Australia's National
Science Agency

Generation STEM Links: Cost-Benefit Analysis

Generation STEM

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Impact and Evaluation, CSIRO Education and Outreach

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Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the lands, seas and waters, of the area that we live and work on across Australia and pays its respects to Elders past and present. CSIRO recognises that Aboriginal and Torres Strait Islander peoples have made, and will continue to make, extraordinary contributions to Australian life including in cultural, economic, and scientific domains.

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Acknowledgments

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Executive summary

This report presents an ex-post Cost-Benefit Analysis of CSIRO's Generation STEM Links program, which provides paid placements, linking tertiary STEM students with industry across New South Wales. This report assessed whether the program delivered value for money by comparing observed outcomes with a counterfactual scenario (what would likely have occurred without the program), using a combination of program data, surveys, interviews and economic modelling. The analysis found that the program generated benefits substantially exceeding costs and delivered positive outcomes for students, employers and the broader STEM workforce system.

Between January 2022 and December 2025, the program created 250 placements with a strong focus on small and medium enterprises (86% of participating businesses) and diverse student cohorts. It aimed to improve students' transition into STEM employment while helping industry access skilled talent and build workforce capability.

Most economic value was generated through placements that would not otherwise have existed, demonstrating the importance of creating new opportunities for students and industry. The complete list of assessed benefits is summarised below; other benefits are discussed qualitatively.

Monetised findings

- The program generated an estimated total economic benefit of $12.3 million, with a plausible range of $11.4–$13.1 million.
- With total operating costs of approximately $2.0 million, Net Present Value is $10.3 million with a plausible range of $9.4–$11.2 million.
- This corresponds to a Benefit-Cost Ratio of 6.13, meaning $6.13 of value generated for every $1 invested.
- Most benefits (around 98.4%) came from businesses and students who would not otherwise have participated in internships, demonstrating that creating new placements drives most economic value.
- Industry received the largest share of benefits ($11.0 million), primarily through faster hiring, reduced recruitment costs, and increased productivity.
- Students gained $1.3 million in benefits, largely from earlier entry into paid STEM employment and associated income gains.

The monetised results are conservative because they exclude benefits that could not be quantified reliably. These other benefits are discussed qualitatively below.

Qualitative findings

- **Stronger workforce pathways:** The Generation STEM Links model (recruitment approach to matching students and industry into a supported, paid placement) provided practical experience, significantly improving students' transition into STEM careers and increasing employment rates compared with typical work integrated learning pathways.

- **Low-risk recruitment for industry:** Employers valued the program as a “try-before-you-hire” model, reducing costs and hiring risk while attracting high-quality candidates through a recruitment-style approach.
- **Enhanced productivity and capability:** Student interns helped businesses meet short-term project needs while program support built internal capability to supervise and engage future interns.
- **Improved access and equity:** the program increased opportunities for underrepresented groups in STEM and reduced barriers for small and medium enterprises and regional businesses to engage with a broader range of STEM tertiary students seeking placements.
- **System-level benefits:** the program strengthened connections between industry and tertiary education and contributed to a larger, more diverse pipeline of work-ready STEM graduates, in line with government policy priorities.

The analysis indicates that Generation STEM Links delivered positive net social benefits, particularly by increasing access to internships that may not otherwise have been available. Overall, the program represents a sound investment, with evidence of economic returns alongside broader contributions to workforce development and equity.

Introduction

Generation STEM Links is a CSIRO-delivered internship program designed to strengthen pathways from tertiary education into STEM employment across New South Wales. As part of the broader Generation STEM initiative, the program responds to growing demand for STEM skills by connecting students with industry through structured, paid placements that prioritise workforce readiness and industry needs.

The program operates within a broader context of increasing emphasis on work integrated learning (WIL) in Australia, where policy settings and sector-wide reforms highlight the importance of practical workplace experience in improving graduate employment outcomes. At the same time, challenges remain across the WIL system, including limited placement availability, uneven access for underrepresented students, and barriers for small and medium enterprises (SMEs) to participate. Generation STEM Links seeks to address these issues by facilitating internship opportunities, particularly for businesses and students who may not otherwise engage in traditional WIL models.

This report presents an ex-post Cost-Benefit Analysis (CBA) of the Generation STEM Links program. The analysis examines whether the program has generated net social benefits by comparing observed outcomes with a counterfactual scenario representing likely outcomes in its absence. Drawing on program data, surveys, interviews, and economic modelling, the report evaluates impacts across key stakeholder groups, including students, industry partners, universities, and government.

The findings provide an evidence base to inform future program delivery, policy development, and broader discussions about effective models for WIL in the STEM sector.

Background and context

About this report

The delivery of Generation STEM Links was informed by a Monitoring, Evaluation and Learning (MEL) plan incorporating implementation, process and outcome findings. The purpose of this report was to extend those findings by assessing whether Generation STEM Links delivered net social benefits and represented value for money.

A CBA systematically estimates economic, social, environmental and cultural costs and benefits of an initiative. In this instance, it was undertaken after the implementation of the program (ex-post CBA) to assess actual costs and benefits, drawing on observed data and informed estimates. Findings from this report will support future CSIRO program delivery decisions and contribute to the Australian WIL evidence base.

This economic analysis was undertaken by the CSIRO Impact and Evaluation (I&E) team, with support from external consultants, Inform Economics. This project was identified by CSIRO as an opportunity to build capability within the I&E team and to work collaboratively with Inform

Economics to deliver a transparent and conservative first economic analysis of the Generation STEM Links model. Further discussion on the benefits of this approach is included in the report's discussion section.

Program background

Generation STEM Links is one of three programs delivered by CSIRO as part of Generation STEM, an NSW Government initiative to attract, support and retain NSW students into STEM and school, into further education and into employment. The NSW Government has made a ten-year, $25 million endowment to the Science and Industry Endowment Fund (SIEF) to establish Generation STEM. Generation STEM takes a location-based approach, with the program being delivered in regions across NSW where there is a current and future need for STEM skills. Generation STEM empowers young people with the relevant STEM skills to pursue a STEM career. The ambition is to build a strong community of STEM capable citizens to fuel local industry.

Generation STEM Links provides placements to help tertiary students gain workplace skills and transition into STEM jobs after graduation. It also aims to build a pool of STEM-capable professionals for future NSW STEM industries. Generation STEM Links is a hands-on internship program that pairs NSW students in their penultimate to final year of study in STEM degrees and qualifications with industry to allow both sides to learn, connect and innovate. The program also seeks to provide additional recruitment pathways for businesses that may not have considered a tertiary student intern.

Program implementation

The Generation STEM Links program model (the program) involves attracting industry partners to match them with a pool of NSW tertiary STEM students. The students are recruited through various channels, including tertiary education career boards, the CSIRO website and other networks, with an assessment of their suitability being undertaken. Industry hosts are offered a short-list of potential interns that have been sourced and vetted by the program.

Throughout the program, industry partners and students are provided support and mentoring, including check-in meetings, resolving any issues that arise, ensuring students and hosts are experiencing expected benefits from the placement.

Requirements of the program include:

- 200 hours of placement must be completed.
- During the placement, students must be formally employed by the business and paid at least the minimum wage of $25 per hour from the business. Generation STEM Links provides a $2,500 internship grant to the business on completion of the internship.
- The business must provide proof of student wages payment to CSIRO before the grant subsidy is released.

Program participants and outputs

Between January 2022 and December 2025, Generation STEM Links facilitated 250 placement contracts with 79 businesses across New South Wales. Of these, 222 contracts were signed with an expected end date by 31 December 2025. Excluded from the analysis were:

- 8 placements completed by 31 December 2025 but at reduced total hours (between 140 and 199 hours). Five of these students were employed in the STEM sector following their placement.
- 11 incomplete placements that finished unexpectedly due to a range of placement or other issues.
- 1 placement completed after the expected end date which fell outside the data period for analysis.

Thus, the dataset used and analysed within this report is of the 202 student placements (of the 222 signed) completed by 31 December 2025, with the full 200 hours completed.

Figure 1 depicts the wide geographical area of participating tertiary student interns and businesses that were reached throughout the program, including the engagement of regional and remote businesses.

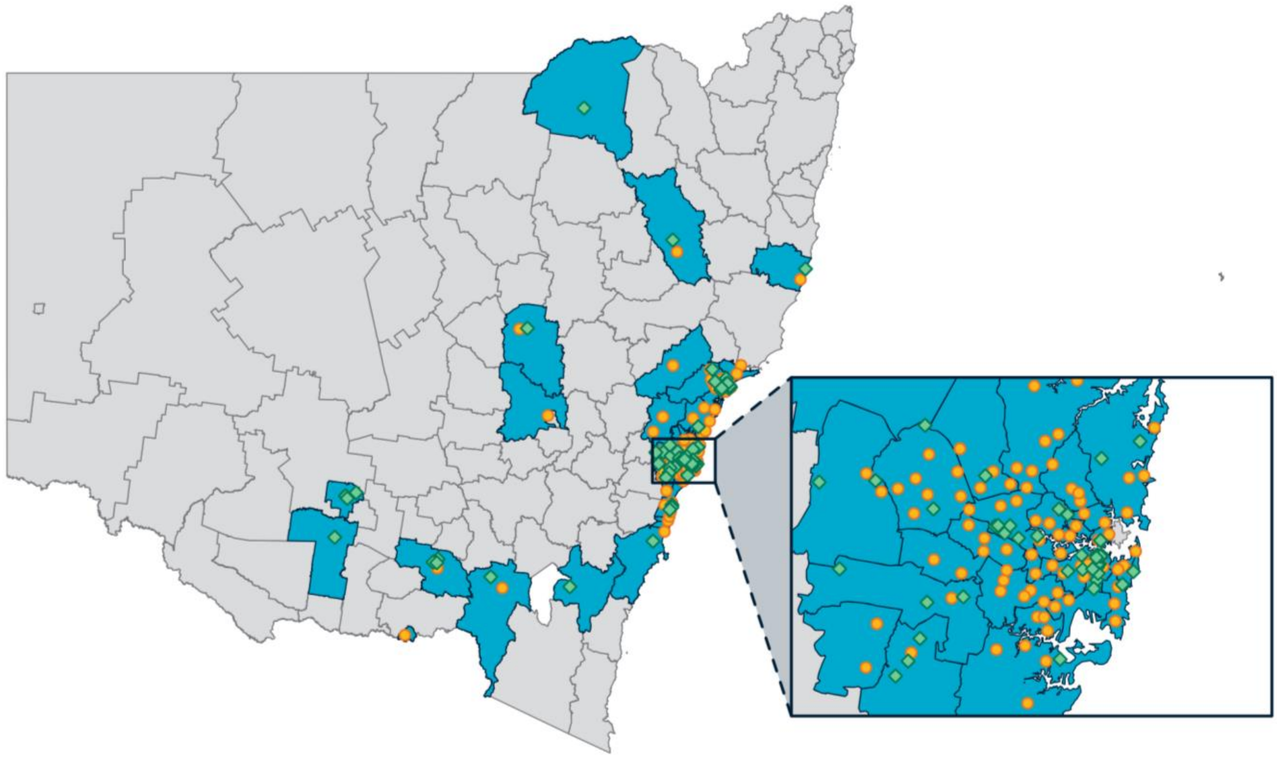

Figure 1 New South Wales Local Government Areas (blue) of interns (orange circles) and organisations (green diamonds) participating in Generation STEM Links. Metropolitan and Western Sydney have been zoomed in, to showcase the breadth of participants across these areas

A wide array of businesses were engaged with Generation STEM Links, with 86% of them being small or medium sized (i.e. having 200 or less employees), 23% located in regional or remote New South Wales and 95% working in manufacturing, professional, scientific and technical service, agriculture, forestry and fishing or mining industries. A full breakdown of the business' demographics can be found in Table 1.

Table 1 Demographics of businesses who were engaged in Generation STEM Links from January 2022 to December 2025

	NUMBER OF ORGANISATIONS	PERCENTAGE OF ORGANISATIONS
Business Size		
Small (5-20 employees)	32	40.5%
Medium (21-200 employees)	36	45.6%
Large (>200 employees)	11	13.9%
Business Remoteness		
Major Cities of Australia	61	76.3%
Inner Regional Australia	12	15.0%
Outer Regional Australia	7	8.8%
Business ANZSIC Division		
C. Manufacturing	30	38.0%
M. Professional, Scientific and Technical Services	24	30.4%
A. Agriculture, Forestry and Fishing	11	13.9%
B. Mining	10	12.7%
D. Electricity, Gas, Water and Waste Services	2	2.5%
O. Public Administration and Safety	1	1.3%
J. Information Media and Telecommunications	1	1.3%

As at 31 December 2025, 202 tertiary students completed Generation STEM Links placements, coming from a wide variety of backgrounds and underrepresented groups. From those 202 students, 34% come from Culturally and Linguistically Diverse (CALD) backgrounds, 34% are from low socioeconomic postcodes, 33% identify as female, 9% reside in regional or remote Australia, 2% identify as having one or more disabilities and 2% identify coming from a First Nations background. A detailed demographic breakdown can be found in Table 2.

Table 2 Demographics of tertiary student interns who engaged with Generation STEM Links from July 2022 to December 2025

	NUMBER OF STUDENT INTERNS	PERCENTAGE OF STUDENT INTERNS
Year		
2022	20	9.9%
2023	53	26.2%
2024	75	37.1%
2025	54	26.7%
Gender		
Male	135	66.8%
Female	66	32.7%
Other (non-binary, intersex, indeterminate, etc.)	1	0.5%
Indigeneity		
No	198	98.0%
Yes	4	2.0%
Culturally and Linguistically Diverse		
No	126	62.4%
Yes	68	33.7%
Prefer not to say	8	4.0%
Disability		
No	196	97.0%
Yes	4	2.0%
Prefer not to say	2	1.0%
Remoteness Area		
Major Cities of Australia	184	91.1%
Inner Regional Australia	17	8.4%
Outer Regional Australia	1	0.5%
Remote Australia	0	0.0%
Very Remote Australia	0	0.0%
Socioeconomic Status		
High Socioeconomic Status	134	66.3%
Low Socioeconomic Status	68	33.7%

Methodology

Approach

CSIRO undertook an ex-post CBA of Generation STEM Links' internship model in Australia. An ex-post CBA is a form of economic evaluation, conducted during or after implementation, that draws on program evidence (including participant feedback) and informed estimates to assess net social benefits and whether the program represents value for money.

The analysis compared observed program outcomes with a counterfactual representing what would likely have occurred without the program. Outcomes and benefits attributable to the program were then assessed relative to this counterfactual to estimate the effects of the program.

Given data limitations, and the timing of the analysis (conducted immediately following each placement), conservative assumptions were applied and not all potential benefits were quantified. The analysis estimated the program's Net Present Value (NPV) and Benefit-Cost Ratio (BCR) and tested the results through sensitivity analysis via a Monte Carlo simulation. Distributional analysis was used to assess how effectively the program delivered outcomes to the groups targeted by the program.

A capability-building component was embedded in this project, enabled through a collaboration with independent economic consultants, Inform Economics. This included two workshops delivered to CSIRO staff associated with the program, designed to increase knowledge of economic evaluation methods, guide definition of the counterfactual, and support the identification and quantification of costs and benefits. Ongoing guidance and advice were provided by Inform Economics to the Impact and Evaluation team to support the delivery of the CBA.

