



**Mapping the  
Humanities, Arts  
and Social Sciences  
in Australia**

October 2014



**Australian Government**  
**Chief Scientist**



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**ACADEMY OF THE SOCIAL SCIENCES  
IN AUSTRALIA**

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# Foreword



**Professor Ian Chubb AC**  
Australia's Chief Scientist

Australians have long been taught that we 'punch above our weight' as inventors, creators and explorers. It seems to be woven into the Australian story. In our island home at the bottom of the world, we make it up as we knock along—and by instinct and initiative we succeed. We're mavericks, if not maestros. We're ingenious but won't be instructed. We face the future with a bold *she'll be right*.

Courage is no bad thing—nor confidence or strength of conviction. But I hope we have courage enough to ask ourselves the hard questions.

Are we performing at the level we would want?

Are our expectations falling short of our true potential?

Have we done enough—and are we doing the right things—to steer our Australia through changing times?

If there were any time to be curious about the world and its opportunities, it is today. And if we are serious in our commitment to progress, we will be honest about what progress will require.

In the face of every national challenge, it will be careful, deliberate and properly conducted science and research that will arm us to respond.

There is no doubt in my mind that the disciplines we now group under the banner of STEM (science, technology, engineering and mathematics) are critical infrastructure.

But it is not, and has never been, STEM alone. The humanities, arts and social science (HASS) disciplines provide vital knowledge and understanding of our world, its peoples and societies. As Australia's Chief Scientist, I am all too conscious of the divides between science and society. Too often, our best intentions are frustrated by our mutual struggle for understanding.

Scientists cannot implement workable solutions without the confidence and consent of the community. Indeed, it is unlikely the solutions could be workable without an understanding of the people who have to carry them through. It is the potential of STEM made real in the lives of Australians, with the insight HASS can provide.

By the same token, the HASS disciplines have much to gain from close engagement with the ideas and ways of thinking born of STEM.

Surely, we cannot afford our long complacency about any part of our research profile.

Across STEM and HASS, we need imagination, creative thinking and learning from what the rest of the world is doing. And we need to do it all on a scale that we have never achieved—and perhaps never bothered with—before.

For that, we will need to organise, evaluate and cohere; aligning our efforts and our investment with our national interests and building to a scale that matches a daunting need.

It cannot be done without a realistic and evidence-based assessment of our performance. To put it all simply, we need to understand our solid foundation, work out what to do, and get better.

Mapping and benchmarking are never easy or popular tasks, particularly in the complex ecosystem in which we function. There are limits to our data, and different views on how it ought to be presented.

That should not defeat us, but remind us of the need to work together.

My office set out by compiling a long overdue benchmarking report for Australian STEM, released as *The Health of Australian Science* in 2012.

I am delighted that the leaders of HASS have united in the same exercise for their disciplines; with my office as a co-funder and collaborator.

This report provides the robust and comprehensive data to serve both practitioners of HASS and those who rely on their skills. It is a timely reminder of the HASS' essential place in building Australia's future.

I trust it will, at the same time, spur on our efforts to raise the bar yet higher.



**Emeritus Professor Lesley Johnson AM FAHA (far left)**

**President**

Australian Academy of the Humanities

**Professor Deborah Terry FASSA (left)**

**President**

Academy of the Social Sciences in Australia

On behalf of the Australian Academy of the Humanities (AAH) and the Academy of the Social Sciences in Australia (ASSA), we are very pleased to present the *Mapping the Humanities, Arts and Social Sciences in Australia* report. The report is the culmination of an 18-month project jointly funded by the two Learned Academies and the Australian Government, through the Department of Industry and the Office of the Chief Scientist.

Australia has four Learned Academies whose mandate it is to advance knowledge, understanding and excellence in their respective discipline areas—from the natural and physical sciences, to technology, engineering and agriculture, to the humanities, arts and social sciences—for the benefit of researchers, teachers and the wider society.

The report is aimed at strengthening humanities, arts and social sciences (HASS) research and education in Australia on the basis of informed research and data analysis. The last such review of the HASS sector, undertaken in the mid-1990s, was itself an earlier collaboration between the AAH and the ASSA.

A major impetus for this report were efforts, led by Australia's Chief Scientist, Professor Ian Chubb AC, to take a more strategic approach to research investment in Australia. The report is envisaged as a companion volume to the *Health of Australian Science* report, published by the Office of the Chief Scientist in 2012. It provides comprehensive information about the current condition of HASS disciplines, which will assist in determining what they currently deliver and how well they are able to respond to the changing needs of the nation.

On the basis of the wide range of data assembled, this report shows how integral the HASS sector is to the education, research and innovation system, and more broadly to addressing societal challenges and maximising opportunities for Australia.

It is our hope that the longitudinal, system-wide data provided in the report will also assist individual universities in their consideration of institutional structures and offerings for HASS teaching and research. We strongly encourage a strategic approach to the development of HASS fields by universities as well as nationally.

The report is intended to be of use to a wide range of audiences: to politicians, policymakers, researchers, teachers, universities, and to the public at large. It positions us to contribute to national conversation about the education and research system. Until now we have only had half of the picture.

It will be vital to check the status of the HASS sector at regular intervals; this report will be a means by which future updates can chart changes in the system.

We would like to formally express our appreciation to the Department of Industry and to the Office of the Chief Scientist for their financial support of the project, and to acknowledge the valuable advice we received throughout the 18 months.

Finally, it was vital that the person charged with stewardship of this project enjoyed the respect and confidence not only of the HASS community, but also the broader higher education and research sector. We are therefore very grateful that Professor Graeme Turner FAHA agreed to dedicate his time, intellect and energy to this important task. Our thanks also to Dr Kylie Brass, Policy & Projects Manager at the AAH, who so ably directed the research and development of the report, and to the Steering Committee—Professor Mark Western FASSA, Professor Joy Damousi FAHA FASSA, Professor Stephen Garton FAHA FASSA and Professor Sue Richardson AM FASSA—for their advice during the life of the project. The team has produced a remarkable piece of work that will serve the humanities, arts and social sciences community in Australia well into the future.

# Preface



**Professor Graeme Turner FAHA**  
**Chair, Steering Committee**  
 Mapping the Humanities,  
 Arts and Social Sciences in Australia

The national benefits of an appropriately resourced, internationally competitive, and socially and culturally engaged, humanities, arts and social sciences (HASS) sector are substantial. This report enables us to assess how well Australia is positioned to reap such benefits now, and how we might better position ourselves for the future.

This project is the result of an initiative proposed to the Australian Government by the President of the Australian Academy of the Humanities, Professor Lesley Johnson AM FAHA. The project has been jointly funded by the Australian Academy of the Humanities (AAH), the Academy of the Social Sciences in Australia (ASSA), the Department of Industry, and the Office of the Chief Scientist.

The preparation of this report has been managed by the Secretariat of the AAH. I would like to thank the Executive Director of the AAH, Dr Christina Parolin, for her support of this project and for her advice over the period of its preparation, as well as the support of the Presidents of the two Academies, Professor Lesley Johnson AM FAHA (AAH) and Professor Deborah Terry FASSA (ASSA).

I would also like to thank the members of the Steering Committee, Professor Joy Damousi FAHA FASSA, Professor Stephen Garton FAHA FASSA, Professor Sue Richardson AM FASSA and Professor Mark Western FASSA; and the numerous members of the HASS academic community that we consulted for comments and advice as the report was being developed and drafted.

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# Abbreviations and Acronyms

AAH	Australian Academy of the Humanities	HASS	Humanities, Arts and Social Sciences
ABS	Australian Bureau of Statistics	HECS	Higher Education Contribution Scheme
AOU	Academic Organisational Unit	HELP	Higher Education Loan Program
ARC	Australian Research Council	HEP	Higher Education Provider
ARCom	Australian Research Committee	HERD	Higher Education Expenditure on Research and Development
ASSA	Academy of the Social Sciences in Australia	HERDC	Higher Education Research Data Collections
ATAR	Australian Tertiary Admission Rank	HCA	Humanities and Creative Arts
ATN	Australian Technology Network [of universities]	IRU	Innovative Research Universities
BERD	Business Expenditure on Research and Development	ISL	International Science Linkages programme
CRC	Cooperative Research Centres programme	LIEF	Linkage Infrastructure, Equipment and Facilities scheme [Australian Research Council]
CSIRO	Commonwealth Scientific and Industrial Research Organisation	LOTE	Languages Other Than English
CSP	Commonwealth Supported Place	NeCTAR	National eResearch Collaboration Tools and Resources
DASSH	Australasian Deans of Arts, Social Sciences and Humanities	NCGP	National Competitive Grants Programme [Australian Research Council]
DECRA	Discovery Early Career Researcher Award	NCRIS	National Collaborative Research Infrastructure Strategy
DEEWR	Department of Education, Employment and Workplace Relations	NHMRC	National Health and Medical Research Council
DFAT	Department of Foreign Affairs and Trade	OCS	Office of the Chief Scientist
DIICCSRTE	[the former] Department of Innovation, Industry, Climate Change, Science, Research and Tertiary Education	R&D	Research and Development
EFTSL	Equivalent Full-Time Student Load	RTS	Research Training Scheme
ERA	Excellence in Research for Australia	RUN	Regional Universities Network
FoE	Field of Education	SES	Socio-Economic Status
FoR	Field of Research	SBE	Social, Behavioural and Economic sciences
FTE	Full-Time Equivalent	SEO	Socio-Economic Objective
GDS	Graduate Destinations Survey	SSR	Staff–Student Ratio
GERD	Gross Expenditure on Research and Development	STEM	Science, Technology, Engineering and Mathematics
Go8	Group of Eight [universities]	UoE	Unit of Evaluation

# Executive Summary

The evidence presented in this report demonstrates that Australia has a strong and resilient humanities, arts and social sciences (HASS) sector that makes a major contribution to the national higher education system, to the national research and innovation system, and to preparing our citizens for participation in the workforce. For the nation to continue to benefit from the HASS sector, it needs to consider how it might make more substantial commitments to its ongoing support.

The aim of higher education research, in all fields, is to understand our world and our place in it. The aim of higher education teaching, in all fields, is to pass on those modes of understanding and what they tell us. Sometimes such understanding is an end in itself—it generates knowledge which is a public good. Sometimes it is used to change something, from the structure of a cell to the social habits of a culture. The contribution of the humanities, arts and social sciences (HASS) to that enterprise—of generating and disseminating knowledge, as well as understanding change—is as important as the contribution of the physical and natural sciences.

The HASS disciplines are fundamental components of every comprehensive national university system around the globe. The knowledge and modes of understanding they generate, while intrinsically valuable in themselves, are especially valuable in the complex environments we face today. Responding to today's global, social, cultural and economic challenges requires specialist knowledge of the peoples, societies and cultures that underpin, fuel or react to these challenges. The HASS disciplines are integral to achieving this fine-tuned understanding.

Australia's approach to generating and maintaining our national capacity in the HASS disciplines has been highly contingent upon short-term strategic policy settings, relatively autonomous institutional and sector-level funding decisions, and fluctuations in student study preferences. A nation of this size must be strategic in how it invests its resources. Decision-makers need a clear idea of the state of our current capacity and its trajectory. Until now, there has been a lack of authoritative sector-wide information.

We have not really known with any precision how, or how well, the HASS sector is making its contribution to the nation at present, nor have we had a means of assessing the sector's capacities and capabilities for the future. This report is a major step towards providing that information and will lead to a more informed understanding of the current health of the sector.

The evidence presented in this report demonstrates that Australia has a strong and resilient HASS sector that makes a major contribution to the national higher education system, to the national research and innovation system, and to preparing our citizens for participation in the workforce. The vast majority of tertiary enrolments are in HASS programmes. The majority of members of the tertiary-educated workforce in Australia have HASS degrees. The HASS fields of research include many that have been ranked by the Australian Research Council's Excellence in Research for Australia (ERA)

process as outstanding against world standards, and the scale and quantity of their research outputs have grown significantly over the last decade.

This high quality performance has been maintained in the face of significant challenges generated by the increasingly market-oriented system, by federal government policy settings, and by universities' strategies for the allocation of funding. Over the period under analysis, 2002 to 2012, staff–student ratios have risen, and fluctuations in demand have adversely affected course provision in particular fields of teaching, as well as research capacity in particular fields of research. The HASS sector is not alone in facing such challenges, of course, but this report highlights particular dimensions of this situation for HASS disciplines and the conditions under which they operate, many of which could be addressed within current funding frameworks by reviewing areas of policy, and by universities exploring new avenues for enhancing their investment in these fields.

Universities, policymakers and HASS practitioners will all benefit from accessing the information provided in this report, much of which has not previously been gathered or collated in such a comprehensive way. The report is intended to assist all stakeholders interested in the current health and capacity of the sector as a whole, as well as in particular fields or disciplines.

The message that emerges from the data collected and analysed in this report is the need for better access to authoritative information about our current capabilities as well as more strategic coordination across the sector that would enable Australia to manage shifts in the scale and focus of what is, after all, a fundamental national resource—our national capacity in teaching and research in the HASS disciplines. For the nation to continue to benefit from the HASS sector, it needs to consider how it might make more substantial commitments to its ongoing support.

There is a great deal of important detail in this report which has implications for the future of the Australian higher education sector. This summary provides a general and brief overview of our findings.

## Teaching and Learning

Over the last decade, the HASS sector has maintained its position as the largest component of the Australian higher education teaching and learning system, in which there is strong evidence of high levels of student satisfaction and positive employment outcomes. There are some areas of concern for the future, however, with slight downward

trends in demand, significant shrinkage in the provision of programmes in certain subject areas and in regional locations, and the more complex issue of the long-term effects of a demand-driven system on maintaining the national capacity for generating and disseminating knowledge in these fields.

HASS Fields of Education (FoEs) comprise 65% of all undergraduate and postgraduate course enrolments in the Australian system, and this has remained steady over the period of our research. Management and Commerce has the largest share of enrolments (26% in 2011), with Society and Culture the next largest (21% in 2011). HASS supplied 71% of the total course completions in the sector in 2011; there is rapid growth in Master's level coursework offerings; and the student body is becoming more internationalised. There has been substantial growth in disciplines ranging from the traditional humanities (Philosophy) to the more contemporary formations in the social sciences (International Relations), to new interdisciplinary programmes which span the humanities and social sciences (Media and Communications).

