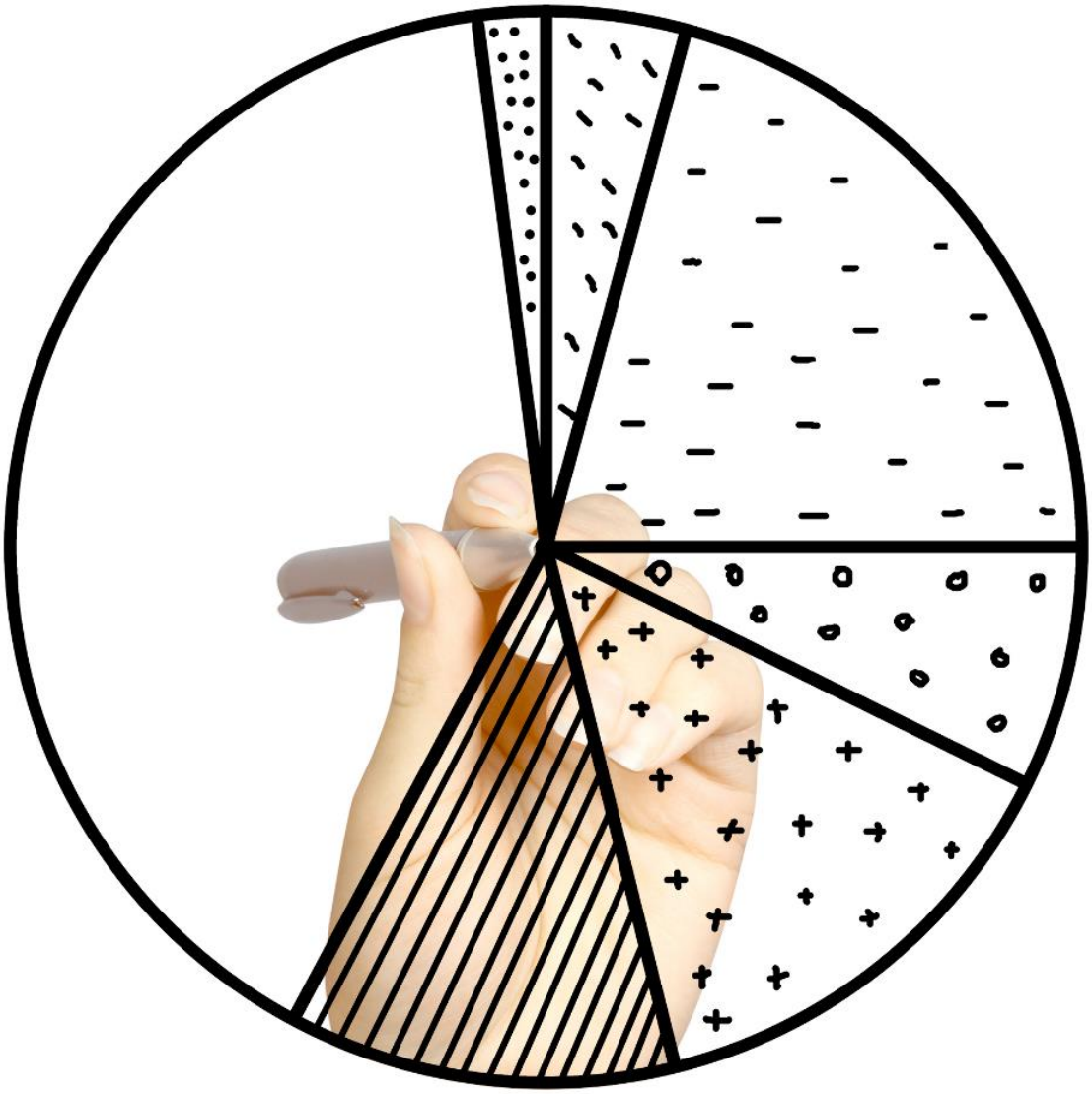
Deloitte.
Access Economics



The Value of the Humanities

Macquarie University

July 2018

Contents

Glossary

ABS	Australian Bureau of Statistics
ADB	Asian Development Bank
AES	Australian Election Study
AHRC	Australian Human Rights Commission
ANZSIC	Australian and New Zealand Standard Industrial Classification
ARC	Australian Research Council
AUD	Australian Dollars
BDS	Backwards Digits Span
CEO	Chief Executive Officer
CPI	Consumer Price Index
DPC	Department of Premier and Cabinet
ERA	Excellence in Research for Australia
GIS	Geographic Information System
GMS	Greater Mekong Subregion
HILDA	Household, Income and Labour Dynamics in Australia Survey
NART	National Adult Reading Test
NPV	Net Present Value
NSW	New South Wales
NUHEI	Non-University Higher Education Institutions
NHMRC	National Health and Medical Research Council
OBPR	Office of Best Practice Regulation
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
RISWM	Racism. It Stops With Me
SICCI	Solomon Islands Chamber of Commerce and Industry
SDM	Symbol Digits Modalities
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNRISD	United Nations Research Institute for Social Development
USD	United States Dollars

Executive summary

Humanities education and research has been a critical foundation of our society for centuries. Disciplines such as history, literature, and philosophy have shaped institutions and policy debates and attracted generations of students seeking to understand more about how societies function and change. However, changing frameworks for understanding social value and the expansion of tertiary education disciplines over time have affected perceptions of the importance of the Humanities.

This report articulates the value of the Humanities to students thinking about their education and career options and to businesses faced with hiring choices. Our research builds on a rich and diverse literature[1] through econometric analysis of HILDA and AES data,[2] analysis of graduate outcomes and employer satisfaction surveys and consultations with global businesses, public sector agencies and researchers in Humanities disciplines.

In doing so this report considers the value of the Humanities to:

1. employers, through having a more productive, innovative and multidisciplinary workforce;
2. the broader community, through better informed citizens and a better understanding of our place in the world;
3. graduates, through increasing their lifetime earnings by increasing wages and job prospects; and
4. our society, through the contributions of Humanities research to improved social outcomes.

Humanities degrees involve many technical skills including quantitative analysis skills, policy development, software use and foreign language skills. This report identifies over 30 technical skills that may be acquired in a Humanities degree. Precisely because of their diversity, and not being common to all degrees, these skills can be difficult to neatly summarise but are nevertheless highly valued by employers.[3]

In addition, transferrable skills,[4] which have at their core the ability to solve complex problems by taking a flexible and adaptable approach, have become widely acknowledged as important in driving business success. An influential study of firms determined that differences in the level of transferrable skills of employees accounts for 3% of the total factor productivity gap between the best and worst performing firms.[5] Employers have identified gaps between the demand and supply of transferrable skills, up to 45 percentage points for communication skills (e.g. 72% of employers

[1] Seminal pieces of research include Putnam (1993), Leigh (2005) and the University of Oxford (2013)
[2] The Household, Income and Labour Dynamics in Australia & the Australian Electoral Survey
[3] 'Most [humanities] graduates stated that their qualification was either a formal requirement or important to their main job (75%)' - Turner, G., and Brass, K. (2014) *Mapping the Humanities, Arts and Social Sciences in Australia.* Australian Academy of the Humanities, Canberra
[4] Transferrable skills are non-technical skills and include skills such as Communication, Teamwork, Problem-solving, Innovation and Emotional Judgement.
[5] Haskell et al. (2005), Centre for Economic Policy Research.

demanded communication skills when hiring, while actual supply of these skills was 27%).[6]

Changes in the labour market are making these skills more important over time – the share of the work force with transferrable-skill-intensive employment is forecast to increase from 53% in 2000 to 63% in 2030. [7] Moreover, studies have estimated that Australians will make 17 changes in employers across 5 different careers moving forward. [8]

Transferrable skills form the basis of a Humanities education, with surveys finding that both undergraduates and postgraduates tended to be more confident in their analytic and written communication skills relative to those in other fields of education.[9] Surveys of employers echoed these findings, with Humanities-educated individuals exhibiting superior transferrable skills in terms of collaboration and overall employability. Analysis of the HILDA survey provides further evidence of the value of a Humanities education to businesses – 40% of Humanities graduates work in market sector industries such as professional services.

While a large proportion of Humanities graduates work in businesses, the majority work in the non-market sectors of health care, education or public administration. [10] This reflects the broader public benefit of the skills they have learned. Consultations with public sector employers revealed that Humanities graduates possessed the right mix of skills to help solve complex policy problems, often called 'wicked problems'.[11] The need to address such complex problems is expected to rise in the future.

Humanities graduates also make meaningful contributions to their communities and society. The rate of volunteering amongst humanities graduates is 5 percentage points higher than the average volunteering rate of all other fields of study.[12]

There is also a range of evidence that indicates that education establishes greater levels of pro-social values. For example, the level of trust exhibited by tertiary qualification holders is 17% higher than those with a lower level of educational attainment. Similarly, those with greater literacy skills are 7% more likely to vote.[13]

Students also give weight to employment opportunities and future earnings in their choice of degree. Analysis of the HILDA survey finds that individuals with tertiary qualifications in the Humanities exhibit improved labour market outcomes relative to those with a completed high school education. Holding an undergraduate or postgraduate degree in the Humanities is associated with a wage premium of approximately 11% and 30%

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[6] Deloitte Access Economics (2017), 'Soft skills for business success', DeakinCo.
[7] Ibid
[8] McCrindle Research (2014), Job mobility in Australia.
[9] These findings are valid with a 95% confidence level. Macquarie University (2018)
[10] In practice, there are elements of the non-market sector that have private sector components, however are defined as 'non-market' as there tends to be significant government intervention to promote the creation of public goods which these industries generate (Productivity Commission, 2017)
[11] Turner, G., and Brass, K. (2014) *Mapping the Humanities, Arts and Social Sciences in Australia.* Australian Academy of the Humanities, Canberra.
[12] This figure is statistically significant at a 99% confidence level. ABS (2016)
[13] These figures are drawn from modelling which compare those with a tertiary education to those without. The impact of specific degrees is not determined and so the impact of a Humanities degree is less clear.

respectively.[14] The industries in which the majority of Humanities graduates work (Education and Training, Health Care and Social Assistance and Public Administration and Safety) have the the highest levels of job satisfation across all Australian industries, approximately 86%.[15]

There are economy-wide benefits received from the participation of Humanities graduates in the workforce. Individuals with a tertiary qualification in the Humanities are, on average, 3.8% more likely to participate in the workforce. This represents a boost to the labour force of approximately 25,000 people.[16]

The research evaluation framework used in Australia is continually evolving. This paper evaluates six recent Humanities research projects in terms of their ability to generate awareness, engagement and impact. It finds that they have far-reaching benefits on health, public policy, and cultural life.

The case studies demonstrate the breadth of Humanities' research impacts. The studies presented in this paper include:

- the development of culturally specific programs to reduce the impact of infectious diseases;
- the design of a tool for mitigating the potential negative health impacts of irresponsible surgical innovation;
- reforms to competition laws to promote gender equality;
- the development of an evidence base for the impacts of online markets for illicit drugs; and
- insight into the behavioural factors affecting financial risk taking; and greater understanding of how societies adapt to transformative events such as environmental change.

Globalisation, rapid technological developments and structural changes in the economy have meant the demands of the modern workforce are changing. This report finds that Humanities education and research has a fundamental role to play in understanding how our society and economy can adapt to these changes, in creating future value, and in helping individuals gain rewarding employment.

[14] When Law is excluded, the estimated wage premium of an undergraduate qualification in the Humanities decreases to 7%. The estimated wage premium for a postgraduate qualification is consistent at 30%.
[15] Curtin University and Making Work Absolutely Human (2017), 'The Australian industries with the happiest, and unhappiest workers'
[16] Assuming a counterfactual where these Humanities graduates had solely a completed high school education.

The Value of Humanities through the eyes of leaders in business, the public sector and academia

"Employers, both in the public and private sector, have increasingly concerned themselves with the 'organisational fit' of candidates. This shift has been accelerated as businesses evolve into increasingly complex organisations with multiple business units and product portfolios. Communication, problem-solving, collaboration and critical thinking…technologies may be ever changing but these transferrable skills will always be in demand." - Susan Carter, Learning, Leadership & Development Head, Siemens Ltd

"The Humanities graduates that are placed within The Department of Premier and Cabinet (DPC) are well rounded…they exhibit persuasive written and verbal communication skills, work collaboratively within a team and think effectively to solve challenging problems." - Rachel Pirc, Principal Learning and Development Officer, Department of Premier and Cabinet

"Coming up with solutions for complex social issues requires thinkers with superior critical thinking along with a sense of empathy and emotional sensitivity. People with humanities backgrounds are good at this – and it allows them to put things into context, to understand issues while looking at the bigger picture."- Dr Tim Soutphommasane, Race Discrimination Commissioner, Australian Human Rights Commission

"[Humanities research] develops an epistemological bridge – it is a journey from data to finding, and through it we gain a much more holistic view of the lived experience of ancient people and societies, material culture, technologies…" - Dr Ronika Power, Senior Lecturer, Department of Ancient History, Macquarie University

"Research, and the skills developed through the humanities, allow for critical analysis of a wide variety of data – the ability to synthesize evidence into a coherent, compelling argument that can be demonstrated and communicated." - Dr Nicholas Baker, Senior Lecturer and Head of Modern History, Department of Modern History, Politics, and International Relations, Macquarie University

1 This report

The Humanities have historically formed the foundation for the model of learning used in higher education, where transferrable skills such as problem solving, critical thinking and communication are a recognised public good. These skills and the public values they provide—such as the capacity for evaluating evidence and argument, making informed choices, creative thinking and problem solving—have immense utilitarian benefit.

However, the need to demonstrate the impact and value of Humanities higher education to society and the economy has intensified. Changes in public funding arrangements and fiscal constraint have necessitated a case to build greater awareness and understanding of the value of the Humanities to students as employees, to businesses as employers, and to the broader community.

This report builds on a rich and diverse literature[17] through econometric analysis of HILDA and AES data,[18] assessment of graduate outcomes and employer satisfaction surveys, as well as consultations with global businesses, public sector agencies and Humanities researchers. Against this background, this report presents the following four chapters.

- **Chapter 2:** Humanities graduates in a changing labour market
- **Chapter 3:** Contributions of Humanities-educated individuals to the community
- **Chapter 4:** Labour market outcomes for Humanities graduates
- **Chapter 5:** The Social and Economic impacts of Humanities research

For this report, the disciplines included in the definition of the Humanities in the context of higher education teaching, learning and research are as follows:[19]

- Academic Study of the Arts (such as Art history; the study of music, drama, cinema)
- Area Studies (such as International Studies, Chinese Studies, Polish Studies etc.)
- Archeology
- Communication
- Cultural, Ethnic, & Gender Studies
- Language and Literature
- History
- Law
- Philosophy
- Religion
- Anthropology
- Criminology
- Geography
- Government
- International relations
- Political science
- Sociology
- Urban studies
- Music and dance performance
- Dramatic and film production
- Studio arts

[17] Seminal pieces of research include Putnam (1993), Leigh (2005) and the University of Oxford (2013)
[18] The Household, Income and Labour Dynamics in Australia & the Australian Electoral Survey
[19] This interpretation aims to capture a 'traditional' understanding of the Humanities as a discipline. Adapted from the American Academy of Arts and Sciences, available at: https://www.humanitiesindicators.org/content/document.aspx?i=180

1.1 Why value the Humanities?

The value of Humanities-educated individuals is more than the money they make and the goods and services they produce. It is about the problems they help solve and the way in which they interact with the wider world.

"The Humanities—including the study of languages, literature, history, jurisprudence, philosophy, comparative religion, ethics, and the arts—are disciplines of memory and imagination, telling us where we have been and helping us envision where we are going."[20] – American Academy of Arts & Sciences

The contributions of the Humanities are often at the forefront of discussions of social and cultural value. However, at the same time the contribution of these disciplines can be overlooked in discussions of economic and commercial value. The challenges arising from prominent global trends, such as managing rapid urbanisation and globalisation, have led to questions about how we could better plan societies that people want to live in, and how we can thrive in a multicultural world that is increasingly interconnected. These are fundamentally issues of human behaviour and social organisation and interaction. Graduates in the Humanities are well placed to be part of the solution.

Similarly, the research undertaken in the Humanities has contributed to economic and social progress. For example, the study of anthropology and international relations has helped us to better understand political, social and development issues with implications for economic development and international aid policy; indigenous studies and international studies contend with the topical issues of racism and cross-cultural communication. This research has applications in both public and private sectors.

Some of the big public policy challenges facing Australia—'wicked' problems such as climate change, obesity, and indigenous disadvantage—require innovative solutions. These solutions are likely to be developed by multidisciplinary teams that understand human behaviour and can connect with people. Humanities graduates play important roles in these teams.

[20] American Academy of Arts & Science's Commission (2013), The Heart of the Matter, Report to the US Congress on the Humanities and Social Sciences, June; available at: http://www.humanitiescommission.org/_pdf/hss_report.pdf

2 Humanities in a changing labour market

Humanities students gain a variety of skills over the course of their degrees, resulting in the development of human capital. Globalisation, rapid technological developments and structural changes in the economy, such as the shift away from manufacturing, has meant that the demands of a modern workforce are changing.