The cost-benefit analysis has been prepared in accordance with the NSW Government Guide to Cost-Benefit Analysis (TPG23-08) and the supplementary guidance on ex-post analysis in the NSW Treasury Technical Note: Ex-Post Cost-Benefit Analysis (TPG22-22) (NSW Treasury, 2023; Transport for New South Wales, 2023).

The key steps in the CBA are summarised in Figure 2, which sets out the staged approach from initial scoping and framework development, through data collection and early analysis, to final CBA analysis, reporting, and knowledge sharing.

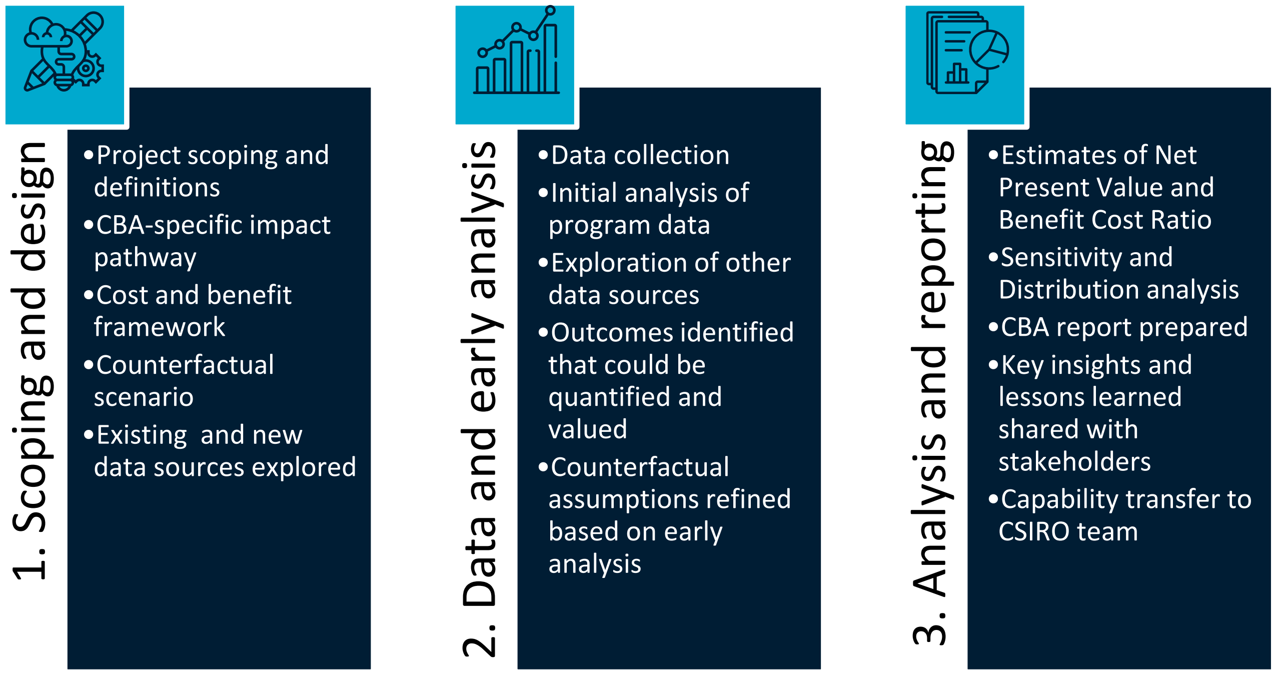

Figure 2 Key steps in the CBA process

Evaluation questions

The CBA sought to answer the following evaluation questions:

1. What are the costs of delivering the Generation STEM Links program?
2. To what extent did the monetised benefits of the program exceed its costs?
3. What broader qualitative benefits were generated by the program?
4. How are these costs and benefits distributed across underrepresented students in STEM, SMEs and participants in regional areas?

Data and analytical methods

A mixed-methods approach was used. Outcome and benefit data were collected from a sample of participants over a 12-month period through surveys and structured interviews. The analysis also drew on program operational data collected between January 2022 and December 2025.

A comparative analysis of program outcomes against the counterfactual assumptions was undertaken to estimate net outcomes attributable to the program. Where appropriate, and adopting a conservative approach, benefits were monetised to enable direct comparison with program costs. NPV and BCR values were then estimated, with sensitivity analysis undertaken to test key assumptions. A cost per placement figure was also generated.

Distributional analysis was conducted to examine how costs and benefits were distributed across underrepresented students in STEM, SMEs, and participants in regional areas.

An overview of data sources and participant samples used in the CBA is outlined in Figure 3.

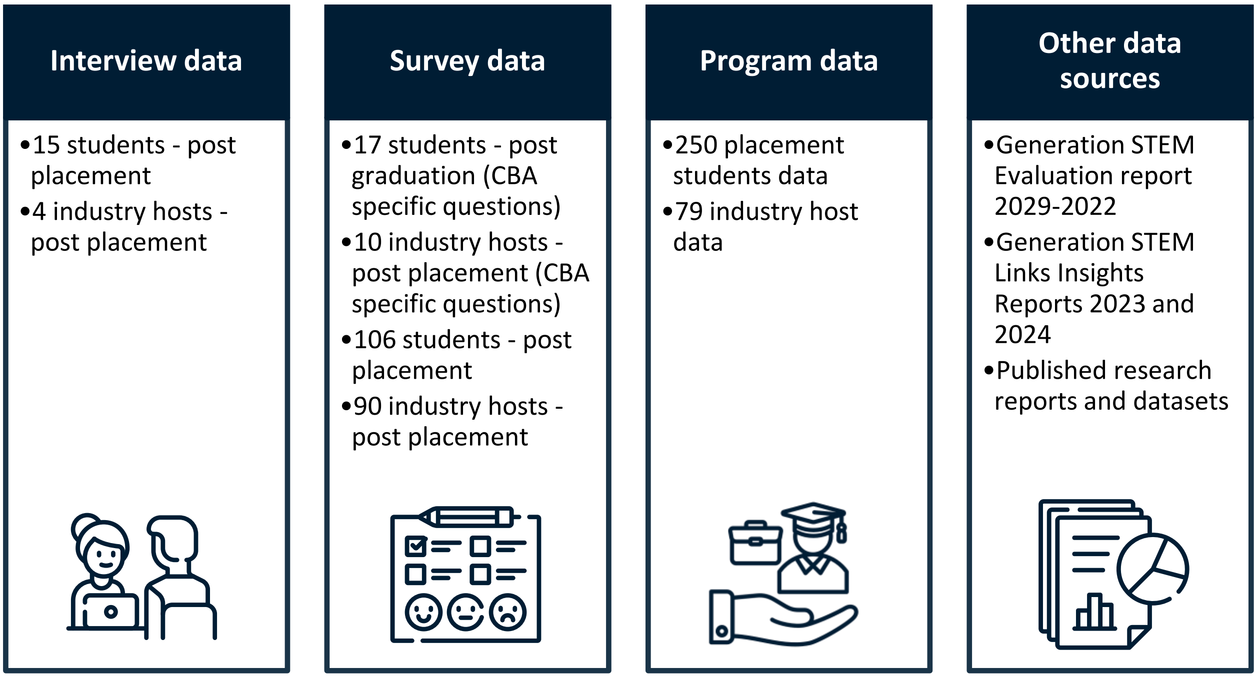

Figure 3 Data sources and sample sizes

Limitations

The analysis was constrained by the available data and by its timing, which was primarily collected immediately after each placement. A post-graduation survey designed to collect later education and/or career outcomes was only completed by a small number of participants. As a result, there was limited evidence available on longer-term outcomes and benefits that may emerge over time, such as potential effects on graduate employment trajectories, career progression, income effects, and broader productivity or innovation impacts.

Despite support from the program delivery team to recruit interview participants, it was difficult to recruit industry partners for the 30-minute interview, partly due to their time constraints. Industry partners were also less likely to complete a post placement survey than students and total completion rates were lower than preferred over the time allocated.

The CBA therefore focused on benefits that could be reasonably evidenced and quantified within the available timeframe, with conservative assumptions adopted where longer-term impacts could not be robustly supported by the data. Several potentially important benefits, including lifetime earnings effects, continued internship activity by participating employers with increased capability, and broader innovation impacts, were excluded from monetised estimates due to insufficient evidence.

Impact pathway

The program's existing impact pathway was refined for the purposes of the CBA, in collaboration with program delivery staff. The pathway is presented in Table 3, highlighting potential outcomes and benefits related to program activities. This provided a basis to explore what could be measured for the analysis with only a subset of outcomes and benefits able to be assessed through the available evidence (summarised in Figure 7).

Table 3 Generation STEM Links Impact Pathway

Impact Statement: Generation STEM Links provides high-quality, paid internships to tertiary students (both VET and university) to enhance their workplace skills and help their transition into STEM employment after tertiary education.

INPUTS RESOURCES APPLIED TO DELIVER ACTIVITIES	ACTIVITIES PROCESSES TO TRANSFORM INPUTS INTO OUTPUTS	OUTPUTS IMMEDIATE DELIVERABLES OF PROGRAM	POTENTIAL OUTCOMES POTENTIAL SHORT AND MEDIUM-TERM EFFECTS ATTRIBUTABLE TO THE PROGRAM, RELATIVE TO THE COUNTERFACTUAL		POTENTIAL BENEFITS INCREASES IN WELFARE ASSOCIATED WITH THE PROGRAM'S OUTCOMES
NSW Government Funding: Core financial support delivered to program **CSIRO delivery resources:** Oversight, management and operational coordination **Student commitment:** Participation in internships, contributing time and effort **Industry partner contributions:** Time, resources and salaries for interns **Higher education engagement:** Career hubs and institutional recommendations to identify and support participants	**Governance:** Oversight and reporting monitoring and evaluation, data collection **Recruitment:** Identification, outreach and onboarding of industry partners Student recruitment through universities and marketing campaigns **Placement**: Assessment, interviews and placement of students into internships aligned with industry needs **Onboarding and support**: Support for industry partners to onboard interns effectively. Case management and mentoring support for students throughout the placement.	**Program Reporting:** Completion of oversight reports and government acquittals **Industry partner participation:** Partners hosted interns and provided workplace supervision, including SMEs and regional businesses **Student engagement and diversity:** Students participated in placements This includes priority cohorts: ○ women, ○ CALD, ○ low SES, ○ students in regional areas **Placements delivered:** Paid placements completed (by year), each comprising up to 200 hours **Resource allocation:** Grants provided to employers and salaries paid to students	**Industry**	**Immediate Operational Benefits** Industry partners benefit from skills and knowledge of interns. Increased productivity through reduced task backlogs during internship periods. Enhanced capacity to meet short-term project deadlines through intern contributions. Interns introduce fresh perspectives that enhance workplace innovation. **Workforce Development Capabilities** Industry partners have increased capability to onboard and train student interns. Hosting interns provides opportunities for senior employees to develop mentoring and leadership skills. Access to a more diverse and skilled STEM talent pool Industry partners gain access to a more diverse and skilled talent pool through internships. Industry partners hire more early-career STEM professionals directly from internship programs. Increased representation of underrepresented groups in industry teams. **Strategic Workforce Growth** STEM industry employs more part-time students and early-career job seekers Industry partners have increased opportunity to develop the skills they need in their future workforce. Pool of available STEM talent widened for industry. Improved retention rates for early-career professionals hired through internships. Enhanced Collaboration between Industry and Academia Industry partners gain closer relationships with universities and VET institutions. **Enhanced Corporate Reputation** Industry partners improve their brand image by participating in a program that fosters diversity, equity, and inclusion in STEM fields. Greater attractiveness as an employer of choice among early-career STEM professionals.	Reduced intern recruitment costs through access to pre-screened candidates Increased productivity from short-term project support and task completion by interns. Reduced costs for recruitment of STEM graduates where internships are a pathway to employment. Reduced turnover and replacement costs where graduates hired through internships have higher retention rates. Increased profits for NSW-owned businesses from STEM-related projects, that would not otherwise have proceeded because the required STEM skills were unavailable or in limited supply.
			Students	**Workplace and Career Readiness** Interns have a greater understanding of professional workplace skills and practices Interns gain enterprise and technical STEM skills that complement their tertiary learning Interns have greater awareness of the range of STEM pathways and careers. Interns develop advanced problem-solving and collaboration skills. **Networking and Access to Opportunities** Interns have extended STEM networks to access future learning and employment opportunities. **Equity and Inclusion** More underrepresented students have competitive skills and experience to secure post-tertiary STEM jobs. Strengthened pathways for underrepresented groups into STEM careers. **Employment and Career Outcomes** STEM students that complete a paid internship experience higher employment outcome and at an accelerated rate. More final-year STEM students pursue STEM careers matched to their qualifications. **Long-Term Career Development** Interns achieve higher long-term earnings compared to peers without internships. Interns experience greater job stability and retention in STEM roles.	Increased income due to earlier transition into the STEM workforce during and after placement. Higher lifetime earnings due to pathway into STEM careers, early career acceleration, and higher employability.
			Government	**Enhanced Collaboration between STEM Stakeholders** Improved collaboration between government, industry, and education providers to address STEM skill shortages. **Reduced Reliance on Skilled Migration** Reduced reliance on skilled migration through the development of a domestic STEM talent pool. **Improved Regional Workforce Outcomes** Greater availability of skilled STEM workers in regional and underserved areas.	Increased tax revenues (state and federal) from higher wages and employment rates among STEM graduates. Reduced public expenditure on unemployment benefits and social assistance.
			Education Providers	**Enhanced Reputation** Enhanced institutional reputation due to improved graduate outcomes and industry engagement. **Enhanced Collaboration between Industry and Academia** Universities and VET institutions gain closer relationships with industry partners.	Reduced costs of sourcing and coordinating industry placements

Counterfactual

The counterfactual represents what would likely have occurred without Generation STEM Links. In practice, both industry partners and students may have followed different pathways in the absence of the program, meaning that not all observed outcomes can be attributed solely to the program. This section describes the program and its counterfactual scenarios for industry and students, with a visual depiction shown in Figure 5 and 6 respectively.

For industry, two pathways were considered: those that were likely to have recruited a student intern regardless of the program, and those for whom the program enabled the recruitment of an intern that would not otherwise have occurred. For the former group, only incremental differences attributable to the program (such as reduced recruitment and screening costs, and access to a more diverse tertiary student cohort) were considered. For the latter group, the full costs and benefits associated with hosting an intern were attributed to the program.

For students, the counterfactual was defined at a market level. Without the program, the number of internships available would have been lower. Benefits were therefore attributed to the additional placements created by the program. Program impacts on access for under-represented groups were presented separately in the distributional analysis.

