Geographic location changes in the transition from school to work

A report submitted to the

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by
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1. Background

In his report to the National Education Performance Monitoring Taskforce (NEPMT) on the definition of geographic location to be used for national comparable reporting of outcomes of schooling, Jones (2000) noted that:

> "In the context of identifying participation, transition, retention and attainment in the workforce and in post-compulsory education and training, greater reliance will be placed on ABS household survey data with reporting based on current address. To the extent that the more successful students from rural/remote areas move into urban areas, the apparent attainment in post-compulsory education, training and employment of those with a rural/remote background may be underestimated. A question to identify young adults' home location during secondary schooling may then be required in relevant ABS surveys to allow key performance measures to be reported by geographic background."

He then recommended that a study be undertaken to:

> *Investigate, using available longitudinal survey data, the extent to which students from rural and remote areas relocate to more urban areas after completing their schooling and the effect that this has on the comparability over time of the characteristics and outcomes of those with a rural/remote background.*

This paper has been commissioned by the NEPMT in response to that recommendation. It uses data from the Longitudinal Surveys of Australian Youth (LSAY) to compare the geographic location of students in Year 9 in 1995 with their location 4 years later in 1999, when almost all have left school and are in higher education, have entered the labour market or are involved in other non-work activities.

2. The LSAY sample data

The original LSAY 1995 cohort sample of Year 9 students included 13,613 respondents, based on two Year 9 classes drawn from about 300 schools. Smaller States and Territories were over-sampled in order to produce reliable estimates at the State/Territory level. After 4 years in the field the number of active sample members has declined to 8,783, a loss of 4,830 respondents, 35 per cent of the original sample. In order for the sample to more accurately represent the population cohort of Year 9 students in 1995, ACER have derived weights which seek to compensate for the joint effects of differences in sampling fractions among the State/ Territory strata and differences in response rates among the strata (ACER (2000), *LSAY Technical Paper No 14*).

Table 1 compares the distribution of Year 9 students by State/Territory of schooling found in the weighted LSAY sample with the corresponding distribution identified through the National Schools Statistics Collection and reported in *Schools 1995* (ABS 4221.0). As noted above, the LSAY data is weighted to take account of differences in sampling probabilities and non-response between

States/Territories and, as expected, the distribution found in the LSAY sample after weighting matches closely that of the Schools Census.

Table 1 Distribution of Year 9 students by State/Territory of schooling, 1995: ABS Schools and weighted LSAY sample

	Full-time Year 9 students ABS Schools				LSAY Sample (weighted)	
	Male	Female	Total	Per cent	Total	Per cent
ACT	2456	2293	4749	1.93	266.6067	1.96
NSW	41311	39857	81168	33.06	4556.735	33.47
VIC	30007	28969	58976	24.02	3310.886	24.32
QLD	24528	22991	47519	19.36	2498.884	18.36
SA	9358	9050	18408	7.50	1033.417	7.59
WA	13222	12409	25631	10.44	1438.913	10.57
TAS	3583	3499	7082	2.88	397.5803	2.92
NT	1003	956	1959	0.80	109.9774	0.81
Total	125468	120024	245492	100	13613	100

ACER analyses of the sample losses from 1995 to 1999 "shows that attrition was slightly higher among males, Aboriginal and Torres Strait Islanders, students attending Government schools, students from a lower socio-economic status and students who performed less well in the achievement tests". Weights have been derived to compensate for these effects so that the distributions of these variables are "very similar or close to identical. Most categories are within a single percentage of the weighted 1995 distributions" (ACER (2000), *LSAY Technical Paper No 14*).

3. Coding of addresses

Respondents were initially tested and surveyed in school in 1995, surveyed by mail at their home address in 1996, and by telephone in each of the following years. Information on their home address in 1995 and their location in 1999 is used here to examine their movement between geographic location categories. Addresses have been coded to seven location categories as defined by Jones (2000), namely:

1. Mainland State Capital City regions
2. Other major Urban Centre regions
3. Large Provincial City (50,000 - 99,999 population) regions
4. Other Provincial City (25,000 - 49,999 population) regions currently defined by Statistical Districts
5. Other Provincial City (25,000 - 49,999 population) regions currently defined by SLAs where the Statistical District is to be defined in ASGC 2001
6. Other Provincial areas, defined as other areas with CD ARIA score < 4.805
7. Remote Zone, defined as areas with CD ARIA score > 4.805

Detailed definitions of categories 1 through 4 are given in Table 5.1, of category 5 in Table 5.2 and Category 7 in Table 5.5 of Jones (2000). Category 6 is the remainder of Australia.

Coding of addresses to these location categories posed relatively few problems, the majority of addresses being assigned to their category on the basis of postcode information alone using the Postal Areas to SLA concordance derived from the Census by the ABS. Where postcodes could not be assigned uniquely to a category, examination of the urban centre/locality name component of the address was usually sufficient to identify whether it was located within a metropolitan or provincial city region (categories 1-5). If not, the ARIA score for the urban centre/locality was, in most cases, available to distinguish between addresses on the boundaries of the Other Provincial areas and Remote Zone categories.

