

Pathways for the Future Pilot Project

Summary report



Pathways for the Future Pilot Project summary report



I am pleased to release the Pathways for the Future Pilot Project summary report. The report presents research which maps the pathways of young people from school, through tertiary education to work.

The Hon. Dr Geoff Lee MP

One of the NSW Government's top priorities is to have the highest quality education system to prepare the most dynamic, qualified and skilled workforce in the world. This report will help us achieve this.

It is an invaluable resource. It was developed by the NSW Department of Education and follows the background, education and employment data of 3.5 million young people aged 15 to 24 in NSW over the period 1996 to 2016.

The report provides an overview of ground-breaking evidence on the pathways students take in senior secondary school through to tertiary study and into employment. The evidence can be used by policymakers, educators, students and employers to improve young people's choices and to help them make better-informed decisions on education-to-work pathways.

With this evidence, we can provide insights to key questions such as:

- What are the pathways young people in NSW take through education and into employment?
- What are the educational drivers of successful employment?
- What actions can young people take to increase their chances of employment?
- What are the pathways into particular careers?
- How do different occupations compare on a range of 'meaningfulness' indicators?

Even without the economic impacts of COVID-19, we know young people face challenges entering the labour market, with higher rates of unemployment and full-time employment difficult to come by. Meanwhile, many industries experience skill shortages.

Through linking the data, we can now better understand how pathway options and choices connect to education and work outcomes.

This summary report and the interactive data visualisation tool that will be developed to accompany it can be used to inform educational and training choices made by students, parents, careers advisers, educators and employers. They can guide our policy settings, reform directions and programs into the future to improve education-to-work outcomes for young people in NSW.

The Hon. Dr Geoff Lee MP
Minister for Skills and Tertiary Education
December 2021

Pathways for the Future Pilot Project summary report

The NSW Department of Education is committed to improving the experience for young people in NSW as they move through education pathways, attain qualifications and enter the workforce.

The Hon. Sarah Mitchell



The Pathways for the Future Program has been a significant undertaking to understand and map the journeys that young people take from Year 10, through tertiary education, and into employment. Improving students' post-school destinations is a target within the Department of Education's School Success Model and will ensure schools are connected to the lifelong learning of their students. The evidence base provided by this program and report will inform the development of decision-making tools that identify available career paths and next steps for education and training.

The Pathways for the Future Pilot Project summary report and the upcoming data visualisation tool are pioneering efforts that will support schools and students to navigate career options. By providing

information about the post-school employment and tertiary education journeys of student groups five years after leaving school, this program will assist schools in decision-making, evaluation and reporting of student pathways. It also allows us to better understand how pathway options and choices connect to quality education and employment outcomes.

Through projects such as this, the NSW Government is supporting and preparing our students for success by providing them with the tools they need to join a dynamic, qualified and skilled workforce in NSW.

The Hon. Sarah Mitchell
Minister for Education and Early Childhood Learning
December 2021

Acknowledgements

The NSW Department of Education would like to acknowledge the assistance of the following organisations in the preparation of this publication:

Australian Bureau of Statistics (ABS)

Australian Curriculum, Assessment and Reporting Authority (ACARA)

Australian Government Department of Education, Skills and Employment (DESE)

Macquarie University Human Research Ethics Committee

NSW Education Standards Authority (NESA)

NSW Skills Board

TAFE NSW

The Centre for Health Record Linkage (CHeReL), NSW Ministry of Health

Universities Admissions Centre (UAC)

Our motivation

The transition from school into further education and work is one of the most important for young people. Students who face challenges transitioning into these pathways are at greater risk of an insecure future. The **Pathways for the Future Pilot Project** seeks to better understand the challenges faced by young people in their journey from education to work and to support all students to find meaningful and satisfying careers.

In 2019, youth unemployment in NSW sat at 11% and underemployment at 16%.¹ The quality and security of many entry-level roles has declined.² The time it takes for graduates to enter full-time work has increased.³

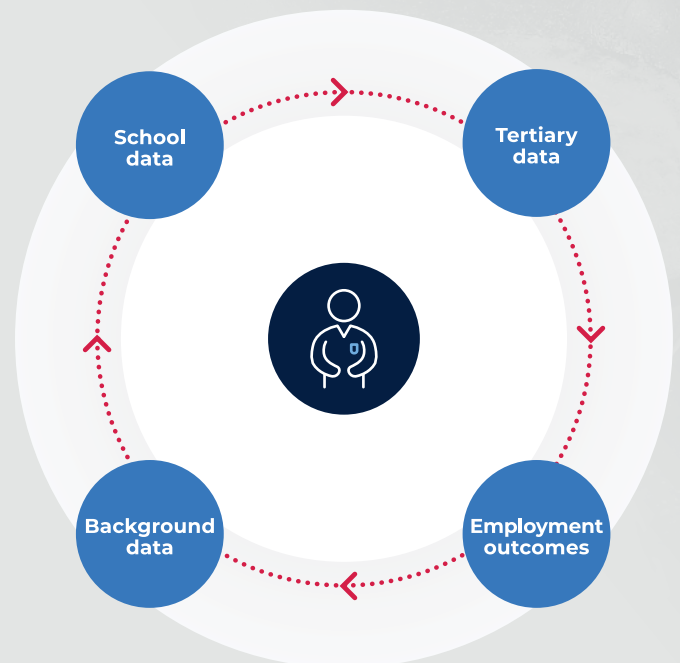
Students, parents and careers advisers need quality information to make decisions about students' education and careers. Policymakers need a robust evidence base to understand how best to support students in the transition from education to work. However, much of our current understanding of education-to-work pathways is based on survey data or studies of a sample population.

