Powers of prediction: Can school recommendations forecast university achievement?

Andrew Harvey
La Trobe University, Australia
Email: andrew.harvey@latrobe.edu.au

Andrea Simpson
La Trobe University, Australia
Email: a.simpson@latrobe.edu.au

Abstract Australian universities are increasingly using secondary school recommendations to create early entry pathways, enabling a wide range of capable students to enter university irrespective of their socio-economic background. Given their expanded use, it is important to determine the predictive validity of school recommendations. Drawing on detailed findings from an alternative entry pathway programme at an Australian university, we find that school recommendation schemes produce successful students, but that the success of most students is not attributable to the predictive powers of schools. Moreover, the combination of academic requirements together with school recommendations may add an additional and unnecessary layer of selection for disadvantaged students. Further work is needed by both universities and schools to ensure that such schemes are streamlined wherever possible and are able to fulfil the purpose for which they were intended.

Key terms: access; participation; prediction; achievement; schools.

Introduction

In Australia, two major policy changes are driving an increase in university entry pathways. First, the uncapping of student places from 2012 has theoretically removed all limits on supply and increased competition for students among universities (DEEWR, 2012). Historically, a fixed number of places were allocated across the sector based on agreement between the Commonwealth and individual institutions. Under recommendations accepted in 2009, universities now have the freedom to enrol as many students in each course as demand and capacity allow. Institutions seeking to expand their enrolment numbers must therefore explore all possible ways of attracting capable students into their courses. The second policy initiative driving the creation of new pathways is the establishment of new
financial incentives for universities to enrol greater numbers of students from backgrounds of low socio-economic status (SES). Through these incentives the Commonwealth is actively supporting and rewarding the recruitment of under-represented students. The two policies have been developed to support the 40/20 agenda: national objectives that 40% of Australians aged 25–34 years old will have a degree by 2025, and 20% of the domestic student cohort will be from the lowest socio-economic quartile (Bradley et al., 2008).

The traditional university entry pathway remains the Australian Tertiary Admissions Rank (ATAR). Under this system, students completing their final year of secondary school receive an independent tertiary ranking based on their (externally moderated) school achievement, and universities set minimum ATARs for entry to their courses based on demand levels and the perceived difficulty of the course. In Victoria, the ATAR was preceded by the Equivalent National Tertiary Education Rank (ENTER), which was found to be an efficient allocator where demand exceeds supply and a moderate predictor of students’ future university academic achievement (Dobson and Skuja, 2005). Nevertheless, tertiary rankings are also closely linked to socio-economic status and have been identified as one of the major reasons behind the long-standing low participation rates of low SES students (Palmer, Bexley and James, 2011; Teese, 2007; Nous Group, 2012). Universities are thus dependent upon the creation of alternative selection pathways in order to meet their targets of widening participation, as well as to expand their overall enrolments.

This paper focuses specifically on one such alternative entry pathway known as Schools Access La Trobe (SALT), which was developed at La Trobe University in Victoria, Australia. SALT provides students nominated by selected schools with a conditional offer into a degree place, prior to the release of students’ final secondary scores. The authors were interested in determining whether the SALT scheme was effective at attracting disadvantaged students, how these students performed academically once at university, and how successful schools were in recommending academically capable students for the scheme.

School pathways

Alternative admissions procedures are numerous and include standardised measures such as aptitude testing, as well as the assessment of personal characteristics through psychometric testing, interviews, portfolios and/or external recommendations. The advantages and limitations of each of these approaches are summarised comprehensively in recent reviews written by James, Bexley and Shearer (2009) and Palmer, Bexley and James (2011), and no single method appears to be consistently superior with regards to predictive validity. Many pathways, including school recommendation schemes, are specifically targeted to attract students from disadvantaged backgrounds.
Alternative entry schemes that accept students on the basis of school recommendation are themselves diverse. For example, the Royal Melbourne Institute of Technology (RMIT) offers the Schools Network Access Program (SNAP) in Victoria, while the University of Canberra, University of New England, Charles Sturt University and Flinders University all offer principals’ recommendation schemes or the equivalent across the Australian Capital Territory (ACT), New South Wales (NSW) and South Australia (SA). Early offer schemes generally operate on similar principles, but have differing degrees of student and school input, different selection criteria leading to varying levels of resource intensity around institutional selection, and different audiences.