"We are going through the process where software will automate software, automation will automate automation. I would not want to be a CPA right now. I would not want to be an accountant right now. I would rather be a philosophy major." - Mark Cuban, Chairman, AXS TV

This chapter analyses the value businesses attribute to employees with Humanities qualifications. Humanities degrees involve the learning of a range of technical skills that serve as the cornerstone of gainful employment. 'Most [humanities] graduates stated that their qualification was either a formal requirement or important to their main job (75%)'.[21]

In addition, transferrable skills,[22] which have at their core the ability to solve complex problems by taking a flexible and adaptable approach, have become widely acknowledged as important in driving business success. An influential study of firms determined that differences in the level of transferrable skills of employees accounts for 3% of the total factor productivity gap between the best and worst performing firms.[23]

Transferrable skills form the basis of a Humanities education with surveys finding that both undergraduates and postgraduates tend to be more confident in their critical thinking and communication skills relative to those in other fields of education. Surveys of employers echoed these findings, with Humanities-educated individuals exhibiting superior transferrable skills such as collaboration and enterprise skills.[24]

While a large proportion of Humanities graduates work in businesses, the majority work in non-market sectors[25] — in health care, education or public services—reflecting their broader public benefit. Moreover, consultations with public sector employers revealed that graduates have developed the right mix of skills to help solve complex policy problems.[26]

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[21] Turner, G., and Brass, K. (2014) *Mapping the Humanities, Arts and Social Sciences in Australia.* Australian Academy of the Humanities, Canberra.
[22] Transferrable skills are non-technical skills and include skills such as Communication, Teamwork, Problem-solving, Innovation and Emotional Judgement.
[23] Haskell et al. (2005), Centre for Economic Policy Research.
[24] Enterprise skills are a combination of developed problem solving techniques and ability to think creatively to come up with new solutions and recognise business opportunities (Foundation for Young Australians, 2016)
[25] The Productivity Commission defines the non-market sector as consisting of the health care and social services, public administration and safety, and education and training industries.
[26] Often called 'wicked problems'.

2.1 Humanities graduates have a broad range of technical skills

Reflecting the history of universities, the Humanities have served as a home for a great variety of disciplines. As a consequence, it is not well recognised that Humanities degrees provide a range of technical skills which serve as the foundation for employment.[27]

For example, particular writing and research styles are necessary to succeed in graduate positions in fields such as law, international relations, political science and criminology. Within the law discipline, over 80% of universities in the UK indicated that legal research, drafting, advocacy and communication were expressly incorporated as a dedicated unit or within a unit that combined skills with a substantive subject area.[28] Similarly, 95% of Arts graduates agreed that they had developed good working knowledge of a range of practical production skills in at least one area of media production.[29]

Table 2-1 highlights the technical skills developed in selected subject areas within a Humanities degree. These technical skills, while not unique to Humanities, are highly valued by employers. This is demonstrated by the *2017 Graduate Outcomes Survey*, which notes that 'undergraduates from more vocationally oriented study areas tend to have greater success in the labour market immediately upon graduation'.[30]

Table 2-1: Attributable technical skills developed in various subject areas in a Humanities degree

Subject Area	Technical Skills
Archaeology	• GIS (including spatial modelling and analysis with software such as ArcGIS) • Earth science techniques • Scientific and laboratory methodologies
Communications	• Public relations and promotional skills • Media production techniques (in specialisations such as broadcast technologies, journalism, advertising and policy)[31]
Criminology	• Social research experience and policy development[32] • Involvement in fora such as the Crime and Justice Research Network

[27] Drewes, T., Giles, O. (2001), 'Liberal arts degrees and the labour market' *Perspectives on Labour and Income*, 13, 27-33.
[28] Grimes, R., Klaff, J. and Smith, C. (1997) 'Legal Skills and Clinical Legal Education: A Survey of Undergraduate Law School Practice' *Journal of Professional Legal Education*, 15, 123-127.
[29] Beacham, J., 'The Value of Theory/Practice Media Degrees' 1 Journal of Media Practice 2, 85-87.
[30] QILT (2017), 2017 Graduate Outcomes Survey – National Report. Available at https://www.qilt.edu.au/docs/default-source/gos-reports/2017/2017_gos_national_report_final_accessiblea45d8791b1e86477b58fff00006709da.pdf?sfvrsn=ceb5e33c_4
[31] 95% of students studying at Goldsmiths College (a constituent college of the University of London) agreed that they developed good working knowledge of a range of practical production skills in at least one area of media production (Beacham, J., 'The Value of Theory/Practice Media Degrees' 1 Journal of Media Practice 2, 85-87).
[32] Universities across Australia offer voluntary involvement in Criminology-specific internship courses which count towards degree credits. This is common across many other humanities degrees in Australia.

Subject Area	Technical Skills
Dramatic and film production	• Software-specific skills for content creation of editing (such as Avid, Final Cut and Adobe Illustrator) • Writing and directing capabilities (such as in cinematography, actor direction, sound and production management)
History	• Interpretation and evaluation of historical and specific, contextual evidence • Scientific and historical research skills (such as specific inquiry, discourse and project management skills)
International relations	• Transnational and cross-cultural experience and understanding • Cross-cultural negotiations practice • Political and international research and writing skills
Language and literature/Area studies	• Diplomacy skills • Graduate language capabilities • Context-specific cultural knowledge
Law	• Statutory interpretation • Legal research, advocacy and writing[33] • Legal professional ethics • Law reform and policy
Music and dance performance	• Music score reading and writing • Composition and Choreography skills • Performance exposure[34] • Music/Dance technique
Philosophy	• Capacity for a balanced and reasoned approach to problems arising in disciplines based on specialisation (such as law, health services and civil services) • Capability in applying philosophical concepts, distinctions and methods to address these problems[35]
Political science	• Political research methodologies and writing skills • Policy evaluative techniques • Political engagement such as for a involvement

Source: Deloitte Access Economics (2018) compiled from various university handbooks

[33] Over 80% of universities in the UK indicated that legal research, drafting, advocacy and communication were expressly incorporated within a dedicated unit or within a unit that combined skills with a substantive subject area (Grimes, R., Klaff, J. and Smith, C., 'Legal Skills and Clinical Legal Education: A Survey of Undergraduate Law School Practice' (1997) 15 *Journal of Professional Legal Education*, 123-127). Similarly, within Australia: Legal research and writing are dedicated skills-based courses common to all universities across Australia. Advocacy and mediation are less common, but are still found as dedicated skills courses across a number of Australian universities, or highly recommended options for electives.

[34] All of the 'Group of 8' Australian universities include dedicated, mandatory performance courses in the first and/or second years of studying undergraduate music performance or equivalent.

[35] Rudsill, J., 'The Transition from Studying Philosophy to Doing Philosophy', *Teaching Philosophy* 34(3), 241-271.

2.2 Transferrable skills are in high demand by employers

In addition to traditional technical skills, non-technical skills have become widely acknowledged as important for workplace outcomes. These skills, commonly termed transferrable skills, have adaptability and flexibility to solve new and complex challenges at their core.

There are different definitions and typologies of transferrable skills[36] in the literature. Figure 2-1 presents a typology that combines examples from the Australian curriculum[37], the Department of Education, Science and Training and the Organisation for Economic Co-operation and Development.

The *OECD's Programme for the International Assessment of Adult Competencies* identifies workplace skills needed for individuals to participate in society and for economies to prosper. In addition to job-specific skills, it identifies that non-technical skills lead to higher wages, greater likelihood of employment, as well as increased levels of job satisfaction.[38]

Figure 2-1: Typologies of transferrable skills

Skill	Australian curriculum	Department of Education, Science and Training	OECD core competencies
Self-management	✓	✓	
Communication		✓	✓
Teamwork		✓	✓
Problem solving		✓	✓
Digital literacy	✓	✓	
Critical thinking	✓		✓
Innovation		✓	
Emotional judgement	✓		✓
Global citizenship	✓		
Professional ethics	✓		
Enterprise skills		✓	✓

Source: Deloitte Access Economics (2018), Australian Curriculum Assessment and Reporting Authority (2016), Department of Education, Science and Training (2002), OECD (2014)

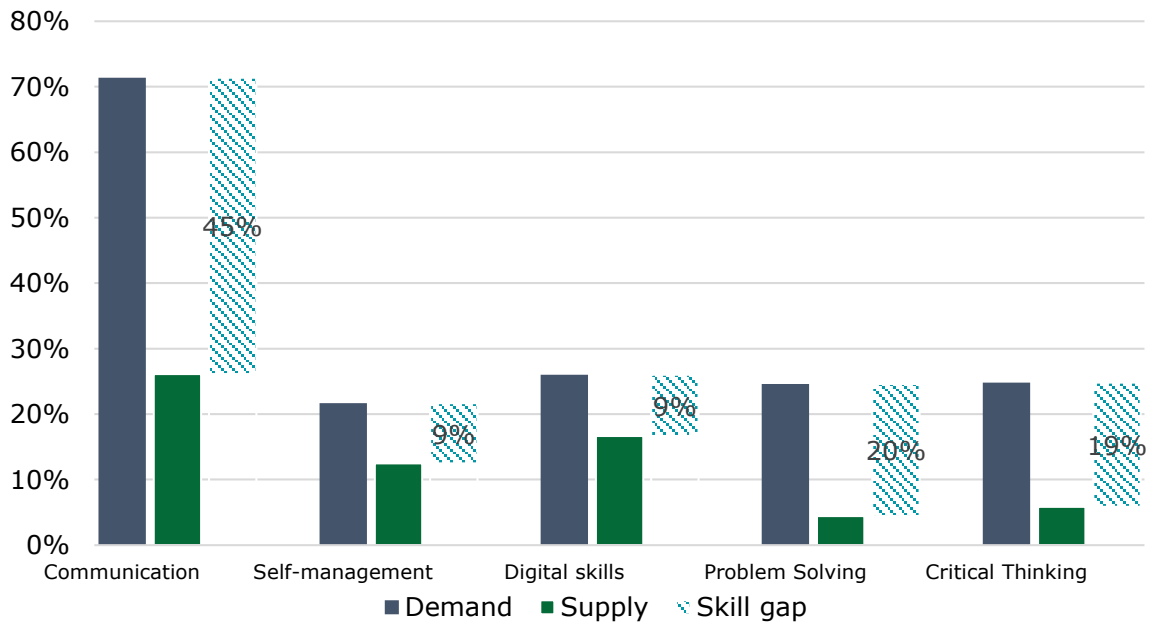
[36] These are variously referred to as 'transferrable', 'soft', 'enterprise' and 'core' skills.
[37] The Australiann Curriculum is a standardised curriculum which is taught from Foundation to Year 10 across all states and territories.
[38] Available at: http://www.oecd.org/skills/piaac/.

While technical skills are clearly valued by employers, these transferrable skills are growing increasingly important. This is supported by a 2009 survey of employers, which found that the skills they valued included communication, team-work, problem-solving, and the ability to assimilate of new knowledge.[39]

"Employers, both in the public and private sector, have increasingly concerned themselves with the 'organisational fit' of candidates. This shift has been accelerated as businesses evolve into increasingly complex organisations with multiple business units and product portfolios. Communication, problem-solving, collaboration and critical thinking…technologies may be ever changing but these transferrable skills will always be in demand." - Susan Carter, Learning, Leadership & Development Head, Siemens Ltd

Figure 2-2 illustrates the demand, perceived supply and resultant skill gap of transferrable skills in the market after analysis of data from job matching tool Workible. Employers identified the greatest skills gaps in the labour market as skills in communication, problem solving and critical thinking. Further, a 2013 study at the University of Oxford highlights these skills as crucial in the employability and career advancement of job candidates. An individual's capacity to continue to learn new technical and other skills, communicate well, and adapt actively in the context of new challenges posed by the economy and society were found to be the key factors in determining outcomes in hiring and advancement.[40]

Figure 2-2: The transferrable skills gap in the labour market

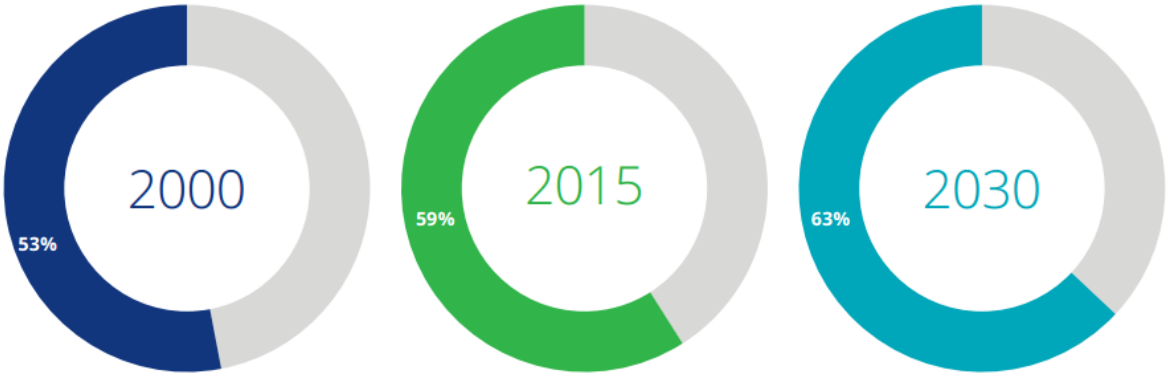


Source: Deloitte Access Economics (2017), '*Soft skills for business success*', DeakinCo.

[39] Nicolescu, L. & Paun, C (2009), Relating Higher Education with the Labour Market: Graduates' expectations and employers' requirements, Tertiary Education and Management, 15(1), 17-33.
[40] University of Oxford (2013), 'Humanities Graduates and the British Economy: The Hidden Impact', available at http://torch.ox.ac.uk/sites/torch/files/publications/Humanities%20Graduates%20and%20the%20British%20Economy%20-%20University%20of%20Oxford.pdf

It is clear that there is a high level of demand for transferrable skills in the labour market. Further, the demand for these skills is projected to increase in the future. As Figure 2-3 highlights, the share of the workforce with transferrable-skill-intensive employment is forecast to increase from 53% in 2000, to 63% by 2030.

Figure 2-3: Transferrable-skill-intensive employment as a share of the workforce, 2000 till 2030



Source: Deloitte Access Economics (2017), '*Soft skills for business success'*, DeakinCo.

Industries such as Health Care and Social Assistance, Public Administration and Education and Training (which make up approximately 60% of employment for those with a Humanities qualification) are three areas where communication, problem solving and critical thinking skills are critical. As these industries develop to form a larger part of the economy, the demand from employers for candidates who demonstrate these transferrable skills will also grow.

Lyn Cobley, Chief Executive, Westpac Institutional Bank

As Chief Executive of Westpac's Institutional Bank, Lyn has responsibility for Westpac's global relationships with corporate, institutional and government clients as well as products across financial and capital markets, transactional banking, structured finance and working capital payments. Prior to joining Westpac, Lyn held an array of senior executive positions at the Commonwealth Bank of Australia, Barclays Capital, Citibank and Trading Room. Suffice to say, that she is one of the accomplished women in the Financial Services industry, as well as being one of Macquarie University's most distinguished alumni.

Given her extensive experience, it is interesting to hear her views on the future of work. In Lyn's words, "the nature of work is changing rapidly, moving from a work environment where command and control is the dominant leadership style toward one in which groups and collectives work collaboratively to solve one problem."

The shifting nature of work is leading to a change in the way contemporary society defines the notion of a career. In contrast to the traditional view of a career, where those in older generations tended to work in one company or industry, individuals are now choosing to have a 'portfolio of careers', housing within it a variety of industries and businesses.

The effect of this shift has meant that employers are looking for a different skillset when hiring and promoting. In the case of Westpac, Lyn described, "We're not focusing as much on the traditional skillset that were once thought of as necessary – financial modelling, accounting, commerce; but rather for people who display a diversity of thought, critical thinking skills, cultural awareness, communication and collaboration skills…we're looking for people with a growth mindset, regardless of their qualification."

While the rise in prominence of transferrable skills has been notable, Lyn highlighted another core value of Westpac employees, which allowed them to be named Dow Jones' most sustainable bank in the world. "People tend to get very caught up in the bubble of the work environment, driven by financial goals and as a result they lose touch with the person on the street. We need people who think about the [social and environmental] footprint of our bank…Judgement is incredibly important as every day of the week you're making a decision which has an outcome for a person…The CEO of this bank [Brian Hartzer] has an undergraduate degree in history, it enables him to put problems and issues into context." Lyn sums up these themes simply by stating, "We want people that will challenge our thinking, bring different ideas to the table and see the broader picture."

