KPMG
cutting through complexity ™

Economic Evaluation of the Australian Indigenous Mentoring Experience Program

Final report

Australian Indigenous Mentoring Experience

December 2013

Disclaimer

Inherent limitations

This report has been prepared as outlined in the Introduction Section. The services provided in connection with this engagement comprise an advisory engagement which is not subject to Australian Auditing Standards or Australian Standards on Review or Assurance Engagements, and consequently no opinions or conclusions intended to convey assurance have been expressed.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided by Australian Indigenous Mentoring Experience and stakeholders consulted as part of the process.

KPMG have indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

KPMG is under no obligation in any circumstance to update this report, in either oral or written form, for events occurring after the report has been issued in final form.

The findings in this report have been formed on the above basis.

Forecasting disclaimer

Any economic projections or forecasts in this report rely on economic inputs that are subject to unavoidable statistical variation. They also rely on economic parameters that are subject to unavoidable statistical variation.

While all care has been taken to ensure that statistical variation is kept to a minimum, care should be taken whenever using this information.

Any estimates or projections will only take into account information available to KPMG up to the date of the deliverable and so findings may be affected by new information. Events may have occurred since we prepared this report which may impact on it and its findings.

Third party reliance

This report is solely for the purpose set out in the Introduction Section and for Australian Indigenous Mentoring Experience's information, and is not to be used for any other purpose or distributed to any other party without KPMG's prior written consent.

This report has been prepared at the request of Australian Indigenous Mentoring Experience in accordance with the terms of KPMG's contract dated 15 August 2013. Other than our responsibility to Australian Indigenous Mentoring Experience, neither KPMG nor any member or employee of KPMG undertakes responsibility arising in any way from reliance placed by a third party on this report. Any reliance placed is that party's sole responsibility.

Contents

Executive summary

Purpose of this report

The Australian Indigenous Mentoring Experience (AIME) engaged KPMG to undertake an economic evaluation of its educational mentoring program. The primary purpose of the evaluation is to assess the value-for-money of the educational mentoring program.

The evaluation is based on three site visits, information and data about the program and costs, a previous evaluation of the Outreach component in 2012, and a literature review focused on the costs and benefits of similar youth mentoring programs.

About the Australian Indigenous Mentoring Experience

Established in 2005, AIME is an organisation which employs coaching principles and mentoring to engage Indigenous high school students and university students across Australia. The goals of AIME align with the schooling targets under the national 'Closing the Gap' agenda as illustrated in Figure 1.

*Figure 1: Mapping AIME goals to Closing the Gap targets*

AIME goals	Closing the Gap targets
• Indigenous students will complete year 12 and transition to university at the same rate as their non-Indigenous peers. • Of the AIME students who complete year 12, 100 per cent will transition to further education, training or employment. • Reach 10,000 students and 3,000 Mentors nationally by 2018.	• Halve the gap for Indigenous students in Year 12 (or equivalent) attainment rates by 2020. • Halve the gap in employment outcomes between Indigenous and other Australians by 2018.

Source: AIME, COAG (2008).

The charts below show how AIME students perform against these goals, compared to Indigenous and non-Indigenous students around the country in 2012.

Chart 1 shows the progression rates of students from one year (grade) to the next, which is a broader measure than the completion rate for the current year (grade). Chart 2 shows the completion rates of year 12 students to finish year 12, and the rate at which year 12 students progressed to university.

Chart 1: AIME student outcomes - progression rates, 2012
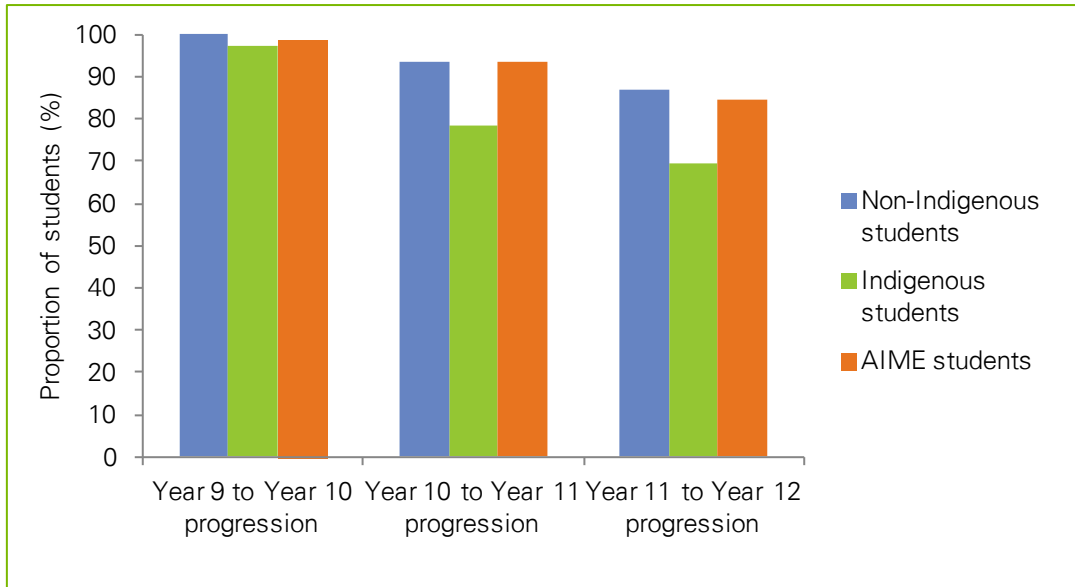
Source: AIME and ABS cat. no. 4221.0 - Schools, Australia, 2012

Chart 2: AIME student outcomes - year 12 completion rates and transition to university, 2012
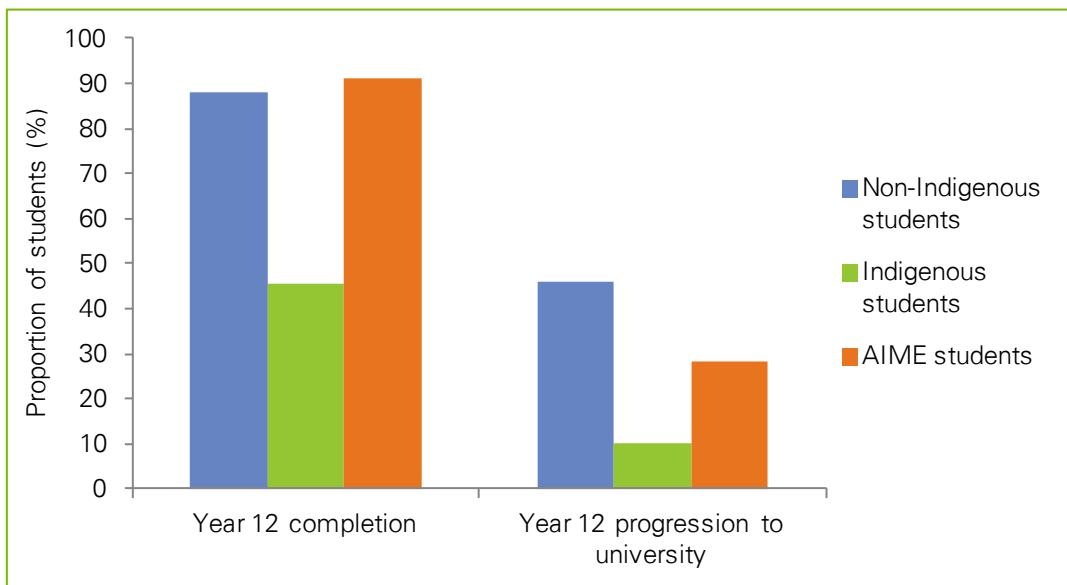
Source: AIME and ABS cat. no. 4221.0 - Schools, Australia, 2012

As shown in the above two charts, AIME students performed better than Indigenous students around the country, and reached levels of school performance close to their non-Indigenous peers. Compared to Indigenous students around Australia, AIME students performed particularly better in year 12 completion (a difference of 46 percentage points in the completion rate) and progression to university (a difference of 18 percentage points in transition from year 12 to university).

AIME students also performed better than their non-Indigenous peers, with a three percentage point difference in the completion rate for AIME students than non-Indigenous students.

Evidence base on the benefits of youth mentoring

Mentoring can have powerful and lasting positive effects for youth. Broadbent and Papadopoulos (2009), Costello and Thornton (2011) and Ware (2013) have found evidence that youth mentoring can:

- decrease truancy
- improve health outcomes
- improve peer and parental relationships
- decrease youth violence
- increase social inclusion
- decrease high risk behaviour, such as drug use.

Mentoring can lead to a range of enhanced learning outcomes for students – academic, motivational, social and personal – at the same time providing benefits to the mentors, the school and the community. Young people's connection with caring adults can account for a range of developmental benefits, including higher self-esteem, greater engagement and performance in school, reduced delinquency and substance abuse and better mental health (Broadbent and Papadopoulos, 2009).

An AIME student that completes a university degree can be expected to earn up to $332,000 more over their lifetime compared to an Indigenous student that does not complete high school.

The economic evaluation indicates that due to the mentoring benefits for students, AIME students are likely to be more employable and earn more.

This results in expected total lifetime earnings across the AIME student population in 2012 of $291 million. In comparison, the total lifetime earnings of a same sized population of Indigenous students around the country is expected to be $232 million.

The AIME program generates $7 in benefits for every $1 of cost

The results show that the net benefit of the AIME program in 2012 is $38 million based on a 7 per cent discount rate (benefits are $58 million while costs, including costs of education, are $21 million) – refer to the chart below. This means that for each $1 spent, $7 in benefits is generated for the economy.

Chart 3: Impact of the AIME program in 2012
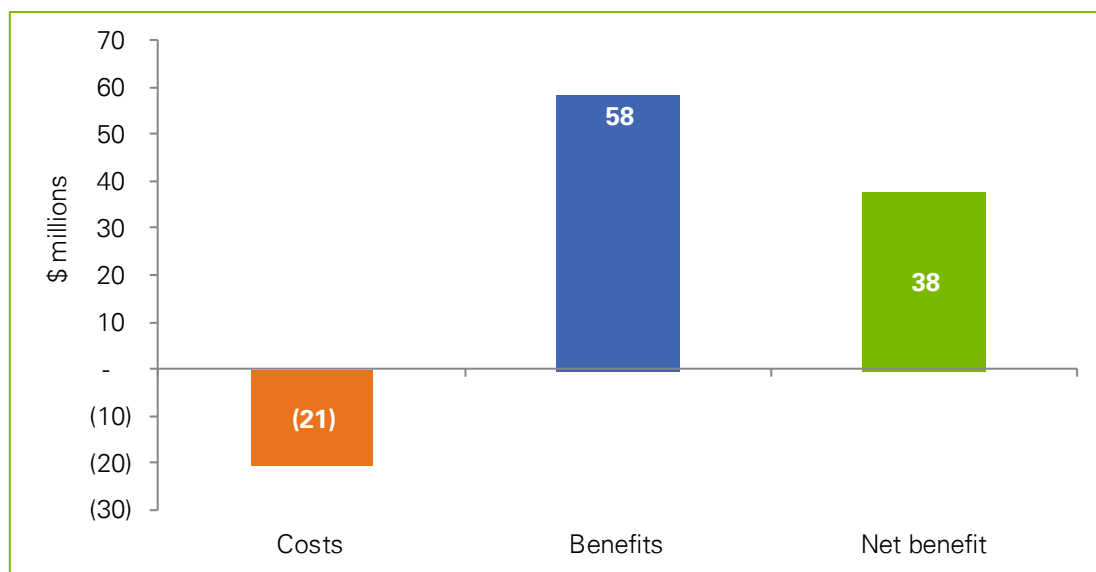
Note: **1.** *2013 prices using a discount rate of seven per cent.*
Source: KPMG calculations.

This result is based on the likely schooling pathways for students who participated in the program in 2012 compared to an average Indigenous student in the country. That is, *how many complete year 12 and for those that do, how many are expected to complete vocational education or university?*

The dollar result ($7 in benefits for every $1 of cost) is based on the quantified benefits of education and employment, though potential benefits in the areas of improving health and pro-social behaviours are recognised.