Nevertheless, the coding of address information to location categories is not straightforward and appropriate tools need to be developed to simplify the task if State and Territory Education Authorities and/or schools are to assign students consistently and reliably to these categories.

4. Geographic distribution of LSAY sample, 1995 and 1999

The distribution of the weighted LSAY sample of Year 9 students in 1995 by geographic location category and State/Territory of home address is shown in Table 2. Differences in the State/Territory totals between Table 1 and Table 2 reflect the attendance of students from New South Wales in ACT schools, from Victoria in New South Wales schools, and from the Northern Territory in Queensland and South Australia schools primarily, and exclusion of a small number of cases (50) where no address was provided.

Table 2 Year 9 students by State/Territory and location category, 1995 (per cent)

	Mainland State Capital City (SD)	Other major urban centre (SD/SSD)	Large provincial city (Sdist)	Other provincial city (Sdist)	Other provincial city (SLA)	Other provincial areas	Remote Zone	Total
ACT		1.85						1.85
NSW	19.40	3.40	0.53	0.99	2.80	6.11	0.07	33.31
VIC	16.79	0.70	0.95	2.01	0.24	3.79	0.07	24.53
QLD	8.73	0.67	2.19	1.67	0.33	3.38	1.39	18.36
SA	4.83					2.34	0.41	7.59
WA	6.67				0.50	1.44	1.96	10.58
TAS		1.21	0.39	0.32		1.01		2.93
NT			0.24			0.05	0.58	0.86
Total	56.42	7.83	4.29	4.99	3.88	18.12	4.48	100.00

Nationally, the metropolitan regions comprising the State Capital City Statistical Divisions (SD) and other major urban centre Statistical Divisions or Subdivisions (SD/SSD) account for 64.2 per cent of the total Year 9 population, provincial city regions account for 13.2 per cent and other provincial areas for 18.1 per cent, with the remaining 4.5 per cent resident in remote areas, primarily in Western Australia, Queensland, Northern Territory and South Australia.

It should be noted that the proportions shown in Table 2 are estimates only, based on a sample of about 300 schools, and that the small numbers of respondents in many of the table cells mean that the estimated proportions cannot be considered reliable, particularly at the State and Territory level. At the national level, the total population distribution from the 1996 Census across the seven categories of geographic location is 59.6%, 10.4%, 3.9%. 3.4%, 2.4%, 16.9% and 3.4% respectively, in reasonable agreement with the weighted LSAY sample distribution. Nevertheless, similar comparisons at State/Territory level suggest some over-representation of students living in provincial cities in New South Wales, Victoria and Queensland and in other provincial areas of Tasmania, and a lower than expected number of students from Darwin and Queensland major urban centres (the Gold Coast and Townsville-Thuringowa). Students from remote areas of Western Australia are also over-represented while New South Wales remote areas appear under-represented.

Without stricter controls on the sample selection to ensure appropriate representation in each category, variations such as these are to be expected. The estimates presented here should therefore be treated as indicative rather than precise, although the pattern of the findings is sufficiently clear to override the relatively minor concerns about the representativeness of the sample and sampling variability within States/Territories.

Four years later in 1999, almost all of these students have left school and a net movement from the smaller urban centres, rural and remote areas into the larger urban centre regions is clearly evident (Table 3). Residence in the metropolitan regions then accounts for 69.3 per cent of this population, up 5 per cent, provincial city regions increase their share slightly to 13.5 per cent, while other provincial areas and the remote zone lose residents, accounting for 14.3 per cent (down 3.8 per cent) and 2.9 per cent (down 1.6 per cent) respectively. This pattern of mobility away from the remote areas, smaller provincial cities and other provincial areas into the larger urban centres occurs generally across all States and Territories.

Table 3 1995 Year 9 students by State/Territory and location category of residence in 1999 (per cent)

	Mainland State Capital City (SD)	Other major urban centre (SD/SSD)	Large provincial city (Sdist)	Other provincial city (Sdist)	Other provincial city (SLA)	Other provincial areas	Remote Zone	Total
ACT		2.05						2.05
NSW	19.83	3.66	0.46	1.00	2.43	4.87	0.02	32.28
VIC	17.51	0.59	1.09	1.73	0.18	2.95	0.03	24.07
QLD	9.97	1.32	2.60	1.81	0.28	2.91	0.97	19.88
SA	5.54					1.83	0.30	7.67
WA	7.47				0.58	1.08	1.14	10.28
TAS		1.41	0.52	0.35		0.56		2.84
NT			0.42			0.06	0.45	0.94
Total	60.32	9.03	5.09	4.90	3.47	14.27	2.92	100.00

Note: Distribution based on 8,783 of the 13,562 Year 9 students responding in 1995, weighted to compensate for sample attrition.