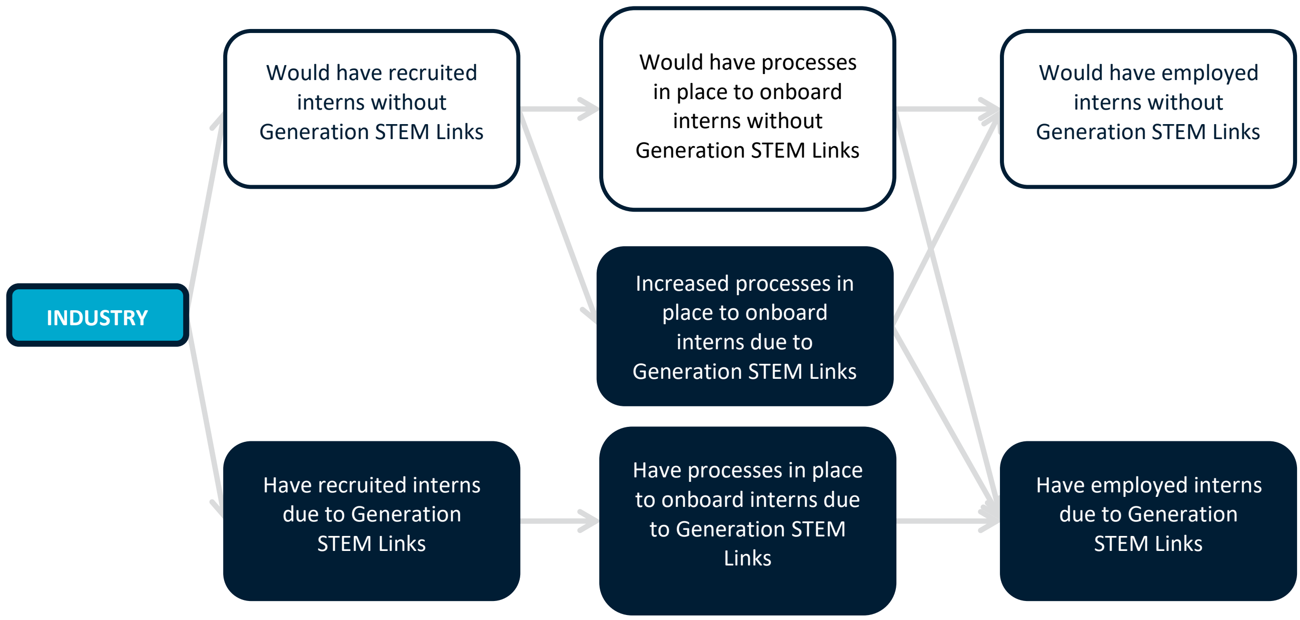

Figure 5 Industry counterfactual diagram

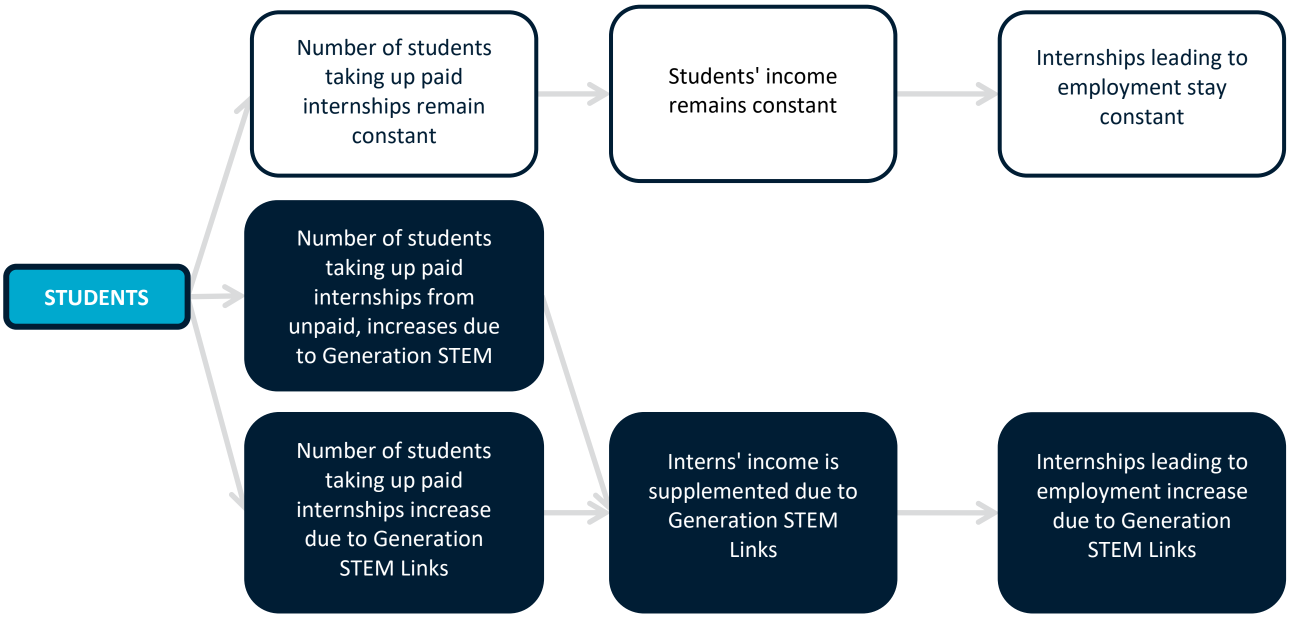

Figure 6 Tertiary Student Intern counterfactual diagram

Cost and benefit framework

The cost and benefit framework sets out how the program's costs and benefits were identified, defined, and structured for inclusion in the CBA. Program inputs, activities, and outcomes were mapped to impacts that could be assessed as benefits, relative to the defined counterfactual assumptions.

Assessment of costs and benefits

Costs and benefits identified through the impact pathway were assessed iteratively to determine which could be quantified and monetised. Data were collected and appraised until a defensible data set was assembled for inclusion in the model. Where evidence was insufficient to reliably monetise a benefit, it was retained for qualitative assessment.

This process resulted in a subset of industry and student benefits being monetised and incorporated into the economic analysis, with the remaining key outcomes described qualitatively alongside the quantitative results. Supporting evidence, assumptions and data limitations for each cost and benefit item are outlined in subsequent sub-sections.

Figure 7 provides a high-level visual overview of the monetised (shaded in blue) and non-monetised benefits included in this cost benefit analysis.

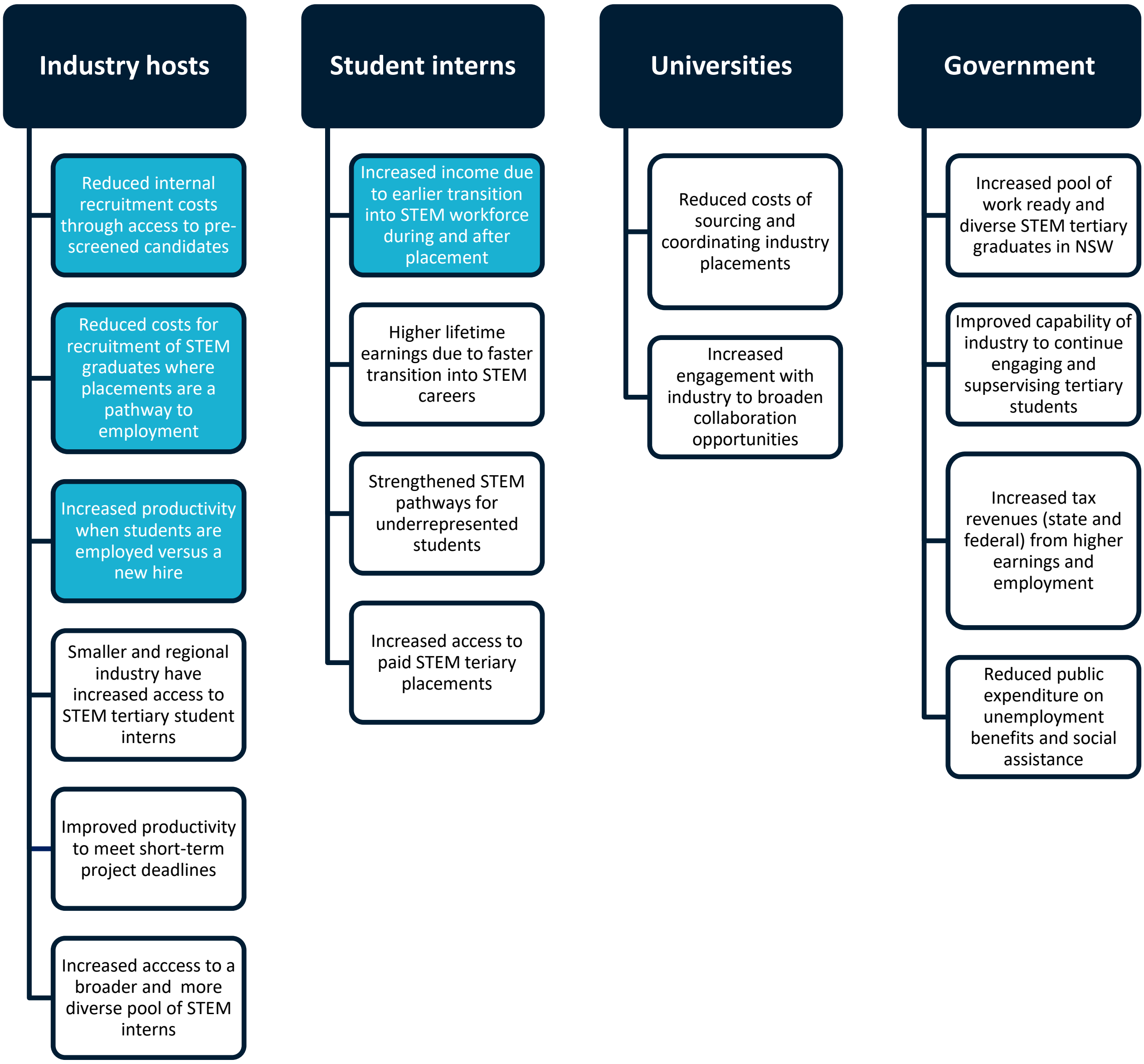

Figure 7 Key benefits across different stakeholders in the CBA process. Coloured steps are those with quantified benefits calculated within the CBA analysis

Estimating monetised benefits

Monetised benefits were estimated by quantifying the economic value generated by Generation STEM Links relative to the defined counterfactual within the report's previous section. Consistent with the overall analytical approach, only those outcomes that can be reasonably attributed to the program, and would not have occurred in its absence, are included. This ensures that the estimated benefits reflect genuine changes in economic welfare rather than business-as-usual activity. This section provides a high-level summary of the methodology behind the estimated monetised benefits of Generation STEM Links. A much more detailed methodology, including how to calculate the benefits, are found within this report's appendices.

The monetised estimation draws upon a combination of program administrative data, survey and interview data from participants, and external labour market evidence. Benefits are assessed across two primary stakeholder groups (industry and students) and are aggregated across all placements. In line with the broader methodology, conservative assumptions are applied where evidence is limited, and not all potential benefits are quantified.

A key feature of the analysis is the distinction between two types of participating employers:

1. **Type A Employers:** those that would have hosted interns regardless of the program
2. **Type B Employers:** those for whom the program enabled the creation of internships that would not otherwise have occurred.

For Type A employers, only incremental differences relative to existing recruitment practices are included. For Type B employers, all benefits associated with hosting interns and subsequent employment outcomes are treated as attributable to the program. The key modelling variables used within the fiscal benefit calculation are found in Table 4.

Table 4 Key modelling variables used for Generation STEM Links monetised benefits

VARIABLE NAME	VALUE	UNITS	REFERENCE
Placements Completed (January 2021 – December 2025)	202		Internal
Number of placements employed from placement	151		Internal
Number of businesses employing interns	59		Internal
Placement to Employment Ratio (counter-factual)	0.169		Internal
Ratio of businesses that had internships before (counter-factual)	0.20455		Internal
Days for a new employee to become fully productive	34	Days	ELMO Software (2025)
Cost to hire entry-level employees	13,870	AUD	ELMO Software (2025)
Hourly wage for industry employees to supervise interns (Median weekly earning in main job for Full-time employed Persons)	46.43	AUD	Australian Bureau of Statistics (2025)
Average Graduate Salary (Undergraduate)	75,000	AUD	Quality Indicators for Learning and Teaching and Social Research Centre (2025)
Program Operations Cost (January 2021 – December 2025)	2,005,849.00	AUD	Internal

For industry participants, monetised benefits primarily arise from improvements in recruitment and workforce development processes. Internships provide students with relevant workplace experience, reducing the time required for graduate employees to reach expected levels of productivity. This effect is estimated using a simplified productivity ramp-up model, which compares the period required for a typical graduate to reach full productivity with and without prior internship experience. The resulting improvement in productivity is expressed in wage-equivalent terms. Employers also benefit from reduced recruitment effort, reflecting the structured sourcing, screening, and shortlisting provided through the program.

Industry benefits

Employer-related costs associated with recruitment, onboarding, and supervision are incorporated into the analysis and offset against these benefits. These costs vary across businesses and are estimated using survey responses collected from participating organisations. To reflect this variability, the model draws on observed ranges of responses rather than relying on fixed point estimates, giving a distribution of answers which median values can be drawn upon. For each business, b, employing an intern, i, the benefits for Type A Industry employers (B^I_{TA}) becomes:

$$B^I_{TA}(b,i) = B_p + S_{HCS} - \left[C_{RC}(b) + C_{OB}(b) + [H_{SP}(b) \times W_h]\right]$$

Where:

- B_p is the productivity benefit attributable to reduced time to productivity in hiring interns as opposed to a new hire. ELMO Software (2025)'s industry survey suggest that it takes 34 days for a new hire to become fully productive. With Generation STEM Links interns applying themselves through 200 hours or 26.7 days of internship training, the benefit is then 7.3 days of daily wages. However, since the interns are not fully productive in those 7.3 weighted by a linear productivity factor (2.9% on day one, ramping up to 100% by day 34). With an average graduate undergraduate salary of $75,000 (Quality Indicators for Learning and Teaching and Social Research Centre, 2025) the productivity benefit for this analysis is fixed at $4,499.66.
- S_{HCS} are the hiring savings costs and are estimated by ELMO Software (2025) for entry level/junior roles to be $13,870. This value is also fixed in the analysis.
- C_{RC} are the costs to participate in the recruitment of Generation STEM Links interns. This value varies and is based upon the distribution of survey results from participating businesses.
- C_{OB} are the onboarding costs associated with bringing on the Generation STEM Links intern. This value varies and is based upon the distribution of survey results from participating businesses.
- H_{SP} is the number of hours spent supervising the students across their 200-hour placement. This value varies and is based upon the distribution of survey results from participating businesses.
- W_h is the hourly wage for industry employees to supervise interns. This is calculated by the median weekly earnings in a main job for full-time employed persons and is $1,741 per week, or an hourly rate of $46.43.

For simplification in later benefits, the total variable cost per intern, C_{var} is the sum of all costs i.e. $C_{var} = C_{RC} + C_{OB} + C_{SP}$, where C_{SP} is the cost of supervising interns and is expressed as

$$C_{SP} = H_{SP} \times W_h$$

For employers that would not otherwise host interns (Type B), additional benefits are generated through reduced time to hire. In the absence of the program, these employers would likely experience delays in recruiting suitable candidates. External labour market data are used to estimate typical time-to-hire durations, with the value of avoided delay calculated as the benefit of bringing forward the commencement of productive employment. For each business, b, employing an intern, i, the benefits for Type B Industry employers (B_{TB}^{I}) is:

$$B_{TB}^{I}(b,i) = \left[\frac{GS_y \times H_d(i)}{WTR(b) \times 365.25}\right] + S_{HCS} - C_{var}(b)$$

Where:

- $\mathrm{GS_y}$ is the average Graduate Salary for those who have graduated with an Undergraduate degree and is set to $75,000 (Quality Indicators for Learning and Teaching and Social Research Centre, 2025).
- H_d are the number of days taken to fill a vacant position within known industry timeframes. These values were provided by Job and Skills Australia through their Recruitment Experiences and Outlook Survey, where industry employers respond to the question 'Time since started trying to fill vacancies'. A distribution of results was provided and aggregated for graduate rolls within the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06) Divisions A, B, C, D, E, J and M, from 2021-22 to 2024-25 combined (Jobs and Skills Australia, 2026). A random day from this distribution was used for the analysis with the provided distribution shown in Table 5.
- WTR is the Wage-to-Turnover Ratio and is defined by the ratio of salary and wages paid by a business with the business' total income. The median WTR values from the ANZSIC06 Divisions were used and were provided by Australian Taxation Office (2026). The values used for the analysis can be found in Table 6.