Further recommendations for quality monitoring and improvement

KPMG notes that AIME has already undertaken an independent evaluation by the University of Wollongong. The results confirm that the AIME program is achieving positive results with Indigenous students, with the vast majority of AIME participants achieving higher grade progression, school completion and university admission rates than the national Indigenous average. The research data also suggests that participation in AIME is successfully strengthening and solidifying students: resiliency, pride, sense of identity, connection with culture, aspirations for finishing school and aspirations for further study.

To continue building its success, KPMG recommends the following to AIME (noting that some of this work may be underway or planned):

- Monitor benefits to validate the results of this economic evaluation which includes tracking outcomes after students enter university or vocational study e.g. what did students study? Did they complete university or vocational education? How long did it take for gainful employment to be obtained?

- Gather data on a comparator group of students, for example, the progression rates, year 12 completion rates and university transition rates for other Indigenous students at the same schools which are participating in the AIME program. This may be a more

appropriate comparison for AIME students than an average Indigenous student across Australia.

- Increase the engagement of parents in the program and formally build this into the mentoring model.

- Revise the pre and post survey to include questions that inquire about how a young person's experience changed as a result of AIME. For example, rather than yes/no/unsure responses to the questions "Have you thought about going to uni before AIME?"and "Do you think you will go to uni?" - these could be replaced by:

  "Do you think you will go to uni or other study (e.g. apprenticeship)?" (responses can be: yes/no/unsure)

  "And has AIME helped you in the thoughts about further study?" (responses can be not at all /a little bit /very much /it's changed my thoughts completely)

- Closely monitor the impact of the transition to AIME Centres under the growth strategy and continue to monitor the effectiveness of the educational mentoring program under the new mode of delivery.

- Share key learnings and insights with other successful Indigenous mentoring programs.

1   Introduction

This chapter provides an introduction to the economic evaluation, including the purpose and scope of the economic evaluation.

1.1   Purpose of the economic evaluation

AIME is an organisation which uses a structured educational mentoring program as a means of engaging Indigenous high school students and university students across Australia, to bring the high school completion rates of Indigenous students to a level that is comparable to their non-Indigenous peers.

AIME engaged KPMG to undertake an economic evaluation of its educational mentoring program. The primary purpose of the economic evaluation is to assess the value-for-money of the educational mentoring program.

1.2   Scope of the economic evaluation

The scope of the evaluation is to estimate the return on investment, in particular regarding the preventative nature of AIME's program for lessening the burden on unemployment, incarceration and health service sectors. The perspectives from which the return on investment has been calculated are that of government and more broadly, society.

The impact of AIME's program is based on three site visits, information and data about the program and costs, a previous evaluation of the Outreach component in 2012, and a literature scan focused on the costs and benefits of similar youth mentoring programs.

The benefits which have been quantified and valued in the economic evaluation model have been subjected to a literature review of the benefits of mentoring programs and the availability of relevant data. This is to maintain the integrity of the model and ensure credibility of evaluation findings. The methodology and underlying assumptions and parameters of the model have also been disclosed in this report for transparency.

1.3   Structure of this report

This report has been structured as follows:

* Chapter 2 provides background and context of the AIME educational mentoring program

* Chapter 3 provides an overview of the methodology applied in the project

* Chapter 4 summarises the literature on 'what works' in youth mentoring programs

* Chapter 5 provides information on economic evaluation and the economic evaluation framework which was used

* Chapter 6 provides an analysis of the value-for-money of the AIME educational mentoring program under the economic evaluation framework

- Chapter 7 discusses conclusions and next steps.

There are also technical appendices to the report to provide details of the evaluation methodology:

- Appendix A provides a list of universities and schools involved in the AIME program in 2012

- Appendix B sets out the approach used to determine the differences in outcomes experienced by an AIME student compared to a non-AIME student

- Appendix C provides the data sources used in the evaluation

- Appendix D contains the sensitivity analysis, which reflects how the value-for-money result changes when certain modelling parameters are changed

- Appendix E provides additional data used in the calculations.

KPMG
cutting through complexity

2　Background

This chapter provides background information on the nation-wide commitment to building a future for Indigenous Australians and how the efforts of AIME are aligned with this government commitment. The chapter then delves into the educational mentoring program itself and provides details on how it operates, who it targets, how many young people participate and the strategic vision for the program.

2.1　Closing the Gap

'Closing the Gap' is a commitment by all Australian governments to improve the lives of Indigenous Australians and provide a better future for Indigenous children. The Council of Australian Governments (COAG) has set specific targets for closing the gap in Indigenous outcomes:

- To close the life-expectancy gap within a generation.

- To halve the gap in mortality rates for Indigenous children under five within a decade.

- To ensure access to early childhood education for all Indigenous four years olds in remote communities within five years.

- To halve the gap in reading, writing and numeracy achievements for children within a decade.

- To halve the gap in Indigenous year 12 achievement by 2020.

- To halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade.

To support achievement of these targets, the efforts of all Australian governments and communities are directed to seven action areas or 'building blocks', as shown below.

Figure 2.1: Building Blocks for 'Closing the Gap'
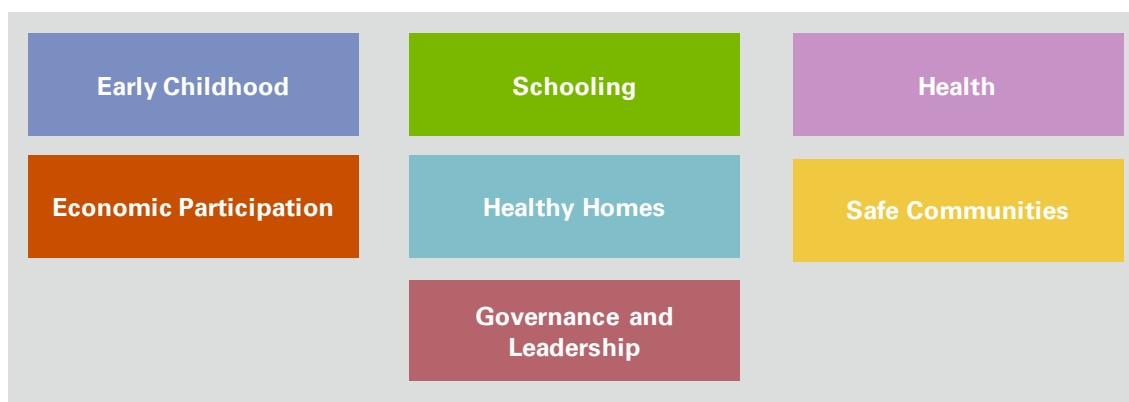
Source: COAG (2008).

The building blocks are interrelated as progress in each of these areas cannot work in isolation from each other. It also means that improvement in one area (e.g. schooling) should enable improvement in other areas such as health, economic participation (notably employment and/or business ownership) and safe communities.

2.2 The Australian Indigenous Mentoring Experience

Established in 2005, AIME is an organisation which employs coaching principles and mentoring to engage Indigenous high school students and university students across Australia. The goals of AIME align with the schooling targets under the national 'Closing the Gap' agenda as illustrated in Figure 2.2.

Figure 2.2: Mapping AIME goals to Closing the Gap targets

AIME goals	Closing the Gap targets
• Indigenous students will complete year 12 and transition to university at the same rate as their non-Indigenous peers. • Of the AIME students who complete year 12, 100 per cent will transition to further education, training or employment. • Reach 10,000 students and 3,000 Mentors nationally by 2018.	• Halve the gap for Indigenous students in Year 12 (or equivalent) attainment rates by 2020. • Halve the gap in employment outcomes between Indigenous and other Australians by 2018.

Source: AIME, COAG (2008).

In aligning the goals of AIME with the Closing the Gap targets, the focus is on gaining higher levels of education and training, in anticipation that this will lead to higher participation in the workforce, and earning capacity. It is also noted that there is current discussion about alternative approaches for addressing Indigenous disadvantage. For example, Warren Mundine, Chair of the Indigenous Advisory Council, adopts a view of 'job first' i.e. first gaining a job, and then training for that job (ABC Lateline, 16 September 2013). Regardless, a skilled workforce requires basic education and the more educated the Indigenous workforce, the more beneficial for individuals and communities.

AIME tracks outcomes achieved by its students compared to their peers. These outcomes relate to progression rates from year 9 onwards, year 12 completion rates and transition to university.

Chart 2.1 and Chart 2.2exhibit the outcomes achieved by AIME students compared to Indigenous and non-Indigenous students around the country, in 2012. Chart 2.1 shows the progression rates of students from one year (grade) to the next, which is a broader measure than the completion rate for the current year (grade). Chart 2.2 shows the completion rates of year 12 students to finish year 12, and the rate at which year 12 students progressed to university.

Chart 2.1: AIME student outcomes – progression rates, 2012
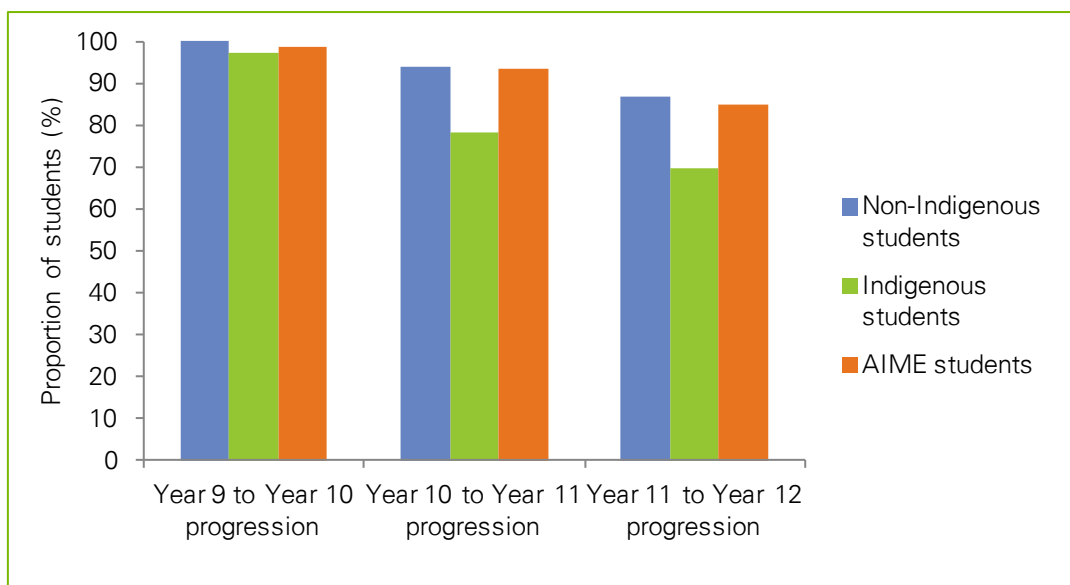
Source: AIME and ABS cat. no. 4221.0 - Schools, Australia, 2012

Chart 2.2: Student outcomes – Year 12 completion rates and transition to university, 2012
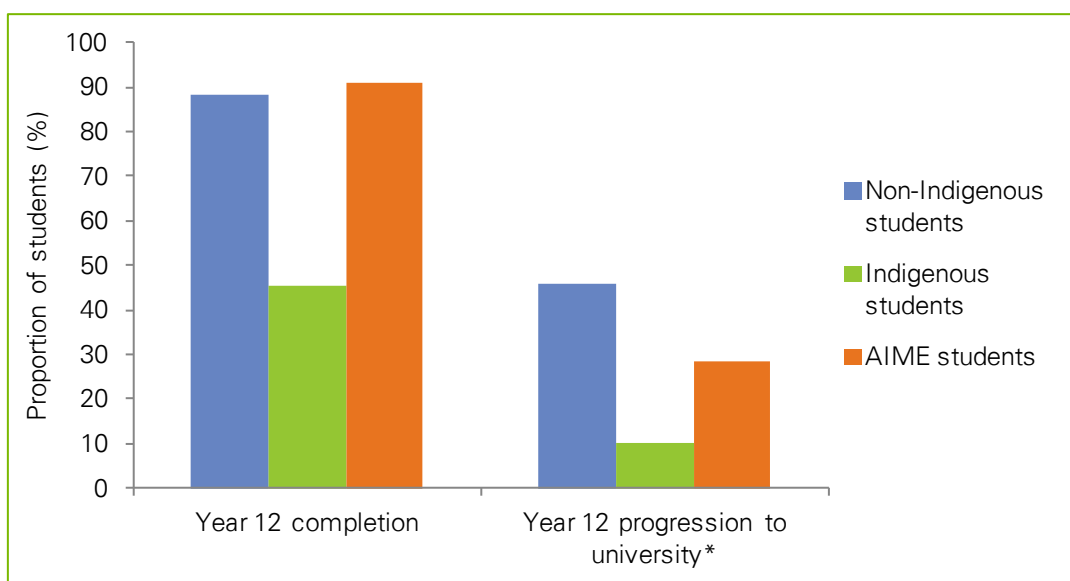
Source: AIME and ABS cat. no. 4221.0 - Schools, Australia, 2012

As shown in the above two figures, AIME students performed better than Indigenous students around the country, and reaching levels of school performance close to their non-Indigenous peers. In terms of year 12 completion rates, AIME students performed better than their non-Indigenous peers. Compared to Indigenous students around Australia, AIME students performed particularly better in year 12 completion (a difference of 48 per cent completion) and progression to university (a difference of 18 per cent transition). In terms of year 12 completion rates, AIME students performed better than their non-Indigenous peers by a 3 per cent difference.