Similar special entry pathways operate in the UK and elsewhere. For example, universities in Sheffield, Newcastle, Bristol, Leeds and Cambridge all have access schemes where students may be effectively ‘bonused’ on the basis of their school and/or postcode (University of Sheffield, 2012; University of Bristol, 2012). The Cambridge Special Access Scheme (CSAS) claims to take potential students’ personal, social and educational backgrounds into account when assessing applications. To be considered for the scheme, each student’s school is expected to complete a letter of recommendation. While the scheme may look sympathetically at background, potential students are still expected to meet the high academic scores set by the university (University of Cambridge, 2012).

The selection process of school-based recommendations can be opaque, and there is generally some discretion at both school and university level. Schools may nominate students, or in some cases respond to the nomination of students with supporting evidence on the applicant’s ability or likelihood to succeed at university. For example, the Schools Access La Trobe (SALT) and Schools Network Access Program (SNAP) schemes both require student nomination and school corroboration (La Trobe University, 2012; RMIT University, 2012). Whether schools are asked to select potential students or simply support their self-nomination, there is clearly some scope for subjectivity. This scope may be most visible where schools are asked to predict university success rather than rank students on previous achievement, or even predict future school achievement. The University of New England’s (UNE) Early Entry Scheme, for example, requires principals to assess the applicant’s potential for academic success at university, explicitly noting that this may be different from a prediction of Year 12 success (University of New England, 2012).

Teachers, advisers and principals may all be involved in the selection process, guidelines and parameters for the measurement and/or prediction of success are often limited, and school curricula and university curricula are of course very different, such that attempts at school level to predict university success are often difficult (Shulruf, Hattie and Tumen, 2008; Hayward, Sturdy and James, 2005). At university level, faculty selection officers may hold substantial discretionary power to calibrate competing school recommendations. Although selection officers
generally follow school recommendations, transparency is somewhat limited given that the applying students usually know neither what the school nor the university says about their applications. The clearer the guidelines established by both school and university, the more transparent the scheme will be and the less susceptible to subjectivity or misuse. A feedback loop between school and university is also important to establish.

At a systemic level, there is transparency insofar as early offer schemes are usually outlined in state tertiary admissions publications. Both SALT and SNAP, for example, are included as categories within the state’s wider special entry scheme made available to all school leaver students. Nevertheless, individual jurisdictions are unlikely to be aware of the full scale, scope and type of school recommendation schemes in play. Which schemes might apply to which schools across a state are difficult to ascertain, and the market will change as more schemes develop and more schools participate.

The Schools Access La Trobe (SALT) scheme

The SALT scheme was introduced to the university in 2008 with the specific aim of increasing the participation of students from low SES backgrounds. The scheme is available to students from selected secondary schools in Victoria, New South Wales and South Australia. For each application, participating schools are required to make a recommendation of the student’s ability to undertake further study. Schools are asked to complete one question that states: ‘Please rate the applicant’s likelihood of succeeding in THIS course, where “7” equals the highest possible chance of success and “1” is the lowest.’ Students are also encouraged to apply for courses in which they will meet the minimum ATAR requirements for the course.

In 2011, a total of 161 schools participated in the scheme, the majority located in Victoria (120 schools), followed by New South Wales (38 schools) and South Australia (3 schools). Schools were selected by their location in designated low SES areas or by their low transition rates – that is, where the proportion of Year 12 students enrolling for further university study averaged 50% or less over the previous two years. Uptake of the programme has increased substantially since inception, with small numbers of applications received in 2008 increasing to 2,072 applications received in 2011. The university has its major campus in Melbourne and four smaller regional campuses across northern Victoria. Unsurprisingly, the majority of SALT applications received were made to Melbourne (69.4%), the largest city campus, with the remaining 30.6% of applications divided among its smaller regional campuses.

Applications received in 2010–11 were fairly evenly distributed among the university’s faculties. The Faculty of Education, which has the smallest student load of any faculty, received 9.6% of the share of SALT applications, while the remaining applicants were distributed among the Faculty of Science, Technology
and Engineering (27.2%); the Faculty of Health Sciences (25.6%); the Faculty of Law and Management (19%); and the Faculty of Humanities and Social Sciences (18.4%).