Table 5 Job and Skills Australia survey responses to the question 'Time since started trying to fill vacancies (where unfilled vacancies exist)' for graduate rolls within ANZSIC06 Divisions A, B, C, D, E, J and M, from 2021-22 to 2024-25 combined (Jobs and Skills Australia, 2026)

	LOWER BOUND (DAYS)	UPPER BOUND (DAYS)	RESPONSE (%)
One week or less	1	7	7.1%
More than 1 week, up to 2 weeks	8	14	9.2%
More than 2 weeks, up to 1 month	15	30	21.4%
More than 1 month, up to 6 weeks	31	42	15.3%
More than 6 weeks, up to 3 months	43	122	14.3%
More than 3 months, up to 6 months	123	183	12.2%
More than 6 months	184	365	20.4%

Table 6 Median Wage-to-Turnover ratios for businesses that fall within ANZSIC06 Divisions A, B, C, D, J, M and O for the 2023-24 financial year (Australian Taxation Office, 2026)

ANZSIC06 DIVISION CODE	ANZSIC06 DIVISION NAME	MEDIAN WAGE-TO-TURNOVER RATIO
A	Agriculture, Forestry and Fishing	0.19
B	Mining	0.30
C	Manufacturing	0.25
D	Electricity, Gas, Water and Waste Services	0.24
J	Information Media and Telecommunications	0.37
M	Professional, Scientific and Technical Services	0.45
O	Public Administration and Safety	0.39

Student benefits

Student benefits arise from earlier entry into paid employment. The counterfactual assumes that, in the absence of the program, students would experience a period of job search or unemployment before securing a graduate role. To estimate the economic value of earlier employment, a labour surplus approach is applied. This recognises that wages reflect both productivity and opportunity cost, and therefore only a proportion of wages is treated as a net benefit. Consistent with established practice, this proportion is conservatively estimated at 50% of earnings during the period of employment brought forward (The Treasury - Te Tai Ōhanga, 2015).

For students placed with Type A employers, not all employment outcomes can be attributed to the program. A baseline employment rate is therefore applied to estimate the number of students who would have secured employment in the absence of the program. Only employment outcomes above this baseline are included in the benefit estimate. For each student above this baseline employment rate, s, hired within industry partner, i, the benefits for Type A Students (B_{TA}^{S}) is:

$$B_{TA}^{S}(s,i) = \beta \times GS_d \times H_d$$

Where:

- β is 0.5 and reflects the weighted net benefit of the student's salary.
- $\mathrm{GS_d}$ is the average daily Graduate Salary and is $\frac{\mathrm{GS_y}}{365.25}$ or $205.34 (Quality Indicators for Learning and Teaching and Social Research Centre, 2025).

For students placed with Type B employers, all employment outcomes are considered additional and are fully attributed to the program with $B_{TB}^{S} = B_{TA}^{S}$.

Given the inherent variability in key inputs, including recruitment costs, supervision effort, and time to hire, the analysis uses a Monte Carlo simulation approach. This involves repeatedly sampling from the observed distributions of these inputs and recalculating total benefits across many iterations, with this report using 1,000,000 iterations. This process generates a distribution of total benefit estimates, from which an expected value and range are derived. The use of simulation enables the analysis to better reflect real-world variability and to present results that are robust to uncertainty.

The estimated monetised benefits are subsequently combined across industry and student groups and compared with program costs to derive overall economic indicators, including total net benefits and the benefit–cost ratio. The total benefits for Generation STEM Links (B_{GSL}) is:

$$B_{GSL} = \sum B_{TA}^{I} + \sum B_{TB}^{I} + \sum B_{TA}^{S} + \sum B_{TB}^{S}$$

The resulting expected benefits are compared to program costs to estimate the BCR:

$$BCR = \frac{B_{GSL}}{C_{GSL}}$$

where C_{GSL} represents total program costs. NPV is then calculated to be:

$$NPV = B_{GSL} - C_{GSL}$$

The next section uses the above methodology to estimate the monetised benefits of Generation STEM Links.

Detailed findings

Monetised benefits

A Monte Carlo simulation was conducted using one million iterations to estimate the overall benefits of the program and to account for uncertainty in key input variables. From these simulations, the 16th, 50th, and 84th percentiles of each output distribution were extracted to approximate the median and one-standard-deviation range.

Using this approach, the median total economic benefit of Generation STEM Links is estimated to be $12,298,000 with a one-standard-deviation interval ranging from $11,449,000 to $13,174,000. With a program cost of $2,005,849, the NPV then becomes $10,292,000 with a one-standard-deviation interval between $9,423,000 and $11,168,000. Based on these benefit estimates and the program's total investment, the median BCR is calculated to be 6.10, with a one-standard-deviation range between 5.70 and 6.60. In practical terms, this indicates that for every dollar invested in the program, an estimated $6.10 is returned to the Australian economy. The full distributions for both NPV and BCR are presented in Figure 8.

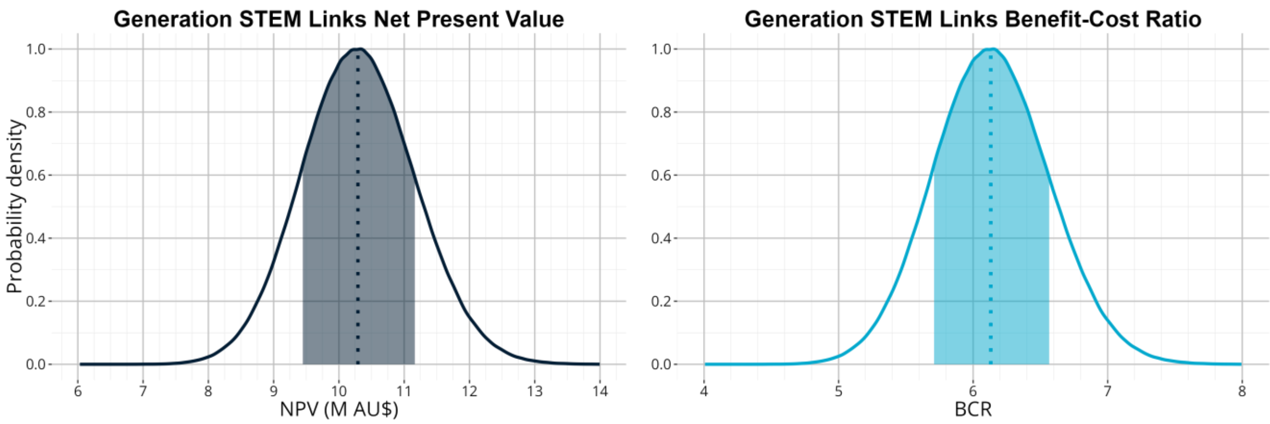

Figure 8 Distribution curves for the calculated NPV (dark blue) and BCR (blue) values for the Generation STEM Links program. The dashed line in each graph is the median value with the shaded area depicting the distributions' one-standard-deviation range

The total quantified benefit of the program is further disaggregated by beneficiary group in **Error! Reference source not found.**. The largest share of benefits arises from Industry – Type B employers, with an estimated contribution of $10,897,000 over the reporting period. These benefits primarily reflect increased economic production resulting from employers hiring former interns—an effect strengthened by earlier recruitment, reduced vacancy durations, and improved productivity ramp-up.

The next largest contribution comes from Students – Type B, accounting for $1,117,000 of the total benefit. These benefits capture the economic gains associated with improved employment outcomes for students who would otherwise have been unlikely to secure comparable industry experience or employment opportunities.

Smaller but still meaningful benefits are generated by Type A participants. Students in Type A placements contribute $203,000, while Industry – Type A employers contribute $67,000 to the overall total. These reflect incremental improvements in employment and productivity outcomes relative to business-as-usual internship activity. A full demographic and internship breakdown is provided in Table 7.

Table 7 Breakdown of economic benefits by beneficiary types (both by internship host type and demographic). The median economic benefit is presented along with one-standard deviation values within the square brackets.

	STUDENT	INDUSTRY	TOTAL
Type A	$203,000 [+85000, -71000]	$67,000 [+35000, -21000]	$274,000 [+102000, -85000]
Type B	$1,117,000 [+136000, -133000]	$10,897,000 [+868000, -840000]	$12,016,000 [+878000, -8510000]
Total	**$1,325,000 [+124000, -120000]**	**$10,970,000 [+868000, -841000]**	**$12,298,000 [+876000, -849000]**

Figure presents the proportional contribution of each beneficiary group to the median net benefit. Combined, the Industry – Type B and Student – Type B groups account for 97.7% of total benefits, underscoring the significant value generated by expanding industry participation beyond existing internship providers. In contrast, Student – Type A and Industry – Type A benefits represent 1.6% and 0.5% of total benefits respectively, reflecting the more incremental nature of gains for existing internship hosts.

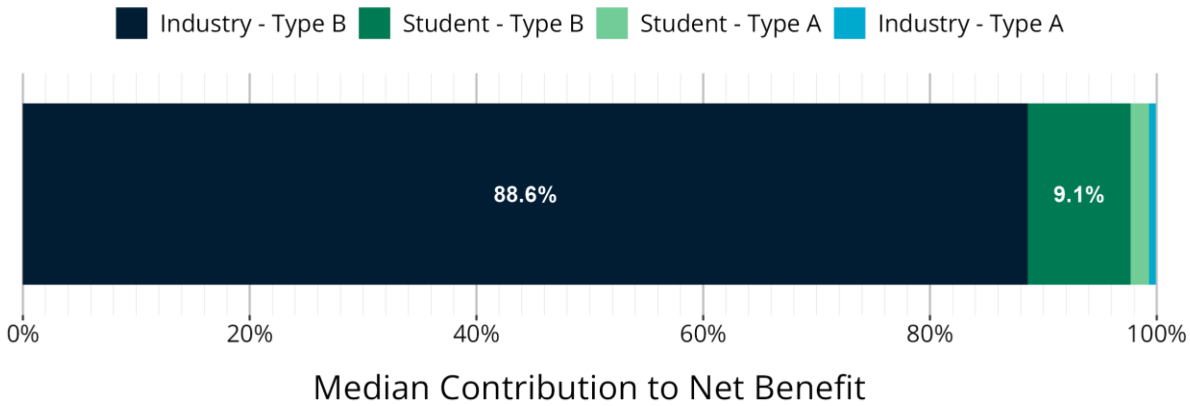

Figure 9 Median contribution to the net benefit broken down by beneficiary types. Industry – Type B and Student – Type B benefits make up 97.7% of the total net benefit. Student – Type A and Industry – Type A benefits contribute to 1.6% and 0.5% to the net benefit respectively

From the median contribution analysis, we determine that each participating Type B industry partner brought $191,000 into the economy with Type A industry partners bringing in $17,000 of benefits into the economy. These results prompted further analysis on what ratio of Type B industry partners would be needed to still have a positive return on investment.

Figure explores this scenario, with 50,000 Monte Carlo simulations made per run and percentage of Type B industry partners changed, ranging from 5% to 20%. The resulting return on investment ratios indicate that a mix of no less than 10% of Type B industry partners were needed in Generation STEM Links for the program to have a net benefit to the economy.

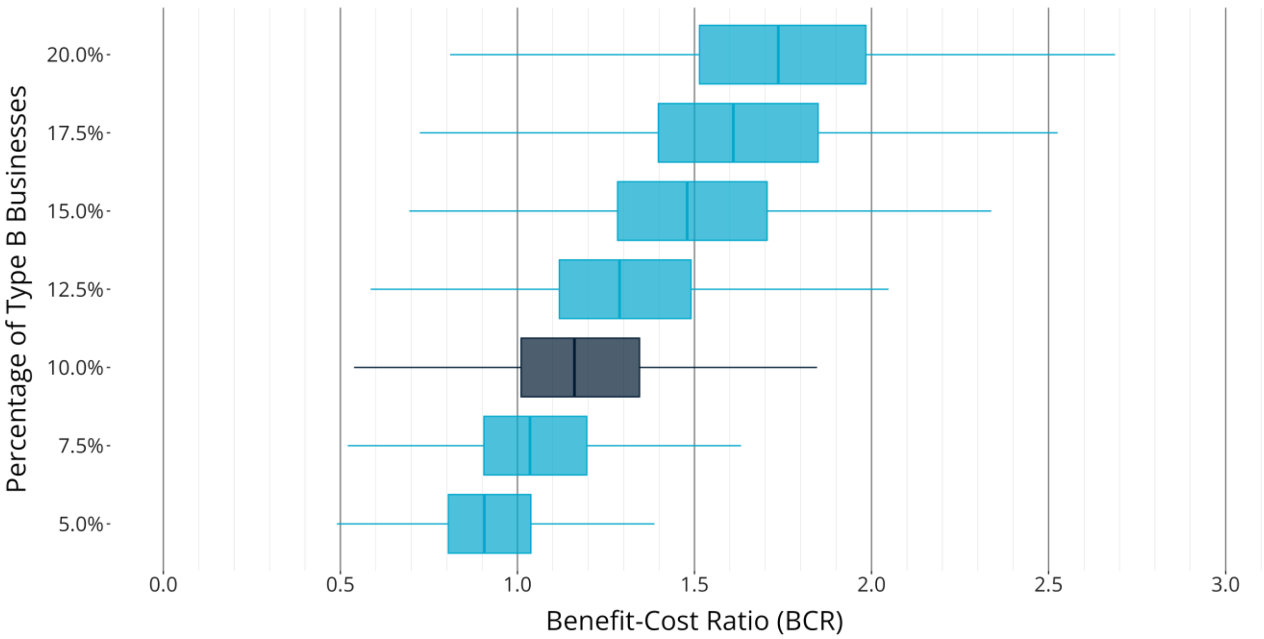

Figure 10 Box and whiskers plot of the theoretical Return on Investment ratios for Generation STEM Links, with a varying percentage of Type B businesses involved within the program. Just over 1 in 10 Type B businesses are needed for the program to be a net benefit for the economy

Qualitative benefits

Industry partners

'Recruitment-agency' approach to access high-quality students matched to industry needs

Program data collected between 2022 and 2025 demonstrated high student demand for STEM tertiary placements and a high placement completion rate for students participating in the program. During this time, only a small number of internships (5%) finished unexpectedly due to factors such as changed student circumstances, or business-related pressures.

Program staff interviews conducted in 2024 highlighted a program model that prioritised up front, one-on-one engagement with industry partners to achieve mutually beneficial placements for industry and students. Program priorities included tailored engagement with industry partners to discuss business, and project needs and set clear expectations around working with tertiary students. Matching students with industry partners included an assessment of student interests, personal attributes, STEM and workplace related skills and abilities.