2.3 Information on the AIME educational mentoring program

AIME delivers highly structured educational mentoring to students in years 9 to 12. The mentoring model is focused around university sites and is dependent on strong partnerships with universities and schools. Refer to Appendix A for a list of the universities and schools in 2012.

At each university site, AIME recruits Mentees and identifies and targets schools within a two hour travel time radius. An AIME Program Co-ordinator visits the schools and invites students in years 9 to 12 participate in the AIME program. Participating students (Mentees) are then matched with a university student (Mentors).

Schools either reside within 'Zone 1' (within a 30 minute trip to the university site) or 'Zone 2' (taking more than 30 minutes but less than two hours to travel to the university site), as shown in Figure 2.4.

Figure 2.3: The AIME model

● School in Zone 1 (within 30min travel)   ● School in Zone 2 (30min to 2hr travel)
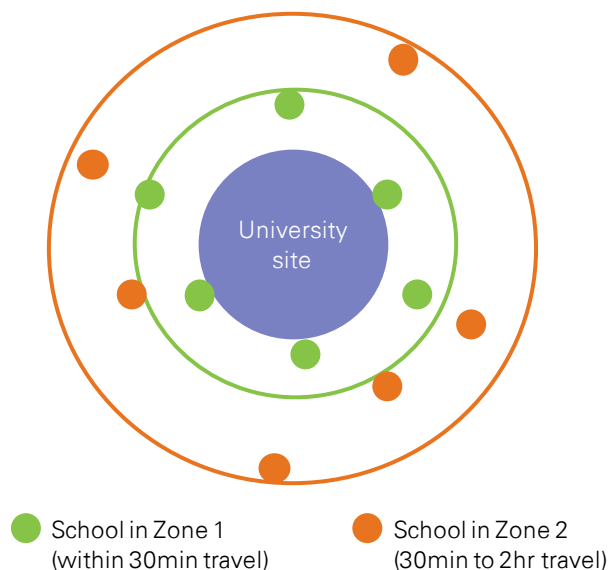
Source: AIME and KPMG

The program is comprised of a Core component and Outreach component. The Core component is targeted at years 9-12 students in schools in Zone 1 and involves one-hour weekly mentoring sessions over 13 weeks. The Outreach component is intended for years 9-12 students in schools in Zone 2 who attend full-day mentoring workshops four times a year. The two components use the same curriculum resources and apply the same pedagogical approach and techniques, with an adjustment made to compress the Core schedule into an Outreach format.

There are also Tutor Squads, which are groups of Mentors, who travel to schools during the program term to provide homework support for students. The Tutor Squad sessions are open for participation from any student in the school from years 7 to 12, although they are focused on Indigenous students.

Starting with 25 Mentors and 25 Mentees, in 2012 AIME connected over 1,400 Indigenous high school students with 950 volunteer university student Mentors, across 15 university sites and 121 high schools in NSW, Queensland and Victoria. In 2013, AIME extended into South Australia and Western Australia, with eight new university sites added to the program. This has resulted in 241 schools, 1070 Mentors and 2839 Mentees being reached in 2013.

Chart 2.3 shows the growth in the number of Mentees and Mentors of the organisation over time.

Chart 2.3: Growth in mentor and mentee numbers participating in the program
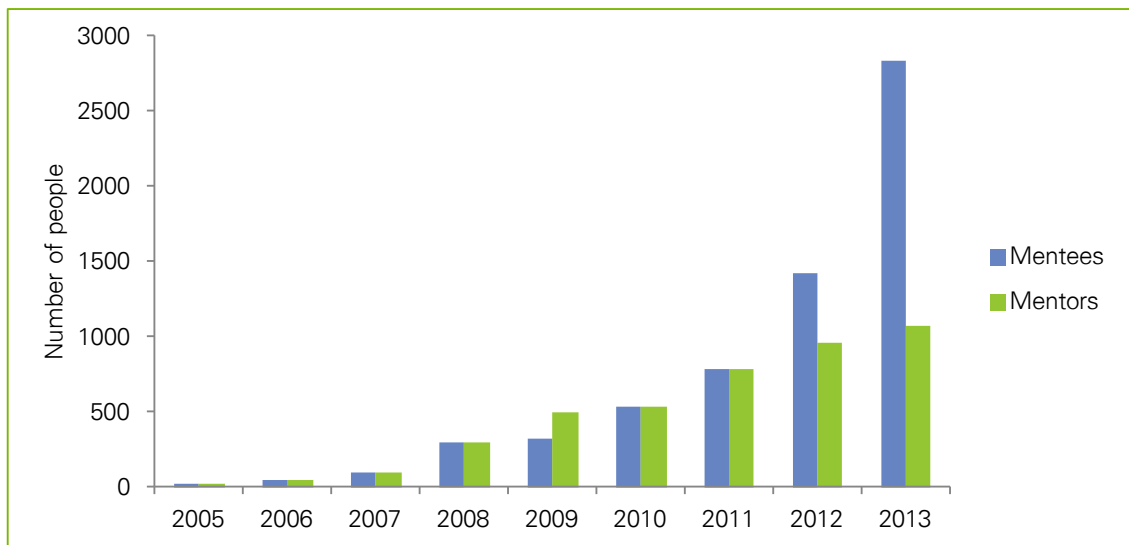
Source: AIME (2013)

As it can be seen, the number of Mentees grew 114 times and the number of Mentors grew 43 times over the seven year period.

2.4 AIME's strategic vision

AIME's growth plan is to establish AIME Centres around the country in regions where a university campus and significant local Indigenous student population are present. AIME's current state and growth plan are shown in Figure 2.4.

Figure 2.4: Current AIME locations and the growth strategy

Current state

- CENTRAL QUEENSLAND UNIVERSITY
- UNIVERSITY OF THE SUNSHINE COAST
- UNIVERSITY OF QUEENSLAND
- BOND UNIVERSITY
- SOUTHERN CROSS UNIVERSITY
- EDITH COWAN UNIVERSITY
- CURTIN UNIVERSITY
- UNIVERSITY OF SYDNEY
- UNIVERSITY OF WOLLONGONG
- MURDOCH UNIVERSITY
- UNIVERSITY OF SOUTH AUSTRALIA
- UNIVERSITY OF BALLARAT
- MONASH UNIVERSITY
- RMIT UNIVERSITY

Growth strategy

- DARWIN
- CAIRNS
- TOWNSVILLE
- TOOWOOMBA
- ARMIDALE
- FREMANTLE
- REGIONAL ADELAIDE
- NEWCASTLE
- GREATER ADELAIDE
- AUSTRALIAN CAPITAL TERRITORY
- CENTRAL NSW
- LAUNCESTON
- HOBART

Source: AIME and KPMG

As illustrated in the figure, currently there are 14 universities (22 university campuses) that reach over 2,800 high school students. Under the growth strategy, the existing sites could be transitioned into AIME Centres, along with the establishment of additional sites, as illustrated in the lower half of the figure.

Under the growth strategy, approximately 25 AIME Centres could be established across the country. It will mean that AIME will enter new areas, including the Northern Territory,

Tasmania and the Australian Capital Territory as well as expanding coverage of existing states.

The additional AIME Centres will enable more high school students and university students to be reached. There will be capacity to grow from 100 Mentees at each university site to 400 Mentees at each AIME Centre (on average). This means that from 2,839 high school students, the AIME program will engage 10,000 high school students.

3   The project approach

This chapter provides an overview of the approach adopted for the economic evaluation.

3.1   Our approach

The economic evaluation was conducted using a four-stage approach as illustrated below.

| 1. Literature scan and modelling framework | 2. Data and information gathering | 3. Cost benefit analysis | 4. Reporting |

3.1.1   Literature scan and modelling framework

To understand the impact of successful mentoring programs, the project team undertook a review of recent literature on comparable youth mentoring programs in other jurisdictions (within Australia, North America and United Kingdom).

The literature enabled the team to identify and understand the benefits which could potentially be included in the economic modelling framework for the AIME program.

Based on the findings of the literature review, the team developed an evaluation framework in consultation with AIME. Potential costs and benefits were categorised as impacts which:

- can be readily identified and valued in monetary terms

- can be identified and measured in physical terms but which cannot be easily valued in monetary terms

- are known to occur but cannot be precisely identified and accurately quantified.

The robustness of the economic evaluation is dependent on the evidence base of these costs and benefits and the categorisation above meant that the project team identified the costs and benefits that should be captured in the framework. Further details of the modelling framework are provided in Appendix B.

Once the likely costs and benefits were identified, the project team commenced information gathering.

3.1.2   Data and information gathering

The following information were requested and collected from AIME:

- student numbers

- pre- and post- participation surveys of students

- post school and leadership outcomes of students

- year 9 to 11 progression rates

- year 12 completion rate

- post-year 12 future intentions (university, vocational education and employment)

- the Index of Community Socio-Educational Advantage (ICSEA) of participating schools[1]

- independent evaluation of the AIME Outreach component in 2012

- AIME expenditure data

- in-kind support provided by AIME partners, funders and sponsors including volunteering hours provided by Mentors

- timeline information on AIME and its growth over time.

The project team also undertook three site visits to the University of Sydney to observe the program in action.

3.1.3 Economic analysis

Using the information collected and the economic modelling framework, the project team populated the economic evaluation framework and analysed costs and benefits of the program.

In undertaking the analysis, the following were completed:

- Establishing the counterfactual. Costs and benefits are incremental to the 'counterfactual' or base case. In this case the counterfactual is a situation in which the AIME program is not available to students.

- Determining the costs and benefits under the current situation (where AIME is available to students) and under the counterfactual (where AIME is not available to students).

- Undertaking a sensitivity analysis on the results. Data on costs and outcomes contain various degrees of uncertainty and potential bias. The sensitivity analysis allows the results of the analysis to be tested by varying key assumptions and to understand if there are particular assumptions for which the results are sensitive.

3.1.4 Reporting

Based on the findings of the previous stages, the project team reported on the results of the economic evaluation, which is this report.

3.2 Key limitations

The following sets out the key limitations of the economic evaluation:

---

[1] The ICSEA is an indicator of educational advantage of all the students in a school, as measured by the parents' occupation and level of education completed, and their educational achievement.

KPMG
cutting through complexity

- The economic evaluation quantifies the benefits relating to education (the potential total lifetime earnings of the AIME student population in 2012, compared to potential total lifetime earnings of a similarly sized group of Indigenous students around the country). These benefits were more readily identifiable and able to be valued in monetary terms. However, it should be noted that there are additional benefits of mentoring programs relating to health and crime as well as benefits for mentors (refer to Chapter 4).

- The economic evaluation is based on the outcomes for an AIME student compared to an Indigenous student in the same year (grade). One of these outcomes is successful progression through high school, and apparent retention data from the ABS was used to establish this.

Apparent retention data is available by Indigenous status and school type but not at a specific geographical level. This means that the progression of AIME students have been matched to Indigenous students from similar school types but not by region. As progression rates may differ by location (i.e. students from a rural or remote region may be less likely to progress through high school than students in metropolitan regions) there may be an overstatement of the impact of AIME on progression rates.

It is worth noting that based on the index of community socio-educational advantage (ISCEA) score, AIME schools are below the national average. The average ISCEA score for AIME schools is 986.14 compared to the scale average of 1000. This may reduce the degree of any overstatement in progression rates, given the relatively low socio-educational status of AIME schools.

