# Submission to the Inquiry into the Educational Achievement Gap in the ACT

**by Dr Mark Drummond**
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**Abstract**

Two huge flaws in the processes used to calculate ACT Universities Admission Indices and equivalents in past years since 1977, and associated flow on effects, have combined to create a significant educational achievement gap in the ACT and reduce the overall quality of the ACT education system. About 10% to 15% or so of ACT students seem to be more or less well served by the current system, but the other 85% to 90% or so are neglected and disempowered by the system to varying degrees depending on the schools and colleges they attend.

## Introduction

This submission has three main sections. The first examines the overall quality of the ACT education system in terms of hard empirical evidence, and concludes that the quality of the ACT education system is not nearly as high as people often claim it is, though this in no way implies that teachers and students are responsible for the system's deficiencies. The second section addresses this Inquiry's terms of reference in substance by explaining (1) how a huge and divisive educational achievement gap in the ACT has been caused by and relentlessly reinforced by two extremely large and damaging flaws in the methodologies used to calculate ACT Universities Admission Indices (UAIs) from 1998 to 2008 (and equivalent percentile ranks between 1977 and 1997), after ACT Year 12 students sat the NSW HSC exams for the last time in 1976, and (2) how the two UAI flaws that create the education gap have created perverse incentives and other flow on effects that have acted to significantly reduce the overall quality of the ACT education system.[1] The third section then explains how fixating on gifted and talented students has the potential to further deepen the education gap between the 10% to 15% or so of students who seem to be more or less well served by the current ACT education system, and the remaining 85% to 90% or so who all too often seem to be largely overlooked and taken for granted.

## The Truth About the Quality of the ACT Education System

It's never nice being the bearer of bad news, but there's long been a need to overcome the smugly complacent fool's paradise that the ACT has become in relation to its education system.

Several comparative studies have concluded that Australia as a whole has a high quality but low equity education system, relative to other countries, and for most of the past three decades, since the ACT senior secondary school system broke away from the NSW HSC

system in 1977, it seems to have been just automatically assumed as an article of faith, without question, that the ACT has a high quality education system.

Appendix A shows that Chief Minister Jon Stanhope, Education Minister Andrew Barr and others have regularly boasted that the ACT has the best education system and achieves the best education outcomes of the eight States and Territories. Appendices B to D (see also Appendices J and K) show clearly, however, that these boasts are nearly all spin and myth. Appendix B shows that the 2008 NAPLAN (National Assessment Program Literacy and Numeracy) results of metropolitan NSW and VIC (i.e. Sydney and Melbourne) were superior overall to those of the ACT, despite the fact that the ACT's socio-economic status vastly exceeds that of NSW, VIC, Sydney and Melbourne. Appendix C shows that the ACT's UAI participation and achievement rates have been much lower than those of NSW over the period 2005 to 2007, and Appendix D provides hard evidence, from the 2001 Census and other Australian Bureau of Statistics (ABS) data, that confirms that the ACT 's socio-economic status really does tower over that of the six States and Northern Territory.[2] Collectively, Appendices B to D prove beyond all doubt that there are clearly very significant problems with the ACT education system that urgently call for a comprehensive review of the entire system. These appendices also show that when the ACT's socio-economic profile is taken into account, achievement levels at the "top end" of the ACT student achievement spectrum are clearly not as high as many people have previously assumed.

The next section explains how two huge flaws in the way ACT UAIs (and equivalents in the past) have been calculated over the past three decades have created and reinforced a significant ACT education achievement gap and significantly damaged the ACT education system's overall quality and outcomes.

## The Two UAI Calculation Flaws that Cause and Tend to Exacerbate an ACT Educational Achievement Gap

Appendix E attempts to explain systemic problems with the ACT UAI calculation process and outward signs of system failure which extend well beyond UAI outcomes to things like the ACT's NAPLAN results (as described in Appendix B), in terms of (as copied directly from Appendix E):

- two major flaws – (1) the **equality assumption flaw**, and (2) the **scaling flaw**;

- the two main injustices arising as a result of these flaws – (1) the **many thousands of ACT system students who have sought but wrongly missed out on funded university places** over the years, and (2) the **many thousands of ACT system kids who have been denied the opportunity to even attempt to gain UAIs** by colleges and other authorities who have aggressively discouraged such attempts;

- two different categories of colleges – (1) **beneficiary colleges**, and (2) **victim colleges** or **sacrificed colleges** [though even the beneficiary colleges generally only just break even, more or less, in typical years];

- two effects which combine to lower the ACT UAI participation/achievement rate – (1) the **equality assumption disincentive effect** or **rationing disincentive effect** which arises due to the equality assumption flaw, and (2) the **scaling flaw discouragement**

**effect** which arises due to the scaling flaw [because of the practice whereby colleges aggressively discourage kids from sitting the AST if they feel such kids will lower the college's AST average and hence its UAI average noting the direct link between AST scores and UAIs]; and

- the manner in which these flaws and resultant effects create and reflect perverse incentives and distortions that in practice tend to drastically lower expectations well in advance of Years 11 and 12 for an alarmingly high proportion of ACT students. Aggressive expectation lowering occurs through the pigeon-holing and "branding for life" of students as early as Year 7, and possibly even earlier, through excessive or otherwise misguided streaming processes, or other similarly stigmatising measures, such that significant fractions of ACT students are (1) wrongly and prematurely led to believe that they are simply not scholastically good enough to gain a UAI and realistically aspire to a university education, and (2) simply not taken as seriously and taught as rigorously as they should be and would be if they were motivated and allowed to maintain ambitions to gain a UAI.

As further explained in Appendix E, an ACT education gap occurs through two highly flawed processes which divide the beneficiary colleges (Narrabundah College, Girls' Grammar, Radford College and Marist College) from the victim (or sacrificed) colleges (i.e. all colleges besides the four beneficiary colleges), where "colleges" refers to all colleges and schools which operate Year 12 programs within the ACT education system. This education gap is created and reinforced trough an overall process which involves at least the following six sub-processes acting in combination:

***(1) The UAI equality assumption flaw unfairly treats all ACT system students;***

***(2) The UAI scaling flaw unfairly benefits UAI seeking students attending the beneficiary colleges and unfairly harms UAI seeking students at the victim colleges;***

***(3) An education achievement gap is produced by the two UAI calculation flaws acting in combination;***

***(4) The UAI calculation flaws tend to reinforce and increase the education achievement gap at Year 12 level;***

***(5) UAI calculation flaws have produced flow on effects that have diminished the quality and outcomes of the entire ACT education system; and***

***(6) The UAI calculation flaws and the damage they've done to the entire ACT education system have gone largely unchallenged because beneficiary and victim colleges each contain government and non-government colleges among their numbers, and advocates of government and non-government schools alike have hence and otherwise been confused, divided, conquered and unable to effectively challenge the flaws.***

The six sub-processes listed above are now described in turn.

***(1) The UAI Equality Assumption Flaw Unfairly Treats All ACT System Students***

ACT Year 12 students as a whole have been treated extremely unfairly by an equality assumption in which it has been simplistically and naively assumed that ACT Year 12 students overall and on average have had the same scholastic ability as their counterparts in NSW, the other States and the Northern Territory, essentially every year since 1977. This assumption is inconsistent, however, with (a) HSC outcomes in 1975 and 1976 – the last two years in which ACT system students sat the NSW HSC exams – when the top 15% of the ACT age cohort achieved HSC mark levels reached by only the top 10% or so of the corresponding NSW cohort, and (2) the fact that the parts of Melbourne and Sydney which share the ACT's very high socio-economic status year after year are free and able to achieve UAI (or equivalent) outcomes vastly superior to those of their respective States and also the ACT. So it's like a situation where the high socio-economic status educationally advantaged parts of Sydney and Melbourne benefit from a floating exchange rate in which their Year 12 students are free and able to achieve a disproportionately high share of high range UAI (or equivalent) scores, but ACT Year 12 students are subjected to a fixed exchange rate such that high range UAIs are restricted and rationed to the proportions achieved by the whole of NSW, VIC and the other States and Northern Territory.

The equality assumption flaw and its historical background are further explained in Appendix F, and further acknowledgement of the equality assumption's existence and shortcomings is confirmed in Appendix G. As described in Appendix F (see especially points 3 and 5), the equality assumption flaw appears to have originated as a result of significant oversights in the interpretation of ACT and NSW HSC results in 1975 and 1976.

The equality assumption flaw reduces the ACT UAI achievement rate (or UAI participation rate) through an effect I've referred to as the **equality assumption disincentive effect** or **rationing disincentive effect**. Noting the 15% and 10% figures in the paragraph above, the situation here is like one in which a water hole should have enough water for 15 animals, but someone comes along and removes five animals worth of water, such that when 15 animals arrive at the water hole, five of the less pushy among them don't bother trying for water at that water hole. As with this water removal analogy, the equality assumption flaw really does remove life opportunities and benefits from its victims.

***(2) The UAI Scaling Flaw Unfairly Benefits UAI Seeking Students Attending the Beneficiary Colleges and Unfairly Harms UAI Seeking Students at the Victim Colleges***

As explained in Appendices H and I, the process used to scale marks up and down at colleges is fundamentally flawed because the statistical correlation between ACT Scaling Test (and similar tests in past years) scores and substantive subject results for maths, English and so on has never been anywhere near high enough to justify the scaling up and down that occurs every year. Data produced every year by the ACT Board of Senior Secondary Studies (BSSS) in *Year 12 Study* documents (see at http://www.bsss.act.edu.au/publications – see especially "AST vs Score" entries in Table 9.1 in 2005 and Table 9.1a in each of 2006 to 2008, and note that these numbers need to be squared to obtain the coefficient of determination values that measure the validity of the scaling process) shows that only about 30% of the scaling up and down that is done to push some colleges up and others down can be considered valid – the other 70% majority of scaling up and down that is done has no scientific basis at all (see Appendix H). So the fact that 30% is about one-third means that a multiplier of about 1 to 3

operates such that the incentive to gain an extra 1 mark advantage on the ACT Scaling Test (AST) is extreme and excessive because an improvement on the AST which really should only add 1 point to a college's average UAI score will actually add 3 points to it! So the stakes are about three times higher than they should ever really be, the "Darwinian fight for survival" is vastly more intensely competitive than it should be, and the incentive to "beat" if not "cheat" the system is again vastly greater than it should be, such that colleges have felt a need to devise various processes to benefit as well as they feel they can from the system. The two main responses by colleges to this scaling flaw and the associated 1 to 3 or so multiplier effect in place have been:

> (i) huge efforts by colleges to train their students up for the AST – akin to an "arms race" – such that there's an incentive to spend more and more time trying to improve AST results at the expense of more substantive learning that will much better prepare students for future studies and employment; and
>
> (ii) huge efforts by colleges to discourage students from sitting the AST Test and hence qualifying for a UAI if the college believes such students will drag down the college's AST average and hence their UAI average.

Response (ii) as above – which I've referred to as the **scaling flaw discouragement effect** – is directly analogous to a form of personal self-harm. Victim colleges are helpless to the extent where the only way they can "help" some of their students is by sacrificing the aspirations of others among their number – an incredibly depressing state of affairs starkly illustrated by the incredibly low UAI participation rates of several ACT colleges as shown in Appendix C (see especially the charts on pages C-4, C-8 and C-12; see also Appendices F, J and K).

Barry McGaw is now considered one of Australia's foremost education policy experts, but in the mid 1970s, and again in 1986, McGaw and others left a critical question unanswered that has enabled the scaling flaw to survive and do huge levels of damage to ACT students and the ACT education system for over three decades now since 1977. As stated in Appendix I:

> McGaw et al. (1975: 25) correctly acknowledge the important question of "whether either .51 or .62 is a sufficiently high correlation for either ASAT or TEEP totals to be considered valid for the purpose of rescaling school assessments". This indeed is *the* centrally important question, and the simple answer to this question is an absolutely clear "NO"! The correlation coefficients achieved by the ASAT and this other test set (TEEP) are nowhere near high enough for valid use as scaling tests! McGaw et al. seem to recognise this themselves when they state that "in test development one might reasonably hope for validities in the order of .80".
> ...
> An apt conclusion to this paper by McGaw et al. would be along the lines of "whilst the use of the ASAT for re-scaling purposes would provide some practical advantages, the correlation coefficients describing the correlation of such tests with actual subject scores are not nearly sufficient for such rescaling purposes. The ASAT therefore fails to provide a valid basis for school assessment scaling. Such scaling systems are therefore not worthy of further consideration."
> ...
> McGaw (1977: 219) acknowledges the question of problematically low correlations again later when he states that:

> The total ASAT score is obviously superior to any of its sub-scores for rescaling aggregate teacher assessments, although a correlation of ·51 is not high. The much lower between-schools correlation of ·19 suggests that rescaling is necessary if the between-schools differences in ratings are to be consistent with within-school ratings.
>
> Whether it is worthwhile to adjust between-school differences in teacher assessments to a variable which correlates only ·51 with the assessments within schools is another question. Given the global nature of the aggregate teacher assessments, and the fact that the components differ according to the students' best 20 semester units, it is probably unrealistic to expect any higher correlation than about ·70. Using the total score from the TEEP battery,

**McGaw again fails to follow up on the significance of this central question, and its very simple and clear-cut answer of NO!**

> McGaw and others had another opportunity to examine the question of problematically low ASAT versus subject score correlations in a 1986 review of the ACT tertiary entrance score determination process, but were again prepared to dismiss the significance of these problematically low correlations, as shown in Table 1 below (see McGaw et al. 1986: 24-29, 48 and 51). ...

The failure to properly address the critical question as above is one of the two huge oversights that have been responsible for the two UAI flaws that have done so much damage to ACT students and the ACT education system, the other oversight being the misinterpretation of NSW and ACT HSC results from 1975 and 1976 as previously noted (see points 3 and 5 in Appendix F).

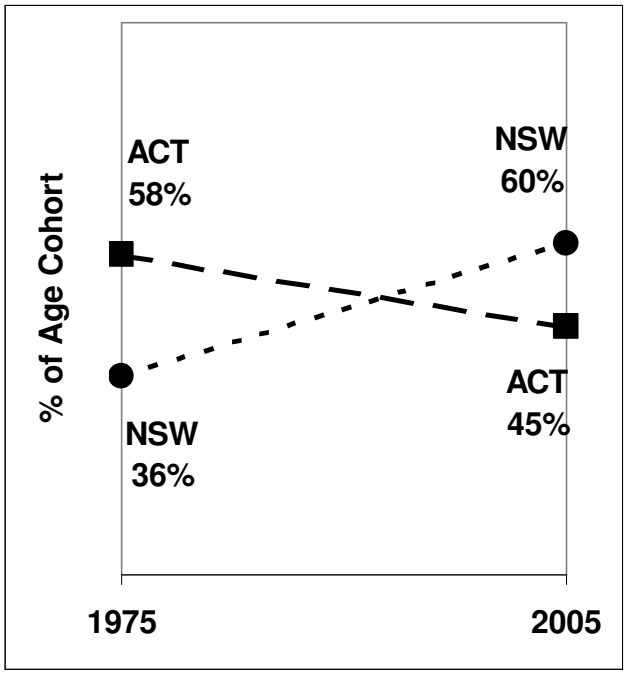
***(3) An Education Achievement Gap is Produced by the Two UAI Calculation Flaws Acting in Combination***

For beneficiary colleges (Narrabundah College, Girls' Grammar, Radford College and Marist College) the unfair harm done by the equality assumption flaw is more or less cancelled about by the exaggerated, never justified and grossly "unfair" boost – via the 1 to 3 or so multiplier described above – achieved through the scaling test flaw, such that these colleges virtually every year end up receiving UAI outcomes about as good as one would expect them to be given that the socio-economic profiles of these colleges exceeds the ACT average, and the ACT's overall socio-economic status towers over that of NSW.

Victim colleges very occasionally have a good year, but in general it's a bloodbath for these colleges – with students at such colleges typically receiving UAIs in the order of 10 or so UAI points lower than they should be. For colleges whose AST average more or less matches the ACT system-wide average, the scaling flaw is effectively neutralised, but the equality assumption flaw remains to impose one dose worth of unfair reduction to UAIs of students at such colleges. But for colleges whose AST averages are significantly below the system-wide average – as is often the case for some of the government and Catholic colleges – it's an incredibly unfair double whammy such that two compounding doses of injustice are imposed on the students at these colleges that typically leave their UAIs about 20 points lower than they should be.

The two huge UAI flaws described here individually create injustices and associated discouragement and disincentives, and in combination produce huge compounding injustices and disincentives in terms of UAI outcomes and achievement rates such that the majority of ACT UAI receivers obtain UAIs much lower than they should be, and a massive proportion of the ACT student cohort are diverted away from the UAI pathway altogether in a process that is incredibly harsh, oppressive and disempowering to many of the students, parents and colleges involved. And as a result, whereas in 1975, 58% of the ACT age cohort sat for the NSW HSC exams, compared to 36% in NSW, three decades later in 2005 the situation had almost reversed, with 60% of the NSW age cohort achieving a UAI compared to about 45% in the ACT, as shown in Figure 1 below.[3]

**Figure 1: The Rise and the Fall – NSW and ACT Tertiary Entrance Score Achievement Rates in 1975 and 2005**




So NSW achieved three decades worth of social progress between 1975 and 2005, and the ACT achieved an extraordinary level of social decline over these 30 years, based on these figures, and an ACT education gap has emerged dividing off the UAI "survivors" from those who have been sacrificed for the benefit of those "selected" – in a Darwinian sense – to "survive" in terms of UAI participation and the achievement of UAIs that are high enough to gain funded university places. The UAI survivors include nearly all of the students at the beneficiary colleges (Narrabundah, Girls' Grammar, Radford and Marist) and generally only the most advantaged 40% or so of students at the victim colleges on average, amounting to about 45% of the overall ACT system age cohort in 2005, though a significant proportion among this 45% will miss out on funded university places or experience some significant injustice as a result of the two UAI flaws described earlier. The magnitude of the damage these flaws have done has been frightening, such that only about 25% of all ACT UAI receivers – representing barely 11% or so of the full age cohort (11% being 25% of 45%) – end up receiving UAIs that are around about where they'd be under a competent and fair system – almost by fluke because of the way the two flaws more or less cancel out for

students at beneficiary colleges in particular. The other 75% or so of all ACT UAI receiving students receive lower UAIs – typically 10 to 15 UAI points lower – than they'd receive if not for the damage done by the UAI calculation flaws both individually and in combination. Tens of thousands of ACT students over the past three decades have unjustly been denied funded university places because of these huge flaws, and tens of thousands more have been discouraged from even attempting to gain a UAI (or equivalent before tertiary entrance scores came to be called UAIs in 1998) because of these flaws.

***(4) The UAI Calculation Flaws Tend to Reinforce and Increase the Education Achievement Gap at Year 12 Level***

Further to the above description of sub-process (3):

> (i) beneficiary colleges achieve successes every year in terms of high average AST and UAI scores and large proportions of students achieving high range UAIs (i.e. 90 and over, 99 and over, etc.), and such positive signals (i.e. positive feedback) encourage a continuation of high UAI participation and achievement rates and high UAI scores year in and year out; and
>
> (ii) victim colleges achieve mixed and generally below average AST and UAI outcomes in terms of lower average UAI scores and generally very low proportions of students achieving high range UAIs (i.e. 90 and over, 99 and over, etc.), and such negative signals (i.e. negative feedback) apply downward pressures on UAI participation and achievement rates, in a process akin to a downward spiral.

As further acknowledged and explained in Appendix E, the simple classification system dividing colleges into beneficiary colleges and victim colleges obviously has its limitations, but this division is much more valid than most simplistic dichotomies, because the four beneficiary colleges as classified herein are the only ones that essentially always do well in terms of achieving AST scores and hence UAIs that are significantly above the ACT system-wide average essentially every year, such that the two huge UAI flaws described above more or less cancel out essentially every year for these colleges and these colleges only.

Some colleges nearly always do below the ACT system-wide average in terms of AST scores and UAIs, such that nearly all students at these colleges receive UAIs that are vastly lower than they should be every year. And the negative signals associated with such below average results tend to continually discourage and "ratchet down" UAI participation to the point where it almost seems as though only a "boutique minority" of students have survived to attempt to gain UAIs at several victim colleges. Some victim colleges nearly always do reasonably close to the system-wide average in the AST, and therefore only suffer the damage done by the equality assumption flaw as described above, with the scaling test flaw being neutralised in these cases, but such damage still typically amounts to an unfair loss of about 10 UAI points. And of course all colleges have better years and worse years. But whereas good years for the beneficiary colleges are ones in which AST scores and UAIs are vastly above the system-wide average, and poor years are ones in which they're still generally well above average, goods years for most victim colleges are ones in which their AST and UAI outcomes roughly match the system-wide average such that typical students still receive UAIs about 10 below what they should be, and bad years are ones in which most students receive UAIs about 20 lower than they should be. Genuinely good years are extremely rare for victim colleges, and

are certainly not frequent enough to provide students, parents, teachers and principals with any real level of clarity and confidence in the substantive educational quality of these colleges, and associated reputational benefits and positive feedback generally that could help to improve UAI participation and achievement at such victim colleges.

### *(5) UAI Calculation Flaws Have Produced Flow On Effects that have Diminished the Quality and Outcomes of the Entire ACT Education System*

It is bad enough that the UAI flaws described above have had a catastrophically detrimental impact on the fortunes of tens of thousands of ACT students at Year 12 level over the past three decades, but the damage done by these UAI flaws extends well beyond just Years 11 and 12 to undermine earlier years of secondary schooling as well – and perhaps even primary school years – because of the perverse incentives to lower student expectations well before they reach Year 12 at victim colleges.

If UAI flaws and associated perverse incentives and disincentives mean that victim colleges adopt the view – effectively as a matter of policy – that only 30% to 40% or so of their cohort should aspire to gain a UAI, there's a need to lower expectations well before Year 12 to prepare for this, in order to soften blows and prevent rude shocks and associated backlashes.

So with less than 50% of the ACT education system age cohort achieving UAIs (see Figure 1 above on page 7), authorities have adopted the view that they have to come up with novel ways of making the ACT education system seem attractive to the more than 50% who don't go on to gain a UAI, and indeed the 89% or so of the age cohorts each year who either don't gain a UAI or otherwise suffer unfairly from the effects of the UAI flaws described earlier (this 89% being all students except the 11% mentioned in the paragraph below Figure 1 near the bottom of page 7). At least the following three overlapping measures have been taken by authorities in an attempt to appease students, parents and colleges:

> (A) Vocational Education and Training programs have been promoted to an exaggerated extent;
> (B) Non-tertiary "accredited" subjects have been promoted to an exaggerated extent; and
> (C) Spin and more spin!

This section will now describe the three measures listed above, and will then briefly examine further adverse impacts of the UAI flaws on the ACT education system.

#### (A) <u>Vocational Education and Training Programs have been Promoted to an Exaggerated Extent</u>

If ACT college students genuinely wanted to do more and more Vocational Education and Training (VET) programs in Years 11 and 12, that would be one thing, but when students are effectively coerced into such programs – albeit unofficially – to make it easier for students at the beneficiary colleges and the chosen "survivors" at the victim colleges to gain UAIs and funded university places, then that is quite another. In other words, if ACT college students only ever undertook VET programs following carrots, that might be fine, but it's not fine

when many are effectively being beaten with sticks out of tertiary programs leading to UAIs and instead into VET programs as a second preference option.

In the NSW HSC system it is common for students to undertake VET subjects but still complete the HSC and gain a UAI, but in the ACT the UAI and VET pathways are all too often promoted as "either or" options rather than options that can gainfully be undertaken together according to individual student preferences and aspirations.

The ACT government's recent announcement that polytechnic colleges focusing on vocational education would be considered for the ACT shows that authorities are continuing to look for new ways to manipulate student aspirations and expectations, and further divert students away from pathways leading to university education, in ways that are again likely to exacerbate already socially divisive education gaps.

(B) Non-Tertiary "Accredited" Subjects have been Promoted to an Exaggerated Extent

Overlapping (A) above is the practice of shunting excessive numbers of ACT college students into non-tertiary "accredited" subjects – another measure that reduces the intensity of competition for artificially rationed UAIs (by virtue of the equality assumption described above) and scarce funded university places. Astute educators in the ACT system have long been aware of anecdotal and substantive evidence suggesting that the academically strongest half or so of students undertaking non-tertiary programs in the ACT college system clearly have the potential to successfully complete a tertiary program in the ACT college system and university level studies. Figure 1 above suggests that if ACT colleges remained part of the NSW HSC system since 1977, the ACT UAI participation rate would probably have been about 75% in 2005 – in line with the parts of Sydney with socio-economic status more or less matching that of the ACT, rather than the 45% or so that eventuated, where this 30% estimated difference between 75% and 45% amounts to some 1500 ACT students each year who are not gaining UAIs but almost certainly would be if ACT colleges had remained part of the NSW HSC system.

(C) <u>Spin and More Spin!</u>

The first section of this submission referred to the boastful spin used by senior ACT politicians to "talk up the share price" of the ACT education system, as documented in detail in Appendix A. But excessive spin has also been used in attempts to lower expectations of students, parents and colleges, and make students feel better about the unfair treatment so many of them receive through the ACT college system as a result of the two huge UAI flaws described earlier. Appendix K provides an example of spin and exaggeration being used to lower expectations in relation to ACT college UAI scores.

<u>Further Adverse Impacts of the UAI Flaws on the ACT Education System's Quality and Outcomes</u>

Further to the measures described in items (A), (B) and (C) above, other problems that have arisen as a result of or in conjunction with the two UAI flaws described above include:

(i) Colleges spend an excessive amount of time practicing for the ACT Scaling Test (AST), so less time is available to learn knowledge and skills that will genuinely assist students with their future studies, employment and life generally much more than AST practice exercises will. The AST is a clone of the highly controversial American SAT (Scholastic Aptitude Test) style of standardised test that was originally designed for military entrance testing purposes, and its use in the ACT system has created the significant and highly damaging UAI scaling flaw as explained above and in Appendices E, H and I.

(ii) As stated near the top of page 3 and in Appendix E (with apologies for repetition): Aggressive expectation lowering occurs through the pigeon-holing and "branding for life" of students as early as Year 7, and possibly even earlier, through excessive or otherwise misguided streaming processes, or other similarly stigmatising measures, such that significant fractions of ACT students are (1) wrongly and prematurely led to believe that they are simply not scholastically good enough to gain a UAI and realistically aspire to a university education, and (2) simply not taken as seriously and taught as rigorously as they should be and would be if they were motivated and allowed to maintain ambitions to gain a UAI.

***(6) The UAI Calculation Flaws and the Damage they've Done to the Entire ACT Education System have Gone Largely Unchallenged Because Beneficiary and Victim Colleges Each Contain Government and Non-Government Colleges Among their Numbers, and Advocates of Government and Non-Government Schools Alike have Hence and Otherwise Been Confused, Divided, Conquered and Unable to Effectively Challenge the Flaws***

At first glance it may seem impossible to understand how flaws as damaging as the UAI flaws described above have been allowed to remain in existence for so long, but the failure to remedy these problems can at least be partly explained by the fact that beneficiary colleges and victim colleges each include a combination of government and non-government schools, such that traditional advocacy alliances for both government and non-government schools have been confused, divided and conquered in relation to the UAI calculation process, its competence and fairness, and those who benefit and suffer from such processes. Among public colleges, Narrabundah College achieves excellent UAI outcomes nearly every year, and this success has encouraged many public school advocates to support both the current UAI system and Narrabundah College as something of a flagship for the public college system. But Narrabundah's successes distract attention away from the generally very poor UAI outcomes – and significant associated injustices – at nearly all other government colleges nearly every year (as starkly illustrated in Appendix J) . If Narrabundah College didn't exist, the injustices done to the other public colleges by the two huge UAI flaws would be all too clear, I believe, to a point that would encourage all public school advocates to strongly join forces to demand and win changes to the system. But with Narrabundah College being so successful and content under the current system – in such stark contrast with all other government colleges – the need to remedy the system to provide a fair go for students at government colleges other than Narrabundah has been largely ignored. Similarly among non-government colleges, it's proven impossible for the injustices experienced at victim colleges to be taken fully seriously whilst Girls' Grammar and Radford continue to do so well out of the system.

## Fixating on Gifted and Talented Students is Not the Answer

Some stakeholders believe that implementing gifted and talented programs can significantly improve the ACT education system. The 29 August 2008 media release 223/08 of Education Minister Andrew Barr, for example (see online at http://www.chiefminister.act.gov.au/media.php?v=7337), states that:

> Minster for Education and Training, Andrew Barr, today announced a re-elected Stanhope Government will provide greater support for gifted and talented students in ACT public schools.
>
> Mr Barr said the Stanhope Labor Government will provide almost $1 million over four years for a package of measures aimed at helping gifted and talented students, their families, teachers and schools.

The poor outcomes described in Appendices B, C, J and K indicate that most ACT school students are not achieving to their potential as well as their counterparts in NSW and VIC, and fixating just on students classified as "gifted and talented" is certainly not going to fully address the huge problems exposed in these appendices and this submission overall. The idea that students classified as "gifted and talented" should receive more government funding than students not so classified also raises concerns about reverse Robin Hood style favouritism that offends justice and equal opportunity principles and would seem more likely to exacerbate the ACT education gap than resolve it. The ACT government and education system need to move beyond picking winners to better care for and invest equitably for the benefit of *all* students.

The UAI flaws have quite ruthlessly divided beneficiary survivors from sacrificed victims, and disproportionately focusing on students classified as gifted and talented is only likely to exacerbate the education gap and associated social divisions and injustices – raising the spectre of a nightmare scenario in which only the 10% to 15% or so students who are classified as gifted or who have the richest or pushiest parents are taken seriously by authorities, and the other 85% to 90% are neglected in various ways. The really frightening thing, though, and I again regret having to be the bearer of such bad news, is that the ACT education system only does justice to about 10% to 15% of student cohorts right now (noting the 11% figure stated near the bottom of page 7). The nightmare scenario has been in place for many years already!

## Closing Remarks

This submission began by using 2008 NAPLAN data and other empirical evidence to dispel the myth that the ACT has a high quality education system. It then set out to explain how a significant ACT education achievement gap has been caused and deeply entrenched by two huge flaws in the way ACT UAIs and equivalents in the past have been calculated since 1977. At senior secondary college level this gap can be seen in a remarkably clear divide between four *beneficiary colleges* (Narrabundah, Girls' Grammar, Radford and Marist) which achieve very good or better UAI outcomes essentially every year, and all other colleges – referred to herein as *victim colleges*, or *sacrificed colleges* – where students' UAIs are typically 10 to 15 UAI points lower than they'd be under a competent and fair system.

The ACT does not have a high quality education system because the UAI equality assumption flaw, that followed a significant interpretive oversight in the mid 1970s, means that the ACT is simply not allowed to have a high quality system in which students can achieve UAI outcomes at Year 12 level as good as they should be given that (1) the ACT's socio-economic status towers over that of NSW and the other States and Northern Territory, and (2) the ACT's HSC outcomes were vastly superior to those of NSW in the last two years of 1975 and 1976 in which ACT students undertook the NSW HSC exams. Restrictions and distortions imposed by this equality assumption flaw and a jointly operating UAI scaling flaw have created perverse incentives and disincentives ever since 1977 that have applied significant downward pressure on the quality of the entire ACT education system and its outcomes, to the detriment of tens of thousands of ACT students over the past three decades. But with beneficiary and victim colleges including both government and non-government schools among their numbers, government and non-government school advocates alike have been confused, divided, conquered and incapable of achieving changes needed to generate high quality and just outcomes for *all* ACT students, rather than the mere 10% to 15% or so who are more or less well served under current arrangements.

## Endnotes:

1. The change from UAIs in 2008 to Australian Tertiary Admission Ranks (ATARs) in 2009 will not in any way overcome the UAI flaws described in this submission and the damage they do to students and the ACT education system. As reported by Anna Patty in the Sydney Morning Herald on 10 June 2009 (see at http://www.smh.com.au/national/theres-no-such-thing-as-a-perfect-child-when-it-comes-to-the-hsc-20090609-c29z.html):

> Andrew Stanton, managing director of the Universities Admissions Centre, said ATAR rankings would be higher than equivalent UAI ranks which may push up course entry scores at universities. For example, a UAI of 60 would convert to an ATAR of 63.4, a UAI of 93 would be 93.55 and a UAI of 99 would be 99.05.
>
> Mr Stanton said there was no need for students to worry about the change as it would make no difference to the way their marks were scaled or to their chances of gaining entry to preferred university courses.

2. The terms UAI participation rate and UAI achievement rate are used interchangeably in this submission to mean the fraction or percentage of the relevant age cohort who gain a UAI each year.

3. Figure 1 should have people falling off their chairs as it shows that the situation is not merely one of stunted growth, but, rather, a very significant decline in absolute terms that represents an even bigger decline relative to the progress made in NSW that should also have been made in the ACT. The 58% and 36% figures in Figure 1 for 1975 are shown on page 9 of the 1978 paper by Morgan (see http://members.webone.com.au/~markld/PubPol/Edu/UAIs/WPs/Morgan.pdf). The 60% figure for NSW in 2005 is the 60.4% figure shown on page 9 of the *Report on the Scaling of the 2005 NSW Higher School Certificate* that no longer seems to be available online, though see on page 9 at http://www.uac.edu.au/documents/uai/uai-scaling-report-06.pdf the corresponding 2006 figure of 59.0%. As summarised on my own website at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAIs.html, the corresponding NSW figures for recent years have been 60.4% in 2003, 60.3% in 2004, 60.4% in 2005, 59.0% in 2006, 58.4% for 2007, and 58.5% in 2008. The ACT 45% figure is an estimate based on the 52% figure for "ACT excluding CIT" shown on page C-4 (and again on pages C-8, C-12 and C-16) of Appendix C for the percentage of ACT system Year 11 starters in February 2004 who went on to gain a UAI at the end of 2005, noting that the UAI participation rate must be lower than this 52% figure because of the students who leave school without going on to Year 11.

**The Appendix list follows on the next page.**

**Appendices:**

# Appendix A

## False Claims that the ACT has the Best Education System and Best Education Outcomes in Australia

Table 1 below shows that ACT Labor MLAs Jon Stanhope and Andrew Barr, and other Labor MLAs including Karin MacDonald, have frequently boasted through the media that the ACT has the best education system and best education outcomes in Australia, hence clearly implying that Australia's education system and outcomes have been the best of Australia's eight States and Territories.

**Table 1: Claims by ACT Labor MLAs Jon Stanhope, Andrew Barr and Karin MacDonald that the ACT's Education System and Outcomes are the Best in Australia**

| Date of Claim | Person Making Claim | Form of Claim | Statement Containing Claim |
|---|---|---|---|
| 2 February 2006 | Chief Minister and Acting Education Minister Jon Stanhope | Media Release | At http://www.chiefminister.act.gov.au/media.php?v=4135 (with emphasis added in bold):<br>Canberra students head back to school<br>...<br>Chief Minister and Acting Education Minister Jon Stanhope said starting school was an important milestone. ... **We're lucky in Canberra to have such great schools for children to take those first steps in."**<br>...<br>Mr Stanhope said he hoped all ACT students and teachers would have an enjoyable and productive year of schooling in 2006. **Canberra had the best education system in the country and the Government would continue working with staff and students to improve on that record.** |
| 6 April 2006 | Chief Minister Jon Stanhope | Media Release 136/06 | At http://www.chiefminister.act.gov.au/media.php?v=4332 (with emphasis added in bold):<br>POSITIVE EARLY RESPONSE TO LIVE IN CANBERRA CAMPAIGN<br>...<br>"At a time when we in Canberra are experiencing across-the-board skill shortages, why shouldn't Sydneysiders in search of new professional opportunities look at what we can offer, just a couple of hours down the road?" Mr Stanhope said. "And why shouldn't we try to make that decision a little easier, by pointing out some of the lifestyle attractions of a city which is safe, affordable, has no toll roads and traffic jams and **the best education system in the nation?"** |

**continued next page**

**Table 1 (continued):**

| Date of Claim | Person Making Claim | Form of Claim | Statement Containing Claim |
|---|---|---|---|
| 9 June 2006 | ACT Education Minister Andrew Barr | Stateline ABC TV interview | At http://www.abc.net.au/stateline/act/content/2006/s1663590.htm (with emphasis added in bold):<br><br>Andrew Barr – Proposed School Closures<br>...<br>Reporter: Philip Williams<br>...<br>BARR ... I'm a product of this system. I went to Turner Primary and Lyneham.<br><br>WILLIAMS Are any of those closing?<br><br>BARR No, all of those schools have very strong enrolments and Lyneham in particular has an excellent gifted and talented program and there are some real opportunities I think to expand on. What is it about those particular schools that sees them fully subscribed with waiting lists to get into? I**f we can repeat that across the education system in the Territory, if I can achieve that out of this process, then I think I will go a long way to addressing the decline in enrolments and will go a long way to having the best education system in the world.**<br><br>**Comment by Mark D:**<br>Andrew Barr is saying here that closing a whole lot of ACT public schools "will go a long way to" giving the ACT "the best education system in the world", but this compilation shows that Andrew Barr and other ACT Labor MLAs had both earlier and later boasted that the ACT already had the best education system and best education outcomes of Australia's eight States and Territories. These claims are actually far from the truth (as proven in Appendices F and G that follow Appendix E here), but if they *were* true, the school closure push would clearly amount to a classic case of "if it ain't broke, don't fix it". |
| 22 July 2006 | ACT Education Minister Andrew Barr | Email interview | At http://the-riotact.com/?p=2912 (with emphasis added in bold):<br><br>Andrew Barr email interview: the answers<br>...<br>... **the ACT public education system has some of the best educational outcomes in the country and the world**. ... |
| 6 October 06 | ACT Chief Minister Jon Stanhope | Stateline ABC TV interview | At http://www.abc.net.au/cgi-bin/common/printfriendly.pl?http://www.abc.net.au/stateline/act/content/2006/s1758494.htm (with emphasis added in bold):<br><br>Curriculum Conformity<br>...<br>Federal Education Minister, Julie Bishop, wants a national schools curriculum.<br>Philip Williams reports.<br>...<br>JON STANHOPE: It's a bit rich to say you're too small or you're doing something wrong. That's what's offensive about this attack by the Commonwealth and Julie Bishop. **In the ACT as every Canberran knows we have the best educational outcomes in Australia by far.** |
| 1 August 2007 | ACT Education Minister Andrew Barr | Media Release | At http://www.chiefminister.act.gov.au/media.php?v=5823 (with emphasis added in bold):<br><br>NO EDUCATIONAL MERIT IN MOVE TO EXTERNAL EXAMS<br><br>Minister for Education and Training, Andrew Barr, today said the ACT Government opposes a move to external examinations for year 12 students in the ACT, saying there is no educational merit in changing the ACT's extremely successful college system and continuous assessment model.<br>...<br>"The ACT Government opposes any move to an external examination for all ACT students at the end of year 12. There is no educational merit in changing from our continuous assessment model," Mr Barr said.<br><br>"**The ACT has the best education system in the country** and our college system and model of continuous assessment serves our students well as they move beyond school into further education or the workforce. |
| 13 August 2007 | ACT Education Minister Andrew Barr | Media Release by ACT Labor MLA Mary Porter | At http://www.maryporter.net/node/1220:<br><br>NO EDUCATIONAL MERIT IN MOVE TO EXTERNAL EXAMS<br>...<br>"**The ACT has the best education system in the country** ... |

**Table 1 (continued):**

| Date of Claim | Person Making Claim | Form of Claim | Statement Containing Claim |
|---|---|---|---|
| 22 August 2007 | ACT Labor MLA Karin MacDonald | Statement in the ACT Legislative Assembly | At http://www.hansard.act.gov.au/hansard/2007/week07/1871.htm (with emphasis added in bold):<br>Education<br>MS MacDONALD (Brindabella) (4.23): I move:<br>That this Assembly:<br>(1) recognises the success of the ACT's senior secondary education system;<br>(2) acknowledges continuous assessment provides for a high degree of integrity in the assessment process;<br>(3) notes there is no educational merit in changing the ACT's college system and continuous assessment model; and<br>(4) places on the record its opposition to the Howard Government's unnecessary intervention in the ACT education system.<br>**There is no doubt that the ACT has the best education system in Australia.** ACT students have consistently ranked higher than the national average in educational benchmarks, and the ACT college system has been recognised for its high level of success. **Despite the ACT's outstanding educational record**, in July this year the federal education minister, Julie Bishop, wrote to my colleague the Minister for Education and Training, Andrew Barr, requesting that the territory introduce external year 12 exams by as early as 2009 or risk losing $30 million of recurrent funding each year.<br>...<br>The ACT's Year 12 Certificate is highly regarded around Australia as a qualification for young people seeking work or further education. It has the same status as similar certificates issued elsewhere in the country. Ms Bishop is seeking uniformity for uniformity's sake, at a time when the Howard government will do anything to win the next federal election. The ACT community has shown its strong support for the college sector and continuous assessment, and I do not believe they wish to see this successful approach thrown out at the whim of a federal minister. Julie Bishop has not provided any educational argument for changing the ACT's extremely successful college system. **Until we see an educational argument for change, we should continue to support the strong system we have.**<br>**We have the best education system in the country.** ...<br>**Comment by Mark D:**<br>When the Commonwealth government seeks to reform the ACT education system we hear the ACT government argue that "if it ain't broke, don't fix it". But when the ACT government seeks to reform the ACT public school system, and the community argues that "if it ain't broke, don't fix it", the ACT government totally ignores such community concerns in a blatant and really quite arrogant display of double standards. |
| 7 November 2007 | ACT Education Minister Andrew Barr | Media Release | At http://www.chiefminister.act.gov.au/media.php?v=6122 (with emphasis added in bold):<br>DEDICATED VOLUNTEER GROUP GIVEN HELPING HAND<br>...<br>"In every community there are people doing extraordinary things. What they have in common is not just dedication or inspiration or sheer hard work, it is that they give to others the thing that is most precious to all of us, time," Mr Barr said.<br>**"We know that the ACT has the best education system in the country – and among the best in the world** – and much of this is because of our great schools, our great teachers and our dedicated schools boards and P&Cs. But it is also because of volunteers who give their time and still have an interest in our students and their wellbeing and learning. |

**Table 1 (continued):**

| Date of Claim | Person Making Claim | Form of Claim | Statement Containing Claim |
|---|---|---|---|
| 2 April 2008 | ACT Chief Minister Jon Stanhope | Statements in the ACT Legislative Assembly | At http://www.hansard.act.gov.au/hansard/2008/week03/866.htm and http://www.hansard.act.gov.au/hansard/2008/week03/867.htm (with emphasis added in bold):<br><br>Schools—enrolments<br><br>MR SMYTH: My question is to the Chief Minister. Chief Minister, an objective of your government's Towards 2020 program was to arrest the exodus of students away from the government school sector to the non-government sector. Since 2004, government school enrolments have declined by 1,564 students, 3.9 per cent, whereas enrolments in non-government schools have increased by 1,217 students, five per cent. This trend has continued despite the government's 2020 policy. Chief Minister, why have your government's school policies failed?<br><br>MR STANHOPE: Our school policies quite clearly have not failed. **The ACT government education system continues to deliver the best outcomes of any school system in Australia.** ...<br>...<br>MR STANHOPE: The facts speak for themselves. **The ACT education system is the best education system in Australia—by far. We produce, year on year, the best educational outcomes of any place in Australia.**<br>...<br>**The ACT stands supreme in the production of educational outcomes or standards that are the envy of not just the rest of Australia but the rest of the world.**<br><br>**When I go to ministerial council meetings, when I go to COAG, and we discuss performance across the jurisdictions, the premiers look away and say, "We won't count the ACT in that, because they are different. "Why won't they count the ACT when they are comparing educational outcomes across jurisdictions? Because we show in stark relief the effort in other places within Australia and across the world.**<br><br>**We have a superb education system.** ... |
| 12 September 2008 | ACT Education Minister Andrew Barr | Media Release 249/08 | At http://www.chiefminister.act.gov.au/media.php?v=7422 (with emphasis added in bold):<br><br>ACT students excel in national testing<br>...<br>The results are from the first National Assessment Program Literacy and Numeracy (NAPLAN) tests taken by 18,000 ACT students in years 3, 5, 7 and 9 in all ACT schools in May this year. NAPLAN tested students in these 4 school years in the 5 areas of reading, writing, spelling, grammar and punctuation and numeracy.<br><br>The report shows ACT students perform above the national average in all five areas tested and that the proportion of ACT students performing at or above the national minimum standard in these areas is also above the national average.<br><br>**Education Minister Andrew Barr said the results show the ACT continues to have the best education system in Australia.** |
| 12 September 2008 | ACT Education Minister Andrew Barr | Statement by Andrew Barr on his own website | At http://www.andrewbarr.com.au/node/69 (with emphasis added in bold):<br><br>ACT students excel in national testing<br>...<br>**Education Minister Andrew Barr said the results show the ACT continues to have the best education system in Australia.** |
| 18 September 2008 | ACT Education Minister Andrew Barr | Website of ACT Labor MLA Mary Porter | At http://www.maryporter.net/node/2163 (with emphasis added in bold):<br><br>ACT STUDENTS EXCEL IN NATIONAL TESTING<br>...<br>**Education Minister Andrew Barr said the results show the ACT continues to have the best education system in Australia.** |

**Table 1 (continued):**

| Date of Claim | Person Making Claim | Form of Claim | Statement Containing Claim |
|---|---|---|---|
| November 2008 | ACT Education Minister Andrew Barr | Article in Teacher magazine | At http://teacher.acer.edu.au/index.php?option=com_content&view=article&id=124%3Anational-news&catid=18%3Anov-08&Itemid=13&limitstart=2 (with emphasis added in bold):<br>Rank and file<br>Results from the first National Assessment Program – Literacy and Numeracy (NAPLAN) tests of students in Years 3, 5, 7 and 9 released in September show students from the Australian Capital Territory, New South Wales and Victoria typically perform above the national average on most measures. According to ACT Minister for Education Andrew Barr, **'The fact (that) ACT students in Years 3, 5, 7 and 9 are at the top of 17 out of 20 categories and ahead of national averages in all these key areas of education is proof of the high standard of the ACT system.'** |

# Appendix B

# Results of the NAPLAN Tests of 2008: Proof that the ACT has Relatively Poor Education Outcomes Given that its Socio-economic Status Towers Over that of the Six States and Northern Territory

This appendix shows that the ACT has performed about as well overall in NAPLAN (National Assessment Program Literacy and Numeracy) testing as New South Wales and Victoria as a whole, but not as well as Sydney and Melbourne, and hence nowhere near as well as the parts of Sydney and Melbourne that the ACT should be and would be matching if the ACT education system was as good as the NSW and VIC systems.