By linking **population-level data for the first time in Australia**, the Pathways for the Future Pilot Project provides powerful insight into how young people move through education and into work. Using this information, key stakeholders will be able to make evidence-informed decisions about the pathway from education to work.

Our approach

The NSW Department of Education, with the support of the Australian Bureau of Statistics (ABS), researched the education-to-work trends of students to provide evidence and support decision-making.

The Pathways for the Future Pilot Project links **background, education and employment data on 3.5 million NSW young people aged 15 to 24 over the period 1996 to 2016**. This allows for mapping and analysis of the pathways that students take from Year 10, through tertiary study and into employment.



1. ABS (2019) *Labour force, Australia, Oct 2019*, ABS website.

2. Reserve Bank of Australia (2018) 'Labour market outcomes for younger people', *Bulletin – June 2018*, Reserve Bank of Australia.

3. Pennington A and Stanford J (2019) *The future of work for Australian graduates: the changing landscape of university employment transitions in Australia*, The Australia Institute, accessed 28 October 2021.

Key themes



Early academic achievement is a strong predictor of successful employment outcomes



- Academic achievement in Year 10 is a significant predictor of a student's employment outcome. Academic achievement is also shown to be highly correlated to a student's socioeconomic status, regional-metro location and the education-to-work pathway chosen.
- Students in the top 40% of their cohort in Year 10 (academics) have on average a 60% chance of being employed above the minimum wage. Students in the bottom 20% of their cohort and students without Year 10 results have a 51% and 40% chance respectively.
- In addition, students in the top 40% of their cohort in Year 10 (academics) are likely to have a higher number of pathway options available to them. As a result, they are able to choose more optimal pathways into employment. For example, they are able to choose HSC subject clusters which lead to higher average salaries or undertake tertiary studies in fields of education which have higher employment chances.

Subject patterns chosen in the HSC help to form routes into tertiary education and employment



- The subjects chosen in Years 11 and 12 are an important predictor of employment above minimum wage. Subject clusters are also correlated to the choice of tertiary program, with students studying in fields of tertiary education similar to their HSC subject cluster.
- There is wide variability in the employment outcomes of students by subject choice. Students who undertook a HSIE specialisation had the highest chance of being employed above the minimum wage at 60%, while students who undertook a creative arts specialisation (plus HSIE) had the lowest chance at 50%.
- Of students who study a high proportion of extension units, 94% are from the top 40% of their cohort in Year 10 (academics). These students are also more likely to continue to university studies.