To reflect the uncertainty associated with the progression rate, sensitivity analysis has been undertaken.

4   Youth mentoring: what works?

4.1 What are the issues facing Indigenous youth?

The Closing the Gap Clearinghouse (the Clearinghouse) is responsible for undertaking research and gathering evidence on what works to overcome Indigenous disadvantage. The Clearinghouse reports that there is a range of risk factors which may make young people more likely to engage in anti-social behaviours (Closing the Gap Clearinghouse, 2013). The risk factors include:

- the young person's own attitudes
- relationships within the family
- growing up in communities where there is widespread violence, alcohol and other substance abuse
- poverty
- poor health
- poor quality housing.

Indigenous young people face the additional challenge of dispossession, discontinuity of culture and intergenerational trauma.

However, a strong connection to culture, along with high self-esteem, a strong sense of autonomy and living in cohesive, functioning families and communities can support Indigenous young people to choose positive life pathways.

In the particular context of schooling, the main factors that influence completion rates for Indigenous students are access, attendance and achievement, with absenteeism being higher than for non-Indigenous students. Specific barriers include:

- physical (for example, due to geographic isolation)
- cultural (for example, due to discrimination)
- economic (for example, due to the costs associated with attending school)
- informational (for example, due to the lower levels of literacy in Indigenous communities) (Helme and Lamb 2011).

Poorer access and absenteeism contribute to lower academic achievement, making it more difficult for many Indigenous students to successfully complete school (Helme and Lamb 2011).

Mentoring aimed at Indigenous youth is intended to address many of these risk factors of Indigenous disadvantage and the barriers for schooling. It is for these reasons that mentoring can have powerful and lasting positive effects for at-risk youth and is regarded as a promising initiative more broadly (Ware 2013). Mentoring is also specifically listed as a

strategy which focuses on the needs of individual students in order to improve schooling outcomes (Ware 2013).

4.2 What is youth mentoring and what does a good mentoring program look like?

Youth mentoring is, according to the Australian Youth Mentoring Network, defined as 'a structured and trusting relationship that brings young people together with caring individuals who offer guidance, support and encouragement' (Costello and Thomson 2011).

The way a mentoring program is run and the nature of the mentoring relationship are crucial in making a difference in the lives of Indigenous youth.

Below is a summary from available evidence on what does, and does not, work in mentoring programs.

Table 4.1: What does and doesn't work in mentoring programs?

What works?	What doesn't work?
In terms of program design and implementation: • Obtaining input of the local Indigenous community in designing and delivering the program. • Involving Elders to pass on cultural knowledge to young people. • Having strong partnerships between the organisation and other services in the area. **In terms of the mentoring relationship:** • Long-term mentoring relationships (at least 12–18 months), based on common interests, mutual respect, genuine friendship, fun and a non-judgemental approach. • Mentoring that continues to support the young person as they experience positive changes. • Consistent, regular contact between mentor and mentee. • Involvement of Indigenous parents in the mentoring relationship. • Mentors who have 'been there, done that'.	• Short-term mentoring (6 months or less). • Infrequent or irregular contact between mentor and mentee, where the mentor is authoritarian or judgemental, or where there is too much emphasis on expected behavioural change rather than first building a friendship. • Too many goals can cause the mentee to become discouraged and give up. • Mentoring by peers is not an effective replacement for mentoring by adults

Source: Ware (2013).

At a high level the AIME program has many of the features of a successful program (refer to Box 4.1). The AIME program has also been specifically mentioned in a resource sheet by the Closing The Gap Clearinghouse as an effective mentoring program for Indigenous students (Helme and Lamb 2011).

The AIME model is premised on strong partnerships with the local community, particularly schools (e.g. AIME meets school contact teachers at least quarterly and school principals on an annual basis). AIME uses a local approach to its mentoring through the use of program coordinators who are based at a university site and who manage and run the mentoring on a day to day basis. The mentoring prioritises cultural safety and the program is tailored for the Australian Indigenous context for relevance. Mentoring relationships between Mentees and Mentors are long term as they last over a school year (and if students return, the mentoring is longer). Mentees also receive broader mentoring support from AIME through program coordinators and other AIME staff.

AIME also undertakes a careful selection process in recruiting mentors and staff, and provides extensive and ongoing support to Mentors. These are also features of successful mentoring programs (Ware 2013). At the start of each year at each university site, the AIME program coordinator is responsible for Mentor recruitment at the university. Mentors are selected on the basis of their attitude and 'fit' as a youth role model. There are also Presenters who are required to be Indigenous as they are the public face of AIME and present and lead mentoring sessions.

AIME provides online and face to face training for mentors as well as Mentor notes for each of the mentoring sessions. The mentoring is in a highly structured format to ensure quality and consistency of delivery.

All AIME staff meet quarterly for a training camp as an update and review on the year which has passed, and consider any changes to the program's structure or format for the following year. There is a strong emphasis on monitoring the program's effectiveness and continuous learning to refresh aspects of the program as necessary.

One of the most successful features of the program is that it is subject to a continuous learning approach to improve the mentoring program and increase its impact for students. Improvements have included changes to:

- the duration of the program (e.g. reduction in the program term from 15 weeks to 13 weeks)

- the curriculum and materials (e.g. switching from using inspirational stories of historical figures such as Martin Luther King to focusing on Indigenous Australians heroes like Eddie Mabo)

- allocation of resources (e.g. small group mentoring of up to three Mentees to one Mentor rather than one-on-one mentoring, to foster peer relationships between AIME students. At the same time, it also creates greater reach of the Mentors).

4.3 What are the benefits of an effective youth mentoring program?

There are very few formal evaluations of mentoring programs (and especially few that establish the long-term impacts of mentoring). Part of the challenge in evaluating

mentoring programs is that outcomes can be less direct and less straightforward to measure than other interventions (for example, it can be contrasted with employment programs which can produce very direct, employment outcomes). In addition, evaluation of mentoring programs strongly relies on participant observation and its subjective nature.

Nonetheless, there is growing evidence in the literature which provide strong indications of the benefits of mentoring programs, all of which relate to the domains of education, training and employment, offending behaviour and health and wellbeing.

At its core, mentoring seeks to:

- address risk factors associated with negative outcomes such as low achievement in school, anti-social peers and lack of community connections

- increase protective factors (those which ameliorate or prevent negative influences) such as skills development, pro-social attitudes and social bonds (AIC 2006).

The flow of logic of the efficacy of mentoring programs is that:

- youth mentoring is a unique form of early intervention

- early interventions for youth at risk are necessary to ensure young people's lives are not derailed

- youth mentoring can make a contribution to early intervention programs by providing young people with access to adult connections

- youth mentoring builds on young people's resilience, capacity and social inclusion

- successful early interventions have been found to decrease the financial burden to the state over a person's life (Costello and Thomson 2011).

The literature prior to 2009 on youth mentoring found a range of benefits of mentoring for young people. The evidence base concludes that:

- youth mentoring does provide a range of positive outcomes for young people

- youth mentoring can be an effective early intervention program for youth at risk of social isolation.

The evaluations that have been undertaken have suggested that youth mentoring programs can, for example:

- decrease truancy and improve health outcomes

- improve peer and parental relationships

- decrease youth violence

- increase social inclusion

- decrease high risk behaviour, such as drug use and sexual activity (Costello and Thomson 2011).

In their study on community education and youth mentoring, Broadbent and Papadopoulos (2009) also refer to research findings over the past two decades which highlight the

KPMG

cutting through complexity

positive contributions non-parental adults can make in the lives of young people. This research focuses on the link between mentoring and the health and well-being of young people. The research includes:

- one which was a synthesis of almost 800 research studies, which concluded that young people's connection with caring adults accounted for a range of developmental benefits, including higher self-esteem, greater engagement and performance in school, reduced delinquency and substance abuse and better mental health

- a longitudinal study of adolescent health which included adolescents who experienced a mentoring relationship since the age of 14. These adolescents exhibited better outcomes in mental health, problem behaviour and connection to general health outcomes

- Australian studies which found that mentoring can lead to a range of enhanced learning outcomes for students – academic, motivational, social and personal – at the same time providing benefits to the mentors, the school and the community (Broadbent and Papadopoulos 2009).

In 2010, the South Australian Government undertook a systematic evaluation over three years of their secondary school mentoring program.[2] The mentoring program was directed towards young people who were at risk of disengagement, particularly in transition years (years 10-11, years 11-12). The evaluation found the following:

- the vast majority of students (96 per cent) considered mentoring was beneficial and made a difference to their lives

- for students experiencing relationship difficulties, a significant proportion identified improvements in their relationships

- students struggling with future and career goals reported significant increases in their skills, decision making and capacity

- a significant proportion of schools with a mentoring program achieved higher completion rates for their Aboriginal students

- the participating schools had higher retention rates than non-participating schools.

Findings of a recent evaluation of the AIME Outreach component reflect the literature above. As previously mentioned, the Outreach component is the same as the Core component in content but the format is adapted to provide mentoring for students who attend schools further away in Zone 2. In the evaluation, the University of Wollongong found that AIME works successfully in a complex environment to make a difference in education and other outcomes for Indigenous young people engaged in the AIME program, including:

- the strength and resilience of mentees

- Mentee pride in being Indigenous

---

[2] Cited in Costello. and Thomson (2011).

- Mentees making strong connections with Indigenous peers, role models and culture
- aspirations and engagement for finishing school
- aspirations for continuing to further study
- school retention rates.

In addition to the benefits for young people being mentored, research shows that most people take on a volunteer mentoring role for reasons of both altruism and personal satisfaction. It is clear that many mentors gain much from their mentoring relationships with young people (Hartley 2004).

5 How did we approach the economic model?

5.1 Introduction to economic evaluation

Economic evaluation is a method to understand the advantages (the benefits) and disadvantages (the costs) of a program. It involves identifying the key benefits of participation in the AIME program and the costs associated with achieving these benefits.

These costs and benefits are quantified over the period in which they are experienced or incurred, and then brought back to today's dollars.[3] From this, the net benefit (i.e. benefits less costs) can be calculated. Alternatively, the benefit/cost ratio can be calculated which indicates the return on investment (e.g. $2 dollars in benefits are returned for every $1 of cost).

One of the important considerations is the attribution of costs and benefits to the AIME program. For example, in 2012, 91 per cent of students that participated in the AIME program completed year 12, with 31 per cent of these students going on to university in 2013. *But how many of these students would have completed year 12 even if they had not participated in the AIME program?* This question is addressed by establishing a counterfactual - the scenario which would have most likely happened to the students if they had not participated in the AIME program.

The costs and benefits are estimated for both the AIME program and the counterfactual to understand how the AIME program performs in comparison to the counterfactual. If the AIME program returns a greater net benefit than the counterfactual, then there is economic justification for the AIME program.

5.2 Applying the economic evaluation framework

The economic evaluation is based on the 1,018 students that participated in the AIME program in 2012, and the educational path taken in subsequent years.

For each year (grade) of students that participated in the AIME program it is estimated how many students are expected to complete year 12, and for those that do, how many are expected to undertake and complete vocational education or university. As discussed above, it is necessary to establish a counterfactual for these years (grades) such that the net benefits can be attributed to AIME.

---

[3] Unquantifiable costs and benefits, either through their inherent nature of due to lack of data, were not included directly in the economic evaluation.