## Results of the NAPLAN Tests of 2008

The 2008 NAPLAN tests were undertaken by students in Years 3, 5, 7 and 9, and comprised five components: reading, writing, spelling, grammar and punctuation, and numeracy. The results of these tests for the ACT, NSW, VIC, NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) are compared below in tabular and graphical form for each year and component and also in terms of four year average (4YA) results based on the simple mean average of results across the four years. Overall NAPLAN results constructed as weighted averages across the five components are also compared, where the five components are weighted as follows so that literary and numeracy components each have a 50% weighting overall: reading (12.5%), writing (12.5%), spelling (12.5%), grammar and punctuation (12.5%), and numeracy (50%).

All data used herein has been taken directly from the Ministerial Council of Education, Employment, Training and Youth Affairs (MCEETYA) publications *NAPLAN Summary Report* (published and released in September 2008, as at www.naplan.edu.au/verve/_resources/NAPLAN_Summary_Report.pdf) and *National Assessment Program Literacy and Numeracy: Achievement in Reading, Writing, Language Conventions and Numeracy*, (released in December 2008, as at www.naplan.edu.au/verve/_resources/2ndStageNationalReport_18Dec_v2.pdf).

**continued next page**

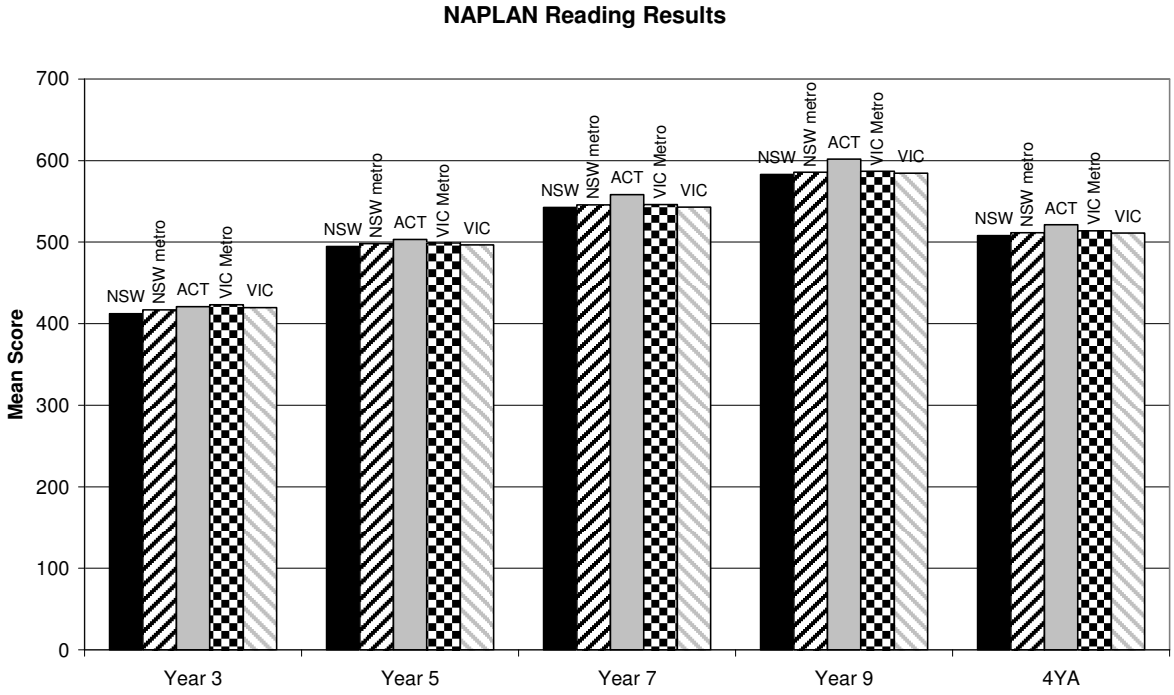
## NAPLAN 2008 Reading Results

The table and chart below show that the ACT's mean average NAPLAN reading scores exceeded those of NSW, VIC, NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for all four years except Year 3 for which the ACT mean (421.0) was slightly lower than the VIC metro mean (423.2). This is as good as it gets for the ACT. Reading is the only NAPLAN test component in which the ACT mean score exceeds those of NSW metro and VIC metro in four year average (4YA) terms.

Whilst the ACT mean average clearly exceeds that of NSW, VIC, NSW metro and VIC metro in Years 7 and 9, this is merely in line with expectations given that the ACT's socio-economic status towers over that of metro NSW and metro VIC alike. Results here indicate that the ACT's average 2008 NAPLAN reading component results would probably not exceed the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT.

**NAPLAN 2008 Reading Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 412.3 | 494.7 | 542.5 | 583.1 | 508.2 |
| NSW metro (i.e. Sydney) | 417.0 | 498.3 | 545.8 | 585.6 | 511.7 |
| ACT | 421.0 | 503.3 | 558.2 | 601.9 | 521.1 |
| VIC metro (i.e. Melbourne) | 423.2 | 499.0 | 545.9 | 587.0 | 513.8 |
| VIC | 419.9 | 496.7 | 543.0 | 584.6 | 511.1 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 5 | 5 | 5 | 5 | 5 |
| NSW metro (i.e. Sydney) | 4 | 3 | 3 | 3 | 3 |
| ACT | 2 | 1 | 1 | 1 | 1 |
| VIC metro (i.e. Melbourne) | 1 | 2 | 2 | 2 | 2 |
| VIC | 3 | 4 | 4 | 4 | 4 |



## NAPLAN 2008 Writing Results

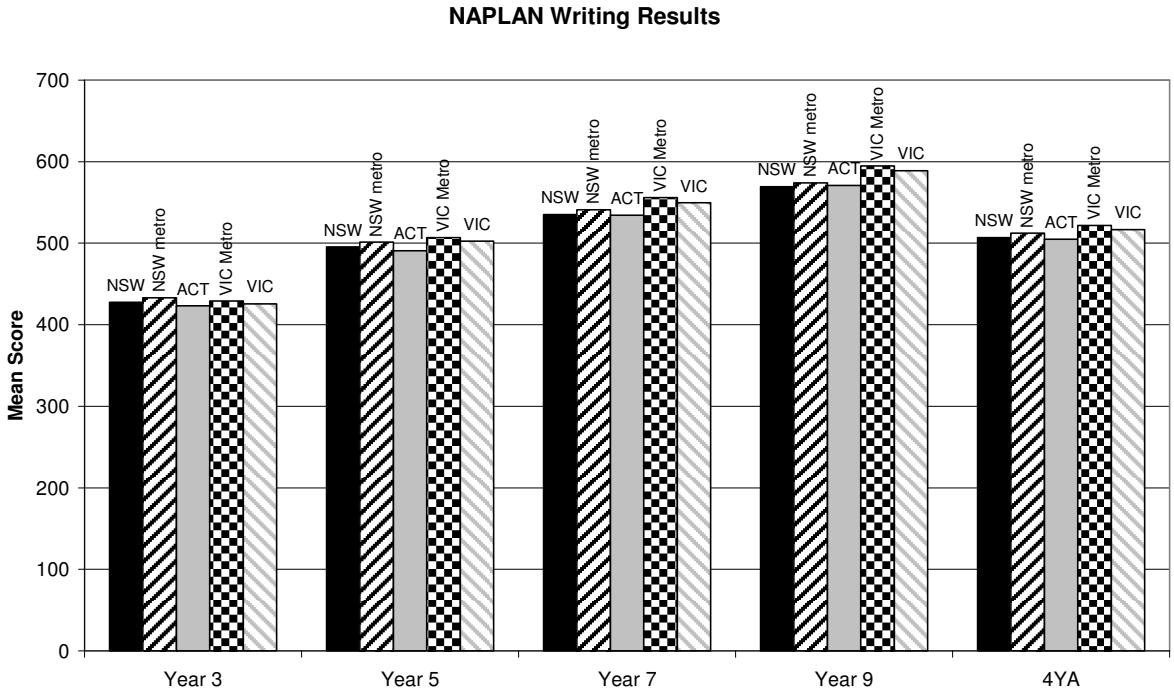
The table and chart below show that the ACT's mean average NAPLAN writing scores were below those of NSW, VIC, NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for all four years except Year 9 for which the ACT mean (571.0) slightly exceeded the NSW mean (569.4). The VIC metro mean was the highest of the five units for all years except Year 3 for which the NSW metro mean (432.9) slightly exceeded the VIC metro mean (429.0).

In four year average (4YA) terms, the VIC metro writing component mean (521.6) exceeded the ACT mean (504.8) by a statistically significant 16.8 points. For the reading component described above the ACT mean (521.1) exceeded the VIC metro mean (513.8) by a much less significant margin of just 7.3 points.

Results here indicate that (1) the ACT's average 2008 NAPLAN writing component results would have been well below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are almost certainly superior to the ACT system in the teaching of writing skills.

**NAPLAN 2008 Writing Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 427.6 | 495.4 | 535.3 | 569.4 | 506.9 |
| NSW metro (i.e. Sydney) | 432.9 | 501.4 | 541.0 | 574.0 | 512.3 |
| ACT | 423.2 | 490.7 | 534.3 | 571.0 | 504.8 |
| VIC metro (i.e. Melbourne) | 429.0 | 506.9 | 555.8 | 594.5 | 521.6 |
| VIC | 425.8 | 502.4 | 549.7 | 588.9 | 516.7 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 3 | 4 | 4 | 5 | 4 |
| NSW metro (i.e. Sydney) | 1 | 3 | 3 | 3 | 3 |
| ACT | 5 | 5 | 5 | 4 | 5 |
| VIC metro (i.e. Melbourne) | 2 | 1 | 1 | 1 | 1 |
| VIC | 4 | 2 | 2 | 2 | 2 |



## NAPLAN 2008 Spelling Results

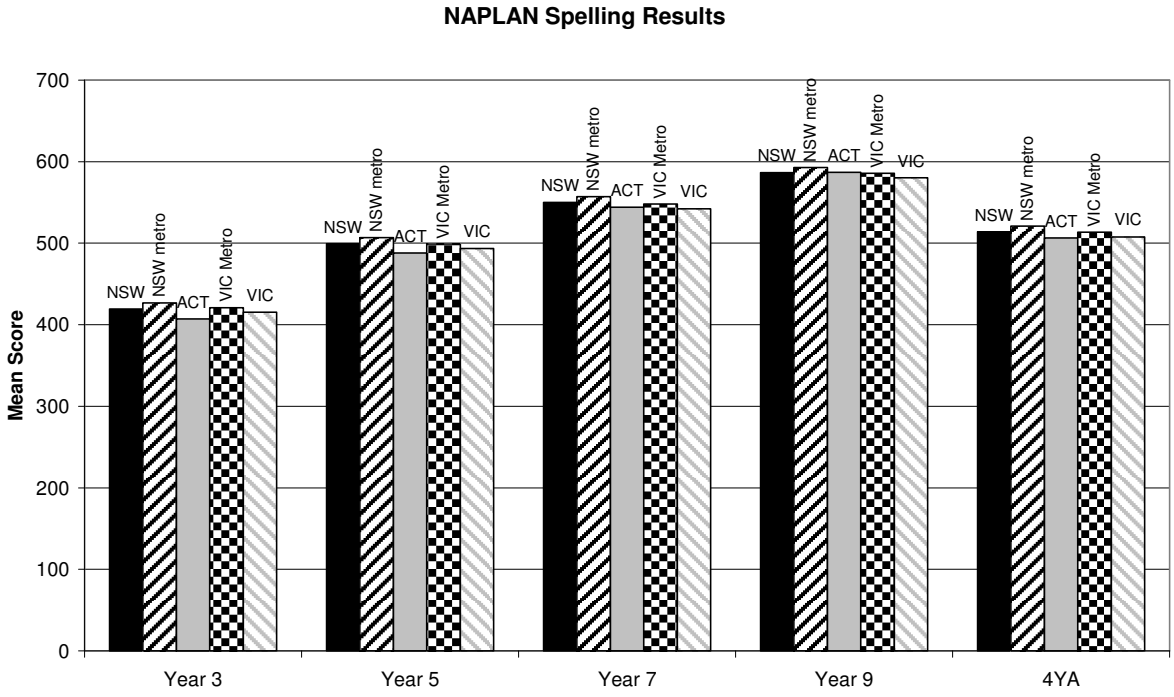
The table and chart below show that the ACT's mean average NAPLAN spelling scores were below those of NSW, NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for all four years except Year 9 for which the ACT mean (586.7) very slightly exceeded the NSW mean (586.6). The NSW metro mean was the highest of the five units for all four years.

In four year average (4YA) terms, the ACT mean was below that of NSW, VIC, NSW metro and VIC metro. The 4YA NSW metro spelling component mean (520.9) exceeded the ACT mean (506.4) by a statistically significant 14.5 points. For the reading component described above the ACT mean (521.1) exceeded the NSW metro mean (511.7) by a much less significant margin of just 9.4 points.

Results here indicate that (1) the ACT's average 2008 NAPLAN spelling component results would have been well below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are almost certainly superior to the ACT system in the teaching of spelling skills.

**NAPLAN 2008 Spelling Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 419.2 | 499.4 | 550.1 | 586.6 | 513.8 |
| NSW metro (i.e. Sydney) | 426.7 | 506.9 | 557.2 | 592.7 | 520.9 |
| ACT | 406.9 | 487.8 | 544.3 | 586.7 | 506.4 |
| VIC metro (i.e. Melbourne) | 421.0 | 499.0 | 548.0 | 585.7 | 513.4 |
| VIC | 415.3 | 493.5 | 542.3 | 580.3 | 507.9 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 3 | 2 | 2 | 3 | 2 |
| NSW metro (i.e. Sydney) | 1 | 1 | 1 | 1 | 1 |
| ACT | 5 | 5 | 4 | 2 | 5 |
| VIC metro (i.e. Melbourne) | 2 | 3 | 3 | 4 | 3 |
| VIC | 4 | 4 | 5 | 5 | 4 |



## NAPLAN 2008 Grammar and Punctuation Results

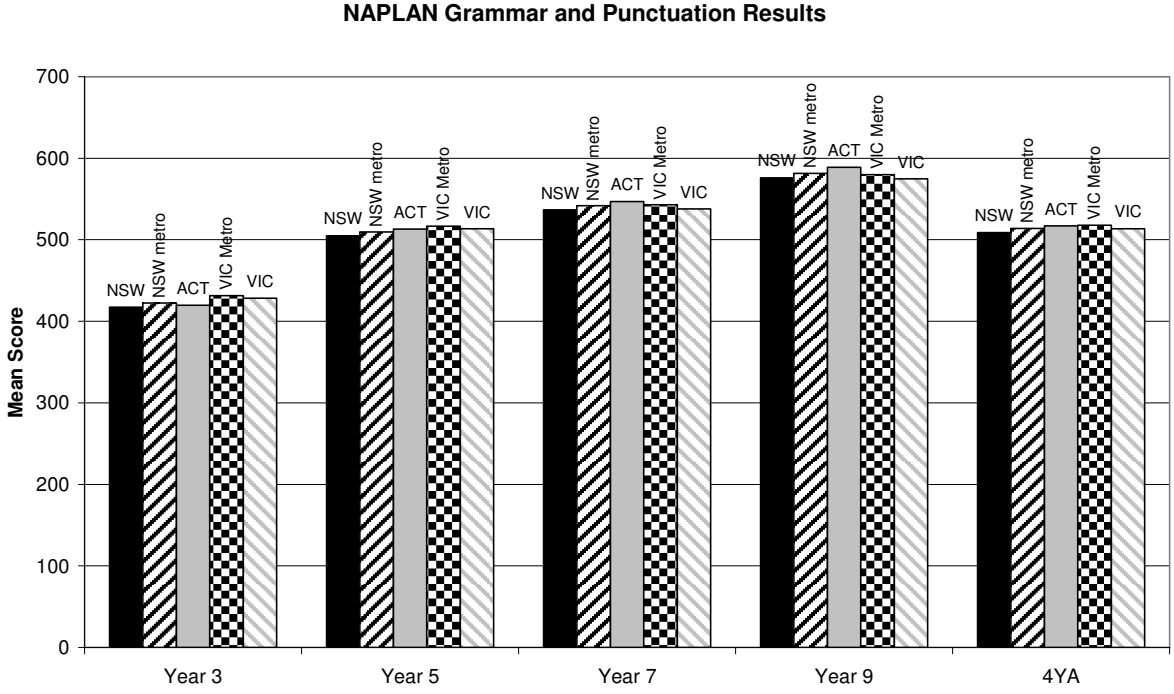
The table and chart below show that the ACT's mean average NAPLAN grammar and punctuation scores exceeded those of NSW, VIC, NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for Years 7 and 9, but not for Years 3 and 5.

In four year average (4YA) terms, the ACT mean (517.0) exceeded that of NSW, NSW metro and VIC, but was slightly below that of VIC metro (517.7).

Results here indicate that (1) the ACT's average 2008 NAPLAN grammar and punctuation component results would have been somewhat below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are probably superior to the ACT system in the teaching of grammar and punctuation skills.

**NAPLAN 2008 Grammar and Punctuation Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 417.2 | 504.9 | 536.6 | 576.1 | 508.7 |
| NSW metro (i.e. Sydney) | 422.6 | 509.6 | 541.6 | 581.4 | 513.8 |
| ACT | 419.6 | 513.2 | 546.6 | 588.7 | 517.0 |
| VIC metro (i.e. Melbourne) | 431.4 | 516.7 | 542.8 | 579.9 | 517.7 |
| VIC | 428.4 | 513.4 | 537.7 | 574.7 | 513.6 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 5 | 5 | 5 | 4 | 5 |
| NSW metro (i.e. Sydney) | 3 | 4 | 3 | 2 | 3 |
| ACT | 4 | 3 | 1 | 1 | 2 |
| VIC metro (i.e. Melbourne) | 1 | 1 | 2 | 3 | 1 |
| VIC | 2 | 2 | 4 | 5 | 4 |



## NAPLAN 2008 Numeracy Results

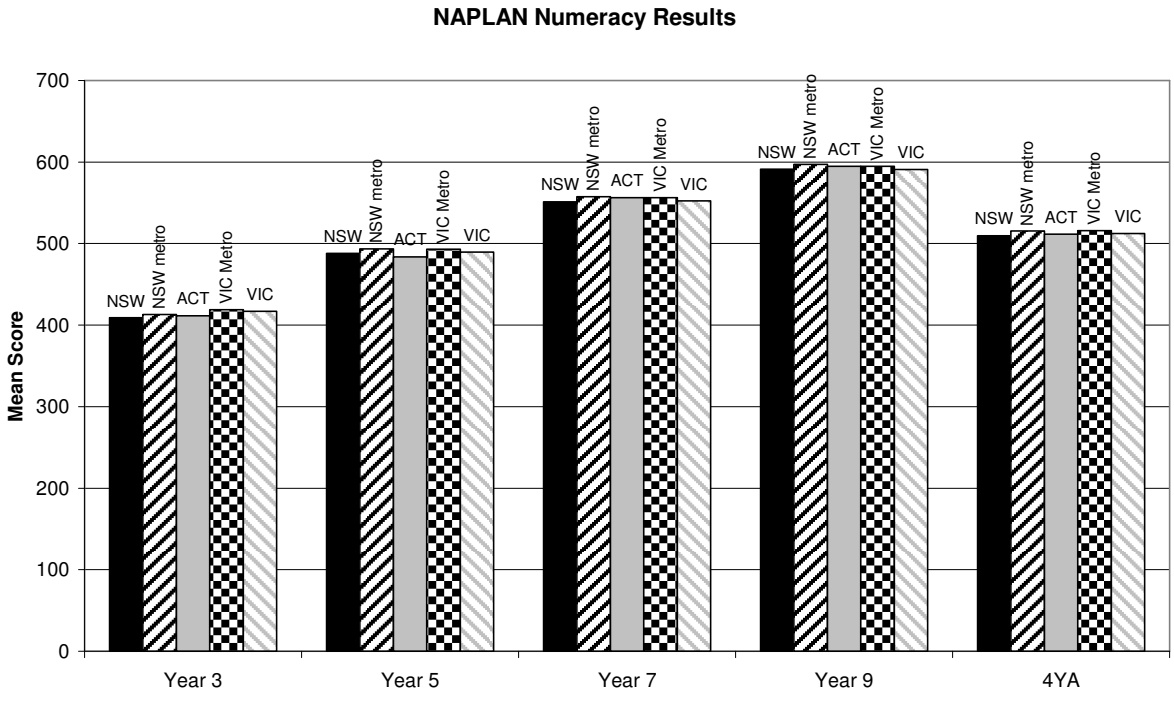
The table and chart below show that the ACT's mean average NAPLAN numeracy scores were below those of NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for all four years except Year 9 for which the ACT mean (594.9) matched the VIC metro mean (594.9). The ACT mean scores in Year 5 were the lowest of the five units compared here.

In four year average (4YA) terms, the ACT numeracy component mean (511.6) was below that of VIC metro (515.8) and NSW metro (515.4), very slightly below that of VIC (512.4), and slightly above that of NSW (509.9).

Results here indicate that (1) the ACT's average 2008 NAPLAN numeracy component results would have been well below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are probably superior to the ACT system in the teaching of numeracy skills.

**NAPLAN 2008 Numeracy Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 408.9 | 487.8 | 551.3 | 591.4 | 509.9 |
| NSW metro (i.e. Sydney) | 413.0 | 493.5 | 557.7 | 597.2 | 515.4 |
| ACT | 411.5 | 483.8 | 556.2 | 594.9 | 511.6 |
| VIC metro (i.e. Melbourne) | 418.8 | 492.9 | 556.5 | 594.9 | 515.8 |
| VIC | 416.9 | 489.7 | 552.3 | 590.7 | 512.4 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 5 | 4 | 5 | 4 | 5 |
| NSW metro (i.e. Sydney) | 3 | 1 | 1 | 1 | 2 |
| ACT | 4 | 5 | 3 | 2 | 4 |
| VIC metro (i.e. Melbourne) | 1 | 2 | 2 | 2 | 1 |
| VIC | 2 | 3 | 4 | 5 | 3 |



## NAPLAN 2008 Overall Results

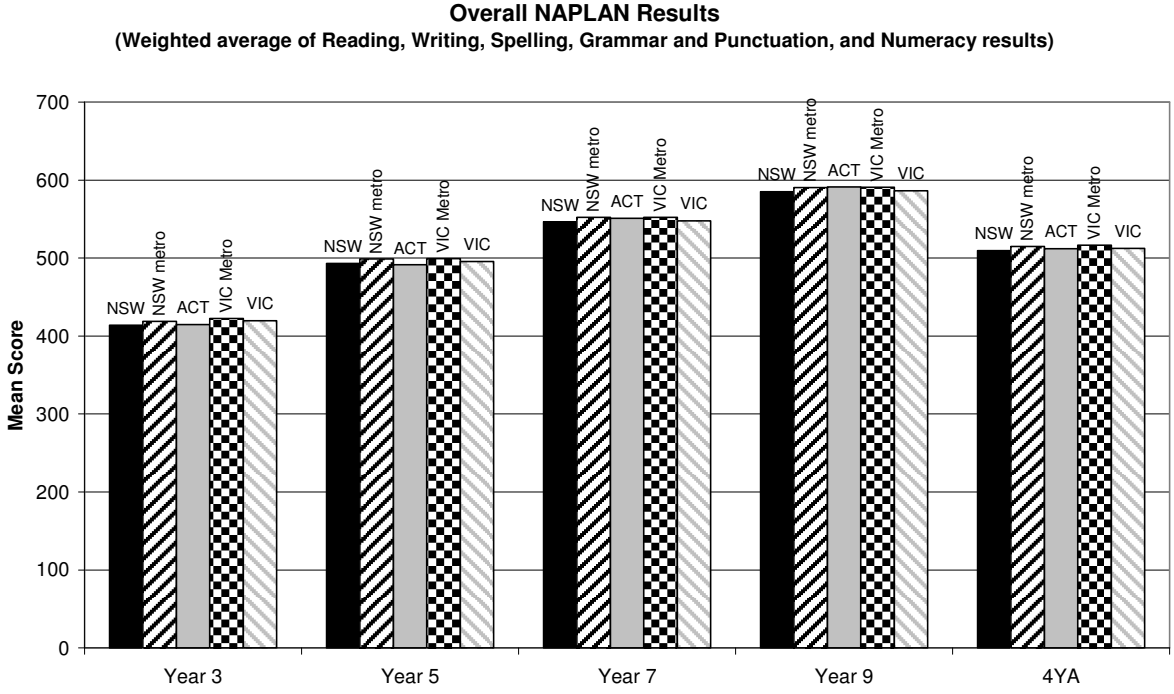
The table and chart below show that the ACT's mean average NAPLAN overall scores (based on the weighted average defined above) were below those of NSW metro (i.e. Sydney) and VIC metro (i.e. Melbourne) for all four years except Year 9 for which the ACT mean (591.0) very slightly exceeded the means of VIC metro (590.8) and NSW metro (590.3). The ACT mean scores in Year 5 were the lowest of the five units compared here, as was the case with the numeracy component results which make up 50% of these overall results.

In four year average (4YA) terms, the overall ACT mean (512.0) was below that of VIC metro (516.2) and NSW metro (515.0), very slightly below that of VIC (512.3), and slightly above that of NSW (509.6).

Results here indicate that (1) the ACT's average overall 2008 NAPLAN results would have been well below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are probably superior to the ACT system overall.

**NAPLAN 2008 Overall Results – Mean Scores**

| Unit | Year 3 | Year 5 | Year 7 | Year 9 | 4YA |
|---|---|---|---|---|---|
| NSW | 414.0 | 493.2 | 546.2 | 585.1 | 509.6 |
| NSW metro (i.e. Sydney) | 418.9 | 498.8 | 552.1 | 590.3 | 515.0 |
| ACT | 414.6 | 491.3 | 551.0 | 591.0 | 512.0 |
| VIC metro (i.e. Melbourne) | 422.5 | 499.2 | 552.3 | 590.8 | 516.2 |
| VIC | 419.6 | 495.6 | 547.7 | 586.4 | 512.3 |
| **As above but ranks (1 = highest, 5 = lowest)** | | | | | |
| NSW | 5 | 4 | 5 | 5 | 5 |
| NSW metro (i.e. Sydney) | 3 | 2 | 2 | 3 | 2 |
| ACT | 4 | 5 | 3 | 1 | 4 |
| VIC metro (i.e. Melbourne) | 1 | 1 | 1 | 2 | 1 |
| VIC | 2 | 3 | 4 | 4 | 3 |



**Summary of Findings on 2008 NAPLAN Results**

The above results show that the ACT's mean average 2008 NAPLAN results were generally below the corresponding NSW metro and VIC metro results except for the reading component. The average ACT results were often below the overall (whole of State) NSW and VIC results as well.

Of the 20 sets of NAPLAN results generated across the four years and five components tested, the ACT achieved the highest mean average scores, and hence a ranking of 1, in 9 of these 20 components, compared to 4 for NSW and 7 for VIC, as shown in the table below which compares just the ACT, NSW and VIC.

**Summary of NAPLAN mean score ranks among the ACT, NSW and VIC**

| Unit | # of 1 ranks | # of 2 ranks | # of 3 ranks | % of 1 ranks | % of 2 ranks | % of 3 ranks | Average Rank |
|---|---|---|---|---|---|---|---|
| NSW | 4 | 6 | 10 | 20 | 30 | 50 | 2.3 |
| ACT | 9 | 5 | 6 | 45 | 25 | 30 | 1.85 |
| VIC | 7 | 9 | 4 | 35 | 45 | 20 | 1.85 |

The next table below shows a summary of NAPLAN mean score ranks among all eight States and Territories.

**Summary of NAPLAN mean score ranks among the ACT, NSW and VIC**

| Unit | # of 1 ranks | # of 2 ranks | # of 3 ranks | # of 4 ranks | # of 5 ranks | # of 6 ranks | # of 7 ranks | # of 8 ranks | Average Rank | Rank of average ranks |
|---|---|---|---|---|---|---|---|---|---|---|
| NSW | 4 | 6 | 9 | 1 | 0 | 0 | 0 | 0 | 2.35 | 3 |
| VIC | 7 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 1.85 | 1 |
| QLD | 0 | 0 | 0 | 1 | 2 | 3 | 13 | 0 | 6.15 | 7 |
| WA | 0 | 0 | 0 | 1 | 3 | 12 | 3 | 0 | 5.60 | 6 |
| SA | 0 | 1 | 1 | 8 | 9 | 1 | 0 | 0 | 4.40 | 4 |
| TAS | 0 | 0 | 0 | 8 | 5 | 3 | 4 | 0 | 5.15 | 5 |
| ACT | 9 | 4 | 6 | 1 | 0 | 0 | 0 | 0 | 1.95 | 2 |
| NT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 8.00 | 8 |

The above table confirms the widely reported finding that (1) the overall NAPLAN scores of the ACT, NSW and VIC were comfortably the best among the eight States and territories, and (2) the results of the ACT, NSW and VIC generally did not differ to a statistically significant extent. These results are quite extraordinary given that the ACT's socio-economic status towers over that of NSW and VIC (as shown in Appendix D above).

The tables and charts presented in Appendix F here show that the mean average 2008 NAPLAN test scores for VIC metro and NSW metro consistently exceeded the corresponding whole of State mean averages, and generally exceeded the mean average scores of the ACT as well – another quite extraordinary finding given that the ACT's socio-economic status towers over that of Sydney (i.e. NSW metro) and Melbourne (i.e. VIC metro). The following table compares the NAPLAN score ranks of just ACT metro, NSW metro and VIC metro, noting that the ACT metro and ACT units are nearly identical.

**Summary of NAPLAN mean score ranks among ACT metro, NSW metro and VIC metro**

| Unit | # of 1 ranks | # of 2 ranks | # of 3 ranks | % of 1 ranks | % of 2 ranks | % of 3 ranks | Average Rank |
|---|---|---|---|---|---|---|---|
| NSW metro | 8 | 6 | 6 | 40 | 30 | 30 | 1.9 |
| ACT metro | 5 | 4 | 11 | 25 | 20 | 55 | 2.3 |
| VIC metro | 7 | 11 | 2 | 35 | 55 | 10 | 1.75 |

The above table further confirms that the 2008 NAPLAN results of VIC metro and NSW metro were superior to those of the ACT overall, and hence provides extremely strong evidence, again, that (1) the ACT's average overall 2008 NAPLAN results would have been well below the corresponding results for the parts of Sydney and Melbourne with socio-economic status matching that of the ACT, and (2) the NSW and VIC education systems are probably superior to the ACT system overall.

# Appendix C

## Comparison of ACT and NSW UAI Achievement Rates from 2005 to 2007: Further Evidence that the ACT has Relatively Poor Education Outcomes Given that its Socio-economic Status Towers Over that of the Six States and Northern Territory

This appendix presents four working papers that compare four parts of the ACT and the ACT as a whole with NSW in terms of the Universities Admission Index (UAI) achievement rates (or participation rates) of students attending schools and colleges in these areas. The four parts of the ACT considered in these working papers are Tuggeranong, Belconnen, Canberra Northside and Canberra Inner Southside. Tuggeranong and Belconnen are the two most populous Australian Bureau of Statistics (ABS) statistical subdivisions (SSDs) and town centre districts within the ACT, making up 26.9% and 26.0% of the ACT population respectively according to the 2006 Census. Canberra Northside, defined here as the combination of the Belconnen, North Canberra and Gungahlin-Hall ABS SSDs, made up 48.8% of the ACT population at the time of the 2006 Census. Canberra Inner Southside, defined as the combination of the Woden Valley, South Canberra and Weston Creek-Stromlo SSDs, made up 24.0% of the ACT population according to the 2006 Census. Tuggeranong, Canberra Inner Southside and Canberra Northside do not overlap and between them make up nearly the whole of the ACT population.

These four working papers are part of a series of eight working papers produced thus far, each focusing on a particular part of the ACT, as shown at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/WPs/UAI_WP11.html. These working papers will hopefully be integrated into a single improved working paper at some future stage.

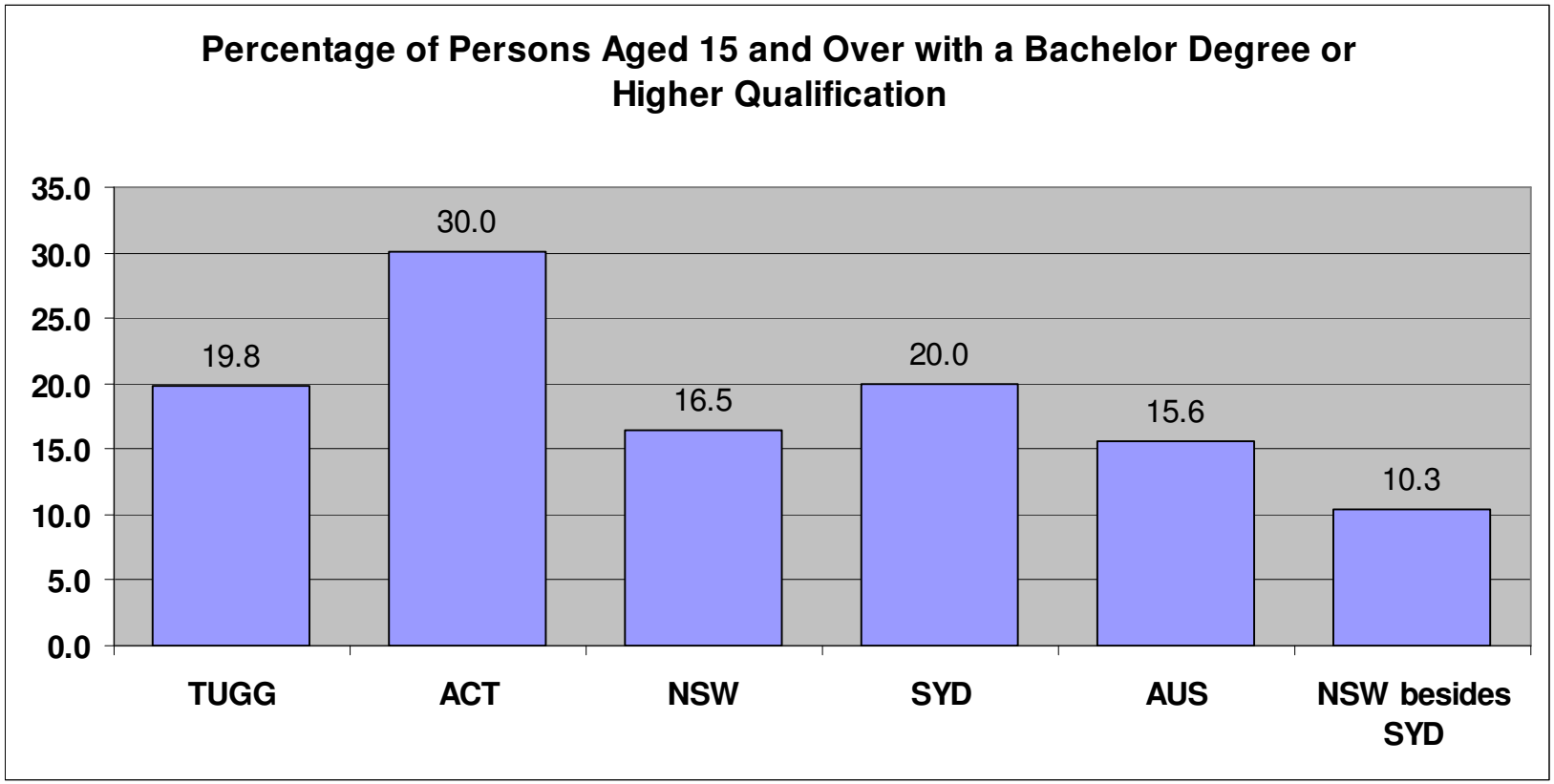
These working papers individually and collectively provide clear evidence that the ACT senior secondary education system is drastically underperforming compared to the NSW senior secondary education system.