For the SALT applications received in 2010–11, approximately 70% of all applicants received an offer for a student place. University offers were highly dependent on the recommendation of the applicant’s school, which accompanied each student’s nomination. Of applicants who received the highest ranking of 7 from their school, 98% were made an offer, followed by 76% of applicants with a ranking of 6. Offers for applicants who received less than a 6 receded dramatically. For example, only 26% of applicants who received a 5 were made an offer.

Approximately 40% of SALT applicants who were made an offer enrolled at the university. University enrolment numbers from the SALT scheme increased from 12 students in 2008, to 185 in 2009, 579 in 2010 and 696 students in 2011. However, many of these students applied to the university through both standard applications as well as the SALT scheme. Therefore, a number were not admitted on the basis of their SALT recommendation, but rather simply on the basis of their ATAR results. In total, less than 20% of SALT offers converted to SALT-based enrolments.

Results

The 2011 SALT student body was selected for further evaluation. As 2010 was the first major year of operation of the scheme and many new schools were added in 2011, using the later year accommodated for any initial school adjustments to processes. For example, some schools may have engaged teachers with greater knowledge of students’ background and achievement to contribute to the ranking process in the later year. Second, the numbers of newly enrolled students in 2011 through SALT were large enough to carry out meaningful quantitative investigation.

The 2011 SALT Cohort

A total of 696 students were offered a place at the university through the SALT scheme and subsequently enrolled at the university in 2011. However, of these students, only 338 (49%) accepted a place with the university explicitly through the SALT scheme. The other applicants enrolled at the university but were accepted on the basis of their ATAR rank or by an alternative admissions process.

Relevant demographic information for these 338 students is shown in Table 1. Of the 338 students enrolled explicitly through SALT, 213 (63%) were female. This was representative of the number of females within the larger student body at the time, which was approximately 62%. Encouragingly, the SALT scheme appears to be attracting larger numbers of students from disadvantaged backgrounds. Only 18% of the current wider university student body is from a low SES background,
compared to 31% of the SALT cohort, and only 33% of the wider student body is from first-in-family backgrounds, compared to 56% of the SALT cohort. Nevertheless, it is also clear that schemes such as this do not solely cater for disadvantaged students, and that many medium-to-high SES students are enrolled at schools that are labelled low SES.

**Table 1:** Demographic information for the 338 students who enrolled through the SALT scheme in 2011

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>213</td>
<td>63%</td>
</tr>
<tr>
<td><strong>Socio-economic status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>106</td>
<td>31%</td>
</tr>
<tr>
<td>Medium</td>
<td>200</td>
<td>59%</td>
</tr>
<tr>
<td>High</td>
<td>17</td>
<td>5%</td>
</tr>
<tr>
<td>Unknown</td>
<td>15</td>
<td>4%</td>
</tr>
<tr>
<td><strong>First in Family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>190</td>
<td>56%</td>
</tr>
<tr>
<td>Regional</td>
<td>92</td>
<td>27%</td>
</tr>
<tr>
<td>Unknown</td>
<td>56</td>
<td>17%</td>
</tr>
<tr>
<td><strong>School type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>237</td>
<td>70%</td>
</tr>
<tr>
<td>Catholic</td>
<td>77</td>
<td>23%</td>
</tr>
<tr>
<td>Independent</td>
<td>12</td>
<td>4%</td>
</tr>
<tr>
<td>Unknown</td>
<td>12</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Academic achievement of the SALT cohort**