This is illustrated in Chart 5.1. It shows that more students are expected to complete year 12 and go on to further education if they participate in the AIME educational mentoring program than if they do not.[4]

Chart 5.1: Pathways for students that participated in AIME in 2012

1,018 students

Pathway with AIME

420 students did not complete Year 12

598 students completed Year 12

169 went on to vocational studies

242 sought employment

187 went on to university

Pathway without AIME

674 students did not complete Year 12

334 students completed Year 12

112 went on to vocational studies

198 sought employment

34 went on to university
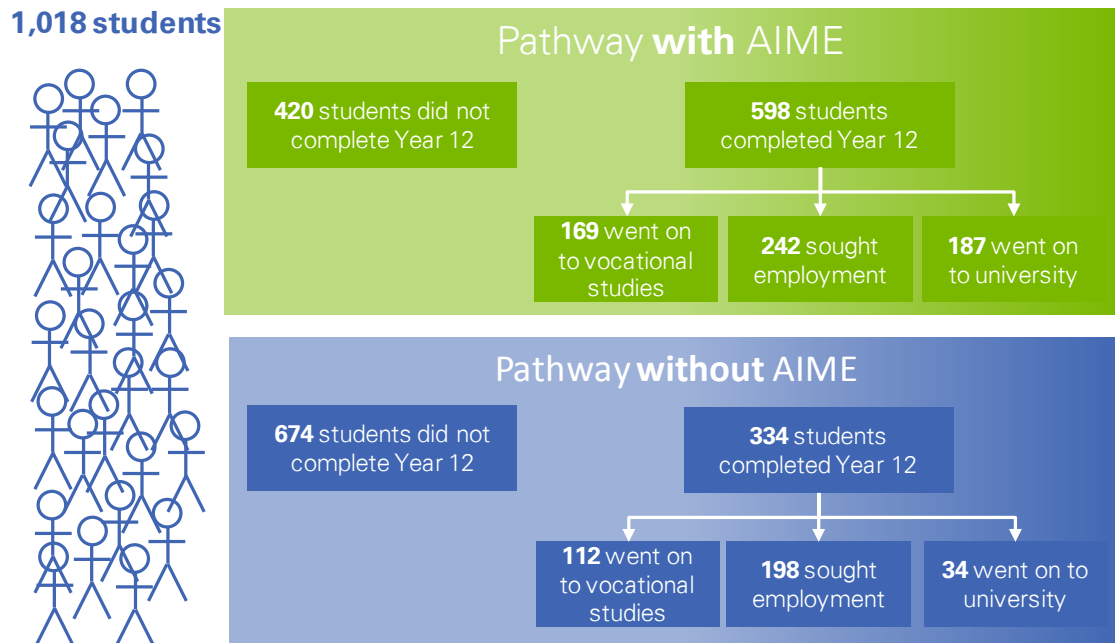
Source: KPMG calculations.

Once the numbers of students achieving certain education pathways were determined, costs and benefits were calculated for each level of education (e.g. the cost of vocational study is different from a university qualification; the income associated with graduation from vocational study is different from university).

5.3   Costs

This section identifies and quantifies where possible the costs associated with delivering the AIME program and associated benefits. This includes the direct program costs of AIME and the indirect costs associated with additional schooling and higher education.

5.3.1   Direct costs

In 2012 AIME had direct expenses of close to $4 million with a further $2.2 million provided in-kind (see Table 5.1).

---

[4] Please see Appendix B for further details about how these alternate paths were calculated.

Table 5.1: Cost of delivering the AIME program

Type of cost	Cost ($ million)[1]
Expenses	3.9
In-kind	2.2
Total	**6.1**

Notes: **1.** 2013 prices.
Source: AIME

5.3.2   Indirect costs

Related to the key benefit of higher education, an indirect cost of the AIME program is the cost of education. For each additional year of education, be that high school, vocational education or university, there is a cost (see Table 5.2).

Table 5.2: Cost of education, per year

Type of cost	Cost per year ($ '000)[1]
University degree (bachelor)[2]	16
Vocational education[3]	13
High school[4]	17

Notes: **1.** 2013 prices; **2.** Average cost per equivalent full time student load (EFTSL), not including research costs; **3.** Average of the cost of completing a Diploma, Certificate I/II and Certificate III/IV; **4.** Average cost of in and out of school secondary student costs per student.
Source: Deloitte Access Economics (2011); Independent Economics (2013); ACARA (2010).

The total cost of education for each person depends on the highest level of education achieved (e.g. year 10, year 12, vocational study or university) and when that education is undertaken (as the cost of education increases with inflation over time). The potential cost of education for a person in each year (grade) is set out in Table 5.3.

Table 5.3: Present value of educational costs per person by year, 2013-19[1,2]

Year (grade)	Highest level of education completed			
	University degree[3] ($ '000)	Vocational education[4] ($ '000)	Year 12 ($ '000)	Year 10 ($ '000)
Year 9	97	67	47	16
Year 10	84	53	32	-
Year 11	71	38	16	-
Year 12	57	23	-	-

Notes: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that an individual completes year 12 before undertaking university of vocational education, and that these are undertaken consecutively (i.e. no gap year); **3.** A university degree is assumed to take four years; **4.** A vocational qualification is assumed to take two years to complete.
Source: Group of Eight (2013); KPMG calculations

5.4   Total costs

The total cost of the AIME program is the sum of mentoring and education costs.

The total cost of education for AIME students is an estimated $31.7 million and the total cost of education in the counterfactual scenario is $17.1 million.[5] Consequently, the net cost of education attributable to AIME is $14.6 million (see Table 5.4).

Table 5.4: Present value of education costs[1]

	Highest level of education completed				Total
	University degree ($ million)	Vocational education ($ million)	Year 12 ($ million)	Below Year 12 ($ million)	($ million)
AIME student	14.6	7.9	6.0	3.2	31.7
Counterfactual	2.7	5.3	5.1	4.1	17.1
Net cost	**11.9**	**2.6**	**0.9**	**(0.8)**	**14.6**

*Note: **1.** 2013 prices using a discount rate of seven per cent.*
Source: KPMG calculations.

Together with the cost of delivering the AIME educational mentoring program in 2012 (see section 5.3.1), the total cost attributable to AIME is $20.7 million (see Table 5.5).

Table 5.5: Net present value of total costs attributable to AIME[1]

Type of cost	Value ($ million)
Mentoring	6.1
Education	14.6
Total	**20.7**

*Note: **1.** 2013 prices using a discount rate of seven per cent.*
Source: KPMG calculations.

5.5   Benefits

This section identifies and quantifies where possible the benefits associated with the AIME program. The primary benefit of the AIME program is the completion of higher levels of education (e.g. year 12, vocational education and university).

While there are indirect benefits from higher education, such as lower incarceration rates and improved health outcomes, only the direct benefit of higher income and employment rate has been included in the economic evaluation to be conservative when not enough information is yet known in the literature.

---

[5] See Table E.2 and Table E.3 in Appendix E for further details.

5.5.1 Higher incomes

Numerous empirical studies have been undertaken to establish the causal relationship between higher incomes and higher education. International studies generally find the average return to schooling between six and nine per cent (Harmon et al, 2000).

An Australian study has assessed the return to education, looking in more detail at the return to different levels of education (Leigh 2008). Leigh (2008) has estimated that university graduates earn 45 per cent more per year than those with only a year 12 education. Vocational education is also rewarded with a higher income, earning an additional 17 per cent per year compared to those with only year 12 education.[6]

The return on education for vocational and university education is applied to publically available data on income by age group for Indigenous persons that have completed year 12.

This is used to estimate the expected income for persons by level of education over their lifetime.

5.5.2 Higher employment

Higher education provides a return to persons through a higher employment rate. Leigh (2008) estimated that university graduates are 10 per cent more likely to be employed than persons with just year 12, and students that complete vocational studies (Diploma or Advanced Diploma) are 3 per cent more likely to be employed than persons with just year 12.

These findings are applied to employment rates for Indigenous persons with year 12 to estimate the employment rate by level of education (see Chart 5.2).

---

[6] This refers to Diploma and Advanced Diploma vocational education. The results were not statistically significant for Certificate Level III or IV.

Chart 5.2: Proportion of Indigenous persons employed by highest level of education
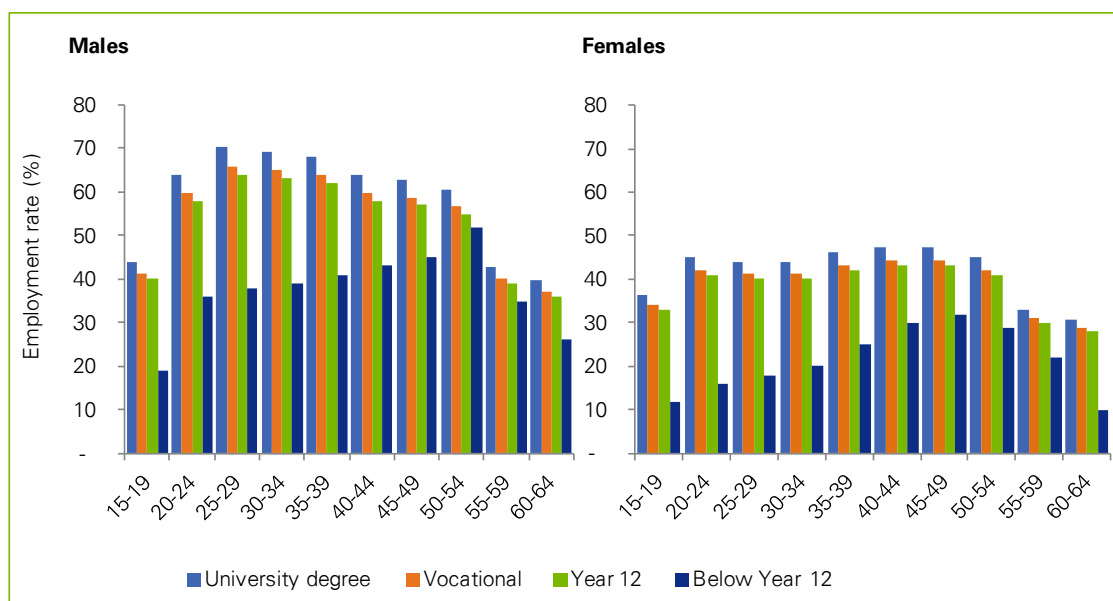
Note: **1.** Data corresponding to charts provided in Appendix E.
Source: Nepal and Brown (2008); Leigh (2008); KPMG calculations.

5.5.3 Total lifetime earnings

At an aggregate level, the lifetime earnings of a person are the result of income level and likelihood of employment each year. This is discounted to estimate the present value of lifetime earnings. The present value of lifetime earnings for each cohort of students that have participated in the AIME program is provided in Table 5.6.

Table 5.6: Present value of education benefits per person by year and gender[1,2]

Year (grade) of participation	Highest level of education completed			
	University degree[3] ($ '000)	Vocational education[4] ($ '000)	Year 12 ($ '000)	Year 10 ($ '000)
Male				
Year 9	527	417	363	210
Year 10	556	455	401	238
Year 11	586	479	423	247
Year 12	595	488	417	242
Female				
Year 9	311	257	229	107
Year 10	328	271	241	110
Year 11	345	286	254	114
Year 12	364	301	268	118

Notes: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that an individual completes Year 12 before undertaking university of vocational education, and that these are undertaken consecutively (i.e. no gap year); **3.** A university degree is assumed to take four years; **4.** A vocational qualification is assumed to take two years to complete.
Source: Group of Eight (2013); KPMG calculations

Comparing this to the non-completion of year 12, male AIME students that complete a university degree can be expected to earn an additional $332,000 over their lifetime. This is slightly lower for females (due to participation rates and income) and vocational education and completion of Year 12 (see Table 5.7).

Table 5.7: Marginal benefit of higher education per person by year and gender[1,2]

Average	Highest level of education completed		
	University degree[3] ($ '000)	Vocational education[4] ($ '000)	Year 12 ($ '000)
Male	332	225	167
Female	225	166	136

Notes: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that an individual completes Year 12 before undertaking university of vocational education, and that these are undertaken consecutively (i.e. no gap year); **3.** A university degree is assumed to take four years; **4.** A vocational qualification is assumed to take two years to complete. Source: KPMG calculations

5.6   Total benefits

The total benefit attributable to AIME is the benefit of education for AIME students relative to the counterfactual. The total benefit of education for AIME students is approximately $291 million.[7] The total benefit of education in the counterfactual scenario is $232.4 million.[8] Consequently, the net benefit of education attributable to AIME is $58.4 million (see Table 5.8).

Table 5.8: Net present value of education benefits attributable to AIME[1]

	Highest level of education completed				Total
	University degree ($ million)	Vocational education ($ million)	Year 12 ($ million)	Below Year 12 ($ million)	($ million)
AIME student	78.9	62.4	80.0	69.5	290.8
Counterfactual	15.3	40.6	63.5	112.9m	232.4
Net benefit	**63.5**	**21.8**	**16.4**	**(43.5)**	**58.4**

Note: **1.** 2013 prices using a discount rate of seven per cent.
Source: KPMG calculations.