# Working Paper 11a:
# Tuggeranong – an ACT Urban Subregion with a Socio-economic Status Significantly Higher than that of NSW Overall but with UAI Participation Rates Little More than Half those of NSW

**by Mark Drummond, 31 January 2008**

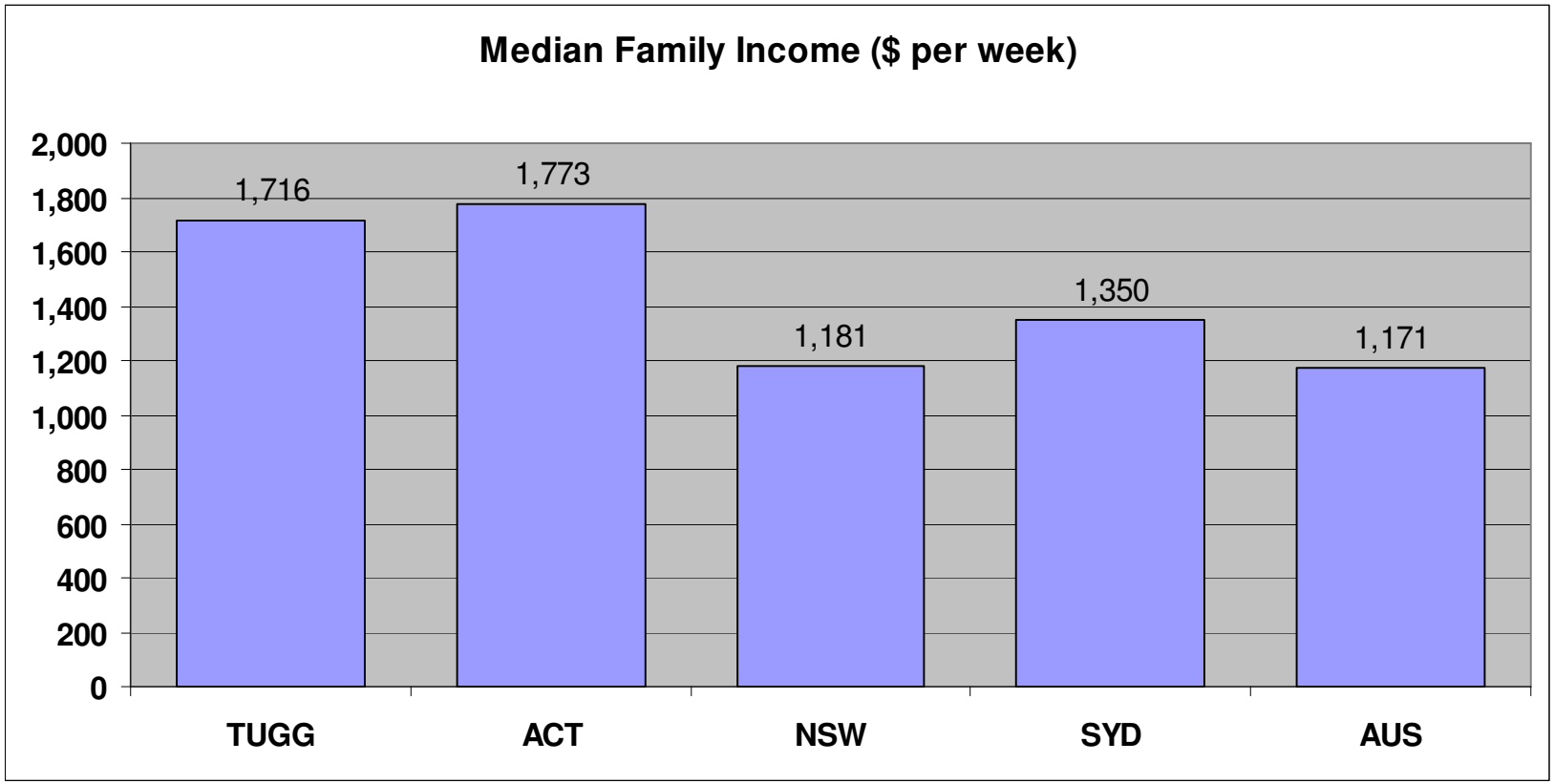
The graphs below say it all ... all is not well at all with the ACT senior secondary system in terms of UAI participation rates!

**Figure 1**



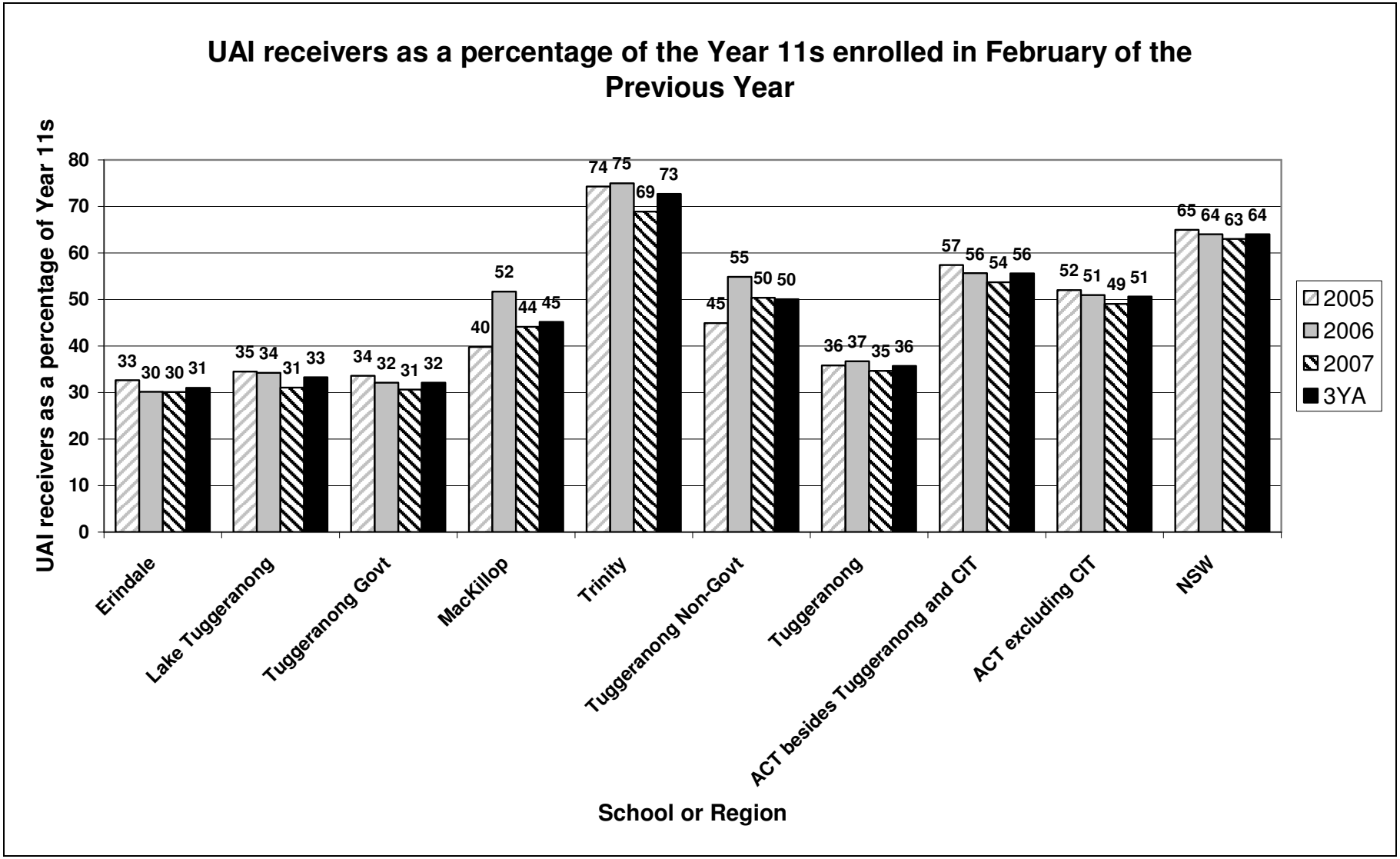

Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
TUGG = Tuggeranong (Statistical Subdivision)
SYD = Sydney (Statistical Division)

**Figure 2**




Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
TUGG = Tuggeranong (Statistical Subdivision)
SYD = Sydney (Statistical Division)

**Figure 3**




Sources of data and further explanatory notes for Figure 3 follow on the next page.

**Sources of Data and Further Explanatory Note for Figure 3**

Sources of Data for Figure 3:

- For the ACT system and ACT schools/colleges: ACT Board of Senior Secondary Studies (UAI results including those for 2007 at www.bsss.act.edu.au/__data/assets/pdf_file/0011/59456/Overview1_2007.pdf) and ACT Department of Education and Training (government and non-government school census reports dated February of 2004, 2005 and 2006 – obtained via www.det.act.gov.au/publicat/publicat.htm); and
- For NSW: annual reports on the scaling of the NSW HSC by the NSW Vice-Chancellors' Committee Technical Committee on Scaling (see the 2005 and 2006 copies at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf and www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf – the 2007 report has not yet been put up on the UAC website at http://www.uac.edu.au/admin/uai.html [it seems to come out each year around mid year]).

Note further in relation to Figure 3 that the NSW figures here of 65%, 64% and 63% for 2005, 2006 and 2007 respectively are estimates (almost certainly on the low side rather than the high side – the true figures would probably make the ACT system figures appear even worse than Figure 3 indicates) based on the following percentages of Year 10 certificate (Y10C) recipients who went on receive a NSW system UAI two years after they completed Year 10:

- 60% for 2003 Y10C recipients received a NSW system UAI in 2005 (see 60.4% figure mid way down page 9 in the 2005 report, printed July 2006, as at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf);
- 59% of 2004 Y10C recipients received a NSW system UAI in 2006 (see 59.0% figure mid way down page 9 in the report at www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf);
- about 58% for 2005 Y10C recipients (the 2008 report is not out yet, but year-to-year comparisons in Table A8 at www.uac.edu.au/pubs/pdf/2007_table_A8.pdf provide some hints on this – note the downward trend in the figures going left to right from 2005 to 2007 in the rows for UAI scores of say 90.0, 80.0 and 70.0 – this downward trend indicates that the UAI cohort as a percentage of Y10C recipients is moving down over these three years).

3YA = simple three year average of the figures for the three years 2005, 2006 and 2007.

**Tuggeranong's fraction of the ACT population**

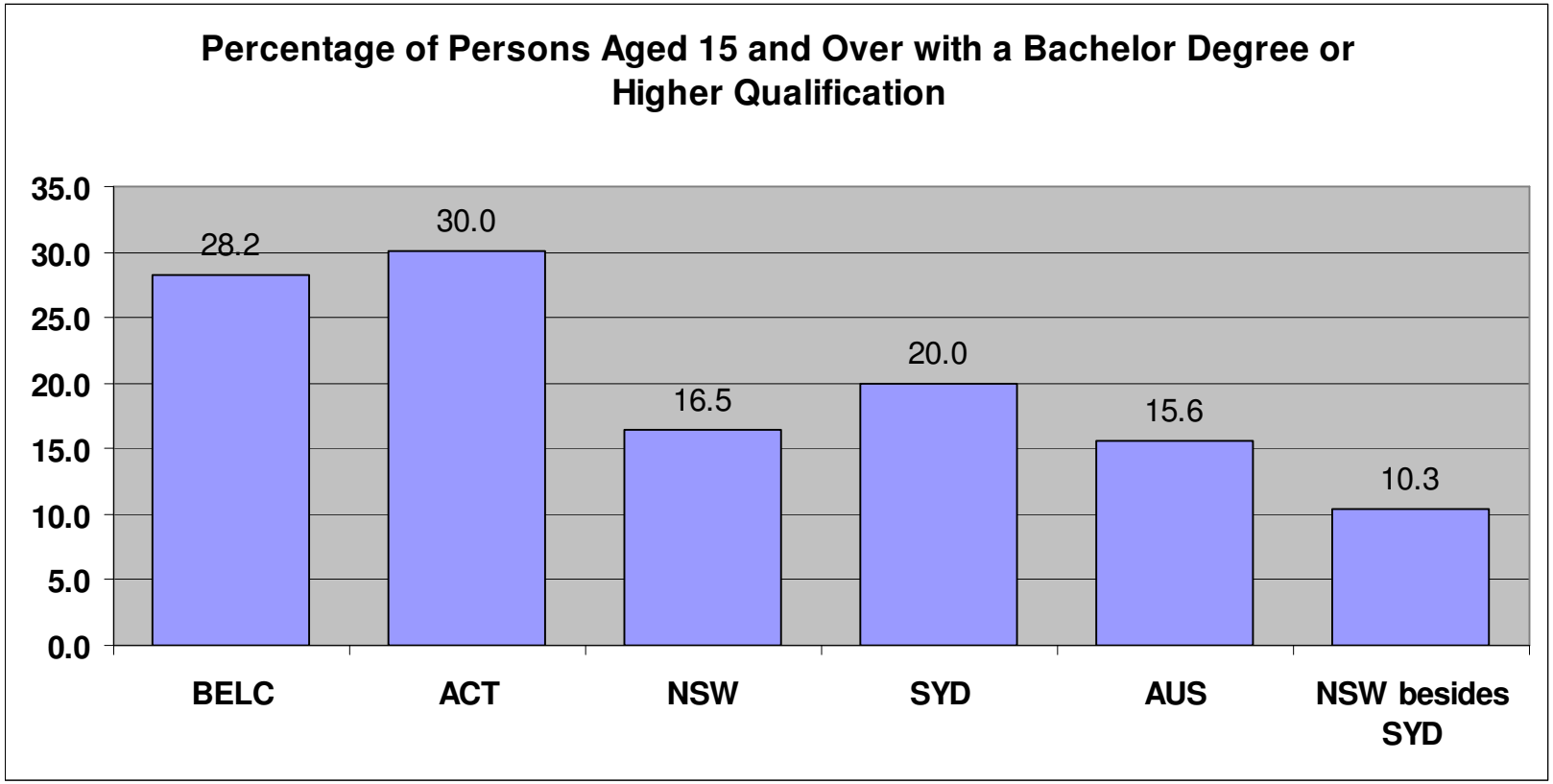
According to the 2006 Census the ACT population was 324,034 and the Tuggeranong population was 87,120, so Tuggeranong made up 26.9% of the ACT's total population.

# Working Paper 11b:
# Belconnen – an ACT Urban Subregion with an Overall Socio-economic Status Significantly Higher than that of NSW and the Sydney Metropolitan Area but with UAI Participation Rates Significantly Lower than those of NSW

**by Mark Drummond, 1 February 2008**

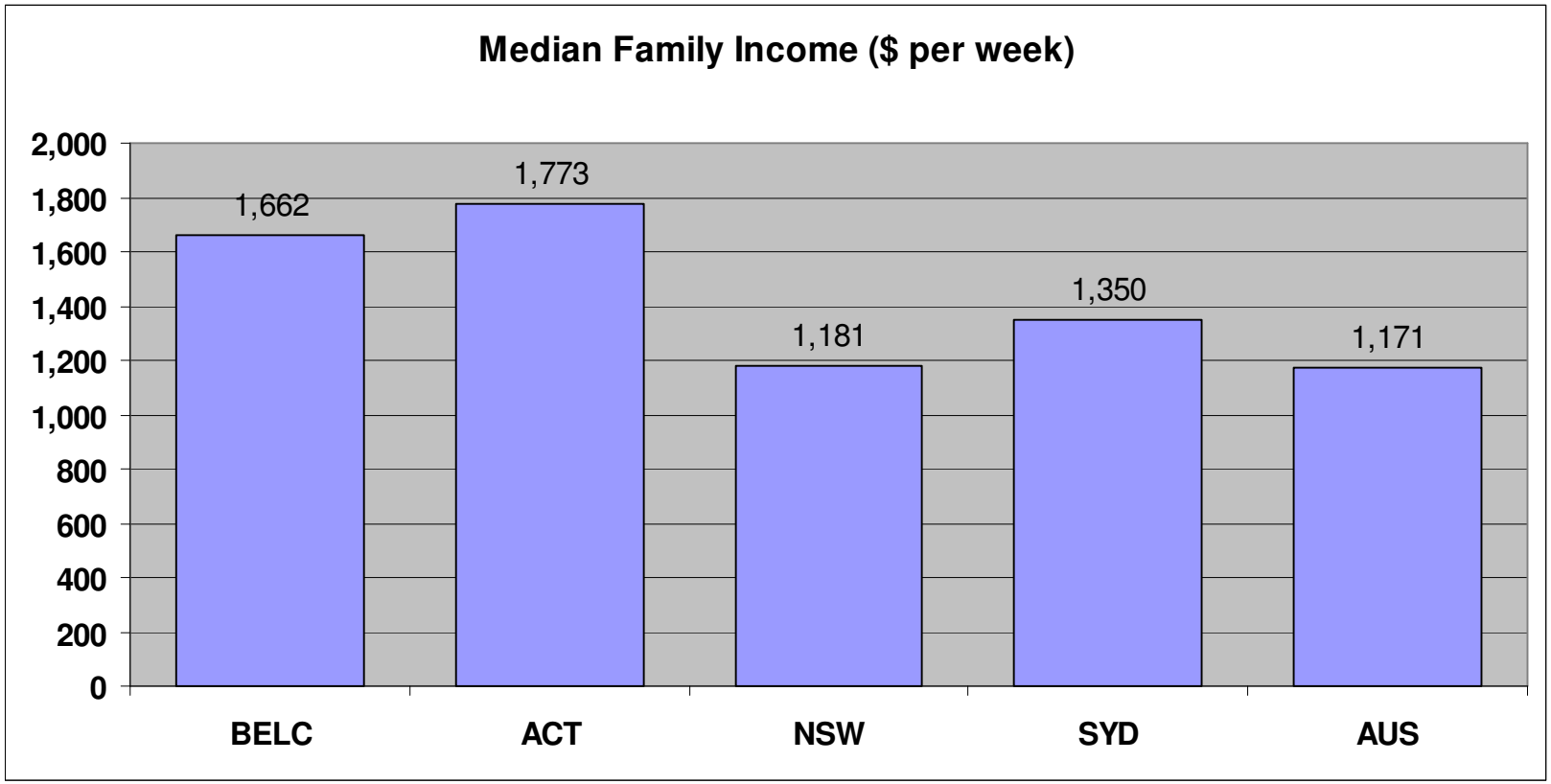
The graphs below again show that all is not well with the ACT senior secondary system in terms of UAI participation rates.

**Figure 1**



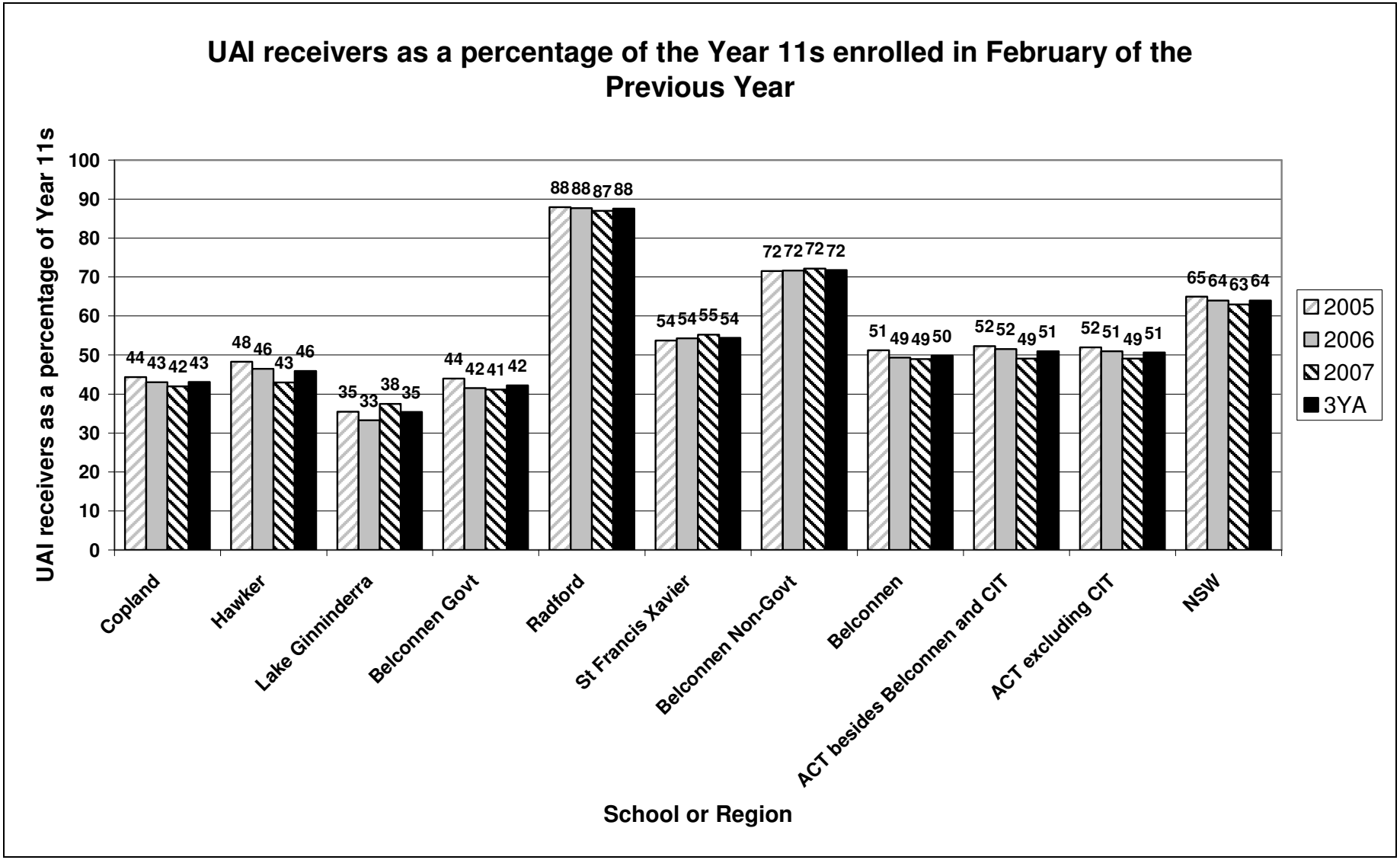

Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
BELC = Belconnen (Statistical Subdivision)
SYD = Sydney (Statistical Division)
Note also that the figure here for the Gungahlin-Hall Statistical Subdivision is 27.6%, so the overall figure for Belconnen and Gungahlin-Hall combined is 28%.

**Figure 2**




Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
BELC = Belconnen (Statistical Subdivision)
SYD = Sydney (Statistical Division)
Note also that the figure here for the Gungahlin-Hall Statistical Subdivision is $1,836 per week.

**Figure 3**

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Sources of Data for Figure 3:

- For the ACT system and ACT schools/colleges: ACT Board of Senior Secondary Studies (UAI results including those for 2007 at www.bsss.act.edu.au/__data/assets/pdf_file/0011/59456/Overview1_2007.pdf) and ACT Department of Education and Training (government and non-government school census reports dated February of 2004, 2005 and 2006 – obtained via www.det.act.gov.au/publicat/publicat.htm); and
- For NSW: annual reports on the scaling of the NSW HSC by the NSW Vice-Chancellors' Committee Technical Committee on Scaling (see the 2005 and 2006 copies at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf and www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf – the 2007 report has not yet been put up on the UAC website at http://www.uac.edu.au/admin/uai.html [it seems to come out each year around mid year]).

Note further in relation to Figure 3 that the NSW figures here of 65%, 64% and 63% for 2005, 2006 and 2007 respectively are estimates (almost certainly on the low side rather than the high side – the true figures would probably make the ACT system figures appear even worse than Figure 3 indicates) based on the following percentages of Year 10 certificate (Y10C) recipients who went on receive a NSW system UAI two years after they completed Year 10:

- 60% for 2003 Y10C recipients received a NSW system UAI in 2005 (see 60.4% figure mid way down page 9 in the 2005 report, printed July 2006, as at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf);
- 59% of 2004 Y10C recipients received a NSW system UAI in 2006 (see 59.0% figure mid way down page 9 in the report at www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf);
- about 58% for 2005 Y10C recipients (the 2008 report is not out yet, but year-to-year comparisons in Table A8 at www.uac.edu.au/pubs/pdf/2007_table_A8.pdf provide some hints on this – note the downward trend in the figures going left to right from 2005 to 2007 in the rows for UAI scores of say 90.0, 80.0 and 70.0 – this downward trend indicates that the UAI cohort as a percentage of Y10C recipients is moving down over these three years).

3YA = simple three year average of the figures for the three years 2005, 2006 and 2007.

**Belconnen's fraction of the ACT population**

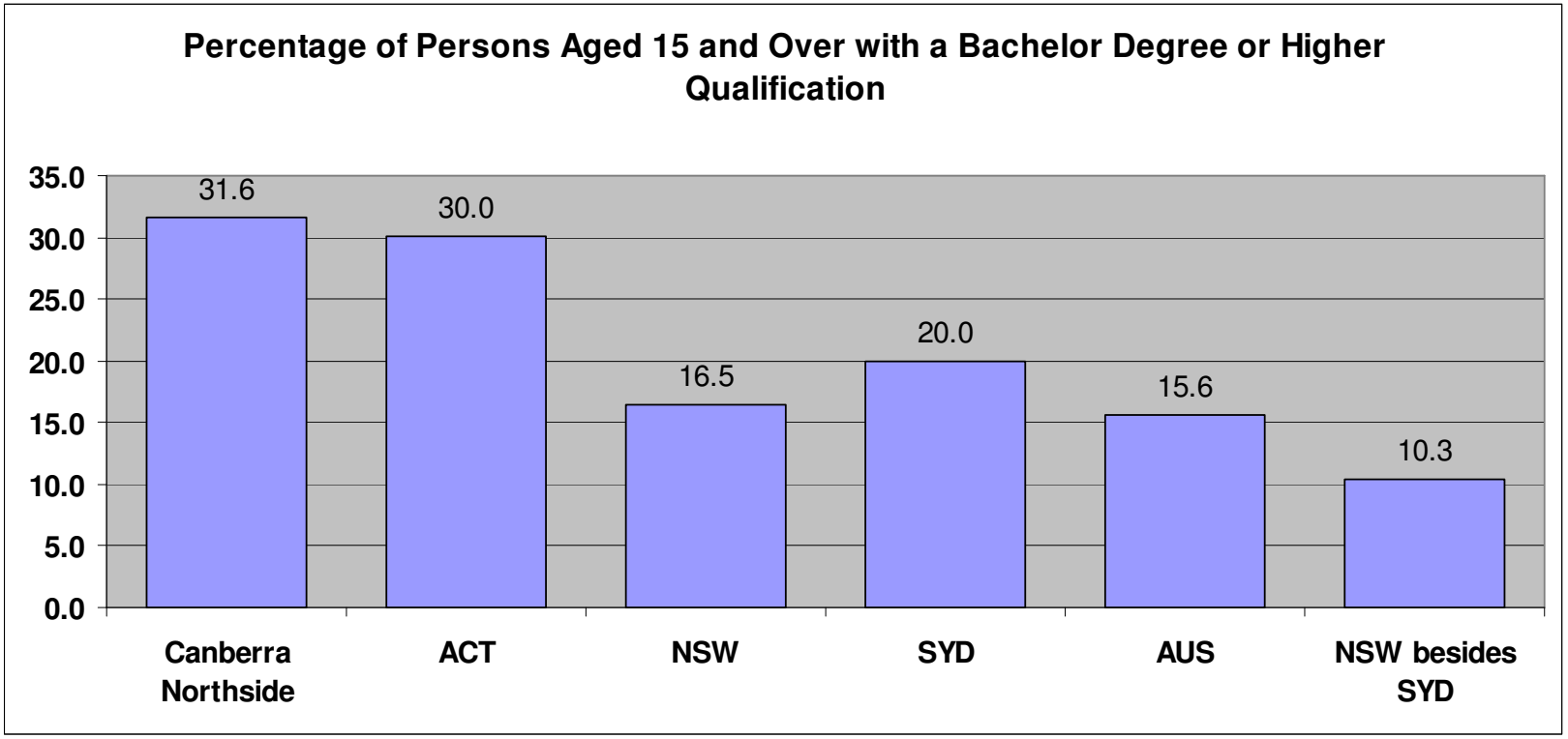
According to the 2006 Census the ACT population was 324,034 and the Belconnen population was 84,382, so Belconnen made up 26.0% of the ACT's total population.

# Working Paper 11f:
# Canberra Northside – Comprising Belconnen, North Canberra and Gungahlin-Hall – an ACT Urban Subregion with an Overall Socio-economic Status Significantly Higher than that of NSW and the Sydney Metropolitan Area but with UAI Participation Rates Significantly Lower than those of NSW

**by Mark Drummond, 7 February 2008**

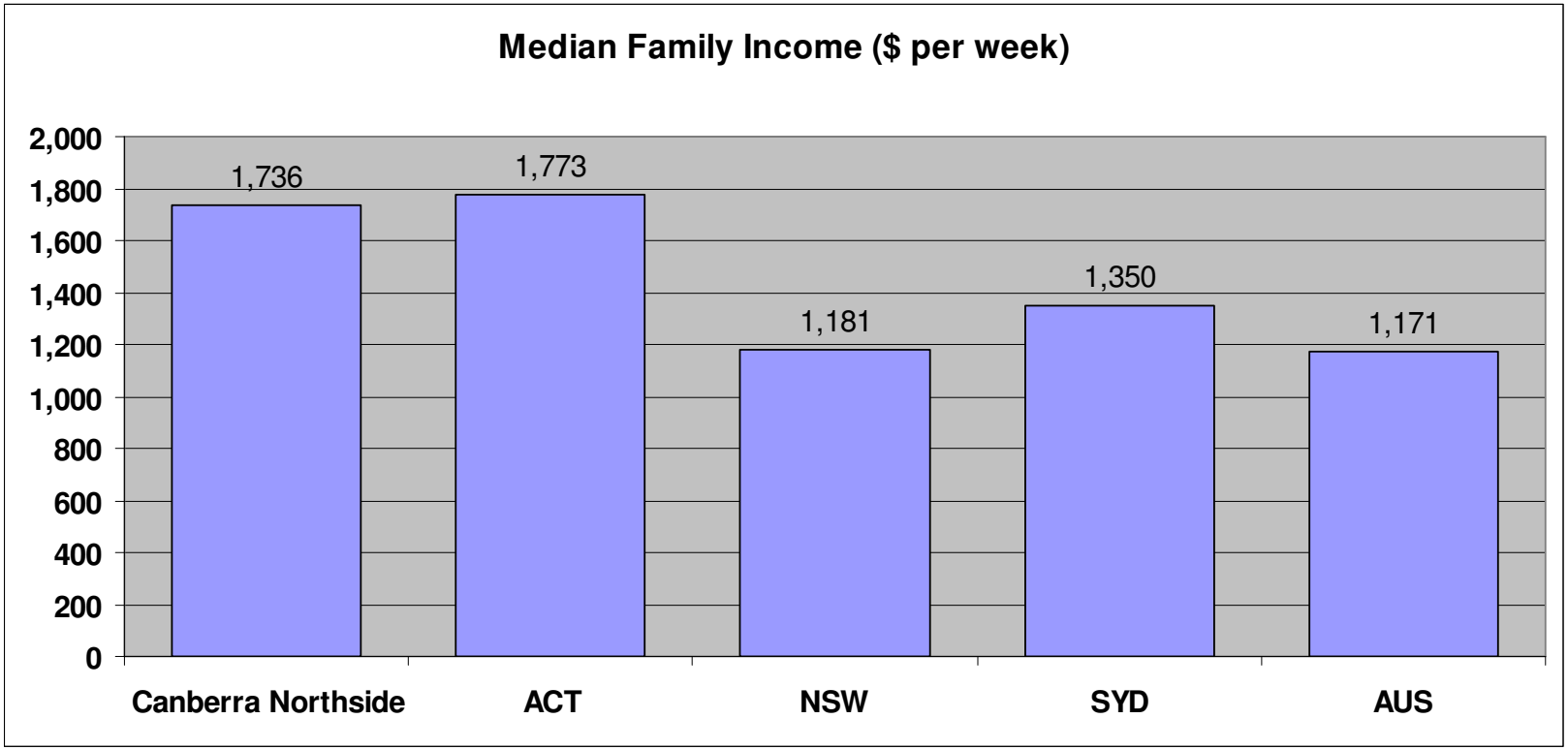
The graphs below again show that all is not well with the ACT senior secondary system in terms of UAI participation rates.

**Figure 1**



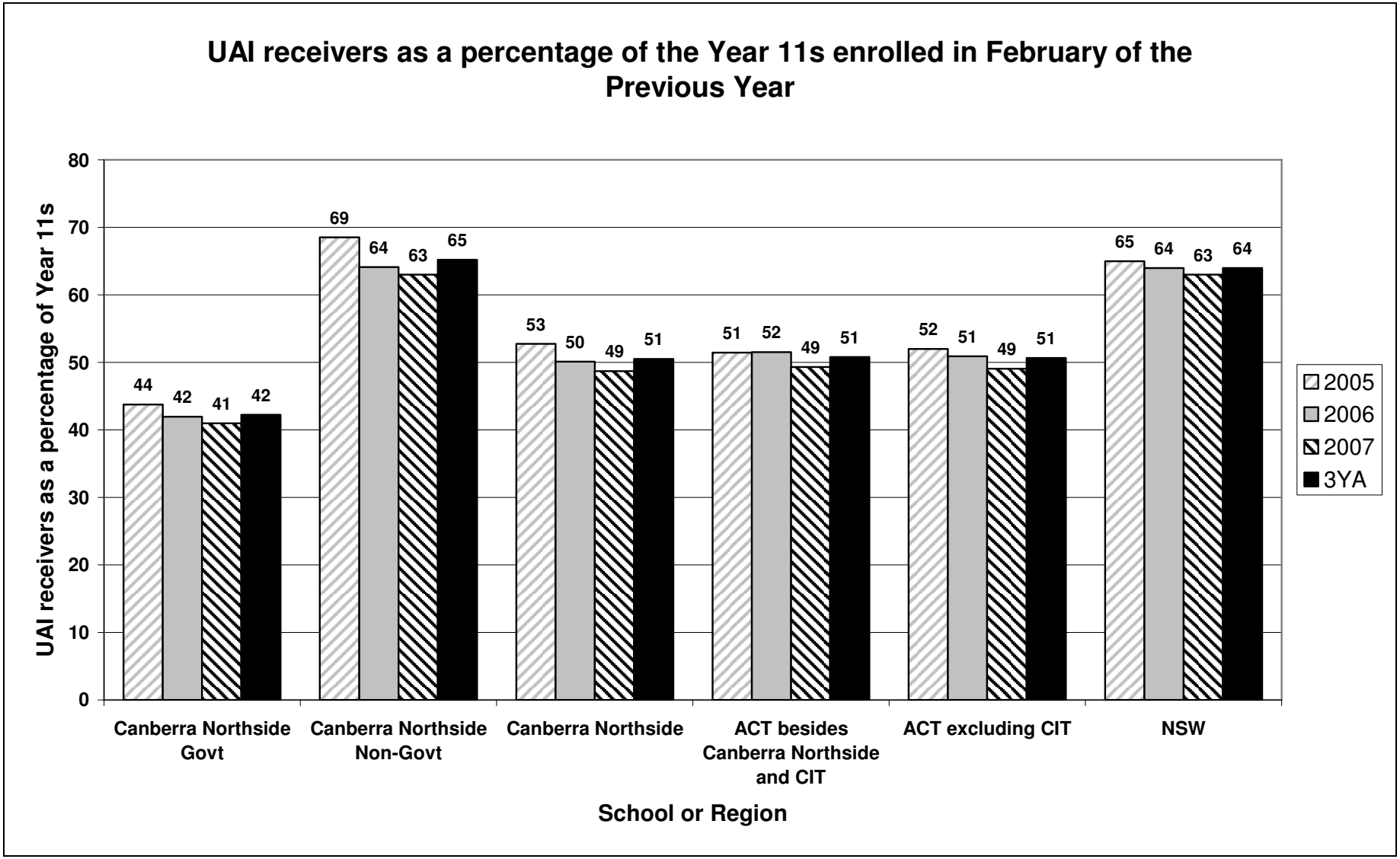

Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
**Canberra Northside** is defined here as the combination of the Belconnen, North Canberra and Gungahlin-Hall Statistical Subdivisions.
SYD = Sydney (Statistical Division)

**Figure 2**




Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
**Canberra Northside** is defined here as the combination of the Belconnen, North Canberra and Gungahlin-Hall Statistical Subdivisions.
The Canberra Northside median family income is the population weighted average of the Belconnen, North Canberra and Gungahlin-Hall median family incomes.
SYD = Sydney (Statistical Division)

**Figure 3**

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- For NSW: annual reports on the scaling of the NSW HSC by the NSW Vice-Chancellors' Committee Technical Committee on Scaling (see the 2005 and 2006 copies at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf and www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf – the 2007 report has not yet been put up on the UAC website at http://www.uac.edu.au/admin/uai.html [it seems to come out each year around mid year]).

Note further in relation to Figure 3 that the NSW figures here of 65%, 64% and 63% for 2005, 2006 and 2007 respectively are estimates (almost certainly on the low side rather than the high side – the true figures would probably make the ACT system figures appear even worse than Figure 3 indicates) based on the following percentages of Year 10 certificate (Y10C) recipients who went on receive a NSW system UAI two years after they completed Year 10:

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- 59% of 2004 Y10C recipients received a NSW system UAI in 2006 (see 59.0% figure mid way down page 9 in the report at www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf);
- about 58% for 2005 Y10C recipients (the 2008 report is not out yet, but year-to-year comparisons in Table A8 at www.uac.edu.au/pubs/pdf/2007_table_A8.pdf provide some hints on this – note the downward trend in the figures going left to right from 2005 to 2007 in the rows for UAI scores of say 90.0, 80.0 and 70.0 – this downward trend indicates that the UAI cohort as a percentage of Y10C recipients is moving down over these three years).

3YA = simple three year average of the figures for the three years 2005, 2006 and 2007.

**Canberra Northside's fraction of the ACT population**

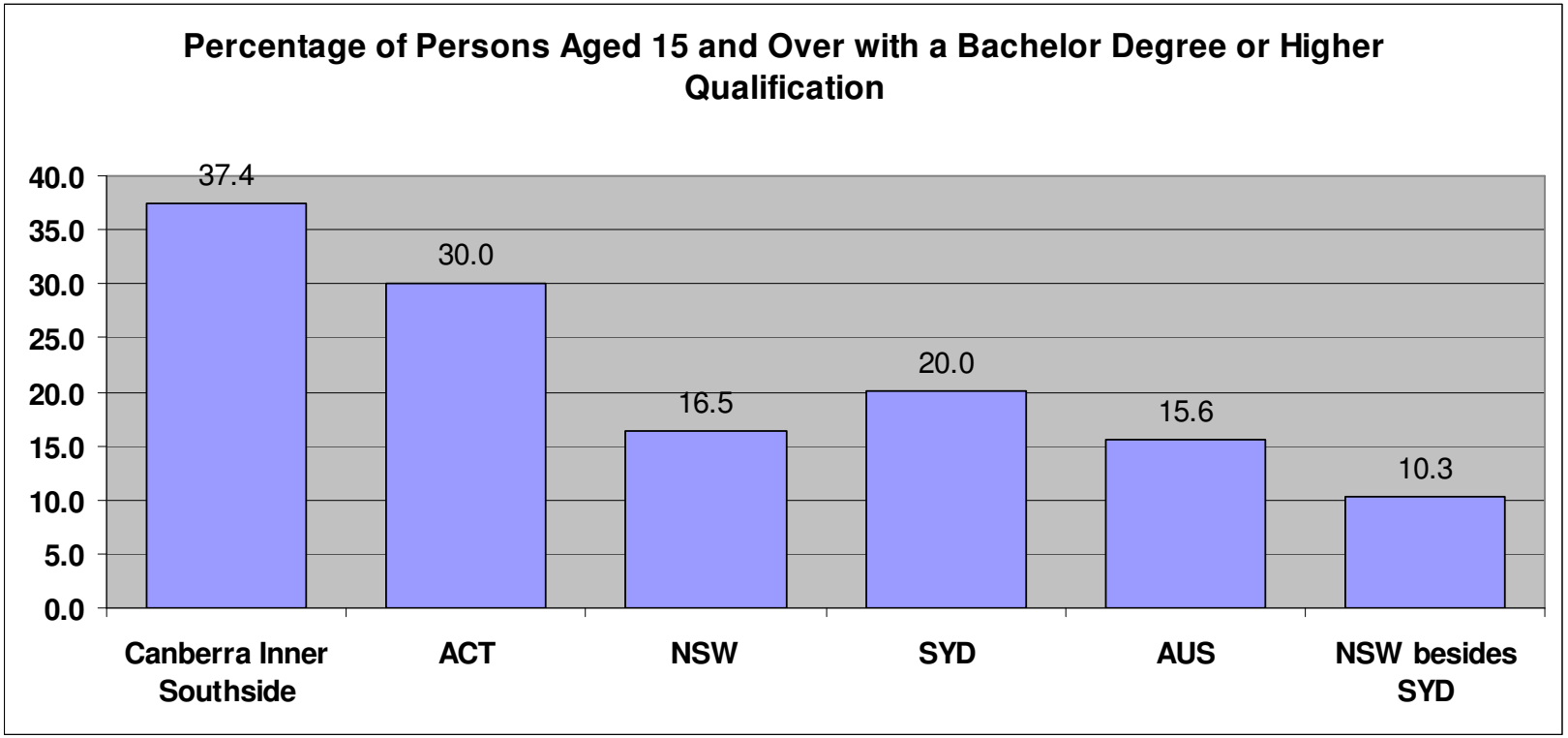
According to the 2006 Census the ACT population was 324,034, Belconnen's population was 84,382, North Canberra's was 42,113, and Gungahlin-Hall's was 31,656, so Canberra Northside's total population was 158,151. Canberra Northside hence made up 48.8% of the ACT's total population.