Students who complete Year 12 experience employment and income uplifts

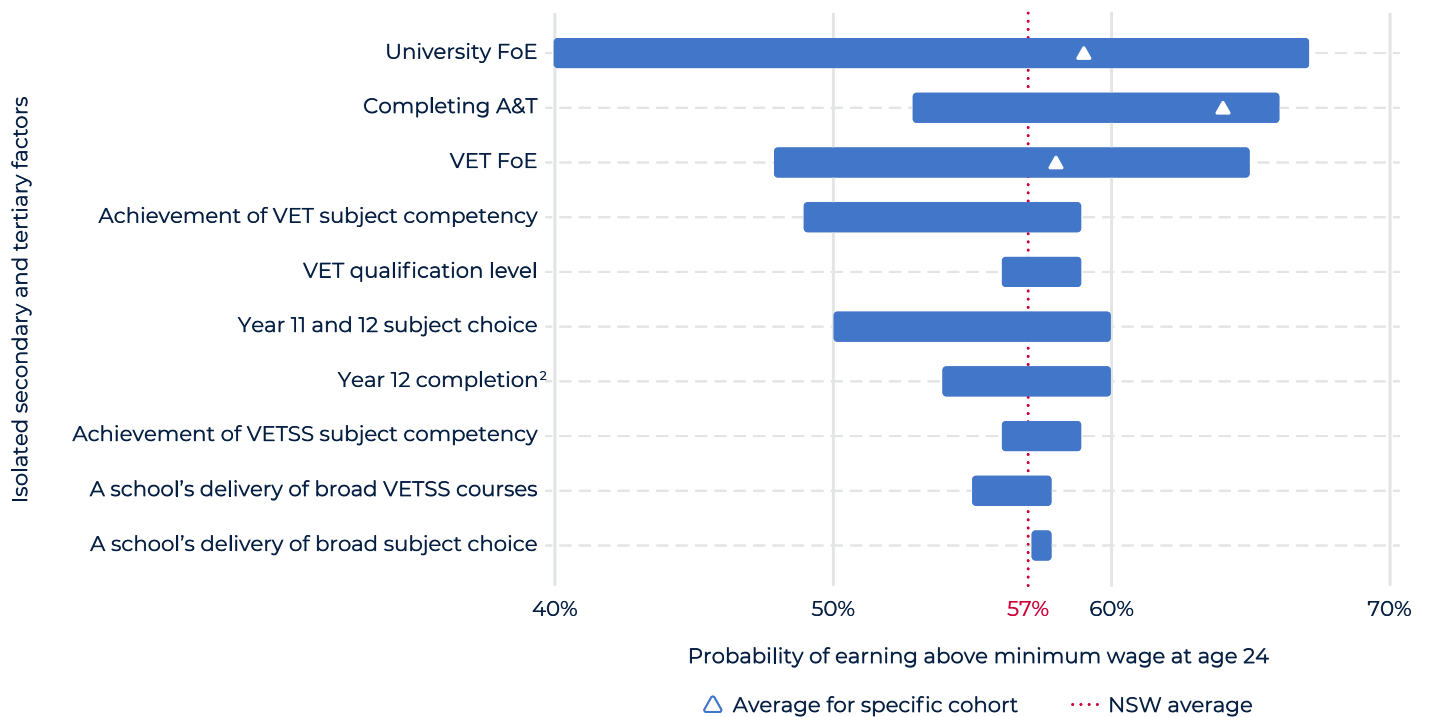


- Completing Year 12 provides significant uplift in the chances of employment. Compared to students who leave school early, students who complete Year 12 have a 6 percentage point (pp) uplift in the chance of earning above minimum wage and a \$7,000 uplift in income. They are also less likely to be not in education, employment or training (NEET) at the age of 24.
- Of students who leave school early, students who continue into vocational education and training (VET) programs with more optimal fields of education and qualification levels can be just as likely to earn above minimum wage compared to Year 12 completers. However, it must be noted that students who finish Year 12 are also far more likely to be studying and may not yet be earning above minimum wage at 24.
- Vocational education and training delivered to secondary students (VETSS) appears to have a positive impact on student retention and employment outcomes.

Drivers of employment outcomes at age 24

A young person's likelihood of employment can be enhanced no matter where they are on their education to work journey. Pathways choices and experiences at 10 key junctures can help boost employment.¹

The chart below highlights the isolated impacts of secondary and tertiary factors on the probability of earning above minimum wage at age 24. The blue bars show the range of probabilities for 10 key junctures. For example, university field of education (FoE) had the widest range of probabilities of earning above minimum wage at age 24 – students who studied nursing had the highest chance, while students who studied creative arts (other) had the lowest chance. The white triangles represent the average probability of earning above minimum wage at age 24 for 3 specific cohorts (university FoE, VET FoE and completing an apprenticeship or traineeship (A&T)). The red dotted line shows the NSW average probability of earning above minimum wage at age 24 (57%).



Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], Multi-Agency Data Integration Project, 2010-2016.

Limitations of this analysis

- This analysis uses data across students' entire education pathway to model employment outcomes at age 24. It does not model the later employment outcomes of students who may be studying at age 24.
- It is important to note that the analysis does not specifically model any causal/sequential relationships that might exist between these variables, but instead statistically examines these factors and their association with observed employment outcomes.
- Despite this, the analysis identifies and provides a useful understanding of the key variables along a student's education-to-work pathway. However, caution should be applied with regard to quantifying the impact of any one factor and further understanding of these causal relationships would require further analysis.

1. The impact of each factor is calculated when holding all other variables constant. The cumulative effect of pathway choices and experiences will vary depending on the combination of key drivers undertaken.

2. The school leaving age increased after this cohort completed their schooling.

Drivers of employment outcomes at age 24

Student pathways at school

Completing Year 12

- Compared to early school leavers, students who continue past Year 10 have a 6 pp employment uplift, with early school leavers 4 pp more likely to be NEET than students who complete school.
- For students who do not leave school early, the chance of employment varies according to the HSC subject combination taken. The range varies between 50% and 60%.

HSC subject combination

- There are correlations between the HSC subject clusters chosen and field of education chosen in tertiary study.

Achieving competency in VETSS subjects

- For students who undertook VETSS, the chance of earning above minimum wage at age 24 was 59%, compared to 56% for those who did not undertake VETSS.
- Students who undertake VETSS and school-based apprenticeship and traineeship (SBAT) programs are more likely to continue into post-school VET and A&T programs, and often into similar fields of education. For some qualifications, there are distinct pathways from VETSS to employment in a related occupation.
- Achieving competency in all VETSS subjects increases a young person's chances of employment above minimum wage. Depending on the student's post-school VET field of education, the likelihood is between 2 pp and 7 pp.
- While the number of students who undertake SBATs is small, descriptive statistics show positive correlations between uptake and employment outcomes, especially for certain cohorts.

School delivery

Broad subject delivery

- Students who attended schools that deliver broader HSC subjects had one pp higher chance of employment compared to students who attended schools that offer fewer subjects.
- Students who attended schools that deliver more VETSS programs had higher chances of employment (2 pp uplift compared to schools with a limited range of VETSS courses).

Note: not all schools have the capacity to increase course delivery. There are many factors that affect school delivery, including school size and capacity.

Drivers of employment outcomes at age 24

VET

<p>Achieving competency in VET subjects</p>	<ul style="list-style-type: none"> • VET course completion results in at least a 9 pp uplift in the chances of earning above the minimum wage.
<p>Qualification level</p>	<ul style="list-style-type: none"> • Within each field of education, there are variations in employment outcome by the qualification level. For example, the chance of students who complete a Diploma in Human Welfare Studies and Services earning above minimum wage is 6 pp higher than for those who complete a Certificate I, II or III in the same training package. • While not modelled, there are other important choices in VET, including qualification studied.
<p>Field of education</p>	<ul style="list-style-type: none"> • Choices and experiences in VET matter. The chances of earning above the minimum wage at age 24 can vary significantly by VET field of education (49% for creative arts versus 65% for mechanical and industrial engineering).