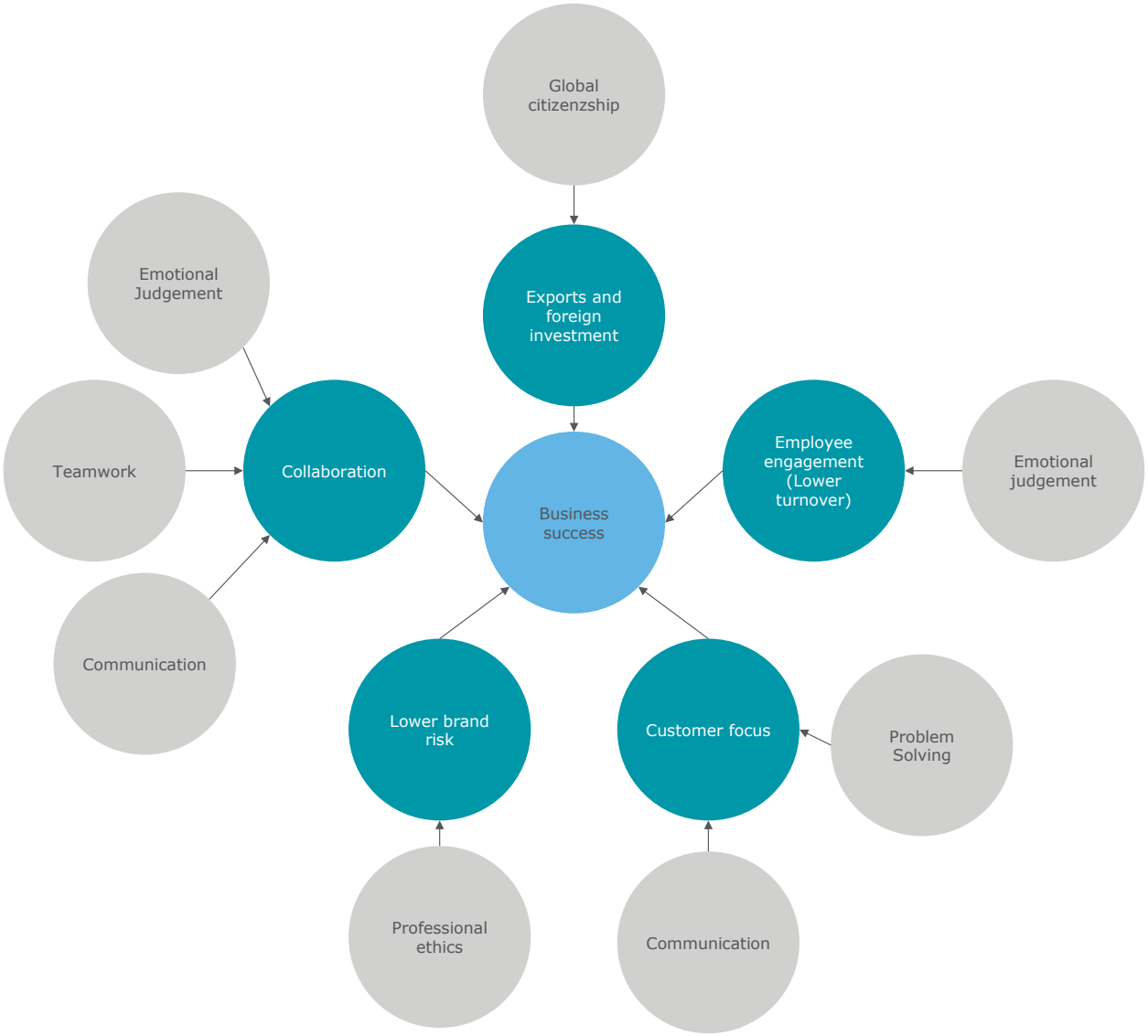
How do individuals with strong transferrable skills generate value for their employers? Critical thinkers and problem solvers are able to identify potential issues early on and implement creative solutions. Team members with strong self-management skills are likely to require less oversight and contribute to team cohesion. Individuals with good communication skills could be easier to work with and relate to clients better, driving business outcomes. Figure 2-4 illustrates the ways through which employees with superior transferrable skills contribute to successful businesses.

A range of quantitative evidence supports this. It has been shown that higher levels of emotional judgement leads to lower levels of staff turnover.[41] Moreover, employees that are characterised by values such as global citizenship are better placed to reach overseas markets. A survey of over 900 internationally active businesses found that 75% believe employees with cross-cultural or language skills were essential for their ability to operate in the most important international markets.[42]

Ultimately, employers value transferrable skills because they lead to business success. Studies demonstrate that these skills contribute to higher revenues, productivity, and profitability. An influential study of 1,100 manufacturing plants in the UK found that differences in the level of transferrable skills of employees account for 3% of the total factor productivity gap between firms in the top and bottom deciles.[43] With the changing nature of work leading to increased demand for these transferrable skills, it is clear that job candidates and existing employees who demonstrate these will be valued by businesses.

[41] Jordan, P. & Troth, A., (2011), 'Emotional intelligence and leader member exchange: the relationship with employee turnover intentions and job satisfaction', Leadership and Organisation development, 32 (3), 260-280
[42] Export Council of Australia (2016), Australia's International Business Survey
[43] Haskell, J., Hawkes, D. & Pereira, S, (2005), 'Skills, human capital and the plan productivity gap: UK evidence from matched plant, worker and workforce data', in Discussion paper No. 5334, Centre for Economic Policy Research.

Figure 2-4: Ways that transferrable skills contribute to business success



Source: Deloitte Access Economics (2017), *'Soft skills for business success'*, DeakinCo.

2.3 A Humanities education equips individuals well with transferrable skills

"Humanities Ph.D.s are not necessarily being hired for their content expertise, but for their process skills: the ability to do excellent research, to write, to make cogent arguments. These skills, it turns out, are in high demand" – Yale University (2017)

This section demonstrates that Humanities graduates are provided with both the technical and transferrable skills that make them well placed to succeed in this changing labour market.

Skills which form the core of a Humanities education are consistently cited as the basis for success in a knowledge economy. In particular, the ability for succinct and persuasive written and verbal communication, coupled with the capacity for critical analysis and synthesis, are cited as enabling individuals to tackle unfamiliar problems, assess risks and give due consideration to ethical issues. These skills are also identified as those that shape effective leadership[44].

There are recent examples of the success of Humanities-educated individuals in adapting to this shifting labour force. IBM has been reorienting itself with 'design-thinking', by introducing "design researchers—specialists with science and humanities backgrounds— [which] has brought the most profound change to the company's operations."[45] Similar conclusions are found in the academic literature, where the skill advantages of Humanities graduates—most notably analytical skills and written communication skills—are observed.[46] The strength of these graduates' transferrable skills is particularly evident when solving complex business problems.[47]

The literature emphasises that study in the Humanities necessarily involves an exploration of social arrangements, policies and practices. In turn, this promotes dialogue and an ability to analyse formal structures, reveal hermeneutic content and highlight critical values, all of which support the development of these capabilities.[33]

"The Humanities graduates that are placed within DPC are well rounded…they exhibit persuasive written and verbal communication skills, work collaboratively within a team and think effectively to solve challenging problems" - Rachel Pirc, Principal Learning and Development Officer, Department of Premier and Cabinet

Figure 2-5 and Figure 2-6 plot the results of surveys given to undergraduates and postgraduates respectively, asking them to self-rate certain transferrable skills following completion of their course. As is evident, Humanities undergraduates tend to be more confident in their

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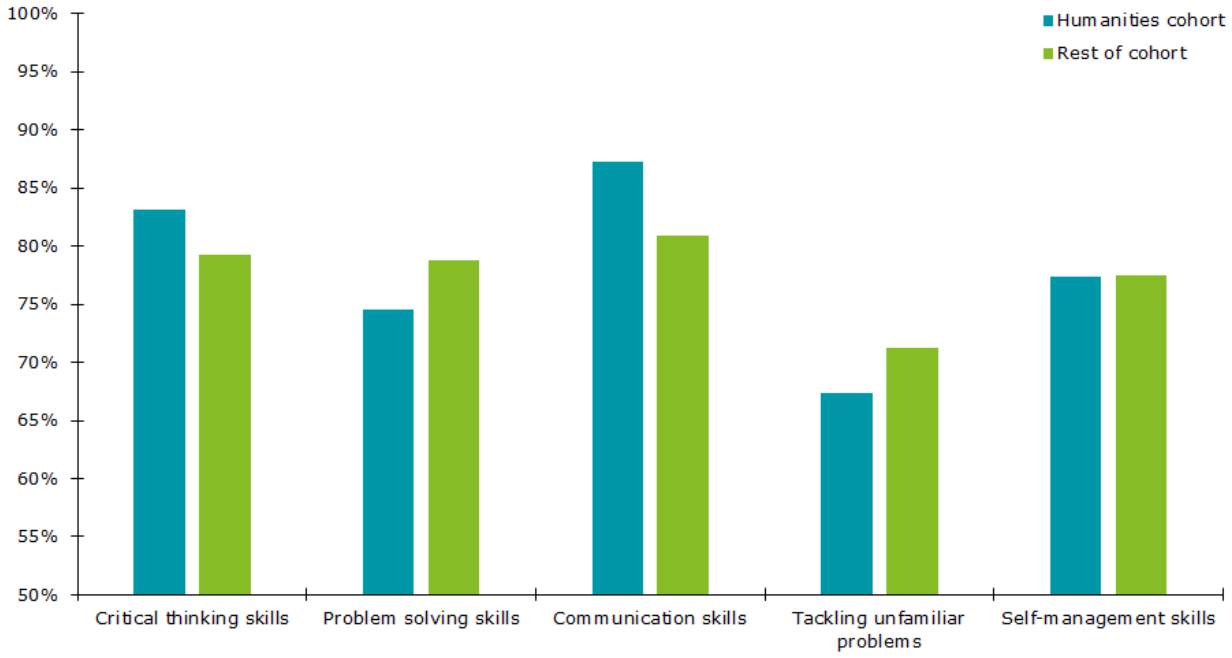
[33] University of Oxford (2013), 'Humanities Graduates and the British Economy: The Hidden Impact', available at http://torch.ox.ac.uk/sites/torch/files/publications/Humanities%20Graduates%20and%20the%20British%20Economy%20-%20University%20of%20Oxford.pdf

[45] Quartz (2016), available at: https://qz.com/755741/ibm-is-becoming-the-worlds-largest-design-company/

[46] Davidson, C. & Goldberg, D., 'A Manifesto for the Humanities in a Technological Age', *The Chronicle Review*, 50(23), B7. They emphasise that the nature of humanities studies necessarily involves an exploration into social arrangements, policies and practices. In turn, this promotes dialogue, and an ability to analyse formal structures, to reveal hermeneutic content and to highlight critical values, all of which support the development of these capabilities.

critical thinking and communication skills relative to the rest of their graduating cohort. This effect is even more pronounced for Humanities postgraduates, who rated their skills higher in every facet of the five transferrable skills than their graduating peers.[48]

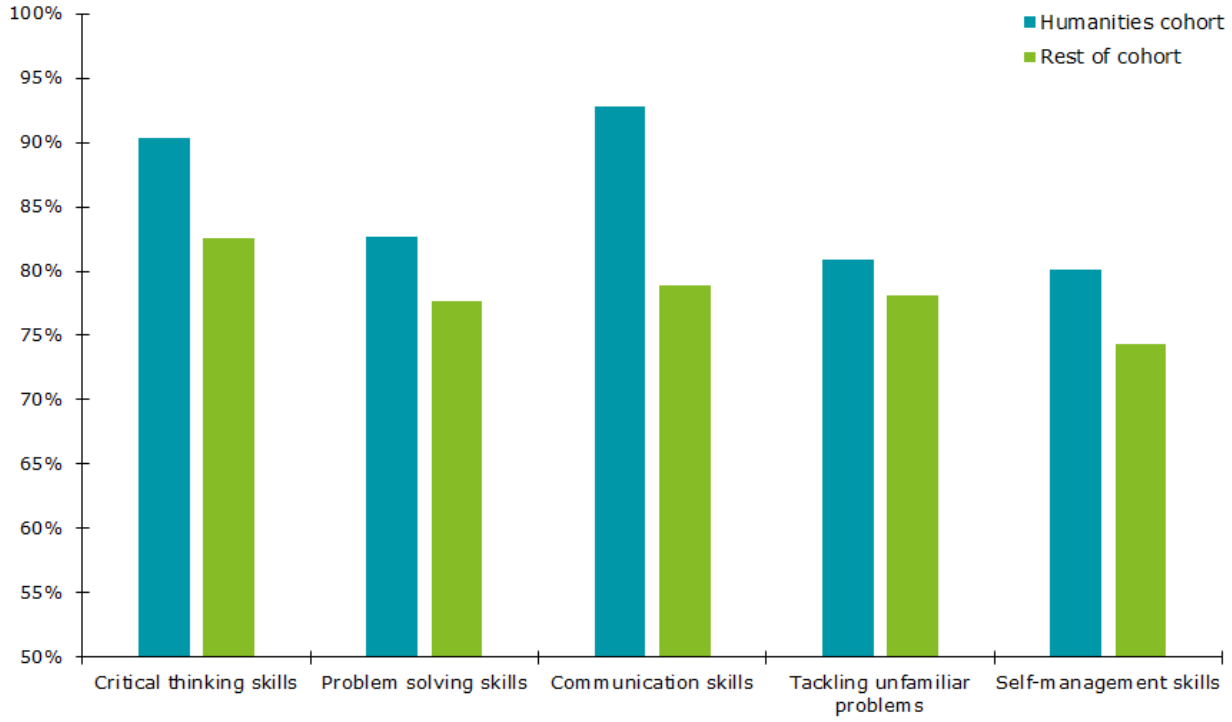
Figure 2-5: Self-rated transferrable skills of undergraduates following completion of course



Source: Deloitte Access Economics (2018) from Macquarie University data

[48] These results are all valid with a 95% confidence level, assuming a sample with a normal distribution.

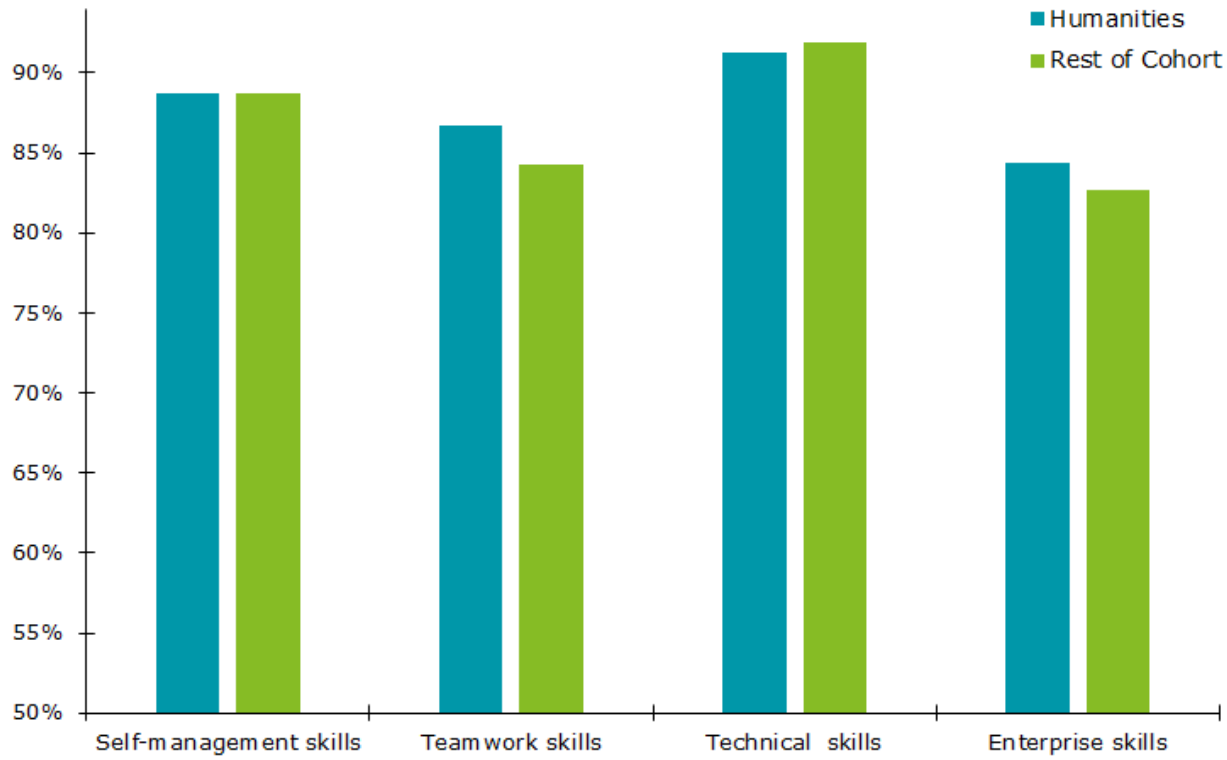
Figure 2-6: Self-rated transferrable skills of postgraduates following completion of course



Source: Deloitte Access Economics (2018) from Macquarie University data

An alternative approach, using a demand-side analysis of graduate employment provides similar insight. Figure 2-7 presents the results of a national survey of employers on the skills of their hired graduate intake. While the self-management and technical skills of Humanities graduates and those from other disciplines were similar, Humanities graduates displayed greater levels of teamwork and enterprise skills. The more pronounced collaborative and interpersonal capabilities of Humanities graduates enhances their ability to drive business success.

Figure 2-7: Employer satisfaction of graduate's skill attributes



Source: Deloitte Access Economics (2018) from 2016 Employer Satisfaction Survey data

2.4 Solving 'wicked' problems requires individuals with the right mix of skills

The Australian public service is faced with very complex policy problems, some of which have been called 'wicked' problems. These are defined as issues that often involve multiple causal factors and are 'highly resistant to resolution.' [49] Examples of issues classed as wicked problems include:

- climate change, which requires global coordination as well as behavioural change in patterns of consumption and production at an individual and organisational level;
- obesity, which depends significantly on individual behaviour change as well as secondary health care; and
- Indigenous disadvantage, which requires the involvement of individuals, communities and coordinated program and services delivery across government and non-government organisations.

These types of problems are difficult to define clearly. The nature and extent of these wicked problems vary between stakeholders, involve many interdependencies and are often multi-causal. Because of this, wicked problems tend to become a collective action problem that becomes the responsibility of many individuals and many organisations simultaneously. Further, the problems are dynamic: they change according to national and international developments. This means that finding solutions across such a dense landscape of interests is not only unclear but also socially complex in

[49] Australian Public Service Commission (2012), *Tackling wicked problems: A public policy perspective*, available at: http://www.apsc.gov.au/publications-and-media/archive/publications-archive/tackling-wicked-problems

that their 'technical complexity overwhelms most current problem-solving and project management approaches'.[50]

It has been recognised that solving wicked problems requires individuals that operate in a multidisciplinary way, are able to grasp the broader context around issues and are able to work collaboratively and innovatively to generate multiple potential solutions.