# Working Paper 11g:
# Canberra Inner Southside – Comprising Woden Valley, South Canberra and Weston Creek-Stromlo – an ACT Urban Subregion with an Overall Socio-economic Status Significantly Higher than that of NSW and the Sydney Metropolitan Area but with UAI Participation Rates Slightly Lower than those of NSW as a Whole

**by Mark Drummond, 7 February 2008**

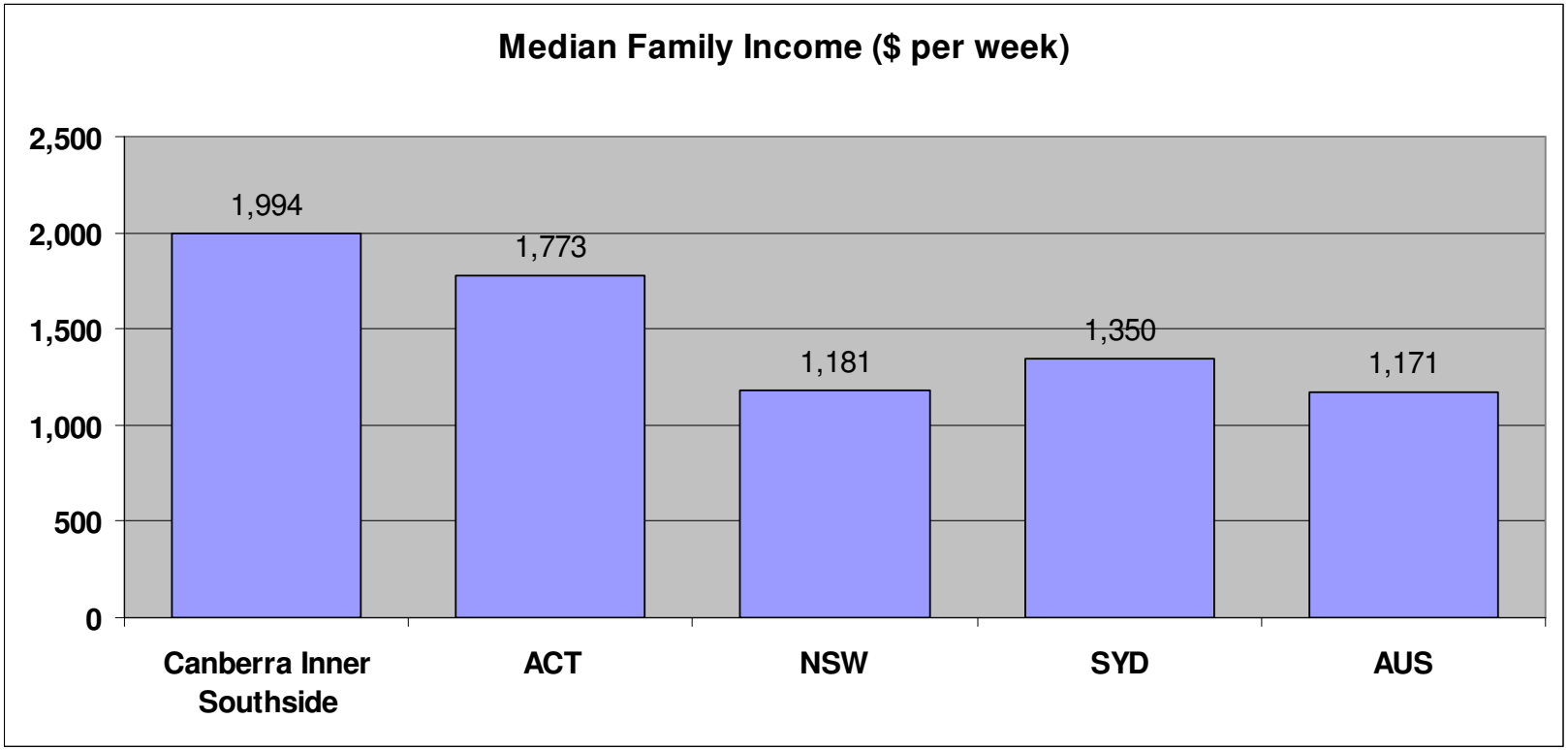
The graphs below again show that all is not well with the ACT senior secondary system in terms of UAI participation rates.

**Figure 1**



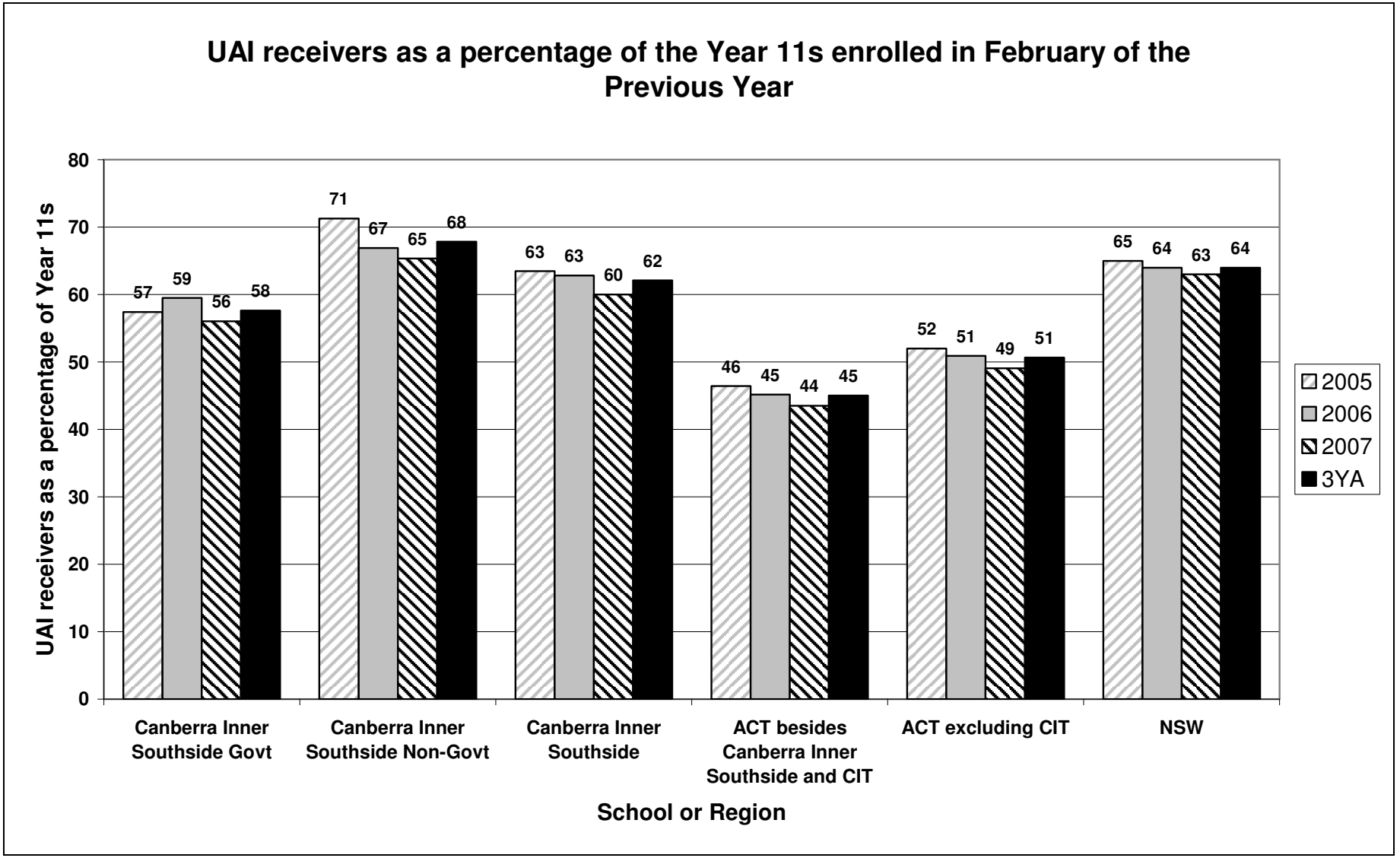

Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
**Canberra Inner Southside** is defined here as the combination of the Woden Valley, South Canberra and Weston Creek-Stromlo Statistical Subdivisions.
SYD = Sydney (Statistical Division)

**Figure 2**




Source of data: Australian Bureau of Statistics Census 2006 Basic Community Profiles via ABS website at www.abs.gov.au.
**Canberra Inner Southside** is defined here as the combination of the Woden Valley, South Canberra and Weston Creek-Stromlo Statistical Subdivisions.
The Canberra Inner Southside median family income is the population weighted average of the Woden Valley, South Canberra and Weston Creek-Stromlo median family incomes.
SYD = Sydney (Statistical Division)

**Figure 3**

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- For NSW: annual reports on the scaling of the NSW HSC by the NSW Vice-Chancellors' Committee Technical Committee on Scaling (see the 2005 and 2006 copies at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf and www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf – the 2007 report has not yet been put up on the UAC website at http://www.uac.edu.au/admin/uai.html [it seems to come out each year around mid year]).

Note further in relation to Figure 3 that the NSW figures here of 65%, 64% and 63% for 2005, 2006 and 2007 respectively are estimates (almost certainly on the low side rather than the high side – the true figures would probably make the ACT system figures appear even worse than Figure 3 indicates) based on the following percentages of Year 10 certificate (Y10C) recipients who went on receive a NSW system UAI two years after they completed Year 10:

- 60% for 2003 Y10C recipients received a NSW system UAI in 2005 (see 60.4% figure mid way down page 9 in the 2005 report, printed July 2006, as at www.uac.edu.au/pubs/pdf/tsc_report_2005.pdf);
- 59% of 2004 Y10C recipients received a NSW system UAI in 2006 (see 59.0% figure mid way down page 9 in the report at www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf);
- about 58% for 2005 Y10C recipients (the 2008 report is not out yet, but year-to-year comparisons in Table A8 at www.uac.edu.au/pubs/pdf/2007_table_A8.pdf provide some hints on this – note the downward trend in the figures going left to right from 2005 to 2007 in the rows for UAI scores of say 90.0, 80.0 and 70.0 – this downward trend indicates that the UAI cohort as a percentage of Y10C recipients is moving down over these three years).

3YA = simple three year average of the figures for the three years 2005, 2006 and 2007.

**Canberra Inner Southside's fraction of the ACT population**

According to the 2006 Census the ACT population was 324,034, Woden Valley's population was 31,991, South Canberra's 23,668, and Weston-Creek-Stromlo's 22,126, so the Canberra Inner Southside population was 77,785. Canberra Inner Southside hence made up 24.0% of the ACT's total population.

# Appendix D

## YES: the ACT's Socio-economic Status Really IS Head and Shoulders Above all Other States and the NT on Average – as we Thought was the Case All Along!

## So YES, ACT Kids WOULD be Getting Better UAIs than those which Arose in 2005 and Other Past Years if the System Used to Determine ACT UAIs "passed the common sense test" and was Generally Competent and Fair

by Mark Drummond, as at July 2006 (slightly edited on 14 April 2009)

**[available online as Working Paper 10 via http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAI_WPs.html]**

The system used to determine ACT UAIs essentially treats the ACT just like any other State, which is one of the two major problems with the system (the other being the fact that the AST is an invalid moderator in view of the lowness of the correlation between the AST and students' assessed results within colleges).

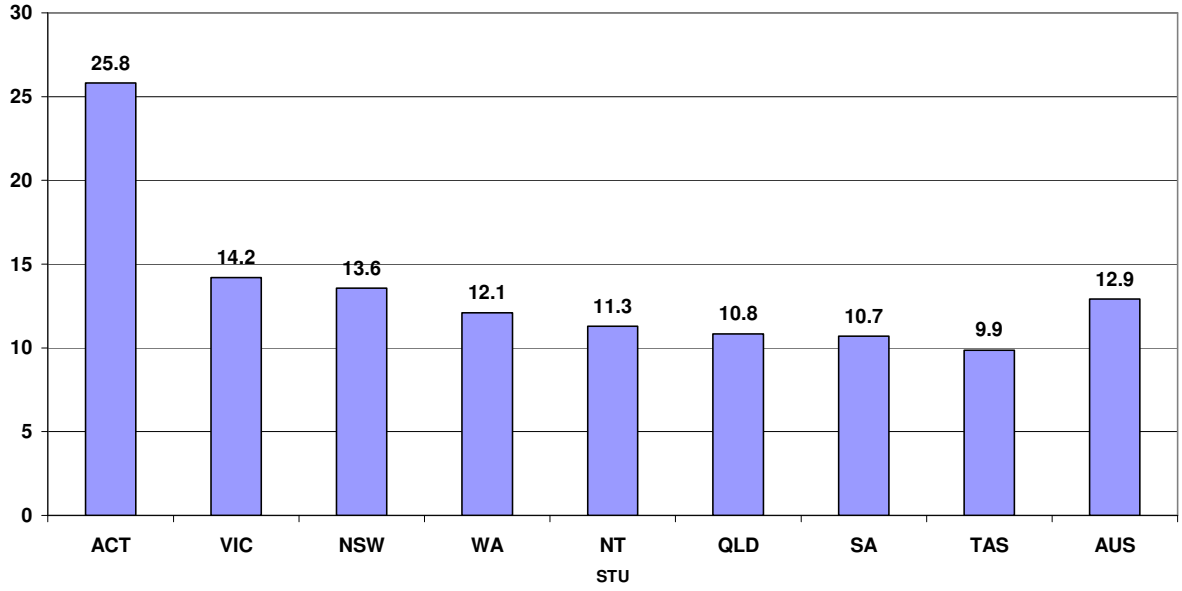
It would perhaps be okay to treat the ACT just like any other State if, say, the eastern suburbs of Melbourne, or the eastern suburbs of Sydney, were treated that way.

The following charts provide clear evidence, from the 2001 Census and other Australian Bureau of Statistics (ABS) data, that the ACT is head and shoulders above all other States and Territories on several measures known to highly correlate with substantive educational outcomes.

The ACT community is vastly more highly educated than NSW, VIC and all other States and Territories in terms of bachelor degree possession and Year 12 completion, as shown in Figures 1 and 2 below.

Note in Figure 1 that the ACT is 11.6% ahead here of second ranked VIC, but that the difference between second ranked VIC and last ranked TAS is just 4.3%. Note also that the ACT figure here (25.8%) is about exactly twice the Australia-wide average (12.9%). So the ACT is head and shoulders above the six States and NT, with the States and Northern Territory all falling within a relatively narrow band on this measure.

**Figure 1: Persons aged 15 years and over possessing a bachelor degree or higher qualification**




**Source: ABS 2001 Census Basic Community Profiles, Table B23.**

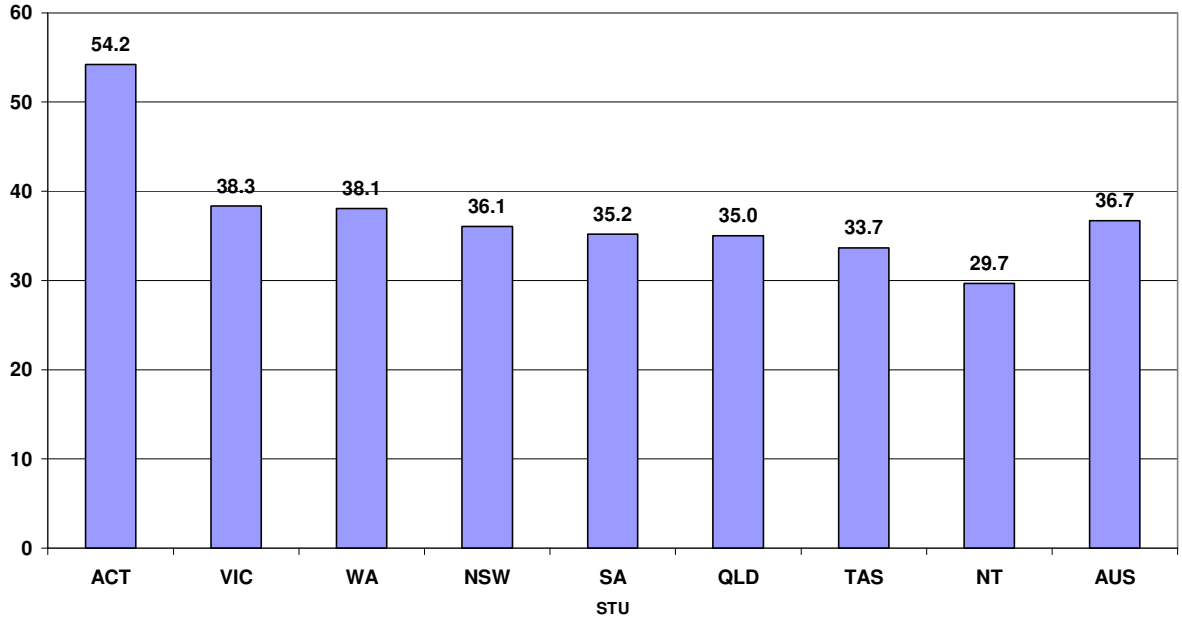
**Figure 2: Persons who have completed Year 12 or equivalent (%)**


**Source: ABS 2001 Census Basic Community Profiles, Table B12.**

Note in Figure 2 that the ACT is 19% ahead here of second ranked VIC, but that the difference between second ranked VIC and last ranked TAS is just 13%. Note also that the ACT figure here (60.5%) is more than 50% greater than the Australia-wide figure (39.5%). So the ACT is, again, head and shoulders above the six States and NT, with the States and Northern Territory again falling within a relatively narrow range.

The ACT community uses the internet much more than NSW, VIC and all other States and Territories, as shown in Figure 3 below.

**Figure 3: Internet use (%)**

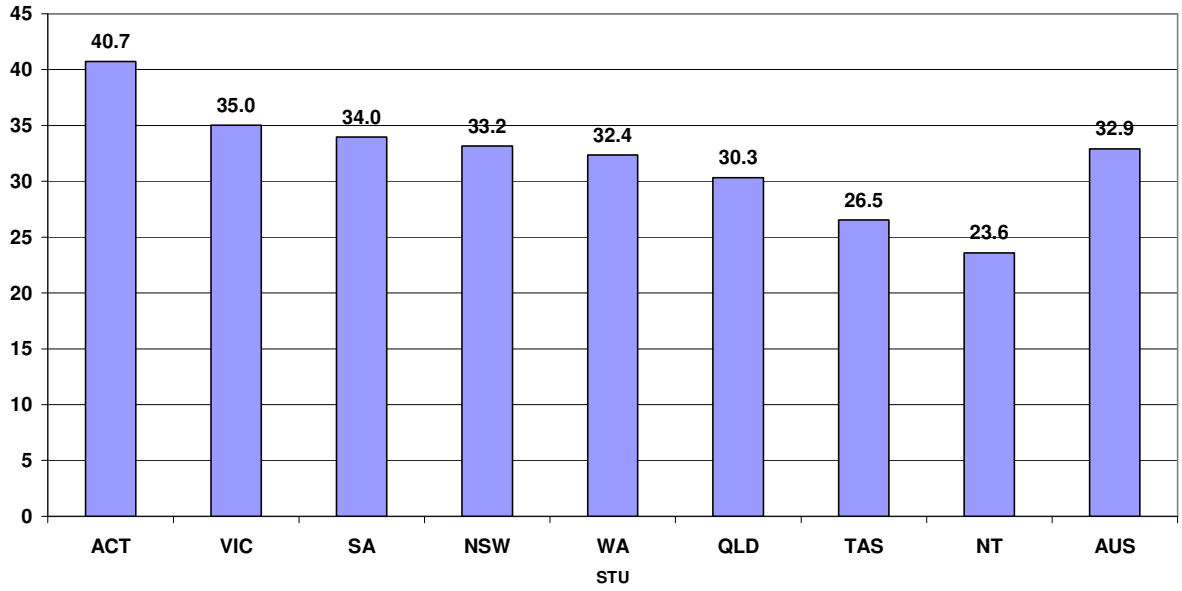



**Source: ABS 2001 Census Basic Community Profiles, Table B16.**

Note in Figure 3 that the ACT is 16% ahead here of second ranked VIC for this internet usage measure, but that the difference between second ranked VIC and last ranked TAS is just 9%. Note also that the ACT figure here (54.2%) is nearly 50% greater than the Australia-wide figure (36.7%). So the ACT is, yet again, head and shoulders above the six States and NT, with the States and Northern Territory again spanning across a relatively narrow range.

The proportion of students in non-government schools is higher in the ACT than in NSW, VIC and all other States and Territories, as shown in Figure 4 below.

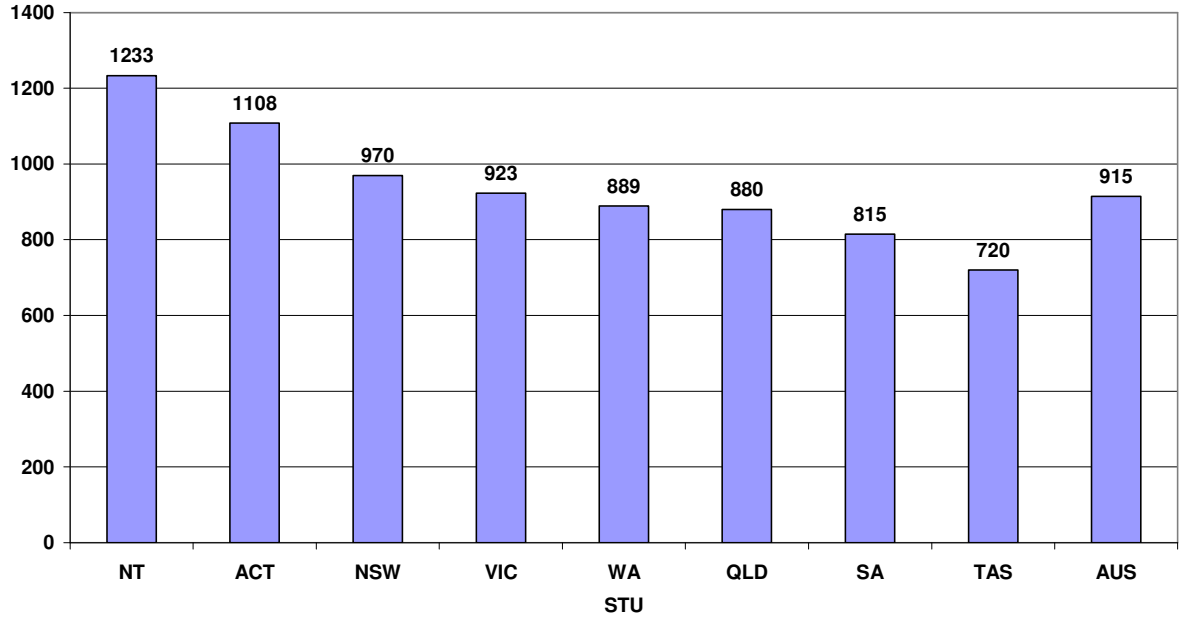
**Figure 4: Percentage of full time students attending non-govt schools in 2005 (%)**




**Source: ABS Cat. 4221.0 2005, Table 6.**

The median gross weekly household income is higher in the ACT than in NSW, VIC and all other States, but falls below that of NT only, as shown in Figure 5 below.

**Figure 5: Median gross weekly household income 2002-04 ($)**




**Source: ABS Cat. 6523.0 2003-04, Table 16.**

**Conclusion**

Among the eight States and Territories, the ACT is definitely by far the most educationally advantaged in terms of variables known to substantively correlate with scholastic outcomes.

So, assuming that ACT schools, colleges and teachers are the equal of those in NSW and elsewhere in Australia, ACT kids should and would be achieving higher UAIs than those in all other States and Territories if the system used to determine ACT UAIs "passed the common sense test" and was generally competent and fair.

Mark Drummond
2 July 2006

# Appendix E

## The Two Major Flaws in the Processes Used to Calculate Australian Capital Territory (ACT) Universities Admission Indices (UAIs) and Resultant Injustices and Damage

[available online at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAI_Flaws.html]

The two major flaws in the processes used to calculate ACT system UAIs (and tertiary entrance scores and percentile ranks before such percentile ranks came to be called UAIs in 1998) have been the **equality assumption flaw** and the **scaling flaw**, and the two main injustices arising as a result of these flaws have been (1) the many thousands of ACT system students who have sought but wrongly missed out on funded university places, and (2) the many thousands of ACT system kids who have been denied the opportunity to even attempt to gain UAIs by colleges/schools (hereafter just "colleges") and other authorities who have aggressively discouraged such attempts. Injustices done to students represent the majority of the damage caused by the two major flaws, but such damage has extended further to diminish the quality and integrity of the entire ACT education system, and adversely impact not only on UAI participation/achievement rate outcomes, but also on NAPLAN results and other measurable outcomes.

This [web] page attempts to explain systemic problems with the ACT UAI calculation process and outward signs of system failure which extend well beyond UAI outcomes to things like the ACT's NAPLAN results, in terms of:

- two major flaws - (1) the **equality assumption flaw**, and (2) the **scaling flaw**;
- the two main injustices arising as a result of these flaws - (1) the **many thousands of ACT system students who have sought but wrongly missed out on funded university places** over the years, and (2) the **many thousands of ACT system kids who have been denied the opportunity to even attempt to gain UAIs** by colleges and other authorities who have aggressively discouraged such attempts;
- two different categories of colleges - (1) **beneficiary colleges**, and (2) **victim colleges** or **sacrificed colleges** [though even the beneficiary colleges generally only just break even, more or less, in typical years];
- two effects which combine to lower the ACT UAI participation/achievement rate - (1) the **equality assumption disincentive effect** or **rationing disincentive effect** which arises due to the equality assumption flaw, and (2) the **scaling flaw discouragement effect** which arises due to the scaling flaw [because of the practice whereby colleges aggressively discourage kids from sitting the AST if they feel such kids will lower the college's AST average and hence its UAI average noting the direct link between AST scores and UAIs]; and

- the manner in which these flaws and resultant effects create and reflect perverse incentives and distortions that in practice tend to drastically lower expectations well in advance of Years 11 and 12 for an alarmingly high proportion of ACT students. Aggressive expectation lowering occurs through the pigeon-holing and "branding for life" of students as early as Year 7, and possibly even earlier, through excessive or otherwise misguided streaming processes, or other similarly stigmatising measures, such that significant fractions of ACT students are (1) wrongly and prematurely led to believe that they are simply not scholastically good enough to gain a UAI and realistically aspire to a university education, and (2) simply not taken as seriously and taught as rigorously as they should be and would be if they were motivated and allowed to maintain ambitions to gain a UAI.

These problems and their gravity are now further explained in turn.

## The Two Major Flaws in the ACT UAI Calculation Process and Their Combined Effect

The equality assumption flaw makes the median UAIs of all ACT colleges and the individual UAIs of nearly all ACT system students lower than they'd be if this huge flaw wasn't present in the calculation process - significantly lower for the vast majority of students, by 5 to 10 UAI points on average and up to 20 or so UAI points in worst cases. This flaw arises because it has always been wrongly assumed that the ACT student population has an overall academic ability level that merely matches that of NSW. It has hence been wrongly assumed that the academic ability of the ACT student population is inferior to that of students living in the parts of NSW with socio-economic status comparable to that of the ACT - i.e. the greater North Shore and Eastern Suburbs regions within the Sydney metropolitan area. This flaw was cemented into place between 1977 and 1980 or so when the responsible authorities badly misinterpreted the HSC results of ACT and NSW students in 1975 and 1976, the last two years before the ACT system first operated separately from the NSW HSC system in 1977. This historical background is further explained in Working Paper 13, titled Historical Development of the Equality Assumption Flaw that Makes the Vast Majority of ACT Senior Secondary System Universities Admission Indices (UAIs) Much Lower than they Should Be. Working Papers 10, 12 and 13 also describe the equality assumption flaw and resultant injustices. A compilation titled *Evidence of equality assumption following mid 1990s MCEETYA agreement* has also been prepared, but note that the MCEETYA agreement referred to here merely reaffirmed the assumption of equal ability of ACT and NSW student populations that has been followed ever since the ACT senior secondary system first operated separate from the NSW HSC system in 1977. See also an explanation of Australia's National Tertiary Admissions System - especially as follows (near the top of this webpage; emphasis added in bold italics here):

National approach to the calculation of tertiary entrance rank equivalences across states in 1997:

> This was achieved by instituting a methodology which converts each state's/

territory's measure of overall achievement into a rank representative of the whole relevant age group (16 - 20 year-olds) rather than year 12 candidates, thus facilitating an equivalence, both between states/territories and over years. This rank, the Interstate Transfer Index, ITI, has been adopted by all states/territories, except Queensland, and is their TER,/ UAI/ ENTER. A description of this methodology is outlined below.

This methodology, which is based on the relationship between a rank in the whole population and the probability that an individual is a candidate, was adopted by the taskforce in May 1997 and is formally monitored by a national group of technical experts reporting to ACTAC.

The scaling flaw has generally made ACT system UAIs (1) higher than they should be at colleges/schools which do above average in the scaling test and (2) lower than they should be at colleges/schools which do below average in the scaling test. This flaw arises because student results in the scaling tests used in the ACT system since 1977 (The Australian Scholastic Aptitude Test [ASAT] and later the Australian Scaling Test [AST] and ACT Scaling Test [AST again]) have never correlated with student results in school subjects (i.e. maths, English etc.) anywhere near strongly enough to substantively or scientifically support the scaling process that has taken place every year since 1977. In other words, the scaling tests have never measured what they'd need to measure in order to provide valid scaling mechanisms that justify the scaling up and down that takes place. Most of this scaling up and down simply has no substantive scientific basis at all. Part of the historical background of the scaling flaw is highlighted in an August 2007 paper titled *Key Literature Extracts from McGaw et al in the mid 1970s Providing Historical Background to The ACT's Flawed Tertiary Entrance Score (and Universities Admission Index) Determination Processes*. Working Papers 1 to 7 and a 3 July 2002 Canberra Times article by me (Mark D) titled *Biases rob colleges of their proper status* (please note that this Canberra Times website copy did not contain a significant table - shown on page 2 here - that was included in the hard copy version) also relate mainly to the scaling flaw and resultant injustices.

The **combined effect** of these two major flaws has been very different for different colleges/schools within the ACT system, depending on whether the college/school has done above average, about average, or below average on the scaling test, and this differential effect can help to explain how and why such huge flaws have been tolerated by the broader ACT education community for so many years.

**For colleges/schools that do well above average in the scaling test** - generally Narrabundah College, Canberra Girls Grammar School, Radford College, and Marist College - the equality assumption flaw and scaling flaw are able to more or less cancel out, so that student UAIs end up around about where they should be and would be if the two flaws were not present. So students at these schools, and their parents and the schools themselves, generally have relatively little grounds for complaint in relation to their UAIs. These are the schools that suffer least and benefit most from the ACT system UAI calculation process, and it's impossible to avoid the conclusion that the huge flaws in the process have been tolerated for so long because the ACT's wealthiest and "highest ranked" people generally send their kids to these schools. The rich and powerful do fine out of the current system and the rest

simply don't matter and can eat dirt! Narrabundah College, Canberra Girls Grammar School, Radford College, and Marist College shall be referred to henceforth as the **beneficiary colleges**.

**For colleges/schools that do well below average in the scaling test** - generally St Edmund's College and some of the government and parish Catholic colleges in Tuggeranong and Belconnen - the equality assumption flaw and scaling flaw compound to generate UAIs that are vastly lower than they'd be if the two flaws were not present. Students at these schools disproportionately bear the brunt of the two flaws, and suffer immense injustices in terms of UAIs as much as 25 or so lower than they should be, and associated lost opportunities for funded university places. These students can always validly claim that they have been treated with contempt by the responsible authorities and also by any and all people who defend the current ACT system UAI calculation process. The students at these colleges/schools are expected to sacrifice their life opportunities in order to leave all of the best university opportunities to the beneficiary colleges as above.

**For colleges/schools that do about average in the scaling test**, the scaling flaw is more or less neutralised and students hence receive just a single dose of injustice as a result of the equality assumption flaw. Students at these colleges are still treated very unfairly, however, and many would still be receiving UAIs as much as 25 or so lower than they should be. The students at these colleges/schools are again expected to play there part in ensuring that the beneficiary colleges have a free run for the most prized of the funded university places available.

All colleges except for the four beneficiary colleges have some years in which their scaling test results are about average, and other years in which their scaling test results are below average. These colleges shall be referred to collectively as the **victim colleges** or **sacrificed colleges**. Students at these colleges are expected to sacrifice their life opportunities in order to ensure that the privileged students at the beneficiary colleges don't end up disadvantaged by the two huge flaws operating.

As above, the scaling flaw seems to have been tolerated for so many years because students from the more advantaged quarter or so of the ACT community disproportionately attend the beneficiary colleges, and whilst beneficiary college students only make up about one quarter of the ACT system student population, their parents hold perhaps three-quarters of the influence over the whole ACT school system by virtue of their wealth, rank and connections. The ACT Board of Senior Secondary Studies - which is responsible for ACT system UAIs - mainly comprises high ranking people on very high salaries who only seem to care about the schools which have the greatest concentrations of students with similarly high ranking and wealthy parents - that is, the beneficiary colleges: Narrabundah College, Canberra Girls Grammar School, Radford College, and Marist College. The ACT BSSS has year in and year out signed off on UAI results which are fair only for the students at the beneficiary colleges. They have clearly breached duties of care they plainly owe to students of the sacrificed colleges, noting that the BSSS is the body that is most responsible for effectively forcing sacrificed college students to forego funded university places. To be fair, most BSSS members lack the knowledge necessary to properly understand the two huge flaws identified herein, but this is little excuse. It's been a bad case of the blind leading the blind.

## The Two Major Flaws in the ACT UAI Calculation Process and Their Adverse Impact on the Entire ACT Education System

**The two flaws highlighted here have led to a significant dumbing down of the entire ACT school education system**. The equality assumption flaw acts to ration the number of high range ACT system UAIs to much smaller proportions than would occur if the equality assumption flaw was absent. In other words, there are less 90+ UAIs available for the ACT system than there should be because the ACT system is only allowed the same proportion of 90+ UAIs as the NSW system. And after the beneficiary colleges scoop up the vast majority of prized 90+ and 99+ etc. UAIs, the high range UAIs left over for the sacrificed colleges are simply too scarce to be worth aiming for, at least for a large proportion of students at the sacrificed colleges. This disincentive to aim for a UAI that results from the equality assumption flaw shall be referred to as the **rationing disincentive effect** or the **equality assumption UAI disincentive effect**.

The scaling flaw creates an obvious incentive for colleges to achieve scaling test averages as high as possible, and hence a perverse incentive to aggressively discourage many students from even attempting to gain a UAI. Colleges aggressively discourage students from even attempting to achieve a UAI if they think such students may drag the college's scaling test average down. Such aggressive discouragement from colleges shall be referred to here as the **scaling flaw UAI discouragement effect**. Less than 50% of the ACT system age cohort have obtained UAIs in all recent years, compared to about 60% in NSW - a ridiculous situation given that the ACT's socio-economic status towers over that of NSW, but easy to explain in terms of the equality assumption UAI disincentive effect and the scaling flaw UAI discouragement effect.

But in order to effectively discourage hundreds of ACT kids from attempting to gain UAIs, schools effectively have to lower expectations as early as about Year 7 or even earlier, to "soften them up" so that students and parents aren't shocked ... Schools have developed various ways and means of suggesting to students and their parents that the traditional schooling pathway leading to a UAI is best reserved for the chosen few students - that is, most of the students who go on to complete Year 12 at the beneficiary colleges, but only about 40% of the students at the sacrificed colleges which host the vast majority of all ACT system students. The dumbing down of the ACT education system arises essentially because of this figure of 40%. If the two huge UAI calculation process flaws were absent, I'd estimate that this 40% figure would be closer to 70%. This difference of 30%, which amounts to about 25% of all students who pass through the ACT secondary school system, represents students who are (1) wrongly led to believe that they are simply not good enough to gain a UAI and realistically aspire to a university education, and (2) simply not taken as seriously and taught as rigorously as they should be and would be if they were motivated and allowed to maintain ambitions to gain a UAI.

It is fully acknowledged that many kids genuinely don't seek a UAI, but it's very clear that a lot of kids are treated like pawns whose aspirations simply don't matter to the ACT BSSS and even to the principals and other leaders at their very own colleges - a

really quite appalling state of affairs!!

The situation here amounts to probably the biggest scandal in the history of Australian education, and one of the biggest scandals in the history of Australian public administration, especially in view of extraordinary conduct on the part of the BSSS that has clearly amounted to corruption in several instances I am aware of.

So how do we overcome the huge levels of injustice that have been dished out to tens of thousands of ACT system students since the ACT senior secondary system broke away from the NSW HSC system in 1977, for the benefit of current and future students in the ACT?

**The only answer at this juncture is a thorough and fully independent inquiry into all aspects of the ACT UAI calculation process and indeed the entire K-12 ACT school education system.**

Mark Drummond
February 2009

# Appendix F

## Historical Development of the Equality Assumption Flaw that Makes the Vast Majority of ACT Senior Secondary System Universities Admission Indices (UAIs) Much Lower than they Should Be

by Mark Drummond, September 2008 [with web links updated in February 2009]
[available online as Working Paper 13 via http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAI_WPs.html]

1. In 1975 and 1976, the last two years in which ACT students sat for the NSW HSC exams, the ACT students who sat for the HSC and the NSW students who sat for the HSC achieved mean (i.e. average) aggregate scores that were almost identical, but the ACT HSC completers represented 58% of the ACT age cohort in 1975 and 61% in 1976, compared to the corresponding NSW figures of 36% and 37% for NSW in 1975 and 1976 respectively (for these 1975 figures of 58% and 36% see Morgan 1978: 9).

2. Note that 58 divided by 36 is 1.61, and 61 divided by 37 is 1.65. So in 1975 and 1976, the top 16% of the ACT age cohort were achieving HSC scores reached by only the top 10% of the NSW age cohort, so a ratio of about 1.6 to 1.0 was operating. So if the UAI system now in place was in place in 1975 and 1976, then 16% of the ACT age cohort would be achieving UAIs of 90.00 and over, compared to just 10% of the NSW age cohort. And all else being equal, this pattern would still be seen today if not for the flaws in the way UAIs (and UAI equivalent percentile ranks before they were named UAIs for the first time in 1998) have been calculated (as further explained below).

3. ACT UAIs (and UAI equivalent percentile ranks before they were named UAIs for the first time in 1998) have always (i.e. ever since the ACT system was separate from that of NSW from 1977 onward) been based on the grossly inaccurate and plainly false and unfair assumption that the ACT and NSW age cohorts have been of equal ability. This inaccurate assumption followed from the grossly incorrect observation that the ACT and NSW cohorts did equally well in 1975 and 1976. The big mistake here is that the relevant authorities concluded that the ACT and NSW age cohorts were of equal ability in 1975 and 1976 in view of their mean HSC scores being very nearly equal. In other words, their big mistake was to totally ignore the obvious and huge significance of the fact that the percentage of the ACT cohort who sat for the HSC in 1975 and 1976 vastly exceeded the corresponding NSW percentages, such that ACT students were clearly a vastly stronger group of students on average. Specifically, the top 16% of the ACT age cohort were achieving HSC scores reached by only the top 10% of the NSW age cohort, as above.

4. In 1975 and 1976 the percentage of ACT kids who sat the NSW HSC vastly exceeded the corresponding NSW figure by the 58 to 36 and 61 to 37 ratios described above. But in 2007, the percentage of the ACT age cohort who obtained a UAI was only about 45%, compared to 58% for NSW. So a ratio that was about 1.6 to 1.0 in the ACT's favour in the mid 70s had now changed dramatically to be about 0.8 to 1.0 in 2007, hence in favour of NSW. So with this 1.6 figure halving to 0.8 it follows that the proportion of ACT students gaining the principal tertiary entrance score (called the UAI since 1998, as above) has halved relative to their NSW counterparts. People will argue about the causes for this dramatic reduction in the ACT system, but it's beyond doubt is that ACT kids, and their parents and schools and teachers have largely rejected this standard UAI pathway. The truth is that colleges/schools over the years have aggressively, increasingly, and always wrongly, discouraged thousands of ACT system kids from seeking UAIs. Specifically, colleges/schools have aggressively discouraged kids from attempting to sit the ACT Scaling

Test (known as the ASAT test in earlier years) required to gain a UAI if they did poorly on trial AST type tests, because the colleges/schools have been concerned that such kids would drag their UAIs down. And these kids WOULD drag college scores down. The problem is the ridiculous linkage between UAIs and the ACT Scaling Test that forces on to colleges/schools the perverse incentive to turn lots of kids away from the ACT Scaling Test and a UAI.