This process, combined with strong student demand and high completion rates, resulted in high-quality interns able to meet workforce needs beyond university-based placements, typically geared towards meeting curriculum requirements. Some industry partners saw these students as part of a long-term investment in their workforce.

A random sample of industry hosts (n=44) identified that 80% of businesses engaged a student intern for the first time through Generation STEM Links. Interviews with industry hosts identified candidate pre-screening, the financial subsidy, placement flexibility, and alignment to industry needs as common reasons for businesses to host tertiary student interns for the first time. Many industry partners reported avoiding student internships previously, due to a perceived drain on time and resources for an uncertain benefit.

Evidence from evaluation interviews and surveys indicated the program's 'recruitment-agency' approach provided to industry partners (supporting industry to develop tailored position descriptions; advertising their placements to all tertiary STEM students across NSW; and providing a shortlisting service) contributed significantly to their positive experience, and their perception of the program as a low-risk recruitment strategy.

Some supervisors of small businesses identified other benefits of the model, explaining the recruitment function filled a human resources skills gap within the organisation or noted a higher level of confidence in the Generation STEM Links process due to the independent nature of the organisation and trusted reputation of CSIRO (Cherry, 2025). Overall, industry partners reported making a minimal contribution of time and resources and attracting high-quality student interns.

In contrast, when industry partners utilised existing university-based student placements, the experience reportedly delivered a less 'hands-on' approach offering less initial and ongoing support. Some industry partners described it as more time consuming, difficult to navigate and less flexible. This was perceived to be due to curriculum related restrictions and/or a lack of dedicated staffing.

Literature (Bhardwaj et al., 2022; Grant-Smith et al., 2024; Smith et al., 2016) and student interview data (n=19) reinforced this experience, indicating a less consistent approach across universities. Students commonly described their universities as providing minimal (if any) assistance to identify appropriate internship opportunities beyond those advertised on their online career hubs.

Low risk trial for potential employees

Common motivators for industry to participate in WIL include access to a pipeline of future talent and as a strategy to progress organisational objectives (Ahmed et al., 2024; Naqvi, 2025). This position was evident in industry partner feedback, with many viewing the placements as low-risk opportunities to screen and trial potential employees. Supervisors believed the program's 'recruitment-style' approach to matching tertiary students with industry projects, the industry subsidy, and the availability of ongoing support for the duration of each placement, mitigated potential issues.

Research evidence suggests that in general, WIL participation is valued by tertiary students, creating the perception that it improves their employability outcomes, such as their competitiveness and prospects (Australian Collaborative Education Network, 2023). However, Graduation Outcomes Survey results indicated that only 16.9% of undergraduates that completed a WIL activity, secured employment with their host (Quality Indicators for Learning and Teaching and Social Research Centre, 2023).

In contrast, the Generation STEM Links model resulted in a high proportion of student interns being offered (and accepting) employment with their internship host. Program data showed that 91% of signed contracts (202 out of 222 signed contracts) were successfully completed by the expected date, with 76% of completed placements resulting in offers of employment (only contracts with an expected and actual end date on or prior to 31 December 2025 were included in this dataset). Of the 153 students offered ongoing employment, 91% of these students accepted the offer. Eleven placements (5%) were considered unsuccessful and marked incomplete due to various reasons such as insufficient work available, a poor match between student and supervisor and more commonly due to unrelated student circumstances. The following table shows the further breakdown of employment offers made by industry partners, highlighting regionally based placements and business size.

Table 8 Student employment rates following placement completed between 1 January 2022 and 31 December 2025

BUSINESS SIZE AND/OR LOCATION (N=PLACEMENTS COMPLETED)	PERCENTAGE OF COMPLETED PLACEMENTS THAT RESULTED IN AN OFFER OF EMPLOYMENT	PERCENTAGE OF OFFERS ACCEPTED
Small (n=72)	75%	89%
Medium (n=101)	81%	93%
Large (n=29)	59%	88%
Regional internship (n=88)	77%	91%
Small and regional internship (n=21)	90%	89%
SME and regional internship (n=70)	81%	91%

Increased workplace diversity

Published evidence suggests that a more diverse STEM workforce is beneficial but often limited in workplaces due to a range of systemic barriers. The Australian Intellectual Property report (2023) asserts that 'gender and cultural' diversity supports innovation and productivity in Australian organisations. Academic and government reports argue that a focus on diversity is not at the expense of merit, but that a lack of diversity is partly fuelled by institutionalised bias and discrimination within the recruitment process in Australia (Anti-Discrimination NSW, 2024; Romanis, 2021; Science and Technology Australia, 2023; Williams et al., 2024).

Program data indicated that students typically underrepresented in STEM were readily accessible to industry partners (see Appendix C for demographic charts). Program data mapped against the student journey to placement, indicated overall improvements in participation rates for both females and regional students. Generally, students with a disability and Aboriginal and/or Torres Strait Islander students experienced a slightly lower placement rate compared to the proportion of their applications. Culturally and linguistically diverse students experienced a positive participation rate until the final stage, where there is a significant drop in their placement rates. At this step, industry partners chose their preferred candidate from a short list. Further research could investigate the potential influence of negative bias at this stage. Overall, the positive diversity trends were potentially influenced by the program's capability-based shortlisting approach and intentional framing of candidates using a strengths-based approach that highlighted benefits of a more diverse STEM workforce.

Immediate productivity to meet short term deadlines

Recruiting industry partners to participate in interviews for this project presented challenges that resulted in only a small sample of qualitative evidence. While survey data had a higher response rate, the evidence collected through surveys didn't provide a full picture of how interns influence productivity within the workplace. However, the overall indication from industry supervisors was positive, when combining data sources. Eighty-five per cent of Generation STEM Links industry partners surveyed were 'very' (41%) or 'extremely' (44%) satisfied with the performance of their student intern. Thirty-seven per cent of industry partners surveyed (n=70) gave broad-ranging examples of workplace productivity benefits or efficiencies created by their student intern, including freeing up senior staff to expedite delayed work; filling gaps in staffing; and creative and innovative solutions to problem solving. One industry partner illustrated this outcome by commenting:

'It has definitely been a resource in terms of being able to bring someone in to help with the project that we need. It's also meant that we can expedite some of the work that we do. I started to see her more as an employee than an intern.'

Three out of four industry supervisors interviewed for the cost benefit analysis agreed that their interns increased immediate productivity. The remaining supervisor agreed that productivity was increased but not always immediately. Supervisors also commented:

'The student helped to draft an AutoCAD drawing that has been used for an investment pitch to show the team's way of working and it has been received so well.'

'The student did bring skills that our business didn't have and would've been expensive to get.'

Supervision capability and capacity benefits

Strengthening industry ability to host students became a key tenet of Generation STEM Links, in response to practice evidence and consultation with industry and broader stakeholder groups. As a result, capability improvements were reported by industry supervisors, with 86% of supervisors surveyed reporting positive improvements in their confidence levels when supervising student interns; with 33% of these describing their improvement as 'significant'. Building this capability in-house, positioned industry partners to deliver high-quality placements for students that could potentially be applied into the future and across business areas, not just STEM. Student survey evidence (n=99) confirmed this capability to be mutually beneficial, highlighting that overall, 'constructive feedback' and 'informal mentoring' from supervisors were the most valued placement interactions for students.

At a broader program level, stakeholder consultation undertaken by staff identified a general lack of industry readiness to engage effectively with tertiary STEM student interns. In response to this capability gap, the program delivered a publicly available toolkit[1], designed to be utilised by businesses -including those outside the program - that are new to engaging with tertiary student interns.

Mitigating systemic barriers for SMEs and regionally based industry

The value of program outcomes was amplified for SMEs and regionally based businesses, due to the program's contribution to easing systemic barriers to participating in WIL programs. Literature

[1] The Internship Toolkit is an industry resource for professionals seeking to host and support a tertiary intern student: Generation STEM Links Program - CSIRO

describes system-level roadblocks as disproportionately experienced by smaller businesses and those in regional areas (Jackson et al., 2024; Li and Hardy, 2025).

Interviews with industry hosts identified the program achieved this in a range of ways, including increasing accessing to a broader range of tertiary students (not limited to the nearest university); subsidising business costs; providing recruitment expertise that might not exist in-house and the flexibility to design placements that prioritise business' workforce needs alongside student learning experiences. One industry partner commented:

> *'When you're a small, lean and agile business, you're conscious of resources. The really hard thing is to carve out the time to be able to scope out the project [for a tertiary student], to give it the time that it needs, to get the result that you want.'*

Research highlights that SMEs and regional businesses benefit from non-traditional, flexible WIL models, and supervisor training to engage successfully in WIL. At a system level, regulatory reforms and practice changes to create financial or other incentives would also benefit these business types but were not addressed as part of this program model (Department of Education, 2024; Jackson, 2024; Kay et al., 2019).

One industry host commented on the benefits of the Generation STEM Links model and their experience prior to accessing it:

> *'We would have not run this many internships at all, and most likely would have not gone out to pay students. Sometimes even if there is a talent, but nobody kind of pushes you towards it or advertise it for you, you don't get around to it, you're busy with many things. Internships are difficult [to find people] so I think biggest value was the top talent that the CSIRO team were finding and it was a much better job than any other companies I've seen who have been trying to hire interns themselves.'*

Li and Hardy (2025) argue that their lack of scale and often stretched resources can inhibit SME capacity to access WIL opportunities or influence university-industry collaboration. Jackson (2024) argues that SMEs can be at a disadvantage in the WIL space where regulations and other restrictions may limit their participation.

Interviews with industry partners corroborated this, highlighting that the workforce needs of regional businesses do not always align with the courses offered at local, regional universities; therefore, a university-led placement program is not a practical option for many regional businesses. University-based WIL programs can also lack the flexibility and tailoring embedded in the Generation STEM Links model, which is generally preferrable for smaller businesses. One industry partner of a small business explained:

> *'If you go direct to a university, it's often lots of conversations. [The response is] "We'll think about it….". I had that exact conversation a couple of weeks ago with the university. It's so hard to navigate. They have a set curriculum.'*

Despite the structural roadblocks limiting smaller and regional businesses to engage tertiary student interns, the benefits for both parties are apparent. Kay et al. (2019) describes student placements at start-ups and SMEs as a contemporary trend, exposing students to 'multidisciplinary contexts that promote the development of entrepreneurial skills required for the 21st century world of work'. Skinner et al. (2021) presents evidence suggesting students who experience WIL in a rural and regional area are more open to practising in those environments after graduation. A small number of students interviewed as part of the 2024 Generation STEM Insights report (Cherry, 2025), described their positive experiences interning with small, businesses that consider themselves 'start-ups', including this quote below that emphasised one of the more common benefits reported by students:

> *'You get to see how business works and be across a lot of things. We've really worked quite deeply on a lot of tasks…it's great to have more of an in-depth opportunity and maybe more responsibility than we would have if we'd gone into a larger company. It has been a really valuable experience to be able to get a feel of everything and get a better understanding of it.'*

Student benefits

Pathway to STEM sector employment and higher lifetime earnings

Recent government publications state that graduates in engineering, medical, and STEM related fields show both high starting salaries and rapid earnings growth within the first 5–10 years and over time, STEM qualified graduates earn more than non-STEM graduates (Department of Education, 2019; Department of Industry Science and Resources, 2026; Jobs and Skills Australia, 2025; The Productivity Commission, 2023). Program records ceased once a student completed their placement, creating a lack of longitudinal evaluation data measuring post-graduation and longer-term student career pathways and earnings. However, with increased income due to an earlier transition into the STEM sector, Generation STEM Links students could reasonably expect higher lifetime earnings compared with other undergraduate STEM students.

Analysis of program data demonstrated a high rate of STEM sector employment for tertiary students completing their placements through Generation STEM Links. This subsequently elevated students to higher STEM sector wage rates compared to their pre-internship casual or part-time employment in entry level jobs such as hospitality, retail or the recreation and leisure industry. Students reported they expected this STEM sector employment to continue throughout their final year of study and post-graduation, providing higher income and sought after experience in discipline-relevant settings. At the time of this report, program data indicated that for students employed post placement, most continued in casual or part-time work with the business and a smaller proportion transitioned into full-time work. Interview evidence indicated students often preferred casual or part-time work to accommodate study commitments. Most student interns reported securing STEM sector employment prior to graduation or were planning to leverage their increased professional networks and work experience for a competitive advantage in the job market.

Responding to student demand

Paid tertiary internships are in high demand due to mandatory WIL curriculum requirements and high interest from many students, even without mandatory requirements. Jobs and Skills Australia (2023) state that WIL opportunities such as internships are advantageous to students, and an important component of a high-quality student education experience. The report argues that work integrated learning opportunities need to be expanded so that more students can build connections to, and experience in the work environment. Universities Australia (2019) report also highlights available WIL placements do not always meet demand and are often unpaid.

Between 2022 and 2025, Generation STEM links received 5,621 student applications for 268 placement contracts, averaging almost 21 student applications per contract signed, with some positions receiving as many as 89 applications (all IT/software-based internships). Attracting new industry partners to host tertiary student interns, through a program model that responds to industry priorities had a flow on benefit to the vast number of students seeking paid placements, providing more students with a high- quality, paid learning experience likely to enhance their career progression.

While the program's increased internship opportunities mitigated some of the access challenges for students, strong and often 'stressful' competition persisted and was universally raised by students during evaluation interviews. The consequences of this were explained by students, including delays to graduation of up to 6 months (experienced by their peers outside the program) and a sense of overwhelm at the application process, with several students citing a high volume of internship applications (between 10 and 30) before being successful.

A pathway for underrepresented STEM students

Kay et al. (2019) argue that increased competition for WIL placements puts students from diverse cohorts such as international students and those with disabilities at a disadvantage. Students underrepresented in STEM – Indigenous students, students from low socio-economic backgrounds and regional and rural students – also face similar challenges in accessing WIL opportunities (Universities Australia, 2019) with a lack of high-quality options often available for students in low socio economic and regional areas (Department of Education, 2024). Higher levels of financial stress also exclude these students from unpaid work learning opportunities.

Australian Collaborative Education Network (2023) reported that less than one third of low SES students (27.8%) participated in some form of WIL compared to almost half of high SES (48.6%).

Comparatively, Generation STEM Links data showed a higher rate of 32.9 %of placed tertiary students were from low SES backgrounds.

In 2018, Indigenous students made up about 1.8% of all higher-education enrolments (The Australian Institute of Health and Welfare, 2025) and 2021 Australian Census data indicated approximately 0.5% of Indigenous peoples held a university STEM qualification**.**

In comparison, a higher proportion of Generation STEM Links applicants identified as Aboriginal and/or Torres Strait Islander (2.1%), with a similar placement rate of 2%. Of those students placed, 75% were offered ongoing employment.

For people living with a disability, the proportion of applicants (4.7%) reflected the population of university students with a disability studying STEM subjects (4.6%) (Williams et al., 2024). People living with a disability made up a slightly lower proportion of program placements (3.2 %); however, 100 % of these students received an offer of employment.

The STEM Equity Monitor (Department of Industry Science and Resources, 2023) reported only 37% of STEM university students identified as female. A smaller proportion of program applicants identified as female (28.3%); however, the proportion of female students securing internships increased as a proportion to 33.2%. As a proportion of completed placements, female students were the least likely of the underrepresented cohorts to be offered ongoing employment (74% of females who completed placements were offered employment).