Apprenticeships and traineeships

<p>Completing an A&T</p>	<ul style="list-style-type: none"> • Completing A&T lifts the chances of employment above minimum wage by 13 pp, compared to completing a course without A&T. However, the median income is similar for those who complete A&T and those who do not (a \$3,000 uplift, at \$46,000 versus \$49,000). • Completing A&T reduces the chances of being NEET by 8 pp. • A&T results in stronger employment outcomes than other VET, improving the chances of earning above the minimum wage by 7 pp to 17 pp. However, this chance varies by field of education undertaken.
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University

<p>Field of education</p>	<ul style="list-style-type: none"> • The chances of earning above the minimum wage at age 24 can vary significantly by university field of education (40% for creative arts versus 67% for nursing). • There was also large variation in income across fields of education (median income at age 24 of \$60,000 for civil engineering versus \$32,000 for performing arts).
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| What we found

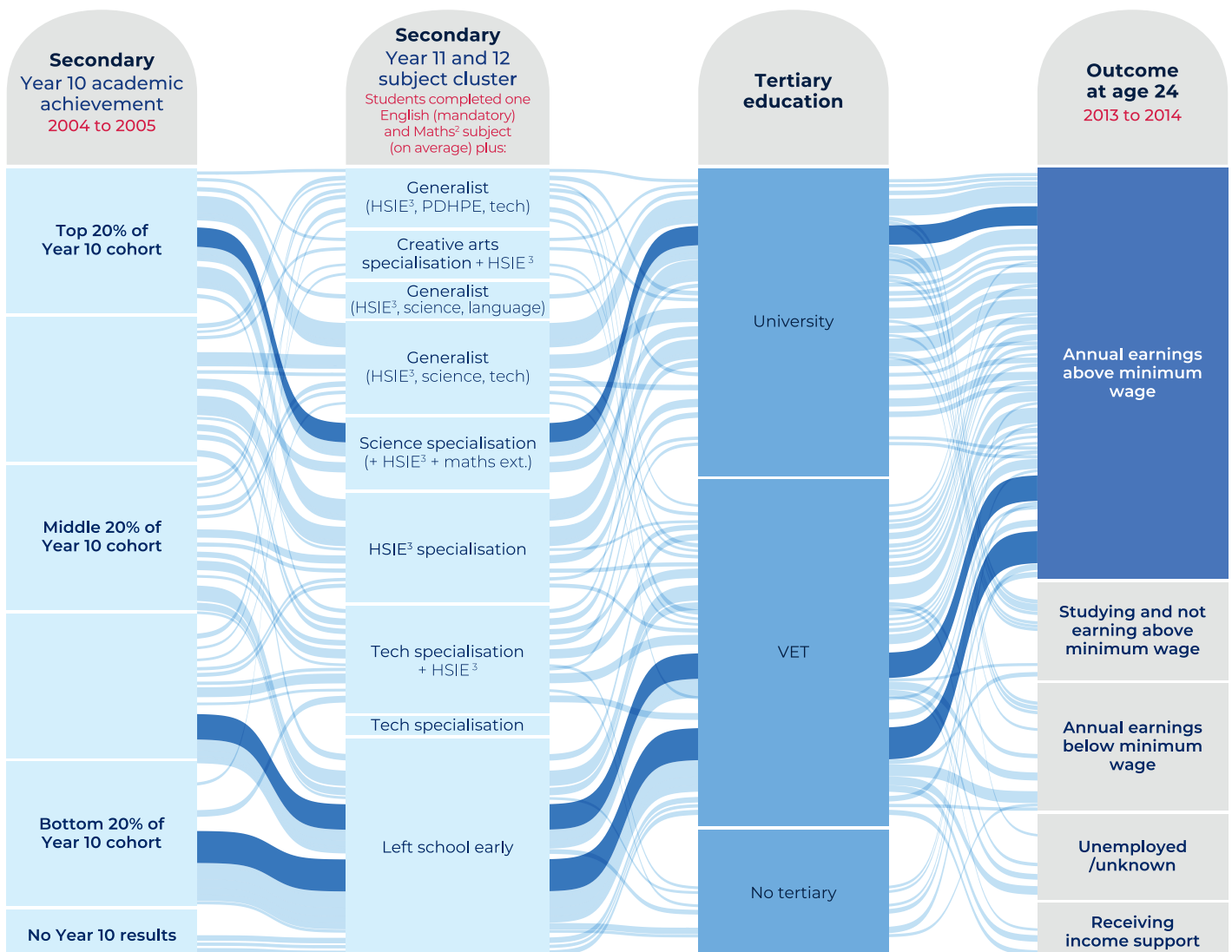
Most common student pathways

NSW students face many pathway choices and take many different routes through education and into employment.