The average ATAR rank for the SALT cohort was 69.7, roughly equivalent to the average ATAR for the university’s commencing student cohort, which was 70.8. The overall achievement of the SALT cohort was relatively high. At the time of data collection, retention and progression rates for the 2011 cohort were similar to the overall university rates. The course weighted average for the 338 students enrolled through SALT in 2011 was 63%, higher than the overall university average of 60%. Similar to findings from the University of New South Wales (UNSW) and RMIT University (Pascoe, McLelland and McGaw, 1997:12; Fels, 2012), academic success rates were equivalent or superior to the total university cohort. These data confirm that entry through SALT is itself a relatively accurate predictor of academic success.
While the SALT cohort performed relatively well overall, the reason for their success is less clear. Within the cohort, 31% of students were from the lowest socio-economic quartile, and the pattern of school recommendations for these students was similar to that of the medium and high socio-economic students. School recommendation ranks appear to be blind to socio-economic status, though it is notable that only around one third of students selected were designated as low SES. Entry schemes are targeted at school level, but within a given low SES school there exist students from a wide range of socio-economic backgrounds, all of whom are eligible for this entry scheme and often many similar schemes nationwide. The requirement that students obtain minimum ATAR scores within the SALT scheme may also be a factor limiting the number of low SES students, although further data would be required to confirm this. Although the numbers are small, of the 14 SALT students with ATARs under 50, just fewer than 50% of these were from low SES backgrounds, compared with none from high SES backgrounds. This pattern is reflected in the data from previous years.

Rankings as predictors of achievement

A linear regression analysis was conducted using the data from all 696 students who applied through SALT in 2011 to improve the rigidity of the analysis. The results are shown in Table 2.

As expected, students’ academic performance in their first year was found to be moderately correlated with their ATAR ranks (r = 0.40). The strength of this relationship was found to differ by faculty of enrolment with the Faculty of Law and Management showing the strongest relationship between ATAR and future academic performance, and the Faculty of Humanities and Social Sciences the weakest.

Table 2: Linear regression results for the 696 students who applied through the SALT scheme in 2011. For each variable in the left-hand column, the r-value shows the variable’s correlation with students’ academic performance in their first year of study.
A moderate correlation was also found between school ranking and students’ ATARs (r = 0.38), indicating that schools were partially basing their rankings on their estimate of the students’ final school academic results. Students’ first-year academic average results are shown in Figure 1. Although higher achievement is seen with higher rankings on average, school ranking was found to be only mildly correlated with students’ first-year university academic results (r = 0.24). Although the numbers are small, even the student cohort receiving a relatively low rank of four or less from their schools recorded satisfactory academic achievement. Overall, while school rankings were moderately correlated with ATARs, they were less correlated with achievement levels.

This weakness of correlation is consistent with findings from the UK, where further education (FE) colleges have been found to have relatively low predictive capabilities, presumably because of the lower knowledge of students’ academic background and history. The University and Colleges Admission Service (UCAS) report of 2005 notes that ‘the reliability of prediction in these institutions [FE colleges] is significantly lower than in the school sector, possibly because the college lecturers have known their A level students for only a year when UCAS applications are being produced’ (Hayward, Sturdy and James 2005:5).

![Course Weighted Average](image)

**Figure 1**: Average course weighted mark by secondary school ranking for all SALT student applicants in 2011
School differences of interpretation

Perhaps as a result of the paucity of guidelines, there were significant differences of interpretation among SALT schools. Some participating schools gave most or all of their students the highest recommendation. At the extreme end, the university received more than 20 applications from one school (X), each of which attracted the maximum ranking of 7. This may reflect a careful selection process at school level to ensure that only those of high aptitude are encouraged to apply. Alternatively, the high rankings may reflect a pragmatic decision on the part of the school to maximise the number of its students receiving enrolment offers.

Both theories are plausible from the available data. All students from school X were indeed made an offer by the university, highlighting that school recommendation levels are strong predictors of university offers. Nevertheless, only around one third of applicants subsequently enrolled, and those enrolled recorded course average marks well above the cohort average. For this school, the consistently high recommendations do seem linked to relatively strong achievement, but this trend is less evident across the broader cohort.

Other schools appeared reluctant to provide high rankings to applicant students. One regional school (Y) provided more than 20 applicants but saw an offer rate of less than 30%, in contrast to the 100% offer rate of school X. The low offer rate for school Y students reflects the fact that the average recommendation was a ranking of just 4.6, compared to 7 at school X. There may be multiple reasons for low rankings, but one possible explanation is that teachers hold lower expectations of students than the students themselves. Indeed, related research by the authors’ institution has revealed a disconcerting discrepancy in some under-represented schools between students, many of whom hold high university aspirations, and teachers, whose expectations of student achievement are often lower (Clarke and Savage, 2012).