While the program facilitates increased opportunities for underrepresented students to access STEM placements, there is potential to improve outcomes in this area outside the scope of this program, by addressing structural and cultural barriers across policy, education and industry (Williams et al., 2024). See Appendix C for detailed program data highlighting the proportion of underrepresented students at each stage of the student journey.

Tertiary benefits

Overall, universities have faced increased pressure to grow WIL opportunities, alongside reported sector wide financial pressures. In 2024, a 12-month review of the higher education sector resulted in 2024-25 budget measures with direct financial benefits for students to mitigate financial pressures and 'placement poverty', while other measures aimed at system level reforms to the tertiary sector may have indirect benefits for the delivery of WIL program (Crowe, Vines & Ey, 2024). Universities Australia (2025) go further, arguing a general decline in universities' financial situations, describing unstable conditions, underfunding and a potential inability to deliver the growth and innovations needed for Australia's workforce.

Attendees at the NPILF Roundtable of key stakeholders in 2025 called for sustained federal funding for WIL to continue gains made since the funding commenced in 2022, and to ensure ongoing high quality and flexible WIL models. One of their practice recommendations included funding for centralised coordination and relationship management to facilitate collaborations with employers and community organisations (Valencia-Forrester et al., 2025).

Representatives from the tertiary sector were not included as participants in the CBA; therefore, potential monetary benefits for tertiary education stakeholders were not fully explored. While universities were not considered a primary beneficiary of the program, they did play a role in communicating internship opportunities to students. University online career hubs were utilised to advertise internships and in a small number of cases (identified through interviews with program staff and students) university academics communicated directly with their students about internship vacancies. During evaluation interviews, students frequently described finding their own placements via their university career hubs as standard practice.

This approach was documented as consistent across the sector by Edwards et al. (2015) describing students as responsible for making connections with potential internship hosts. This was the only financially viable model for many universities; however, this model didn't allow for building networks between universities and industry. In some cases where individual academics held industry connections, they could be closely guarded or lost if academics left the institution (Edwards et al., 2015). Program implementation evidence highlighted that in some cases, university guidelines were a barrier to students using Generation STEM Links placements towards their mandatory placement hours. This was generally due to a lack of flexibility reported more commonly in larger, metro universities.

Universities are the primary promoters of WIL placement opportunities for Australian tertiary students yet argue that it is resource intensive and costly for them to deliver, with these pressures increasing into regional areas (Department of Education, 2024). With the additional placements generated by the program, some universities may have experienced an associated reduction in resourcing pressures. Without evidence from the tertiary sector exploring any benefits it is not possible to identify to what extent the program contributed to a reduction in pressure on university resources to deliver WIL placements.

Evidence from participating industry partners indicated that some universities may have experienced new or strengthened connections with the STEM industry. Survey and interview evidence gathered from industry hosts (n=66) provided feedback on engagement with universities because of participating in the program. For just over half of industry partner respondents (56%), their connections with the tertiary sector 'improved significantly' (18%) or 'improved somewhat' (38 %) (Figure). Some industry partners described different or new arrangements they had explored with the tertiary sector, for example:

- 'I attended a CSIRO Educate to Innovate day as a panellist, and this opened up my engagement'
- 'We are exploring more university and even TAFE placements in other areas (outside engineering) within our company'
- 'We are considering sponsoring a PhD student on a project related to our business and commencing some free for service projects with a Sydney University'

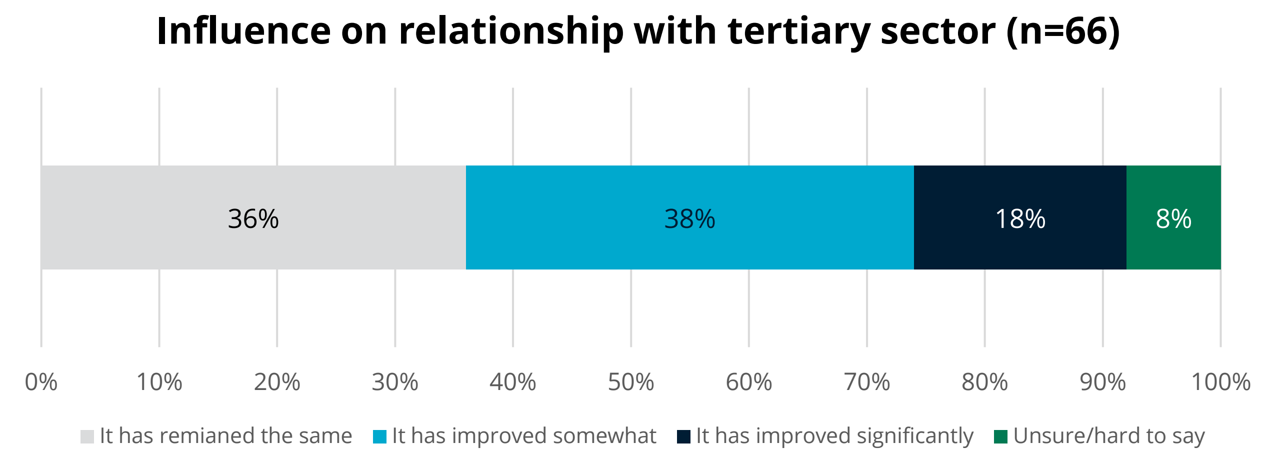

Figure 11 Survey results from industry hosts when asked if their relationship with the tertiary education sector has changed since participating in Generation STEM Links

This industry-reported improvement in relationships with the tertiary sector could create flow on benefits for participating universities such as research collaborations, research translation and research innovation (especially with small businesses and 'start ups'), increased industry involvement in course design, industry embedded PhD pathways and expanded WIL opportunities (Department of Education, 2024). These benefits are considered challenging to achieve outside deliberate policy and funding support, especially for SMEs and in regional contexts (Li and Hardy, 2025) as collaborative partnerships still require ongoing resourcing to negotiate and sustain.

Government benefits

While not included as a monetised benefit for this project, the NSW government could expect a small increase in payroll tax generated with the creation of a larger pool of paid internship opportunities and any ongoing employment of students at a higher wage rate than prior to their placement. This may also translate to a benefit for the Commonwealth government if a proportion of students received reduced allowances (such as Youth Allowance for students aged 24 years and younger) during this period of higher income. Another benefit that currently lacks comprehensive analysis is the longer-term impacts of improvements in STEM industry capability and capacity to host future tertiary students, following their engagement in this program. Improvements in ability to engage students could coincide with an increased likelihood of seeking further student interns outside this program.

In addition to this, the Generation STEM Links model contributed broader policy benefits to the state and commonwealth governments. This is evidenced through the program's alignment to recent federal and NSW government policy objectives, and its mitigation of a range of systemic challenges identified in policy recommendations, particularly for SMEs and regional businesses. Program evaluation interview and survey data provided specific examples of what this looked like for participants of Generation STEM Links, including comments related to easing financial and risk pressures, filling recruitment and human resource gaps in their workforce, placement flexibility, and support to enter and navigate the complexity of the WIL system with confidence.

Figure shows recent key federal and state policy and budget milestones aligned to improving outcomes in education and employment pipelines in Australia and NSW with Table 9 presenting key policy recommendations consistent across these publications and demonstrating ways in which Generation STEM Links responded to these for the STEM sector.

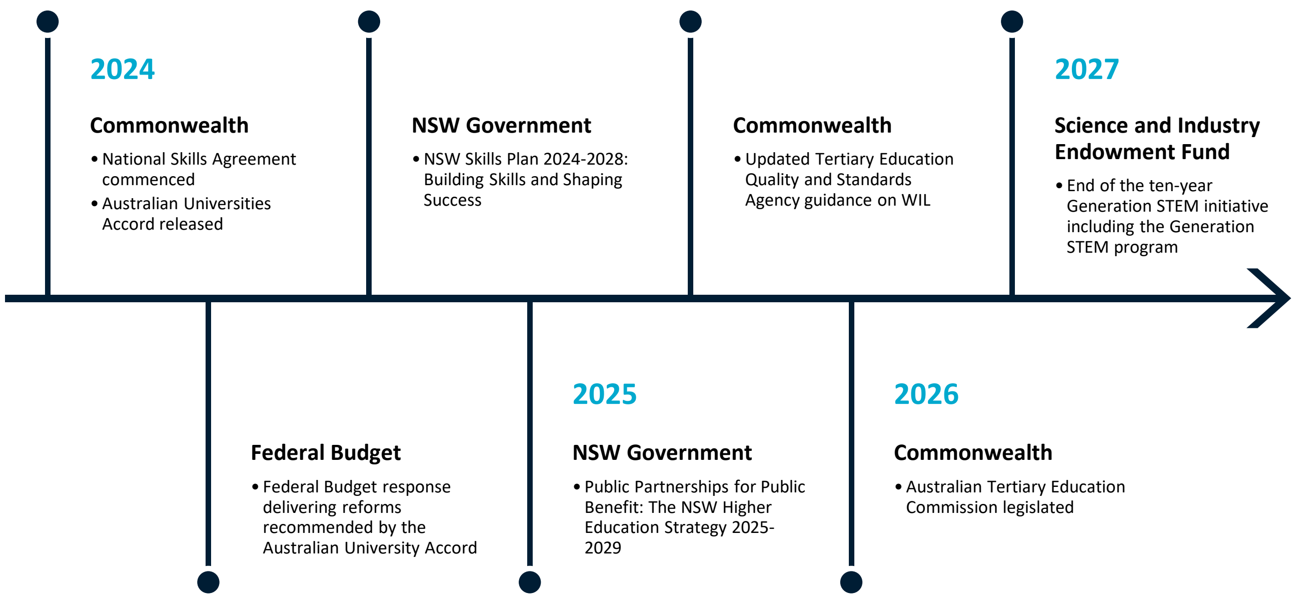

Figure 12 Key government policy milestones related to tertiary education and workforce outcomes

Table 9 program alignment to policy recommendations

POLICY RECOMMENDATION AND RESPONSE	GENERATION STEM LINKS ALIGNMENT	PARTICIPANT EXPERIENCE
Expansion of WIL, paid placements, internships and employment-linked study models	Increased opportunities for industry and students to access paid placements for NSW tertiary students in the STEM sector. The transferability of this model to other sectors to meet workforce shortages, such as CSIRO's delivery of NSW Skills for Net Zero initiative.	80% of businesses sampled (n=44) engaged a student intern for the first time through Generation STEM Links.
Government and employers share responsibility for the costs of mandatory placement	NSW Government funding of the Generation STEM Links program facilitated additional paid placement opportunities and a subsidy to industry. Industry partners paid minimum wage rates and superannuation to students.	Case study participants (2024) shared that a wage not only relieved financial pressures but elevated the status of student interns within the business, to increase industry investment and deliver a more valuable learning experience for students.
Sector-wide engagement and accountability for work-based learning opportunities for students	Generation STEM Links operates primarily at an individual business level, however, also supports broader industry capability and capacity through freely available resources developed at a regional level with key stakeholders.	Between November 2022 and November 2023, the Generation STEM Links program facilitated four workshops and roundtable events across the Hunter/Newcastle and Orana/Dubbo regions. These workshops resulted in the delivery of an internship toolkit resource for industry and support for other activities such as the Hunter Innovation Festival.
Tertiary and industry collaboration at a system level including employer informed curriculum design	Not a primary component of Generation STEM Links. Generation STEM Links operates primarily at an individual business and university level, promoting opportunities for tertiary and industry collaboration as an indirect outcome.	56% of industry partners (n=66) reported improved relationship with the tertiary sector because of the program.
SME face barriers engaging with the skills system **Limited resources, supervisors, HR, to navigate the system and comply with it**	Recruitment style approach of Generation STEM Links provides HR capabilities and resources, subsidy, and tailored, flexible delivery of placements.	100% of supervisors (n=38) who were new to the program reported their expectations were met (26%) or exceeded their expectations (74%). All new industry partners said the process of engaging with the program was easy (10) or very easy (11) 86% of supervisors experienced a positive improvement in their level of confidence to supervise student interns. 33% described this as a significant improvement
Regional and remote businesses participation is a core equity and productivity priority	Generation STEM Links has increased regional and remote business' access to students and supported supervisor capability in these businesses.	78% of SME in regional areas offered their student interns ongoing employment Higher regional student placement rates (8.9%t of all students) compared to the proportion of eligible regional student applicants (3.7%).
Students and industry benefit from training/education underpinned by strong employer engagement resulting in increased work readiness of graduates.	Industry priorities are elevated in this model, resulting in increased workforce value of the placement experiences for industry and students. students were provided with job-relevant skills; exposure to real workplaces and clear pathways to employment, matched with industry needs.	91% of student interns (n=55) agreed the internship influenced future decisions about their careers. This was demonstrated through: broadened awareness and interests within STEM; ignited passions in new STEM areas; reinforced their STEM pathway; increased their preparedness for the workforce.

Implications for policy and further research

Policy implications

Policy environment

In Australia, the term work integrated learning (WIL) encompasses an expansive range of activities (Edwards et al., 2015) becoming increasingly popular across university courses, resulting in growing competition for students seeking workplace learning (Kay et al., 2019). The objective of Generation STEM Links 'to provide high-quality internships to help tertiary students gain workplace skills and transition to STEM jobs after graduation' fits well within the broad scope of Australia's WIL sector. However, the 200-hour paid internship doesn't fit neatly into one WIL typology, which are commonly delivered by tertiary institutions such as universities or TAFE and often as a mandatory component of the course curriculum. Instead, Generation STEM Links is characterised by its prioritisation of industry operational and workforce needs; capability-based assessment of student skills, and a subsidised minimum wage for students.

A national WIL strategy was commissioned in 2014, and the concept continued to feature in Australian Government policy over time, reflected in the 2020 Job-ready Graduate Package reforms to higher education (including the National Priorities and Industry Linkage Fund (NPILF)) and more recently in the Australian Government's Universities Accord interim and final report in 2024 (Department of Education, 2024).

Collectively, these policies prioritised an increased number of internships, more innovative approaches to WIL, and increased cross-sector collaboration. While the NPILF advocated for increasing the number of STEM skilled graduates and their subsequent employment in the sector, the Universities Accord represented a shift towards a broad, student focused policy, such as addressing the financial pressures experienced by tertiary students and an improved equity of participation in higher education.

These policy objectives were seen as necessary to 'ensure that students are graduating with the specific skills required to do the jobs that are required of them' (Department of Education, 2024). Jackson et al. (2024) argued that a lack of funding in Australia has led to 'an imbalance between the supply and demand of WIL opportunities and the normalisation of unpaid work-based WIL.' This lack of funding highlighted a shortfall for higher education across several pressures such as the cost of WIL, which is acknowledged to be more than traditional academic units of study; university capacity to ensure every faculty student is placed; and 'the debate about how far universities should be geared towards the needs of employers' (Edwards et al., 2015). Building effective cross sector partnerships between universities and industry takes time and effort, including engagement to identify a mutually beneficial approach to engaging within the WIL space (Atkinson, 2016).