"We are looking for people that can understand the social issues that affect our society…that can work effectively within a diverse team to formulate and communicate evidence-based policy …Humanities graduates do that well" - Anita Hawtin, Principal Advisor, NSW Public Service Commission

Humanities graduates are well placed to succeed in this environment because they bring a mix of transferrable and technical skills to bear on the issues at hand. The team-oriented skills and innovative capabilities found in Humanities graduates are ideal for navigating through the interests of various stakeholders, working across organisational boundaries and adapting to the flexible approaches that are required to solve wicked problems.

Aside from collaboration, it has also been acknowledged that effective solutions for wicked problems require 'policy development and evolution [to] be informed with on-the-ground intelligence about operational issues and the views of service users or recipients … in the light of feedback about what works and what doesn't … as [part of] a more circular process involving continuous learning, adaptation and improvement'.[51] In particular, the confidence that both undergraduate and postgraduate Humanities-educated individuals reported in their analytical and problem-solving skills will be valuable in this kind of environment.

"Within DPC 99% of graduates have a Humanities education, they offer a well-rounded perspective on wicked problems, thinking critically about these complex policy issues. An example is in the Premier's implementation unit, where there are bottlenecks in the policy implementation chain. We need people who analyse the situation and come up with multiple solutions creatively – communicating the benefits and risks of each option" - Rachel Pirc, Principal Learning and Development Officer, Department of Premier and Cabinet

Turner and Brass maintain that Humanities disciplines provide graduates with the 'fine-tuned understanding' to respond to today's 'global, social, cultural and economic challenges'.[52]

[50] Ibid
[51] Ibid
[52] Turner, G., and Brass, K. (2014) *Mapping the Humanities, Arts and Social Sciences in Australia.* Australian Academy of the Humanities, Canberra.

Dr Tim Soutphommasane, Race Discrimination Commissioner, Australian Human Rights Commission

Established in 1986 under the *Australian Human Rights Commission Act 1986 (Cth)*, the Australian Human Rights Commission (AHRC) seeks to ensure freedom from discrimination on the basis of age, disability, race, sex, sexual orientation, intersex status and gender identity. The commission provides dispute resolution services to the Australian community, and policy advice that encourages government, industry and community groups to ensure that human rights are respected, protected and promoted.

"Around 80% of our staff here at the AHRC have a Humanities background…we're an organisation with a heavy humanistic slant… we have people with advanced qualifications in Law, Politics, Anthropology, Sociology, Social work, History, Criminology."

Dr Tim Soutphommasane has been in his role as Race Discrimination Commissioner since August of 2013. His role as Commissioner is to advocate for the notions espoused in the *Racial Discrimination Act 1975,* promote of equality regardless of race, make racial discrimination unlawful and provide protection against racial hatred.

Prior to joining the AHRC, Tim held posts at the University of Sydney and Monash University. He has been recognised amongst his contemporaries as a prominent political philosopher and his thinking on multiculturalism, patriotism and national identity have been influential in shaping debates in Australia.

Race discrimination is undoubtedly one of the wicked problems that plagues modern societies. It is socially complex, multi-causal and permeates throughout communities. Humanities students are well placed to respond to these wicked problems. In Tim's words, "Coming up with solutions for these issues requires thinkers with superior critical thinking along with a sense of empathy and emotional sensitivity. People with humanities backgrounds are good at this – and it allows them to put things into context, to understand issues while looking at the bigger picture."

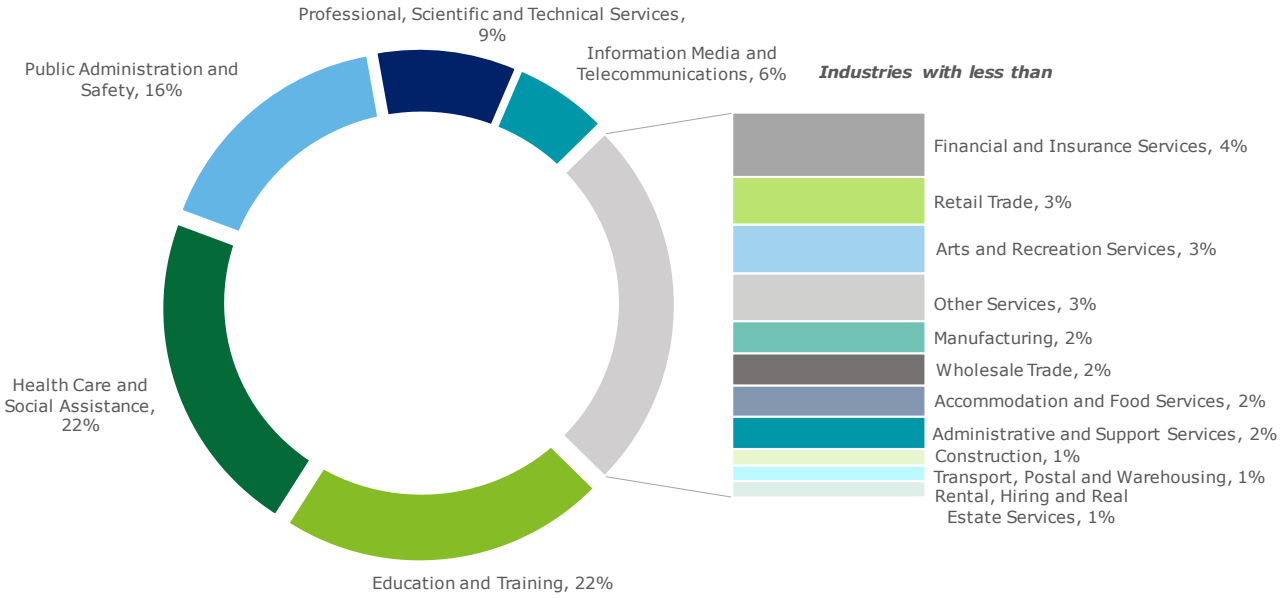
The AHRC's *Racism. It Stops With Me (RISWM)* Campaign is an example of this big picture thinking. By combining a targeted awareness campaign with traditional efforts to change laws, attitudes around prejudice and discrimination are shifting. Over the past five years, the campaign has attracted over 400 organisations from around the country as supporters.

Successes such as the RISWM campaign are driven by individuals who are innovative and able to think about social problems at a high level. Tim adds, "If you're in a small organisation with fewer resources, there is a greater need for you to be more creative and inventive about how you organise people in civil society…How do we generate a different kind of impact? What if we were able to use this to empower key people?"

Given that Humanities graduates posess the necessary skills to help solve complex policy problems affecting society, it is useful to note that a large proportion of these graduates work in the public sector.

Figure 2-8 deconstructs the industries of employment for individuals with a Humanities qualification. The top three industries—Education and Training (22%) Health Care and Social Assistance (22%) and Public Administration and Safety (16%)—make up 60% of all employment, with the majority of these roles being in the public sector. When compared against all individuals with a tertiary qualification, those with a Humanities degree are approximately 64% more likely to work in the public sector.

Figure 2-8: Industries of employment for individuals with a Humanities qualification



Source: Deloitte Access Economics (2018) analysis of HILDA Survey

As has been shown throughout this chapter, this is primarily because the skills that Humanities graduates exhibit (both technical and transferrable) align particularly well with the problems that require solving in the public sector. The personal values and self-evaluative traits that individuals with humanities qualifications exhibit align well with these non-market sector career paths. These career paths can be thought of as values-based career choices in which private financial returns, alebit important, are not the primary driver.

The evidence presented in this chapter strongly suggests that Humanities-educated individuals are equiped with a superior set of skills geared toward helping the public sector formulate solutions to wicked problems. Moreover, individuals with a Humanities qualification work in the public sector in disproportionately larger numbers, putting these skills into use for the wider public benefit.

3 The contributions of Humanities-educated individuals to the community

A Humanities degree equips graduates with the tools to better understand their society, its institutions, and the behaviours and motivations of others. This has implications for how they interact with society and may lead them to exhibit greater levels of:

- trust;[53]
- volunteerism;
- political engagement;[54] and
- tolerance.

Each of these social values are recognised as elements of civic engagement, which is defined as 'promoting the quality of life in a community, through both political and non-political processes'.[55]

Robert Putnam, a political scientist, identifies that civic engagement helps build social capital and is a key instrument in achieving improved educational outcomes, increased economic development, reduced levels of crime and more effective government.[56]

Guido Tabellini details this relationship by suggesting that trust leads to well-functioning institutions through a number of different channels: citizens are more likely to be law-abiding; bureaucrats are more likely to refrain from corruption; and voters are more inclined to vote based on general social welfare.[57]

This is supported by a number of studies which provide empirical evidence to show that well-functioning institutions are often observed in countries where individuals have a greater level of trust in each other.[58, 59]

There is a considerable body of evidence that identifies a relationship between education and civic engagement. For example, the level of trust exhibited by those with a tertiary education is 17% greater than the level of

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[53] This includes trust in others as well as legal, political and social institutions.
[54] This includes voting, writing to a public official, attending a political meeting, and contributing money to a political candidate or cause.
[55] Ehrlich, T. (2000), *Civic Responsibility and Higher Education*, Greenwood Publishing Group, p. vi
[56] Putnam, R.D. (1995) 'Bowling Alone: America's Declining Social Capital', *Journal of Democracy,* 6(1), 65-78
[57] Tabellini, G. (2008) 'Presidential address institutions and culture' *Journal of the European Economic Association,* 6(2-3), 255–294.
[58] La Porta, R., Silanes, F., Lopez-de, Shleifer, A., and Vishny, R. (1999) 'The quality of government' *Journal of Law, Economics, and organization,* 15(1), 222–279.
[59] Easterly,W., Ritzen, J., and Woolcock, M. (2006) 'Social cohesion, institutions, and growth' *Economics & Politics*, 18(2), 103–120.

those without a tertiary qualification. Similarly, those with higher literacy levels are 7% more likely to vote.

The direct relationship between the Humanities and civic engagement, however, is less clear. In the following sections, we demonstrate that (1) a tertiary education leads to greater trust, political engagement and tolerance; (2) that the capabilities taught in Humanities-based education foster civic engagement; and (3) that Humanities-educated individuals demonstrate higher levels of political and civic engagement. Considered together, these elements provide a multi-faceted view of the social contribution of Humanities-educated individuals.

3.1 A tertiary education establishes greater levels of trust, political engagement and tolerance

The *Australian Election Study* (AES) surveys a nationally representative sample of voters on their voting behaviour and attitudes towards political and social issues. Data from the 2016 study offers valuable insights into respondents' levels of political engagement, trust and tolerance.

The survey also collects data on the educational attainment of respondents. This information is incorporated into an econometric model to determine how education affects respondents' levels of civic engagement. Appendix A provides a full explanation of the data sources and econometric model used in this section.

Other background information collected by the survey is used to control for the effects of age, gender, income, religious affiliation, indigenous status and social class. Different characteristics in groups across states are also accounted for.

These controls allow for the effect of education to be determined. That is, any differences in the levels of political engagement, trust or tolerance between respondents can be explained by differences in the level of education.

The survey asks respondents if they find others to be trustworthy. An analysis of responses to this question suggests that the average level of trust exhibited by those with a tertiary qualification is approximately 17% greater than the average trust level of those that do not hold a tertiary qualification.

In addition to trust in others, the survey asks respondents to indicate their confidence in a number of social institutions, including the legal system, armed forces, police and public services. Results indicate that those with a tertiary-level qualification have greater levels of confidence in these institutions.

Similarly, analysis of respondents' level of agreement with changes in a number of social policy issues (including equal opportunities for migrants and women, aboriginal land rights and government support for Aborigines) indicates that those with a tertiary qualification are, on average, more tolerant.

Based on respondents' level of interest in the election campaign, it is possible to conclude that those with higher levels of education are also more likely to exhibit higher levels of political engagement.

However, an important limitation of the AES analysis is that respondents are self-selected. Whilst the sample is drawn randomly from the electoral

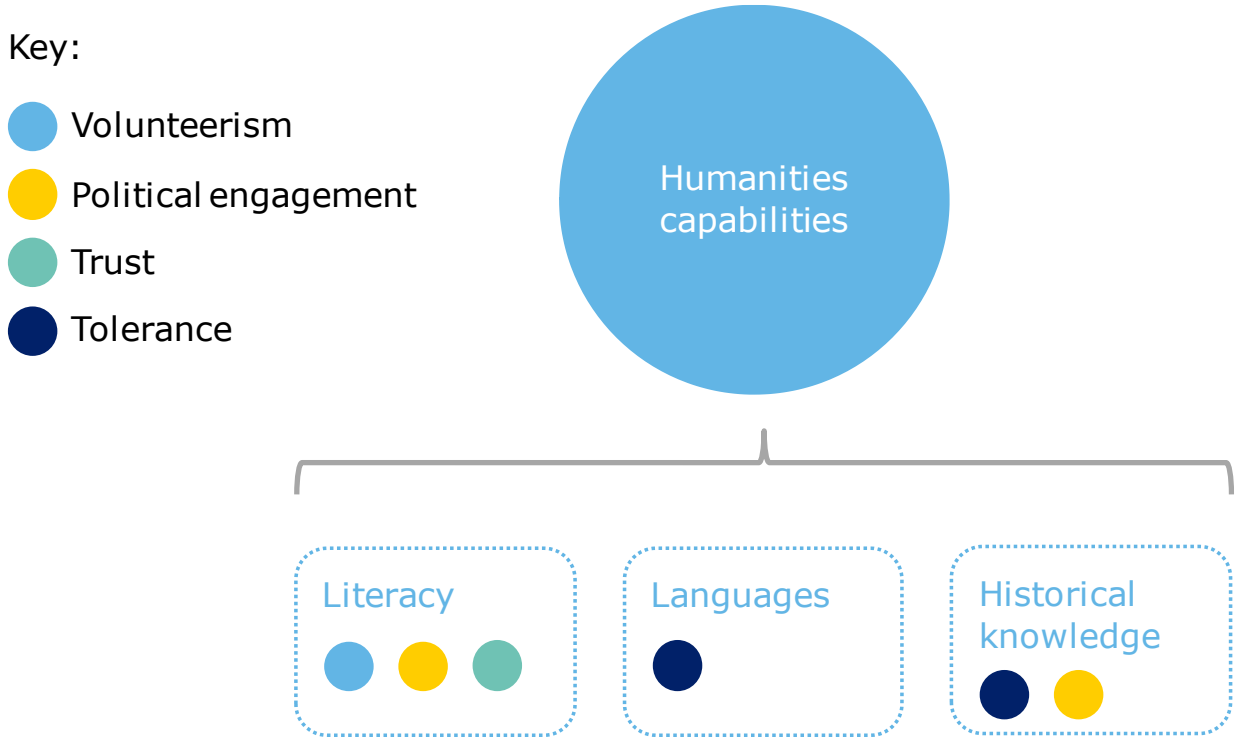
register, completion of the survey is not compulsory and those that respond may be more politically engaged than those that do not. This suggests that the sample may not be completely representative of the general voting population.

Nonetheless, the findings from this analysis are supported by the *2017 Scanlon Foundation Survey*, which surveyed over 40,000 respondents on social cohesion, immigration and population issues. Analysis of survey responses shows that those with a Bachelor degree or higher are more trusting than those with lower levels of education. They also have more positive attitudes towards immigration and multiculturalism, which suggests that they are more tolerant.[60]

3.2 The capabilities taught in the Humanities foster greater civic engagement

A Humanities education allows individuals to develop a number of capabilities that foster greater levels of tolerance and trust, in both institutions and in others. These characteristics are also associated with motivation to volunteer and engage in political activities. An overview of the relationship between specific capabilities and civic engagement is outlined in Figure 3-1. Evidence to support these relationships is provided below.

Figure 3-1: Capabilities taught in the Humanities and the relationship with civic engagement



Source: Deloitte Access Economics (2018)

[60] Andrew Markus (2017), *Mapping Social Cohesion – The Scanlon Foundation surveys 2017*, available at: http://scanlonfoundation.org.au/wp-content/uploads/2014/05/ScanlonFoundation_MappingSocialCohesion_2017.pdf

The *OECD's Programme for the International Assessment of Adult Competencies* assessed the proficiency level of 166,000 adults in 24 countries (of which Australia is one) in several key information-processing capabilities. One of the key capabilities tested is literacy, which is defined as the 'ability to understand, evaluate, use and engage with written texts to participate in society.'[61]

The survey views literacy as a continuum, that includes the learning of basic skills, the ability to synthesise information across complex texts, and the ability to be aware of subtle cues. Using these focus areas, the study categorises individuals according to their level of proficiency in literacy and finds that those with higher levels of education are more proficient. [62]

The findings of the survey also show that individuals with greater literacy capabilities are more likely to believe that they have a greater impact on political processes and to participate in volunteer activities. They are also more likely to trust others.

Specifically, within Australia, individuals with greater literacy proficiency are over 2.5 times more likely to report higher levels trust in others than those with lower levels of literacy.[63] The link between literacy and positive social outcomes is stronger in Australia than most other countries.

The importance of literacy is also emphasised by a study of American students. This study indicates that literacy has a 'clear and significant influence on future political engagement.' [64] Students that scored more highly in literacy on a standardised test were 10.3% more likely to participate in political activities and 7.0% more likely to vote.

The same research also explores the link between fields of study and political participation. The study finds that students that take more social science credits are 4.0% more likely to participate in political activities, and 3.7% more likely to vote. Based on these findings, the study concludes that literacy skills are 'undoubtedly re-enforced through college.'[65]

A summary of the study findings is presented in the table below.