Over the period surveyed, there has been a slight decline in the proportion of university enrolment offers going to HASS, and student interest in the Bachelor of Arts (BA) registers a slight decline as well. Fewer majors were available through the BA in 2012 than in 2008, and fewer 'tagged' degrees (i.e. Bachelor degrees named after a particular specialisation, such as a Bachelor of Music), although this has been partially balanced by an increased interest in double degrees.

The growth in student enrolments over the last decade has been fuelled by growth in international enrolments across the whole sector, and the area of most substantial growth has been in Management and Commerce (107%). The HASS sector is playing a dominant role in the export of education.

Staff–student ratios for the HASS disciplines remain high, following increases during the 1990s, and are significantly higher than those in the science, technology, engineering and mathematics (STEM) sector. Over 2002–12, the HASS staff–student ratio was 22.6 students per full-time equivalent (FTE) academic staff member, while the equivalent STEM ratio was 16.8 students per academic staff member. These figures are largely the result of the combination of cluster funding settings and student demand: cluster settings determine the funding levels available, while fluctuations in student preferences impact upon the range of offerings available, and their distribution.

Regional universities are particularly vulnerable to these influences. There is some evidence that entry scores are dropping and numbers declining in HASS programmes in regional universities; there are also indications that enrolments in these fields of education are becoming increasingly concentrated in the metropolitan universities and the Group of Eight (Go8) universities, with consequent reductions in the range of opportunities available to those in regional Australia.

## Research

The scale of the HASS sector's contribution to the national research and innovation system is considerable: it received 16% of the nation's research income, contributed 44% of the total number of Units of Evaluation in the 2012 ERA research assessment exercise, and produced 34% of the research outputs in the university sector. The quality of research as assessed by the ERA rankings demonstrates strong performance against world standards for most of the HASS fields of research, with many fields achieving outstanding results.

In terms of scale and quantity, the numbers of research outputs are growing across the sector and, according to the ERA's Discipline Growth Index, of the 62 disciplines across the system recording growth rates above the average (12%), 32 are HASS disciplines. HASS researchers have generated consistently strong performances in national competitive grants schemes. This has not only been notable in the ARC's Discovery Projects scheme (from which 53% of HASS' ARC competitive grant research income is derived), but also through the HASS sector's substantial participation in the ARC's Linkage Projects scheme—which fosters collaboration with industry—which generates 22% of the sector's research income.

While the HASS sector attracts a significant share of publicly funded research and development (R&D), the level of investment from business and from universities is comparatively low. There has also been minimal investment in research infrastructure for these disciplines, either through government or individual university initiatives. The HASS sector does not have the same levels of access to government-funded strategic research initiatives as the STEM sector. This has significant consequences for the HASS sector's research income over the period surveyed, and in specific cases it seriously impacts upon the capacity to develop international collaborations of significant scale. The current industry tax concessions for R&D expenditure explicitly exclude research in HASS from core R&D activities, thereby restricting opportunities to engage in collaborative and industry-based research.

There is significant variation in the distribution of research funding between the regions and the Go8 universities over the period surveyed. While the Go8 universities were awarded 65% of ARC National Competitive Grants Programme (NCGP) funding for HASS over this period, regional universities only received 4%. This trend is also supported by ERA data which suggests some important or enabling disciplines (Language Studies, or History, for instance) are registering a declining institutional presence outside the metropolitan areas. A large proportion of quality HASS research is taking place in the metropolitan universities, especially the Go8. This raises questions about the maintenance of research capacity for the future, as well as about the distribution of opportunity in the regions.

## The Academic Workforce

It is in this area of research that critical issues for the sustainability of the workforce emerged: unbalanced staffing profiles, declining career opportunities, the feminisation of casual and part-time staff cohorts, and an ageing academic workforce. Most of these issues apply across the higher education sector, but some factors appear to be more pronounced in the HASS disciplines. For instance, over the period surveyed, the size of the total academic workforce in Australia grew by 27%, while student numbers grew by 36%, and student load by 40%. In the HASS sector, the teaching workforce grew by only 22%. While the HASS sector teaches 65% of all enrolments in tertiary education, it does so with 55% of the total teaching workforce; ERA data puts the HASS research workforce at even lower levels, at 42% of the total. It is especially notable that non-research postgraduate enrolments have increased by 44% over the 2002–11 period across the university sector; in the broad Society and Culture field this growth has been in the order of 96%. Growth in Bachelor degrees across the system was 31% and in HASS fields 35%.

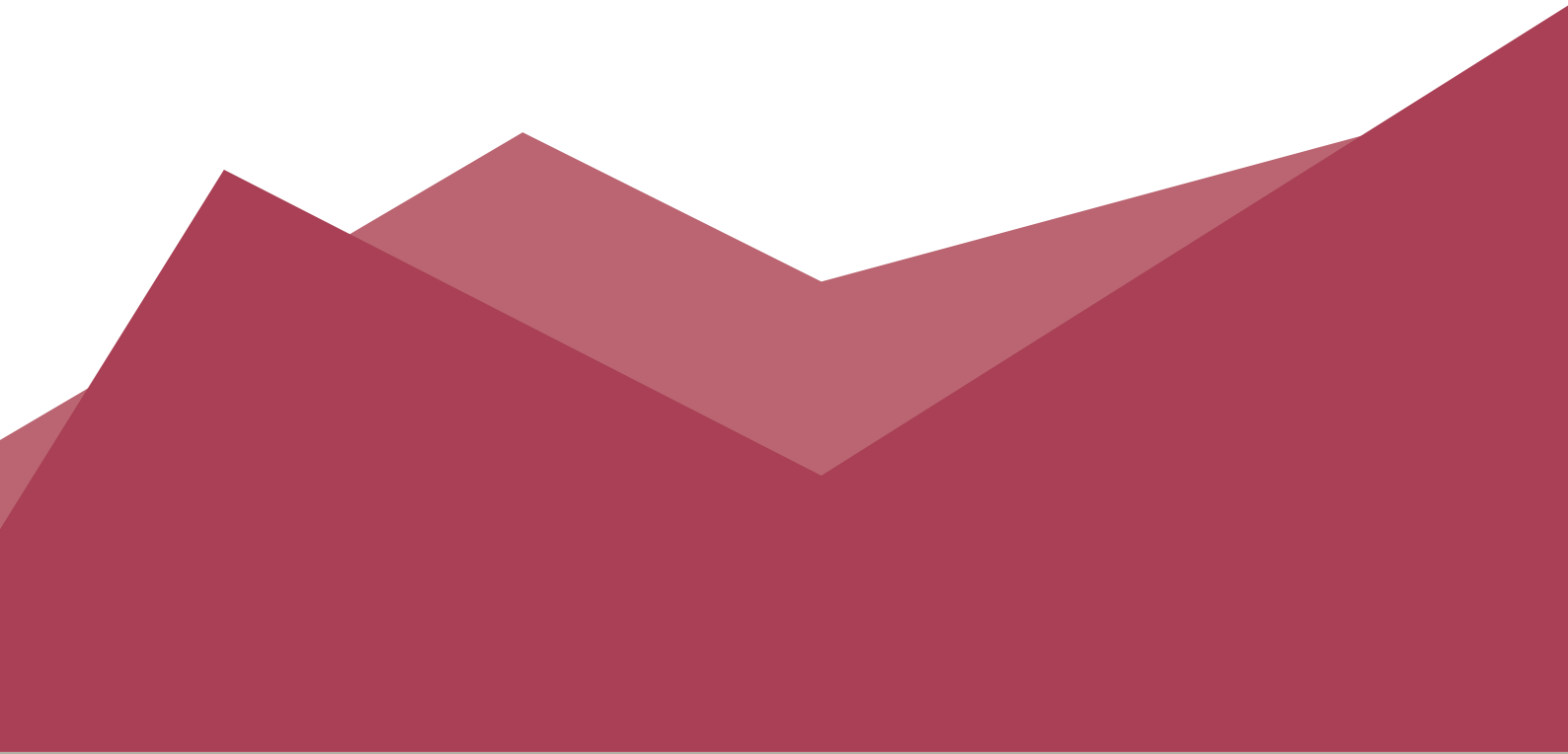
A series of indicators highlight issues for the future: the ageing of the workforce leading to an impending shortage of senior staff available to take on planning, administration, leadership and mentoring roles; the uncertainty of academic teaching and research careers leading to a shrinking pool of new entrants to the profession; and the tendency towards the development of a growing cohort of casual or part-time teachers, predominantly women, as a means of working within tight budgets leading to limited career opportunities and a stalling of career paths for junior academics.

While the teaching and research outcomes generated by this workforce are impressive, and bring credit to the system, it is reasonable to predict that such a level of performance will be difficult to sustain into the future as senior staff move into retirement. According to Graeme Hugo, 'Baby Boomers' constitute 42% of the national workforce but 56% of the academic workforce; in HASS, more than 50% of staff are aged over 50. While staffing profiles are highly variable across disciplines, they are often unbalanced (in some cases dominated by more junior-level appointments, Level As and Level Bs, in others with senior professorial appointments, Level Es) and this impacts upon succession planning, continuity of programmes and the reproduction of disciplines, as well as upon career development and the resources for academic leadership. Finally, some research indicates that as much as 50% of the teaching across the system is carried out by casual staff. While there is conflicting evidence on this, there is certainly evidence of an increase in the proportion of casual staff as compared to full-time and fractional full-time staff FTE over the 2002–12 period.

## Conclusion

The following chapters provide detailed analysis of the current condition of HASS teaching, research, and its academic workforce. Each chapter concludes with a discussion of critical issues for the future. The data presented, and the analysis performed, within these chapters is based on a substantial body of background data that is collected in the appendices. The analysis of student enrolments draws on a commissioned study conducted by Dr Ian Dobson, *Mapping the Humanities and Social Sciences: Analysis of University Statistics 2002–2011*. Dobson's report, together with the statistics in the appendices then, are further resources for the higher education sector to enable it to better understand the current condition and future capacities of the HASS sector of the Australian higher education system.

Finally, in addition to these detailed data, the appendices contain an account of the methodology and the sources for this report, as well as an outline of areas this research has revealed as likely to repay further investigation in the future.



# 1

## Introduction



# 1. Introduction

The aim of the *Mapping the Humanities, Arts and Social Sciences in Australia* report is to chart Australia's current capabilities in the humanities, arts and social sciences (HASS) and identify gaps and opportunities for the future by developing a comprehensive understanding of student enrolment trends, and teaching and research activity, quality and potential.

## 1.1 Objectives

Australia lacks a comprehensive understanding of its research and teaching system. While several large-scale government-funded surveys of the science and technology research and education sector have been conducted in recent years—most recently the Chief Scientist's *Health of Australian Science* (2012) report<sup>1</sup>—data mapping and analyses for other sections of the research and teaching enterprise are either patchy or non-existent. The nation needs a solid and reliable evidence base from which to make decisions about its capabilities in teaching and research across all the disciplines.

This report provides the data needed to assess whether Australia's current teaching and research capability in HASS will best serve our future needs. The HASS sector is large and diverse—covering fields from economics, psychology, geography and demography to linguistics, archaeology, history, arts and media studies. These disciplines provide the vital cultural, linguistic and social perspectives required for our future economic, political and cultural engagement—both regionally and globally. They are also the drivers of creativity, delivering knowledge and skills in critical and imaginative thinking. HASS graduates constitute a significant component of Australia's workforce, contributing both generic and specialist skills to support and drive national wellbeing and productivity across diverse sectors.

If we wish to build, or even merely to maintain Australia's capacity in teaching and research in HASS, there needs to be a more informed planning process to help the nation manage the resources involved. Such a process is under way in relation to the science, technology, engineering and mathematics (STEM) disciplines, and there is an urgent need for HASS disciplines to be subject to the same strategic scrutiny.

To ensure we have the research and teaching capability to respond to global opportunities and challenges, we need to know more about the health of HASS in Australia.

The *Mapping the Humanities, Arts and Social Sciences in Australia* report is jointly funded by the Australian Government (through the Department of Industry and the Office of the Chief Scientist), the Australian Academy of the Humanities, and the Academy of the Social Sciences in Australia. The report provides important information on the national context which will be of use to the government (the departments of Industry and Education), and to the Australian Research Committee (ARCom) in its work in mapping capacity in research priority areas. Many questions around the future of certain disciplines also need to be addressed by universities themselves. This report will be a resource for universities, and for the sector in general, in making informed decisions for the future.

## 1.2 Scope and Approach

The HASS sector is not widely understood—what is known about the sector is largely based on *ad hoc*, anecdotal evidence. The point of this report is to start to build a more comprehensive, systematic and comparative evidence base. The last comprehensive survey of the HASS sector was undertaken nearly twenty years ago.<sup>2</sup> The current report is intended as an important initial step towards drawing together the evidence over the 2002–12 period to inform planning for the future.

The report set out to answer the following questions:

1. What are major areas of research and teaching strength in HASS in Australia?
2. What is Australia's public investment in teaching and research in HASS disciplines?
3. What are the current major trends in HASS enrolments in Australian universities?
4. Where are the gaps in research capabilities and research infrastructure now and for the future?
5. What is the current profile and capability of the academic workforce in HASS?

Our approach to data collection, analysis and capability mapping draws upon the Office of the Chief Scientist's report, *Health of Australian Science* (2012), which tracked current capability across the science disciplines, allowing an analysis of strengths and weaknesses in STEM disciplines that are critical to Australia's future and providing an evidence base from which to make policy decisions about these disciplines. The report and subsequent data analyses provided the basis for a *STEM in the National Interest Strategy* released by the Office of the Chief Scientist in September 2014.

This report maps HASS within the context of the overall research and education system, before focusing more directly on specific fields within the HASS sector. While there are areas in which it is relevant and appropriate to compare performance across HASS and STEM, in other areas the existence of discipline-specific practices, such as patterns of publication, means that straight cross-sectoral comparisons may distort the picture.