5. The huge mistake referred to in point 3 above would not have been a problem if the percentage of ACT kids who gained a tertiary entrance score remained much greater than that of NSW as was the case in 1975 and 1976. But as the ACT percentage has dramatically reduced compared to NSW, the assumption of equal ability of ACT and NSW cohorts has become increasingly unfair on ACT kids and has caused thousands over the years to either (1) miss uni places they should have gained altogether, or (2) gain say 2nd or 3rd preference places instead of the 1st preference place they'd have gained if not for the huge oversight here. It appears as though this problem had become very large as early as about 1980, just four or so years after the ACT system broke away from the NSW system.

6. So the problem here is that ACT kids have had their university placement opportunities savaged by a huge oversight made by people in the 1970s that has never been rectified ever since. This flaw in the system means that a typical ACT UAI of 70 should really be about 80 or higher, and a typical 85 should really be 90 or higher etc. etc. This follows from the 1.6 to 1.0 ratio described above.

7. I drew this problem to the attention of the ACT Education minister Katy Gallagher and others in 2005, and in early 2006 Jon Stanhope as Acting Education Minister (whilst Katy G was on maternity leave) said he would agree to have an independent investigation into my concerns. The authorities responsible for ACT UAIs were the ACT Board of Senior Secondary Studies and NSW Technical Committee on Scaling, so an independent investigation into my concerns obviously should have gone to someone entirely outside the fold of these two entities, but, incredibly, Chief Minister Stanhope handed responsibility for the investigation to the BSSS itself and, sure enough, this inquiry – carried out by a close friend/colleague of members of the ACT BSSS and the NSW Technical Committee on Scaling (a person very much IN the fold) – totally ignored the substance of my concerns (indeed was never even passed on the bulk of my concerns, and I was never given a chance to convey my concerns directly to this "investigator" … it was just a sham hatchet job) and found the BSSS processes to be sound. Meanwhile, ACT kids continue to wrongly miss uni places in their many hundreds each and every year in what is surely one of the biggest injustices and associated scandals in the history of education administration and public administration generally in the ACT and Australia. On a world scale this may not match the injustice of places where women can't access education at all, for example, but still: who'd have ever thought educationally advantaged ACT (i.e. by far the wealthiest and most advantaged State/Territory in one of the wealthiest countries in the world) would be home to such huge educational injustices on such a large scale?

8. Documents obtained in mid 2008 have clarified/confirmed the lack of independence and effective corruption of the investigation into my concerns that found the current processes to be valid.

# Appendix G

## Evidence of Equality Assumption Following Mid 1990s MCEETYA Agreement

compiled by Mark Drummond, as at January 2008 [available online at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/WPs/Equality.pdf]

### Table 1: Evidence of equality assumption following mid 1990s MCEETYA agreement

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
|---|---|---|---|---|
| 1970 | Sesame Street characters | Sesame Street song: 'One of These Things (Is Not Like The Others)' (available online at http://members.tripod.com/tiny_dancer/one.html) | One of These Things (Is Not Like The Others)<br>Words and Music by Joe Raposo and Jon Stone<br><br>One of these things is not like the others,<br>One of these things just doesn't belong,<br>Can you tell which thing is not like the others<br>By the time I finish my song?<br><br>Did you guess which thing was not like the others?<br>Did you guess which thing just doesn't belong?<br>If you guessed this one is not like the others,<br>Then you're absolutely...right! | One of the eight States and Territories is not like the others in terms of demographic variables (income, wealth, parental education level etc.) known to correlate with educational outcomes – i.e. the ACT!<br><br>The six States and NT are genuinely similar on average in terms of income, wealth, education levels and other similar demographic variables, but the ACT is head and shoulders above all six States and NT on average in all of these variables. ACT students are hence bound to be by far the most unfairly disadvantaged by the equivalence assumption in question here. Nobody has any legitimate excuse for failing to recognise this obvious truth. |
| 8 December 1995 | Ministerial Council for Education, Employment, Training and Youth Affairs (MCEETYA) | Summary of Outcomes of 4th MCEETYA meeting | From http://www.mceetya.edu.au/mceetya/default.asp?id=11499:<br><br>Information statement<br>4th MCEETYA meeting<br>Adelaide, 8 December 1995<br><br>State, Territory, Commonwealth and New Zealand Ministers with responsibility for Education, Employment, Training and Youth Affairs, met in Adelaide on 8 December 1995 for the 4th meeting of the Ministerial Council on Education, Employment, Training and Youth Affairs. The meeting was chaired by the Hon David Hamill, MLA, Minister for Education, Queensland. The meeting was jointly hosted by the Hon Rob Lucas MLC, Minister for Education and Children's Services, South Australia, and the Hon Bob Such MP, Minister for Employment, Training and Further Education and Youth Affairs, South Australia. The main outcomes of the meeting are summarised below.<br>...<br>Australian Tertiary Admissions System<br><br>Following agreement to the implementation of the Australian Tertiary Admissions System, Ministers noted progress with work on the benefits of and options for further integration of the admission practices of the vocational education sector and endorsed the use of the Common University Entrance (CUE) Index by tertiary admissions centres for determining interstate equivalences for university entry selection, with monitoring of methodologies to be undertaken by the Ministerial taskforce.... | The MCEETYA website provides little detail of the equivalence assumption in question here, but this extract provides some background in connection with the assumption in question. |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
|---|---|---|---|---|
| 30 April 1998 | Emma Macdonald of the Canberra Times and Selwyn Cornish of the BSSS | Canberra Times newspaper article titled 'TER Makes Way For Index In Quest For Uni Places', page 3. | Macdonald (1998: 3):<br><br>Canberra students who graduate from Year 12 this year and go on to university will no longer receive a Tertiary Entrance Rank but a Universities Admission Index. The move will bring the ACT into line with NSW, which is also changing to a UAI this year, and is part of a national agreement made by tertiary admission centres in 1995 to find a common scale which would allow comparisons across time and states by 1999. Yet in a peculiar twist, the term UAI, unlike the TER, will not be adopted nationally. Western Australia and South Australia have already changed to the uniform scale system but not the name. Victoria is likely to follow. Queensland is the only state which has no plan to implement the new scale by 1999.<br><br>According to the ACT Board of Senior Secondary Studies, the change from TER to UAI is not only in terminology but in the way the index is calculated. Board chairman Selwin Cornish said students would be ranked against their Year 10 cohort rather than just their Year 12 cohort. Previously, a student who received a TER of 80 per cent would be in the top 20 per cent of students eligible for a TER in that year. The introduction of the UAI will rank a student against the cohort who started Year 10 with them. A TER of 80 per cent will convert to a UAI of about 87 per cent. That is, the top 20 per cent of Year 12 students are in the top 13 per cent of the cohort who started Year 10.<br><br>A student with a UAI of 87 will receive the same treatment by universities in all states and territories, rather than having their scores converted by different admissions authorities. As UAI scores from 1998 will be slightly higher than TER scores up to 1997, university cut-off marks will rise comparably so that present entry standards are maintained.<br><br>Students wanting admission to university with a TER score will have their marks standardised to the new system and will not be disadvantaged. "We are following a national trend of ranking qualified students in relation to the appropriate age cohort of students completing Year 12, instead of ranking only eligible students," Mr Cornish said.<br><br>ACT students' marks have always been standardised with NSW to work out TER scores because of the similarity and interchange of students between the two systems. ACT and NSW university admissions are also handled by the Universities Admissions Centre. | This article provides further background on the introduction of the UAI system, but note that the assumption that the ACT and NSW student cohorts were of equal ability had always been in place ever since the ACT gradually broke away from the NSW system form 1975 to 1977. To the equivalence assumption that followed from the MCEETYA agreement in question merely cemented into place an assumption long in place as between the ACT and NSW for the purposes of tertiary entrance score percentile ranks. |
| 1999 | The Australian National University (ANU) | ANU Handbook 1999 as at http://www.anu.edu.au/sas/handbook/1999/General_Information.htm | Other States<br><br>Applications from school-leavers from States (or Territories) other than ACT or NSW who have met matriculation requirements within their own State, will be assessed on the basis of a minimum tertiary entrance rank as determined by the University using the conversion method developed by the National Tertiary Admissions System (NTAS) Task Force. | It is significant that this National Tertiary Admissions System (NTAS) Task Force exists (or existed in the past), but note also that the exact phrase "National Tertiary Admissions System" generates just two hits in a Google search for websites ending in .au – the one here and a second at http://www.actac.edu.au/, but this latter page only contains the phrase "National Tertiary Admissions System" as a link to a page at http://www.actac.edu.au/ntas.html which is no longer available online – this page at http://www.actac.edu.au/ntas.html was apparently taken offline some time in 2007. |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| April 1999 | Ministerial Council for Education, Employment, Training and Youth Affairs (MCEETYA) | The Adelaide Declaration (1999) on National Goals for Schooling in the Twenty-First Century | From http://www.mceetya.edu.au/mceetya/nationalgoals/index.htm:<br><br>In April 1999, State, Territory and Commonwealth Ministers of Education met as the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) in Adelaide. At that meeting, Ministers endorsed a new set of National Goals for Schooling in the Twenty-First Century. The new goals were released in April 1999 as The Adelaide Declaration (1999) on National Goals for Schooling in the Twenty-First Century.<br><br>The Adelaide Declaration (1999) arose from a Discussion Paper (1998) reviewing The Hobart Declaration (1989) and supersedes these earlier documents.<br><br>From http://www.mceetya.edu.au/mceetya/nationalgoals/natgoals.htm (last updated 28 July 1999) [emphasis added here – see items 3.1 and 3.6 near the end of the following statement]:<br><br>The Adelaide Declaration (1999) on National Goals for Schooling in the Twenty-First Century<br>...<br>Schooling provides a foundation for young Australians' intellectual, physical, social, moral, spiritual and aesthetic development. By providing a supportive and nurturing environment, schooling contributes to the development of students' sense of self-worth, enthusiasm for learning and optimism for the future.<br><br>Governments set the public policies that foster the pursuit of excellence, enable a diverse range of educational choices and aspirations, safeguard the entitlement of all young people to high quality schooling, promote the economic use of public resources, and uphold the contribution of schooling to a socially cohesive and culturally rich society.<br><br>Common and agreed goals for schooling establish a foundation for action among State and Territory governments with their constitutional responsibility for schooling, the Commonwealth, non-government school authorities and all those who seek the best possible educational outcomes for young Australians, to improve the quality of schooling nationally.<br><br>The achievement of these common and agreed national goals entails a commitment to collaboration for the purposes of:<br>* further strengthening schools as learning communities where teachers, students and their families work in partnership with business, industry and the wider community<br>* enhancing the status and quality of the teaching profession<br>* continuing to develop curriculum and related systems of assessment, accreditation and credentialling that promote quality and are nationally recognised and valued<br>* increasing public confidence in school education through explicit and defensible standards that guide improvement in students' levels of educational achievement and through which the effectiveness, efficiency and equity of schooling can be measured and evaluated.<br>...<br>3. Schooling should be socially just, so that:<br>***3.1 students' outcomes from schooling are free from the effects of negative forms of discrimination based on*** sex, language, culture and ethnicity, religion or disability; and of ***differences arising from students' socio-economic background or geographic location***<br>...<br>***3.6 all students have access to the high quality education necessary to enable the completion of school education to Year 12 or its vocational equivalent and that provides clear and recognised pathways to employment and further education and training.*** | There are lots of impressive "feel good" words here, but the poor students of the ACT have been just totally ignored and taken for granted. For ACT students schooling is NOT even close to being socially just! The schooling outcomes of ACT students generally DO suffer from negative forms of discrimination based on students' geographic location in the ACT. The ACT is the one well defined region of approximately 300,000 people, with a socio-economic status vastly exceeding that of all other States, the NT and Australia overall, whose students' tertiary entrance score percentile ranks are held down to the same distribution as that applying to the six States and the NT. |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| 2002 and 2003 | Department of Econometrics and Business Statistics, Monash University | Department of Econometrics and Business Statistics, Annual Reports, 2002 and 2003 | At http://www.buseco.monash.edu.au/depts/ebs/pubs/annual/Report2002.pdf, on page 33 [emphasis added here]:<br>R.J. Hyndman<br>Theory and Methods Editor, Australian and New Zealand Journal of Statistics.<br>Associate Editor, International Journal of Forecasting.<br>***Member, Scaling Committee, Victorian Tertiary Admissions Centre.***<br>Member, Admissions Committee, Monash University.<br>Member, Science Faculty Board, Monash University.<br>***Victorian delegate, Committee for the Interstate Transfer Index for Tertiary Admission.***<br><br>At http://www.buseco.monash.edu.au/depts/ebs/pubs/annual/Report2003.pdf, on page 39 [emphasis added here]:<br>R.J. Hyndman<br>...<br>***Member, Scaling Committee, Victorian Tertiary Admissions Centre.***<br>...<br>***Member, Interstate Transfer Index Technical Group for the Australasian Conference of Tertiary Admissions Centres.***<br>... | Shows that Monash University Professor Rob Hyndman was a member of the "Interstate Transfer Index Technical Group for the Australasian Conference of Tertiary Admissions Centres". |
| July 2003 | MCEETYA | Attachment A to a report on a MCEETYA meeting of July 2003 | At http://www.dest.gov.au/NR/rdonlyres/527EA1D8-F12F-463F-95CA-AAAC117F70A2/5171/mceetya_paper.pdf:<br><br>Page 14:<br>*Equity* in the provision of educational opportunities will be essential when determining the allocation of new places. Regional disparities in higher education participation need to be addressed where it is clear that the distribution of places is contributing to inequitable outcomes.<br><br>Page 16 [emphasis added here]:<br>University Admission Indexes<br>Final year secondary students normally apply to enter university through State-based university admissions centres. Applicants can list a number of course and institutional preferences on one application. Successful applicants generally receive one first round offer [12] from one institution. Qualification for most courses is determined by a student's University Admission Index (UAI) or equivalent and the UAI cut-off for each course[13].<br><br>The UAI cut-offs for high-demand university courses are determined by the number of places available in the course, the popularity of the course and the UAIs achieved by students wishing to enter the course. Cut-offs for low demand university courses may be determined by minimum educational standards required of students. Courses with high UAI cut-offs tend to be those where demand is significantly high. Courses with lower cut-offs tend to be those of where a greater level of demand is met by the available places. UAI cut-offs may therefore have some capacity as a readily available numeric indicator of the balance between student demand and the number of places available. Since 1998, all States and Territories, except Queensland [14], have reported overall student achievement for the purposes of university entry in some form of UAI that is directly comparable between States and Territories. That is, an ENTER of 80.00 in Victoria is directly comparable to a TER of 80.00 in South Australia. This consistency allows students to be easily assessed for entry to a university in a State other than their home State. It also allows some analysis of the level of achievement that a student requires for entry into a university in their home State, compared to a university in another State. ***Given that a large majority of students attend university in their home State, disparities between States in terms of UAI cut-offs may indicate an inequitable distribution of places for students.***<br><br>Note 13:<br>UAI used in ACT and NSW; Tertiary Entrance Rank (TER) is used in NT, SA, WA; Interstate Transfer Index (ITI) is used in Tas; Equivalent National Tertiary Entrance Rank (ENTER) in Vic; and Overall Position (OP) is used in Qld. Offers for some specialised courses or some institutions have additional criteria. For example, some institutions conduct additional testing for medicine or require the submissions of portfolios/auditions for art and music courses. Some institutions make conditional offers to students from disadvantaged backgrounds (rural, low SES etc), based on other evidence of student capacity to succeed in higher education. | Here again we see MCEETYA on the one hand promoting equity but on the other hand failing to see that one of its very own agreements has cemented in place the grossly inequitable equivalence assumption that has robbed ACT students of funded university places for so many years. |

**Table 1 (continued)**

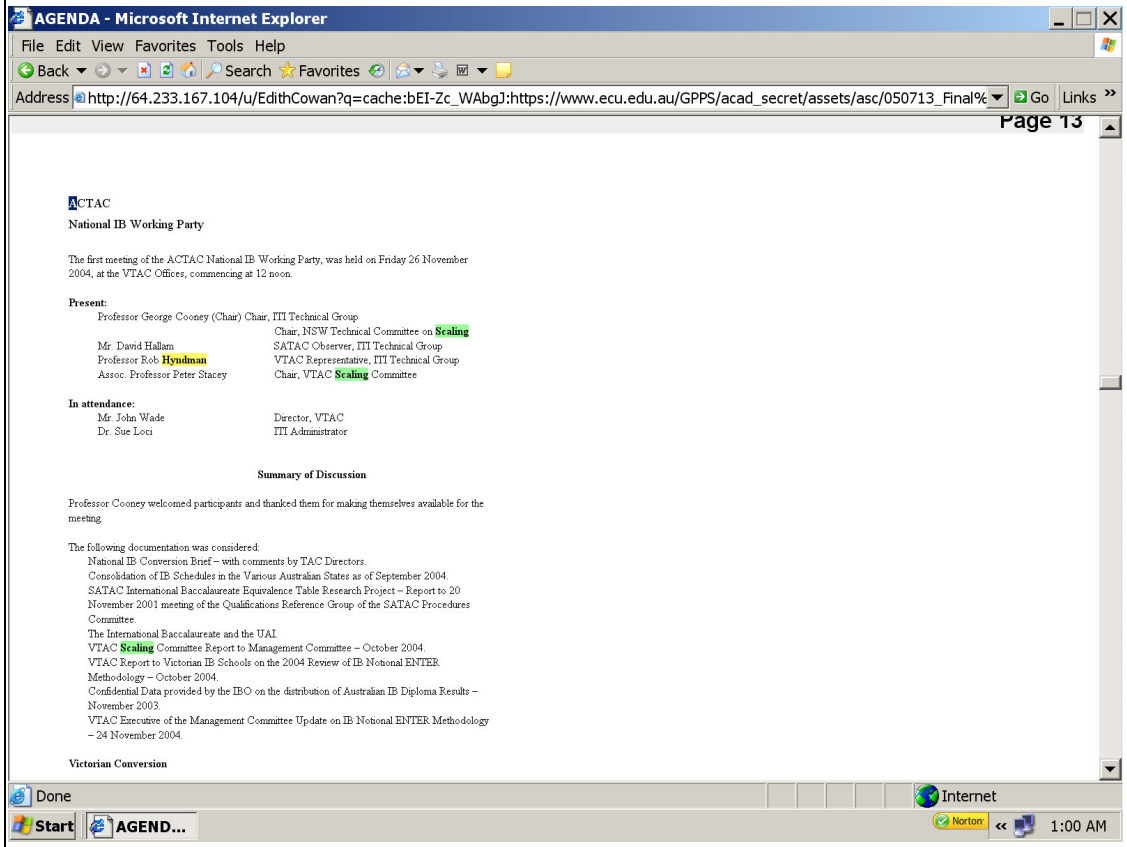
| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
|---|---|---|---|---|
| 26 November 2004 | National International Baccalaureate Working Party | Record of meeting dated 26 November 2004 which included Professors George Cooney and Rob Hyndman. | A document at https://www.ecu.edu.au/GPPS/acad_secret/assets/asc/050713_Final%20Agenda.pdf (cached version accessed via Google in March 2007; this page still shows up on Google searches as at April 2007 but the pdf file itself and the cached copy can no longer be accessed) shows that Rob Hyndman was a member of the ITI Technical Group in 2004 at a time when George Cooney was the Chairman of this ITI Technical Group, as follows:   This document also states as follows, as shown in the results of a Google search carried out on 11 April 2007: **[PDF]** *AGENDA* File Format: PDF/Adobe Acrobat **ACTAC** asked Prof **George Cooney** from Macquarie University, the Chair of the ITI Technical. Group to chair a National IB Working Party to review each of the **...** | Cooney and Hyndman have both been brought in by the ACT BSSS to do "hatchet jobs" on analyses by me (Mark D) which have criticised the ACT UAI calculation process. It seems clear to me (Mark D) that George, Rob and others are upset with me because I have been able to identify serious technical flaws which they themselves overlooked despite their heavy involvement in the processes used to calculate not only UAI scores (and their equivalents) but also the Interstate Transfer Indices that were supposed to improve interstate cross-border transferability of tertiary entrance scores. I didn't even know who these guys were until I received copies of the dishonest and incompetent hatchet jobs on my criticisms the BSSS had them do! It was never my original intention to set out to criticise these individuals for their technical mistakes, but I'm not prepared to see students continue to wrongly miss out on funded uni places because these high ranking academics lack the integrity and backbone to own up to the technical errors they have been responsible for! |

**Table 1 (continued)**

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|---|---|---|---|---|
| 9 November 2005 | ACT BSSS Executive Officer Bob Edwards | Email to Mark Drummond | From: Edwards, Bob<br>To: Mark Drummond<br>Sent: Wednesday, November 09, 2005 4:35 PM<br>Subject: RE: Recommend the BSSS set the ACT system wide median UAI to 84 instead of 76 or so<br><br>Mark<br><br>There is an assumption that all states are equal in the UAI processes. ... Dr Daley has examined the equivalence with NSW and has agreed with the current outcome.<br>... | Dr Daley is largely responsible for the whole ACT UAI calculation system. If he acknowledged the full extent of the problem now he'd in effect have to admit that he has failed to address such problems for more than two decades! It is ridiculous that the ACT BSSS and ACT Government continue to seek advice from Dr Daley on Dr Daley's very own UAI calculation model. |
| 21 December 2005 | Mark Drummond | Letter to editor published in Canberra Times, page 20. | Year 12 results are out again So what do they reveal? Firstly, whereas about 60 per cent of the NSW Year 10 cohort from 2003 went on to achieve a University Admission Index (UAI) in 2005, in the educationally advantaged ACT less than 55 per cent of the Year 10 cohort of 2003 attained a UAI in 2005. As the Times article shows, in 11 ACT colleges awarding 1934 Year 12 certificates, there were no students who reached a UAI of 99.00, nor even 98.60, whereas 2.2 per cent of NSW UAIs are 98.60 or higher. So we'd expect from these 11 ACT colleges about 48 UAIs of at least 98.60 (48 being 2.2 per cent of 2200, where 2200 is an estimate of the Year 10 cohort corresponding to the 1934 students achieving Year 12 certificates) if their students merely matched NSW averages. The outcome that no student at any of these 11 colleges reached a UAI of 98.60 would be less likely than 1 in 10 to the power of 21 if these students merely matched their NSW counterparts on average, and even more unlikely given the ACT's educationally advantaged demography. These comparisons have rung loud alarm bells for many years, revealing a subtle but immense "border anomaly" which has wrongly denied a funded university place to between 5000 and 10,000 ACT students since the late seventies when the ACT system broke away from NSW - including another 300 or so this year unless the accountable authorities do something about it!<br>Mark Drummond, Kaleen | Comparisons like these here made it clear that there had to be a technical flaw that was systematically dragging down the UAIs of nearly all ACT students at nearly all ACT colleges. No honest, competent mathematician could fail to acknowledge the legitimacy of the observations I (Mark D) make here. |
| 27 March 2006 | Geoff Masters, Margaret Forster, Gabrielle Matters and Jim Tognolini | Report commissioned by the Commonwealth Government titled 'Australian Certificate of Education: exploring a way forward' (available online via http://www.dest.gov.au/sectors/school_education/publications_resources/profiles/australian_certificate_education.htm) | Masters et al. (2006: i):<br>The desirability of greater consistency in senior secondary arrangements across Australia was discussed by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) in July 2003. The idea of a nationally consistent 'Australian Certificate of Education' for the senior years of school was canvassed by the Australian Government in its 2004 discussion paper Taking Schools to the Next Level. Later that year, in its election policy for school education Higher Standards and Values in Schools, the government indicated its intention to 'work with State and Territory Ministers to begin the work towards implementing an Australian Certificate of Education'.<br><br>In May 2005 the Department of Education, Science and Training commissioned the Australian Council for Educational Research (ACER) to investigate and report on models and implementation arrangements for an Australian Certificate of Education (ACE). In particular, ACER was asked to investigate four options for the introduction of a new certificate.<br><br>Masters et al. (2006: 86 [emphasis added here]):<br>Finally, the availability of a national Key Capabilities Assessment opens up the possibility of improving attempts to make ENTER scores comparable across states and territories. ***Currently, the statistical process used in the equating makes an assumption that the distribution of student achievements is the same in all jurisdictions. This assumption is implausible given other evidence of between-state differences (eg, PISA) and is almost certainly introducing a bias into the process.*** | As per the emphasised passages from page 86 here, the equality assumption here is obviously implausible and obviously provides biases, and these biases are bound to unfairly disadvantage the ACT much more than any other State or Territory. |

**Table 1 (continued)**

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|---|---|---|---|---|
| April 2006 | Professor Rob Hyndman of Monash University | Report commissioned by the ACT BSSS under direction from Acting Education Minister Jon Stanhope in late 2005: Hyndman R. (2006a), *Review of ACT University Admission Index Calculation: Report for ACT Board of Senior Secondary Studies*, Monash University. Melbourne, April 2006. | Hyndman (2006: 2):<br>In this report, I review the calculation of University Admission Indexes (UAIs) in the ACT and the procedures used to relate ACT UAIs with NSW UAIs. In particular, I review the claims of Mr Mark Drummond about the fairness of these procedures.<br><br>Hyndman (2006: 2-3 [emphasis added here]):<br>For the 2504 UAI-eligible students [in 2005], the following procedure was followed:<br>1. Each college calculates a score for each student completing a "T course".<br>2. The BSSS scales the college course scores using the ACT Scaling Test results to give statistically moderated scores known as "scaled scores".<br>3. For each student, the aggregate score is equal to the sum of their best three scaled scores plus 0.6 of the next best scaled score. (All scaled scores must be from T courses.)<br>4. Students who have completed the ACT year 12 certificate and at least one tertiary subject, but who have not received an aggregate score, are given a notional aggregate score.<br>5. Students with aggregate scores or notional aggregate scores are given a percentile rank based on their scores.<br>***6. For eligible students, these percentile ranks are converted to UAIs using the same conversion table as for NSW TERs to UAIs.***<br>The criticisms surrounding the calculation of the ACT UAIs primarily concern Step 6 above, and so this step is the focus of the rest of my report. I do not consider Steps 1–5 further.<br><br>Hyndman (2006: 4):<br>Because there are no comparable Year 10 results available for the ACT, the TER-UAI conversion in the ACT is the same as that for NSW, where the percentile rank (TER in the above equation) is based on students with aggregate scores and those with notional aggregate scores.<br><br>By using the NSW conversion table based on equation (1), the following implicit assumptions have been made:<br>1. the age cohort in the ACT has the same distribution of ability as the age cohort in NSW;<br>and<br>2. the Year 12 students receiving an aggregate or notional aggregate score have the same distribution of ability as the students receiving a UAI in NSW.<br>It is these assumptions that Mr Drummond is questioning. In his various emails, he alleges either that the age cohort in the ACT is different from the age cohort in NSW, or that the population of the ACT receiving either an aggregate or nominal aggregate score is different from the population of NSW who receive a UAI.<br><br>Hyndman (2006: 5-6 [emphasis added here]):<br>The ACT experiences greater immigration of students in years 11 and 12 than do other states. So the age cohort of students is trickier to define than it is in states with more stable residential populations. Nevertheless, ***there is some statistical evidence that the age cohort in the ACT is relatively similar to that in NSW***. The "participation rate" (the proportion of the age cohort receiving a UAI) in the ACT for<br>2005 is 55.7%. The participation rate in NSW was 57.0%. In comparison, the only other state with a participation rate between 50 and 60% was South Australia with 53.3%. Victoria had a participation rate of 65.5% in 2005. The differing participation rates between states has been shown (Hyndman, 2005, 2006) as the major contributing factor to the different state conversion tables. ***This suggests that the NSW age cohort is quite similar to the ACT age cohort in terms of their propensity to undertake preparation for tertiary education.*** | In relation to the six steps Hyndman (2006: 2-3) acknowledges, I (Mark D) have no doubt that Steps 2, 4, 5 and 6 are all very badly flawed, but YES Step 6 – because it sets the entire UAI distribution for ACT system students, is the one that I have focused on most recently (Step 2 though is almost as bad as Step 6 in terms of technical incompetence and injustices created!).<br><br>Yes, of course I (Mark D) have challenged the obviously implausible assumption that "the age cohort in the ACT has the same distribution of ability as the age cohort in NSW"!!<br><br>The passages from pages 5 and 6 here that are emphasised are probably the most treacherous ones in this appallingly incompetent and dishonest paper by Rob Hyndman. The extract from pages 5 and 6 here are riddled with numerical errors: the 55.7% for the ACT should be about 45% and the 57.0% for NSW should be 60%; the true would ring loud alarm bells that even a grossly dishonest report like Hyndman's here would be compelled to address – i.e. how could it be that a part of Australia with a socio-economic status that is vastly higher than that of NSW and the other States and Northern Territory have UAI (or equivalent) participation rates that are much lower than that of NSW, VIC etc.? Hyndman's incompetence "helps" him to arrive at absurd conclusions that really are a huge kick in the guts to all ACT students and indeed the entire ACT senior secondary system – but the BSSS and ACT Government have been too stupid and dishonest to realise and admit to this plain truth! |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
|---|---|---|---|---|
| 2006 | Professor Geoff Masters CEO, Australian Council for Educational Research | Journal article: Masters, G. (2006), 'The Case for an Australian Certificate of Education', *International Education Journal*, Vol. 7, No. 6, pp. 5-10. | Masters (2006a: 7 [emphasis added here]):<br><br>There is also very little information about how standards compare across Australia. Part of the reason for this is that there is no way of comparing performances in a subject such as Accounting across state boundaries. A mark of 85 in one state does not necessarily represent the same level of achievement as a mark of 85 in another. While some states report results as marks out of 100, others provide marks out of 50, and still others report in terms of a small number of achievements levels. Currently there is no way of comparing a 'Band 6' performance in NSW with a 'Very High Achievement' in Queensland or a mark of 40/50 in Victoria. Some employers told us that they find these differences confusing.<br><br>***For students wishing to enter university, an attempt is made to provide nationally comparable tertiary entrance ranks (ENTER scores). But the process used to do this makes the assumption that students in each state or territory have the same overall distribution of achievement: a necessary but dubious assumption in the light of other evidence about interstate differences.*** Some university selection officers now believe that students from some states are less well prepared than their ENTER scores suggest. | YES: dubious to the point of absurd, but certainly not necessary – would the parents of students on Sydney's North Shore or in Melbourne's eastern suburbs, or with kids in selective schools or expensive private schools accept that it was ":necessary" to assume that their children were merely equal in academic ability to the relevant State or Territory wide average? |
| Autumn 2006 | Geoff Masters (as at http://cmslive.curriculum.edu.au/leader/abstracts,58.html?issueID=10252) | Journal article and other similar papers, all similar to that cited directly above: Masters, G. (2006), 'The Case for an ACE', *EQ Australia*, Autumn 2006, pp. 12-14. | Masters (2006 [emphasis added here]):<br><br>***Even the ENTER scores, used to provide nationally comparable tertiary entrance ranks, require the 'necessary but dubious assumption' that each State and Territory has the same distribution of achievement.***<br><br>See also at www.acer.edu.au/resdev/16_ACE.html [emphasis added here]:<br>For students wishing to enter university, an attempt is made to provide nationally comparable tertiary entrance ranks (ENTER scores). But ***the process used to do this makes the assumption that students in each state/territory have the same overall distribution of achievement: a necessary but dubious assumption in the light of other evidence about interstate differences.***<br><br>And at http://ehlt.flinders.edu.au/education/research/Docs/FUIIE_SAIER_Seminar_2_MASTERS.pdf [identical to Masters 2006a as above]:<br>For students wishing to enter university, an attempt is made to provide nationally comparable tertiary entrance ranks (ENTER scores). But the process used to do this makes the assumption that students in each state or territory have the same overall distribution of achievement: a necessary but dubious assumption in the light of other evidence about interstate differences. | Masters largely repeats the claims made by he and others (see entry directly above here) in several other papers in 2006. |
| November 2006 | Dr Daryl Daley | Paper prepared for the ACT BSSS titled 'Relating ACT and NSW UAI populations via PISA and other scores' | Daley (2006: 2):<br>***This assumption of the equivalence of Year 10 populations in different parts of Australia in terms of their academic performance, was the basis of an agreement between the states c.1995 to provide comparability of Tertiary entrance ranks for immediate school leavers across the different state systems, despite the assumption being mostly untested and largely unquestioned.*** It is arguable that detailed academic comparability is not necessary within a system where education, when regarded as a community asset and service, is a responsibility of the region (state) it is serving and not the Commonwealth. Nevertheless, it would appear to be a self-evident principle that within Australia, a student's tertiary entry credential should be acceptable on the same terms both within and beyond the region where it is issued. | YES it would indeed "appear to be a self-evident principle that within Australia, a student's tertiary entry credential should be acceptable on the same terms both within and beyond the region where it is issued." |
| 21 November 2006 | Commonwealth Education Minister Julie Bishop and her Senior Adviser Darren Brown | Letter of two pages from the Office of Julie Bishop to Mark Drummond | Page 1 [emphasis added here]:<br>The Minister believes that the current processes for the calculation of tertiary entrance ranks (TERs) across the states can be improved. ***Currently, the statistical process used in equating TERs makes an assumption that the distribution of student achievements is the same in all jurisdictions. This assumption is implausible.*** | Minister Bishop was clearly correct on this matter. |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| 31 December 2006 | Mark Drummond | Letter to editor published in Canberra Times, page 15. | Raw score deal for ACT [emphasis added here]<br>Elizabeth Bellamy reports ("New UAI system lifts our students", December 20, p5) that 2431 ACT Year 12 students received Universities Admission Indices this year and 62 achieved UAIs exceeding 99.00. But if the ACT UAI determination process was competent there'd have been about 120 UAIs exceeding 99.00, rather than just 62, which would merely bring the ACT into line with the UAI outcomes of the districts in Sydney and Melbourne with overall socio-economic status comparable to that of the ACT. In other words, an ACT student receiving a 98.00 this year should actually receive about a 99.00; a 90.00 should be about 95.00; 80.00 should be about 90.00, and so on. ACT UAIs have been much lower than they should have been and grossly unfair for the vast majority of ACT kids at least since 1998 because of an extraordinary blunder which the ACT Board of Senior Secondary Studies and recent Labor ministers have essentially swept under the carpet and closed ranks on despite sustained protests by myself and others over recent years. ***As at www.actac.edu.au/ ntas.html, the Ministerial Council on Education (MCEETYA) in 1997 adopted a scheme which "facilitat(ed) an equivalence" in UAI outcomes "between states/ territories". Year 12 students in Sydney's north shore and Melbourne's eastern suburbs certainly aren't subject to this ridiculous and incredibly damaging "equivalence" assumption, and the restriction on high-range UAIs it imposes, and neither would ACT kids if our Education Minister took time out from closing schools to legitimately and effectively go into bat for our kids on this issue.***<br>Mark Drummond, Kaleen | The website at www.actac.edu.au/ ntas.html was taken down shortly after this letter appeared and I otherwise drew people's attention to it, possibly in connection with the mention of Tim Brown's involvement on this web page (see entry directly below) and my contention that Tim Brown's conflict of interest here (defending a system he largely created) was hampering efforts to resolve problems with ACT UAIs. |
| Until 2007 | The Australasian Conference of Tertiary Admission Centres (ACTAC) | Summary of the National Tertiary Admissions System | From http://www.actac.edu.au/ntas.html (before this page was taken offline some time in 2007 [emphasis added here]):<br><br>National Tertiary Admissions System<br>In 1995 the Ministerial Council on Education, Employment, Training and Youth Affairs (MYCEETYA) accepted a report from its taskforce on a national tertiary admissions system which established core elements of a national system as detailed below.<br><br>This system is administered through ACTAC, the Australasian Conference of Tertiary Admissions Centres, which conference comprises all state-based admissions centres, the University of Tasmania, Charles Darwin University and the New Zealand Qualifications Authority.<br><br>Common dates:<br>The last working day in September for the submission of on-time applications.<br><br>Agreed dates in January for the publication of, and response to, main round offers such that applicants who have applied in more than one state/territory are not required to respond until all main offers have been made.<br>Release of year 12 results:<br>The agreed latest target date for release of results to students was set at the first working day of January. The purpose of this element is to ensure a reasonable period for applicants to change their preferences prior to main round offers. Results are released in all states/territories, as a matter of course, in December.<br><br>***National approach to the calculation of tertiary entrance rank equivalences across states in 1997:***<br><br>***This was achieved by instituting a methodology which converts each state's/ territory's measure of overall achievement into a rank representative of the whole relevant age group (16 - 20 year-olds) rather than year 12 candidates, thus facilitating an equivalence, both between states/territories and over years. This rank, the Interstate Transfer Index, ITI, has been adopted by all states/territories, except Queensland, and is their TER,/ UAI/ ENTER. A description of this methodology is outlined below.***<br><br>***This methodology, which is based on the relationship between a rank in the whole population and the probability that an individual is a*** | The "national group of technical experts" referred to here appears to be the "Interstate Transfer Index Technical Group" chaired by Macquarie University's Professor George Cooney (see entries within this compilation dated "2002 and 2003" for Rob Hyndman, June 2007 for George Cooney, and 26 November 2004 for both George and Rob).<br><br>See reference to Professor Tim Brown towards the end here. |