[61] OECD (2013), *Skilled for Life? Key Findings from the Survey of Adult Skills*, p. 4, available at: http://www.oecd.org/skills/piaac/publications.htm
[62] OECD (2012), *United States – Country Note – Survey of Adult Skills first results*, available at: http://www.oecd.org/skills/piaac/country-specific-material.htm
[63] OECD (2012), *Australia – Country Note – Survey of Adult Skills first results*, available at: http://www.oecd.org/skills/piaac/country-specific-material.htm
[64] Hillygus, D.S (2005), 'The Missing Link: Exploring the Relationship Between Higher Education and Political Engagement', *Political Behavior*, 27(1), 25-47, p. 40
[65] Ibid – p. 40

Table 3-1: Probability of political engagement with levels of literacy and social science credits

	Secondary education – Literacy score in standardised test		**Tertiary education – Number of social science credits**	
	20th percentile	*80th percentile*	*9 credit hours*	*43 credit hours*
Probability of Political Participation	30.8 %	41.1 %	34.0 %	38.0 %
Probability of Voting	56.1 %	63.1 %	57.9 %	61.6 %

Source: Hillygus, D. 2005

In relation to language, an analysis of multiple studies conducted in schools across Europe shows that the provision of a bilingual education has a positive impact on inter-cultural understanding. Furthermore, improved language capabilities help to create a sense of belonging and engagement.[66] This can establish greater levels of tolerance and improve relations between minority communities and the community at large.

The analysis also demonstrates that history teaching is a 'key tool to promote and instil democratic culture and values'.[67] Lessons on social movements, for example, may allow students to realise that they can have an impact on political processes and that they are able to positively change society.

Additionally, history teaching is also a key tool to 'reduce stereotypes and prejudices.'[68] For example, learning about colonialism helps students understand the importance of tolerance and cultural understanding.

"Understanding someone who is different – that should be the power of Humanities – to equip individuals with a level of understanding of others … To resolve [disputes] peacefully you need to have some perspective and the Humanities encourages that." - Dr Tim Soutphommasane, Race Discrimination Commissioner, Australian Human Rights Commission

The capabilities developed through the study of language and history build on and support the civic engagement outcomes observed in the literacy skills taught in the Humanities.

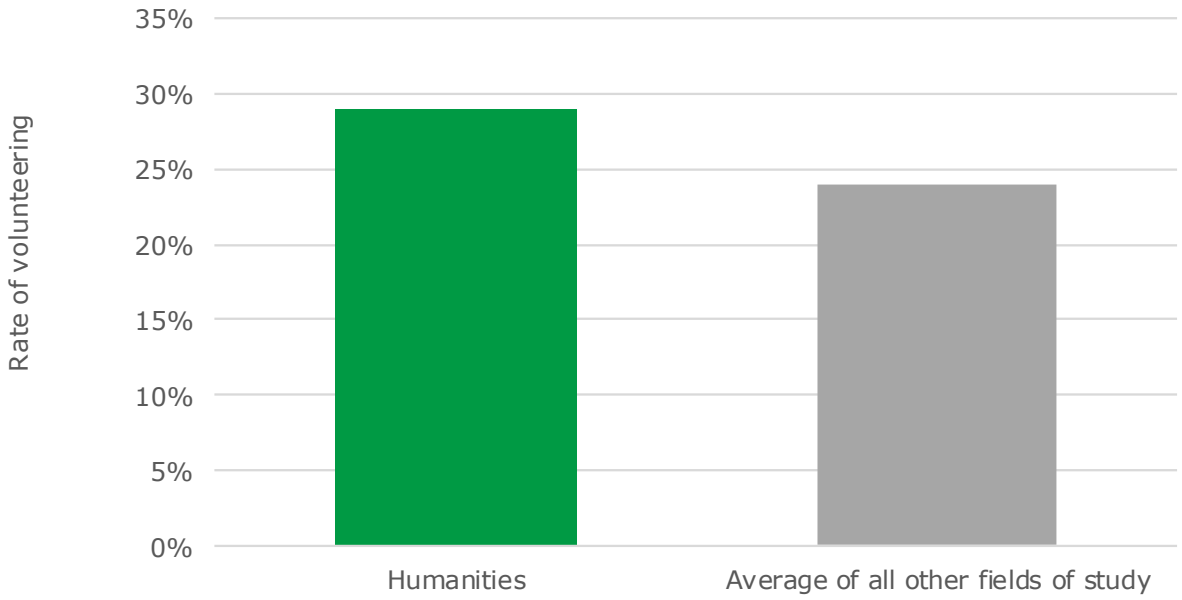
[66] Van Driel, B., Darmody, M., Kerzil, J.(2016), 'Education policies and practices to foster tolerance, respect for diversity and civic responsibility in children and young people in the EU', *NESET II report,* available at: https://www.esri.ie/publications/education-policies-and-practices-to-foster-tolerance-respect-for-diversity-and-civic-responsibility-in-children-and-young-people-in-the-eu/
[67] Ibid – p. 47
[68] Ibid – p. 49

3.3 Humanities graduates demonstrate high levels of political engagement and volunteering

In addition to the relationship between Humanities-taught capabilities and positive social outcomes, there is also evidence of direct links between a Humanities education and civic engagement.

Data from the ABS 2016 Census demonstrates that the rate of volunteering amongst Humanities graduates is 5 percentage points, or 21%, higher than the average rate of all other fields of study.[69]

Figure 3-2: Rate of volunteering among graduates by qualification



Source: ABS (2016), Deloitte Access Economics (2018)

This is reflected in the findings of Haski-Leventhal et al. Based on a study of more than 6,500 students across 12 countries, Humanities students showed volunteering rates of 27.7%, whilst natural sciences students showed a rate of 19.6% and business and engineering students 18.2%. The study explains the difference by suggesting that Humanities graduates are 'willing to express their pro-social values in action.'[70]

This research analysed the voluntary engagement among students in a cross-cultural context. Data was collected from countries such as Canada, England, Belgium and the United States in order to represent Western and developed countries. This suggests that the findings would closely reflect students' attitudes in Australia.

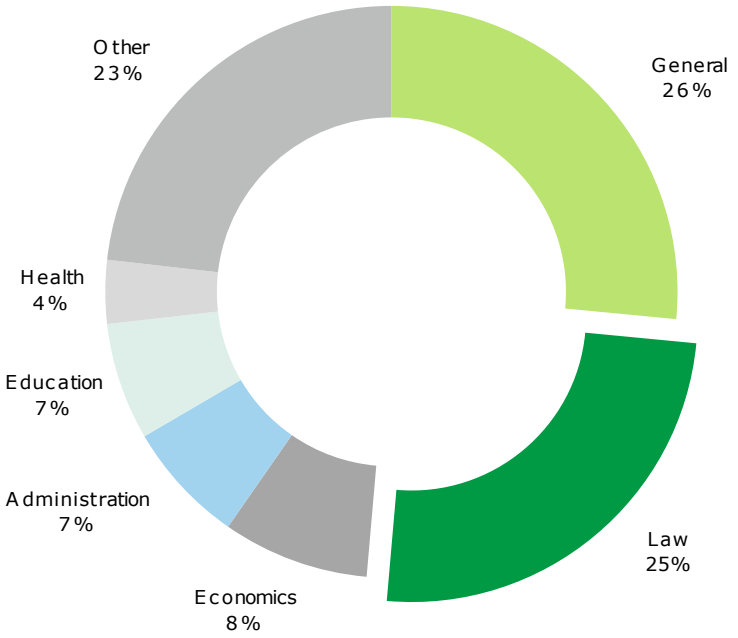
Further evidence of the high levels of political engagement in the Humanities can be seen in that of the 362 members of the 43rd Australian

[69] Defined as the proportion of people who spent time doing unpaid voluntary work through an organisation group or group, in the last twelve months. This figure is statistically significant at a 99% confidence level.

[70] Haski-Leventhal, D., Cnaan, R. A., Handy, F., Brudney, J. L., Holmes, K., Hustinx, L., … Zrinscak, S. (2008), 'Students' vocational choices and voluntary action: A 12-nation study', *Voluntas*, 19(1), 1-21, p. 19

Parliament that had post-secondary qualifications, a quarter (90) of which held a degree in Law.[71] Just over a quarter held 'general' qualifications, which is classified as degrees where the major field of study has not been specified (this includes Arts degrees). Figure 3-3 provides a breakdown of the various qualifications held in the Australian parliament.

Figure 3-3: Qualifications of Australian parliamentarians, 2011



Source: M. Lumb (2013), Deloitte Access Economics (2018)

The high proportion of parliamentarians with law degrees suggests that Humanities graduates play an influential role in the development of public policy to address social issues.

There is also evidence that a Humanities education instils social values in those that learn outside of a university environment. Within Australia, there are a number of programs that provide tertiary-level Humanities courses to homeless and other marginalised people. The purpose of these programs is to promote engagement, which is defined as 'the process of establishing trust in the broader community.'[72]

Qualitative data gathered from interviews and discussions with participants indicates that the program helped them to feel more engaged. The program also helped to reduce the stigma attached to homelessness among others involved in the programs. However, no measures of the potential longer-term effects of the program have been explored, and sample sizes were small.

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[71] Martin Lumb (2013), *The 43rd Parliament: traits and trends*, available at: https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1314/43rdParl

[72] Egan, A., Butcher, J., Howard, P., Hampshire, A., Henson, C., Hommel, R. (2006), 'The impact of tertiary-level humanities education for homeless and marginalised people', *AARE Conference Paper 2006*, p. 5, available at: https://www.aare.edu.au/publications-database.php/5024/The-impact-of-tertiary-level-humanities-education-for-homeless-and-marginalised-people

In summary: the analysis of survey data provides evidence of a relationship between education and elements of civic engagement. This is supported by findings in the literature which show that the development of capabilities, such as literacy lead to positive social outcomes. The literature also shows that a Humanities education provides individuals with the tools to make meaningful contributions to their communities and society in general, more so than other fields of study.

4 Labour market outcomes for Humanities graduates

In understanding the market benefits of a Humanities education, the first measure is the wage premium for those with a higher education Humanities qualification.[73] The second measureable benefit of a Humanities education is the increased likelihood of labour force participation, which holds economy-wide value.

Wage premiums represent a natural starting point in understanding the private market benefits of a Humanities education. This is because the market-based productivity[74] of a worker is largely reflected in their wage.[75] The theory of human capital posits that skilled graduates embody greater human capital as a result of their university education, which increases their productivity in the workplace and quality of life more broadly.

To the extent that this higher productivity is rewarded, the financial returns to students from higher educational attainment consists in higher lifetime earnings. The Melbourne Institute Report *Returns to Investment in Higher Education* found that employed graduates working full time received a 'substantial wage premium over non-graduates.'[76]

Past studies of the HILDA survey found that individuals receive significant returns from higher education in Australia in the form of an increased likelihood of being full-time employed and a higher weekly income.[77,78] Unlike high school and vocational education and training graduates, the gains experienced by university graduates were primarily from the increased productivity and human capital that people derive from university education, and not simply increased participation.

University graduates tend to hold a strong position when entering the labour market. In 2017, 72.2% of university undergraduates upon graduation were in full-time employment, compared with 58.4% of non-university higher education institution (NUHEIs) undergraduates.[79] Table

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[73] This measure of wage gains is relative to those who enter the labour market with a completed high school education.
[74] The term market-based productivity is used conventionally in economics. Higher education may increase the quality of a worker's output, which in some fields is a public benefit, not captured in the market mechanism.
[75]This notion is based on the theory of human capital. A competing idea is signalling theory, which contends that employees send a signal about their ability level to the employer by acquiring education credentials.
[76] Borland, J., Dawkins P., Johnson, D. & Williams, R (2000), *Returns to Investment in Higher Education, Melbourne Institute Report No.1*, available at: https://www.melbourneinstitute.com/downloads/reports/rihe.pdf
[77] Wilkins, R (2015), *The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 12*, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne.
[78] Leigh, A. (2007), 'Returns to Education in Australia', Centre for Economic Policy Research, available at: https://pdfs.semanticscholar.org/2ce4/58633ceceeac4b9cd48b612129bb2304d978.pdf
[79] Macquarie University (2017), *2017 Graduate Outcomes Survey National Report*, page iii.

4-1 emphasises the strength of labour market outcomes for both undergraduates and postgraduates.[80]

Table 4-1: Graduate employment and study outcomes, by study level, 2017

	Undergraduate	**Postgraduate**
In full-time employment	71.8%	86.1%
Overall employed	86.5%	92.6%
Median salary, employed full-time	$60,000	$81,000
Labour force participation	92.0%	95.8%
In full-time study	20.7%	6.6%

Source: The 2017 Graduate Outcomes Survey, The Department of Education and Training (2017)

A university education also tends to provide an equalising force to traditional barriers that prohibit equality of labour market outcomes. The gender pay gap for undergraduates narrowed to 1.9% in 2017, the lowest recorded pay gap reported in 40 years of data. Furthermore, labour force outcomes were found to be relatively similar regardless of socio-economic status. The Social Research Centre concludes that 'further study, on average, continues to confer additional benefits in the labour market', with these benefits leading to more equitable outcomes.[81]

"There is much evidence that decisions of children and their families on secondary and tertiary education, including about the period of study and area of study, are influenced as much by perceived relative chances of gaining a job as by the relative wages for jobs gained." - Reserve Bank of Australia[82]

This chapter builds on the evidence presented in earlier chapters of the public benefits of a Humanities education with an econometric analysis of the labour market outcomes for Humanities-educated individuals.

[80] *Postgraduate* refers to Postgraduate by coursework and is consistent with the definition used in the econometric model below.
[81] Macquarie University (2017), *2017 Graduate Outcomes Survey National Report*, page iii
[82] Freebairn, J. (1998) 'Microeconomics of the Australian Labour Market', *Conference – 1998,* Reserve Bank of Australia available at: https://www.rba.gov.au/publications/confs/1998/freebairn.html

Econometric Methodology

A wide range of factors affect wages between individuals in the labour force. Qualifications are a key influence, but an array of other variables are also important,[83] including:

- Demographics – gender, social and ethnic background, age;
- Cognitive ability – innate ability and talent for a given job; and
- Time or region specific factors.

Accordingly, the econometric model developed takes into account these variables when estimating both the private wage gain and likelihood of participation in the labour force from higher education. Estimates are modelled on HILDA data pooled across all waves,[84] while all results should be interpreted as valid in an Australian context.

The HILDA survey[85] uses a slight variation of the 'traditional' Humanities definition presented in section 1. Of particular note, the HILDA survey splits out Law and the rest of Humanities as different fields of education. For completeness, results in this chapter are presented for three fields of education: Humanities, Humanities including Law and All Fields of Education.

The method used to estimate the effect of a higher education qualification on wages is a pooled Ordinary Least Square (OLS) regression. Standard errors are clustered at the individual level to account for the likelihood that an individual's wages are correlated over time.

To estimate the effect of a higher education qualification on the likelihood of an individual to participate in the labour force, a linear probability model was used. This model allows for the isolation of an individual's higher education qualification while also controlling for demographic and cognitive ability characteristics. Standard errors are similarly clustered at the individual level. Appendix B provides a full explanation of the data sources and econometric model used in this chapter.

[83] Wilkins, R (2015), *The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 12*, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne. pp. 70-71

[84] The HILDA survey is a longitudinal survey that collects information about economic and personal well-being, labour market outcomes and family life. The HILDA survey began in 2001 and has been repeated yearly since. A more technical discussion of the methodology and assumptions can be found in Appendix B.

[85] Coded using the Australian Standard Classification of Education (ASCED), Field of Education Classification. It describes the field of study of a person's highest completed non-school qualification.
http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2901.0Chapter8102011

4.1 Wage Premium estimates

Wage premium estimates represent the starting point for understanding the private market benefits which accrue for Humanities-educated individuals. The findings suggest that holding a postgraduate or undergraduate degree in the Humanities is associated with a wage premium of approximately 7%[86] and 30% respectively over a completed high school education, after controlling for various demographic characteristics and cognitive ability. When including Law in the definition of a Humanities education, the estimated wage premiums increase to 11% for undergraduates while remaining consistent at 30% for postgraduates. The estimated wage premiums for some other fields of education were higher than this, though there tended to be a high variance between these fields of education. The full results of the model are reported in Appendix B.

Note that the qualification level results are relative to an average individual with a completed high school education, while wages are measured at a weekly level after accounting for inflation.[87] It is important to note that the modelling considers the *average* impact of an individual increasing their level of education across the collective sample provided in the HILDA Survey. Thus, it may be the case that an individual's movement into a higher level of education may not be reflected in higher wages.

4.2 Labour Force Participation estimates

While wages represent the natural starting point in understanding the market benefits of a Humanities qualification, they present an incomplete picture due to imperfections in the labour market. These imperfections include situations where wages only vary within pre-defined bands (such as in the public sector where Humanities graduates hold a large share of the employment – see Table 4-2), or where wage growth is dictated by existing union agreements. To generate a richer understanding of the market benefits of a Humanities tertiary qualification, the effect on labour force participation outcomes are modelled.

The participation estimates clearly show that having a tertiary Humanities qualification improves the likelihood of participating in the workforce. For example, an average individual that holds a tertiary degree in the Humanities is 3.8% more likely to participate in the workforce than someone with a completed high school qualification, after controlling for demographic and cognitive ability. Taking the counterfactual, where these Humanities-educated individuals had solely completed a high school certificate, the labour force would decline by approximately 25,000 people.[88]

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[86] It should be noted that the estimated wage premium of Humanities undergraduates is not statistically significant at the 10% level. This is primarily due to a relatively low sample size for this estimation. This estimate of the wage premium should be interpreted as evidence of a positive correlation with a Humanities undergraduate education and a positive wage premium relative to an individual with a completed Year 12 certificate.