The data presented in this report is mostly gathered from Australian sources, including publicly available data, and customised data accessed on request from the relevant departments and agencies. A list of key data sources is at Appendix 1. A detailed account of the study's methodology, including data limitations, is contained in Appendix 4. While it is beyond the resources of this study to undertake comprehensive international comparisons, where appropriate the report references international studies. International



mapping and survey exercises of note to the project are provided in Appendix 5.

The report's key areas of coverage are:

**Teaching and learning:** undergraduate and postgraduate enrolment patterns and completions, international and domestic cohorts, student demand, course provision across fields, staff–student ratios, graduate destinations, changes over the 2002–12 period and key trends.

**Research:** expenditure on research and development (R&D); research quality, outputs and share of research income; research infrastructure; performance across national competitive grants schemes; industry and public sector collaboration; international collaborations; cross, multi or interdisciplinary collaborations; solo vs team researchers (grants and publications); changes over the 2002–12 period and key trends.

**Academic workforce:** profile of the workforce in terms of size, distribution, age, gender, employment level, qualifications, extent of casualisation, and regional provision; changes over the 2002–12 period and key trends.

Each chapter includes an appraisal of critical issues for the future.

### 1.3 Definitions

In terms of coverage, the report has adopted a broad definition of HASS.

Student data is collected and reported by universities across Fields of Education (FoE). Research income, activity and

quality data is reported by Fields of Research (FoR). In relation to research, HASS comprises 11 broad FoRs and 58 narrow fields; in relation to teaching, HASS has five broad FoEs and 29 narrow fields. The list of the broad fields of education and research included in this study is presented in Table 1. A more detailed list of these fields of education and research is contained in Appendix 2.

At times it has been appropriate and useful to talk about the humanities, arts and social sciences as separate components of the sector, in which case we have employed a 'division' which separates Humanities and Creative Arts (HCA) from Social, Behavioural and Economic sciences (SBE). These categories may differ from the clusters used in the Excellence in Research for Australia (ERA) 2012 National Report, or assessment panels used in the Australian Research Council's (ARC) National Competitive Grants Programme (NCGP).

Of necessity, the report draws upon publicly available data from varied institutional sources, and employs different coordinates to construct the large and diverse HASS sector. As outlined in Appendix 4, there are fundamental difficulties in aggregating different sources of information and so there is a limit to the amount of cross-referencing and comparison that is possible between, for instance, teaching and research data.

The report has also sought to draw out trends where appropriate or relevant between HASS and STEM sectors/disciplines. For the purposes of this study STEM includes Natural and Physical Sciences, Information Technology, Engineering, Agriculture, Environmental Studies and Health and Medical Studies. A full list of STEM disciplines is at Appendix 2.

Table 1 Broad fields of education and research included in the study

Broad Field of Education: Australian Standard Classification of Education Code (ASCEDC)	Broad Field of Research: Australian and New Zealand Standard Research Code (ANZSRC)
04 Architecture and Building	12 Built Environment and Design
07 Education	13 Education
08 Management and Commerce	14 Economics
09 Society and Culture	15 Commerce, Management, Tourism and Services
10 Creative Arts	16 Studies in Human Society
	17 Psychology and Cognitive Sciences
	18 Law and Legal Studies
	19 Studies in Creative Arts and Writing
	20 Language, Communication and Culture
	21 History and Archaeology
	22 Philosophy and Religious Studies

## 1.4 Units of Analysis

The report includes data and analysis of HASS in aggregate, at the broad (two-digit) level, and at the narrow (four-digit) level. A number of HASS two-digit fields combine multiple disciplines with sometimes different trends. This is the case, for instance, with the broad field of research Studies in Human Society, which includes eight disciplines, so four-digit disaggregation is essential to draw out discipline-specific trends. Four-digit data has therefore been used where possible.

Our approach is necessarily 'top-down' and driven by available units of analysis (fields of research, etc). Where possible we have conducted deeper analysis to draw out discipline-specific trends and also to profile critical issues, areas of strength and so on. Further quantitative and qualitative work will be necessary to continue to build the picture.

Importantly, the project also appraises the health of HASS at the institutional level. The analysis has sought, where possible, to examine institutional concentrations and distribution of research and teaching activity, including across institutional groupings and geographical locations. A full list of Higher Education Providers and relevant institutional groupings is at Appendix 3.

Working with different taxonomies and categories of analysis means that, while the project sought to draw correlations across datasets, direct comparisons were not possible. An account of the project's research design and methodology is contained in Appendix 4, together with a discussion of data limitations and areas for further work.

## 1.5 Next Steps

While the report highlights critical issues for the future, which emerge from analysis of the data it has collected, it does not provide recommendations for future action from either the government or the universities. Rather, it constitutes a fundamental resource for planning such future action, available to be used by all of those with an interest in the sector. The material made available in this report has not been collected before in this aggregated format; it is a new source of data, providing authoritative evidence of the current state of HASS in Australia.

This project would not have taken place if there was not a strong commitment to the national importance of an internationally competitive, appropriately resourced, and vibrant community of researchers and teachers in HASS. The significance of a strong contribution from the HASS disciplines has been reassessed and reaffirmed across the sector in recent years, further increasing the urgency for an evidence-based platform upon which planning for its development and support can be based. This report is the first step towards providing such a platform.

### Endnotes

- 1 Office of the Chief Scientist (2012) *Health of Australian Science*. Available from <http://www.chiefscientist.gov.au/2012/05/health-of-australian-science-report-2/>
- 2 This earlier work focused on the research domain and was conducted by the Australian Academy of the Humanities and Academy of the Social Sciences in Australia: Low, A. *et al.* (1998) *Knowing Ourselves and Others: The Humanities in Australia into the 21st Century*. Australian Research Council, Discipline Research Strategies. Canberra: AGPS; Academy of the Social Sciences in Australia (1998) *Challenges for the Social Sciences and Australia*. Australian Research Council, Discipline Research Strategies. Canberra: AGPS.





# 2

## Teaching and Learning Profile

## 2. Teaching and Learning Profile

This chapter profiles teaching and learning in the higher education sector over the last decade. It provides an overview of the enrolments in the humanities, arts and social sciences (HASS), staff–student ratios, undergraduate applications, offers and acceptances, and graduate destinations.

### 2.1 Introduction

The humanities, arts and social sciences (HASS) disciplines teach the majority of students in the Australian higher education system. Over the period examined, from 2002–12 they steadily maintained a share of around 65% of all enrolments, and 63% of student load. The HASS sector's largest Field of Education (FoE), Society and Culture, comprises the largest share of student load across the university system (25% in 2011). The HASS disciplines' impact on educating the Australian population has been profound; data from the Australian Bureau of Statistics (ABS) shows 60% of the tertiary-qualified population have a Bachelor or higher degree in a HASS field. In 2012, according to a survey of recent graduates, of those graduates working full-time (of those available for full-time employment) 64% were from the HASS fields.

Over the period surveyed, however, there has been significant change that has limited growth and in some cases generated a decline in the HASS teaching and learning capability. Accommodating the logics of a demand-driven system has resulted in the rationalisation of offerings in certain fields of education, the mergers of disciplinary units, such as schools and departments, into multidisciplinary formations, and a reduction in the geographic spread of HASS programmes across the nation. Advocates for the sector argue that universities have been increasingly reluctant to invest in the HASS fields. While it is difficult to aggregate the various sources of information required to properly assess the health of the HASS sector, there is now an urgent need to undertake such a task in order to develop an authoritative empirical account of the current condition of teaching and learning within HASS.

This chapter profiles teaching and learning in the higher education sector over the last decade. It provides an overview of enrolments and completions for the range of fields of education that together comprise HASS; an analysis of student load data across the system; and a brief summary of graduate destinations surveys together with undergraduate applications, offers and acceptances data to produce an indicative overview of trends in student demand.

For much of its analysis of enrolments, this chapter draws on a commissioned study undertaken by Dr Ian Dobson, which reviews student enrolments in HASS over the period 2002–11.<sup>1</sup> Key sources consulted in order to analyse the changing patterns of offerings, course provision and graduate outcomes include a report commissioned by the Australasian Deans of Arts, Social Sciences and Humanities (DASSH), *Benchmarking the Australian Bachelor of Arts* (2012).<sup>2</sup>

In this chapter two sets of data are used to track the HASS student cohort—*student enrolment* data and *student load* data. *Student enrolment* data refer to the number of students

admitted to a degree course or programme of study. When an enrolled student has met the institutional requirements of their course they are counted in the completions data. *Student load* measures the actual subject or study load for a year of a student undertaking a course of study on a full-time basis. At times student load is higher than enrolments, which is an indication that students enrolled in degrees offered by other faculties are enrolling in HASS units as part of their degree.

### 2.2 Summary

Over the last decade, the HASS sector has maintained its position as the largest component of the Australian higher education teaching and learning system.

- » HASS fields of education comprise 65% of all course enrolments. This figure remained steady over the period 2002–11. Within HASS, Management and Commerce has the largest enrolment, at 26% in 2011 (336,816 students); Society and Culture comprised 21% (or 267,499 students); Education at 9% (113,652 students); Creative Arts at 7% (85,190) and Architecture and Building at 2% (28,895).
- » HASS fields comprised 63% of student load in 2011. At the broad, two-digit level Society and Culture comprised the largest share of student load across the system at 25.1%, though this has declined as a proportion of the system from 27% in 2002.
- » Student load increased across the whole system by 40% from 2002 to 2011. In HASS the increase was 41%, in STEM it was 39%.
- » The HASS proportion of the number of course completions across the whole system increased from 67% in 2002 to 71% in 2011.
- » In 2012, the HASS share of tertiary undergraduate enrolments offers was 57%. Society and Culture represented 23% of all offers but was showing a slight decline in its proportion of applications, offers and acceptances across the system. It remained the second most popular field in terms of first preference applications (the most popular was Health).
- » On average, over the period 2002–12, the HASS staff–student ratio was 22.6 students per full-time equivalent (FTE) academic staff member, while the science, technology, engineering and mathematics (STEM) ratio was 16.8 students per FTE staff member.
- » The attraction of the Bachelor of Arts (BA), a key degree for the HASS fields, is showing signs of slight decline. Between 2001 and 2010, despite an increase in the number of students enrolling in the Society and Culture FoE, the number of students enrolled in a BA degree as a proportion of enrolments in the Society and Culture FoE dropped from 32% to 26%.<sup>3</sup>

- » Fewer majors in the Bachelor of Arts were available in 2012 than in 2008, there has been a reduction in the number of 'tagged' degrees (i.e. Bachelor degrees named after a particular specialisation, such as a Bachelor of Music), and an increasing interest in double degrees.<sup>4</sup>
- » According to a recent Graduate Destinations Survey, in 2012, of graduates working full-time as a proportion of those available for full-time employment, 64% were from HASS fields. From the Society and Culture field, 90% of graduates were in full-time employment, of those who were available for full-time employment; 95% of Management and Commerce graduates were in full-time work, followed by 93% of Education graduates, 88% of Creative Arts graduates, and 93% of Architecture and Building graduates.
- » HASS graduates were mostly employed in either a professional occupation such as education (51%), or in a clerical, sales or service occupation (34%).

There is strong evidence of student satisfaction and positive employment outcomes. There are areas of concern for the future, however, with slight downward trends in demand, significant shrinkage in the provision of programmes in certain subject areas, a rising staff–student ratio, and the more complex issue of the long-term effects of a demand-driven system on maintaining the national capacity for generating and disseminating knowledge in these fields.

### 2.3 University Enrolments

Our analysis of student enrolments includes the five broad fields of education which cover HASS: Society and Culture, Education, Management and Commerce, Creative Arts, and Architecture and Building. A breakdown of these FoEs to detailed, six-digit codes is available at Appendix 2.

Dobson's commissioned report, *Mapping the Humanities and Social Sciences: Analysis of University Statistics 2002–2011*, examined baseline data on undergraduate and postgraduate students (enrolments, load and completions) by: course level and attendance type, citizenship status, gender, state, and institution. Two main data sources were used to produce the analysis: the publicly available uCube system, and customised tables from (the then) Department of Industry, Innovation, Climate Change, Science, Research, and Tertiary Education (DIICCSRTE) higher education statistics collections.<sup>5</sup>

Dobson's full report commences with a discussion of the availability of the data, the nature of the data used, and the kind of legitimate conclusions that might be drawn from it. He points out that the variability of reporting from universities and other education providers is an important factor to consider when interpreting figures—while six-digit FoEs exist, many universities code courses at the broadest level, often because large Bachelor's programmes are generalist degrees and not able to be tightly defined.

Since 2001, there have been four changes to the way in which universities collect and report student data, but only one of these is of consequence for the period under analysis: the introduction of the 'Melbourne model' at the University of Melbourne. This has already impacted on commencing Bachelor's degree enrolments and there will be pipeline effects on the numbers of graduates from the University of Melbourne. Undergraduates there no longer enrol directly in Bachelor's degrees in professional fields such as Architecture, Education,

Engineering and Health. There is also sizeable 'transfer' between fields. Dobson observes that in time there will be an apparent decrease in Engineering graduates, for example, but with a corresponding increase in Science enrolments from future undergraduate cohorts.

Analysis in this chapter draws on Dobson's report and has been undertaken at the two- and four-digit level, and in select instances at the six-digit level. The Society and Culture field has been explicitly privileged in this analysis because it is both large and diverse.<sup>6</sup>

#### General trends:

- » Three of the four largest fields of education are in the HASS sector: Management and Commerce, Society and Culture, and Education (Health is the fourth). (Table 2.1)
- » In the context of a system that has expanded by 36% between 2002 and 2011, it is notable that this is accompanied by an increasing tendency for students to study full-time, with a slight increase in the number mixing on- and off- campus attendance.
- » An important trend over the period of analysis is the aggregated field of private providers who largely teach in Creative and Performing Arts, Law, and Religion; together they account for a significant amount of the expansion of numbers in the humanities subjects (such as Philosophy and Religious Studies, and Performing Arts).