SMEs were not frequently mentioned in the WIL literature, however, Li and Hardy (2025) argued their lack of scale and often stretched resources could inhibit SME capacity to access WIL opportunities or influence university-industry collaboration. Jackson (2024) argued that SMEs could be at a disadvantage in the WIL space where regulations and other restrictions may limit their participation. Australian and NSW Government policy positions aimed to mitigate this and support SMEs to participate more equitably in the business community (The Productivity Commission, 2023).

The findings of this analysis highlight several policy-relevant insights for WIL and STEM workforce development. Firstly, most program benefits were generated through new internship opportunities that would not otherwise exist, indicating that policy mechanisms which expand employer participation—particularly among SMEs, are critical to improving system-wide outcomes.

Secondly, the program demonstrates the value of shared funding models, where government investment offsets costs for industry while ensuring students are paid. This approach aligns with broader policy priorities aimed at addressing financial barriers to participation and reducing reliance on unpaid placements.

Thirdly, the results reinforce the importance of flexible, industry-led program models that complement traditional university-based WIL. By prioritising workforce needs and reducing administrative burden, Generation STEM Links enabled higher engagement from SMEs and regional businesses—groups often underserved in conventional models.

Finally, the program supports policy objectives related to equity and workforce diversity, demonstrating that targeted interventions can improve access for underrepresented groups while maintaining strong employment outcomes.

Research implications

Learnings from this evaluation project highlighted that fully understanding an economic approach such as a CBA required not just the initial capability building, but ongoing guidance to develop and refine the methodology and communicate findings in a cohesive report. This guided evaluation process provided a valuable opportunity to brainstorm and refine the methodology and identify outcomes that were feasible to monetise, and those that were better to present qualitatively. A significant learning through this project was the amount of time needed to identify the most appropriate outcome and benefit evidence for the program and its counterfactual. This involved some exploration and testing of different data sets. For future evaluation projects, this data exploration stage will be built into future CBAs and for other evaluation projects, using an economic evaluation lens to consider a broader range of program outcomes and evidence collection at the planning stage, may improve opportunities to assess impacts outside the typical paraments of program evaluation.

Recommendations to improve future program data collection

While the analysis provided strong evidence of program benefits, several data limitations constrained the ability to fully capture long-term impacts. Addressing these gaps would strengthen future evaluations and policy insights. Future improvements may include:

1. **Implement longitudinal tracking of participants:** Collect post-graduation data on employment outcomes, career progression, and earnings to better estimate long-term benefits such as lifetime income and career advancement.
2. **Align data collection with national datasets:** Coordinate surveys with existing instruments such as the Graduate Outcomes Survey to enable benchmarking and improve comparability across programs.
3. **Increase sample sizes and response rates:** Enhance engagement strategies for industry partners and graduates to improve survey completion rates and reduce bias in evaluation findings.
4. **Strengthen data on counterfactual scenarios:** Collect more detailed baseline information on industry recruitment practices and student employment pathways prior to participation to improve attribution of program impacts.
5. **Capture broader system impacts:** Develop measures to assess outcomes such as industry capability building, ongoing internship provision, and university–industry collaboration over time.
6. **Improve tracking of equity outcomes:** Monitor participation and outcomes for underrepresented cohorts across all stages of the program to better understand where barriers persist and where targeted support is needed.

Collectively, these improvements would support more robust evaluation of both short and long-term program impacts and strengthen the evidence base for future policy and investment decisions.

Conclusion

The findings of this CBA indicate that Generation STEM Links has delivered positive economic and social outcomes for participants and the broader STEM ecosystem in New South Wales. The program generated measurable economic benefits that exceeded its costs, with value primarily driven by the creation of internship opportunities that would not otherwise have occurred. These additional placements enabled earlier employment outcomes for students and supported more efficient recruitment and productivity gains for participating businesses.

Beyond quantified outcomes, the program demonstrated a range of important qualitative benefits. These include improved pathways for students into STEM careers, increased access to paid internships—particularly for underrepresented groups and enhanced workforce capability within industry. For employers, especially SMEs and those in regional areas, the program reduced barriers to engaging with internships and provided a low-risk mechanism to identify and recruit talent.

The analysis also highlighted the program's contribution to broader system-level objectives, including strengthening connections between industry and the tertiary sector and supporting government priorities related to workforce development, equity, and innovation. However, it is noted that some longer-term benefits, such as sustained career progression and lifetime earnings for students, could not be fully quantified due to data limitations, suggesting an opportunity for future evaluation work.

Overall, Generation STEM Links represents an effective and adaptable model for delivering WIL. Its emphasis on industry engagement, paid placements, and accessibility positions it as a valuable approach for supporting both workforce needs and student outcomes in the evolving STEM landscape.

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Appendix A Detailed methodology of estimating monetised benefits

Monetised benefits were estimated by quantifying the incremental economic value generated by the Generation STEM Links program relative to a defined counterfactual (base case). Consistent with NSW Treasury guidance, the analysis measures only those benefits that are attributable to the program and would not occur in its absence, ensuring that estimated impacts reflect genuine improvements in economic welfare rather than business-as-usual outcomes.

The analytical approach combines program administrative data, survey responses, and external labour market evidence within a probabilistic modelling framework. Benefits are estimated separately for industry and students and then aggregated across all internship placements. Given the variability in employer behaviour and labour market conditions, the analysis incorporates explicit treatment of uncertainty through a Monte Carlo simulation model, allowing the results to be expressed as expected values with associated ranges.

A key feature of the methodology is the distinction between two types of participating employers. Type A employers are those that would have hosted interns regardless of the program, while Type B employers are those for whom participation is contingent on program support. This distinction is critical to the estimation of additionality. For Type A employers, only incremental efficiencies relative to existing recruitment practices are included, whereas for Type B employers, all benefits associated with internship creation and employment outcomes are treated as additional.

Let η denote the total number of internships, with η_{TA} and η_{TB} representing the number of Type A and Type B internships respectively. Benefits are calculated on a per-intern basis and aggregated across these groups.

For Type A employers, the primary monetised benefits arise from improvements in hiring efficiency and reduced time to productivity. Graduate employees typically require a period of adjustment before reaching full productivity ELMO Software (2025)'s research show that the time to full productivity is taken as $D_p = 34$ days. Internship experience is assumed to provide an equivalent of 200 hours or $D_I = 26.7$ days of productive experience. Assuming a linear productivity ramp-up, the wage lost due to initial under-productivity can be expressed as:

$$\omega(d) = GS_d \times \left(\frac{D_p - d}{D_p}\right)$$

where GS_d is the average daily graduate wage. The productivity benefits attributable to the internship, B_P, is therefore the difference in lost productivity between the baseline and internship-adjusted scenarios:

$$B_P = \sum_{d=1}^{D_p} \omega(d) \; - \sum_{d=26.3}^{D_p} \omega(d)$$

This formulation captures the value to employers of reduced onboarding time and faster integration of graduates into productive roles. Thus, with a starting graduate salary of $75,000 (Quality Indicators for Learning and Teaching and Social Research Centre, 2025), B_P for this analysis is fixed at $4,499.43 per employed tertiary intern.

In addition to productivity gains, employers benefit from reduced recruitment costs. Based on benchmark data for entry-level recruitment in Australia (ELMO Software, 2025), hiring cost savings (S_{HCS}) are estimated at $13,870 per employed intern. This reflects avoided costs associated with advertising, screening, and shortlisting candidates.

Employer costs associated with recruitment, onboarding, and supervision are also incorporated into the analysis. These costs are highly variable across businesses and are therefore modelled using probability distributions derived from program survey data. Let C_{RC}, C_{OB} and C_{SP} denote recruitment costs (costs to participate in the recruitment process for a tertiary student intern through Generation STEM Links onboarding), onboarding costs and supervision hour inputs, respectively. Supervision hours are converted into a monetary value using an hourly wage proxy $W_h = \$46.43$:

$$C_{SP} = H_{SP} \times W_h$$

Each of these variables is drawn from kernel density distributions fitted to observed internal survey responses. Implausible values (such as negative supervision hours) are excluded. The total variable cost per intern is then:

$$C_{var} = C_{RP} + C_{OB} + C_{SP}$$

The net benefit for Type A employers is therefore expressed as:

$$B_{TA}^{I} = B_p + S_{HCS} - C_{var}$$

For Type B employers, the program creates opportunities that would not otherwise exist, and therefore all resulting benefits are considered additional. The primary benefit arises from reduced hiring delays. In the absence of the program, employers would incur time costs in searching for suitable candidates. These hiring delays (H_d) are modelled using external survey data on time-to-fill vacancies (Job Skills Australia, Internal Communication) found in Table 5. Because survey responses are provided in ranges (e.g. "more than 6 weeks, up to 3 months"), each observation is converted into a bounded day interval, and a random value is drawn from within that interval.

The benefit of avoided delay is thus calculated as:

$$B_d = \frac{GS_y \times H_d}{WTR \times 365.25}$$

where GS_y is the annual graduate salary and WTR is the wage-to-turnover ratio which is the salary and wages paid by a business divided by its total income. WTR values in this analysis come from the Australian Taxation Office (2026)'s Company financial ratios, 2023–24 income year and incorporate median WTR values from businesses within ANZSIC06 Divisions A, B, C, D, E, J and M.

Recruitment cost savings are also included, consistent with Type A estimates, and variable costs are deducted using the same stochastic approach:

$$B_{TB}^{I} = B_d + S_{HCS} - C_{var}$$

Student benefits are estimated based on earlier entry into employment. Consistent with economic theory, wages are not treated as a full net benefit, as they reflect both output and opportunity cost. Instead, a labour surplus approach is adopted, whereby only a proportion of wages represents net welfare gain. Following standard practice, this proportion is assumed to be $\beta = 0.5$. The benefit associated with earlier employment is therefore:

$$B^{S} = \beta \times GS_d \times H_d$$

For Type A students, not all employment outcomes can be attributed to the program, as some would have occurred in the counterfactual. A baseline intern-to-employment conversion rate γ_{ER} is used to estimate the number of employment outcomes expected without the program per business, b:

$$N_E(b) = \gamma_{ER} \times \eta_{TA}(b)$$

Only employment outcomes above this baseline are included in the benefit calculation:

$$B_{TA}^{S}(b) = \sum_{i=1}^{N_E} \beta \times GS_d \times H_d(i)$$

For Type B students, all employment outcomes are considered additional, and the full benefit is included per business:

$$B_{TB}^{S}(b) = \sum_{i=1}^{\eta_{TB}} \beta \times GS_d \times H_d(i)$$

Given the variability in inputs, the full set of benefits is estimated using a Monte Carlo simulation with one million iterations, with a detailed description of the process given in Appendix B. However, in each iteration, internship types are randomly assigned using an 80:20 split between Type A and Type B employers. For each intern, values for hiring delays and cost components are randomly drawn from the relevant distributions, and benefits are calculated using the equations above. Total monetised benefits for Generation STEM Links () for each iteration, j, are aggregated across all interns:

$$B_{GSL}(j) = \sum B_{TA}^{I} + \sum B_{TB}^{I} + \sum B_{TA}^{S} + \sum B_{TB}^{S}$$

The resulting expected benefits are compared to program costs to estimate the BCR:

$$BCR = \frac{B_{GSL}}{C_{GSL}}$$

where C_{GSL} represents total program costs. NPV is then calculated to be:

$$NPV = B_{GSL} - C_{GSL}$$

Appendix B Monte Carlo simulation of Monetised Benefits

A Monte Carlo simulation was used to estimate Generation STEM Links monetised benefits. This approach enables the model to incorporate uncertainty explicitly and generate a distribution of possible outcomes, rather than relying on a single deterministic estimate. The simulation proceeds through a series of repeated calculations (iterations), each representing one plausible realisation of the program's BCR under the defined assumptions. The iteration distribution is then used to determine the median and standard deviation of the calculated values.

Simulation steps

Step 1: Define input distributions

All uncertain parameters are represented as probability distributions derived from empirical data. These include:

- Hiring delay (H_d): drawn from an empirical distribution constructed from external survey data. Observations reported as ranges are converted into bounded intervals, from which random values are sampled.
- Recruitment, onboarding and supervision costs (C_{RC}, C_{OB} and C_{SP}): modelled using kernel density estimates fitted to survey responses from industry participants.
- Supervision cost conversion (C_{SP}): supervision hours are converted to dollar values using an assumed hourly wage rate.

These distributions reflect observed variability and form the basis for stochastic sampling in the simulation.

Step 2: Assign employer types

For each iteration, internships are randomly assigned as either Type A or Type B using a fixed probability split reflecting observed program proportions (e.g. 80:20). This step ensures that each iteration reflects a plausible composition of participating employers. WTR values are also assigned to each employer based on their ANZSIC06 Division.

Step 3: Sample values for each intern

For every intern in the simulated cohort, random values are drawn from the defined distributions, including H_d, C_{RC}, C_{OB} and C_{SP}. From these draws, derived variables are calculated, including supervision cost ($C_{SP} = H_{SP} \times W_h$) and total employer cost per intern ($C_{var} = C_{RP} + C_{OB} + C_{SP}$).

Step 4: Calculate benefits at the individual level

Using the sampled values, industry and student benefits are calculated for each intern according to their employer type:

- Type A industry benefit: $B_{TA}^{I} = B_P + H_{SP} - \left(C_{RP} + C_{OB,i} + C_{SP}\right)$
- Type B industry benefit: $B_{TB}^{I} = \left(\frac{GS_y \times H_d}{\text{WTR} \times 365.25}\right) + H_{SP} - (C_{RP} + C_{OB} + C_{SP})$
- Type A student benefit: $B_{TA}^{S} = \beta \times GS_d \times H_d$
- Type A student benefit: $B_{TB}^{S} = \beta \times GS_d \times H_d$

Step 5: Aggregate total benefits

For each iteration j, benefits are summed across all interns and stakeholder groups:

$$B_{GSL}(j) = \sum B_{TA}^{I} + \sum B_{TB}^{I} + \sum B_{TA}^{S} + \sum B_{TB}^{S}$$

This produces a total benefit estimate for that iteration.

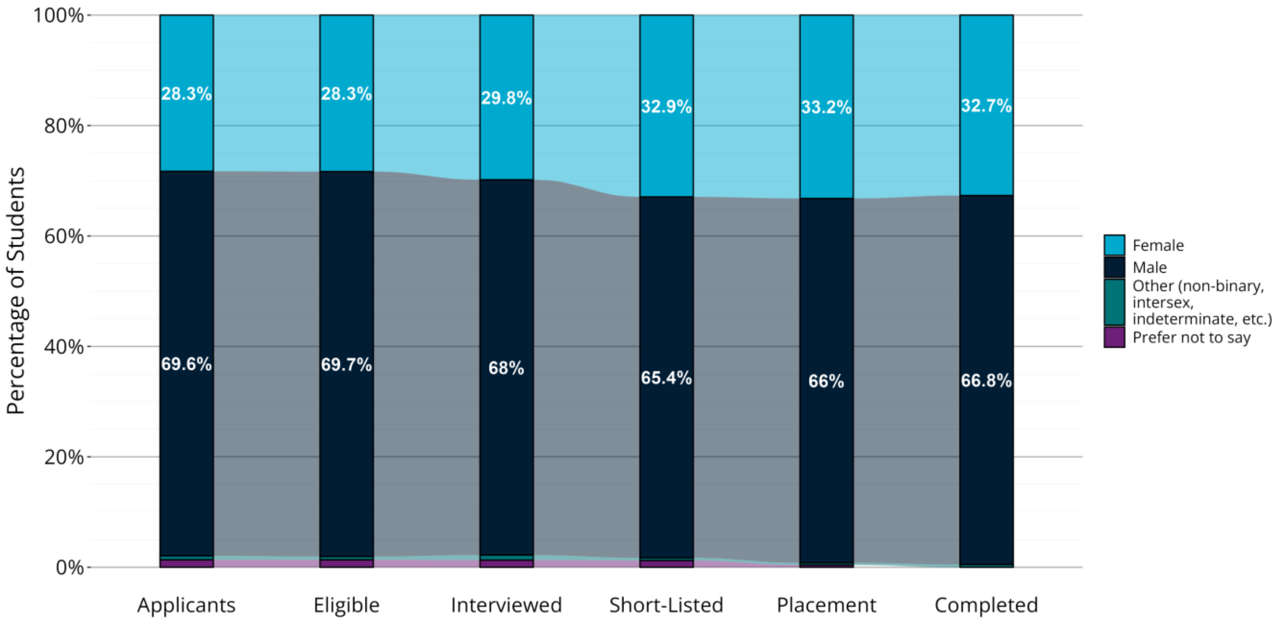
Step 6: Repeat simulation

Steps 2–5 are repeated many times (e.g. $N = 1{,}000{,}000$) with each iteration representing a different possible combination of inputs, generating a distribution of total benefit outcomes.