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| | | | ***candidate, was adopted by the taskforce in May 1997 and is formally monitored by a national group of technical experts reporting to ACTAC.***<br><br>***This group has also developed for ACTAC a common table for converting IB results into local measures of overall achievement which will be used by the majority of states/territories for 2008 admissions.***<br><br>Eligibility of interstate applicants:<br><br>The notion of 'home state rule' was adopted meaning that an applicant deemed eligible for university entrance in their home state/territory is automatically eligible nationally subject to TER and individual course requirements. Admissions centres refer to tables of interstate subject equivalents so that interstate applicants are not disadvantaged where institutions have established prerequisites at course level. Some centres also include subjects completed interstate in local measures of overall achievement calculations where appropriate arrangements have been made with certifying authorities to convert those subjects into local scores.<br><br>ACTAC also coordinates the following functions which underpin the successful operation of the national system:<br>Exchange of year 12 results:<br><br>Each state's and territory's year 12 results and overall measures of achievement are annually transferred to a national data base so that current, and prior year, applicants can be automatically considered without any action required by individual interstate applicants.<br>Exchange of university transcripts:<br><br>A national system of automatically accessing university data bases and transferring records for non-year 12 (ARTS) has been in operation since 1996/97. Approximately 90,000 records are transferred electronically between admissions centres each year.<br>Special Tertiary Admissions Test National database:<br>...<br>National approach to the calculation of tertiary entrance rank equivalences across states/territories in 1997 – methodology<br><br>The original proposal, as endorsed by MCEETYA, was a theoretical model to obtain the table of equivalences. However, the availability and analysis of various data sets that have subsequently become available has resulted in the use of a more empirically based methodology.<br><br>Analysis of the available data sets indicated that the assumption of the original proposal, namely that an age-cohort rank ie a ranking based on the numbers in each state's/territory's underlying age cohort was applicable to the top 20% of candidates was invalid, and that the participation rate ie the number of students from each state who attain the measure of overall achievement, had an effect on the degree to which the age-cohort rank was suitable.<br><br>It is now evident that participation rates vary considerably between the states/territories, from a low of about 30% to a high of about 90%. It has also been shown that participation rates can vary within regions of one state/territory, between genders, and between years.<br><br>Taking account of different participation rates is an essential element of the methodology, as the reasons for the variation in participation rates include the differing education systems in the different states/territories.<br><br>***The methodology for incorporating the participation rate and obtaining a smooth curve for the state TER to ITI, as originally suggested by Professor Tim Brown, was based on the NSW data available.*** The smooth curve was suggested when the actual year 12 ranks of the NSW students were mapped against the ranks of the same students in the entire year 10 population. This mapping indicated a smooth nature of variation of participation rate (matriculation percentage) to ITI, and also that the matriculation percentage was not constant over any appreciable range at the top of the matriculation percentage range. When the matriculation percentage rate was transformed logistically to obtain the logits (the natural logarithm of the ration of participants in year 12 to non matriculants for that particularity), it was found that the scatter plot of logits versus actual score exhibited a high degree of linearity, suggesting a regression line could be found. The regression line was originally determined using weights proportional to the number of students getting each score, but could equally be determined by logistic regression. This basic approach was successfully used (by New South Wales/Australian Capital Territory, Queensland, Victoria and South Australia/Northern Territory) for participation rates above 50%, and could be modified (as for Western Australia) for participation rates below 40. Fortunately, the state with the lowest participation rate of 30%, namely Tasmania, was able to find an alternative methodology based on the empirical data available to it. | |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| 28 April 2007 | Emma Macdonald of the Canberra Times | Canberra Times article by Emma Macdonald titled 'Swap UAIs for national assessment: academic', page 5. | [Emphasis added here]<br>A Canberra academic who has been waging a one-man battle to have the ACT system of university entrance scores overhauled, says the fairest way to calculate ACT Year 12 results would be scrap the ACT Universities Admissions Index altogether in favour of national assessment. A national university entrance system rather than the current set of state and territory marks also appears to have in-principle agreement from both the Board of Senior Secondary Studies which is in charge of calculating the ACT UAI, and the chief executive of the ACT Department of Education, Michele Bruniges. A maths teacher at the Canberra Institute of Technology, Mark Drummond, who recently submitted his PhD thesis on government structure reform within the University of Canberra's Centre for Research in Public Sector Management, has spent five years lobbying the ACT Government to change the way the ACT UAI is calculated.<br><br>Currently, the Board of Senior Secondary Studies moderates ACT student results against those of NSW, a system Mr Drummond says is flawed because ACT students have the highest socio-economic status of all states or territories, yet their scores have been dragged down to equate with those of NSW. He said ACT students would, as a group, achieve "vastly higher scores than they have in the past three decades in a national system or any fair and competent system". An investigation into Mr Drummond's concerns last year by Australian National University mathematician Daryl Daley recognised "the average ability of the ACT population is almost certainly above the average ability of NSW students" and UAIs were adjusted up by 1 to 2 per cent. ***Mr Drummond said the reforms did not go anywhere near far enough and the fairest way ACT students and their state counterparts could be ranked for entrance to university was to "fully break the assumption of state/ territory equality that is especially damaging to ACT students"...*** | |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| 28 April 2007 | Emma Macdonald of the Canberra Times | Canberra Times article by Emma Macdonald titled 'Swap UAIs for national assessment: academic', page B5. | FOR THE past five years, Mark Drummond has been waging a one-man war against the ACT's system of allocating university entrance scores. As the holder of three bachelor degrees (two with first-class honours and University Medals in applied maths and mechanical engineering), one DipEd, an MBA and a Masters in public policy and management, Drummond can plot a statistical curve with natural ease. But ***he has grave concerns about the way in which ACT college students have had their scores calculated on the assumption that their academic performance equates to that of students in NSW, despite the fact that the ACT's socio-economic status is the highest by far of the eight states and territories***, and their academic performance is correspondingly superior. ***The current system, Drummond says, has artificially dragged down the university admissions scores of nearly all ACT students for the past three decades. He says it would make more sense to align Canberra students with those in Sydney's North Shore for the purposes of moderation, rather than the entire state of NSW.*** It is a problem partly resulting from the states and territories having individual responsibility for calculating their own university entrance scores as well as having individual Year 12 systems. The ACT's particularly perplexing system is a hangover from 1976 when the ACT broke away from NSW abandoning the Higher School Certificate in favour of two years of continuous assessment at unique college campuses. ***While the system was fine-tuned in 1997, the NSW equalisation component remains.*** Drummond, who has become increasingly vocal in his calls for a complete overhaul of the ACT Universities Admissions Index (UAI) calculation process, has been joined in recent years by disgruntled parents, also increasingly frustrated by the convoluted way in which scores are calculated. He believes the system developed by the ACT's Board of Secondary Senior Studies and delivered through the ACT Department of Education has robbed as many as 50,000 ACT students of valuable university entrance scores since its inception, and that up to 10,000 of these students have missed a funded university place as a result. "It is a mongrel of a scaling system that is completely incompetent and downright cruel in many cases," he says. He says also it has major implications when it comes to students vying for university places in competitive courses where missing one-tenth of a point can mean the difference between missing out on Law and having to do Arts or missing out on Medicine and having to do Science. Even middle-ranking scorers are affected when their results don't get them into the Australian National University or University of Canberra and they have to move interstate to a regional university with a lower cut- off. And, of course, valuable scholarship money is also awarded according to scores and Drummond believes ACT students have unfairly missed out. Some also face up-front fees they would otherwise avoid. He believes an ACT student receiving 98 should actually receive about a 99, a 90 should be about 95, 80 should be about 90, and so on. Last year, in direct response to his concerns, the ACT Government commissioned Monash University statistician Professor Rob Hyndman to review the system. Hyndman has been closely involved with the Victorian Tertiary Entrance Score and Admissions systems and the cross-border Interstate Transfer Index system a background Drummond says amounts to a conflict of interest in that Hyndman is "very much a part of the current system". Indeed, Hyndman found no significant problems with the ACT's dependence on NSW scaling data. But he conceded the situation was "not ideal" and warranted further monitoring. The Board of Senior Secondary Studies then commissioned a second review last year by ANU mathematician Daryl Daley. He was more forthright in recognising the ACT's privileged educational status was not comparable with NSW. Daley analysed the 2003 Program for International Student Assessment exams on a state and territory basis the first time such information was made available by the Australian Council for Educational Research. He found ACT students performed better than almost all of their state and territory counterparts when it came to maths, reading, science and problem-solving, and generally were academically superior to their NSW classmates. As a result, UAIs were recalibrated last year to be between 1 and 2 per cent higher than the year before. It was a small vindication for Drummond, but one which he says does not address fundamental flaws in the system, much less raise ACT students' UAIs to their rightful place. The chair of the ACT Board of Senior Secondary Studies and Dean of the College of Science at the ANU, Professor Tim Brown, concedes there are some difficulties in formulating an ideal system which accurately assesses the range of abilities from students across eight states and territories and then assigns them with a nationally consistent ranking. "At the beginning of the 1990s there was no system for exporting a Tertiary Entrance Rank from one state to another we had a whole lot of unilateral arrangements with each state authority having its own way of interpreting the ranks coming in from the other states," he says. "Often those methods were conflicting with some extreme assumptions being used. Theoretically, you could get a score in one state, take it to another, then export it back to the first and get a completely different number." ***By 1997, the states and territories agreed on a national method for importing and exporting ranks across borders with "a presumption that the gross features of the system gave equal success for predicting tertiary success from the different states and territories".*** Brown wrote the computer program for the new system, saying it vastly improved on the chaos of before, while realising it is a long way from a truly unified national system. "It is a way of taking account of different levels of participation at Year 12 in different states, but it is not a definitive solution because the translation is not based on common performance or aptitude testing of students in Year 12," Brown says. | |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| 2 May 2007 | Professor Tim Brown | Letter to editor published in Canberra Times, page 10. | Students fair well<br>Mark Drummond and members of the Legislative Assembly ("One man fights for a better deal on ACT uni entry", April 28, pB5) claim ACT students are disadvantaged in tertiary entrance because their University Admissions Indices (UAIs) are equated with those of NSW students. This claim has never been true: in 2006 the middle UAI of ACT students was 10 higher than the middle for NSW students! The meshing of UAIs for NSW and ACT students is based on a comparison of ACT and NSW students in a common academic test. The ACT community can be confident that ACT students are fairly treated compared to NSW students.<br>Professor Tim Brown, Chair, ACT Board of Senior Secondary Studies and Dean, College of Science, Australian National University | Tim Brown's claim that "this has never been true" is absurd in light of the equivalence assumption that has clearly been in place and widely acknowledged by everyone who knows the truth of the matter – as in most entries in this compilation here!! |
| 7 May 2007 | Mark Drummond | Letter to editor published in Canberra Times, page 8. | Unfair to students<br>Chair of the ACT Board of Senior Secondary Studies Professor Tim Brown (Letters, May 2), uses the fact that "in 2006 the middle UAI of ACT students was 10 higher than the middle for NSW students" to support his claim that it "has never been true" that "ACT students are disadvantaged in tertiary entrance because their University Admissions Indices are equated with those of NSW students". Professor Brown does not acknowledge, however, that NSW UAI attainers in 2006 represented 60 per cent of their age cohort, compared with about 42 per cent for the ACT system. So with half of 60 being 30, half of 42 being 21, and 30 minus 21 being nine, about nine of the 10 point difference Professor Brown relies upon can be explained by the vastly different UAI participation rates of the ACT and NSW. The other one out of 10 difference can perhaps be explained by the minor tinkering that very slightly elevated ACT UAIs for the first time in 2006 (as reported in The Times by Elizabeth Bellamy in December 2006 and Emma Macdonald on April 28, 2007), but it remains, even after this minor tinkering, that students in the Melbourne and Sydney districts with socio-economic status comparable with the ACT achieve high range UAIs or equivalent percentile ranks (99+, 95+, 90+ etc) at about twice the rate of their ACT counterparts. When will the board and the ACT Labor Government acknowledge the obvious problem here and fairly treat our children?<br>Mark Drummond, Kaleen | |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| June 2007 | Governor General's Office | List of people awarded AMs in 2007 Queen's Birthday Honours | At http://www.gg.gov.au/res/File/PDFs/honours/qb07/Media%20notes%20AM%20(A-L).pdf, on page 56 [emphasis added here]:<br><br>MEMBER (AM) IN THE GENERAL DIVISION OF THE ORDER OF AUSTRALIA<br>Professor George Henry COONEY, 90 Mitchell Street, Croydon Park NSW 2133<br>For service to secondary education, particularly through contributions to scholarship, research and policy development in the areas of curriculum, educational testing, and standards based assessment.<br>Current Professor of Education, Australian Centre for Educational Studies, Macquarie University.<br>Patron and benefactor, Professor George Cooney Scholarship, since 2004.<br>Director Teacher Education Program, 1993-2000.<br>***Current Member, Accreditation Panels, New South Wales Vice Chancellors Committee.***<br>Adviser, School Partners Program, since 1999.<br>Expert Adviser to School Partners Program since 1999; facilitates links between the University and over 60 member schools; voluntarily visits program member schools to assist staff, students and parents to understand university entrance scores.<br>Extensive involvement with the Gifted and Talented Program (recently launched).<br>Recent Presenter, fairer assessment procedures to Beijing Education Authorities, China.<br>Chair of Education, 1993.<br>New South Wales Department of Education and Training<br>***Chairman, New South Wales Technical Committee on Scaling (responsible for the calculation of the Universities Admission Index), since 1977***; appointed to conduct an independent review of New South Wales Student Assessments, 2005 (Interim report released 2006).<br>***Current Chairman, Interstate Transfer Index Technical Group; responsible for ensuring each state's methodology adheres to the agreed principles for calculation of the index.***<br>Board of Studies New South Wales<br>Long-standing Member, Technical Advisory Committee; advises the Board on statistical issues associated with scaling and assessment moderation procedures.<br>Member, Higher School Certificate Consultative Committee (responsible for determining results that are reported to students), for approximately 25 years; Auditor, Higher School Certificate results (prior to release to students), since 1996.<br>Adviser (curriculum development and assessment matters in secondary education and the process to determine University Admission Index), since 1990s; Senior University Member, Assessment Committee, since 1990.<br>Key role in Introduction of the New Higher School Certificate Scaling System, 1977.<br>Member Evaluation Team, 2006 National Literacy and Numeracy Trial, Department of Education, Training and the Arts, Queensland.<br>***Advises and assists, University Admissions Index Enquiry Centre, University Admissions Centre (following the release of University Admissions Index each year).***<br>Statistical Expert, Consultant and mentor to staff of the Educational Measurement and School Accountability Directorate, voluntary capacity.<br>Research Fellow, Edinburgh University, 1988; Princeton University, 1980.<br>Author and co-author to many research papers in diverse fields.<br>Current Parish Warden, Service Leader and Lay Preacher, Anglicans of Enfield; former Synod representative, Council Member, Church Warden, for approximately 40 years.<br>President, Rotary Club of Burwood; various Board roles, for approximately 15 years.<br>Awards include:<br>Paul Harris Fellow, Rotary Club of Burwood. | Shows that Professor George Cooney is the current chairman of the Interstate Transfer Index Technical Group as well as the chairman of the NSW Technical Committee on Scaling. This also shows that George is a member of the NSW Vice Chancellors Committee and someone who advises and assists for the University Admissions Index Enquiry Centre, which is part of the University Admissions Centre. |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
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| December 2007 | Question by Mrs Vicki Dunne MLA dated 14 November 2007 (see www.parliament.act.gov.au/downloads/notice-paper/06NP118.pdf) and response by ACT Education Minister Andrew Barr on 14 December 2007. | ACT Legislative Assembly Question Number 1763, especially Parts (3), (4), (6), (7) and (8) | From http://www.parliament.act.gov.au/downloads/notice-paper/06NP118.pdf (Hansard pages 2077-2079):<br>*1763 MRS DUNNE: To ask the Minister for Education and Training—<br>(1) Further to the reply to question on notice No 1662 in relation to the process used by the ACT Board of Senior Secondary Studies (BSSS) to calculate ACT Universities Admission Indices (UAIs) as set out in the current 2007 edition of the BSSS Policy and Procedures Manual (the Manual), given that in part (7) of the answer the Minister confirmed that notional aggregates are now determined for students who do not complete Year 12 can he (a) explain why the 2007 edition of the Manual does not mention the changes based on the use of Program for International Student Assessment (PISA) results for the first time, (b) confirm that the use of PISA results in the UAI calculation process is explained in an addendum and (c) make the 2007 Manual addenda publicly available noting the password protection currently set via <http://www.bsss.act.edu.au/publications/operational_resources>;<br>(2) Did the NSW Scaling Committee Table used to determine ACT UAIs need to be modified as a result of the use of PISA results in the 2006 UAI calculation process; if so, how and on what publicly available document is the rationale for such changes documented;<br>(3) Did the report by Dr Daley which led to the changes acknowledged in the reply to question on notice No 1662 part (7)(a) state that up until 1976, ACT school students seeking tertiary admission took the NSW HSC examination, and so gained tertiary admission qualifications on the same academic footing as their NSW contemporaries and in terms of academic performances (i.e. educational measurements), the distribution of HSC aggregate scores of the ACT students was effectively the same as the distribution of their NSW contemporaries [these observations are due to Morgan for 1975 data, and Daley's analysis of 1976 HSC results supplied by Mitchell] and that in other words, the selection mechanism by which students sought a tertiary admission credential in NSW and the ACT, produced across NSW on the one hand and within the ACT on the other, two candidatures of approximately the same spread of academic ability, notwithstanding the higher proportion of the age cohort (about 45%) in the ACT compared with about 30% in NSW;<br>(4) Noting the quote from Dr Daley's report as above – especially the 45% and 30% figures in the last sentence – and the Minister's answer to Estimates Question E07/160 and the 1978 report by Douglas Morgan which you acknowledged in your response to E07/160 (especially the 58% and 36% figures therein), wasn't it the case in 1975 and 1976 that (a) about 30% of the ACT age cohort achieved HSC aggregates reached by only 20% of the NSW age cohort, and, in view of this ratio of 30 to 20 or 1.5 to 1.0 or so and (b) the distribution of HSC aggregate scores of ACT students was actually significantly superior to that of their NSW contemporaries;<br>(5) Will the Minister make Dr Daley's report publicly available via the Department of Education and Training (DET) or BSSS website given that changes to the UAI calculation system have followed from this report;<br>(6) Does this 1.5 to 1.0 ratio identified in part (4) mean, for tertiary entrance score calculation purposes, that it has never been sound or equitable at any time since the mid 1970s to assume that the ability of ACT senior secondary students is equal to that of their counterparts in NSW;<br>(7) Is the Minister aware that (a) ACT UAIs are calculated in accordance with the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) agreement that the students of all States and Territories are assumed to be of equal ability for the purposes of tertiary entrance score calculations and (b) Dr Daley's report on page 2 states, in line with this MCEETYA equality assumption, that this assumption of the equivalence of Year 10 populations in different parts of Australia in terms of their academic performance, was the basis of an agreement between the States about 1995 to provide comparability of tertiary entrance ranks for immediate school leavers across the different state systems, despite the assumption being mostly untested and largely unquestioned;<br>(8) Will the Minister challenge the equality assumption referred to in part (7) in view of the clear evidence that this assumption is implausible, contrary to large bodies of evidence that suggests that ACT students are academically stronger than their NSW counterparts, and very unfair on ACT students;<br>(9) Does the Minister acknowledge that the processes used to calculate the UAIs of NSW Higher School Certificate (HSC) students in 2006 is set out in detail in the publication titled Report on the Scaling of the 2006 NSW Higher School Certificate which recently became available on the Universities Admissions Centre website (at <http://www.uac.edu.au/pubs/pdf/scaling_report_2006-web.pdf> and that page 9 of this report stated that of the 50 744 students in the 2006 UAI cohort, 46 181 completed the School Certificate Examination in 2004: 59.0% of the 78 214 students in that school certificate cohort;<br>(10) Can the Minister supply the figures for the ACT senior secondary education system corresponding to the NSW HSC figures as in part (9), specifically how many (a) students made up the 2006 ACT system UAI cohort (in other words, how many students in ACT colleges or schools | None of Mr Barr's answers satisfactory address the questions as put here, but the responses to parts (3) to (13) are obviously especially dismissive. The response to parts (5) to (13) is clearly a lazy or evasive non-response, and the response to parts (3) and (4) is also evasive given that the Daley report referred to (which was probably only ever put on the website for public scrutiny as a result of the unanswered part (5) here) does NOT fully acknowledge the significance of the 1.5 to 1.0 ratio at the centre of part (4).<br><br>The only honest answers to Parts (3) and (4) are "Yes" for both of these parts, and given this truth, the ACT public is clearly entitled to a straight answer from the Education Minister on parts (6) through (8) (and the other parts dismissed and evaded by Mr Barr here).<br><br>The response to part (2) is simply stunning in that the "NSW Scaling Committee Table" referred to here is only used for ACT system UAIs – it clearly has a central role in ACT UAI determination and must reflect the equivalence assumption in question here |

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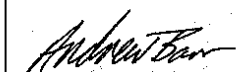
| | | | received an ACT senior secondary system UAI in 2006), (b) of the students in the 2006 ACT system UAI cohort (the answer to part (a)) received an ACT Year 10 Certificate in 2004 and (c) of the students in the 2006 ACT system UAI cohort received a NSW Year 10 School Certificate in 2004;<br>(11) How many of the students in the 2005 ACT system UAI cohort received (a) an ACT and (b) a NSW Year 10 School Certificate in 2003;<br>(12) Does the Minister acknowledge that the statistics called for in parts (10) and (11) are necessary to accurately compare the UAI outcomes of ACT students with those of NSW in 2005 and 2006, given that NSW UAIs are percentile ranks based on the Year 10 School Certificate Cohort, as explained in the Report on the Scaling of the 2006 NSW Higher School Certificate;<br>(13) Do the statistics called for in parts (10) and (11) appear in any BSSS or DET annual report or other documents available to the public via their websites; if so, in what document(s) do these statistics appear; if not, will the Minister please ensure that these statistics are reported in DET or BSSS annual reports or otherwise made publicly available via DET or BSSS websites in future.<br>T Duncan<br>Clerk of the Legislative Assembly<br><br>Mr Barr's response dated 14 December 2007 as shown in Mr Barr's letter to Mrs Dunne:<br>**MR BARR** - the answer to Mrs Dunne's question is:<br><br>(1) (a) My response to QON 1662 (1) indicated why the changed Year 12 candidature in 2006 was not included in the 2007 ACT Board of Senior Secondary Studies (BSSS) Manual.<br>(b) The addendum to the 2007 BSSS Manual states the new policy for the calculation of the Year 12 Candidature. The Manual lists the BSSS' policies and procedures. It does not include the research that is used to inform BSSS policy. Accordingly, it does not refer to PISA results.<br>(b) The 2007 Manual addenda are now publicly available on the BSSS website without password protection.<br><br>(2) As the Table is the intellectual property of the NSW Scaling Committee, I am unable to comment. I am also unable to comment on NSW scaling procedures as requested in later questions.<br><br>(3) (4) The report to the BSSS *Relating ACT and NSW UAI populations via PISA and other scores* by Dr Daryl Daley is now publicly available on the BSSS website.<br><br>(5)-(13) The BSSS has recently sought a range of external advice on its procedures and also regularly reviews its procedures as new data becomes available. I am not prepared to divert any further resources to responding to this question.<br><br>**Approved for circulation to the Member and incorporation into Hansard.**<br><br>  <br>**Andrew Barr MLA**<br>**Minister for Education and Training** **Date:** 14/12/07..... | ... but the Minister won't make any effort to allow the public to see it. For the NSW HSC system the similar tables are free for all to see every year (see at http://www.uac.edu.au/pubs/pdf/2007_table_A8.pdf but note this clearly only applies to NSW HSC aggregates – the table we need to be made publicly available for the ACT system would obviously need to have ACT system aggregates rather than HSC aggregates)! |

**Table 1 (continued)**

| Date of Statement | Person(s) Making Statement | Form of Statement | Actual Statements | Comment by Mark D |
|---|---|---|---|---|
| 27 December 2007 | Mark Drummond | Letter to editor published in Canberra Times, page 16. | UAI statistics<br>Hard facts confirm the sorry developments rightly lamented by shadow education minister Vicki Dunne ("Parents in dark on UAI results", December 22, p1). In 1976, the last year in which ACT system students undertook the NSW HSC, 61 per cent of the ACT age cohort completed the HSC, compared with 37 per cent for NSW. In 1975 the figures were 58 per cent (ACT) and 36 per cent (NSW). But in 2007, 60 per cent of the NSW age cohort gained a UAI, compared with about 42 per cent for the ACT. So over the past 31 years, the ACT UAI (or equivalent before 1998) achievement rate has fallen by more than 1 per cent every two years on average, while in NSW (like Victoria and most other states) the corresponding achievement rate has risen by nearly 1 per cent per year. No other Australian jurisdiction and few, if any, developing countries have discouraged participation in higher education as "effectively" as the ACT did over the past three decades. This decadent state of affairs ultimately derives from several huge technical flaws in the process used to calculate ACT UAIs (and tertiary entrances scores before UAIs), which have turned students away in droves especially the absurd assumption that the academic ability of ACT students merely matches that of NSW students. As with previous years, this year's ACT UAIs as summarised in The Canberra Times (December 22, p2) are typically five to 10 points lower than they'd be but for this incredibly damaging ACT-NSW equivalence assumption.<br>Mark Drummond, Kaleen | |

# Appendix H

## The Reverse Robin Hood Stealing from ACT Colleges Containing More Females and Low SES Students

[Published in the Canberra Times on 3 July 2002 under the title of 'Biases rob colleges of their proper status' – see online version minus table shown below at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/WPs/MD_CT_030702.mht]

Catriona Jackson's article 'Narrabundah top ACT college', in the Canberra Times on 20 December 2001, showed median level University Admission Index (UAI) scores for ACT secondary colleges last year, and what really stood out was the immense difference between the highest scoring Narrabundah College, with a median UAI of 87, and the lowest scoring MacKillop Catholic College, with a median UAI of 63. On closer scrutiny, however, the MacKillop kids were almost certainly better than their UAI results indicated, and were victims of the inequitable system used to scale between schools in the ACT, based on the Australian Scaling Test (AST).

To the extent of absence of a just mechanism to scale between schools, the best and only sound assumption is that of school equality, according to which all colleges would have achieved UAIs averaging about 75 in 2001. But here in the ACT, the AST-based scaling process raises course scores of students whose schools perform above average in the AST, and lowers course scores of students whose schools do below average in the AST. In 2001, Narrabundah's AST average of 161.3 (7.5 % above the system-wide mean of 150.0) translated into an average aggregate of 593.9 (7.3% above the system-wide mean 553.7) and a median UAI of 87 (12 above the system-wide median of 75). But this scaling process is imprecise, biased and far from equitable, most obviously in the form of a significant level of gender bias, which especially punished MacKillop students last year.

The 55 girls at MacKillop who completed tertiary programs in 2001 averaged 130.2 in the AST, 11% lower than the 30 MacKillop boys, who averaged 145.0. But, the average aggregate scores of the MacKillop girls (511.8) was 4% higher than that of the boys (492.4). These results amount to a staggering 16% bias against females here; the AST (based on just several hours of multiple choice and written tests) in 2001 suggested that the MacKillop boys were on average about 16% better, relative to their female counterparts, than their substantive performance (based on two years worth of continuously assessed work) demonstrates. Across all schools, the gender bias against females in the AST-based scaling process averaged 8%. Because girls made up the significant majority of MacKillop Year 12s, *and* the AST is significantly biased against females, the MacKillop Year 12s were unfairly scaled down to a significant extent in 2001.

It is generally acknowledged that socio-economic status (SES) biases in tests like the AST exceed gender biases. The high average AST scores achieved by schools such as Narrabundah and Girls Grammar indicate that the AST-based scaling process is, indeed, unfairly biased against schools containing high proportions of students of lower SES, as well as those hosting high proportions of females. Such gender and SES biases also highlight the imprecision of the AST as a scaling mechanism. A statistic called the "coefficient of determination" (or "r-squared") provides an estimate of the percentage of variation in college course scores that is explained by the variation in AST scores. An r-squared value of 100% reflects perfect correlation/precision; 70% is good, 50% moderate, 30% poor, and 0% reflects no precision at all.

As the following Table shows, the correlation between AST scores and course scores for the 2001 Year 12s ranged from very poor to less than moderate.

Table: 2001 course score versus AST r-squared values

| Course | # of students | r-squared (%) |
|---|---|---|
| Biological Science | 599 | 44 |
| Physical Science | 1267 | 43 |
| German | 50 | 39 |
| Indonesian | 58 | 38 |
| Economics/ Legal Studies | 748 | 36 |
| Human Movement | 42 | 35 |
| History | 600 | 35 |
| Behavioural Science | 656 | 35 |
| Maths 1 | 1412 | 34 |
| Other Science | 131 | 32 |
| English | 2724 | 32 |
| French | 112 | 30 |
| Computing | 693 | 29 |
| Geography | 109 | 29 |
| Italian | 32 | 28 |
| Japanese | 106 | 27 |
| Maths 2 | 844 | 25 |
| Religious Studies | 605 | 25 |
| Design & Technology | 216 | 22 |
| Spanish | 25 | 22 |
| Dance | 50 | 19 |
| Drama | 271 | 18 |
| Art/Photography | 508 | 16 |
| Music | 197 | 14 |
| Textile/Food Studies | 84 | 8 |
| Weighted average | N/A | 32 |

The real underlying correlations between AST and course scores are actually even poorer than the r-squared values above indicate, because the above results are based on course scores already adjusted by the AST-based scaling process. So the level of correlation is typically poor – merely 30% or so.

The 24 point UAI difference between MacKillop and Narrabundah in 2001, at the median level, could only be justified if the MacKillop kids were as inferior to the Narrabundah kids in *all attributes relevant to scholastic performance* as they were in the AST. The AST provides some measure of students' levels of scholastic talent and sophistication, but provides no measure at all about how hardworking or well organised students are, though such factors clearly have an immense influence on student performance at all levels of education. The current scaling process gives credit to schools who do above average in the AST not only for attributes which the AST *does* measure, but also for attributes which the AST *does not* measure at all.

Whereas the r-squared values describing the scaling process *do* support about 30% of the upward scaling that lifted Narrabundah's median UAI 12 points above the system-wide

average (hence about 4 UAI points worth) last year, the remaining 70% of this 12 point elevation constituted a "free-rider", "over-correction" or "exaggeration" effect – a "Reverse Robin Hood" effect which takes marks from the "school mark poor" to give to the "school mark rich". And, as Barry Jones captures well in his well-known book 'Sleepers Wake' (Oxford, 1995, page 166), this "Reverse Robin Hood" effect takes on economic as well as scholastic dimensions for those who miss out on a university place: "The main relationship the working class has with tertiary education is financial. Taxes from working people are used to subsidise university education for the children of the affluent, while working-class children are effectively excluded."

A competent and equitable between-school scaling process would apply the AST with weightings equal to the relevant course score versus AST r-squared values (typically about 30%), reflecting extents to which the AST *is* competent to explain variations in substantive course score performance. The scaling process should apply the assumption of school equality with the remaining weightings, which would be the relevant "1 minus r-squared" values (typically around 70%). Applying AST scores in such an even-handed manner last year would have seen the MacKillop median UAI end up around 71 (4 below the system-wide median) rather than 63.

Mark Drummond
28 June 2002

# Appendix I

## Key Literature Extracts from McGaw et al in the mid 1970s Providing Historical Background to The ACT's Flawed Tertiary Entrance Score (and Universities Admission Index) Determination Processes

by Mark Drummond, August 2007
[available online at http://members.webone.com.au/~markld/PubPol/Edu/UAIs/WPs/Equality.pdf]

This paper briefly examines significant extracts from two journal articles published in the mid 1970s when the ACT senior secondary system broke away from that of NSW, and a 1986 review report, all involving Barry McGaw, as follows:

> McGaw, B., Warry, R., and McBryde, B. (1975), 'Validation of Aptitude Measures for the Rescaling of School assessments', *Education Research Perspectives*, Vol. 2, No. 2, pp. 20-34.
>
> McGaw, B. (1977), *Australian Journal of Education*, Vol. 21, No. 3, pp. 209-225.
>
> McGaw, B. et al. (1986), *Making Admission to Higher Education Fairer: Report of the Committee for the Review of Tertiary Entrance Score Calculations in the Australian Capital Territory* [chaired by B. McGaw], ACT Schools Authority, Australian National University and Canberra College of Advanced Education, Canberra.

An immensely significant and generally absurd passage is the following by McGaw et al. (1975: 25):

> From the within-schools correlations in Table II it is clear that both TEEP and ASAT totals are superior to any of their respective sub-tests. The question is whether either .51 or .62 is a sufficiently high correlation for either ASAT or TEEP totals to be considered valid for the purpose of rescaling school assessments.
>
> In test development one might reasonably hope for validities of the order of .80. In the case of variables for rescaling an aggregate assessment, the assessment itself, which serves as the criterion for validation, is a single index summarizing a complex set of performances on a number of different dimensions. Since achieving high correlations with an index of this sort is unlikely, a goal of .60-.70 seems more reasonable than .80-.90. Taking this into account, the correlations for TEEP and ASAT seem to be satisfactory.
>
> The total score derived from the six TEEP papers is superior to that obtained from ASAT. The advantage of the original ASAT, used in this study, was that it was a single three hour test, whereas the TEEP papers required a total of nine hours twenty minutes of testing. The ASAT Series B, developed in 1973 and presently used in Queensland, involves two two-hour papers, which still represents a considerable time saving over the TEEP battery.
>
> The between-schools correlations for both TEEP and ASAT totals are considerably lower than the within-schools correlations. That is, the relationship between performance on TEEP and ASAT, and the assessments provided by schools, is stronger for students within-schools than it is between-schools. Rescaling of school assessments would, therefore, appear to be necessary, and either TEEP or ASAT would appear to provide a reasonably valid basis for it.

The above is really just totally absurd. McGaw et al. (1975: 25) correctly acknowledge the important question of "whether either .51 or .62 is a sufficiently high correlation for either ASAT or TEEP totals to be considered valid for the purpose of rescaling school assessments". This indeed is *the* centrally important question, and the simple answer to this question is an absolutely clear "NO"! The correlation coefficients achieved by the ASAT and this other test set (TEEP) are nowhere near high enough for valid use as scaling tests! McGaw et al. seem to recognise this themselves when they state that "in test development one might reasonably hope for validities in the order of .80".

Yes, indeed, and if correlation coefficients this high (i.e. .80 or greater) were achieved by the ASAT, then McGaw et al. might be justified in their support of the ASAT for school assessment rescaling purposes. But the ASAT correlation coefficient is a mere 0.51, which provides a coefficient of determination of just 26% (as 0.51 squared = 0.26). A correlation of 0.71 (equating to the square root of one-half) represents a sort of "break-even" point. For correlation coefficients exceeding 0.71, it can be said that such rescaling processes would be more valid than assigning all schools the same mean average scores. But for correlation coefficients less than 0.71, it is actually more valid to assign all schools the same mean average than to use the rescaling test results. For correlations as low as 0.51, it's a complete no-brainer. The correlation coefficient is *not* the valid measure of goodness-of-fit nor of the extent to which a proposed scaling test measures what it is supposed to measure in terms of actual ability or performance in a given school subject. The apt measure of goodness of fit and of explained variation is the *coefficient of determination* (or "r-squared"), defined as the square of the correlation coefficient (where r is the symbol used for the correlation coefficient). The coefficient of determination corresponding to the correlation of 0.51 achieved by the ASAT is 0.51 squared = 0.26 = 26%. This means that the ASAT only measured about one-quarter of what it would need to measure in order to be a fully valid rescaling test. Most relevant factors, amounting to the 74% of unexplained variation, are left unmeasured by the ASAT! Note also that the correlation coefficient level of 0.80, which McGaw et al. acknowledge as a necessary or desirable level, corresponds to a coefficient of determination of 0.64 or 64% (as 0.80 squared = 0.64). So even if the ASAT achieved correlation coefficients of 0.80, an ASAT-based rescaling process would be far from perfect as it would leave 36% of relevant factors unmeasured, or unexplained, by the ASAT. I (Mark D) believe a scaling test would need to achieve a correlation coefficient of 0.86 – the square root of three-quarters – in order to qualify as a valid scaling test, so as to measure 75% of the performance related factors it is supposed to measure in order to provide a valid basis for scaling purposes.

An apt conclusion to this paper by McGaw et al. would be along the lines of "whilst the use of the ASAT for re-scaling purposes would provide some practical advantages, the correlation coefficients describing the correlation of such tests with actual subject scores are not nearly sufficient for such rescaling purposes. The ASAT therefore fails to provide a valid basis for school assessment scaling. Such scaling systems are therefore not worthy of further consideration." But McGaw et al. (1975: 25) actually conclude, incredibly and quite ridiculously, that the ASAT provides a "reasonably valid basis" for the "rescaling of school assessments". So how do they pull this incredible conclusion off? As the above statement by McGaw et al. (1975: 25) shows, they pull it off with a two stage fudge.

The first fudge by McGaw et al. (1975: 25) is a huge "hurdle lowering" fudge which emerges in the incredible statement that "since achieving high correlations with an index of this sort is unlikely, a goal of .60-.70 seems more reasonable than .80-.90". McGaw et al. clearly acknowledge here that scaling tests would need to achieve correlation coefficients of 0.80 to 0.90 (giving coefficients of determination in the 64% to 81% range) in order to constitute valid scaling tests, but then suddenly decide that correlation coefficients of 0.60 to 0.70 (giving coefficients of determination in the 36% to 49% range) will suffice. So they've just arbitrarily decided to set lower hurdles to make it easier for the ASAT to get over the hurdles, in order to misleadingly inflate the validity of the ASAT as a scaling test. So this is a classic case of fudging legitimate scientific criteria in order to meet a pre-determined conclusion supportive of the use of the ASAT for re-scaling in this particular case. But note that the ASAT only achieved a correlation coefficient of 0.51, so not even the markedly reduced 0.60 to 0.70 level McGaw et al. decide to settle for! So this is where the second huge fudge comes in. McGaw et al. (1975: 25) conclude, again, that "either TEEP or ASAT would appear to provide a reasonably valid basis" for the "rescaling of school assessments", and yes it is true that *TEEP* did actually achieve a correlation of 0.62 (so a coefficient determination of 0.62 squared = 0.38 = 38%), so TEEP just barely surpassed the minimum correlation coefficient requirement of

0.60 that McGaw et al. decided to use when it became clear that their tests were not going to go close to the genuinely required levels of 0.80 or higher. But the ASAT correlation coefficient of 0.51 is well below the TEEP value of 0.62. By mentioning both the ASAT and TEEP tests in the same sentence here – only one of which (TEEP) just makes it above the revised correlation coefficient requirement of 0.60 – they manage to assign validity to the ASAT. So McGaw et al. conclude that ASAT provides a "reasonably valid basis" for the "rescaling of school assessments" on the basis of the correlation levels achieved not by ASAT itself, but, rather, by TEEP!! McGaw et al. actually quite clearly show that the ASAT *doesn't* come close to providing a valid basis for between school scaling, but use not one but two gigantic fudges to mischievously claim validity for the ASAT!!

McGaw (1977: 219) acknowledges the question of problematically low correlations again later when he states that:

> The total ASAT score is obviously superior to any of its sub-scores for rescaling aggregate teacher assessments, although a correlation of ·51 is not high. The much lower between-schools correlation of ·19 suggests that rescaling is necessary if the between-schools differences in ratings are to be consistent with within-school ratings.
>
> Whether it is worthwhile to adjust between-school differences in teacher assessments to a variable which correlates only ·51 with the assessments within schools is another question. Given the global nature of the aggregate teacher assessments, and the fact that the components differ according to the students' best 20 semester units, it is probably unrealistic to expect any higher correlation than about ·70. Using the total score from the TEEP battery,

## McGaw again fails to follow up on the significance of this central question, and its very simple and clear-cut answer of NO!

McGaw and others had another opportunity to examine the question of problematically low ASAT versus subject score correlations in a 1986 review of the ACT tertiary entrance score determination process, but were again prepared to dismiss the significance of these problematically low correlations, as shown in Table 1 below (see McGaw et al. 1986: 24-29, 48 and 51). This review concluded that the ASAT test was essentially good enough to justify the retention of the system in place at the time, and called for just minor amendments – really just pretty trivial tinkering.

It is obviously problematic that Barry McGaw, with respect to Barry, was allowed to chair a review of a system which was so largely Barry's very own "baby" as is clearly evident from the earlier works by Barry and others as described here. The result of all of this was that the badly flawed ACT tertiary entrance score determination process remained largely in place. The system in place in 2006 is essentially identical in all high stakes respects as it was in 1986 and 1977. Minor tinkerings have essentially done nothing to rectify the deep flaws with the whole process.

Note that in paragraph 7.9 that McGaw et al. (1986: 48, as in Table 1 below) rejected a sensible proposal by Geoff Masters (current head of the ACER) and David Beswick to develop substantive subject-specific reference tests for the purposes of scaling subjects. McGaw and others appear to have held a predetermined position that the system McGaw and others were so largely responsible for must survive this review process at all costs!

The recommendations of this review, some of which are shown on page 51 (see Table 1 below), call for utterly trivial tinkering which did essentially nothing to overcome the core problem that the

ASAT correlated insufficiently with students' substantive subject scores to constitute a valid scaling test, keeping in mind that the whole sole role of the ASAT was to scale subject scores from students at different secondary colleges! So this review did nothing to make tertiary admission fairer for kids in the ACT senior secondary system, and merely served to entrench a fundamentally flawed model that has remained essentially unchanged in all significant respects until the present day in 2007.

Table 1 below provides extended extracts from the above papers by McGaw et al. (1975), McGaw (1977) and McGaw et al. (1986).

## Table 1: Key Literature Extracts from the Mid 1970s

| Source | Selected Extracts |
|---|---|
| McGaw, B., Warry, R., and McBryde, B. (1975), 'Validation of Aptitude Measures for the Rescaling of School assessments', *Education Research Perspectives*, Vol. 2, No. 2, pp. 20-34. | **McGaw et al. (1975: 24-25):** |

In order to judge the validity of a potential scaling variable, the relationship which must be examined is that between school assessments and the scaling variable within schools. There is no need to obtain separate correlations for each school. A single index, in the form of a *within-schools* correlation coefficient, can be derived by pooling the information for all schools. A high within-schools correlation between school assessments and the scaling variable would indicate that the latter is valid for the purpose of rescaling the former.

In order to determine whether rescaling is necessary, the relationship *between* schools on assessments and the scaling variable must be examined. If the relationship between schools is different from that within schools, then rescaling could be necessary. If there is a strong relationship between the variables within schools, and little relationship between schools, then rescaling is necessary. An index of the relationship between schools can be obtained as the correlation between the pairs of mean scores for the schools on the two variables (shown as in Figure I). This index is a *between-schools* correlation coefficient.

**Evaluation of Some Potential Scaling Variables**

1. Relationships between Scaling Variables and School Assessments. Several potential scaling variables were evaluated in the manner described above using data obtained in the Queensland Grade Twelve Study. For each student, the school assessment used in these analyses was the aggregate assessment for the five 1970 Senior subjects in which the school judged the student would perform best. Each subject assessment was expressed in terms of the seven to one scale used for reporting Senior results, so that the aggregate assessment was on a scale from thirty-five to five. This corresponds with the scale used by most tertiary institutions for results in the external examination. The potential scaling variables considered in these analyses were total and sub-test scores on the Australian Scholastic Aptitude Test (ASAT) and the Tertiary Education Entrance Project (TEEP) tests. These tests and sub-tests are described briefly in Table I.

TABLE I

DESCRIPTION OF POTENTIAL SCALING VARIABLES

| Test | Brief Description of Question Types/Stimulus Material | Number of Items | Duration |
|---|---|---|---|
| ASAT | | | |
| Part A | mathematical-scientific | 42 | |
| Part B | humanities-arts | 39 | |
| Part C | structure, pattern, form (pictorial and verbal) | 29 | |
| Total | single scholastic aptitude test | 110 | 3 hours |
| TEEP | | | |
| Paper 1 | quantitative | 41 | 1 hr 30 mins |
| Paper 2 | physical and biological sciences | 48 | 1 hr 30 mins |
| Paper 3 | written expression | 4 essay questions (48 marks) | 2 hrs 20 mins |
| Paper 4 | social sciences | 48 | 1 hr 15 mins |
| Paper 5 | literature, humanities (verbal material) | 61 | 1 hr 30 mins |
| Paper 6 | pattern, style, structure (visual material) | 65 | 1 hr 15 mins |
| Total | unweighted aggregate of all six papers | 263 plus 4 essay questions | 9 hrs 20 mins |

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Using the aggregate school assessments and each of these potential scaling variables, within-school and between-school correlations were calculated and are shown in Table II. The weighted between-school correlations are based upon the means of 178 schools, and within-schools correlations on the results of 7,595 students in these schools. A high within-schools correlation indicates that the potential scaling variable is valid. Where the within-schools correlation is high, a low between-schools correlation indicates that rescaling is necessary.