#### Specific trends and issues:

The data reveals a number of specific trends that deserve closer examination:

- » the growth of the Management and Commerce FoE at the undergraduate level, and the associated growth of international student numbers;
- » the apparent reduction in the HASS presence in regional universities;
- » the decline of provision in certain six-digit discipline groups such as Southeast Asian Languages, raising questions about the future of low enrolment, but nationally significant, fields. Although there have been some extremely successful collaborative ventures between groups of universities around low enrolment subject areas, such as Languages and Classics, there is not yet a systemic national mechanism to deal with the issue of market failure in relation to such fields.

#### Enrolments

Over the survey period, Society and Culture maintained its position as the second largest FoE in Australian universities; it accounted for 20.8% of all course enrolments (including undergraduate, postgraduate and enabling course levels) in 2011, after Management and Commerce (with 26.2%). The proportion of 2011 enrolments in the other fields of education of relevance to this study was: Education 8.8%, Creative Arts 6.6%, and Architecture and Building 2.2%. Together, HASS fields comprised 64.7% of student enrolments.

Across the system, Management and Commerce, Health, and Society and Culture experienced the largest total increase in student numbers, while the largest proportionate increases were in Architecture and Building, the Creative Arts, and Engineering and Related Technologies.

Table 2.2 shows enrolments by year by HASS field of education for postgraduate and undergraduate cohorts. The growth at the postgraduate level has been driven by high growth in non-research postgraduate enrolments (largely Master's coursework). In the broad Society and Culture field this growth has been in the order of 96% (see Table 2.9 later in the chapter).

Broad trends at the two-digit level for HASS fields by institutional location are shown in Table 2.3 (extracted from Dobson's report). It should be noted that the table does not include distance students, offshore students, or capital city-based campuses of regional universities. Nevertheless, some immediately observable variations are clear with regard to regional and metropolitan provision.

**Table 2.1 Undergraduate, postgraduate and enabling course enrolments, by broad field of education, 2002–11**

	2002	2005	2008	2011	Variation	
Broad Field of Education					No.	%
01 Natural and Physical Sciences	68,626	74,627	77,650	93,706	25,080	36.5%
02 Information Technology	79,026	64,453	49,195	49,377	-29,649	-37.5%
03 Engineering	61,269	65,404	73,610	88,718	27,449	44.8%
04 Architecture and Building	17,861	19,889	24,399	28,895	11,034	61.8%
05 Agriculture, Environmental and Related Studies	18,596	17,374	16,680	18,935	339	1.8%
06 Health	97,282	109,178	140,728	173,180	75,898	78.0%
07 Education	89,588	95,521	100,741	113,652	24,064	26.9%
08 Management and Commerce	240,836	273,712	317,016	336,816	95,980	39.9%
09 Society and Culture	196,065	208,322	227,292	267,499	71,434	36.4%
10 Creative Arts	55,034	61,279	71,932	85,190	30,156	54.8%
11 Food, Hospitality and Personal Services	151	97	813	900	749	496.0%
12 Mixed Field Programmes	1,893	1,861	4,326	8,180	6,287	332.1%
13 Non-Award course	22,234	22,425	22,322	19,546	-2,688	-12.1%
<b>Total course enrolments</b>	<b>948,461</b>	<b>1,014,142</b>	<b>1,126,704</b>	<b>1,284,594</b>	<b>336,133</b>	<b>35.4%</b>
<b>Total student enrolments</b>	<b>896,621</b>	<b>957,177</b>	<b>1,066,095</b>	<b>1,221,008</b>	<b>324,387</b>	<b>36.2%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), <http://www.highereducationstatistics.deewr.gov.au/Default.aspx>, reproduced from Ian Dobson's report.

**Table 2.2 Enrolments, by HASS broad field of education, by course level, 2002–12**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	% change
<b>Postgraduate</b>													
Architecture and Building	3,171	3,440	3,488	3,647	3,681	4,102	5,847	6,515	6,994	7,393	7,387	55,665	132.95
Education	27,553	28,830	29,335	31,098	33,793	34,516	34,369	37,178	40,517	42,317	43,972	383,478	59.59
Management and Commerce	78,908	88,387	91,459	92,593	93,676	97,169	99,688	101,981	101,282	96,700	95,065	1,036,908	20.48
Society and Culture	38,296	43,530	46,388	48,085	52,235	53,696	56,212	61,372	63,881	66,358	68,325	598,378	78.41
Creative Arts	7,562	8,731	9,343	9,204	9,288	9,436	9,852	10,500	11,312	11,189	10,930	107,347	44.54
<b>Total</b>	<b>155,490</b>	<b>172,918</b>	<b>180,013</b>	<b>184,627</b>	<b>192,673</b>	<b>198,919</b>	<b>205,968</b>	<b>217,546</b>	<b>223,986</b>	<b>223,957</b>	<b>225,679</b>	<b>2,181,776</b>	<b>45.14</b>
<b>Undergraduate</b>													
Architecture and Building	14,690	15,294	15,613	16,242	17,358	18,655	18,552	19,776	20,684	21,584	22,158	200,606	50.84
Education	60,655	61,092	62,650	64,266	65,322	65,948	64,655	66,072	67,734	69,828	73,865	722,087	21.78
Management and Commerce	161,865	167,127	175,384	181,099	190,067	206,976	217,026	230,701	238,723	240,015	239,560	2,248,543	48.00
Society and Culture	155,251	156,752	154,558	157,974	161,391	166,338	168,088	177,142	188,766	196,322	205,057	1,887,639	32.08
Creative Arts	46,633	48,481	49,699	51,162	53,298	57,853	61,219	67,148	69,793	72,147	73,868	651,301	58.40
<b>Total</b>	<b>439,094</b>	<b>448,746</b>	<b>457,904</b>	<b>470,743</b>	<b>487,436</b>	<b>515,770</b>	<b>529,540</b>	<b>560,839</b>	<b>585,700</b>	<b>599,896</b>	<b>614,508</b>	<b>5,710,176</b>	<b>39.95</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube).

Note: The data do not include Enabling or Non-Award courses.



Table 2.3 Enrolments, by HASS broad field of education, by university/provider location, 2011

Location*	Architecture and Building	Creative Arts	Education	Management and Commerce	Society and Culture
<b>New South Wales</b>					
Group of Eight [2]	47.5%	23.1%	11.5%	20.5%	28.3%
Other Metro [3]	29.7%	24.7%	23.6%	39.3%	29.5%
Regional [5]	20.4%	22.7%	62.5%	31.3%	32.1%
Private Providers	2.4%	29.5%	2.3%	8.9%	10.1%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	8,984	29,462	34,811	103,883	98,426
<b>Victoria</b>					
Group of Eight [2]	20.9%	30.7%	32.9%	26.1%	44.7%
Other Metro [6]	75.7%	60.3%	58.1%	60.5%	51.0%
Regional [1]	0.0%	2.1%	8.2%	4.1%	1.2%
Private Providers	3.5%	6.9%	0.8%	9.3%	3.0%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	7,329	19,883	23,218	104,196	61,404
<b>Queensland</b>					
Group of Eight [1]	15.8%	11.8%	9.8%	15.5%	31.6%
Other Metro [2]	68.6%	57.8%	43.3%	41.9%	34.9%
Regional [5]	15.7%	29.5%	45.4%	40.8%	31.6%
Private Providers	0.0%	0.9%	1.5%	1.7%	2.0%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	5,624	17,050	20,056	55,935	37,973
<b>Western Australia</b>					
Group of Eight [1]	31.0%	12.7%	5.7%	16.3%	24.7%
Other Metro [4]	65.8%	85.0%	94.3%	81.0%	74.8%
Private Providers	3.2%	2.4%	0.0%	2.7%	0.5%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	3,436	8,401	12,837	35,328	23,624
<b>South Australia</b>					
Group of Eight [1]	28.0%	18.5%	11.5%	27.7%	34.6%
Other Metro [2]	72.0%	72.7%	84.6%	62.5%	61.0%
Private Providers	0.0%	8.8%	4.0%	9.8%	4.4%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	2,294	5,472	7,703	20,507	17,082
<b>Tasmania</b>					
Other Metro	100.0%	100.0%	100.0%	100.0%	97.7%
Regional	0.0%	0.0%	0.0%	0.0%	0.0%
Private Providers	0.0%	0.0%	0.0%	0.0%	2.3%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	506	1,989	2,781	4,539	4,575
<b>Northern Territory</b>					
Regional	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	50	195	1,769	853	2,222
<b>ACT and Multi State</b>					
Group of Eight	0.0%	30.3%	2.0%	34.4%	47.1%
Other Metro	100.0%	68.8%	98.0%	65.6%	39.6%
Private Providers	0.0%	0.9%	0.0%	0.0%	13.3%
Subtotal %	100.0%	100.0%	100.0%	100.0%	100.0%
Subtotal No.	672	2,738	10,477	11,575	22,193
<b>Total</b>	<b>28,895</b>	<b>85,190</b>	<b>113,652</b>	<b>336,816</b>	<b>267,499</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

\* Numbers of providers are in square brackets. For a list of institutional groupings refer to Appendix 3.

In Victoria, regional providers accounted for only 1.2% of student enrolments in Society and Culture in 2011. There is only one regional university in Victoria (Ballarat, now Federation University), which explains the very low numbers (and this figure does not include regional campuses of metropolitan universities). In New South Wales just over 32% of Society and Culture enrolments were in regional universities (five providers), with the two Sydney-based Group of Eight (Go8) providers comprising just under that share at 28%. Distribution across the metropolitan and regional universities appears to be more even in Queensland, although it is still the case that just one Go8 provider had a share of Society and Culture enrolments that is equal to the total of the five regional providers. The equitable distribution of HASS programmes across metropolitan and regional centres is an issue for future policy to examine and, if necessary, address.

This is a similar issue to that related to subjects where the demand from the student market may not be high, but the subjects are nonetheless of national, strategic, or academic importance (for example, they may generate expertise in specific areas, or serve as enabling disciplines for further research development). As things stand currently, the responsibility for what is effectively an issue of national capacity is largely left to individual universities or groups of universities to address, when what is required is a more systemic approach that can address areas where the market is not delivering what the nation needs.

### Student load

Student load data gives a more accurate picture of teaching and learning because it counts all the teaching provided in a broad field of study, not only that provided to students enrolled in courses within a broad FoE, such as Society and Culture, but also to students enrolled in Society and Culture courses from other FoEs as part of their degree.

There has been growth in the proportion of teaching in all HASS fields over the 2002–11 period. In student load, Society and Culture is the largest FoE across the system with 25.1% of equivalent full-time student load (EFSTL) in 2011, although over the period the Society and Culture share has gone down slightly. The proportion of student load in the other HASS FoEs was: Management and Commerce (20.2%), Education (7.7%), Creative Arts (7.8%), and Architecture and Building (2.2%). Together HASS fields comprised 63% of student load (STEM had 36.6% of student load in 2011).

Table 2.5 (overleaf) provides a snapshot of teaching in 2011 by comparing broad fields of education (courses in which students are enrolled) with broad discipline groups (the subjects studied as part of their courses). It disaggregates the broad Society and Culture field in order to focus on three subsets: Law, Economics, and Society and Culture Other. Among the information this table reveals is that the field receiving the highest amount of 'service teaching' is Economics, and that 81.6% of teaching in Education is directed at students enrolled in that broad FoE. The latter is of particular interest given current debates regarding the importance of school teachers having substantial disciplinary backgrounds in the subject area they are destined to teach, rather than merely training in education. This data implies that there may be as little as 18% of the degree programme available for developing a disciplinary background in a FoE other than Education; if that is indeed the case, it would be hard to argue that this enables the acquisition of a substantial disciplinary background in another FoE.

### Completions

Together, the HASS fields comprised 70.6% of the total completions in the national system in 2011 (Table 2.6 overleaf). Management and Commerce represented the largest proportion of total completions across the system in 2011 at 33%, and this came from a 74.3% increase in total numbers from 2002 to 2011. Society and Culture's proportion of completions did not change over the period (its share was 18.8% in 2002 and 18.9% in 2011) although the total numbers of completions increased by 48%. Dobson notes in his report that this growth has been 'driven largely by the rapid increase in the number of non-research postgraduate qualifications awarded' (p. 30). The proportion of completions in other HASS fields of education was: Education (9.5%), Creative Arts (7.0%), and Architecture and Building (2.2%). STEM had 31.7% of completions in 2011.

When examining course completions data it is important to note that there is a substantial internal transfer in fields like Society and Culture; students often enrol in a general Bachelor of Arts but then transfer to another field mid-degree as they narrow down their area of interest. A further factor is the high proportion of Bachelor degree enrolments in HASS fields. It is customary to see higher completion rates in shorter postgraduate coursework degrees (and these, as noted above, have underwritten growth in Society and Culture completions over the period).

The range of enrolment and related issues specific to each HASS broad field of education are surveyed in the next section.