---

[7] See Table E.4 in Appendix E for a breakdown of this figure by level of education, gender and year (grade) of participation.

[8] See Table E.5 in Appendix E for a breakdown of this figure by level of education, gender and year (grade) of participation.

6 Does the program deliver value-for-money?

This chapter presents the results from the economic evaluation and assesses whether the AIME program provides value of money.

Result: For every $1 in cost, there is a benefit of $7

The results show that the net benefit of the AIME program in 2012 is $38 million - refer to the chart below. The corresponding cost benefit ratio is 1 to7.2. This infers that for each $1 spent, $7 in benefits are generated.

Chart 6.1: Net present value of impact of the AIME program in 2012
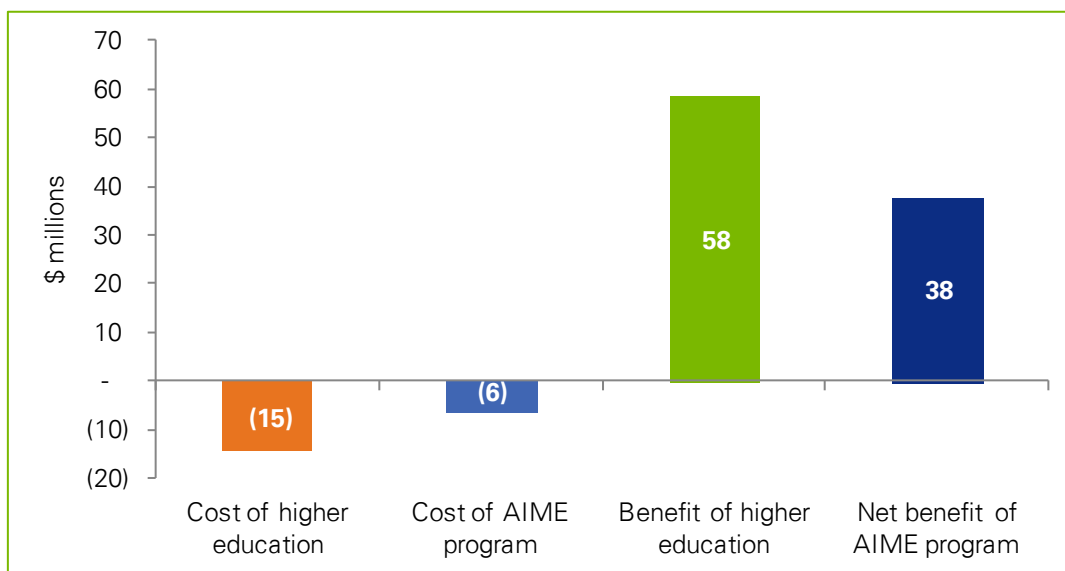
Note: **1.** 2013 prices using a discount rate of seven per cent.
Source: KPMG calculations.

6.1.1 Effect of changing the discount rates

A discount rate is used to bring back future money into today's terms and recognises that a person could have invested the money in the meantime. To bring future money into today's terms, a discount rate can be used to compare two scenarios, each involving different money being received at different points in time.

For example, if a person could either receive $100 today or double this if they waited ten years, it could be better for the person to receive $100 now depending on how they value money each year that passes.

The net benefit shown above was calculated using a real discount rate of seven per cent, however, there is no one universally accepted discount rate.

Consequently the sensitivity of the results to the selected discount rate was tested by calculating the net benefit with discount rates of four and 10 per cent in line with NSW Treasury guidelines (NSW Treasury, 2007).

The results show that the net benefits will range from $14.9 million with a discount rate of 10 per cent to $86.4 million with a discount rate of 4 per cent (see Chart 6.1).

Table 6.1: Net present value of the impact of the AIME program[1]

Discount rate	4 per cent ($ million)	7 per cent ($ million)	10 per cent ($ million)
Total cost	22.1	20.7	19.5
Total benefit	108.5	58.4	34.5
Net impact	**86.4**	**37.7**	**14.9**

Note: **1.** 2013 prices .
Source: KPMG calculations.

The cost benefit ratio corresponding to a four per cent discount rate is 15.2, and falls to 3.4 for a 10 per cent discount rate. This illustrates that the benefits substantially outweigh the cost associated with the educational mentoring program under both the lower and upper discount rate scenarios.

6.1.2 Sensitivity analysis

Sensitivity analysis was undertaken on the net benefit of AIME to understand the impact of changes in key assumptions on the results. The sensitivity analysis tested changes in:

- decreasing marginal impact of the program on progression rates throughout high school (post participation);

- Indigenous progression rates and Year 12 completion rate (used to establish the counterfactual);

- marginal return to income from completing a bachelor degree; and

- marginal return to income from vocational education (Diploma or Advanced Diploma).

Results from the sensitivity analysis show that the likely impact of the AIME program in is estimated to be between $35.0 million and $40.3 million using a 90 per cent confidence interval.[9] Further details of the sensitivity analysis methodology and results are presented in Appendix D.

---

[9] With a discount rate of seven per cent.

KPMG
cutting through complexity

7   What next?

The results of the economic evaluation indicate that the AIME educational mentoring program is creating $7 in benefits for $1 in cost of the program. These results are specific for all the students who participated in the program in 2012. It is also based purely on the education and employment benefits of the educational mentoring program without regard to broader or more indirect benefits that the program may be creating. For example, there were 232 students in 2012 who were reported by their schools as being inducted into positions of leadership. Positive role modelling by these students will encourage and inspire others to follow.

AIME has used continuous learning and research to inform its educational mentoring program and refresh the approach and content as needed. The high level of support by government, corporates, schools and universities is a testament to the success of AIME and its contribution toward Closing the Gap on Indigenous outcomes.

KPMG notes that AIME has already undertaken an independent evaluation by the University of Wollongong. The results confirm that the AIME program is achieving positive results with Indigenous students, with the vast majority of AIME participants achieving higher grade progression, school completion and university admission rates than the national Indigenous average. The research data also suggests that participation in AIME is successfully strengthening and solidifying students: resiliency, pride, sense of identity, connection with culture, aspirations for finishing school and aspirations for further study.

To continue building its success, KPMG recommends that AIME considers (noting that some of this work may be underway or planned):

- Monitoring benefits to validate the results of this economic evaluation which includes tracking outcomes after students enter university or vocational study e.g. what did students study? Did they complete university or vocational education? How long did it take for gainful employment to be obtained?

- Gathering data on a comparator group of students, for example, the progression rates, year 12 completion rates and university transition rates for other Indigenous students at the same schools which are participating in the AIME program. This may be a more appropriate comparison for AIME students than an average Indigenous student across Australia.

- Increasing the engagement of parents in the program and formally build this into the mentoring model.

- Revising the pre and post survey to include questions that inquire about how a young person's experience changed as a result of AIME. For example, rather than yes/no/unsure responses to the questions "Have you thought about going to uni before AIME?" and "Do you think you will go to uni?" - these could be replaced by:

KPMG
cutting through complexity

"Do you think you will go to uni or other study (e.g. apprenticeship)?" (responses can be: yes/no/unsure)

"And has AIME helped you in the thoughts about further study?" (responses can be not at all /a little bit /very much /it's changed my thoughts completely)

- Closely monitoring the impact of the transition to AIME Centres under the growth strategy and continue to monitor the effectiveness of the educational mentoring program under the new mode of delivery.

- Sharing key learnings and insights with other successful Indigenous mentoring programs.

Technical appendices

A Current participating universities and schools

AIME provided a current list of participating universities and schools to KPMG over the course of the project (see Table A.1).

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
NSW	University of Sydney	Alexandria Park Community School	1020
		Ashfield Boys High School	1028
		Asquith Girls High School	1061
		Blacktown Boys High School	990
		Blacktown Girls High School	975
		Cambridge Park High School	916
		Colo High School	1006
		Concord High School	1098
		Cranbrook School	1189
		Cranebrook High School	913
		Doonside High School	926
		Dulwich High School of Visual Arts and Design	1069
		Endeavour Sports High School	973
		Evans High School	956
		Fairfield Patrician Brothers College	999
		Hills Sports High School	972
		Ingleburn High School	963
		JJ Cahill Memorial High School Memorial High School	969
		Kingswood High School	935
		Mackellar Girls High School	1082
		Marrickville High School	959
		Marsden High School	1027
		Matraville Sports High School	867
		Meriden School	1165
		Mitchell High School	976
		Newtown High School of the Performing Arts	1131
		Northmead Creative and Performing Arts High School	1013
		Parramatta High School	1027
		Plumpton High School	943
		Quakers Hill High School	980
		Randwick Boys' High School	1057
		Riverside Girls High School	1096

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
		Riverstone High School	912
		Rooty Hill High School	961
		Rose Bay Secondary College	1124
		Rosemount Study Support Centre	-
		Seven Hills High School	943
		South Sydney High School	1008
		Southern Cross Catholic Vocational College	993
		St Andrew's Cathedral School	-
		St Scholastica's College	1122
		St. Dominics Catholic College	1009
		Sydney Secondary College Balmain Campus	1102
		Sydney Secondary College Blackwattle Bay Campus	1098
		Sydney Secondary College Leichhardt Campus	1082
		Tara Anglican College	1163
		Tempe High School	1019
		Windsor High School	919
		Wyndham Senior College	973
	University of Wollongong	Albion Park High School	955
		Bega High School	972
		Bomaderry High School	977
		Bombala High School	984
		Bulli High School	1037
		Corrimal High School	934
		Dapto High School	963
		Eden Marine High School	965
		Figtree High School	1008
		Illawarra Sports High School	925
		Kanahooka High School	915
		Keira High School	1000
		Kiama High School	1043
		Lake Illawarra High School	915
		Lumen Christi Catholic College	1069
		Narooma High School	975
		Nowra Anglican College	1063
		Nowra High School	981

KPMG
cutting through complexity

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
		Oak Flats High School	938
		Shoalhaven Anglican School	1070
		Shoalhaven High School	883
		St John The Evangelist Catholic High School	1006
		Ulladulla High School	974
		Vincentia High School	927
		Warilla High School	953
		Warrawong High School	915
		Wollongong High School of the Performing Arts	1030
		Woonona High School	979
	Southern Cross University	Alstonville High School	1116
		Ballina High School	873
		Bishop Druitt College	981
		Bonalbo Central School	1034
		Bowraville Central School	933
		Byron Bay High School	1030
		Casino High School	1016
		Coffs Harbour High School	963
		Coffs Harbour Senior College	921
		Evans River K-12 School	926
		Grafton High School	915
		John Paul College	933
		Kadina High School	960
		Lismore High School	1026
		Maclean High School	916
		McAuley Catholic College	869
		Mullumbimby High School	1068
		Nambucca Heads High School	897
		Orara High School	946
		Richmond River High School	950
		Shearwater Steiner School Mullumbimby	917
		South Grafton High School	1005
		Southern Cross K-12 School Ballina	998
		St Mary's Catholic College Casino	1131
		Tenterfield High School	989

KPMG
cutting through complexity

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
		Toormina High School	979
		Trinity Catholic College Lismore	941
		Woolgoolga High School	1078
VIC	Monash University	Alkira Secondary College	987
		Avila College	1082
		Cranbourne Secondary College	943
		Dandenong High School	961
		Dromana Secondary College	982
		Elisabeth Murdoch College	965
		Fountain Gate Secondary College	961
		Frankston High School	1044
		Genazzano FCJ College	1186
		Hallam Senior College	958
		Hampton Park Secondary College	955
		Kambrya Secondary College	977
		Koo Wee Rup Secondary College	962
		Lyndale Secondary College	970
		Lyndhurst Secondary College	942
		McClelland Secondary College	954
		Monterey Secondary College	932
		Mount Eliza Secondary College	1037
		Mount Erin Secondary College	969
		Patterson River Secondary College	967
		Rosebud Secondary College	967
		Scotch College	1197
		Sports Education & Development Australia	-
		Trinity Grammar School	1189
		Xavier College	1177
	RMIT University	Brookside College	-
		Brunswick Secondary College	1051
		Bundoora Secondary College	952
		Footscray City College	997
		Healesville High School	940
		Hume Central Secondary College	927
		Kurunjang Secondary College	948