[87] This is known as an individual's *real wage.* Real wages are wages adjusted for inflation, or, equivalently wages in terms of the amount of goods and services that can be bought. Because it has been adjusted to account for changes in the prices of goods and services, real wages provide a clearer representation of an individual's wages in terms of what they can afford to buy with those wages.

[88] Despite having a smaller labour force participation percentage effect, an undergraduate qualification has a larger effect on the amount of people in the labour force. This is because there is a larger pool of people with a Humanities undergraduate qualification than those with a Humanities postgraduate qualification in the labour force.

These results differ when considering undergraduates and postgraduates. An individual that holds a postgraduate degree in the Humanities is 5% more likely to participate in the workforce, while an undergraduate with a Humanities degree is 3% more likely to participate in the labour force.

The increased likelihood of labour force participation holds economy-wide value, as the overall productive capacity of the economy rises. This increase in capacity has the potential to lead to greater total output and higher incomes across the economy. Appendix B presents the full results of the labour force participation estimates.

This conclusion is supported by the *Mapping the Humanities Arts and Social Sciences in Australia* report, which highlights that Humanities graduates '[contribute] both generic and specialist skills to support and drive national wellbeing and productivity across diverse sectors'.[89]

4.3 Lifetime Earnings

As wages vary over an individual's career, calculating lifetime earnings is important for comparing the relative returns of tertiary qualifications.[90] The lifetime earnings is the amount of additional labour income received by an individual over their working life in comparison to a high school graduate. As this report does not estimate the likelihood of employment for Humanities educated individuals, updated estimates of lifetime earnings from *Estimating the public and private benefits of higher education*[91] are presented.

The modelling suggests that an average individual with a Humanities undergraduate degree (not including law) earns approximately $200,000 more after tax than the typical individual with no post-school qualification. This figure corresponds to a 20% premium after accounting for the likelihood of whether they are employed or not and participating in the labour force.[92] This increases to $270,000 when Law is included in the definition, corresponding to a 26% premium.

Expected lifetime earnings for individuals with a Humanities postgraduate degree is higher than that calculated for undergraduates. An individual with a postgraduate degree in the Humanities without Law earns, on average, $280,000 more after tax. This rises to $390,000 when Law is included in the definition.[93]

These premiums are the values attributable to the qualification itself, rather than the observed differential which also include demographics and innate cognitive ability. The premiums are expressed as 2017 post-tax dollar figures, undiscounted and in net present value (NPV) terms with a discount rate of 7%.

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[89] Turner, G., and Brass, K. (2014) *Mapping the Humanities, Arts and Social Sciences in Australia.* Australian Academy of the Humanities, Canberra.
[90] To accurately estimate these lifetime earnings, a combination of estimated wage premium effects and the likelihood of employment and labour force participation effects are required.
[91] Deloitte Access Economics (2016), *Estimating the public and private benefits of higher education*, Australian Government Department of Education and Training, available at - https://docs.education.gov.au/system/files/doc/other/dae-det_benefits_of_higher_education_final_report.pdf
[92] Ibid - pg.42-43
[93] As was the case with the wage premium estimates presented above, lifetime earnings premiums for some other fields of education tended to be higher than the estimated results for the Humanities.

Individuals with Humanities qualifications tend to move into industries and occupations of employment that do not fully reward this increased skill level in the form of increased wages. As Table 4-2 indicates, approximately 1 in 3 Humanities-educated individuals are employed in the public sector compared with 1 in 5 for all tertiary qualifications. [94]

Table 4-2: Ratio of people employed in the Public/Private Sector for selected qualifications

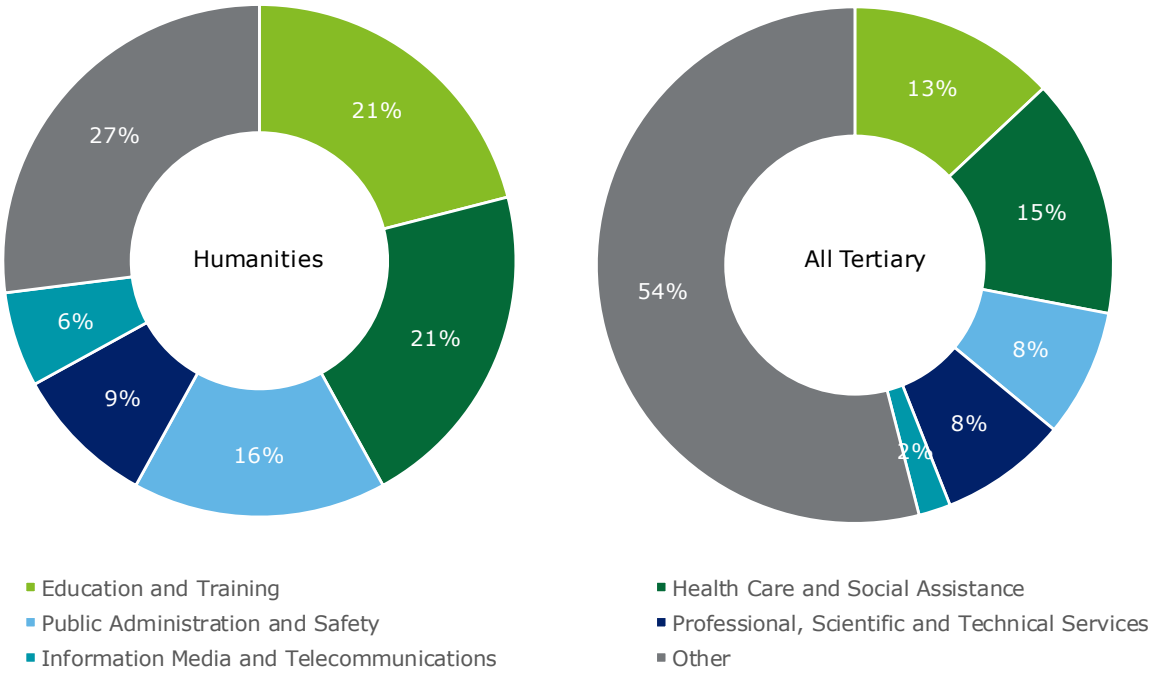
Qualification	Public Sector	Private Sector
Humanities	31.8%	68.2%
Humanities including Law	30.7%	69.3%
All Tertiary qualifications	19.4%	80.6%
Year 12 certificate	14.0%	86.0%
All employed	18.7%	82.3%

Source: Deloitte Access Economics (2018) analysis of HILDA Survey.

Figure 4-1 compares the top 5 industries of employment for Humanities graduates against those with a tertiary qualification. The top three industries, Education and Training (21%) Health Care and Social Assistance (21%) and Public Administration and Safety (16%), make up almost 60% of all employment, with the majority of these roles being in the public sector. When compared against all individuals with a tertiary qualification, those with a Humanities tertiary qualification are approximately 64% more likely to work in the public sector.

[94] A full breakdown of the industries and occupations of employment are presented in Appendix B.

Figure 4-1: Comparison of top 5 industries of employment – Humanities and All Tertiary qualifications



Source: Deloitte Access Economics (2018) analysis of HILDA Survey

As explored in Chapter 2, this is primarily because the skills, both techincal and transferrable, that Humanities graduates exhibit align particularly well with those required in the public sector.

The propensity of Humanities-educated individuals to work in the public sector means that they are underrepresented in the industries that pay the greatest wages. Individuals with a Humanities qualification have close to zero share of employment in three of the top-paying industries, including Mining ($2,595), Electricity, Gas, Water and Waste Services ($1,825), and Construction ($1,462). Comparatively, the average wage across the top three industries of employment for Humanities is $1,226[95], and is a large reason for the comparatively lower estimates of earnings outcomes.

The wages of Humanities graduates are also impacted by imperfections in the labour market. For example, graduates employed by the same company may have the same starting salary regardless of their qualification. This effect is even more pronounced in the public sector where wages grow and vary within predefined bands even in later career stages. These imperfections result in a muted price signal, meaning that wages do not fully capture the value that businesses and firms ascribe to holders of particular degrees.

A Humanities education equips individuals well with transferrable skills. While these skills are important to the success of individuals in their career, they tend to be hard to credential. The evidence provided in Chapter 2 revealed that these transferrable skills are in high demand by employers and make up a growing proportion of the economy. As this sentiment

[95] Education and Training ($1184), Health Care and Social Assistance ($1068) and Public Administration and Safety ($1426).

spreads, transferrable skills will become easier to credential and hence contribute more to wages over time.[96]

Although wage differences are a starting point to understand the private market benefits of humanities education, these estimates differ from overall job satisfaction. A study by Curtin University in 2017 found that individuals employed in the Education and Training (87%), Health Care and Social Assistance (86%) and Public Administration and Safety (84%) industries had the highest levels of job satisfation across all Australian industries.[97] As the majority of Humanities graduates will move into these industries, this is compelling evidence that a Humanities degree provides a high overall level of job satisfaction.

Finally, wage premiums fail to capture the positive externalities that public sector work has for the remainder of society. The public sector has the critical role in providing public goods, which are a key determinant of higher quality of life and economic development[98] for the community as a whole. These findings complement the broader public contribution of Humanities-educated individuals highlighted in the Chapter 3.

[96] Balcar, J (2014), 'Soft Skills and their wage returns: Overview of empirical literature' *Review of Economic Perspectives,* 14, 3-15

[97] Curtin University and Making Work Absolutely Human (2017), 'The Australian industries with the happiest, and unhappiest workers', available at: https://www.businessinsider.com.au/the-australian-industries-with-the-happiest-and-unhappiest-workers-2017-4

[98] Observable through the provision of basic necessities such as sanitation, medical care, transport and education institutions. The provision of law and order, creating competitive markets and enforcing contracts are examples of market-supporting public goods which are the foundations of a strong economy. Besley T., & Ghatak M. (2006), 'Public Goods and Economic Development'. In A. Banerjee (eds.). *Understanding Poverty.* Oxford: Oxford University Press.

5 The social and economic impacts of Humanities research

Producing and disseminating new knowledge via research is a defining feature of universities in Australia and a major part of their contributions to society. This chapter analyses frameworks for evaluating research and develops case studies of six Macquarie University research projects to identify the social and economic impacts of Humanities research.

5.1 Measuring the value of Humanities research is challenging

The Excellence in Research for Australia (ERA) is the national framework that is used to evaluate the quality of research undertaken by Australian universities. It aims to identify and promote excellence across the full spectrum of research activity. The stated objectives of ERA are to:

- 'continue to develop and maintain an evaluation framework that gives government, industry, business and the wider community assurance of the excellence of research conducted in Australian higher education institutions
- provide a national stocktake of discipline level areas of research strength and areas where there is opportunity for development in Australian higher education institutions
- identify excellence across the full spectrum of research performance
- identify emerging research areas and opportunities for further development
- allow for comparisons of research in Australia, nationally and internationally, for all discipline areas.'[99]

Using the framework, research is evaluated by research evaluation committees that consist of experienced and internationally recognised experts in their fields, and three broad categories of indicators are used to inform the evaluation process:

1. 'indicators of research quality - research quality is considered based on citation analysis, or ERA peer review, and other supporting quality indicators.
2. indicators of research activity - research activity is considered based on research outputs, research income and other research items within the context of the profile of eligible researchers; and
3. indicators of research application – research application is considered based on research commercialisation income, patents, plant breeder's rights, registered designs, and National Health and Medical Research Council (NHMRC) endorsed guidelines. Other measures, such as publishing behaviour and some other categories of research income, can also provide information about research application.'[100]

[99] Australian Research Council (2017) *ERA 2018 Submission Guidelines*
[100] Ibid

For the Humanities, quantifiable indicators of research application such as commercialisation income or patents do not have much of a role to play. Benneworth et al. propose that beyond the ability to commercialise research outputs, the real value of Humanities research lies in the ability to influence societies' capacity for transformation.[101]

"[Humanities research] develops an epistemological bridge – it is a journey from data to finding, and through it we gain a much more holistic view of the lived experience of ancient people and societies, material culture, technologies…" - Dr Ronika Power, Senior Lecturer, Department of Ancient History, Macquarie University

Recognising the broader impacts that research can have, the *Review of Research Policy and Funding Arrangements* (the Review) highlighted the need for measures which take into account 'the broader economic, social and environmental impact of university research'.[102]

The Review also highlighted the importance of engagement with research, identifying that strong links between research institutions and end users allows for knowledge, skills, and resources to be shared. This drives innovation and enhances the impact of research.

"Research, and the skills developed through the humanities, allow for critical analysis of a wide variety of data – the ability to synthesize evidence into a coherent, compelling argument that can be demonstrated and communicated." - Dr Nicholas Baker, Senior Lecturer and Head of Modern History, Department of Modern History, Politics, and International Relations, Macquarie University

The Australian Research Council (ARC), who administers the ERA has accepted the recommendations of the Review and is currently developing a national assessment of research engagement and impact. This assessment will run as a companion exercise to the ERA 2018, with the aim of examining how universities are translating their research into economic environmental, social and other benefits.

Adopting a similar approach to the ERA and the complementary engagement and impact assessment, the following framework has been developed to measure the value of Humanities research.

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[101] Benneworth, P., Gulbrandsen, M., Hazelkorn, E., Gibson, A. (2016), 'Crucial role of arts and humanities in societal change', *University World News*, available at: http://www.universityworldnews.com/article.php?story=20161125142332720#.WD7U-D1Haa8.twitter

[102] Department of Education and Training (2015), *Review of Research Policy and Funding Arrangements,* p. 66, available at: https://docs.education.gov.au/node/38976

Figure 5-1: Research evaluation framework

1. Social impact

Component	Measure
Awareness	Academic performance metrics / Bibliometrics (e.g. citations, peer reviews)
	Non-traditional metrics / Altmetrics (e.g. paper downloads, social media activity)
	Media coverage (e.g. no. of articles, coverage, and prominence of article)
Engagement	Event participation statistics (e.g. public lectures, cultural events, exhibitions)
	Collaboration with other research institutions
	Committee memberships
	In-kind contributions from partner organisations
Impact	An effect on society, culture, public policy or services, health, the environment or quality of life

2. Economic Impact

Component	Measure
Financial impact (Impact to the University)	The total cost of the project ($)
	Grant funding - The amount of total research funding that was allocated to the project ($)
	Commercialisation, licensing, and patent sale ($)
Direct impact	Impact of research on industry (e.g. efficiency gains to production) ($)
Indirect impacts	Potential spillover gains ($)

Source: Deloitte Access Economics (2018)

The measures used to evaluate the economic impacts include the financial impacts to the university and the impacts to industries through commercialisation of research outputs. The social impacts of research are evaluated across three dimensions: awareness, engagement and impact.[103]

[103] Impact is defined by the Higher Education Funding Council for England as 'any effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia'. Higher Education Funding Council of England (2015), The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework (REF) 2014 impact case studies, available at: http://www.hefce.ac.uk/pubs/rereports/year/2015/analysisREFimpact/

5.2 Case studies effectively convey the impacts of Humanities research

The Review also outlines that case studies can be used to assess the impact of research and highlights that this method is of 'particular importance' for fields of study such as Humanities and social sciences.[104]

Several initiatives, undertaken both overseas and in Australia, have sought to express research impacts using case studies. The *2014 Research Excellence Framework* analysed approximately 7,000 case studies of research produced by UK higher education institutions. The analysis showed that the societal impact of research is diverse, and that 'case studies provide a rich resource for analysis'.[105]

The Excellence in Innovation for Australia Trial, undertaken by 12 Australian universities, analysed 162 research case studies against a number of socio-economic measures. The findings from the trial show that 'the case study approach can provide a compelling narrative of the impact of research.' It is also suggested that this methodology allows for the 'full value' of research to be captured. [106]

Using case studies to develop a narrative linking each of the measures outlined in the evaluation framework, the impacts of six Macquarie University research projects have been assessed. A brief description of each of these projects is presented in the table below. The full case studies are available in Appendix C.

[104] Department of Education and Training (2015), *Review of Research Policy and Funding Arrangements,* p. 67 available at: https://docs.education.gov.au/node/38976

[105] Higher Education Funding Council of England (2015), *The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework (REF) 2014 impact case studies*, p. 6 available at: http://www.hefce.ac.uk/pubs/rereports/year/2015/analysisREFimpact/

[106] Australian Technology Network of Universities, Group of Eight (2012), *Excellence in Innovation: Research Impacting our Nation's Future- assessing the benefits*, p. 8 available at: https://go8.edu.au/programs-and-fellowships/excellence-innovation-australia-eia-trial

Table 5-1: Description of the research projects

Research Project	Researcher	Description
The darknet drugs trade	Dr James Martin - Department of Security Studies and Criminology	This research focuses on cryptomarkets, which are online marketplaces where anonymous users can buy and sell illicit drugs. The research examines emerging trends in the online drug trade and analyses the implications it has for drug consumers and law enforcement. It also explores the potential changes cryptomarkets have made in drug distribution networks.
Innovation in surgery	Dr Wendy Rogers - Department of Philosophy	This research explores the ethical considerations associated with the development of new surgical practices such as patient harm, patient autonomy and conflicts of interest. Recognising that surgical innovation falls into a grey area between research and ordinary practice, this research develops a framework for use by medical professionals to identify and evaluate innovative surgeries.
Economic development and infectious diseases within the Greater Mekong Subregion	Christopher Lyttleton - Department of Anthropology	This research examines the adverse impacts of rapid economic development in the Greater Mekong Subregion. Specifically, it analyses how greater mobility afforded by infrastructure improvements can lead to the spread of infectious diseases in minority populations. The research considers how social and cultural factors can impact programs aimed addressing the threats of infectious diseases.
Financial risk taking in sixteenth-century Italy	Dr Nicholas Baker - Department of Modern History, Politics and International Relations	This research analyses how religious beliefs and other attitudes affected financial risk taking in sixteenth-century Italy. Drawing on this analysis, the research examines how historic behaviours are reflected in the present.
Economic empowerment of women in the Pacific	Dr Vijaya Nagarajan – Macquarie Law School	This research analyses how existing laws in a number of Pacific Island states impact women's economic participation. In particular, this research identifies how changes to competition and consumer laws can support female entrepreneurship and increase the number of women in executive positions.
Fragility and Sustainability in the restricted island environments of Malta	Dr Ronika Power - Department of Ancient History	The project explores how humans in isolated environments, such as islands, develop over extended periods of time. In particular, the project studies the Maltese temple building populations from the 4th and 3rd millennia BC. Analysing a range of archaeological evidence, the research attempts to explain how these populations adapted to disastrous events such as invasion, disease, volcanic eruption and environmental change.