### Trends in Society and Culture

- » As shown in the following tables and figures (pp. 19–21), Society and Culture enrolments grew slightly more than the national average from 2002–11, representing around 25% of all enrolments; but the proportion of the total EFTSL has gone down over the 2002–11 period.
- » There has been a slight shift from undergraduate to postgraduate enrolments.
- » Female students are the largest group but growth in the proportion of male students has been higher than females. Of all students enrolled in Society and Culture programmes, 64% were women—but there is a high degree of variation in sub-fields: the proportion of female students ranged from 50% in Philosophy and Religious Studies, to 83% in Human Welfare Studies.
- » There has been a slight increase in international students, although this cohort comprised only 10% of total enrolments; the system average was 27%. The increase in HASS was largely driven by growth in international student numbers in Management and Commerce.
- » Go8 universities dominated enrolments (33.5%), when numbers of providers are taken into consideration, with enrolments in Society and Culture particularly low in regional universities in some states.
- » Patterns of subject enrolments demonstrate continuing strength of some traditional humanities areas such as Philosophy and Religious Studies (where enrolments increased by 66%), extremely significant growth in student load in particular fields in the social sciences, such as Psychology—60% off a very large base), but in some of the smaller areas in the humanities there has been significant decline (e.g. in Southern and Southeast Asian Languages

Table 2.4 Student load (EFTSL), by broad discipline group, 2002–11

Broad Discipline Group	2002	2005	2008	2011	Variation	
					No.	%
01 Natural and Physical Sciences	73,764	79,317	88,153	105,054	31,290	42.40%
02 Information Technology	55,272	46,683	37,390	39,066	-16,206	-29.30%
03 Engineering	36,985	39,303	44,688	56,870	19,885	53.80%
04 Architecture and Building	12,089	13,498	16,172	19,336	7,247	59.90%
05 Agriculture, Environmental and Related Studies	8,931	8,891	9,654	11,406	2,475	27.70%
06 Health	57,521	67,031	87,616	110,415	52,894	92.00%
07 Education	51,525	56,085	59,515	67,451	15,926	30.90%
08 Management and Commerce	114,409	132,618	160,274	178,086	63,677	55.70%
09 Society and Culture	169,106	180,888	195,803	221,051	51,945	30.70%
10 Creative Arts	46,621	49,004	56,701	68,621	22,000	47.20%
11 Food, Hospitality and Personal Services	120	185	533	840	720	600.00%
12 Mixed Field Programmes	407	590	1,351	1,786	1,379	338.80%
<b>Total</b>	<b>626,749</b>	<b>674,092</b>	<b>757,850</b>	<b>879,981</b>	<b>253,232</b>	<b>40.40%</b>
<b>%</b>						
01 Natural and Physical Sciences	11.8%	11.8%	11.6%	11.9%		
02 Information Technology	8.8%	6.9%	4.9%	4.4%		
03 Engineering	5.9%	5.8%	5.9%	6.5%		
04 Architecture and Building	1.9%	2.0%	2.1%	2.2%		
05 Agriculture, Environment	1.4%	1.3%	1.3%	1.3%		
06 Health	9.2%	9.9%	11.6%	12.5%		
07 Education	8.2%	8.3%	7.9%	7.7%		
08 Management and Commerce	18.3%	19.7%	21.1%	20.2%		
09 Society and Culture	27.0%	26.8%	25.8%	25.1%		
10 Creative Arts	7.4%	7.3%	7.5%	7.8%		
11 Food, Hospitality and Personal Services	0.0%	0.0%	0.1%	0.1%		
12 Mixed Field Programmes	0.1%	0.1%	0.2%	0.2%		
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>		

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

and Australian Indigenous Languages—respectively 43%, 32% and 23%).

- » The relatively self-contained nature of the content of the degrees in this FoE means that in 2011 almost 80% of the teaching received by students enrolled in Society and Culture (excluding Law and Economics) came from Society and Culture disciplines. (There is a similar figure for Law, which was examined as a separate subset of Society and Culture.)
- » Course completions increased at a much higher rate than the increase in enrolments.
- » In a relatively recent development, private institutions (such as those providing studies in divinity) would, if aggregated, constitute the third largest provider of Society and Culture teaching in 2011.
- » There is evidence that Society and Culture fields have been adapting to the 'professionalising' tendency in higher education by increasing the proportion of postgraduate coursework enrolments—in part to meet student demand but also to offset low Commonwealth Supported Place (CSP) funding levels by creating professional degrees to attract local fee paying students.<sup>7</sup>

Patterns of teaching did not change significantly over the period, but Table 2.9 shows that the proportion of teaching declined in the Society and Culture Other field.

Society and Culture is a diverse field of education, so in order to pick out trends in specific discipline groups further analysis was undertaken at the six-digit level. More detailed analysis of Society and Culture is available in Dobson's report. As Dobson notes, care should be taken in working with these numbers because they are likely to be undercounts. Dobson observes that several of the 'general' detailed discipline groups show a decline between 2002 and 2011: '[t]his is the case for Political Science and Policy Studies (-328 EFTSL), Studies in Human Society (-928), Behavioural Science (-2,004), Language and Literature (-3,580) and Economics and Econometrics (-3,429)' (p. 24). He attributes this 'decline' to the fact that 'some universities have progressively tightened up the way they code statistics to detailed discipline groups'. Taking Behavioural Sciences as an example, then, Dobson observes that 'some of the expansion in detailed discipline group Psychology will have come from tighter subject classification, and the consequent reduction in the size of detailed discipline group Behavioural Science'.

Table 2.5 Broad field of education compared to discipline group, 2011

Field of Education	Number of Students	Discipline Group										
		01 Natural and Physical Sciences	02 Information Technology	03 Engineering and Related Technologies	04 Architecture and Building	05 Agriculture, Environmental and Related Studies	06 Health—Medicine	06 Health—Pharmacy, Dental, Optical	06 Health—Vet Science	06 Health—Other	07 Education	08 Management and Commerce
		EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL
01 Natural and Physical Sciences	93,593	49,987	949	1,518	54	1,971	1,350	105	115	1,741	409	1,086
02 Information Technology	49,230	1,559	25,233	1,426	17	67	-	-	-	19	55	2,411
03 Engineering and Related Technologies	88,777	10,814	2,594	49,576	339	386	8	<5	-	141	34	2,408
04 Architecture and Building	28,842	234	197	1,125	16,648	544	-	-	-	19	<5	897
05 Agriculture, Environmental and Related Studies	18,846	3,314	44	487	941	6,338	<5	8	39	79	46	444
06 Health—Medicine	24,485	1,698	<5	<5	-	<5	18,611	10	<5	1,041	<5	136
06 Health—Pharmacy, Dental, Optical	13,141	3,337	<5	<5	-	-	355	7,377	-	321	-	46
06 Health—Vet Science	3,994	318	<5	<5	-	254	10	-	2,903	<5	-	5
06 Health—Other	131,758	15,441	79	142	<5	151	1,827	152	<5	69,937	389	910
07 Education	113,582	2,810	235	109	13	269	9	5	<5	1,405	62,769	349
08 Management and Commerce	336,991	7,708	6,522	1,107	664	425	7	<5	-	598	283	155,708
09 Society—Law	54,713	294	55	35	<5	23	<5	-	-	13	9	1,251
09 Society—Economics	13,829	443	65	<5	8	57	-	-	-	13	12	3,191
09 Society—Other	210,041	4,578	736	331	112	571	235	11	<5	1,594	2,689	4,166
10 Creative Arts	85,078	417	1,557	631	433	41	<5	<5	-	65	398	3,197
11 Food, Hospitality and Personal Services	894	<5	55	-	-	-	-	-	-	-	-	308
12 Mixed Field Programmes	8,177	1,099	387	-	-	<5	-	-	-	<5	66	246
99 Not a Combined Course	19,529	1,003	230	319	63	103	15	<5	<5	365	251	1,613
<b>Total</b>	<b>1,221,008</b>	<b>105,058</b>	<b>38,941</b>	<b>56,815</b>	<b>19,300</b>	<b>11,204</b>	<b>22,430</b>	<b>7,670</b>	<b>3,067</b>	<b>77,353</b>	<b>67,416</b>	<b>178,372</b>

Source: Customised table, Department of Education.

Note: The data for column B (number of students) takes into account the coding of Combined Courses to two fields of education. As a consequence, counting both fields of education for Combined Courses means that the totals may be less than the sum of the individual fields of education. There is no double counting for columns C to T, as the EFTSL figures are displayed only against the Primary Field of Education in Column A.

Table 2.6 Course completions, by broad field of education, 2002–11

Broad Field of Education	2002	2005	2008	2011	Variation	
					No.	%
01 Natural and Physical Sciences	14,021	16,589	17,323	19,665	5,644	40.3%
02 Information Technology	18,491	18,313	13,010	12,890	-5,601	-30.3%
03 Engineering	10,895	12,878	13,895	16,809	5,914	54.3%
04 Architecture and Building	4,186	4,524	5,319	6,494	2,308	55.1%
05 Agriculture, Environmental and Related Studies	3,963	3,846	3,482	4,200	237	6.0%
06 Health	23,869	26,522	33,171	40,748	16,879	70.7%
07 Education	23,423	26,390	27,196	28,185	4,762	20.3%
08 Management and Commerce	57,428	69,932	86,496	100,091	42,663	74.3%
09 Society and Culture	37,927	44,492	48,726	56,344	18,417	48.6%
10 Creative Arts	12,271	15,817	17,357	20,886	8,615	70.2%
11 Food, Hospitality and Personal Services	41	28	386	352	311	758.5%
<b>Total</b>	<b>200,744</b>	<b>232,188</b>	<b>258,802</b>	<b>297,391</b>	<b>96,647</b>	<b>48.1%</b>

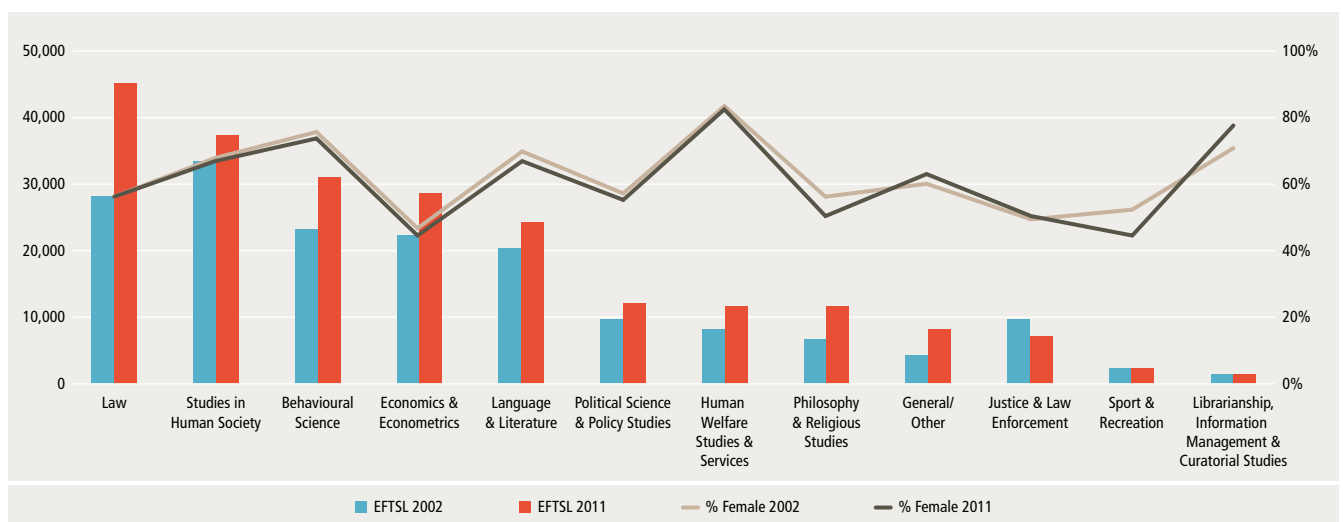
Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

	Discipline Group						Total EFTSL
	09 Society—Law	09 Society—Economics	09 Society—Other	10 Creative Arts	11 Food, Hospitality and Personal Services	12 Mixed Field Programmes	
	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	EFTSL	
	438	302	6,006	544	12	5	66,593
	135	259	734	1,063	-	13	32,990
	187	614	841	348	-	34	68,325
	233	89	922	1,259	-	-	22,169
	89	228	769	82	-	<5	12,911
	9	6	222	12	-	-	21,759
	<5	<5	101	6	-	-	11,550
	-	11	11	<5	-	-	3,517
	65	63	6,192	466	<5	93	95,913
	26	50	6,933	1,952	9	20	76,964
	15,570	21,663	10,820	3,256	555	237	225,127
	22,992	314	2,631	287	<5	<5	27,915
	541	3,698	676	64	-	<5	8,777
	3,998	1,148	100,453	9,062	<5	94	129,780
	640	91	6,704	48,971	<5	14	63,160
	7	<5	<5	<5	220	50	650
	-	11	907	461	-	1,177	4,359
	441	268	2,152	684	5	7	7,525
	<b>45,372</b>	<b>28,826</b>	<b>147,076</b>	<b>68,521</b>	<b>807</b>	<b>1,755</b>	<b>879,981</b>

With those caveats in place, next we focus briefly on Languages at the detailed six-digit level to draw out some specific issues. Languages teaching expanded over the period by nearly 5,000 EFSTL but declined in certain language groups, notably Southeast Asian Languages (Figure 2.2). Research in this area provides more context than is available in the raw data. According to a recent survey undertaken by Dunne and Pavlyshyn (2012) between 2005 and 2011 there was an increase in the number of languages on offer in Australian universities, from 34 to 45 languages. However, there is some volatility across the sector with programmes being withdrawn at some universities, so data can vary year by year.

Of the 45 Languages Other Than English (LOTE) taught at Australian universities in 2011, Dunne and Pavlyshyn classify seven as ‘widely taught’ (i.e. taught at more than 50% of universities): French, German, Indonesian, Italian, Japanese, Mandarin and Spanish. There are six ‘moderately taught’ (taught in more than three states and/or more than 10% of Australian universities): Arabic, Greek (Ancient), Greek (Modern), Korean, Latin, and Russian. There are 32 less commonly taught languages including Cantonese, Hindi, Malay, Thai, as well as Australian Indigenous Languages (for example Yolngu and Pitjanjtajtara).

Figure 2.1 Society and Culture student load (EFSTL), by narrow discipline group and percentage female, 2002 and 2011



Source: Customised tables—Department of Education, reproduced from Ian Dobson’s report.