The forgotten cohort

There is a further sub-group of interest within the SALT cohort. In 2011, 57 students applied for a course through SALT, were rejected by the university in this application, but nevertheless enrolled in the same course simply by subsequently exceeding the required ATAR in their final school exams. Most of these students received relatively low rankings, but 21 students received a recommendation ranking of 6 and were still rejected.

The 57 students who were rejected by the SALT process but then enrolled in the same course via an ATAR pathway recorded an average ATAR one point below the SALT cohort and a course weighted average two points below the SALT cohort. Reasons for their initial rejection are not provided, but ideally such students would not be rejected at SALT application stage.
Students who are not predicted to succeed still perform relatively well if accepted into the university. The high overall rate of achievement for the SALT cohort comes despite the fact that around 40% of SALT students are entering their course with an ATAR below the university’s clearly-in rank. Students with a ranking of 4 or below returned a course weighted average of 58% in 2011, which is roughly comparable with the university average of 60%. Moreover, SALT students who received an ATAR below the specified minimum in 2011 still averaged 60%, equivalent to the university average. These data correspond to results from similar programmes such as ACCESS at UNSW and SNAP at RMIT (Pascoe, McLelland and McGaw, 1997:12; Fels, 2012), where the progression rates of the school recommendation cohort are also higher than the total university cohort.

Implications

School recommendations combined with ATAR have provided an effective alternative entry pathway to university. For the SALT cohort, ATAR itself remains a better predictor of university academic achievement than school rankings. While ATAR explained 16% of the first-year achievement of the 2011 cohort, school ranking explained only around 5% of the variance in academic achievement for the same cohort. Together, the entry criteria help to explain why SALT students receive better grades in their first year than the average university student.

Nevertheless, the combination of both requirements – ATAR and school recommendation – may be working against the scheme’s aim of allowing greater access for disadvantaged students. While other school recommendation schemes provide guaranteed early offers, SALT students must still receive a minimum ATAR after receiving their conditional offer. Given the established correlation between ATAR and socio-economic status, the influence of ATAR within alternative entry schemes needs to be minimised or removed if the objective of widening participation is to be met.

Our study demonstrates that a high level of sophistication is required to ensure the predictive accuracy of school recommendation schemes. Refining the application process by adding more detailed qualitative feedback to either the student applications or teacher recommendations may improve predictive validity. When further detail is sought, either about achievement at school or about likely aptitude for university, the recommendations of teachers may reflect increased accuracy. However, greater detail usually comes at the expense of time. Given the number of applicants, universities need to avoid selection processes that are overly labour-intensive. Similarly, by effectively transferring the selection process to schools, universities risk over-burdening the very schools they are trying to help.

Further research is therefore needed to identify specific factors, aside from previous academic achievement, that might signal university capability. For example, potential predictors could include participation in community or school
activities, or extracurricular activities. Identifying and researching such potential predictors could help to attract students otherwise unlikely to attend university. Within alternative entry schemes, recommendations could also be sought from teachers who are closest to the applicants and have worked with them over time, rather than careers teachers, principals, or other staff who may have less knowledge of the academic history and capability of individual applicants.

It also appears that the act of self-nomination itself is a good predictor. Established attitudes towards higher education doubtless influence the likelihood of students to nominate or be nominated, ensuring that the school recommendation pool is self-selecting to an extent. As Lisa Smith has noted (2011), ‘hot’ or informal knowledge gleaned from friends and family can be as important as the ‘cold’, formal knowledge of university publications and websites in matching aspirations to university pathways. Indeed, Trevor Gale has argued that ‘it is possible for the capacity for voice to be available in social institutions and interactions, yet at the same time for people to have limited capacity to voice their views, understandings, concerns and so on’ (2010:9). Students suffering the most disadvantage within under-represented schools may need particular encouragement by teaching staff to nominate for early offer access schemes.

