	89.4%
706400	Ramingining (L)	12	613	89.9%
706600	Santa Teresa (L)	7.5	536	89.6%
706880	Titjitkala	12	218	88.5%
706950	Umbakumba (L)	12	372	94.6%
707200	Warrabri (L)	11.74	487	94.0%
707600	Warruwi (L)	12	331	96.7%
707700	Willowra	10.7	347	92.8%
707800	Yirrkala (L)	12	648	75.6%
708000	Yuendumu	11.12	700	85.3%

Appendix 2: Census variables used for analysis

Table 8. Census variables tested against certificate qualifications

Category	Unit of measure	Variable
Population	Persons	Males Females Persons Aged 15 years and over Indigenous persons
Highest level of schooling completed	Persons aged 15 years and over (excluding overseas visitors)	Year 8 or below Year 9 or equivalent Year 10 or equivalent Year 11 or equivalent Year 12 or equivalent Still at school Did not go to school
Weekly individual income	Persons	Negative/Nil income $1-$39 $40-$79 $80-$119 $120-$159 $160-$199 $200-$299 $300-$399 $400-$499 $500-$599 $600-$699 $700-$799 $800-$999 $1,000-$1,499 $1,500 or more
Computer use (uses a computer at home)	Persons	Total persons
Internet use (uses the Internet anywhere)	Persons	Total persons
Employed	Males Females Persons	Full time Part time
Non-school qualifications	Persons	Bachelor degree Certificate
Industry of employment	Persons	Agriculture, Forestry and Fishing Mining Manufacturing Electricity, Gas and Water Supply Construction Wholesale Trade Retail Trade Accommodation, Cafes and Restaurants Transport and Storage Communication Services Finance and Insurance Property and Business Services Government Administration and Defence Education Health and Community Services Cultural and Recreational Services Personal and Other Services

Category	Unit of measure	Variable
Occupations	Persons	Managers and Administrators Professionals Associate Professionals Tradespersons and Related Workers Advanced Clerical and Service Workers Intermediate Clerical, Sales and Service Workers Intermediate Production and Transport Workers Elementary Clerical, Sales and Service Workers Labourers and Related Workers
Number of motor vehicles	Private dwellings	No Vehicles 1+ vehicles 1 vehicle 2 vehicles 3+vehicles
Family income	Families in occupied dwellings	Negative/Nil income $1-$199 $200-$299 $300-$399 $400-$499 $500-$599 $600-$699 $700-$799 $800-$999 $1,000-$1,199 $1,200-$1,499 $1,500-$1,999 $2,000 or more
Selected averages	Whole population	Median age
		Mean household size

Appendix 3: Statistical comparison of sample with NT Bal Statistical Division and NT Bal SD Indigenous profile

Table 9. Comparison of sample statistics with NT Bal Statistical Division (SD) population and NT Bal SD Indigenous profile

Variable	Sample	Population NT Bal (SD)	Indigenous profile (NT Bal SD)
Total population	23427	94156	
Indigenous population	20433	41203	41203
Percent Indigenous	87.2%	43.8%	
Median age	22	29	21
Percent 15+ population with certificates	3.5%	13.4%	2.7%
Percent 15+ population with bachelor qualifications	2.3%	6.5%	0.5%
Percent 15+ completing year 12	8.9%	24.4%	4.7%
Percent persons employed	32.1%	52.5%	29.9%
Median family income ($)	400-499	700-799	400-499
Median individual income ($)	160-199	200-299	160-199
Managers and Administrators	1.8%	0.7%	3.9%
Professionals	5.3%	2.9%	8.9%
Associate professionals	3.1%	2.2%	6.4%
Tradespersons and related workers	1.6%	1.1%	6.3%
Advanced clerical and service workers	0.4%	0.2%	1.3%
Intermediate clerical, sales and service workers	3.8%	4.1%	7.8%
Intermediate production and transport workers	1.9%	1.8%	3.8%
Elementary clerical, sales and service workers	2.1%	1.5%	3.9%
Labourers and related workers	10.4%	12.4%	8.2%
Agriculture, forestry and fishing	0.5%	2.4%	0.7%
Mining	0.1%	2.2%	0.5%
Manufacturing	0.1%	1.8%	0.2%
Electricity, gas and water supply	0.1%	0.4%	0.0%
Construction	1.1%	3.2%	0.6%
Wholesale trade	0.2%	1.4%	0.2%
Retail trade	2.2%	5.3%	1.0%
Accommodation, cafes and restaurants	0.4%	3.8%	0.5%
Transport and storage	0.5%	2.6%	0.3%
Communication services	0.1%	0.4%	0.1%
Finance and insurance	0.2%	0.5%	0.1%
Property and business services	0.5%	3.0%	0.7%
Government administration and defence	15.5%	9.9%	15.3%
Education	3.8%	4.5%	2.0%
Health and Community Services	3.2%	5.2%	2.8%
Cultural and Recreational Services	0.5%	1.5%	0.8%
Personal and Other Services	1.9%	2.8%	2.5%
Percent persons using the Internet	5.40%	21.8%	3.6%
Percent persons using computers	4.50%	22.20%	2.70%

Appendix 4: Multiple regression

Table 10. Independent variable: Full time employment; Dependent variables: Certificates, Indigenous status, Year 12 completion

Regression Statistics	
Multiple R	0.7365
R Square	0.542433
Adjusted R Square	0.505333
Standard Error	0.047671
Observations	41

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.09968	0.033227	14.62081	1.95E-06
Residual	37	0.084085	0.002273		
Total	40	0.183765			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.248788	0.125524	1.981991	0.054945
Percent completing yr 12	0.129246	0.236208	0.547171	0.587547
Percent >15 with certificates	1.348191	0.57714	2.335987	0.025019
Percent Indigenous	-0.19911	0.130334	-1.5277	0.135092

Table 11. Independent variable: Individual income above $299 per week Dependent variables: Certificates, Indigenous status, Year 12 completion, median age

Regression Statistics	
Multiple R	0.769895
R Square	0.592739
Adjusted R Square	0.534559
Standard Error	0.058186
Observations	41

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	0.172462	0.034492	10.18799	4.38E-06
Residual	35	0.118496	0.003386		
Total	40	0.290957			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.696472	0.242982	2.866352	0.006983
Percent full time	0.182549	0.202102	0.903252	0.372567
Percent completing year 12	0.297936	0.292913	1.017148	0.316063
Percent >15 with certificates	0.186041	0.768481	0.242089	0.810124
Percent Indigenous	-0.60129	0.189581	-3.1717	0.003148
Median age	-0.00329	0.004272	-0.76914	0.446972