**Table 2.7 Society and Culture enrolments, by course level, gender, citizenship status, attendance mode and attendance type, 2002–11**

	2002	2005	2008	2011	Variation	
					No.	%
<b>Course Level</b>						
Postgraduate—Research	11,468	12,032	12,459	13,662	2,194	19.1%
Postgraduate—Other	26,828	36,053	43,753	52,663	25,835	96.3%
<b>Subtotal</b>	<b>38,296</b>	<b>48,085</b>	<b>56,212</b>	<b>66,325</b>	<b>28,029</b>	<b>73.2%</b>
Undergraduate—Bachelor's	147,801	152,749	161,313	188,537	40,736	27.6%
Undergraduate—Other	7,450	5,225	6,775	7,525	75	1.0%
<b>Subtotal</b>	<b>155,251</b>	<b>157,974</b>	<b>168,088</b>	<b>196,062</b>	<b>40,811</b>	<b>26.3%</b>
Enabling	2,518	2,263	2,877	5,112	2,594	103.0%
Non Award #			115			
% Undergraduate	79.2%	75.8%	74.0%	73.3%		
<b>Gender</b>						
Male	68,391	73,240	80,842	96,197	27,806	40.7%
Female	127,674	135,082	146,450	171,302	43,628	34.2%
% Female	65.1%	64.8%	64.4%	64.0%		
<b>Citizenship Status</b>						
Domestic	182,015	189,927	205,778	240,378	58,363	32.1%
Overseas	14,050	18,395	21,514	27,121	13,071	93.0%
% Overseas	7.2%	8.8%	9.5%	10.1%		
<b>Attendance Mode</b>						
Internal	154,730	162,595	174,256	204,352	49,622	32.1%
External	30,323	30,974	33,649	41,776	11,453	37.8%
Multi-modal	11,012	14,753	19,387	21,371	10,359	94.1%
% Internal	78.9%	78.0%	76.7%	76.4%		
<b>Attendance Type</b>						
Full-time	125,995	133,453	147,450	178,282	52,287	41.5%
Part-time	70,070	74,869	79,842	89,217	19,147	27.3%
% Full-time	64.3%	64.1%	64.9%	66.6%		
<b>Total</b>	<b>196,065</b>	<b>208,322</b>	<b>227,292</b>	<b>267,499</b>	<b>71,434</b>	<b>36.4%</b>

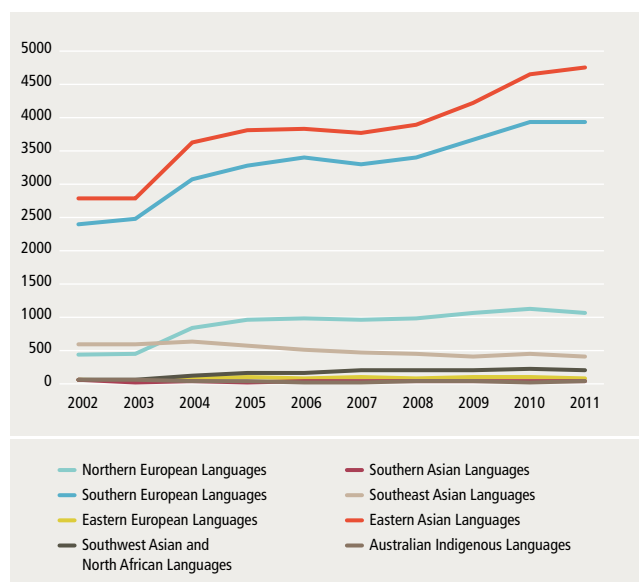
Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

# Non-Award enrolments would not usually be linked to a specific field of education. Some students may be enrolled in a Non-Award programme as a supplementary course.

**Table 2.8 Society and Culture teaching: field of education of students taught, 2002 and 2011**

Broad Field of Education	2002		2011	
	No.	%	No.	%
01 Natural and Physical Sciences	5,651	3.3%	6,746	3.0%
02 Information Technology	2,585	1.5%	1,128	0.5%
03 Engineering	1,581	0.9%	1,642	0.7%
04 Architecture and Building	853	0.5%	1,244	0.6%
05 Agriculture, Environmental and Related Studies	1,175	0.7%	1,086	0.5%
06 Health	4,552	2.7%	6,681	3.0%
07 Education	6,614	3.9%	7,009	3.2%
08 Management and Commerce	32,512	19.2%	48,053	21.7%
09 Society and Culture—Law	18,579	11.0%	25,937	11.7%
09 Society and Culture—Other	85,468	50.5%	110,514	49.9%
10 Creative Arts	6,072	3.6%	7,435	3.4%
Other Fields (incl. balancing)	3,756	2.2%	2,868	1.3%
<b>Total</b>	<b>169,408</b>	<b>100.0%</b>	<b>221,274</b>	<b>100.0%</b>

Source: Customised table—Department of Education, reproduced from Ian Dobson's report.

**Figure 2.2 Languages Other Than English student load (EFSTL)—all course levels, 2002–11**

Source: Customised data—Department of Education.



Table 2.9 Society and Culture completions, by course level, 2002–11

All Society and Culture	2002	2005	2008	2011	Variation	
					No.	%
<b>Postgraduate</b>						
PhD (incl. Higher Doctorate)	1,024	1,225	1,299	1,431	407	39.7%
Master's by Research	351	331	268	262	-89	-25.4%
Other Postgraduate	7,897	12,291	16,176	19,466	11,569	146.5%
<b>Subtotal</b>	<b>9,272</b>	<b>13,847</b>	<b>17,743</b>	<b>21,159</b>	<b>11,887</b>	<b>128.2%</b>
<b>Undergraduate</b>						
Bachelor's	26,530	29,095	28,999	33,059	6,529	24.6%
Other Undergraduate	2,129	1,573	2,024	2,049	-80	-3.8%
<b>Subtotal</b>	<b>28,659</b>	<b>30,668</b>	<b>31,023</b>	<b>35,108</b>	<b>6,449</b>	<b>22.5%</b>
<b>Total</b>	<b>37,931</b>	<b>44,515</b>	<b>48,766</b>	<b>56,267</b>	<b>18,336</b>	<b>48.3%</b>
<b>Law #</b>						
<b>Postgraduate</b>						
PhD (incl. Higher Doctorate and Master's by Research)	68	94	95	105	37	54.4%
<b>Master's by Research</b>						
Other Postgraduate	1,943	2,442	3,134	3,481	1,538	79.2%
<b>Subtotal</b>	<b>2,011</b>	<b>2,536</b>	<b>3,229</b>	<b>3,586</b>	<b>1,575</b>	<b>78.3%</b>
<b>Undergraduate</b>						
Bachelor's	5,038	5,404	5,678	6,236	1,198	23.8%
Other Undergraduate						
<b>Subtotal</b>	<b>5,039</b>	<b>5,404</b>	<b>5,679</b>	<b>6,236</b>	<b>1,197</b>	<b>23.8%</b>
<b>Total</b>	<b>7,050</b>	<b>7,940</b>	<b>8,908</b>	<b>9,822</b>	<b>2,772</b>	<b>39.3%</b>
<b>Society and Culture excluding Law</b>						
<b>Postgraduate</b>						
PhD (incl. Higher Doctorate and Master's by Research)	1,307	1,462	1,472	1,588	281	21.5%
<b>Master's by Research</b>						
Other Postgraduate	1,943	2,442	3,134	3,481	1,538	79.2%
<b>Subtotal</b>	<b>3,250</b>	<b>3,904</b>	<b>4,606</b>	<b>5,069</b>	<b>1,819</b>	<b>56.0%</b>
<b>Undergraduate</b>						
Bachelor's	21,492	23,691	23,321	26,823	5,331	24.8%
Other Undergraduate	2,128	1,573	2,023	2,049	-79	-3.7%
<b>Subtotal</b>	<b>23,620</b>	<b>25,264</b>	<b>25,344</b>	<b>28,872</b>	<b>5,252</b>	<b>22.2%</b>
<b>Total</b>	<b>30,881</b>	<b>36,575</b>	<b>39,858</b>	<b>46,445</b>	<b>15,564</b>	<b>50.4%</b>

Source: Customised tables—Department of Education, reproduced from Ian Dobson's report; shaded figures (Law: 68 and 95) are estimated from the customised tables.

# Narrow field of education and Master's by research figures included in PhD/Higher Doctorate row.

While there was 'relative stability of widely taught languages' in the 2005–11 period,<sup>8</sup> one issue of note for policymakers and for universities lies in the less commonly taught languages (LCTL). The total number of LCTL programmes available looks acceptable, but the picture looks less favourable when it is noted that 50% of the sector's offerings of LCTL occur at one university, the Australian National University (ANU). According to Dunne and Pavlyshyn, only nine institutions (out of a total 40) taught LCTL in 2011.

The other issue of note is the availability of languages at metropolitan campuses compared to regional campuses. According to Dunne and Pavlyshyn no languages were on offer at the University of Ballarat (now Federation University), Charles Sturt University, Central Queensland University or Southern Cross University. As they observe, 'if all institutions offering languages are within major metropolitan centres, then the nation's linguistic ecology may be less healthy than it at first appears'.<sup>9</sup>

# Languages Snapshot

## Teaching and Learning

The significant increase in university enrolments over the period 2002–11 (almost 5,000 EFTSL) is a positive indication of rising student interest in languages, and institutional attempts to address that interest. A number of important structural initiatives have been taken to facilitate language study over this time, most typically by individual universities. These include:

- a. a Year 12 language bonus for university entry
- b. the introduction of the Diploma of Languages that allows concurrent language study with an undergraduate degree
- c. the specific tagging or naming of degrees, e.g. BA (Languages), Bachelor of Languages.

That said, structural restrictions continue to limit access to language study, and current enrolments do not reflect true demand as a result. The biggest increases in language enrolments in individual universities have occurred where many of these restrictions have been tempered or removed. The universities of Western Australia (UWA) and of Melbourne are well known, for instance, for restructuring degrees to guarantee students in any undergraduate course (e.g. engineering) access to study outside their faculty at all year levels. Enrolments in languages have risen dramatically as a result, particularly at UWA, which has gone furthest in opening out language study to all students.

The decade has also seen the development of a number of collaborative arrangements across institutions (Dunne and Pavlyshyn 2012), such as the Brisbane University Language Alliance (BULA) involving Griffith University, Queensland University of Technology and the University of Queensland. While such arrangements can be complex, they may be particularly useful for languages with fewer enrolments for institutions that wish to increase the number of language offerings to their students. Work has now commenced on developing a national language studies portal, with project funding from the federal Office for Learning and Teaching (OLT) to provide potential and current students with information about language study options across the university sector.

## Research

There is a strong research tradition in the languages area in Australian universities, although this is not fully reflected in Excellence in Research for Australia (ERA) statistics. In the first instance, research in language studies overlaps with research in linguistics, literary and cultural studies and is often assigned exclusively to these fields in ERA assessments. In the second, changes to ERA data collection in 2012, which increased the minimum number of outputs (from 30 to 50) for evaluation for any one area at a single institution, resulted in a significant decline in the number of Units of Evaluation (UoE) in language studies from 2010 (falling from nine to four). Given the relatively small staff profile of most language programmes, and concomitant overall research output, this change to ERA requirements

“The significant increase in university enrolments over the period 2002–11 (almost 5,000 EFTSL) is a positive indication of rising student interest in languages, and institutional attempts to address that interest.”

made it difficult for many universities to nominate language studies for evaluation.

## Academic Workforce

One feature of the language teacher workforce is the particularly high dependence on junior and casual staffing—often as a means of managing costs—coupled with a long-term decline in the proportion of senior staff (Nettelbeck, Hajek and Woods 2011). Baldauf and White (2010) report a sharp increase in the proportion of teaching assigned to casuals in the period they examined (2000–05), a trend that on all evidence has continued.

### Professor John Hajek FAHA

President, Languages and Cultures Network for Australian Universities

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### Trends in Creative Arts

- » Creative Arts enrolments grew at a much higher level than the national average (55%) over the 2002–11 period (Table 2.10). This was mostly at the undergraduate level and with a strong preference for internal (90% as against the national average of 76%) and full-time modes (78% as against the national average of 65%). Of the 14,204 overseas students enrolled in Creative Arts in 2011, around 30% studied at an off-shore campus.
- » The highest proportionate increase was recorded by Graphic and Design Studies: over 5,000 EFSTL or nearly 80%.
- » A second major area of growth has been in the still relatively new area of Communication and Media Studies with an additional 10,000 equivalent full-time students over the period (an increase of 50%). Enrolments in this discipline group now constitute 45% of all teaching in this FoE, and it is taught by a large number of institutions.
- » The broad field had a high proportion of undergraduates to postgraduates in 2011: 72,000 or approximately 84.7% of total enrolments.
- » Table 2.11 (overleaf) shows broad fields of education of students taught in Creative Arts. Creative Arts continues to teach into Society and Culture Other, but there has been a decline in service teaching in Engineering, Information Technology and Education.
- » There has been significant expansion in provision by private providers over the last decade, and notably from 2006.

### Trends in Education

- » This FoE is showing signs of a weakening position; its growth rate (26.9%) is lower than the national average and there has been a slight decline in its proportion of overall enrolments, down from 10% in 2002 to 8.8% in 2011 (Table 2.12 overleaf).
- » Enrolments in initial teacher training courses, however, remained constant over the period.
- » There was a strong gender skew towards women in the cohort and this is relatively consistent over 2002–11.
- » There was a high proportion of postgraduates in non-research postgraduate programmes (teaching accreditation presumably drives this). There was more rapid growth in these enrolments than at the Bachelor's level over the period.
- » There were comparatively few international students, varying between 5% and 8% over 2002–11. It is likely this reflects the localised nature of teacher training.
- » The proportion of on-campus attendance was lower than the national average; and also lower than sector average full-time attendance.
- » Table 2.14 (overleaf) shows the distribution of teaching and learning in Education, revealing that around 93% of Education teaching was to students enrolled in Education courses.
- » In 2011 Education students received 82% of their teaching from the Education FoE with the largest service teaching component coming from Society and Culture (9%). As noted earlier, this is much lower than one would expect or is desirable if, for instance, prospective high school teachers are expected to have majored in the discipline they wish to go on and teach.