There are close to **30,000** possible pathways a student can take from secondary school into employment.¹

The chart below illustrates the pathways taken by NSW students from achievement in Year 10, through to Year 11 and 12 subject choice, to participation in tertiary education and outcome at age 24. The thickness of the curved lines from Year 10 academic achievement to employment outcome at age 24 indicates the comparative number of NSW students who take a particular path. The darker blue lines show the top 3 most common pathways taken by students between 2004 and 2014.



1. Based on the number of theoretical pathways where students complete a single VET or university course. There are 6 academic achievement bands, 9 Year 11 and 12 subject choice clusters, 137 university or VET fields of education and 4 outcome groups at age 24.

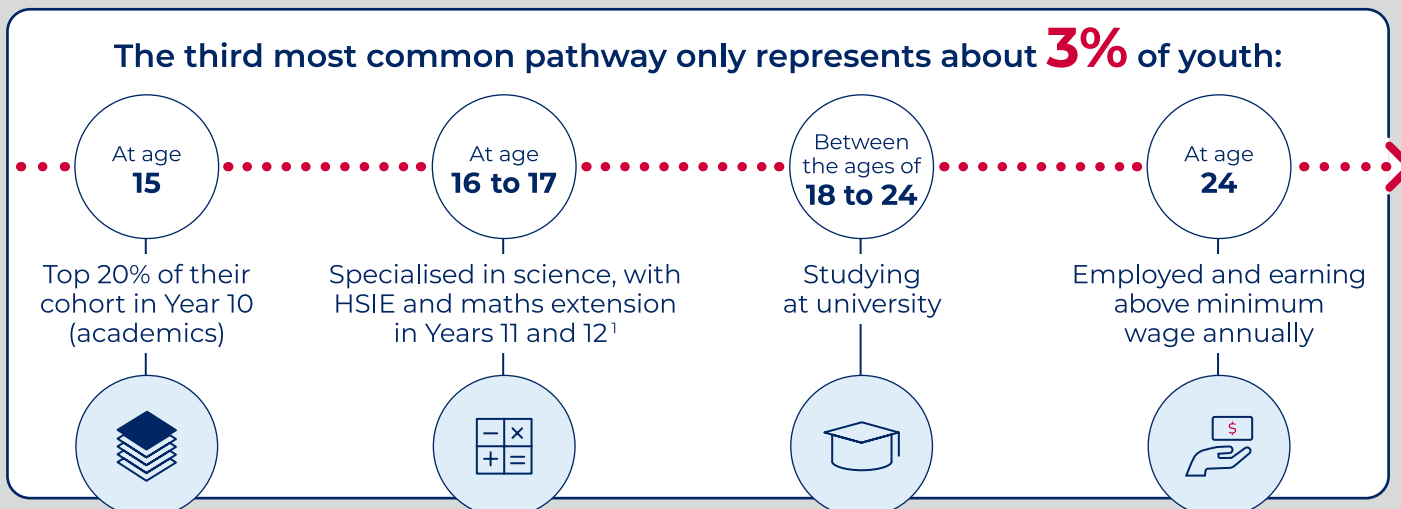
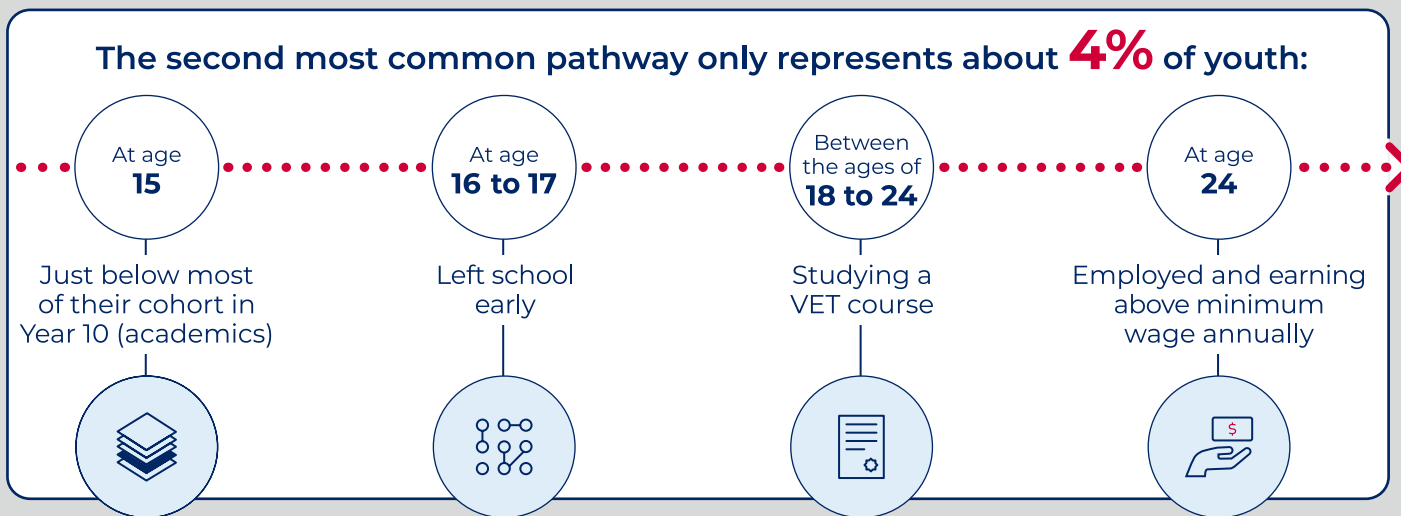
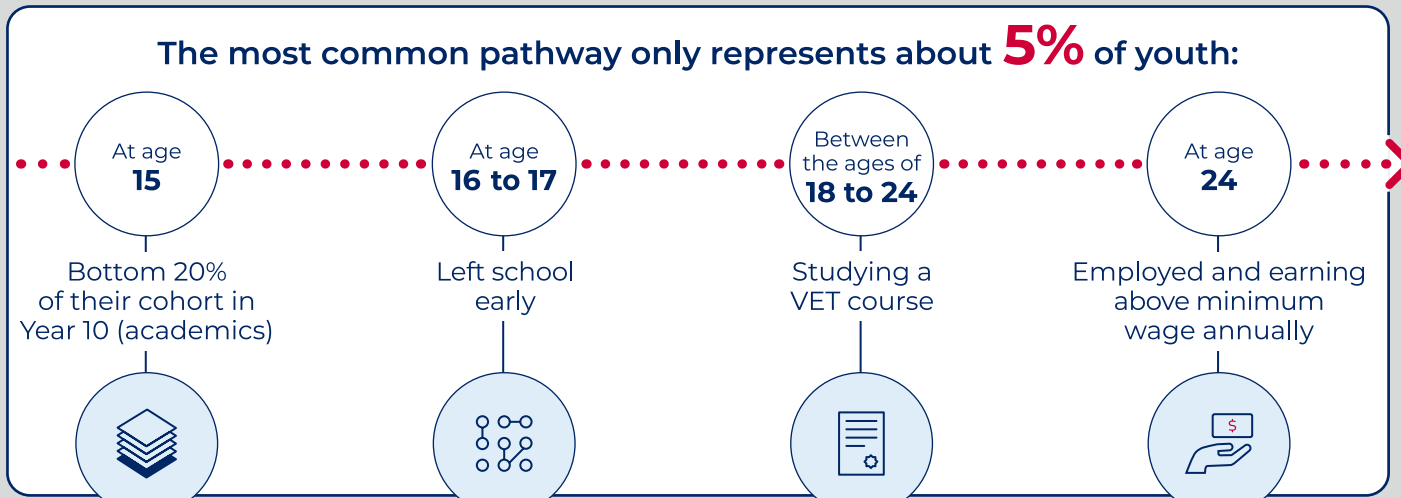
2. Although not mandatory, 4 out of 5 students completed a maths subject in Years 11 and 12.