Source: Deloitte Access Economics (2018)

5.3 Strong awareness and engagement supports the social impacts of Humanities research

The discussion below draws on each of the case studies and presents some common findings. These findings provide evidence of how Humanities research has significant social impacts.

5.3.1 Humanities research garners substantial academic and public awareness

Awareness of research is commonly measured using metrics based on the number of citations within academic journals. However, given that research is often produced within lengthy timeframes, reliable and valid measurements if citations can only be provided several years after publication. To capture the broader level awareness of humanities research, this report focuses on alternative, web-based metrics based on the number of downloads, tweets, shares, comments and other activity on social media outlets.

Analysis of the case studies indicates that that Humanities research attracts a considerable degree of awareness amongst academics from a variety of different fields. For example, a book chapter produced by Dr Baker, published within *Rituals of politics and culture in Early Modern Europe,* has received 218 views and 97 downloads on Academia.edu, a social networking site for academics. Similarly, the outputs of research into cryptomarkets and online drug distribution has had 99 readers on Mendeley, a software for managing and sharing research.

Outside of academia, Humanities research often garners a considerable degree of public awareness through media coverage. For example, research focused on the economic empowerment of women in the Pacific has been reported in the Fiji Sun and the Samoa Observer. [107,108] Similarly, Dr Martin's research has featured in printed articles by the Huffington Post and The Economist.[109,110] Multiple articles published on the Conversation have also received over 74,800 views.

5.3.2 Engagement with Humanities research is reflected in collaboration with other research organisations

The case studies show that many Humanities research projects are produced in collaboration between several research institutions. Research focused on the impacts of economic development in the Greater Mekong Subregion, for example, has been developed in partnership with the United Nations and the Asian Development Bank. The same research has attracted interest from the private sector.

Similarly, research analysing artefacts from the temple-building populations of Malta has involved leading researchers from universities in the UK, Ireland, Canada, and Malta. Other Maltese institutions, namely the Superintendence of Cultural Heritage Malta and the National Museum of

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[107] Aguilar, M. (2017), '25 Women Leaders Graduate', *Fiji Sun,* available at: https://fijisun.com.fj/2017/12/02/25-women-leaders-graduate/

[108] Maiava, V. (2016), 'Parliamentarians go to work', *Samoa Observer,* available at: http://www.samoaobserver.ws/en/06_04_2016/local/4596/Parliamentarians-go-to-work.htm

[109] Pearce, L. (2017), 'Could the Dark Net Pave the Way Towards a Less Harmful Illicit Drug Trade?', *HuffPost,* available at: https://www.huffingtonpost.com.au/2017/09/14/could-the-dark-net-pave-the-way-towards-a-less-harmful-illicit-drug-trade_a_23206913/

[110] 'Buying Drugs Online - Shedding light on the dark web', *The Economist,* available at: https://www.economist.com/news/international/21702176-drug-trade-moving-street-online-cryptomarkets-forced-compete

Archaeology Malta have also been involved. This demonstrates that Humanities research often attracts a high degree of engagement amongst academics and professionals in the public sector.

Engagement with the research projects is also reflected in in-kind contributions that are made by partner organisations. Part of the historical research into risk taking in Italy, for example, has been facilitated by the Harvard University Center for Italian Renaissance Studies with the provision of a residential fellowship.

5.3.3 Humanities research has health and social, policy and cultural impacts

It is evident from the case studies that Humanities research, through a number of different means, has significant health impacts. Associate Professor Christopher Lyttleton's research, for example, has analysed the social and cultural factors that impact the prevalence of infectious diseases. In Cambodia, for example, mosquito nets over bedding may not be effective given that some community members spend nights in jungle areas harvesting protected tree species for sale on the black market. These findings have been used in the development of culturally specific programs that help achieve regional health security.

Professor Wendy Rogers' research project analysing new surgical practices has also achieved significant health outcomes. Currently, the line between the development of new techniques and ordinary practice is blurred. Using ethical reasoning, this research has developed a framework for identifying and evaluating innovative surgery. This will help to create a collective view between medical practitioners, and lead to safer practices with fewer negative health outcomes for patients.

Humanities research also has policy impacts. For example, Professor Vijaya Nagarajan's research has developed a range of reforms to business laws to increase women's economic participation. Some of the recommendations made include the provision of assistance for females at business registry offices, and improvements to complaint processes. These recommendations have been incorporated in revisions to competition laws by Papua New Guinea's Department of Treasury.

Beyond the impacts on national policies, Humanities research also has impacts on the development of multilateral policies. Based on Associate Professor Lyttleton's research, 6 countries of the Greater Mekong Subregion developed a Memorandum of Understanding to create a joint approach to address HIV vulnerabilities faced by migrant populations. This allowed for collective action to be taken to promote access to HIV prevention, treatment and support among affected populations.

Humanities research also has substantial cultural impacts. Dr Nicholas Baker's research analyses the various factors affecting risk taking. Whilst analysed within a historical context, the findings are reflected in current attitudes to risk. A greater understanding of these factors will help people and businesses take more informed risks, which the *National Innovation and Science Agenda* recognises is critical for building sustainable cultural innovation.[111]

[111] Australian Government (2015), *National Innovation and Science Agenda Report*, available at: https://www.innovation.gov.au/page/national-innovation-and-science-agenda-report

Dr Martin's research into cryptomarkets has been critical in identifying parties involved in drug trades as rational decision makers. For example, findings show that online drug traders emulate marketing strategies seen in the conventional retail sector. This research has changed perceptions on the topic, which had previously been reported in media with tones that reflected 'moral panic'.[112] This has helped to create awareness about the benefits and opportunities of a regulated market for drugs.

It is evident from the case studies that Humanities research has wide-ranging social impacts. Awareness metrics indicate that Humanities research attracts considerable attention in both public and academic arenas. This supports strong engagement with research and fosters collaboration with other research institutions and policy-making organisations. This, in turn, allows Humanities research to have impacts on public policy, health and society in general.

Examples of economic impacts of Humanities research

In addition to the social impacts, Humanities research can also have economic impacts. A few examples of the economic impacts had by the research projects analysed are described below.

Research focused on the economic empowerment of women in the Pacific has informed the development of a community training program for the Solomon Islands Chamber of Commerce and Industry. The purpose of the program was to create greater awareness and understanding of corporate governance laws. The program has since been adopted by a number of local businesses, which have used it to offer private educational programs. Over 100 local business men and women have participated in these programs.

The same research has also led to the Reserve Bank of Fiji adopting recommended reforms in its revisions to corporate governance codes. The changes will require businesses to have greater female representation on corporate boards when listing on the South Pacific Stock Exchange. This will create more opportunities for women and positively impact their wages.

The outputs of research exploring the ethics of surgical innovation have been developed into a 'tool', or a checklist, to define and identify innovation. Currently this tool is being trialled at one public and one private hospital. Whilst the university will not realise any revenue from the commercialisation of the tool (due to ethical reasons), it has allowed for the hospitals to recognise some economic benefits. For example, the tool has allowed surgeons to identify when new surgical practices carry risk and may lead to negative health impacts on the patient, which may lead to further medical treatment. The tool, therefore, has allowed hospitals to take actions to mitigate the risks and avoid the costs of further treatment. This benefit has not been quantified.

[112] Macquarie University (2015), *Research Spotlight: Dr James Martin*, available at: https://www.mq.edu.au/newsroom/2015/11/04/research-spotlight-dr-james-martin/

Appendix A: Community Returns of Higher Education- Econometric Analysis

This appendix provides further detail on the data sources, empirical approaches and econometric model of the analysis undertaken in the study of the community returns of higher education. It is important to note that the econometric methodology described in this Appendix estimates the effect of completing a tertiary education (regardless of subject area) on an individual's likelihood to exhibit pro-social behaviour.

Data source

The 2016 Australian Election Study (AES) is the data source used in estimating the returns of higher education. The AES have been a series of surveys beginning in 1987 that have been timed to coincide with Australian Federal elections. The AES aim to provide a long-term perspective on stability and change in the political attitudes and behaviour of the Australian electorate, and investigate the changing social biases of Australian politics as the economy and society modernise and change character.

The 2016 AES used a one-staged stratified random sampling, and saw a response of 2,818 completed surveys out of 12,497 mailed. It should be noted that this low response rate may introduce a greater element of self-selection bias to the estimated results.

Econometric methodology and results

The key variables of interest for the core econometric analysis were:

- **pro-social behaviour** – Trust in the general population, Political engagement, A constructed tolerance index[113]; and confidence in a variety of social institutions[114]
- **education variables** – Only include a respondent's qualification level. For this analysis only those who had completed a higher education degree (undergraduate and/or postgraduate) or solely a high school diploma were kept in the sample.
- **controls for demographic characteristics** – including age, gender, Indigenous status, income, religiosity, self-reported social class; and State of residence.

Work was undertaken to sense-check the data, including identifying implausible values (or combinations of values), and transform certain variables to prepare them for analysis. Based off seminal empirical work

[113] The tolerance index is constructing by equally weighting the responses of tolerance toward Indigenous groups, women and migrants.
[114] Social institutions are the Armed Forces, the Legal System, The Police and the Public Service

from the likes of Easterly and Levine (1997), [115] Nunn and Wantchekon (2011),[116] we specify the following linear model:

$$pro - social\ behaviour_i = \beta_0 + \beta_1 E_i + \beta_2 X_i + \gamma_i + \epsilon_i$$

where:

- $pro - social\ behaviour_i$ is the tendency of individual *i* to exhibit pro-social behaviour
- E_i is a vector of educational characteristics – our variable of interest
- X_i is a vector individual characteristics – individual control variables
- γ_i is a state fixed effect; and
- ϵ_i is a random error.

The β's are parameters to be estimated with standard errors modelled either on the normal distribution for binary dependent variables (generalised trust) or on the Poisson distribution for categorical dependent variables (political engagement, tolerance index, social institutions).

[115] Easterly, W. and Levine, R. (1997), 'Africa's growth tragedy: policies and ethnic divisions', *The Quarterly Journal of Economics,* 112(4), 1203–1250
[116] Nunn, N. and Wantchekon, L. (2011), 'The slave trade and the origins of mistrust in Africa', *The American Economic Review* 101(7), 3221–3252

Table A-1: Levels of pro-social behaviours exhibited by respondents to the AES

	Trust	Political Engagement	Tolerance Index	Confidence in social institutions
Education	0.169***	0.078*	0.065*	0.041
	(-0.028)	(-0.044)	(-0.035)	(-0.047)
Age	0.004***	0.005***	-0.001	0.002
	(-0.001)	(-0.001)	(-0.001)	(-0.001)
Gender	0.029	0.080**	-0.097***	0.002
	(-0.025)	(-0.038)	(-0.031)	(-0.04)
Income	0.010***	0.005	-0.001	0.004
	(-0.002)	(-0.003)	(-0.003)	(-0.004)
Religious Affiliation	-0.106***	-0.053	-0.084**	-0.0004
	(-0.027)	(-0.04)	(-0.033)	(-0.044)
Indigenous	-0.071	-0.125	0.088	-0.03
	(-0.138)	(-0.225)	(-0.177)	(-0.23)
Social Class	0.079***	0.076**	0.037	0.05
	(-0.02)	(-0.031)	(-0.025)	(-0.034)
Victoria	0.012	-0.080*	-0.018	-0.031
	(-0.032)	(-0.048)	(-0.04)	(-0.053)
Queensland	-0.042	-0.075	-0.097**	-0.01
	(-0.035)	(-0.053)	(-0.044)	(-0.057)
South Australia	-0.026	-0.11	-0.083	-0.036
	(-0.049)	(-0.075)	(-0.062)	(-0.081)
Western Australia	-0.019	-0.169**	-0.084	-0.038
	(-0.047)	(-0.073)	(-0.058)	(-0.076)
Tasmania	-0.062	-0.111	-0.011	0.036
	(-0.08)	(-0.127)	(-0.101)	(-0.129)
Northern Territory	-0.041	-0.246	0.219	0.085
	(-0.206)	(-0.305)	(-0.213)	(-0.293)
Australian Capital Territory	-0.008	-0.125	0.05	0.017
	(-0.079)	(-0.12)	(-0.091)	(-0.127)
Constant	0.077	0.190*	1.242***	0.316***
	(-0.071)	(-0.112)	(-0.088)	(-0.119)

Source: Deloitte Access Economics (2018). Note: *** represents significance at the 1% level, ** at the 5% level, * at the 10% level.

Appendix B: Labour Market Outcomes - Econometric Analysis

This appendix provides further detail on the empirical approaches, data transformations, and intermediate findings of the econometric analysis undertaken in this study.

Data cleaning and preparation

Key variables of interest

The key variables of interest for the core econometrics analysis were:

- **real weekly wages** (earnings model);
- **labour force status** (labour force participation model);
- **education variables** – including qualification level, field of education; and provider types;
- **controls for demographic characteristics** – including age, gender, born in Australia, Indigenous status, State of residence, ABS Remoteness Area, disability, English language proficiency, hours worked (earnings model), employment status (labour force participation model), family type (labour force participation model); and
- **controls for cognitive ability** (tested in Wave 12 of the HILDA survey) – including Backward Digits Span (BDS), Symbol Digits Modalities (SDM), and a shortened (25-item) version of the National Adult Reading Test (NART-25).

Beyond the core analysis of qualification effects, econometric techniques were used to assess labour market spillovers for those with and without higher education. Beyond those set out above, the key variables of interest were labour market and region-specific control variables, defined at a State by Remoteness Area level;

- the weighted proportion of individuals with a higher education qualification (bachelor degree or higher).
- regional unemployment rate; and
- population density.

Transformations and descriptive statistics

Work was undertaken to sense-check the data, including identifying implausible values (or combinations of values), and transform certain variables to prepare them for analysis. These transformations are presented her, along with the descriptive statistics relating subpopulations of interest, to begin to understand the nature of the interactions between key variables.

Data filtering

Where relevant, the following data filters, similar to those noted by Sinning (2014), were applied. The sample included those:

- aged 25 to 64 years;
- who were employed (earnings model);
- reported positive earnings from wages and salaries (earnings model);

- had zero business income;
- reported details about their educational attainment and, if applicable, field of education; and

Application of human capital variables

Data on human capital variables was collected only in Wave 12 of the HILDA survey. These data on field of education, cognitive ability and university attended was applied to other waves, to allow all waves of data to be used in the regressions. Individuals without the Wave 12 variables were excluded from the analysis. Data relating to field of education and university were applied to the earlier waves if the individual had reported having a post-school qualification, but not otherwise.

Hours worked

Hours worked by an individual (in a typical week) is included in the earnings model because the model uses log weekly wages as the dependent variable. There are two possible effects: (i) weekly wages can be viewed simply as hourly wage times hours worked, and (ii) hourly wages may vary with hours worked. Weekly wages increase in a fairly linear fashion between 0 and 50 hours a week and then level out. The higher variability of average wages at higher levels of hours worked reflects smaller numbers of observations. Log hours worked per week was used in the model.

Empirical methodology and results

Earnings Model – conditional on employment

The earnings model is specified as an 'augmented Mincer equation', based on Mincer's (1974) seminal work on the effects of education on wages and taking into account the key variables detailed above. The estimating equation is given by:

$$\log_e w_{it} = \beta_0 + \boldsymbol{\beta_1 E_{it}} + \boldsymbol{\beta_2 X_{it}} + \boldsymbol{\beta_3 \theta \theta_{it}} + \gamma_t + \epsilon_{it}$$

where:

- w_{it} is the wage of individual i at time t and $\log_e$ means natural logarithm;
- E_{it} is a vector of educational characteristics (qualification level, field of education);
- X_{it} is a vector of individual characteristics (including demographic characteristics and cognitive ability);
- θ_{tit} is a vector including the natural logarithm of hours worked and a dummy for employed full-time;
- γ_t is a year fixed effect; and
- ϵ_{it} is a random error.

The β's are parameters to be estimated and the data is obtained by pooling across the waves of HILDA data. Our preferred estimation method is an ordinary least squares regression. Standard errors are clustered at the individual level, to account for the likelihood that the outcomes of each individual (and hence the error terms) are highly correlated over time.

Weights were not used as part of this estimation. This is because the weights provided as part of the HILDA dataset may not accurately represent the way in which attrition occurs in the subsamples of the interest (as opposed to the HILDA sample as a whole).

Table C-1: Wage premium of employed Humanities graduates, key estimation results

Qualification level	Humanities	Humanities including Law	All Fields of Education
Undergraduate	6.6%	11.1%**	23.9%***
Postgraduate[117]	29.6%***	30.3%***	28.9%***

Source: Deloitte Access Economics (2018). Note: *** represents significance at the 1% level, ** at the 5% level, * at the 10% level.