Table 2.10 Creative Arts enrolments, by course level, gender, citizenship status, attendance mode and attendance type, 2002–11

	2002	2005	2008	2011	Variation	
					No.	%
Postgraduate—Research	2,568	2,933	3,081	3,270	702	27.3%
Postgraduate—Other	4,994	6,271	6,771	7,721	2,727	54.6%
<b>Subtotal</b>	<b>7,562</b>	<b>9,204</b>	<b>9,852</b>	<b>10,991</b>	<b>3,429</b>	<b>45.3%</b>
Undergraduate—Bachelor's	45,958	50,628	57,909	67,500	21,542	46.9%
Undergraduate—Other	675	534	3,310	4,636	3,961	586.8%
<b>Subtotal</b>	<b>46,633</b>	<b>51,162</b>	<b>61,219</b>	<b>72,136</b>	<b>25,503</b>	<b>54.7%</b>
Enabling	839	913	861	2,063	1,224	145.9%
% Undergraduate	84.7%	83.5%	85.1%	84.7%		
Male	19,117	21,876	26,946	32,782	13,665	71.5%
Female	35,917	39,403	44,986	52,408	16,491	45.9%
% Female	65.3%	64.3%	62.5%	61.5%		
Domestic	46,900	51,192	59,636	70,986	24,086	51.4%
Overseas	8,134	10,087	12,296	14,204	6,070	74.6%
% Overseas	14.8%	16.5%	17.1%	16.7%		
Internal	50,216	54,207	64,823	76,102	25,886	51.5%
External	3,150	3,675	3,450	4,471	1,321	41.9%
Multi-modal	1,668	3,397	3,659	4,617	2,949	176.8%
% Internal	91.2%	88.5%	90.1%	89.3%		
Full-time	43,185	48,105	56,402	66,596	23,411	54.2%
Part-time	11,849	13,174	15,530	18,594	6,745	56.9%
% Full-time	78.5%	78.5%	78.4%	78.2%		
<b>Total</b>	<b>55,034</b>	<b>61,279</b>	<b>71,932</b>	<b>85,190</b>	<b>30,156</b>	<b>54.8%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

### Trends in Architecture and Building

Architecture and Building contains a number of fields that are of less relevance to HASS categories, nonetheless, the following trends are relevant;

- » Enrolments in the FoE grew in both undergraduate (44.8%) and postgraduate non-research programmes (159.7%).
- » One of the fields with most relevance to this study, Urban Design and Regional Planning, experienced a 117% growth in student load over the period from 1,038 EFSTL in 2002 to 2,251 in 2011. Architecture also experienced sizeable growth (79%) in student load from 3,982 in 2002 to 7,135 in 2011.
- » There were significant increases in overseas student enrolments.

Further analysis and detailed tables are in Dobson's report.

**Table 2.11 Creative Arts teaching: broad field of education of students taught, 2002 and 2011**

Broad Field of Education	2002		2011	
	No.	%	No.	%
01 Natural and Physical Sciences	335	0.7%	544	0.8%
02 Information Technology	1,653	3.5%	1,063	1.6%
03 Engineering	378	0.8%	348	0.5%
04 Architecture and Building	484	1.0%	1,259	1.8%
05 Agriculture, Environmental and Related Studies	86	0.2%	82	0.1%
06 Health	370	0.8%	484	0.7%
07 Education	2,169	4.7%	1,952	2.8%
08 Management and Commerce	1,987	4.3%	3,256	4.8%
09 Society and Culture—Law	210	0.5%	287	0.4%
09 Society and Culture—Other	6,121	13.1%	9,126	13.3%
10 Creative Arts	31,964	68.6%	48,971	71.5%
Other Fields (incl. balancing)	850	1.8%	1,145	1.7%
<b>Total</b>	<b>46,607</b>	<b>100.0%</b>	<b>68,517</b>	<b>100.0%</b>

Source: Customised table—Department of Education, reproduced from Dobson's report.

**Table 2.12 Education enrolments, by course level, gender, citizenship status, attendance mode and attendance type, 2002–11**

	2002	2005	2008	2011	Variation	
					No.	%
Postgraduate—Research	4,601	4,511	4,397	4,652	51	1.1%
Postgraduate—Other	22,952	26,587	29,972	37,708	14,756	64.3%
<b>Subtotal</b>	<b>27,553</b>	<b>31,098</b>	<b>34,369</b>	<b>42,360</b>	<b>14,807</b>	<b>53.7%</b>
Undergraduate—Bachelor's	59,722	63,733	64,265	68,730	9,008	15.1%
Undergraduate—Other	933	533	390	741	-192	-20.6%
<b>Subtotal</b>	<b>60,655</b>	<b>64,266</b>	<b>64,655</b>	<b>69,471</b>	<b>8,816</b>	<b>14.5%</b>
Enabling	1,380	157	1,717	1,821	441	32.0%
% Undergraduate	67.7%	67.3%	64.2%	61.1%		
Male	23,235	25,361	25,372	27,976	4,741	20.4%
Female	66,353	70,160	75,369	85,676	19,323	29.1%
% Female	74.1%	73.4%	74.8%	75.4%		
Domestic	84,785	88,141	92,139	105,052	20,267	23.9%
Overseas	4,803	7,380	8,602	8,600	3,797	79.1%
% Overseas	5.4%	7.7%	8.5%	7.6%		
Internal	60,540	63,352	65,794	72,719	12,179	20.1%
External	20,461	20,472	22,570	27,647	7,186	35.1%
Multi-modal	8,587	11,697	12,377	13,286	4,699	54.7%
% Internal	67.6%	66.3%	65.3%	64.0%		
Full-time	55,045	61,505	65,023	73,272	18,227	33.1%
Part-time	34,543	34,016	35,718	40,380	5,837	16.9%
% Full-time	61.4%	64.4%	64.5%	64.5%		
<b>Initial teacher training:</b>						
Postgraduate	5,880	6,653	9,914	14,081	8,201	139.5%
Undergraduate	52,941	56,541	58,167	60,438	7,497	14.2%
Other Education Students	30,767	32,327	32,660	39,133	8,366	27.2%
% Teacher Training	65.7%	66.2%	67.6%	65.6%		
<b>Total</b>	<b>89,588</b>	<b>95,521</b>	<b>100,741</b>	<b>113,652</b>	<b>24,064</b>	<b>26.9%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Dobson's report.

Table 2.13 Education student load (EFSTL), by narrow discipline group and course level, 2002 and 2011

	Teacher Education	Curriculum and Education Studies	Other Education	Subtotal	Teacher Education	Curriculum and Education Studies	Other Education	Subtotal
Course Level	2002				2011			
Postgraduate—Research	822	1,230	434	2,486	548	1,400	524	2,472
Postgraduate—Other	5,777	4,037	581	10,395	14,223	4,252	1,228	19,703
Undergraduate—Bachelor's	22,195	14,762	523	37,480	32,724	9,953	1,084	43,761
Undergraduate—Other	236	182	49	467	343	69	78	490
Enabling courses	59	40	156	255	5	102	616	723
Non-Award courses	209	131	104	444	171	49	32	252
<b>Total</b>	<b>29,298</b>	<b>20,382</b>	<b>1,847</b>	<b>51,527</b>	<b>48,014</b>	<b>15,825</b>	<b>3,562</b>	<b>67,401</b>
<b>% of Subtotal</b>	<b>56.9%</b>	<b>39.6%</b>	<b>3.6%</b>	<b>100.0%</b>	<b>71.2%</b>	<b>23.5%</b>	<b>5.3%</b>	<b>100.0%</b>
	Variation No.				Variation %			
Postgraduate—Research	-274	170	90	-14	-33.3%	13.8%	20.7%	-0.6%
Postgraduate—Other	8,446	215	647	9,308	146.2%	5.3%	111.4%	89.5%
Undergraduate—Bachelor's	10,529	-4,809	561	6,281	47.4%	-32.6%	107.3%	16.8%
Undergraduate—Other	107	-113	29	23	45.3%	-62.1%	59.2%	4.9%
Enabling courses	-54	62	460	468	-91.5%	155.0%	294.9%	183.5%
Non-Award courses	-38	-82	-72	-192	-18.2%	-62.6%	-69.2%	-43.2%
<b>Total</b>	<b>18,716</b>	<b>-4,557</b>	<b>1,715</b>	<b>15,874</b>	<b>63.9%</b>	<b>-22.4%</b>	<b>92.9%</b>	<b>30.8%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Dobson's report.

Table 2.14 Education teaching: broad field of education of students taught, 2002 and 2011

Broad Field of Education	2002		2011	
	No.	%	No.	%
01 Natural and Physical Sciences	194	0.4%	409	0.6%
02 Information Technology	76	0.1%	55	0.1%
03 Engineering		0.0%	34	0.1%
04 Architecture and Building		0.0%		0.0%
05 Agriculture, Environmental and Related Studies	40	0.1%	46	0.1%
06 Health	495	1.0%	389	0.6%
07 Education	47,921	93.0%	62,769	93.1%
08 Management and Commerce	230	0.4%	283	0.4%
09 Society and Culture—Law	7	0.0%	9	0.0%
09 Society and Culture—Other	1,722	3.3%	2,701	4.0%
10 Creative Arts	363	0.7%	398	0.6%
Other Fields (incl. balancing)	499	1.0%	317	0.5%
<b>Total</b>	<b>51,547</b>	<b>100.0%</b>	<b>67,410</b>	<b>100.0%</b>

Source: Customised table—Department of Education, reproduced from Dobson's report.

### Trends in Management and Commerce

- » The first major issue to address in Management and Commerce is the high proportion of overseas students (more than half, up from a third of all enrolments in 2002) (Table 2.15 overleaf). The Dobson research suggests that this may be influenced by migration issues: the popularity of professions such as Accounting on skills shortages lists has created a situation where a degree completed in this FoE is likely to assist in obtaining residency in Australia. Many students do not stay, however, and this raises issues for the sector. On the one hand, this suggests that the offerings in most Australian universities are competitive in an international market. On the other hand, this rate of expansion puts considerable strain on those who must respond to such a rapid rise in student numbers. It also may result in future capability gaps for Australia.
- » The second major issue is the extraordinarily low figures for postgraduate research enrolments, less than 2% consistently over the period. There is a significant disparity between these figures and those for undergraduate enrolment, providing poor returns on investment at the undergraduate level. That said, a majority of graduate students are full fee-paying and thus generate income that is helping to fund this expansion.
- » There is a high level of service teaching into Management and Commerce with students receiving more than 30% of their teaching from other fields of education.
- » In 2011, private providers were responsible for approximately 7,500 completions, 80% of which were by overseas students.

Table 2.16 (overleaf) provides a more detailed picture of course completions 2002–11 for Management and Commerce. By 2011 Management and Commerce represented 40.9% of all completions across the system. While domestic completions have remained static over the period 2002–11, international student completions have increased, notably in postgraduate

**Table 2.15 Management and Commerce enrolments, by course level, gender, citizenship status, attendance mode and attendance type, 2002–11**

	2002	2005	2008	2011	Variation	
					No.	%
Postgraduate—Research	3,605	3,879	3,903	4,484	879	24.4%
Postgraduate—Other	75,303	88,714	95,785	92,373	17,070	22.7%
<b>Subtotal</b>	<b>78,908</b>	<b>92,593</b>	<b>99,688</b>	<b>96,857</b>	<b>17,949</b>	<b>22.7%</b>
Undergraduate—Bachelor's	160,005	178,349	199,848	222,241	62,236	38.9%
Undergraduate—Other	1,860	2,750	17,178	17,619	15,759	847.3%
<b>Subtotal</b>	<b>161,865</b>	<b>181,099</b>	<b>217,026</b>	<b>239,860</b>	<b>77,995</b>	<b>48.2%</b>
Enabling	63	20	302	99	36	57.1%
% Undergraduate	67.2%	66.2%	68.5%	71.2%		
Male	120,508	140,057	161,955	168,666	48,158	40.0%
Female	120,328	133,655	155,061	168,150	47,822	39.7%
% Female	50.0%	48.8%	48.9%	49.9%		
Domestic	158,663	158,905	163,850	166,553	7,890	5.0%
Overseas	82,173	114,807	153,166	170,263	88,090	107.2%
% Overseas	34.1%	41.9%	48.3%	50.6%		
Internal	192,123	220,969	268,723	289,536	97,413	50.7%
External	40,970	39,395	32,747	30,966	-10,004	-24.4%
Multi-modal	7,743	13,348	15,546	16,314	8,571	110.7%
% Internal	79.8%	80.7%	84.8%	86.0%		
Full-time	142,445	176,048	220,912	242,651	100,206	70.3%
Part-time	98,391	97,664	96,104	94,165	-4,226	-4.3%
% Full-time	59.1%	64.3%	69.7%	72.0%		
<b>Total</b>	<b>240,836</b>	<b>273,712</b>	<b>317,016</b>	<b>336,816</b>	<b>95,980</b>	<b>39.9%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

**Table 2.16 Management and Commerce course completions, 2002–11**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Variation	
											No.	%
<b>Postgraduate</b>												
<b>Research</b>												
Domestic	303	311	301	305	362	317	349	353	269	319	16	5.3%
Overseas	82	118	122	145	160	174	182	176	193	221	139	169.5%
<b>Total</b>	<b>385</b>	<b>429</b>	<b>423</b>	<b>450</b>	<b>522</b>	<b>491</b>	<b>531</b>	<b>529</b>	<b>462</b>	<b>540</b>	<b>155</b>	<b>40.3%</b>
% Overseas	21.3%	27.5%	28.8%	32.2%	30.7%	35.4%	34.3%	33.3%	41.8%	40.9%		
<b>Other</b>												
Domestic	12,781	13,519	14,120	14,078	13,560	13,120	13,243	12,809	13,683	13,691	910	7.1%
Overseas	11,240	14,746	15,359	17,193	17,723	20,214	23,227	24,639	26,138	25,479	14,239	126.7%
<b>Total</b>	<b>24,021</b>	<b>28,265</b>	<b>29,479</b>	<b>31,271</b>	<b>31,283</b>	<b>33,334</b>	<b>36,470</b>	<b>37,448</b>	<b>39,821</b>	<b>39,170</b>	<b>15,149</b>	<b>63.1%</b>
% Overseas	46.8%	52.2%	52.1%	55.0%	56.7%	60.6%	63.7%	65.8%	65.6%	65.0%		
<b>Subtotal</b>	<b>24,406</b>	<b>28,694</b>	<b>29,902</b>	<b>31,721</b>	<b>31,805</b>	<b>33,825</b>	<b>37,001</b>	<b>37,977</b>	<b>40,283</b>	<b>39,710</b>	<b>15,304</b>	<b>62.7%</b>
<b>Undergraduate</b>												
<b>Bachelor</b>												
Domestic	20,720	21,133	21,514	21,474	21,783	22,036	21,770	22,977	23,146	23,434	2,714	13.1%
Overseas	11,652	12,381	14,892	15,927	18,145	19,151	20,700	24,156	27,224	29,554	17,902	153.6%
<b>Total</b>	<b>32,372</b>	<b>33,514</b>	<b>36,406</b>	<b>37,401</b>	<b>39,928</b>	<b>41,187</b>	<b>42,470</b>	<b>47,133</b>	<b>50,370</b>	<b>52,988</b>	<b>20,616</b>	<b>63.7%</b>
% Overseas	36.0%	36.9%	40.9%	42.6%	45.4%	46.5%	48.7%	51.3%	54.0%	55.8%		
<b>Other</b>												
Domestic	473	532	400	559	729	1,047	1,145	1,220	1,221	1,198	725	153.3%
Overseas	177	223	178	251	1,546	4,391	5,880	6,884	7,295	6,195	6,018	3400.0%
<b>Total</b>	<b>650</b>	<b>755</b>	<b>578</b>	<b>810</b>	<b>2,275</b>	<b>5,438</b>	<b>7,025</b>	<b>8,104</b>	<b>8,516</b>	<b>7,393</b>	<b>6,743</b>	<b>1037.4%</b>
% Overseas	27.2%	29.5%	30.8%	31.0%	68.0%	80.7%	83.7%	84.9%	85.7%	83.8%		
<b>Subtotal</b>	<b>33,022</b>	<b>34,269</b>	<b>36,984</b>	<b>38,211</b>	<b>42,203</b>	<b>46,625</b>	<b>49,495</b>	<b>55,237</b>	<b>58,886</b>	<b>60,381</b>	<b>27,359</b>	<b>82.9%</b>
<b>Total</b>	<b>57,428</b>	<b>62,963</b>	<b>66,886</b>	<b>69,932</b>	<b>74,008</b>	<b>80,450</b>	<b>86,496</b>	<b>93,214</b>	<b>99,169</b>	<b>100,091</b>	<b>42,663</b>	<b>74.3%</b>

Source: Department of Education—Higher Education Statistics Data Cube (uCube), reproduced from Ian Dobson's report.

other (i.e. Master's/coursework), to the point where international students comprise 65% of completions in 2011. The other point of note here relates to the relatively small number of postgraduate research completions (international and domestic): only 1.34% of total postgraduate completions.