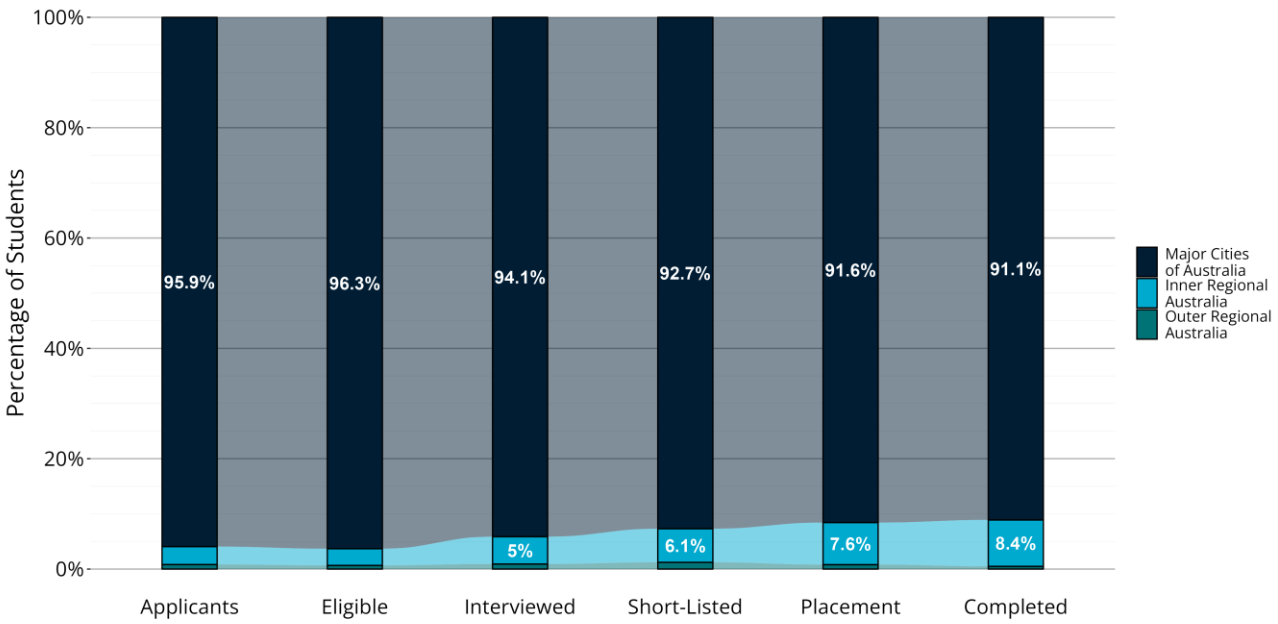
Step 7: Summarise results

The simulation output is a distribution of total benefits, from which summary statistics of NPV and BCR are derived including the median and standard deviation (e.g. 15.9th and 84.1st percentiles) to provide both a central estimate and an assessment of uncertainty.

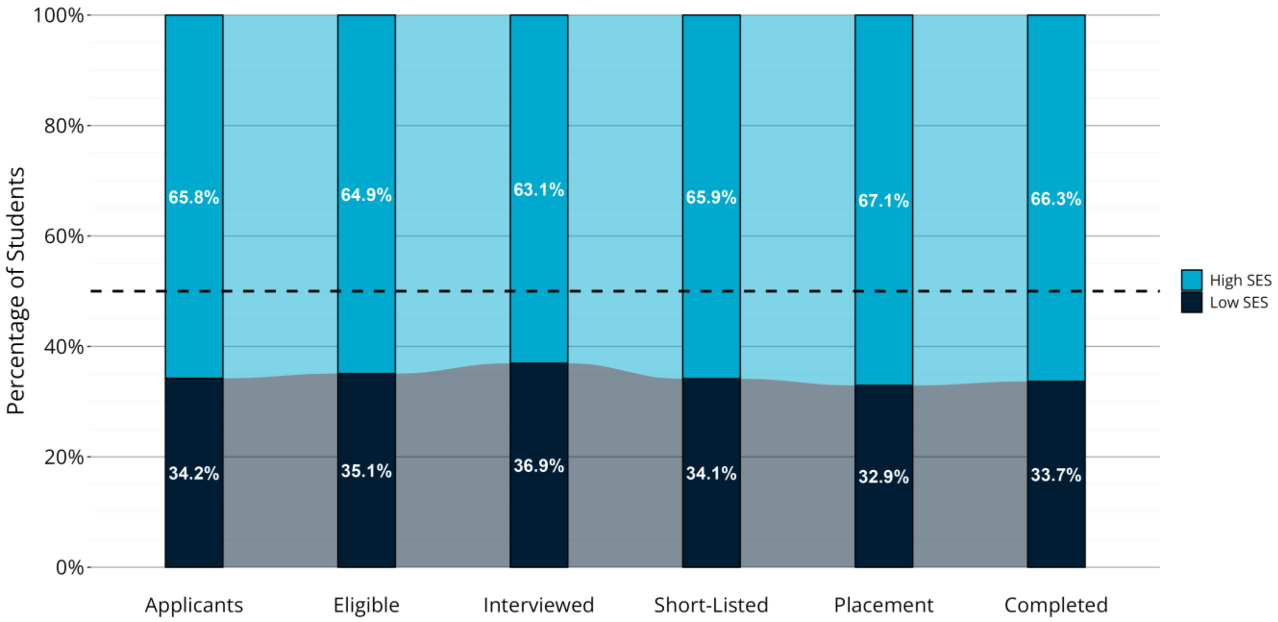
Appendix C Demographics of Generation STEM Links' Applicants



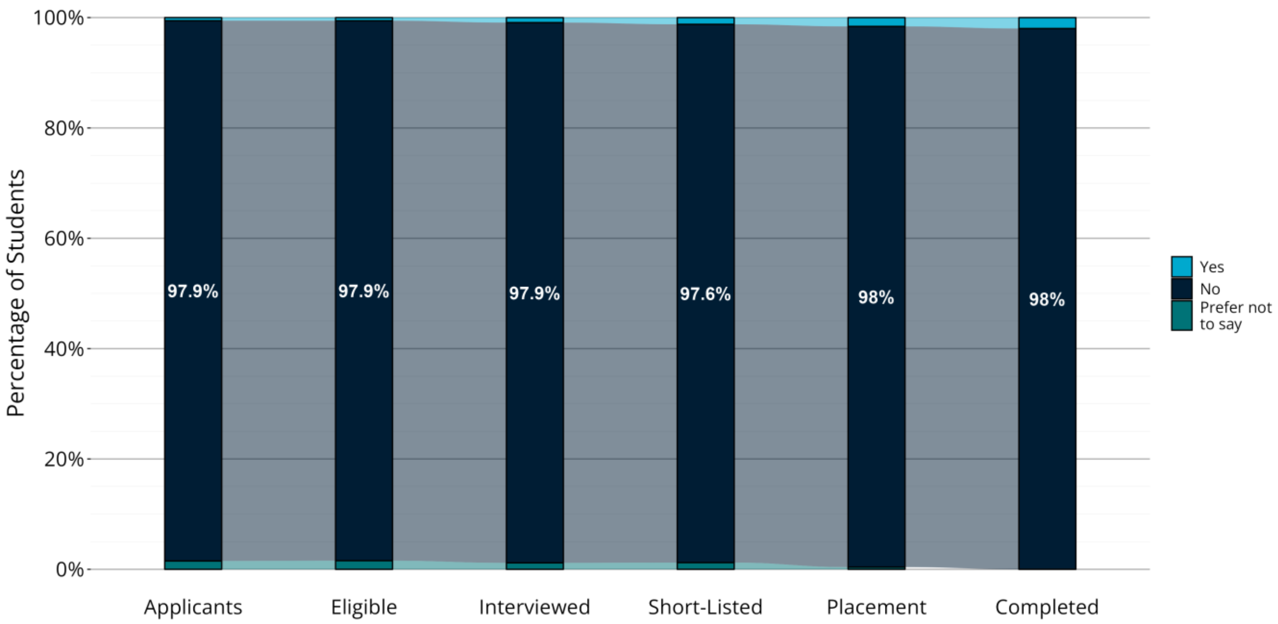
Apx Figure C.1 Proportion of Generation STEM Links students' identified gender across the program's application process



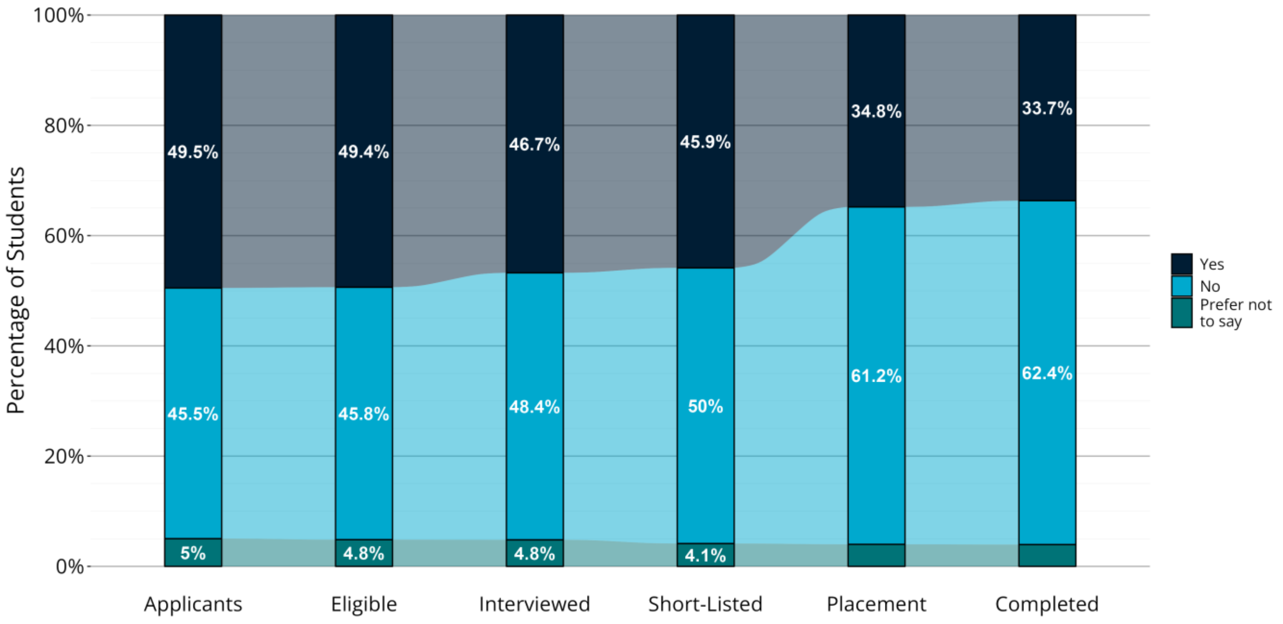
Apx Figure C.2 Proportion of Generation STEM Links students from regional Australia across the program's application process



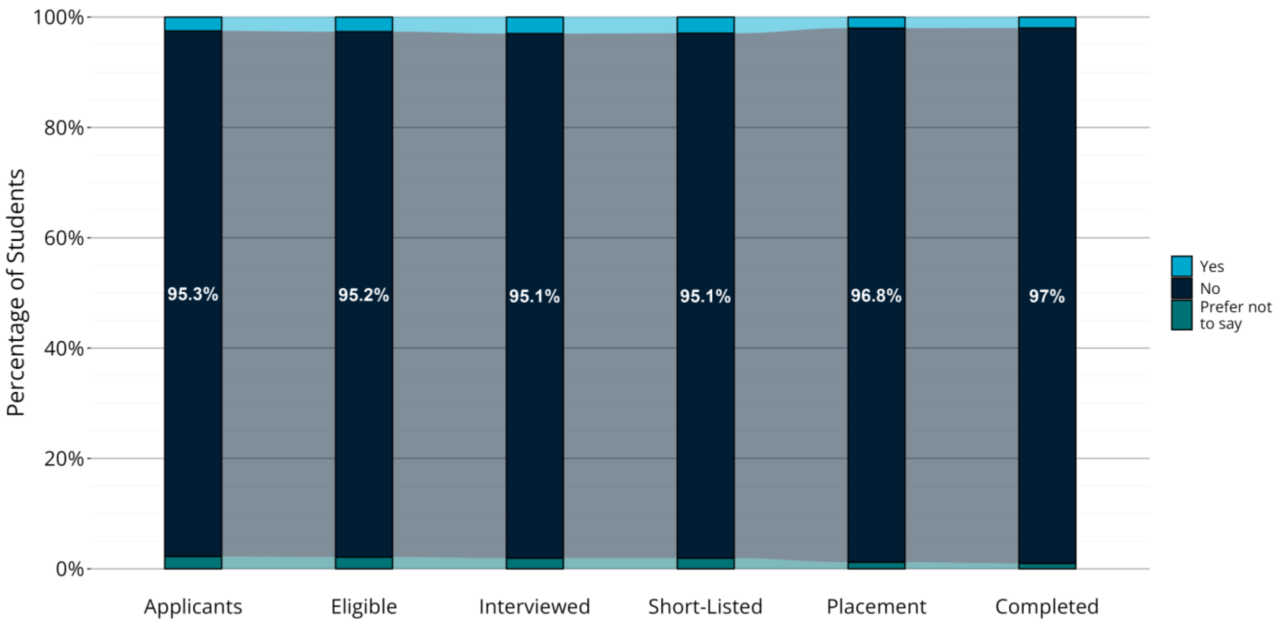
Apx Figure C.3 Proportion of Generation STEM Links students from Low and High socio-economic status areas across the program's application process



Apx Figure C.4 Proportion of Generation STEM Links students who identified as either Aboriginal and/or Torres Strait Islander across the program's application process



Apx Figure C.5 Proportion of Generation STEM Links students from Culturally and Linguistically Diverse backgrounds across the program's application process



Apx Figure C.6 Proportion of Generation STEM Links students who identified as having a disability across the program's application process

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