State	University full name	School	ICSEA value
		Lakeview Senior College	-
		Laverton Secondary College	936
		Manor Lakes P-12 College	980
		Maribyrnong College	976
		Melton Secondary College	945
		Parade College	1045
		Point Cook Senior College	1003
		Reservoir High School	921
		Roxburgh College	937
		Santa Maria College	1028
		Staughton College	939
		Surf Coast Secondary College	1050
		Sydney Road Community School	957
		Thornbury High School	988
		Wyndham Central Secondary College	936
	University of Ballarat	Ballarat Grammar School	1137
		Ballarat Secondary College	1071
		Mount Clear Secondary College	979
		Phoenix College	938
QLD	Bond University and Southern Cross University, Gold Coast	Banora Point High School	951
		Coombabah State High School	971
		Elanora State High School	984
		Helensvale State High School	998
		Keebra Park State High School	962
		Kingscliff High School	974
		Loganlea State High School	916
		Murwillumbah High School	968
		Nerang State High School	960
		Pacific Pines State High School	1005
		Palm Beach Currumbin State High School	998
		Shailer Park State High School	963
		Southport State High School	974
		St Michaels College	1046
		Tweed River High School	937
		Upper Coomera State College	983

KPMG

cutting through complexity

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
		Varsity College	1038
		Wollumbin High School	980
	University of Queensland	Bremer State High School	935
		Bundamba State Secondary College	911
		Coorparoo Secondary College	1026
		Corinda State High School	972
		Ipswich State High School	910
		Kedron State High School	1062
		Murri School	649
		St Peter Claver College	965
		Wavell State High School	997
	University of the Sunshine Coast	Beerwah State High School	978
		Burnside State High School State High School	974
		Caboolture State High School	957
		Caloundra State High School	986
		Coolum State High School	997
		Gympie State High School	961
		James Nash State High School	965
		Maroochydore State High School	1029
		Meridan State College	1010
		Morayfield State High School	940
		Mountain Creek State High School	1039
		Nambour State High School	974
		Sunshine Beach State High School	1031
	Central Queensland University	Emmaus College	994
		Glenmore State High School	919
		North Rockhampton State High School	917
WA	Murdoch University	All Saints College	1161
		Armadale Senior High School	929
		Cecil Andrews Senior High School	902
		Hamilton Senior High School	940
		Kelmscott Senior High School	977
		Lynwood Senior High School	979
		Melville Senior High School	1005
		Seton Catholic College	1011

KPMG
cutting through complexity

Table A.1: Progression rates for AIME students, 2012

State	University full name	School	ICSEA value
		South Fremantle Senior High School	967
		Thornlie Senior High School	963
		Warnbro Community High School	963
	Curtin University	Belmont City College	929
		Cannington Community College	958
		Catholic Agricultural College	957
		Clontarf Aboriginal College	-
		Darling Ranges Sports College	953
		Ellenbrook Secondary College	981
		Guildford Grammar School	1127
		John Forrest Secondary College	1006
		Kent Street Senior High School	1000
		Southern River College	915
		St Mary's Anglican Girls School	1156
		Wesley College	1146
	Edith Cowan University	Aranmore Catholic College	1020
		Balga Senior High School	836
		Girrawheen Senior High School	903
		La Salle College	1011
		Mount Lawley Senior High School	1071
		Ocean Reef Senior High School	1032
		Swan View Senior High School	922
		Trinity College	1111
		Warwick Senior High School	936
SA	University of South Australia	Fremont Elizabeth City High School	908
		Kaurna Plains School	623
		Para Hills High School	948
		Parafield Gardens High School	942
		Paralowie R-12 School	931
		Roma Mitchell Secondary College (Co-ed campus)	947
		Roma Mitchell Secondary College (Girls campus)	947
		Salisbury East High School	957
		Salisbury High School	921
		Windsor Gardens Vocational College	924

Source: AIME.

KPMG
cutting through complexity

B Estimating alternate progression pathways

AIME provided data to KPMG on the number of students that participated in the AIME program in 2012 and the number of students that progressed to the subsequent year of schooling (see Table B.2).

Table B.2: Progression rates for AIME students, 2012

Year of participation	Students (no.)	Progressed (no.)	Progression rate (%)
Year 9	350	345	99
Year 10	296	277	94
Year 11	248	210	85
Year 12[1]	124	113	91

Note: **1.** Year 12 data refers to participation and completion of Year 12.
Source: AIME; KPMG calculations.

For year 12 students, AIME also collected information on their intentions for post-school education (see Table B.3)

Table B.3: Post-Year 12 intentions, 2012

	Vocational education	University	Employment
Number of students	32	35	46
Share (%)	28	31	41

Source: AIME; KPMG calculations.

The AIME data tells us the progression rate of students in their current year (grade) but their subsequent progression rates are unknown. For example, does a student that participated in year 9 progress from year 10 to 11 at the same rate as students that participated in year 10 (94 per cent)? Or at some other rate, such as the counterfactual progression rate (see Table B.4)?

Table B.4: Counterfactual progression rates[1]

Year of participation	Progression rate (%)
Year 9	97
Year 10	78
Year 11	69
Year 12	54

Notes: **1.** Weighted (by school type) apparent retention rate for years 9 to 11. Year 12 refers to the Indigenous completion rate of year 12 and equivalent education.
Source: ABS 2013, 'Table 63a, Apparent retention rates, by single year (grade), 1998-2012', Schools, Australia, 2012, cat. no. 4221.0, Canberra; KPMG calculations. COAG Reform Council 2013, Education in Australia: Five years of performance, report to the Council of Australian Governments, p. 60.

It is likely that the progression rate in subsequent years lies somewhere between the AIME progression rate and the counterfactual progression rate. It is also likely the over time, the effect of participation in AIME on progression rates will reduce, and approach the counterfactual progression rate. To reflect this, a progression rate for students in the

subsequent years of schooling has been estimated by weighting the AIME progression rate and the counterfactual progression rate, where the weight of the AIME progression rate declines by 25 percentage points each year since participation in the AIME program.[10]

Table B.5: Share of progression rate taken from AIME and counterfactual

Years since participation in the AIME program	AIME progression rate (%)	Counterfactual progression rate (%)
1	75	25
2	50	50
3	25	75

Source: AIME; KPMG calculations.

This calculation results in a unique progression rate for each year (grade) of AIME participants for each remaining year of high school (see Table B.6).

Table B.6: Progression rates

Year of participation	Progression rates (%)			
	2012	2013	2014	2015
Year 9	99	90	77	63
Year 10	94	81	73	-
Year 11	85	82	-	-
Year 12	91	-	-	-

Source: KPMG calculations.

Given these progression rates, the number of students that complete year 12 can be estimated (see Table B.7)

Table B.7: Number of students completing year 12

Year of participation	Students participating (no.)	Progression of students (no.)			
		2012	2013	2014	2015
Year 9	350	345	310	238	**150**
Year 10	296	277	201	**162**	
Year 11	248	210	**172**		
Year 12	124	**113**			

Source: KPMG calculations.

Once the number of students completing year 12 has been calculated, it is then necessary to estimate how many of these students will proceed to vocational education or

---

[10] To reflect the subjectivity of this weighting, it is included in the sensitivity analysis.

university.[11] This estimation is based on applying the intentions of 2012 high school graduates (see Table B.3) to all other AIME students that graduate (see Table B.8)

Table B.8: Year 12 students, and post-schooling education

Year of participation	Completed year 12 (no. of students)	Post-school education (no. of students)	
		Vocational education	University
Year 9	150	43	47
Year 10	162	45	52
Year 11	172	49	53
Year 12	113	32	35
Total	**598**	**169**	**187**

Source: KPMG calculations.

---

[11] To simplify the number of alternate pathways for students, it has been assumed that vocational education is undertaken after completing high school.

C Data sources

Table C.1 outlines the data sources that have been used to undertake the economic evaluation.

Table C.1: Data items used in the estimation of the costs and benefits of the AIME program

Data item	Used, how?	Source
Gross domestic product, chain volume measure	Calculation of labour productivity	ABS 2013, Table 1: Key national accounts aggregates, Australian National Accounts, cat. no. 5206.0
Hours worked	Calculation of labour productivity	ABS 2010, Table 19: Aggregate monthly hours worked by employment status and sex – Trend and seasonally adjusted, Labour Force Australia, cat .no. 6202.0.
Wage indexation	Inflate wage to current prices.	ABS 2013, All WPI Series: Original (financial year index numbers for year ended June quarter), Wage Price Index, Australia, cat. no. 6345.0.
Consumer price index	Inflate education and mentoring costs to current prices	ABS 2013, Tables 3 and 4: Groups, weighted average of eight capital cities, Index numbers and percentage change, Consumer Price Index, Australia, cat. no. 6401.0.
Annual income	Basis of measuring the return to additional education.	Nepal B, Brown L 2008, Estimating lifetime socio-economic disadvantage in the Australian Indigenous population and returns to education, NATSEM paper, Canberra.
Employment rate	Probability of earning the average income.	Nepal B, Brown L 2008, Estimating lifetime socio-economic disadvantage in the Australian Indigenous population and returns to education, NATSEM paper, Canberra.
Progression rates	Probability of progressing through high school.	AIME, 2013.
Apparent retention rates	Counterfactual for progression from Years 9 to 12.	ABS 2013, 'Table 63a, Apparent retention rates, by single year (grade), 1998-2012' , Schools, Australia, 2012, cat. no. 4221.0, Canberra.
Post year 12 intentions	Probability of students going on to further studies.	AIME, 2013.
Mentoring costs	Cost of delivering the mentoring program.	AIME, 2013.

(continued next page)

KPMG
cutting through complexity™

Table C.1: Data items used in the estimation of the costs and benefits of the AIME program

Data item	Used, how?	Source
Year 12 completion rate	Counterfactual for completion of year 12 for Indigenous students.	COAG Reform Council 2013, Education in Australia: Five years of performance, report to the Council of Australian Governments, p. 60.
Marginal return of post-school qualifications to income	Inflate average annual income for those with higher education	Leigh A, 2008 'Returns to Education in Australia', Economic Papers, vol. 27, issue 3, pp. 233–249, September.
Marginal return of post-school qualifications to employment	Inflate average annual income for those with higher education	Leigh A, 2008 'Returns to Education in Australia', Economic Papers, vol. 27, issue 3, pp. 233–249, September.
Cost of a university degree	The cost of additional education.	Deloitte Access Economics 2011, Higher education teaching and learning costs, prepared for the Department of Education, employment and workplace relations, August.
Cost of vocational education	The cost of additional education.	Independent Economics 2013, Cost-benefit analysis and returns from additional investment in Vocational Education and Training, prepared for TAFE Directors Australia.
Cost of higher school	The cost of additional education.	Australian curriculum, assessment and reporting authority (ACARA) 2010, National Report on Schooling in Australia, Table 51, Australian, State and Territory government recurrent expenditure per student in government schools by level of education, by State and Territory, 2005–06 to 2009–10 ($/full-time equivalent student – accrual basis; including user cost of capital)

Source: KPMG

KPMG

cutting through complexity ™

D Sensitivity analysis

A probabilistic sensitivity analysis was undertaken to measure the impact of changes in key inputs on the results of the economic evaluation. It was undertaken using @RISK software which uses Monte Carlo techniques to simulate the impact of changes in one or more assumptions on the model outputs.[12]

Sensitivity analysis provides statistical information about models which helps to understand the:

- interactions between key factors which drive model outputs; and
- reliability of central estimates of model outputs.

Although all inputs and assumptions in a model may be subject to variation in practice, sensitivity analysis was only undertaken on a selected number of key inputs to ensure the value of the analysis was not diminished by unnecessary detail.

D.1 Specification for sensitivity results

The sensitivity analysis used assumptions about the probability distributions of each economic evaluation model input along with its maximum and minimum values.[13] Triangular distributions were used with a ten per cent range on either side.

Table D.1 presents the assumptions used to underpin the sensitivity analysis.

Table D.1: Sensitivity analysis assumptions

Variable	Minimum	Mean	Maximum
Decreasing marginal impact of AIME on progression rates (%)	0.23	0.25	0.28
Probability of completing Year 12 (Grade 12) (%)	0.49	0.54	0.59
Marginal return to income from a Bachelor degree (%)	0.41	0.45	0.50
Probability of completing Year 12 (Grade 9) (%)	0.25	0.28	0.31
Probability of completing Year 12 (Grade 10) (%)	0.26	0.29	0.32
Probability of completing Year 12 (Grade 11) (%)	0.34	0.37	0.41

Source: KPMG calculations.