Many school recommendation schemes are different from class rankings, in that they are based on less-tangible prediction rather than more-objective measurement. Nevertheless, we would expect substantial overlap given that achievement levels clearly influence attitudes towards higher education from an early age (Parliament of Victoria, 2009:71; Dalley-Trim and Alloway, 2010). Indeed, results from SALT indicate that schools are basing their recommendations largely on academic criteria, and the relationship between high recommendation and subsequent high ATAR is relatively strong. While in principle the programme asks schools to consider students who have potential but are likely to underperform academically, in practice most schools are recommending students who subsequently perform well in their final school exams. The relationship between school ranking and academic achievement is further limited by some schools potentially being pragmatic rather than wholly objective when selecting their rankings. An early offer is helpful to these students, but the outcome is sub-optimal if most of the students identified are likely to succeed without the need for an early offer.

Entry schemes such as SALT are often unable to address the multiple barriers to participation experienced by students from disadvantaged backgrounds. Although unconfirmed, it is likely that secondary students who were already considering higher education are most likely to be the scheme applicants. In addition, these students are also most likely to have the skills and ability to capitalise on the advantages such a scheme may give them. In terms of the widening participation agenda, an ongoing challenge for school recommendation schemes is to identify students who not only have the capability and aspiration to attend university, but
who would otherwise not apply or receive an offer through the traditional ATAR selection process. As discussed, meeting this challenge requires identifying a broader range of predictors than past academic achievement.

Notwithstanding these limitations, a significant number of students with academic scores in the middle ranges could benefit from a scheme such as SALT. In reported data with the older ENTER ranks, there is a significant gap between number of university applications and offers for applicants with ENTERs in the middle range between 40 and 70 (Palmer, Bexley and James, 2011). In Victoria alone in 2009, this number equated to 6,735 rejected applicants who may have had the potential to succeed with further study. The success of the SALT cohort indicates that many university applicants who are currently rejected could be successfully enrolled if they were able to access a school recommendation scheme.

Moreover, a substantial number of students who currently receive a university offer choose subsequently to reject that offer. Rejection rates affect both traditional ATAR applicants and those who apply through alternative pathways. In the current study, a substantial gap was found between offers and take-up with only 40% of SALT applicants who were made an offer actually accepting that offer. Many of these students are lost to the sector, and this loss is significant in the context of widening participation. Although equity researchers have focused extensively on the reasons why disadvantaged students do not apply for further study, less attention has been given to applicants who receive an offer but decline to take up their enrolment. In particular, does the extended period of time between an early offer and final enrolment reduce the likelihood of that offer being converted, and what can universities do to ensure that disadvantaged students receiving early offers remain sufficiently engaged to enrol at university several months later? The need to convert more offers into actual enrolments is central to the objective of widening participation and could be a potentially productive area for further research.

Conclusion

The SALT scheme confirms that early offer schemes can provide a pathway to higher education for some students who would otherwise not attend. Students enrolled through SALT achieve a higher course weighted average than the overall university cohort. As intended, the scheme has succeeded in identifying academically capable students. Through a relatively low investment of resources, the SALT pathway has thus opened the doors of university to scores of under-represented students.

Nevertheless, there have been some unintended consequences of the scheme, and the correlation between school ranking and university achievement remains weak. Further improvements in transparency, communication and expectations are required to increase the predictive validity of the scheme. Co-curricular and extracurricular activities could also be investigated as potential predictors of
university achievement, and the opinions of teachers closest to the applicant students could be sought. Moreover, further work is required to increase transparency and equity not only at the level of individual schemes but across the education sector. It is important that early offer schemes do not become yet another preserve of those with cultural capital, and that all parents and students are able both to understand and to access the opportunities presented.

More broadly, early offer schemes remain essentially a tool of selection and are therefore limited in their ability to effect social change. Converting university offers to acceptances and, indeed, enrolments is a broader challenge. Further, raising the proportion of low socio-economic students will depend in part on closer curricular and strategic links between universities and schools. Deeper relationships could increase awareness of, and enthusiasm for, higher education among low SES school students. Such links will need to be part of a wider systemic transformation in which the education sectors are more closely aligned.

Acknowledgements

The authors wish to acknowledge the assistance of Michael Luckman, Kris Kellerman, and Janne Gorman in the preparation of this paper.

References


End notes

1 CSAS has now been replaced by the Extenuating Circumstances Form (ECF), see www.study.cam.ac.uk/undergraduate/apply/ecf.html.