3. HSIE includes Aboriginal studies, ancient history, business studies, economics, geography, legal studies, modern history, history extension, society and culture, studies of religion I and studies of religion II.

Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], Multi-Agency Data Integration Project, 2010-2016.

Most common student pathways

In NSW, young people pursue thousands of different pathways to employment, with the most common pathway representing only 5% of students and the top 3 most common pathways only representing 12% of students.



1. Subject selection in Years 11 and 12 was clustered based on commonalities between students. Students across each subject cluster took 2 units of English and maths (on average), with additional subject specialisations noted.

Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], Multi-Agency Data Integration Project, 2010-2016.

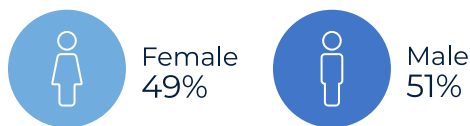
What we found

Understanding NSW students and their common pathways to employment

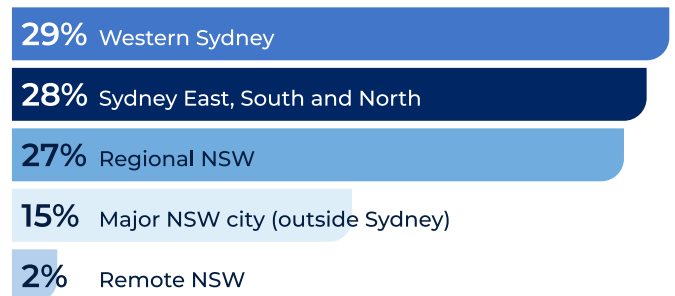
NSW students face many pathway choices and take many different routes through education and into employment.

Demographics

Country of birth and gender



Place of residence (in Year 10)



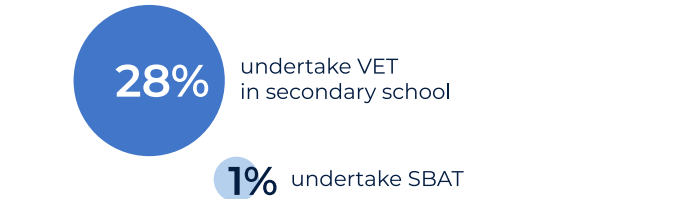
Secondary¹

Secondary school achievement



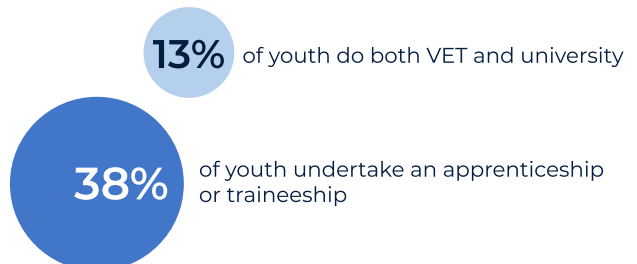
VET training in secondary school

Of all the students in Years 11 and 12:

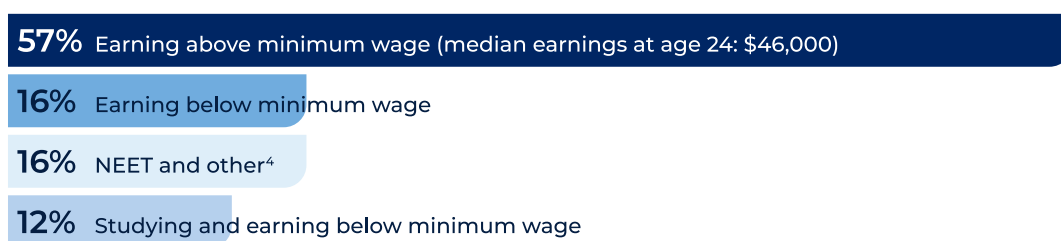


Tertiary

Highest tertiary level



Outcome at age 24



1. The secondary categories are not mutually exclusive.

2. Of all Year 10 students. Note: an ATAR eligible program is **not** a requirement for the award of the HSC.

3. Early school leavers were defined as all students who were not awarded the HSC.

4. May include youth who are in postgraduate study, in fee-for-service VET training or have not submitted their tax return for that year.

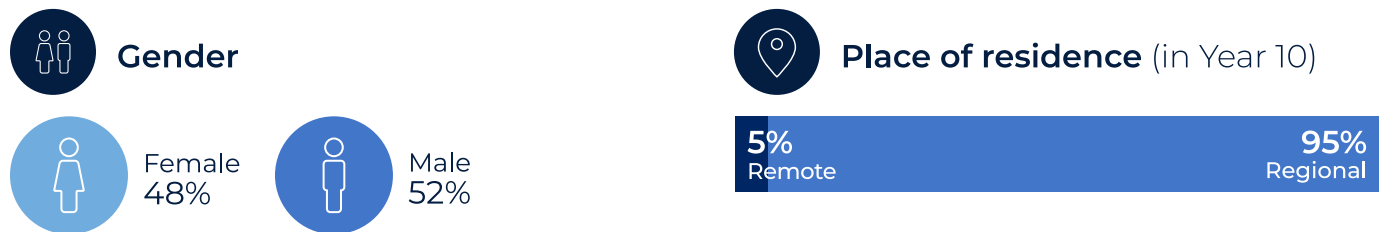
Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], *Multi-Agency Data Integration Project, 2010-2016*.

Understanding NSW students – regional analysis

Regional analysis of employment outcomes shows that the outcomes of 24 year olds vary by region. Viewing employment outcomes by region can help understand effectiveness of an area in preparing students for employment, though it is likely to also show variation in local employment opportunities.

Deep dive – regional and remote students

Demographics



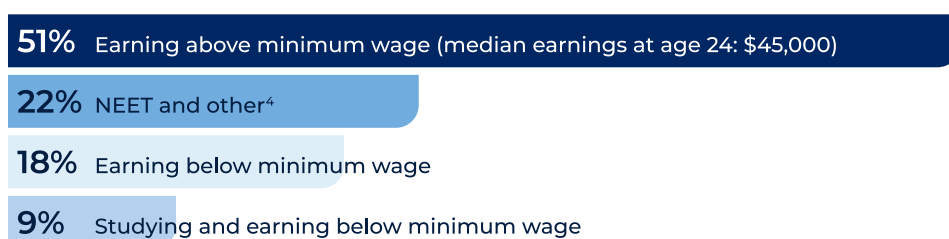
Secondary¹



Tertiary



Outcome at age 24



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2. Of all Year 10 students. Note: an ATAR eligible program is **not** a requirement for the award of the HSC.

3. Early school leavers were defined as all students who were not awarded the HSC.

4. May include youth who are in postgraduate study, in fee-for-service VET training or have not submitted their tax return for that year.

Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], *Multi-Agency Data Integration Project, 2010-2016*.

Overview of data sources and example variables

Background	Secondary	Tertiary	Employment outcomes at 24
<p>NSW Education Standards Authority (NESA)</p> <ul style="list-style-type: none"> • Student gender • Student socioeconomic status • Student country of birth • Student primary language spoken at home • School sector • School geographic location • School characteristics (such as co-education, years of schooling) 	<p>NESA</p> <ul style="list-style-type: none"> • NAPLAN participation and results (Years 7 and 9) • Record of school achievement (RoSA)¹/ HSC student enrolments, results and awards (Years 10, 11 and 12) • ATAR eligibility • VETSS qualifications 	<p>NSW Department of Education</p> <hr/> <p>University</p> <ul style="list-style-type: none"> • Degree enrolled and graduated • Number of years • Mode of study (for example classroom, electronic) • Time to completion <hr/> <p>TAFE NSW/Department of Education</p> <ul style="list-style-type: none"> • Attended VET or undertook A&T • VET subject competency • VET training packages • Mode of study • Time to completion 	<p>ABS – personal income tax</p> <ul style="list-style-type: none"> • Employment status and income • Australian and New Zealand Standard Classification of Occupations (ANZSCO) • Australian and New Zealand Standard Industrial Classification (ANZSIC) <hr/> <p>Social security and related information</p> <ul style="list-style-type: none"> • Income support • Type of welfare <hr/> <p>Person-level census</p> <ul style="list-style-type: none"> • Underemployed • Looking for work • Labour force status • Child carer



1. Includes School Certificate data prior to the introduction of RoSA in 2012.

Source: ABS (2016) 'Detailed microdata: DataLab: findings based on the use of ABS microdata' [unpublished dataset], *Multi-Agency Data Integration Project, 2010-2016*.