Participation model

The participation model similarly uses a linear probability model to isolate the effect of higher education (and other explanatory variables) on the likelihood of an individual participating in the labour force. The functional form of the equation is shown below:

$$\Pr(Participation_{it} = 1) = \alpha\gamma_0 + \boldsymbol{\gamma_1 E_{it}} + \boldsymbol{\gamma_2 X_{it}} + \gamma_t$$

where:

- $Participation$ is a dummy variable that equals one if individual i at time t is participating in the labour force and equals zero if they are not;
- E_{it} is a vector of educational characteristics (qualification level, field of education); and
- X_{it} is a vector of individual characteristics (including demographic characteristics and cognitive ability); and
- γ_t is a year fixed effect.

The θ's are parameters to be estimated and the data is obtained by pooling across the waves of HILDA data. Standard errors are clustered at the individual level, to account for the likelihood that the outcomes of each individual (and hence the error terms) are highly correlated over time.

[117] Results for **Postgraduate** represent the combined value of a *postgraduate and undergraduate* qualification relative to a base of a completed high school education. To isolate the value of a *postgraduate* degree specifically one would have to compare the returns against a base cohort of individuals with solely an undergraduate degree.

Table C-2: Likelihood of labour force participation results for postgraduate and undergraduate qualifications

Qualification level	Humanities	Humanities including Law
Undergraduate		
Percentage difference	2.5%	3.0%*
Equivalent number of people in labour force	12,115	14,538
Postgraduate		
Percentage difference	4.0%*	5.0%***
Equivalent number of people in labour force	8,123	10,154

Source: Deloitte Access Economics (2018). Note: *** represents significance at the 1% level, ** at the 5% level, * at the 10% level.

Table C-3: Attributable earnings lifetime premiums for postgraduate and undergraduate qualifications (2017 dollars)

Qualification level	Humanities	Humanities including Law[118]	All Fields of Education
Undergraduate			
Percentage premium	20%	26%	49%
Undiscounted	18%	23%	41%
Discounted NPV			
Discounted premium ($ million)	$0.20	$0.27	$0.50
Undiscounted	$0.05	$0.07	$0.12
Discounted NPV			
Postgraduate			
Percentage premium	28%	38%	67%
Undiscounted	16%	25%	46%
Discounted NPV			
Discounted premium ($ million)	$0.28	$0.39	$0.68
Undiscounted	$0.05	$0.08	$0.14
Discounted NPV			

Source: Deloitte Access Economics (2016), HILDA Survey, ABS Census (2011). Premiums are calculated over lifetime earnings for those with a completed Year 12 certificate. Dollars are uprated from 2011 figures to 2017 using CPI. NPV calculations use a discount rate of 7% as per OBPR benchmarks.

The undiscounted postgraduate premiums across all three types of qualification are greater than the undergraduate premiums. It is interesting to note that the margins between the discounted premiums between undergraduate and postgraduate qualifications are narrower. This is a

[118] *Humanities including Law* estimates were calculated as the weighted average of the Humanities and Law lifetime earnings estimates.

function of the NPV calculation, where the up-front cost of additional time out of the workforce is weighted more heavily for postgraduate qualifications.

Table C-4: Industries of employment for selected qualifications

ANZSIC 1-digit Industry Code	Humanities	High School	All Tertiary	All Employed
Agriculture,	0%	2%	2%	2%
Mining	0%	2%	2%	2%
Manufacturing	2%	11%	10%	10%
Electricity, Gas,	0%	1%	1%	1%
Construction	1%	5%	7%	6%
Wholesale	2%	5%	4%	4%
Retail Trade	3%	12%	7%	8%
Accommodation	2%	6%	4%	4%
Transport,	1%	7%	5%	5%
Information	6%	3%	2%	2%
Financial and	4%	6%	4%	4%
Rental, Hiring	1%	2%	1%	1%
Professional,	9%	7%	8%	8%
Administrative	2%	3%	3%	3%
Public	16%	8%	8%	8%
Education and	21%	4%	13%	12%
Health Care	21%	10%	15%	15%
Arts and	3%	2%	1%	1%
Other Services	3%	3%	3%	3%

Table C-5: Top 50 occupation of employment for individuals with a Humanities qualification

No.	Occupation	Number
1	Solicitors	50761
2	Graphic and Web Designers, and Illustrators	24651
3	Psychologists	20777
4	Social Workers	18241
5	University Lecturers and Tutors	15282
6	Welfare, Recreation and Community Arts Workers	13906
7	Advertising and Marketing Professionals	13085
8	Ministers of Religion	11320
9	Secondary School Teachers	11155
10	Counsellors	10848
11	Journalists and Other Writers	10618
12	Private Tutors and Teachers	10380
13	Human Resource Professionals	9673
14	Management and Organisation Analysts	8959
15	Intelligence and Policy Analysts	7735
16	Public Relations Professionals	7390
17	Judicial and Other Legal Professionals	6771
18	Registered Nurses	6603
19	Barristers	6416
20	Librarians	6307
21	Other Information and Organisation Professionals	5710
22	Accountants	5402
23	Film, Television, Radio and Stage Directors	5341
24	Artistic Directors, and Media Producers and Presenters	4993
25	Social Professionals	4887
26	Photographers	4820
27	Vocational Education Teachers (Aus) / Polytechnic Teachers	4505
28	Fashion, Industrial and Jewellery Designers	4233
29	Primary School Teachers	4180
30	Music Professionals	3999
31	Financial Investment Advisers and Managers	3244
32	Early Childhood (Pre-primary School) Teachers	3195
33	Training and Development Professionals	2930
34	Authors, and Book and Script Editors	2646
35	Archivists, Curators and Records Managers	2631
36	Software and Applications Programmers	2541

No.	Occupation	Number
37	Visual Arts and Crafts Professionals	2156
38	Auditors, Company Secretaries and Corporate Treasurers	2059
39	Actors, Dancers and Other Entertainers	2039
40	Economists	2026
41	Financial Dealers	1908
42	Education Advisers and Reviewers	1835
43	Teachers of English to Speakers of Other Languages	1792
44	Financial Brokers	1784
45	Multimedia Specialists and Web Developers	1698
46	Interior Designers	1484
47	Occupational and Environmental Health Professionals	1483
48	Database and Systems Administrators, and ICT Security	1456
49	ICT Sales Professionals	1418
50	ICT Business and Systems Analysts	1343
	Total	**360,616**

Appendix C: Research Case Studies

Case Study – Supporting safer innovation in surgery

Context

The development of new surgical practices and techniques is essential to achieving progress in healthcare. However, as well as potential benefits, surgical innovations also carry a number of risks, as the new procedures may harm patients' health. Regulating these activities is challenging as new surgeries often fall into a grey area between research and practice, and there is no widely accepted definition of surgical innovation that would help to clarify the research-practice distinction.

Professor Wendy Rogers is a researcher within Macquarie University's Department of Philosophy. Initially trained as a general practitioner, Professor Rogers is currently leading a program of research into the ethics of surgical research and practice. Her research has led to a new definition of surgical innovation that helps medical practitioners to evaluate the associated risks.

Social Impact

Professor Rogers' research has received a considerable amount of attention within the medical and academic communities. Collectively, the 15 papers from the research to date have received over 90 citations.

The definition of surgical innovation developed by this research has been adopted and further explored with The IDEAL Collaboration, an international organisation of surgeons, researchers and others focussed on evaluating new surgical techniques. Drawing on the research, a set of recommendations for each stage of surgical innovation has been developed. This research has also been presented at the 2016 IDEAL Conference which had over 100 international participants.

A checklist tool based on the new definition is being trialled at the Macquarie University Hospital and Westmead Hospital to identify any planned surgical innovations. Funding has now been received to trial the checklist tool with a further three hospitals across Australia.

Findings from the research are being used to inform the work of the Australian Health Ethics Committee of the National Health and Medical Research Council, through Professor Rogers' position as chair of the working group revising the national human research ethics guidelines.

Currently surgeons hold individual ideas about surgical innovation and the ethical practices that should accompany the introduction of innovations. This research will help to create a collective view between surgeons and health care organisations, and support safer practices with fewer negative health outcomes for patients.

Economic impact

This research has been funded by the Australian Research Council ($255,000). Research institutions, private organisations (with a focus on ethics and science) and public health institutions have also made financial and in-kind contributions to the research.

Whilst the university will not realise any revenue from the commercialisation of the checklist tool (which is open-access), hospitals who use the checklist may realise economic and other benefits. For example, the tool will allow surgeons to identify when new surgical practices occur so that the hospital can prospectively manage risks. The checklist supports the safer introduction of surgical innovations, reducing potential harms to patients and avoiding the costs of treating any complications.

Case Study - Economic development and infectious diseases within the Greater Mekong Subregion

Context

Countries of the Greater Mekong Subregion (GMS), connected by the Mekong River, have a shared focus on creating economic development through infrastructure projects. Whilst this can improve the quality of life of populations, there are a number of associated negative externalities. Increased mobility and migration, for example, are linked with the spread of HIV and other infectious diseases that have potential to threaten global health security.

Over the past 25 years, Associate Professor Christopher Lyttleton, a researcher within Macquarie University's Department of Anthropology, has worked with a number of organisations to lessen the threats of infectious diseases through the development and evaluation of culturally specific health programs.

Social impact

Associate Professor Lyttleton's research in the area of economic development and the spread of infectious diseases has yielded two books and multiple book chapters, as well as numerous academic papers and consultancy reports. The first book has over 100 citations, and a couple research articles have received over 60 citations, which indicates a considerable level of awareness of this research.

Presentations of research findings have initiated collaborative works with various non-government organisations, UN agencies, and the Australian government. It has also lead to a continuing role as health advisor for the Asian Development Bank (ADB). Private sector corporations, including a mining company in Laos, have also expressed interest in the findings of this research, demonstrating a high degree of engagement with the research.

The research produced in collaboration with ADB has contributed to the design of regional health programs. Implemented through local governments, the aim of these programs is to prevent the continued spread of HIV and drug-resistant malaria, and improve regional health security. In addition to the design of programs, this research reviews the efficacy of existing programs and evaluates the success of their implementation.

The ADB research has also had impacts on national and multilateral policies. For example, a GMS Memorandum of Understanding was developed to address regional HIV vulnerabilities, including those faced by migrant populations.

Economic Impact

This research has received funding from a number of non-government organisations, including grants from the Rockefeller Foundation, UNESCO and UNRISD and after a presentation of findings at a UNESCO conference, a grant from the private sector of $400,000 was donated for an applied health project run by Norwegian Church Aid. This research has also received a four-year grant, with a total value of $250,000, from AusAID. Research consultancies from ADB total over $350,000 USD.

Case Study – Financial risk taking in sixteenth century Italy

Context

Historical evidence indicates that economic activity in sixteenth-century Italy provided the foundations for the modern global financial system. Dr Nicholas Baker, a researcher within Macquarie University's Department of Modern History, Politics and International Relations, has researched how beliefs affected financial risk taking at this time, and how this is reflected in current attitudes.

Social Impact

Since 2012, Dr Baker's research has yielded a journal article and a book chapter, which have been shared on a number of social media platforms and other websites. The book chapter has been viewed 218 times and been downloaded 97 times.

This research has been facilitated by the Harvard University Center for Italian Renaissance Studies through the provision of a residential fellowship. A presentation was made here to the center's council and professionals working in the financial sector. The interest displayed in the insights of this research shows a demonstrated understanding and engagement.

The findings of this research have been also presented at academic conferences across Australia, Europe, and North America in collaboration with researchers from the University of Antwerp and the University of Parma.

This research provides an understanding of attitudes to financial risk taking, and builds on evidence which suggests that financial decision-makers are not always rational. These findings provide the rationale for regulation of the financial agents, and may inform the design of policy by agencies such as the Australian Prudential Regulation Authority and the Australian Securities and Investments Commission.

A greater awareness of the factors affecting risk taking may lead to more informed risk taking, which the National Innovation and Science Agenda recognises is critical for building sustainable cultural innovation.

Economic Impact

This research was awarded a grant of $157,655 by the ARC for three years. Additionally, a grant of $5,200 was received from the Gladys Krieble Delmas Foundation, a private organisation which promotes the advancement and perpetuation of humanistic inquiry. These grants cover the costs associated with providing teaching relief, travel and collection of data from archives.

Case Study – Economic empowerment of women in the Pacific

Context

Across a number of Pacific island states, there are multiple social and cultural factors which affect the development of laws to promote gender equality. Dr Vijaya Nagarajan's research on gender equality in business has provided a greater understanding of these factors and proposed a range of reforms to increase women's economic participation.

This research has yielded academic articles, reports to government agencies, and the design of a new development program for women's leadership. It highlights the significant tangible impact of Humanities research on development of law, policy change and business practices within an economic development setting.

Social Impact

Dr Nagarajan's research has been published in a number of academic papers, and featured in a number of articles published by the Fiji Sun and the Samoa Observer. Publication of the research resulted in an invitation to present the findings to Pacific and Australian parliamentarians in Apia, Samoa. It also formed the focus of an online seminar presented to an audience in the Marshall Islands. This indicates a considerable level of awareness and engagement with the research.

Part of this research has focused on consumer and competition laws in Papua New Guinea. The research made a number of recommendations for reforms, including the provision of assistance for females at registry offices, and improving the complaint processes. The PNG Department of Treasury is incorporating these recommendations in its revisions to domestic laws to promote female entrepreneurship and increase competition.

Another component of this research made recommendations to the South Pacific Stock Exchange. The recommendations proposed diverse ways to increase the representation of women in senior management and on corporate boards. The Reserve Bank of Fiji is currently considering these proposals by establishing a database of women with senior experience for selection to board positions, developing training programs for female executives, and evaluating the potential for including gender diversity in the listing rules.

This research has also been used in the development of a program to build leadership skills in women in Fiji. The program engaged a female executive from Lendlease to provide soft skills and leadership training. It also involved CEOs from local businesses, including a large liquor retailer, who judged women's pitches for inclusion on corporate boards.

Finally, this research has informed the development of a community training program for the Solomon Islands Chamber of Commerce and Industry (SICCI). The program helped to create greater awareness and understanding of corporate governance.

Economic Impact

The SICCI program has since been adopted by a number of local businesses which have been able to turn it into a profit making enterprise. This provides an example of how outputs from this research can be commercialised.

This research has provided greater opportunities for women. Female entrepreneurs, for example, will be able to set up a business more easily. More executive positions will also be open to women with changes to the listing rules of the South Pacific Stock Exchange. These changes will positively impact women's employment and wages.

Case Study – The fragility and sustainability of ancient Maltese societies

Context

Over the 4th and 3rd millennia BC, the islands of Malta and Gozo supported remarkably sophisticated societies. This is evidenced by a number of megalithic temples which are amongst the oldest free-standing stone structures in the world. These temples, some of which have been listed as UNESCO World Heritage sites, demonstrate considerably advanced architecture, and appear to have been central to a well-organised system of food production and redistribution.

Dr Ronika Power is a researcher in Bioarchaeology in the Department of Ancient History at Macquarie University. Working in collaboration with a number of international research institutions, her current research project explores how the temple-building populations of Malta responded to transformative events such as invasion, disease, and environmental change. This research informs our understanding of how societies develop over time, and provides insight into how current environmental and cultural challenges might be addressed.

Social impact

Having just completed the fieldwork stage of this research, Dr Power's team has yet to publish their findings. There is, however, already considerable awareness of this research project itself in both academic and public arenas. The project website and twitter page have shared regular updates on archaeological digs. Awareness about the project has also been extended through numerous articles published in disciplinary and public magazines, such as Archaeology Magazine.

The project has involved leading researchers across a range of disciplines from universities in the UK, Ireland, Canada, and Malta. Other Maltese institutions, namely the Superintendence of Cultural Heritage Malta and the National Museum of Archaeology Malta have also been involved. This demonstrates a high degree of engagement with the research amongst academics and professionals in the public sector.

The project has also formed the basis of a public lecture in Malta, which attracted considerably large numbers of local people. Notably, the former president of Malta was amongst the audience, indicating a high level of public engagement with the research.

This research explores the adaptation and sustainability of populations to changing social and environmental conditions. For example, using radio carbon dating (a method used to accurately determine the timing of events) the research analyses how populations adjusted their subsistence strategies as a response to resource depletion and landscape degradation. It also explores how conditions were exacerbated or alleviated through contact with other cultures, especially regarding the exchange of technology, materials, people and ideas. The findings indicate that the timing of responses impacted the ability of Maltese populations to adapt to environmental changes, with early responses having the greatest effect. This may provide policymakers with insight on how and when to best respond to current environmental challenges, including climate change.

In addition to the potential policy impacts, the findings from this research also inform modern health practices. For example, bioarchaeological evidence shows that ancient Maltese populations had excellent dental health in comparison to contemporary groups from neighbouring regions, such as Egypt. This was found to be due to the high levels of fluoride endemic in local water sources. These findings have been welcomed by the Maltese Dental Association, which is now exploring further research opportunities.

Economic impact

This research project has received approximately 1.5 million Euro (2.3 million AUD) in funding from the European Research Council. This funding has been received by the Queen's University Belfast which is leading the research project.

Arrangements have been made with the National Museum of Archaeology in Malta to display some of the artefacts and remains unearthed through this research as part of an exhibition devoted entirely to

the project. This may attract a larger number of visitors to the Museum, and allow the organization to realise greater revenues. Additionally, the more detailed picture of history that is developed through the research findings may attract a larger number of international visitors to Malta. The greater level of visitor expenditure in the region will allow local businesses and populations to capture a number of economic benefits.

Limitation of our work

General use restriction

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