TABLE II

WITHIN-SCHOOLS AND BETWEEN-SCHOOLS CORRELATIONS FOR AGGREGATE SCHOOL ASSESSMENTS AND POTENTIAL SCALING VARIABLES

| Potential Scaling Variable | | Correlations with Aggregate School Assessment | |
|---|---|---|---|
| | | Within-Schools | Between-Schools |
| ASAT Total | | .51 | .19 |
| ASAT A | (Quantitative/Science) | .43 | .07 |
| ASAT B | (Humanities) | .43 | .37 |
| ASAT C | (Other) | .31 | .16 |
| TEEP Total | | .62 | .31 |
| TEEP 1 | (Quantitative) | .41 | .09 |
| TEEP 2 | (Science) | .45 | .04 |
| TEEP 3 | (Written Expression) | .49 | .52 |
| TEEP 4 | (Social Science) | .52 | .35 |
| TEEP 5 | (Humanities) | .52 | .38 |
| TEEP 6 | (Aesthetics) | .47 | .25 |

From the within-schools correlations in Table II it is clear that both TEEP and ASAT totals are superior to any of their respective sub-tests. The question is whether either .51 or .62 is a sufficiently high correlation for either ASAT or TEEP totals to be considered valid for the purpose of rescaling school assessments.

In test development one might reasonably hope for validities of the order of .80. In the case of variables for rescaling an aggregate assessment, the assessment itself, which serves as the criterion for validation, is a single index summarizing a complex set of performances on a number of different dimensions. Since achieving high correlations with an index of this sort is unlikely, a goal of .60-.70 seems more reasonable than .80-.90. Taking this into account, the correlations for TEEP and ASAT seem to be satisfactory.

The total score derived from the six TEEP papers is superior to that obtained from ASAT. The advantage of the original ASAT, used in this study, was that it was a single three hour test, whereas the TEEP papers required a total of nine hours twenty minutes of testing. The ASAT Series B, developed in 1973 and presently used in Queensland, involves two two-hour papers, which still represents a considerable time saving over the TEEP battery.

The between-schools correlations for both TEEP and ASAT totals are considerably lower than the within-schools correlations. That is, the relationship between performance on TEEP and ASAT, and the assessments provided by schools, is stronger for students within-schools than it is between-schools. Rescaling of school assessments would, therefore, appear to be necessary, and either TEEP or ASAT would appear to provide a reasonably valid basis for it.

25

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|
| McGaw, B. (1977), *Australian Journal of Education*, Vol. 21, No. 3, pp. 209-225 | **McGaw (1977: 219):** |



*Validity of the Scaling Variable*

Bell (1976) examined the construct validity of ASAT by analyses of data from its sub-scales and from a set of reference tests taken from the Kit of Cognitive Reference Tests (French, Ekstrom and Price, 1963). These analyses confirmed the presence of quantitative, verbal and spatial/visual (aesthetic) sub-scales in ASAT, with the quantitative and verbal sub-scales being more clearly established. Bell's data were obtained from administration, in 1973, of ASAT-B and the 2½ hour reference test battery to a sample of 418 students in 21 Queensland secondary schools.

In considering the validity of a variable such as ASAT for rescaling school assessments, it must be recognized that the purpose of rescaling is to remove arbitrary differences *between* schools in their use of the rating scales. It is presumed that teachers can, for each subject, provide reliable and valid assessments of student performance *within* schools.

If school assessments are accepted as the basis for discriminations among students within schools, it is important that the scaling variable should measure abilities similar to those measured by the school assessments. Since the rescaling is intended only to remove arbitrary differences between schools, it should be performed on a dimension as similar as possible to that on which the within school judgments are based. Thus, the school assessments themselves can constitute the criterion against which concurrent validity of the scaling variable may be established.

A useful index of the similarity of the dimensions measured by two variables is their correlation. In such a case, however, a simple correlation may well hide the true picture. A low correlation would appear to suggest that the variables are unrelated and that rescaling would be inappropriate. A perfect correlation would indicate not only that the scaling variable and school assessments measure similar abilities but also that rescaling would be unnecessary and, in fact, have no effect.

Consideration of the overall correlation between school assessments and a potential scaling variable could, therefore, lead to only one of two conclusions. On the one hand, if the correlation were low, the scaling variable would be judged invalid for the purposes of rescaling school assessments. On the other hand, if the correlation were high, school assessments and the scaling variable would be seen to be so similar that rescaling would have little impact. Thus, on examining this index, one could only conclude that a particular scaling variable was either invalid or impotent. To examine the overall correlation is to fail to take account of the reasons for which rescaling is usually necessary.

In order to judge the validity of a potential scaling variable it is necessary to consider the *within* school correlation between school assessments and the scaling variable. A *pooled within-schools* correlation is a satisfactory index, with a high correlation indicating that the scaling variable is valid for the purposes of rescaling the school assessments.





In order to determine whether rescaling is necessary, the relationship between school assessments and the scaling variable *between* schools must be examined. If there were a strong relationship between the variables within schools, but little relationship between schools, then rescaling would be necessary. An index of the relationship between schools can be obtained as the correlation between the pairs of mean scores for the schools on the two variables. This index is a *between-schools* correlation coefficient.

To allow for differences in school size, and the consequent difference in precision of the estimates of their means, it is best to compute this index as a weighted between-schools correlation, with each school's means weighted by the number of students on which it is based.

Data from the Queensland Grade 12 Study can provide a basis for assessing the validity of ASAT in these terms. The teacher assessments were estimates provided by the teachers of the likely results of the students, on a seven point scale, in the 1970 external Senior examination. For each student, the aggregate of the best five assessments was taken. For the 7595 students and 178 schools involved, the weighted *between-schools* and the *pooled within-schools* correlations with ASAT total and sub-scores are shown in Table 2.

TABLE 2 *Weighted Between-Schools and Pooled Within-Schools Correlations Between ASAT and Aggregate Teacher Assessments*

| | Correlation with Aggregate Teacher Assessments | |
|---|---|---|
| | Within Schools | Between Schools |
| ASAT | | |
| Quant/Science Sub-score .. | ·43 | ·07 |
| Humanities Sub-score .. | ·43 | ·37 |
| Aesthetic Sub-score | ·31 | ·16 |
| Total Score | ·51 | ·19 |

The total ASAT score is obviously superior to any of its sub-scores for rescaling aggregate teacher assessments, although a correlation of ·51 is not high. The much lower between-schools correlation of ·19 suggests that rescaling is necessary if the between-schools differences in ratings are to be consistent with within-school ratings.

Whether it is worthwhile to adjust between-school differences in teacher assessments to a variable which correlates only ·51 with the assessments within schools is another question. Given the global nature of the aggregate teacher assessments, and the fact that the components differ according to the students' best 20 semester units, it is probably unrealistic to expect any higher correlation than about ·70. Using the total score from the TEEP battery,

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|
| McGaw, B. et al. (1986), *Making Admission to Higher Education Fairer: Report of the Committee for the Review of Tertiary Entrance Score Calculations in the Australian Capital Territory* [chaired by B. McGaw], ACT Schools Authority, Australian National University and Canberra College of Advanced Education, Canberra. | **McGaw et al. (1986: 24-25):**<br><br>Chapter 5<br><br>ADEQUACY OF MEASUREMENTS ACHIEVED<br><br>5.1 In Chapter 3 we set out our understanding of the principles underlying the current system of upper secondary education in the Australian Capital Territory. In Chapter 4, we identified what we take to be the essential properties required of assessments of student achievements if these educational purposes are to be fulfilled. In this Chapter, we examine the evidence available to determine the extent to which the current assessment practices satisfy these requirements.<br><br>5.2 In this task, we were assisted greatly by the work of a number of others, but most particularly Dr Geofferey Masters and Professor David Beswick in the Centre for the Study of Higher Education at the University of Melbourne, who were commissioned by the ACT Schools Authority, The Australian National University and the Canberra College of Advanced Education to provide an independent analysis of the issues on which we could draw, and by Dr Daryl Daley, in the Department of Statistics in the Research School of Social Sciences at The Australian National University, whose early work provoked much of the debate that gave rise to our inquiry and whom we commissioned to provide a review of Masters and Beswick's (1986) report and to undertake some additional analyses. Of course, none of them need accept any responsibility for what we have made of their advice to us.<br><br>**Course Score Equating**<br><br>5.3 Course score equating in the Australian Capital Territory, as we have indicated, is undertaken by equating course scores with Australian Scholastic Aptitude Test scores on the assumption that both the aptitude test and the course scores are measuring the same thing. The annual Year 12 Study published by the ACT Schools Authority, reports the correlations between course scores and Australian Scholastic Aptitude Test scores in all the colleges. They vary considerably with some being quite low, even negative, providing indication that the course assessments and the aptitude test are not measuring the same dimension of student performance. Some examples of the correlations obtained in 1984 are shown in Table 5.1.<br><br>5.4 The variability in the correlations from course to course and also, within courses, from college to college is clear in this table. In assessing the size of such<br><br>24<br><br>Adequacy of Measurements<br><br>correlations, it is important to be clear about the criterion to be used. A correlation of 0.00 reveals no relationship between two variables. A correlation of 1.00 reveals a perfect relationship. A perfect correlation can be obtained only between two perfect measures of the same thing. Educational tests are never perfect in this sense. Two examinations in physics, for example, will inevitably produce somewhat different rankings of students because different topics will be assessed in each examination and different questions asked. When assessments in different domains are correlated, their correlation will be less than 1.00 because of such errors in the measures and because of differences in what is measured. The criterion for judging the suitability of one variable as a reference to which another might be equated then cannot simply be how close to 1.00 it is since a difference in what is measured is not the only thing which reduces the correlation from 1.00.<br><br>Table 5.1<br><br>Correlations between Some Course Scores and ASAT Scores by College in 1984<br><br>| College | English | Maths I | Biol Sc | Behav Sc | Art | History |<br>|---|---|---|---|---|---|---|<br>| Copland | 0.48 | 0.65 | 0.68 | 0.59 | * | 0.68 |<br>| Dickson | 0.48 | 0.31 | 0.60 | 0.43 | 0.41 | 0.55 |<br>| Erindale | 0.45 | 0.52 | 0.47 | * | * | * |<br>| Hawker | 0.34 | 0.55 | 0.33 | 0.56 | 0.12 | 0.30 |<br>| Narrabundah | 0.45 | 0.26 | 0.44 | 0.09 | 0.26 | 0.61 |<br>| Phillip | 0.47 | 0.59 | 0.52 | 0.41 | 0.03 | 0.69 |<br>| Stirling | 0.46 | 0.63 | 0.48 | 0.52 | 0.16 | 0.58 |<br>| Daramalan | 0.59 | 0.61 | 0.43 | 0.35 | 0.40 | 0.40 |<br>| St Edmund's | 0.60 | 0.55 | 0.62 | @ | * | 0.72 |<br>| CCEGGS | 0.64 | 0.40 | 0.48 | 0.65 | * | 0.32 |<br>| St Clare's | 0.58 | 0.55 | 0.70 | 0.63 | 0.26 | 0.50 |<br>| Marist | 0.63 | 0.59 | 0.61 | @ | @ | 0.62 |<br>| Merici | 0.68 | 0.46 | 0.37 | 0.62 | * | 0.70 |<br><br>* enrolment less than 20<br>@ course not offered<br><br>Source: ACT Schools Authority (1985) *Year 12 Study Number Nine, 1984*. Canberra, pp.49-61.<br><br>5.5 One way to judge the level of the relationship between Australian Scholastic Aptitude Test scores and course scores, is to see how they compare with relationships between other reference tests and course assessments provided either by schools or external examinations. Masters and Beswick (1986, p.91) summarise the findings of various studies showing correlations between English assessments (school based and external) and several reference tests (ASAT Total, ASAT Verbal, TEEP Total and Written Expression and a specific English Reference test) ranging from 0.40 to 0.67. The highest correlation was between an external examination in English and the Tertiary Education Entrance Project (TEEP) Written Expression test prepared by the Australian Council for<br><br>25 |

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|

**McGaw et al. (1986: 26-27):**



Educational Research. The range of correlations between mathematics assessments and relevant reference tests was 0.49 to 0.88, the highest in this case being between a combination of school and external assessments in a mathematics course and a three hour mathematics reference test (Masters and Beswick, 1986, p.93).

5.6 It is clear from the tables provided by Masters and Beswick that English assessment correlates better with the ASAT Verbal score than with the ASAT Total score. In addition, reference tests containing an essay component are more highly correlated with English assessments than those without an essay. Similarly, the correlation between the ASAT Total score and mathematics assessment is lower than that between the ASAT Quantitative score and mathematics assessment.

5.7 On the basis of these observations, it appears that a composite measure of verbal and quantitative aptitude is a less appropriate reference test for course assessments in English and mathematics than the more specific measures of verbal and quantitative aptitudes respectively. For course assessments in English, an aptitude measure which included a component of writing as well as a component of comprehension would appear to be superior to a test of comprehension alone. The crucial question is whether the gains in moving to more appropriate, separate reference tests for equating scores in particular courses across colleges more than outweigh the losses in no longer having a common reference test with which to equate scores from different courses.

**Unidimensionality of Course Scores**

5.8 There are two ways in which one might consider whether scores from different courses are sufficiently unidimensional to proceed to aggregate them to form a single index of achievement for each student. One is to take account of the current practice in the Australian Capital Territory of equating all courses to the Australian Scholastic Aptitude Test and to judge the validity of combining rescaled course scores in terms of the validity of attempting in the first place to bring each of them to a common scale defined by the Australian Scholastic Aptitude Test. The other is to focus on the relationships among course scores rather than the relationships between the various course scores and the Australian Scholastic Aptitude Test. Masters and Beswick (1986) adopted the former approach. Daley in his advice to us, adopted the latter approach.

5.9 Masters and Beswick (1986, p.100) consider that the correlations of the Australian Scholastic Aptitude Test with some course scores are clearly too low to justify current attempts to bring these scores to a common scale using the Aptitude Test as a reference test. They conclude that the obvious multidimensionality of the courses renders invalid any attempt to summarise student performance in a single score.

5.10 In addition to questioning the unidimensionality of the course scores, Masters and Beswick question the unidimensionality of the Australian Scholastic Aptitude Test. They doubt the validity of combining the subtest scores from the Australian Scholastic Aptitude Test into a total score instead of making use of the separate Verbal and quantitative results and point to practice with the Scholastic Aptitude Test in the United States of America where Quantative and Verbal scores





are always kept separate and are not combined (Masters and Beswick, 1986, p.83).

5.11 Daley is not persuaded that the extent of multidimensionality in the scores from different courses is sufficient to abandon the use of a summary aggregate for each student. To make his view explicit he treats all the measures of performance for a single student as estimates of the student's level of achievement, denoted as $V_i$. The score of student i in course j, that is $Y_{ij}$, is presumed to be related to this achievement by

$$Y_{ij} = V_i + e_{ij}$$

where $e_{ij}$ is a discrepancy due to lack of precision in the assessment, $Y_{ij}$, and to failure of this simple model using the single dimension V to account for scores from all courses (Daley, 1986).

5.12 Daley and Seneta (1986) describe three different statistical procedures for estimating the value of $V_i$ for each student. One is to allow it to be defined by the aptitude test scores alone rather than all course scores and to scale the course scores to it. This is the system used currently in the Australian Capital Territory and Queensland with college based course scores. It is also the system used in Western Australia to equate external examination results in different subjects using the Australian Scholastic Aptitude Test. Daley and Seneta's other methods estimate the $V_i$ from all the course scores. The Australian Scholastic Aptitude Test could simply be added as an additional course, the only one common to all colleges, which would thus ensure that the $V_i$ are comparable across colleges. Alternatively, the $V_i$ could first be estimated from courses within colleges and then the $V_i$ for each college could be rescaled to the mean and standard deviation of the Australian Scholastic Aptitude Test scores for the students in the college.

5.13 Daley has advised us that one of the methods for estimating $V_i$ from all the courses is likely to have the advantage that courses which do not correlate well with other courses will not play a diminished role in defining the $V_i$. This method he labels a 'method of moments'. It has not been used extensively in practice. In a trial undertaken at our request, Daley has programmed a hybrid version of the two Daley and Seneta (1986) estimation procedures that use course scores to estimate $V_i$ and applied the program to data from three colleges.

5.14 One way to examine the adequacy with which the single dimension of the $V_i$ scores accounts for the full set of course scores is to determine what proportion of the variation in course scores is accounted for by variation in the $V_i$ scores. Daley's estimates for a single school suggest that it is about 80 per cent which does indicate that there is, at least in those data, a substantial first dimension. About 10 per cent of the observed variation is due to the usual imprecision of measurement so only about 10 per cent remains to be accounted for by additional dimensions.

5.15 A further way to judge the adequacy of the first dimension and whether additional dimensions can be ignored is to examine the correlations between various course scores and the $V_i$. Correlations obtained with the data from the

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|
| | **McGaw et al. (1986: 28-29):** |



college for which the most extensive analyses have been completed are shown in Table 5.2.

The fact that the correlations of course scores with ability estimates are so high suggests that a single dimension can account for much of the performance in all courses. This evidence strengthens the case for retaining a single aggregate as Daley proposes rather than abandoning it as Masters and Beswick propose.



5.16 We indicated in Chapter 4 that use of a single summarising aggregate should not depend only on a consideration of how much of the overall variation in course scores could be accounted for by a single dimension. There needs also to be consideration of whether any particular subgroup of students are treated differently from others in the scaling and aggregation process. That is, there needs to be good overall fit of the aggregate in accounting for differences among students and no bias in the way different subgroups of students are treated.

Table 5.2

Correlations between Various Ability Estimates and Course Scores for Students in One College

| Course | $X_{ij}$ | $V_{ij}$ | $V'_{ij}$ | $V_i$ | $V'_i$ |
|---|---|---|---|---|---|
| English | 0.65 | 0.79 | 0.73 | 0.86 | 0.86 |
| Mathematics | 0.61 | 0.77 | 0.74 | 0.85 | 0.87 |
| Human Biology | 0.65 | 0.89 | 0.90 | 0.92 | 0.94 |
| Physical Science | 0.58 | 0.88 | 0.88 | 0.91 | 0.92 |
| Modern History | 0.44 | 0.89 | 0.90 | 0.92 | 0.93 |
| Economics/Legal Studies | 0.67 | 0.89 | 0.88 | 0.92 | 0.92 |
| Art/Photography | 0.16 | 0.61 | 0.67 | 0.71 | 0.77 |

$X_{ij}$ = ASAT scores:

$V_{ij}$ = ability of person i estimated from scores in ASAT and all courses other than course j (shown as row heading):

$V'_{ij}$ = ability of person i estimated from scores in all courses other than course j (shown as row heading):

$V_i$ = ability of person i estimated from scores in ASAT and all courses;

$V'_i$ = ability of person i estimated from scores in all courses.

Source: Dr Daryl Daley

5.17 Early debates about possible bias in Tertiary Entrance Scores were based on a view that females were disadvantaged by the use of the Australian Scholastic





Aptitude Test to rescale school assessments. Teachers in single-sex schools believed their students did less well in comparison with students from other schools than they had under the New South Wales external examination system. The teachers claimed also that their students' subsequent performance at tertiary level was consistently better than would have been expected from their Tertiary Entrance Scores.

5.18 The difference of 6.3 between the mean scores of male and female students on the Australian Scholastic Aptitude Test, gave rise to the inquiry chaired by Dr Rawson and to the interim adjustment in 1983 which increased the Australian Scholastic Aptitude Test scores of all female students (Special Committee on ASAT, 1983). It also generated a study of sex-bias in the Australian Scholastic Aptitude Test by the Australian Council for Educational Research (Adams, 1984).

5.19 Adams documented the consistently higher means for males than females and concluded that several factors contributed to these differences. He believed the difference in retention rates for males and females accounted for approximately half the difference between mean scores on the Australian Scholastic Aptitude Test, since fewer less able males than females remained to Year 12. Other differences to which he pointed were:

- time spent studying mathematics where males are generally superior because they do more mathematics than females;
- English ability, where females are generally superior; and
- confidence of success on the Australian Scholastic Aptitude Test where females tended to be less confident than males.

Adams stated that the combined effect of these influences accounted for more than half the sex differences in Australian Scholastic Aptitude Test performances, and that the remaining difference was not statistically significant. Adams concluded

> that a student's sex had no significant direct effect on performance on ASAT [but that in]...some groups that have a high proportion of, or that are exclusively composed of, females the mean ASAT scores may be depressed by the lower confidence in success of females in general (Adams, 1984, p110).

5.20 Adams also showed that males tended to score higher than females on the ASAT Quantitative, but lower than females on ASAT Verbal. Masters and Beswick (1986) also pointed to this difference explaining it in terms of item difficulties. For the 1984 test, they calculated the difficulties of the 100 items for males and females separately and then plotted the differences in the difficulties (male-females) as shown in Figure 5.1. Items classified as verbal are shown with a 'V' and those classified as quantitative are shown with a 'Q'. Items with a difference greater than zero, and so plotted above the solid horizontal line, are those easier for females. Those below the line were easier for males.

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|
| | **McGaw et al. (1986: 48):**<br>  <br>7.9 We do not support the proposal by Masters and Beswick (1986) that a considerable number of reference tests be developed for scaling courses across colleges. We believe that a smaller number of useful summary indices can be developed and we are concerned that use of such specific tests as Masters and Beswick propose will introduce restrictive definitions of the college curriculum. We believe that, initially, only Quantitative and Verbal achievement indices should be developed. Whether the problems of multidimensionality bedevilling the current single index will persist within each of these more narrowly defined indices is a matter for empirical investigation. Should the data reveal it to be necessary, we would urge the subsequent development of additional indices by subdivision of the two we initially propose, but see no reason to begin with more than two. |

**Table 1 (Continued)**

| Source | Selected Extracts |
|---|---|
| | **McGaw et al. (1986: 51):** |

Conclusions and Recommendations

**Recommendation 4**

**The Australian Scholastic Aptitude Test (ASAT) should be broadened by the addition of an essay component to supplement the current multiple-choice items which assess verbal performance.**

**Recommendation 5**

**ASAT Total scores should be calculated as a 50:25:25 combination of scores on Quantitative, the current Verbal and new Essay subtests, with scores on these three subtests first set to a common mean and standard deviation.**

**Recommendation 6**

Course scores **should** be scaled against ASAT Quantitative, ASAT Verbal plus Essay, or ASAT Total, the choice of scaling criterion be determined by which of these subtest scores correlates most highly across colleges with the course scores.

**Recommendation 7**

A Tertiary Entrance Score for each student completing a tertiary package should be calculated as the sum of the best 3.6 scaled course scores obtained as above, with students for whom there are clear inconsistencies between quantitative and verbal performances highlighted for special consideration in decisions about admission to higher education.

**Recommendation 8**

**Further investigations should be undertaken of the method of scaling courses against other courses within colleges and against the Australian Scholastic Aptitude Test between colleges in order to determine whether an improved single aggregate may provide a sufficient and unbiased account of student performances. Investigations should also be undertaken of ways of identifying students whose Quantitative and Verbal performances are sufficiently different for the aggregate to provide an inadequate summary.**

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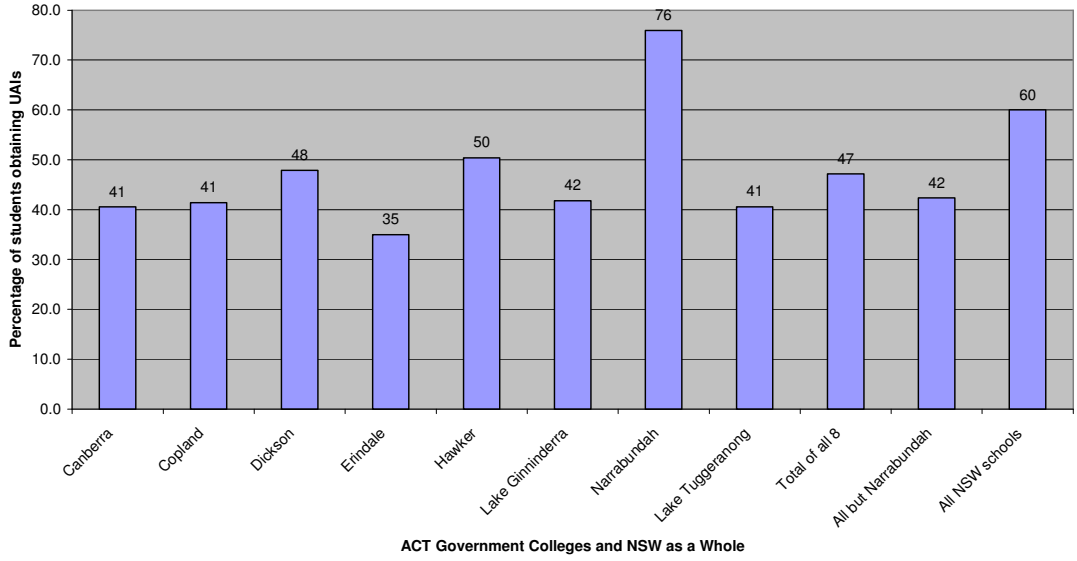
# Appendix J

## Clear Evidence that Narrabundah College is the Only Large ACT Secondary College whose UAI Outcomes have Exceeded those of NSW over the Period 2001 to 2005, and that the Average Outcomes for the Other Seven Government Colleges and Most Non-Government Colleges are Significantly Below those of NSW

**[available online as Working Paper 9 via http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAI_WPs.html]**

See Charts 1-4 and accompanying comments as follows:

**CHART 1: Number of students obtaining UAIs as percentage of Year 11 starters for ACT and of Year 10 cohort for NSW: average for 2001-2005 (NSW estimate assuming 2004 60% value)**




In NSW, 60% of the 2002 Year 10 cohort went on to obtain UAIs in 2004, and this 60% figure is assumed as the average for the period 2001-2005 (this is bound to be a pretty accurate assumption).

Chart 1 above shows that 76% of Narrabundah students who began in Year 11 in years 2000-2004 went on to obtain UAIs in years 2001-2005, and among the seven Colleges besides Narrabundah the corresponding percentages range between 35% at Erindale and 50% at Hawker; the average of the seven colleges besides Narrabundah is 42%. But if 42% of Year 11 starters go on to obtain UAIs on average at these seven ACT government colleges, then the percentage of the corresponding Year 10 cohort who go on to obtain UAIs on average at these ACT government colleges must be less than this 42% (as the Year 10 cohort is a larger group than the "Year 11 starters" cohort) – perhaps 35% to 40% or so. So whilst data limitations make perfect like with like comparison impossible, it is fully clear that at all ACT government colleges besides Narrabundah, the percentage of the relevant Year 10 cohort (or Year 11 starters) who go on to obtain UAIs is significantly below the corresponding whole of NSW figures. In other words, the UAI obtainers at these seven ACT colleges

besides Narrabundah are a significantly more "selective" or "rarefied" group than their NSW counterparts on average, and, all else being equal, would therefore be expected to obtain UAI outcomes significantly superior to their NSW counterparts on average. Taking further account of the fact that the ACT's socio-economic status etc. significantly exceeds that of NSW on average (in terms of measures such as income levels of parents of school kids, percentages of parents with university educations etc.), these comparisons suggest that a competent UAI determination process should produce UAI outcomes, for all eight ACT colleges here, that are well above the NSW average.

So how do UAI outcomes for these eight large ACT government secondary colleges compare with those of NSW on average over the period 2001-2005? Charts 2-4 provide some answers here – Chart 2 for the 97.00 and higher UAI range; Chart 3 for the 98.00 and higher UAI range, and Chart 4 for the 99.00 and higher UAI range, as follows:

**CHART 2: UAIs 97.00 and higher as percentage of Year 11 starters for ACT and of Year 10 cohort for NSW: average for 2001-2005**

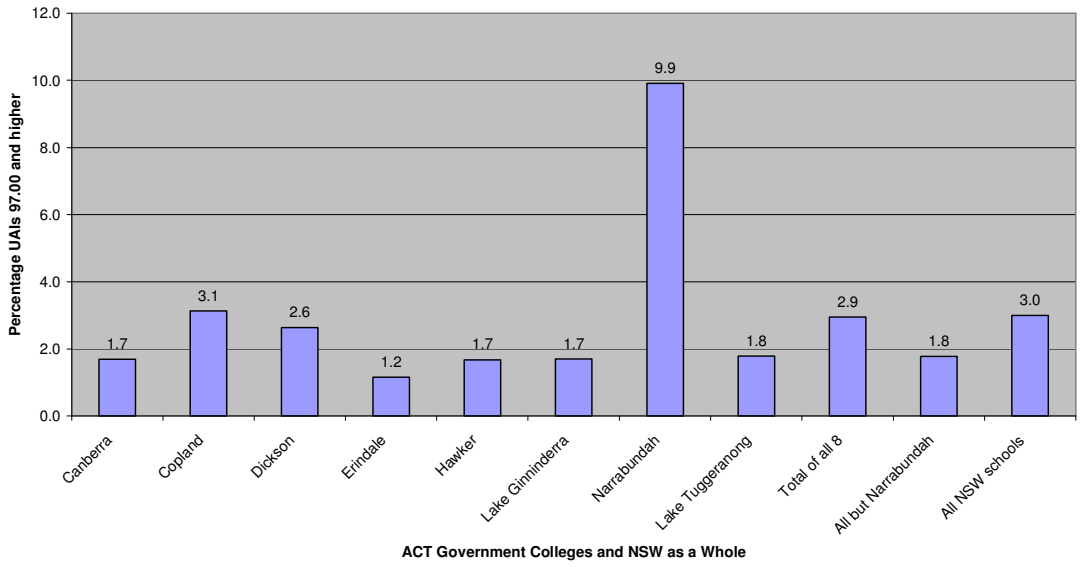


**CHART 3: UAIs 98.00 and higher as percentage of Year 11 starters for ACT and of Year 10 cohort for NSW: average for 2001-2005**

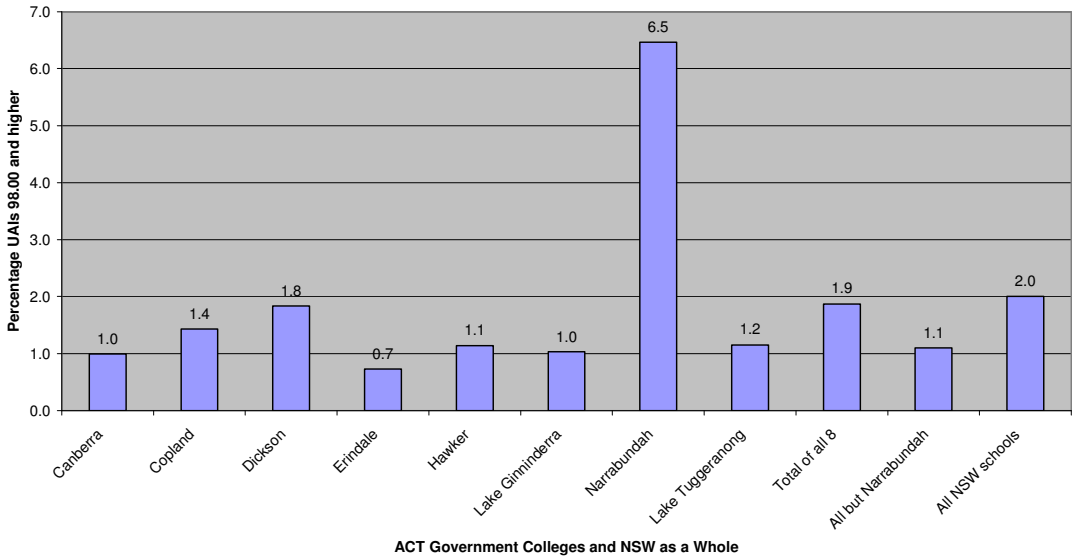
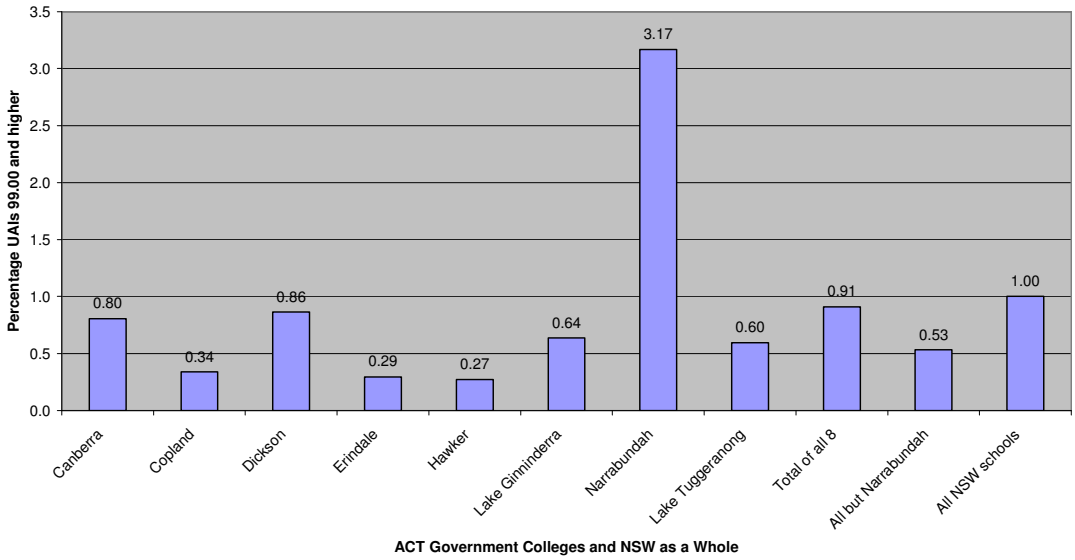



**CHART 4: UAIs 99.00 and higher as percentage of Year 11 starters for ACT and of Year 10 cohort for NSW: average for 2001-2005**




Charts 2-4 show that the eight ACT government colleges here have achieved UAIs in the 97.00 and higher range at a lesser rate than NSW on average over the period 2001-2005, and likewise for the 98.00 and higher and 99.00 and higher ranges. As with chart 1, the ACT college outcomes in Charts 2-4 would appear even worse compared to NSW if it were possible to establish the Year 10 cohorts for each college. Why? Simply because the Year 10 cohort numbers will exceed numbers of Year 11 starters, noting that not all Year 10 graduates go on to start Year 11 – some go off into employment and other occupations besides secondary college study. So whilst it is not possible to achieve perfect like-with-like comparisons, all comparisons here lean in the same direction, suggesting that all large ACT secondary colleges besides

Narrabundah achieve UAI outcomes that are significantly inferior to those of NSW, on average.

**Sources**: the above comparisons have been carried out with data obtained from the ACT School Censuses for the month of February from the years 2000 through to 2004, and other data obtained from UAC (for NSW students), the Canberra Times, the Board of Senior Secondary Studies and other sources, noting that NSW UAIs are percentile ranks based on the NSW Year 10 cohort (hence the 3.0%, 2.0% and 1.0% figures for NSW in Charts 2 through 4 respectively).

These comparisons as above prove beyond any doubt at all that the "translation table" or "lookup table" employed by the various agencies responsible for ACT UAIs simply must be substantially inaccurate – this table systematically underestimates ACT UAIs on average – perhaps especially in higher range UAI levels such as those illustrated above. So this comparison further supports my modest suggestion that ACT UAI outcomes ought to be "calibrated" so as to achieve parity with the NSW North Shore, or some other sub-population within NSW whose demographic characteristics are more or less equivalent to those of the ACT.

See further charts in Appendix following.

Mark Drummond
12 May 2006

## Appendix: Further Charts, A1 to A7

**Sources: ACT Government and Board of Senior Secondary Studies, NSW and ACT Universities Admissions Centre (NSW & ACT Pty Ltd, for NSW data), and the Australian Bureau of Statistics (for 2001 Census data)**

**Notes:**

*** Charts A4 to A7 provide averages over the period 2000 to 2005 inclusive.**

*** The total numbers of Year 12 students for non-government schools, as used in charts A4 to A7, are estimates made in the absence of exact figures, but based on known numbers of students awarded Year 12 certificates. The ACT BSSS, Catholic Education Office and others could provide figures that could improve the accuracy of these charts.**

**Chart A1:**

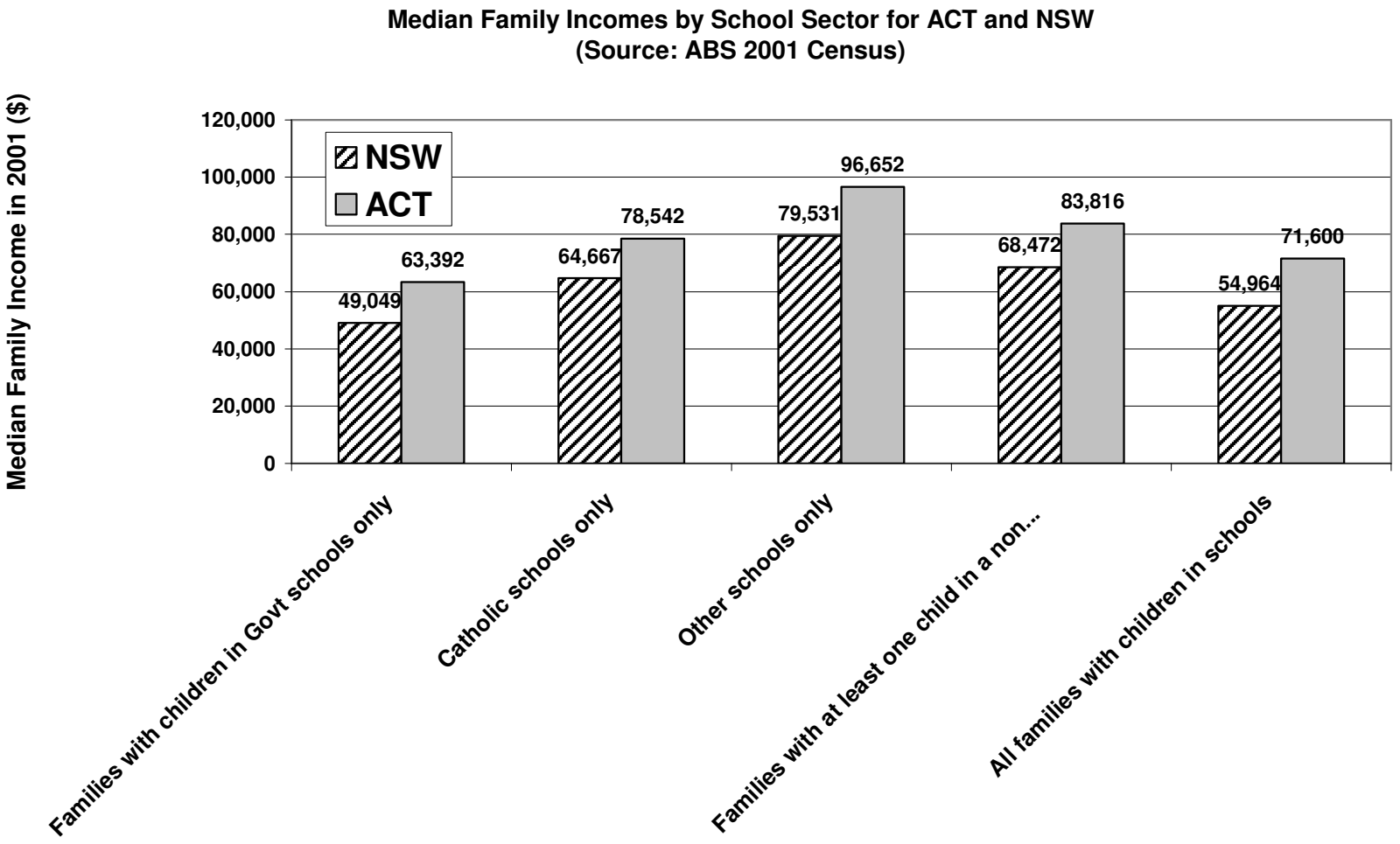
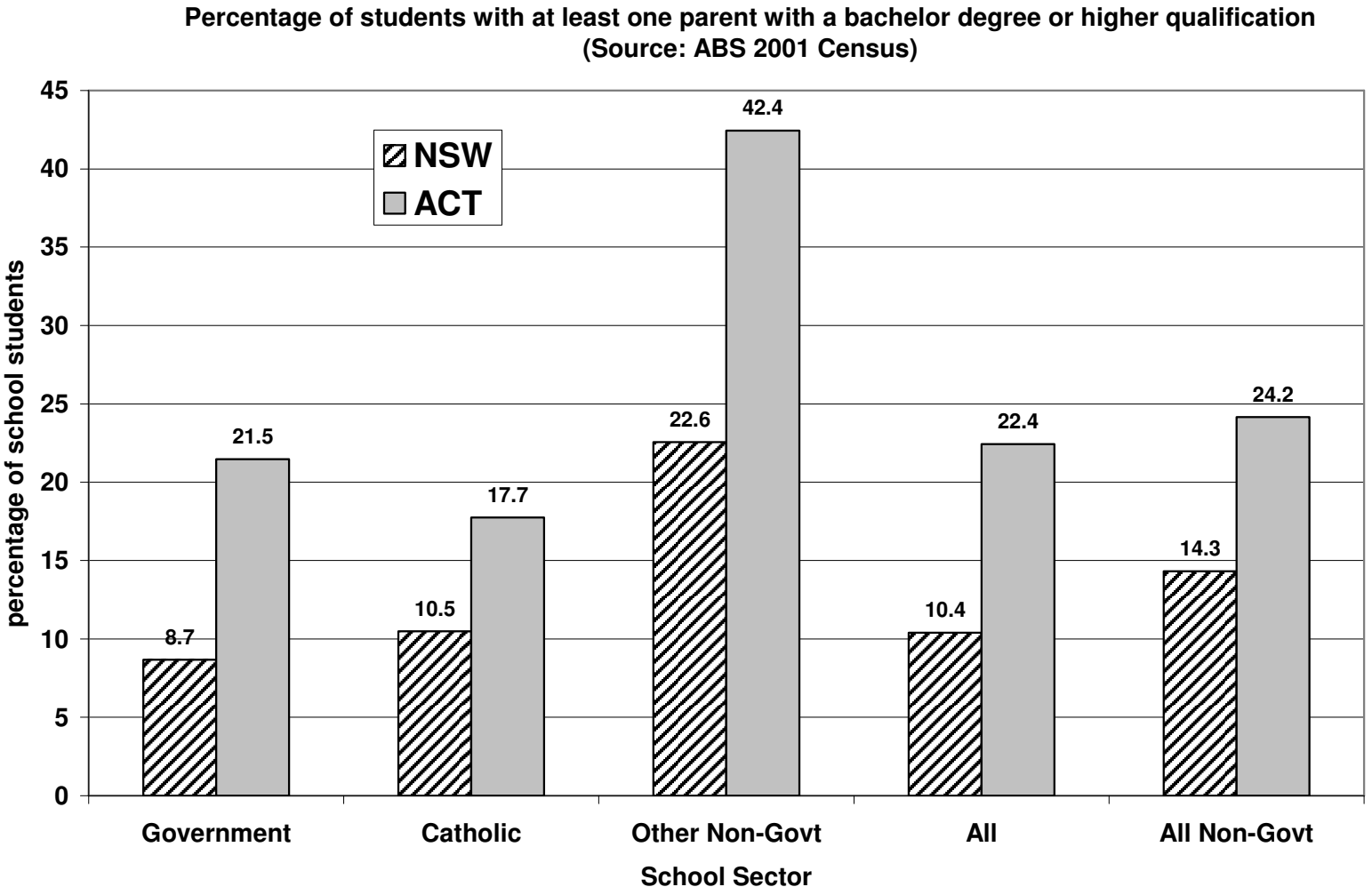