Note: the NSW Department of Industry provided an opportunity for people to withdraw from this research project.

Overview

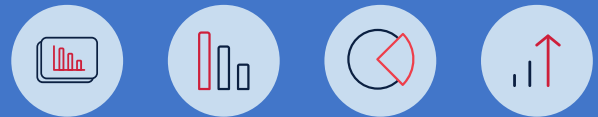
1

We conducted research to understand how education options and choices connect to work outcomes

The Pathways for the Future Pilot Project links demographic, education and employment data on **over 3.5 million NSW young people** aged 15 to 24 from 1996 to 2016. The data is de-identified and aggregated so that individual students cannot be identified.

2

We analysed different student groups, mapped their pathways through senior secondary school, tertiary education and into work, and explored relationships between different pathway factors



3

We performed advanced analytics to model the connections between pathway factors and employment at age 24

We used machine learning to map out the journeys of **about 140,000 NSW youth, from school at age 15 (2004 to 2005) to employment at age 24 (2013 to 2014)**.

We tested over 150 data points (or factors) for each student to see how well they predicted employment above minimum wage at age 24 and to determine which factors to investigate further. Guided by this information, we then identified the isolated impact of each factor on students' chances of employment.

4

Limitations of this data

It is important to note that only education factors are currently considered in the Pathways for the Future Pilot Project. Student pathways can be shaped by many other factors, including economic, wellbeing and social circumstances as well as experiences with the justice, health and social services systems. A deeper understanding of these circumstances and experiences is important context when interpreting the implications of findings in this report, especially when looking at particular segments of young people.

5

We consulted with key stakeholders to explore how the Pathways for the Future Pilot Project can inform policymaking

This project also has powerful potential to shape and evaluate government programs and policies. It has already been used to help inform the Educational Pathways Pilot Program, which includes a range of initiatives to improve careers advice, and to evaluate the effectiveness of the Smart, Skilled and Hired Youth Employment Program in terms of employment outcomes.

| What next?

Publishing our findings

We are developing a data visualisation tool, which will allow students, careers advisers, teachers, parents and policymakers to explore the different education-to-work pathways taken from Year 10 until the age of 24.

- **Policymakers** can use the data to inform government policies and programs and support students in making the transition from education into work.
- **Students** can compare the most common pathways into different careers, including the HSC subjects and tertiary courses that can help them to achieve their career goals.
- **Careers advisers and teachers** can use the tool to provide students with career guidance and information on subject selection based on real-world insights.
- **Careers advisers, teachers and parents** can see the wide variety of pathways taken by students with different levels of academic achievement.



The new program of work

The Department of Education is now working on a new program of work that expands upon the **Pathways for the Future Pilot Project**. We plan to fill gaps in the data and to extend the age range to better understand students' lifelong learning journeys through education and work.

The research pilot provides valuable insight into education-to-work pathways, but there is still much more that can be done in this space. At the age of 24, many students are still transitioning into work or undertaking further study. Learning more about the pathways that students take after 24 will help us to better understand longer-term employment outcomes and how we can support students as they navigate through education and work throughout their lives.

The new program of work will give us insight into lifelong journeys through education and work. The dataset will also be updated annually, ensuring the data remains up-to-date and allowing us to analyse how education-to-work pathways change over time.

This new program will be used to explore how the NSW Government can improve the effectiveness of the education and training system to better prepare our students as lifelong learners and equip them with the knowledge, skills and attributes for meaningful work and satisfying careers.

Insights from this new program of work will allow us to:

- identify the barriers and drivers of effective education and employment outcomes
- support students to make better-informed decisions about their studies and careers
- evaluate the effectiveness of government policies and programs
- shape policy development and targeted interventions for students who may be experiencing additional barriers to education and employment.

Contact

If you have further questions on this report, please email us at Pathways.Project@det.nsw.edu.au
For further information on this project, visit www.education.nsw.gov.au/about-us/educational-data/cese

Abbreviations and terms

Term	Definition
A&T	Apprenticeship and traineeship
ABS	Australian Bureau of Statistics
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ATAR	Australian Tertiary Admission Rank
FoE	Field of education
HSC	Higher School Certificate
HSIE	Human society and its environment
NAPLAN	National Assessment Program – Literacy and Numeracy
NEET	Not in education, employment or training
NESA	NSW Education Standards Authority
NSW	New South Wales
PDHPE	Personal development, health and physical education
pp	Percentage points (difference between 2 percentages)
RoSA	Record of School Achievement
SBAT	School-based apprenticeship and traineeship
Secondary	Secondary school (Years 7 to 12)
TAFE NSW	Technical and Further Education NSW
Tertiary	Tertiary education (formal education beyond secondary)
VET	Vocational education and training
VETSS	Vocational education and training delivered to secondary students