More specifically, almost all (97.8 per cent) of the Year 9 residents of the mainland capital city regions remain within that category, whereas only 62.5 per cent of those living in the remote zone while attending Year 9 are still living in remote areas four years later (Table 4). Large provincial cities lose about 7 per cent of their young adult school leavers to metropolitan areas, the two other provincial city categories show losses of about 12 per cent and 17 per cent respectively, while 19 per cent of school leavers from other provincial areas and 24.5 per cent from remote areas relocate to metropolitan regions. The more distant these young adults homes are from the services and opportunities provided by the major cities, the more likely they are to move to them after leaving school.

Table 4 Location category of 1995 Year 9 students by location category in 1999 (per cent)

1999 residence /1995 residence	Mainland State Capital City (SD)	Other major urban centre (SD/SSD)	Large provincial city (Sdist)	Other provincial city (Sdist)	Other provincial city (SLA)	Other provincial areas	Remote Zone	Total
Mainland State Capital City	**97.75**	0.72	0.22	0.21	0.18	0.82	0.09	100.00
Other major urban centre	5.14	**92.09**	0.89	0.10	0.04	1.53	0.20	100.00
Large provincial city	5.68	1.49	**87.29**	0.18	0.29	3.59	1.48	100.00
Other provincial city (Sdist)	9.93	1.97	1.31	**84.06**	0.48	1.50	0.75	100.00
Other provincial city (SLA)	12.71	4.73	1.12	0.00	**79.33**	1.95	0.16	100.00
Other provincial areas	13.95	5.03	3.24	2.35	1.36	**73.51**	0.58	100.00
Remote Zone	21.89	2.59	5.30	0.38	2.81	4.58	**62.45**	100.00

Note: Distribution based on 8,783 of the 13,562 Year 9 students responding in 1995, weighted to compensate for sample attrition.

5. Conclusions

This analysis of the 1995 Year 9 LSAY cohort clearly illustrates the attraction of the major capital cities, in particular, and other large urban centres to young adults from smaller regional centres, rural and remote areas. While the reasons for this movement have not (as yet) been investigated, it seems reasonable to assume that they are in most cases associated with attendance at university, better employment opportunities, and better access to leisure services and facilities.

Whatever the reasons for this mobility, analyses by geographic location of post-school attainment in the workforce and in post-compulsory education and training will almost certainly be affected. In the context of reporting outcomes from schooling in particular, young adults from rural and remote areas who have moved to the larger provincial and major urban centres need to be identified and assigned to geographic location categories on the basis of their home address while attending school rather than their current location.

The equity indicators for higher education already identify rural and isolated students on the basis of the postcode of a student's permanent home residence, linking the postcode to the rural and

remote zones respectively of the DPIE/DHSH 1991 Census Rural, Remote and Metropolitan Areas (RRMA) classification using the Postal Areas to SLA Concordance File. In the context of nationally comparable reporting of outcomes from schooling, there are then two issues that need to be addressed.

- First, the DPIE/DHSH classification is now outdated and should be abandoned.
- Second, the use of postcodes alone as the basis for defining remote (or isolated) students in particular needs to be re-examined.

The Provincial and Remote Zones of the classification proposed by Jones (2000) are closely comparable with the Rural and Remote Zones of RRMA. However, an address is assigned to the Other Provincial areas or the Remote Zone category on the basis of its Accessibility/Remoteness Index of Australia (ARIA) score rather than its SLA or postcode. While, as noted above (see Coding), the majority of postcodes are entirely located in one category of the classification, there are inevitably numerous examples of postcodes that cross category boundaries where additional address data, namely a town/locality name, is required for more accurate allocation.

The definition of geographic location based on home address poses few problems in longitudinal surveys such as LSAY. However, if these data are to be used for reporting of post-school outcomes by geographic location, specific attention will need to be given to the selection of schools in remote areas. For example, New South Wales contains almost 10 per cent of the national remote areas population, but this represents less than one per cent of the State population and a random selection of schools within that State could easily exclude any schools from remote areas, leaving representation to those remote students attending schools in non-remote areas. To ensure that students from remote areas are appropriately represented nationally and across States/Territories, a separate stratum of remote schools and some over-sampling of these schools appears necessary.

Similarly, if post-school outcomes by geographic location are to be reported from relevant ABS surveys, the relatively small size of the remote areas population is likely to preclude any State/Territory breakdowns and require over-sampling to give adequate reliability. However, as the analyses here show clearly, reporting based on current location is likely to be of limited value in assessing the post-school outcomes of students from regional, rural and remote areas. These analyses then strongly support the view that:

> *A question should be included in relevant ABS surveys to allow key performance measures to be reported by geographic location based on home address during (Year 9) secondary schooling.*