Median Family Incomes by School Sector for ACT and NSW
(Source: ABS 2001 Census)
Median Family Income in 2001 ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
NSW
ACT
49,049
63,392
64,667
78,542
79,531
96,652
68,472
83,816
54,964
71,600
Families with children in Govt schools only
Catholic schools only
Other schools only
Families with at least one child in a non...
All families with children in schools

**Chart A2:**


Percentage of students with at least one parent with a bachelor degree or higher qualification
(Source: ABS 2001 Census)
NSW
ACT
percentage of school students
45
40
35
30
25
20
15
10
5
0
8.7
21.5
10.5
17.7
22.6
42.4
10.4
22.4
14.3
24.2
Government
Catholic
Other Non-Govt
All
All Non-Govt
School Sector

## Chart A3:

**Percentage of people aged 15 and over who possess a bachelor degree or higher qualification**
**(Source: ABS 2001 Census)**

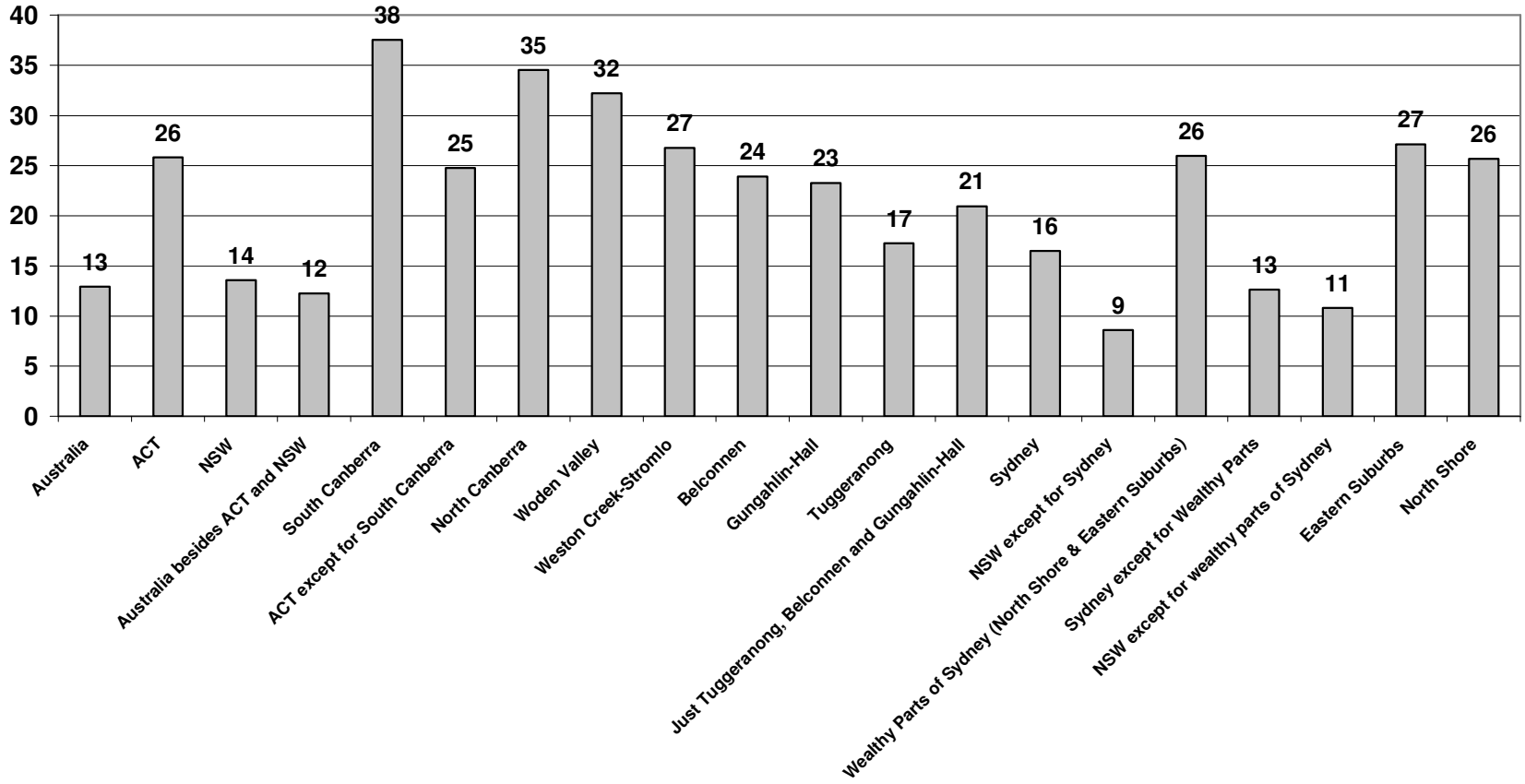
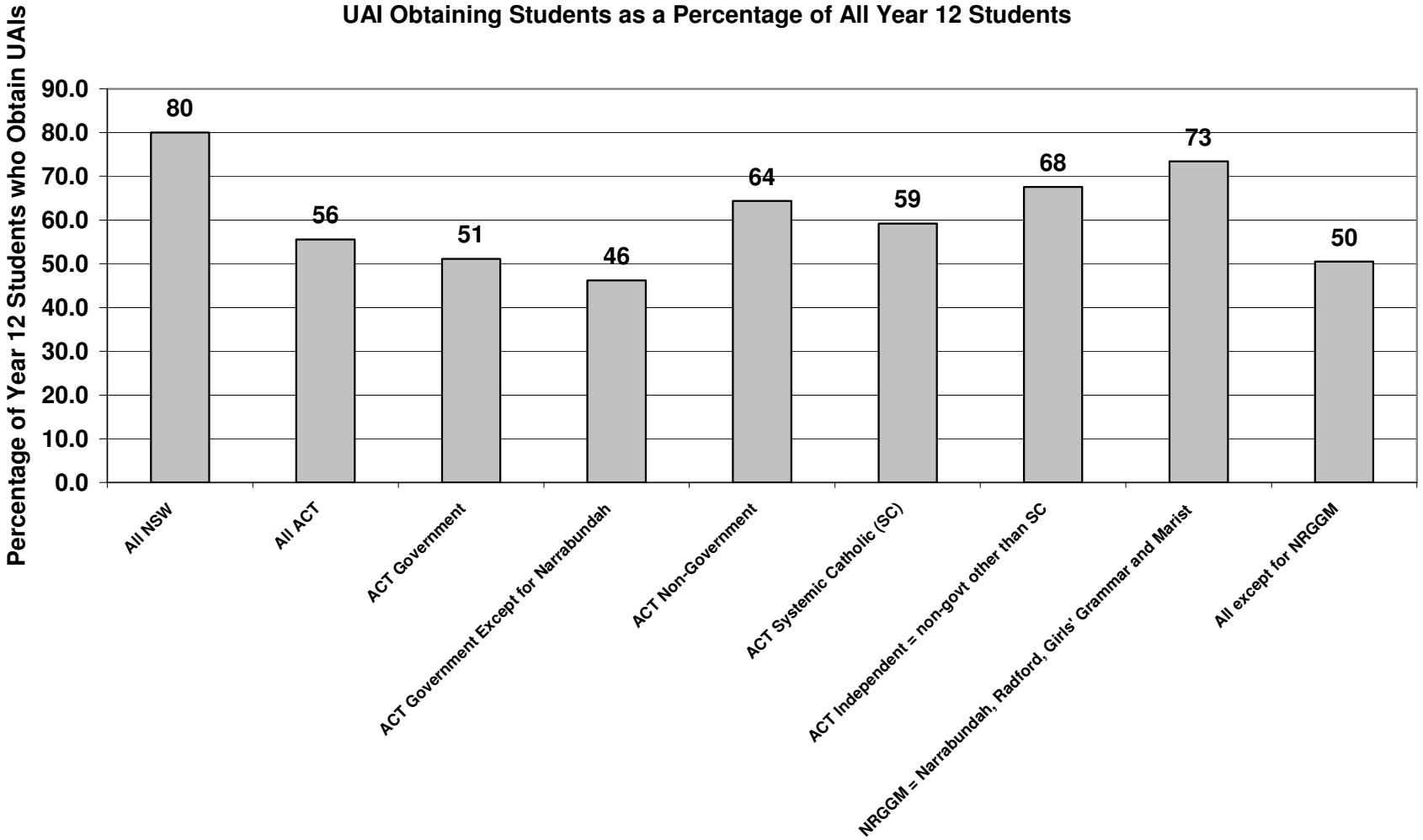


**Chart A4:**


UAI Obtaining Students as a Percentage of All Year 12 Students
Percentage of Year 12 Students who Obtain UAIs
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
80
56
51
46
64
59
68
73
50
All NSW
All ACT
ACT Government
ACT Government Except for Narrabundah
ACT Non-Government
ACT Systemic Catholic (SC)
ACT Independent = non-govt other than SC
NRGGM = Narrabundah, Radford, Girls' Grammar and Marist
All except for NRGGM

## Chart A5:

**UAIs 97.00 and over as a Percentage of Year 12 Students**

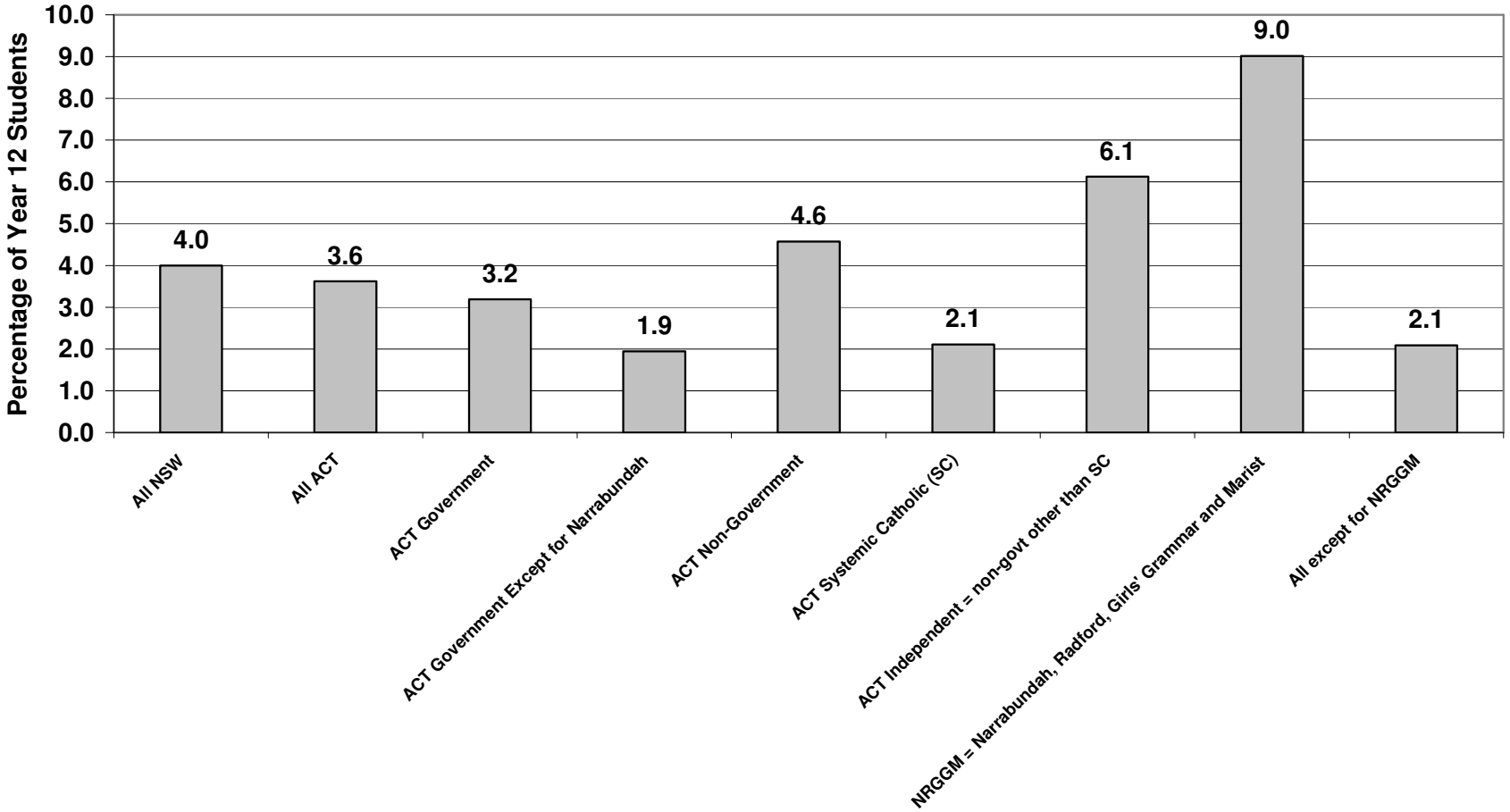


**Chart A6:**

**UAIs 98.00 and over as a Percentage of Year 12 Students**

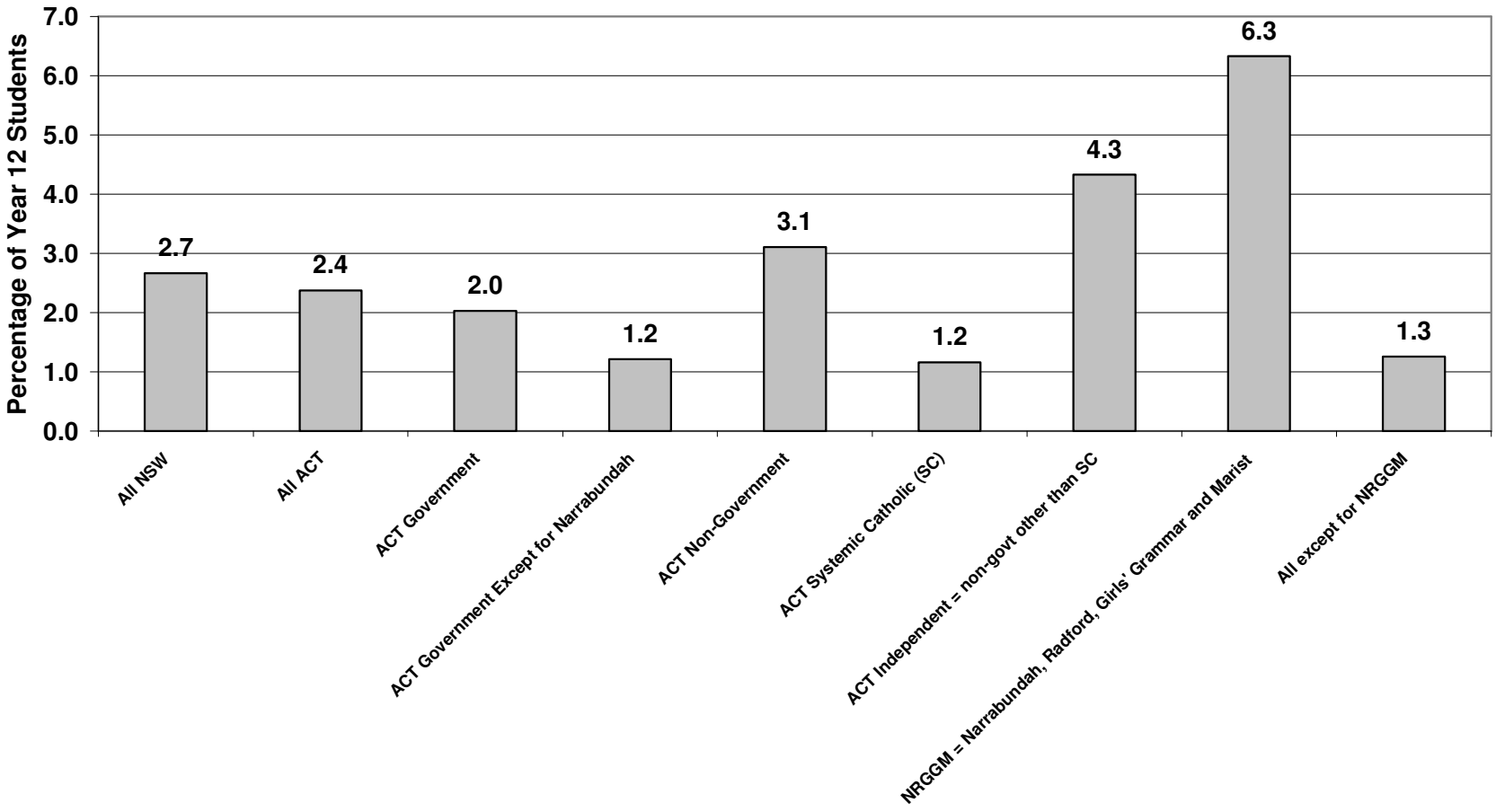
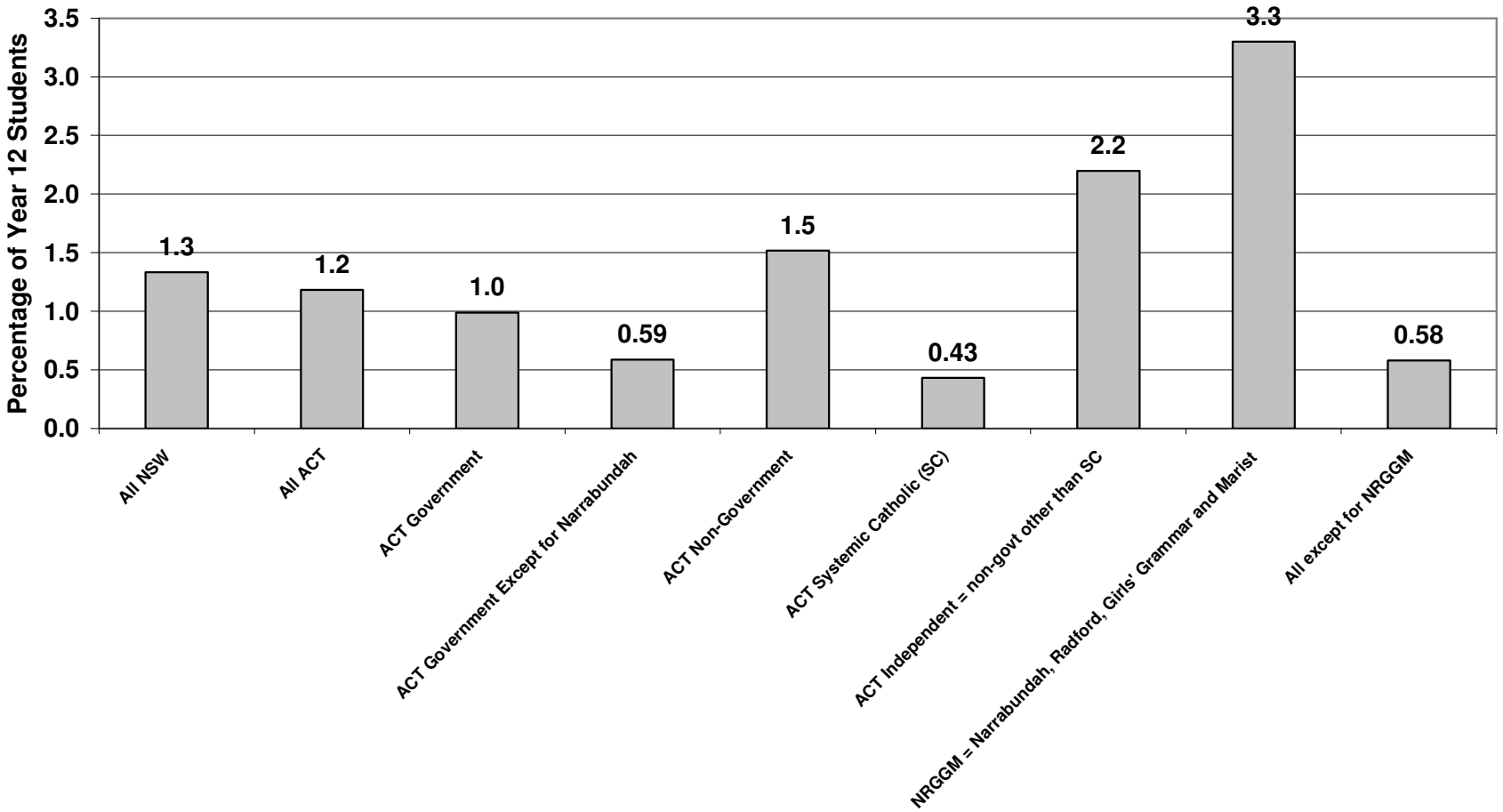


**Chart A7:**

**UAIs 99.00 and over as a Percentage of Year 12 Students**



# Appendix K

## Breaking Myths – The Absurd Claim that a Top UAI of 97 or More is Evidence that "All is Well" in ACT Senior Secondary Colleges

**[Draft]**

by Mark Drummond, as at April 2006

**[available online as Working Paper 8 via http://members.webone.com.au/~markld/PubPol/Edu/UAIs/UAI_WPs.html]**

1. The fact that all large public colleges have had at least one student reach a UAI of 97.00 or higher in the past two years has been used by BSSS Executive Officer Bob Edwards and others in the ACT Government as evidence that all is well with ACT UAIs. For example, an article in the Canberra Times on 22 December 2004 (page 4) included as follows:

> Board of Senior Secondary Studies executive officer Bob Edwards said the results showed the amazing breadth and depth of the ACT system. "Given that every large college had students in the top 3 per cent [a **UAI** score of **97** or more] that is an amazing performance."

2. The document 'School Excellence: Improvement and Achievement in ACT Government Schools in 2004', produced by the ACT Department of Education and Training (publication date April 2005, available at www.decs.act.gov.au/publicat/pdf/school_excellence04.pdf) also states as follows, on page 7, under the heading of 'Senior Secondary Education' (emphasis added here):

> **In 2004, 2,923 students were enrolled in Years 11-12 in ACT government senior secondary colleges. 2,541 students received their Year 12 certificate (86.9%) and of these, 1,451 students (57.1%), received a Tertiary Entrance Score (TES).**
>
> Each year the ACT, through the Board of Senior Secondary Studies, recognises the outstanding Year 12 students from each senior secondary college. Students qualify for recognition of excellence by achieving the highest Universities Admission Index (UAI) in their schools or by being nominated by their school for outstanding achievement in a particular area. The areas are: community services, vocational studies, performing/visual arts and academic studies.
>
> The highest UAI achieved by a student attending a government college was 99.95. **All eight government colleges had students achieving a UAI over 97 – outstanding results.**

3. So Bob Edwards claimed that it was "amazing" that all ACT colleges had at least one student with a UAI of 97 or more. And the Education Department (probably using words given to them by Bob) also claimed that having colleges reach 97 was an

"outstanding" result. These claims are completely "over the top", and really absolutely ridiculous, as follows:

4. In NSW, where 60% of the 2002 Year 10 cohort (which UAIs are based on) went on to obtain a UAI in 2004, approximately 4.8% of UAIs were 97 and over. So if the UAI distribution of students in an ACT college in 2004 matched that of the NSW 2004 UAI obtaining cohort, then 4.8% of students at that college would have obtained UAIs of 97 and over.

5. There is abundant hard evidence to suggest that ACT colleges should be achieving UAI distributions far superior to the NSW distribution, noting the ACT's significantly higher socio-economic status compared to NSW, and the fact that only 50% or so of the ACT Year 10 cohort goes on to obtain a UAI, compared to 60% in NSW (in 2004 at least though these figures have been highly stable over recent years) – so ACT students are a more academically "selected"/"refined" group than their NSW counterparts.

6. As above, even if a given ACT college merely matched the NSW UAI distribution, we'd expect in the normal course of events to observe about 5% of all students reach a UAI of 97 and over at that college – which is 1 in every 20 students. So even if a college only had 20 students, and those students merely matched NSW average standards, even then we'd expect at least one student to have a UAI of 97 or over – meaning that chances are that the top UAI at a college of just 20 students should be approximately 98.5 (noting that 98.5 is mid-way between 97 and 100 and hence a best unbiased estimate of a top UAI if it is only known that it is somewhere between 97 and 100).

7. So what does all of this mean? This means that Bob Edwards and the ACT government are trying to con us into believing that "all is well" with the ACT UAI situation when in fact our ACT colleges are achieving UAI results which are, bluntly, quite appalling compared to those of NSW – in view of the ACT's educationally advantaged community.

8. Table 1 below provides details of the UAI outcomes for ACT government secondary colleges in 2005, corresponding to the details provided for all colleges in Table 2 which appears at the end of this paper:

**Table 1: Top UAI Outcomes for ACT Government Secondary Colleges in 2005**

| College | Number of Year 12 Certificates in 2005 | Number of UAIs in 2005 | UAI% = # TES as % of Year 12 Certificates | Highest UAI in College = "ACTUAL" | Highest UAI in College if it matched NSW = "NSW MATCH" | Difference = "ACTUAL" minus "NSW MATCH" | COMMENT |
|---|---|---|---|---|---|---|---|
| Lake Ginninderra | 205 | 89 | 43.4 | 100.00 | 99.50 | 0.50 | expected given ACT demography |
| Narrabundah | 428 | 340 | 79.4 | 99.90 | 99.85 | 0.05 | expected given ACT demography |
| Copland | 146 | 94 | 64.4 | 99.35 | 99.50 | -0.15 | evidence of system flaw |
| Canberra | 310 | 160 | 51.6 | 99.25 | 99.70 | -0.45 | evidence of system flaw |
| Erindale | 357 | 157 | 44.0 | 99.10 | 99.70 | -0.60 | strong evidence of system flaw |
| Lake Tuggeranong | 383 | 164 | 42.8 | 98.55 | 99.70 | -1.15 | extremely strong evidence of system flaw |
| Dickson | 247 | 145 | 58.7 | 98.50 | 99.70 | -1.20 | extremely strong evidence of system flaw |
| Hawker | 385 | 230 | 59.7 | 97.85 | 99.80 | -1.95 | extremely strong evidence of system flaw |
| CIT | 88 | 46 | 52.3 | 94.15 | 99.05 | -4.90 | extremely strong evidence of system flaw |
| TOTAL | 2549 | 1425 | 55.9 | | | | |

9. As with the 2004 results, it is again the case that all large ACT public colleges achieved at least one student with a UAI of 97.00 or over. The highest score at CIT, however, was just 94.15 in 2005, and in the 80s in 2004.

10. In 2004, the top Lake Ginninderra student scored just 97.65, despite from all credible reports being an outstanding student.

11. If CIT UAI obtainers merely matched NSW average standards, as above, we'd expect the top 5% to have UAIs of 97.00 and over – which would be 5% of the 46 who obtained UAIs – that is, 2.3, so ***we'd expect to see 2 or 3 at 97.00 and over; in fact none made it even to 95.***

12. If Hawker UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 3.3% (i.e. 1 in every 30 or so) should have scored a

UAI of 98.00 and over – which would be 3.3% of the 230 who obtained UAIs – that is, 7.6, so ***we'd expect to see 7 or 8 at 98.00 and over; but the highest UAI was just 97.85.***

13. If Dickson UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 1.6% (i.e. 1 in every 60 or so) should have scored a UAI of 99.00 and over – which would be 1.6% of the 145 who obtained UAIs – that is, 2.3, so ***we'd expect to see 2 or 3 at 99.00 and over; none made it above 98.50.***

14. If Lake Tuggeranong UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 1.6% (i.e. 1 in every 60 or so) should have scored a UAI of 99.00 and over – which would be 1.6% of the 164 who obtained UAIs – that is, 2.6, so ***we'd expect to see 2 or 3 at 99.00 and over; the highest was just 98.55!***

15. If Erindale UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 0.8% (i.e. 1 in every 125 or so) should have scored a UAI of 99.50 and over – which would be 0.8% of the 157 who obtained UAIs – that is, 1.3, so ***we'd expect to see 1 or 2 at 99.50 and over; the highest was just 99.10!***

16. If Canberra College UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 0.8% (i.e. 1 in every 125 or so) should have scored a UAI of 99.50 and over – which would be 0.8% of the 160 who obtained UAIs – that is, 1.3, so ***we'd expect to see 1 or 2 at 99.50 and over; the highest was 99.25!***

17. If Copland College UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 0.8% (i.e. 1 in every 125 or so) should have

scored a UAI of 99.50 and over – which would be 0.8% of the 94 who obtained UAIs – that is, 0.8, so ***we'd expect to see 1 at 99.50 and over; the highest was 99.35!***

18. The only two colleges which obtained top UAIs which appear plausible, in view of NSW comparisons, were Lake Ginninderra (top UAI of 100.00 and fie UAIs of 99.00 and over) and Narrabundah (top UAI of 99.90 and 20 UAIs of 99.00 and over). But note that in 2004, the top UAI at Lake Ginninderra was 97.65. It is understood that teachers at Lake Ginninderra regard the top students in both 2004 and 2005 as outstanding, and roughly equally outstanding, despite the widely varying fortunes of the two years – owing to the erratic dependence of UAIs on AST outcomes generally, and AST standard deviations in particular!

19. The Narrabundah situation is significant in that: if Narrabundah College UAI obtainers merely matched the NSW distribution of UAIs (despite all hard evidence suggesting they should be well above the NSW average), then, as Table A8 below shows, the top 1.6% (i.e. 1 in every 60 or so) should have scored a UAI of 99.00 and over – which would be 1.6% of the 340 who obtained UAIs – that is, 5.4, so ***we'd expect to see 5 or 6 at 99.00 and over. Now we DID see 20 with a UAI of 99.00 and higher, but the Narrabundah student cohort – like that of Girls' Grammar and Radford College – is typically from a prodigiously privileged background in terms of percentages of students whose parents have a university education, etc. etc. So when such demographic and socio-economic status realities are taken into account, even Narrabundah's performance here is far from exceptional!***

20. In summary, of the nine public colleges, Narrabundah and Lake Ginninderra were the only two colleges which achieved high range UAIs (especially in the 97.00 and over range) at a higher rate than the NSW average rate, and so were the only two colleges whole UAI distribution seemed plausible. Copland's top UAI was just slightly below expected if Copland's distribution matched that of NSW. The top UAIs of Canberra and Erindale Colleges were significantly lower than would have arisen if the NSW distribution was matched, and the top UAIs at the other four colleges – Lake Tuggeranong, Dickson, Hawker and CIT – were all very significantly below where they would have been if these four colleges matched the NSW distribution.

21. Here is perhaps the most stunning explanation of all to prove the point here. I'll use Lake Tuggeranong, but could have used any:

Note above that Lake Tuggeranong students in 2005 obtained 383 Year 12 certificates and 164 UAIs, so the Year 10 cohort for these 164 UAIs would have to have been approximately 500. Now imagine that Lake Tuggeranong shrunk by a factor of about 10, so that there were just 16 UAIs awarded, and 38 Year 12 certificates, from a Year 10 cohort of 50. So what would we expect the top UAI to be at Lake Tuggeranong if it had these numbers – that is, again, 16 UAIs and 38 Year 12 certificates from a Year 10 cohort of 50?

22. Answer: If the Tuggeranong college "catchment area" Year 10 cohort merely matched NSW average standards, we'd expect the top one of 50 to be in the top 2% and hence would expect a top UAI somewhere between 98.00 and 100.00; so the safest unbiased guess is that the UAI should be approximately 99.00 – i.e. half way along the interval between 98.00 and 100.00.

23. Now the above really does prove beyond any doubt that it is absolutely outrageous for Bob Edwards and others to use 97.00 level UAIs as an indicator that all is going "amazingly" well or "outstandingly" well in ACT colleges. In view of the ACT's demographic situation – such that all districts of the ACT comfortably surpass the NSW average in terms of income and parental educational levels, etc., we'd expect UAIs of 97.00 and over at any ACT college at which at least 10 or so UAIs are issued ... YES, 10! Why? Well 10 UAIs would correspond to a Year 10 cohort of at least 20 or so, so the top one of 20 IS the top 5% of that 20, so should obtain a UAI somewhere between 95.00 and 100.00, hence probably about 97.50!!

24. I hope this helps clarify the situation here ...

25. Questions that need to be asked quite urgently – certainly soon enough to make 100% sure that the system is rectified well before people think about number crunching for the 2006 UAIs - include:
Why the effort to "dress up" the lousy results which so many colleges have been obtaining compared to the NSW UAI distribution – noting Bob Edwards' reference to

"amazing" results when for many colleges they were downright lousy? Specifically, is there a dishonest element here, or is it just a terrible case of gross incompetence? Has it been a case of a patronising attitude of: "we need to say something to keep the peasants happy"? Or: "we know that we dump on kids at most colleges every year and that the system only reliably does justice to kids at Girls' Grammar, Radford and Narrabundah, and is a lottery with poor odds at most other colleges [which is certainly how things happen], so what can we say to make the kids we dump on feel better about the UAIs we've landed them with?" Or is it just really quite extraordinary incompetence and ignorance on the part of the authorities whose job it is to "get it right" on these matters?

(b) How has it come to this? How could a supposedly intelligent BSSS membership – supposedly in touch with the Canberra community and ACT students they are there to represent – year after year sign their approval for such ridiculous UAI outcomes? And why has the ACT government allowed this chronic neglect to go on for so long? Does the ACT government only care about students who go to Narrabundah, Radford and Girls' Grammar? Does the ACT government believe its duties to "defend the system" override its duties to ensure fair and competent treatment of ACT students? Is the ACT government just completely ignorant of and out of touch with the ACT community to an extent where it simply has no idea whether or not to expect our colleges to be achieving UAI outcomes at above NSW levels?

Regards,
Mark Drummond
April 2006

**Table 2: Top UAIs for ACT Colleges in 2005 and What They'd be if Colleges Matched the 2005 NSW UAI Distribution**

| College | Number of Year 12 Certificates in 2005 | Number of UAIs in 2005 | Highest UAI in College = "ACTUAL" | Highest UAI in College if it matched NSW = "NSW MATCH" | Difference = "ACTUAL" minus "NSW MATCH" | COMMENT |
|---|---|---|---|---|---|---|
| Lake Ginninderra | 205 | 89 | 100.00 | 99.50 | 0.50 | expected given ACT demography |
| Girls' Grammar | 146 | 140 | 99.95 | 99.65 | 0.30 | expected given ACT demography |
| Narrabundah | 428 | 340 | 99.90 | 99.85 | 0.05 | expected given ACT demography |
| Radford | 172 | 153 | 99.90 | 99.70 | 0.20 | expected given ACT demography |
| Marist | 190 | 142 | 99.65 | 99.65 | 0.00 | evidence of system flaw |
| St Clare's | 179 | 135 | 99.60 | 99.65 | -0.05 | evidence of system flaw |
| Copland | 146 | 94 | 99.35 | 99.50 | -0.15 | evidence of system flaw |
| Canberra | 310 | 160 | 99.25 | 99.70 | -0.45 | evidence of system flaw |
| Erindale | 357 | 157 | 99.10 | 99.70 | -0.60 | strong evidence of system flaw |
| Lake Tuggeranong | 383 | 164 | 98.55 | 99.70 | -1.15 | extremely strong evidence of system flaw |
| Dickson | 247 | 145 | 98.50 | 99.70 | -1.20 | extremely strong evidence of system flaw |
| MacKillop | 181 | 80 | 98.50 | 99.45 | -0.95 | strong evidence of system flaw |
| Trinity | 32 | 26 | 98.15 | 98.35 | -0.20 | evidence of system flaw |
| Hawker | 385 | 230 | 97.85 | 99.80 | -1.95 | extremely strong evidence of system flaw |
| Daramalan | 226 | 160 | 97.55 | 99.70 | -2.15 | extremely strong evidence of system flaw |
| St Francis Xavier | 144 | 86 | 96.55 | 99.45 | -2.90 | extremely strong evidence of system flaw |
| Merici | 127 | 97 | 96.25 | 99.55 | -3.30 | extremely strong evidence of system flaw |
| CIT | 88 | 46 | 94.15 | 99.05 | -4.90 | extremely strong evidence of system flaw |
| St Edmunds | 113 | 59 | 93.45 | 99.25 | -5.80 | extremely strong evidence of system flaw |
| Orana | 12 | 8 | 92.90 | 94.80 | -1.90 | extremely strong evidence of system flaw |
| TOTAL | 4071 | 2511 | | | | |

**Notes:**
"NSW MATCH" estimates have been calculated using a binomial probability formula. These are "balance of probability" estimates representing the UAI levels which have a 50% probability of being reached or exceeded by at least one student at the College if the College's UAI distribution matched that of NSW (noting that the top 0.8% of NSW UAIs in 2005 were 99.50 or over, the top 1.6% were 99.00 and over, etc.).

Because the ACT is a much more educationally advantaged community than NSW on average (the 2001 Census found, for example, that 25.8% of ACT residents aged 15 and over had a bachelor degree or higher qualification, compared with 13.6% in NSW), and because a smaller percentage of ACT students attain UAIs (50% of the ACT's year 10 cohort attained UAIs in 2005, compared to 60% in NSW – making ACT UAI obtainers a more "academically elite" group), there is good reason to expect the top UAIs at most ACT colleges to be even higher than the "NSW MATCH" figures as indicated above.

***Table A8 Relationship between UAI, percentile and aggregate: 2001 – 2005***

*Note: The percentile shown in this table is the percentage of the UAI cohort for that year with a UAI less than or equal to the selected value. Since there is a range of aggregates for each UAI the aggregates given in this table are the lowest aggregates for the selected UAIs.*

| UAI | Percentiles | | | | | Aggregate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2001 | 2002 | 2003 | 2004 | 2005 |
| 100 | 100 | 100 | 100 | 100 | 100 | 483.2 | 480.8 | 485.6 | 483.0 | 482.4 |
| 99.50 | 99.1 | 99.2 | 99.1 | 99.2 | 99.2 | 456.8 | 455.1 | 458.6 | 454.9 | 456.7 |
| 99.00 | 98.3 | 98.4 | 98.4 | 98.4 | 98.4 | 445.4 | 444.8 | 448.2 | 444.8 | 446.5 |
| 98.00 | 96.7 | 96.8 | 96.7 | 96.8 | 96.7 | 429.7 | 430.5 | 433.1 | 430.4 | 431.6 |
| 95.00 | 91.9 | 92.0 | 92.0 | 92.0 | 92.0 | 399.1 | 401.9 | 403.8 | 403.5 | 404.1 |
| 90.00 | 84.0 | 84.3 | 84.2 | 84.1 | 84.1 | 365.5 | 369.9 | 371.3 | 371.7 | 371.9 |
| 85.00 | 76.4 | 76.8 | 76.6 | 76.4 | 76.3 | 339.7 | 344.8 | 345.0 | 346.0 | 346.6 |
| 80.00 | 69.0 | 69.4 | 69.2 | 68.8 | 68.8 | 318.2 | 322.9 | 322.2 | 322.6 | 323.7 |
| 75.00 | 61.8 | 62.3 | 62.1 | 61.4 | 61.4 | 298.9 | 302.4 | 301.9 | 301.5 | 303.3 |
| 70.00 | 54.9 | 55.4 | 55.2 | 54.3 | 54.3 | 280.3 | 282.5 | 282.6 | 281.5 | 283.2 |
| 65.00 | 48.2 | 48.7 | 48.6 | 47.4 | 47.5 | 263.0 | 263.9 | 264.6 | 262.1 | 264.0 |
| 60.00 | 42.0 | 42.5 | 42.3 | 41.0 | 41.0 | 246.4 | 246.7 | 246.6 | 243.7 | 244.9 |
| 55.00 | 36.0 | 36.5 | 36.4 | 34.9 | 34.9 | 230.5 | 229.7 | 230.0 | 225.9 | 227.5 |
| 50.00 | 30.5 | 31.0 | 30.8 | 29.3 | 29.1 | 214.9 | 213.0 | 213.0 | 207.9 | 209.2 |

The above Table A8 was obtained online at www.uac.edu.au/pubs/pdf/2005-Table-A8.pdf