---

[12] @RISK for Excel (v 6) was used by KPMG under license and is Copyright © 2010 by Palisade Corporation.

[13] Probability distributions map each potential event with a numerical probability subject to the constraint that the sum of the probabilities of all events equals one.

D.2　Sensitivity results

The sensitivity analysis was undertaken with 10,000 simulations. Results are presented in Table D.2 and illustrated in Chart D.1. These results show that the likely net benefit of the AIME program in 2012 is estimated to be between $35.0 million and $40.3 million with 90 per cent confidence.

Table D.2: Sensitivity analysis results

Variable	5th percentile ($ million)	Mean ($ million)	95th percentile ($ million)	Standard deviation
Net impact of AIME program	35.0	37.7	40.3	1,594,278

Source: KPMG calculations.

Chart D.1: Distribution of the net benefits from AIME
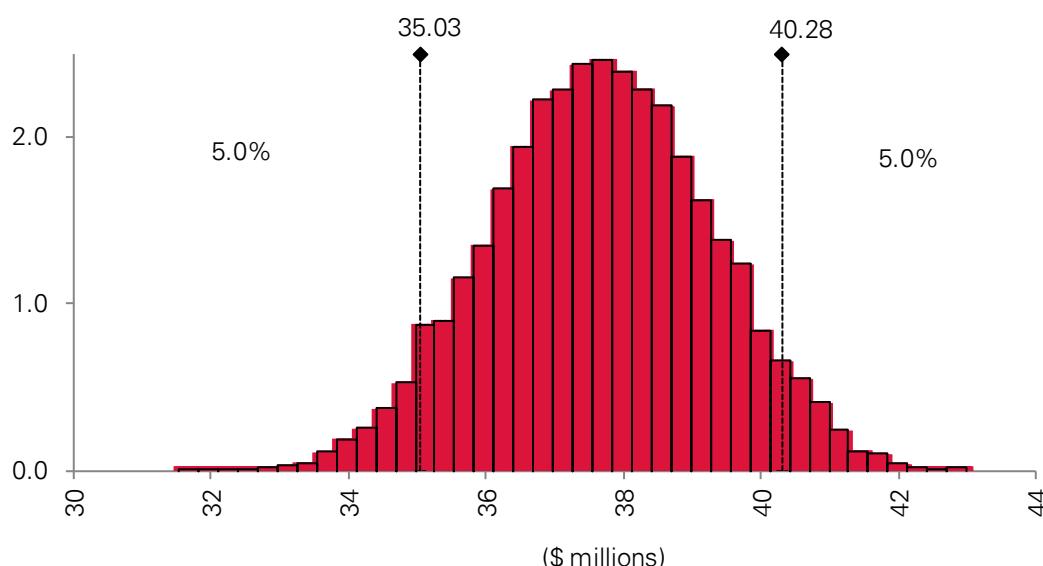
Source: KPMG calculations

The Spearman's rank correlation coefficients were also estimated to better understand the relative significance of tested model inputs in driving the model outputs. Spearman's rank correlation coefficients range between negative one and one and are a measure of the strength of the positive or negative dependence between two variables.

Estimates of the correlation coefficients between key inputs and the net benefit of AIME in 2012 are provided in Chart D.2. The two most significant drivers of the net benefits are the decreasing marginal impact of the AIME program on progression rates in subsequent years, and the marginal return to income from a bachelor degree.

These are expected given that:

- a decrease in the impact of AIME on progression rates reduces the expected number of students to complete year 12; and

- the marginal return to income is a key variable in calculating the difference between the AIME scenario and the counterfactual.

Chart D.2: Estimated correlation coefficients for the net benefits of AIME
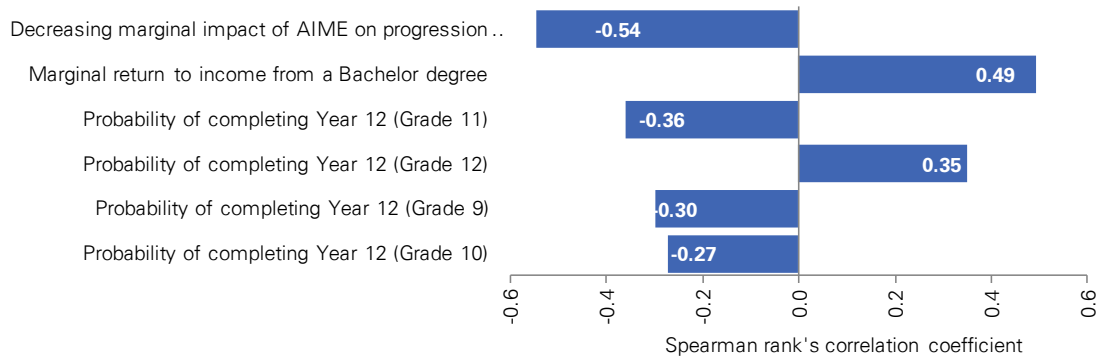
Source: KPMG calculations.

E Data tables

The purpose of this appendix is to provide additional data that is used in the calculations.

E.1 Employment rates

Table E.1: Proportion of Indigenous persons employed by highest level of education

Age group	Highest level of education completed			
	University degree	Vocational education	Year 12	Below year 12
Males				
15-19	51	41	40	19
20-24	72	60	58	36
25-29	74	66	64	38
30-34	73	65	63	39
35-39	72	64	62	41
40-44	72	60	58	43
45-49	71	59	57	45
50-54	70	57	55	52
55-59	66	40	39	35
60-64	41	37	36	26
Females				
15-19	43	34	33	12
20-24	55	42	41	16
25-29	56	41	40	18
30-34	55	41	40	20
35-39	56	43	42	25
40-44	58	44	43	30
45-49	60	44	43	32
50-54	59	42	41	29
55-59	49	31	30	22
60-64	44	29	28	10

Source: Nepal and Brown (2008); Leigh (2008); KPMG calculations.

E.2   Costs

Table E.2: Present value of cost of education for AIME students[1]

Year (grade of participation)	Highest level of education completed			
	University degree	Vocational education	Year 12	Below year 12[2]
Males				
Year 9	1,816,999	1,531,719	1,626,334	1,640,937
Year 10	1,366,334	1,049,908	958,912	-
Year 11	1,536,128	1,016,772	654,139	-
Year 12	798,430	397,270	-	-
Females				
Year 9	2,680,657	1,329,281	1,230,443	1,585,624
Year 10	3,017,085	1,363,745	1,085,863	-
Year 11	2,198,755	856,099	480,159	-
Year 12	1,180,331	345,465	-	-
Total	**14,594,719**	**7,890,259**	**6,035,850**	**3,226,561**

Note: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that at least year 10 has been completed.
Source: KPMG calculations.

Table E.3: Present value of cost of education for counterfactual students[1]

Year (grade of participation)	Highest level of education completed			
	University degree	Vocational education	Year 12	Below year 12[2]
Males				
Year 9	485,988	1,093,137	1,349,143	2,065,450
Year 10	295,638	606,149	643,517	-
Year 11	336,209	593,786	444,048	-
Year 12	192,272	255,263	-	-
Females				
Year 9	469,607	1,056,290	1,303,666	1,995,828
Year 10	427,576	876,662	930,707	-
Year 11	315,196	556,674	416,295	-
Year 12	186,168	247,160	-	-
Total	**2,708,655**	**5,285,121**	**5,087,376**	**4,061,278**

Note: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that at least year 10 has been completed.
Source: KPMG calculations.

E.3 Benefits

Table E.4: Present value of benefits of education for AIME students[1]

Year (grade of participation)	Highest level of education completed			
	University degree	Vocational education	Year 12	Below Year 12[2]
Males				
Year 9	9,909,364	9,512,856	12,687,247	21,345,614
Year 10	9,051,825	8,999,173	12,137,433	13,016,918
Year 11	12,753,420	12,679,236	17,100,836	9,696,688
Year 12	8,387,154	8,352,308	10,912,413	1,351,837
Females				
Year 9	8,624,468	5,093,979	6,044,640	10,482,358
Year 10	11,791,442	6,964,529	8,264,281	8,736,002
Year 11	10,769,016	6,360,640	7,547,692	4,211,880
Year 12	7,587,675	4,481,605	5,317,982	639,921
Total	**69,481,219**	**62,444,326**	**78,874,363**	**80,012,524**

Note: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that at least year 10 has been completed.
Source: KPMG calculations.

Table E.5: Present value of benefits education for counterfactual students[1]

Year (grade of participation)	Highest level of education completed			
	University degree	Vocational education	Year 12	Below year 12[2]
Males				
Year 9	2,650,434	6,789,007	10,524,846	26,867,762
Year 10	1,958,575	5,195,541	8,145,318	20,417,274
Year 11	2,791,316	7,404,565	11,608,520	19,811,289
Year 12	2,019,731	5,366,727	8,150,360	7,025,131
Females				
Year 9	1,510,864	4,047,839	6,404,354	13,194,162
Year 10	1,671,063	4,477,038	7,083,417	13,702,579
Year 11	1,543,762	4,135,977	6,543,803	8,605,285
Year 12	1,196,767	3,206,323	5,072,936	3,325,494
Total	**112,948,976**	**40,623,017**	**15,342,511**	**63,533,554**

Note: **1.** 2013 prices using a discount rate of seven per cent; **2.** Assumes that at least year 10 has been completed.
Source: KPMG calculations.

References

Australian Bureau of Statistics (ABS) 2013a, Australian National Accounts, cat. no. 5206.0, Canberra.

- 2013b, Wage Price Index, Australia, cat. no. 6345.0, Canberra.

- 2013c, Consumer Price Index, Australia, cat. no. 6401.0, Canberra.

- 2013d, Schools, Australia, 2012, cat. no. 4221.0, Canberra.

- 2010, Labour Force, Australia, cat .no. 6202.0, Canberra.

Australian curriculum, assessment and reporting authority (ACARA) 2012, National Report on Schooling in Australia 2010, Sydney.

Australian Institute of Criminology 2006, Mentoring and crime prevention: what is good practice?, AICrime Reduction Matters no. 43.

Broadbent R and Papadopoulos T 2009, 'Community education and youth mentoring: how to build good practice', *Australian Journal of Adult Learning*, vol. 49, no. 2, pp. 318-351.

COAG Reform Council 2013, Education in Australia: Five years of performance, report to the Council of Australian Governments.

Council of Australian Government (COAG) 2008, Factsheet on National Indigenous Reform Agreement, www.coag.gov.au/sites/default/files/20081129_national_indigenous_reform _factsheet.pdf, accessed 31 October 2013.

Costello L and Thomson M 2011, Youth mentoring, prepared for the Australian Housing and Urban Research Institute Research Synthesis Service, November.

Deloitte Access Economics 2011, Higher education teaching and learning costs, prepared for the Department of Education, employment and workplace relations, August.

Group of Eight (Go8) 2013, The Higher Education System, www.go8.edu.au/students/the-australian-higher-education-system, accessed 24 October.

Harmon C, Oosterbeek H and Walker I 2000, The returns to education: A review of evidence, issues and deficiencies in the literature, Centre for the Economics of Education.

Hartley R, 2004, *Young people and mentoring: Time for a national strategy*, produced for Australian Institute of Family Studies, no.68, Winter.

Helme S and Lamb S 2011, Closing the school completion gap for Indigenous students, produced for the Closing the Gap Clearinghouse, resource sheet no. 6, January.

Independent Economics 2013, Cost-benefit analysis and returns from additional investment in Vocational Education and Training, prepared for TAFE Directors Australia.

Leigh A 2008, 'Returns to Education in Australia', Economic Papers, vol. 27, issue 3, pp. 233-249, September.

New South Wales Treasury 2007, NSW Government Guidelines for economic appraisal, TPP 07-5.

Nepal B and Brown L 2008, Estimating lifetime socio-economic disadvantage in the Australian Indigenous population and returns to education, NATSEM paper, Canberra.

Ware V 2013, Mentoring programs for Indigenous youth at risk, produced for the Closing the Gap Clearinghouse, Resource sheet no. 22, September.