### Socio-economic Status (SES)

Dobson provided additional analysis of the SES of students. The HASS fields, with a few notable exceptions (Education, Management and Commerce), do not do well in attracting low SES students. There are a number of possible reasons for this. For example, areas that appear to have a more direct professional destination—Health, Education, Law, and Engineering, for instance—are likely to be more attractive to students from low SES backgrounds where vocational outcomes of tertiary education are more likely to be seen as a necessity.

Data from the former Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE) on student tertiary applications supports the findings from Dobson's analysis that low SES students are much less likely to apply for courses in Architecture and Building, Management and Commerce, Society and Culture, and Creative Arts fields, compared to high SES students.<sup>10</sup> Education is the only HASS field where low SES students are more likely to apply than high SES students.

Table 2.17 shows HASS course completions by broad FoE and SES in 2002 and 2011. There are difficulties in reading this

data for more than the above noted broad trends, but Dobson's analysis suggests that the system remains skewed towards the higher SES students:

Whereas high SES students would represent 25% of the student population if their presence in the population of students completing courses matched their overall presence, in fact they represented 32.3% in 2011. Within the humanities and social sciences disciplines, only in Education is the proportion of high SES attuned to the population overall. The other fields of education show much greater bias when compared with the population at large. The proportion of students from low SES postcodes is low indeed, in all but Education, but even in Education, the proportion is ten percentage points lower than the defined low SES population (25%).

It is also noteworthy that 20% of completions were from postcodes that were 'SES not known', which represents a large cohort of students—approximately double the proportion of students completing courses defined as being of low SES. Dobson provided additional estimates (in Table 2.17 referred to as 'Estimates 2011'), in which 'unknown' SES status was removed from the calculations:

Of the remaining students, about 14% would be low SES and about 40% high SES. It is interesting to note the underrepresentation of the middle SES level, which would represent 50% if the university population 'matched' the overall population.

**Table 2.17 Award course completions for domestic students, by broad field of education and socio-economic status, 2002 and 2011**

2002	Architecture and Building	Education	Management and Commerce	Society and Culture	Creative Arts	All Fields of Education
Low	6.9%	15.5%	8.8%	9.3%	9.3%	11.0%
Middle	28.1%	42.1%	32.1%	31.5%	33.3%	34.8%
High	44.4%	25.6%	35.5%	35.5%	41.3%	32.4%
Unknown	20.7%	16.7%	23.5%	23.7%	16.2%	21.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2011						
Low	8.4%	15.3%	10.0%	9.3%	8.5%	11.1%
Middle	34.5%	45.7%	35.1%	31.7%	34.8%	36.9%
High	40.9%	24.8%	36.3%	35.7%	39.4%	32.3%
Unknown	16.2%	14.2%	18.6%	23.3%	17.2%	19.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Estimates 2011						
Low	10.1%	17.8%	12.3%	12.2%	10.3%	13.8%
Middle	41.1%	53.3%	43.1%	41.3%	42.1%	45.9%
High	48.8%	28.9%	44.6%	46.5%	47.6%	40.2%
Unknown						
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Customised table, Department of Education.

Note: (a) Low SES postcode measure is based on the student postcode of permanent home residence, with the SES value derived from the 2006 SEIFA Education and Occupation Index for postal areas, where postal areas in the bottom 25% of the population aged 15–64 are classified as Low SES.

(b) Not known relates to a postcode that is not on the SEIFA SES file.



## 2.4 Student Demand

### Undergraduate applications, offers and acceptances

The study reviewed publicly available data on undergraduate applications, offers and acceptances. The following analysis gives a snapshot of 2012, followed by additional tables showing changes over the 2009–12 period.

The Department of Industry's reports no longer include unmet demand analysis because 'the new demand driven system has changed the concept of unmet demand from one that measures the inability of applicants to secure university entrance, to one that reflects the mismatch between applicants' preferences for particular fields of education or university'.<sup>11</sup>

#### 2012 Snapshot:

The most popular broad field of education (in terms of number of highest preference applications) in 2012 was Health (68,861). This was followed by Society and Culture (55,231) and Management and Commerce (35,182). Natural and Physical Sciences recorded the largest increase in applications (10.8%), followed by Engineering (6.2%) and Health (4.1%). The largest decline in the number of applications was recorded in Creative Arts (-3.8%), followed by Architecture and Building (-3.1%).

It is worth noting that direct applications comprise a sizeable component of HASS applications. Direct applications are an indicator of different pathways/cohorts, given that applicants tend to be older than those applying through the tertiary admissions process. The Society and Culture field received just over 30% of the entire direct applications to university in 2012.

Across the entire system, offers in 2012 increased 5.2% overall in comparison with 2011. The national offer rate (number of offers as a percentage of highest preference applications) increased from 79.1% in 2011 to 81.4% in 2012. As the report observes 'the offer rate provides an indicator of the way in which universities choose to respond to student demand' in the context of the new demand-driven system.<sup>12</sup>

HASS share of offers in 2012 was 57%, Society and Culture was 23.1%. Table 2.18 summarises the share of offers by Australian Tertiary Admissions Rank (ATAR) band. The snapshot here does not give a sense of any changes of note. (Looking at changes over the last decade, and specifically since the introduction of the demand-driven system, will put these numbers in perspective.) While the top three fields with offers to students in the highest ATAR band (ATAR above 90) are all STEM fields (Natural and Physical Sciences, then Engineering, followed by Health), it should be noted that this is largely a function of the supply and demand curve—that is, it reflects the number of places on offer (in 2012, Natural and Physical Sciences, for instance, offered 23,000 places, while Society and Culture offered 51,000). Most offers go to the HASS fields and so their ATAR scores are lower than fields which offer fewer places.

A recent study conducted by Edwards and Radloff for the Australian Council for Educational Research (ACER) has observed that since the introduction of the demand-driven system there has been no substantial impact on ATAR distribution for domestic undergraduate commencing students. They observe that between 2009 and 2012 there has been some growth in undergraduate commencements with ATAR scores under 60 'in the cohorts entering the fastest growing

institutions', but this 'change is not occurring rapidly among the very low ATAR students and it is difficult to determine the extent to which this change suggests any noticeable diminishing of quality across the system or in the high growth universities'.<sup>13</sup> Edwards and Radloff do not undertake an examination of ATAR trends by broad field of education; this is an area that warrants further work.

Table 2.19 summarises applications, offers and acceptances over the period 2009–12 by broad field of education. Analysis of the Society and Culture fields, 2009–12, reveal downward trends against all of these indicators:

- » Applications have increased across the system from 2009 to 2012 by 9.38%. In the Society and Culture field, numbers of applications have essentially remained static (from 2009 to 2012 they are slightly down, -0.4%). Society and Culture applications comprised 22.2% of all applications in 2009 and in 2012 the proportion has decreased to 20.2%.
- » Numbers of Society and Culture offers increased by 10.7% over the period; but their share as a proportion of the whole system has gone down from 24.3% in 2009 to 23.1% in 2012.
- » Numbers of Society and Culture acceptances increased 4.4% over the period, however, as a proportion of overall acceptances, Society and Culture has gone down from 23.9% in 2009 to 21.7% in 2012.

### 2.5 Staff–Student Ratio

The study requested data on staff–student ratios (SSR) from the Department of Education, to track changes over the last ten years by Academic Organisational Unit (AOU) group (which essentially maps to Fields of Education).<sup>14</sup>

General trends across the system in the period 2002–12 can be seen in Figure 2.3 (overleaf), which plots equivalent full-time students alongside equivalent full-time teaching staff (i.e. staff with a 'teaching only' or a 'teaching and research' function). It should be noted that staff–student ratios are often underestimated; the Department of Education is unable to separate out 'teaching only' from 'teaching and research' staff, so it is not possible to discern the teaching load across the spectrum of staff who have teaching responsibilities.

While student load has increased 44% over the 2002–12 period, staff growth has been in the order of 26%. A number of studies have observed that the growth in teaching staff has been in the area of casual appointees, but there is conflicting evidence on this that suggests a more close-grained analysis is required.

It is important to note that there was a significant increase in SSRs in HASS during the 1990s, and therefore the starting point in 2002 for the HASS disciplines was already significantly higher than for the STEM disciplines. Between 1989 and 1999, SSRs in HASS rose by between 27% and 35%.<sup>15</sup> In 1999, the average SSR for HASS was 20.55 while the average SSR for STEM was 15.74.<sup>16</sup> This is a product of cluster funding differentials that have determined the numbers of students required to make the teaching of HASS subjects viable. A consequence of this has been an increase in the number of casual and sessional staff employed as a means of reducing labour costs. This issue will be reviewed further in Chapter 4.

Table 2.18 Share of offers, by ATAR band and broad field of education, 2012

Broads Field of Education	50.00 or less	50.05–60.00	60.05–70.00	70.05–80.00	80.05–90.00	90.05 or more	No ATAR / Non-Yr 12	Total offers (%)	Total offers (No.)
Natural and Physical Sciences	0.9%	3.4%	7.4%	11.4%	16.5%	27.9%	32.5%	100.0%	23,148
Information Technology	3.4%	10.3%	15.7%	13.5%	10.6%	4.2%	42.2%	100.0%	6,081
Engineering	0.7%	2.0%	6.2%	11.5%	18.9%	26.2%	34.6%	100.0%	15,586
Architecture	1.1%	2.9%	7.2%	12.5%	15.1%	9.5%	51.7%	100.0%	6,432
Agriculture, Environmental and Related Studies	2.4%	4.3%	10.0%	12.7%	16.4%	11.6%	42.6%	100.0%	4,164
Health	1.4%	3.4%	7.3%	8.7%	10.3%	14.2%	54.7%	100.0%	44,227
<i>Medical Studies</i>	0.0%	0.3%	2.9%	6.8%	5.2%	54.0%	30.7%	100.0%	2,480
<i>Nursing</i>	2.2%	4.4%	8.9%	7.8%	4.9%	1.9%	70.0%	100.0%	16,934
<i>Dental Studies</i>	0.0%	0.3%	1.3%	2.6%	4.4%	40.7%	50.7%	100.0%	1,100
<i>Veterinary Studies</i>	0.0%	0.0%	0.5%	2.7%	7.5%	34.3%	55.1%	100.0%	601
Education	2.8%	6.6%	13.1%	11.5%	7.3%	2.2%	56.5%	100.0%	19,010
Management and Commerce	1.9%	5.8%	11.1%	11.8%	12.9%	15.1%	41.4%	100.0%	30,949
Society and Culture	1.7%	5.3%	8.5%	9.6%	12.2%	15.0%	47.7%	100.0%	51,491
Creative Arts	1.9%	4.8%	9.8%	12.5%	14.8%	11.1%	45.0%	100.0%	19,120
<b>Total</b>	<b>1.7%</b>	<b>4.6%</b>	<b>9.0%</b>	<b>10.8%</b>	<b>12.7%</b>	<b>14.9%</b>	<b>46.2%</b>	<b>100.0%</b>	<b>222,476</b>

Source: Department of Education, *Undergraduate Applications, Offers and Acceptances 2012*.

Note: Hospitality and Mixed Field Programmes are not shown due to the small number of offers, hence the total number of offers does not equal the sum of offers by broad field of education in the table.

Table 2.19 Applications, offers and acceptances, by broad field of education, 2009–12

Broad Field of Education	Applications				Offers				Acceptances			
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012
Natural and Physical Sciences	17,222	19,390	20,932	23,199	18,018	20,420	21,741	23,148	12,759	14,654	15,320	16,519
Information Technology	6,500	6,802	6,712	6,891	5,219	5,943	6,013	6,081	4,171	4,569	4,644	4,682
Engineering and Related Technologies	16,523	16,713	17,159	18,224	13,803	14,083	14,489	15,586	10,409	10,867	11,150	12,046
Architecture and Building	8,877	9,430	9,428	9,137	5,804	6,235	6,318	6,432	4,422	4,801	4,749	4,832
Agriculture, Environmental and Related Studies	4,272	4,491	4,231	4,203	4,042	4,341	4,086	4,164	2,623	2,936	2,738	2,734
<i>Health</i>	57,006	64,394	66,156	68,861	35,317	38,467	40,124	44,227	25,054	27,462	27,960	31,324
<i>Medical Studies</i>	10,110	11,438	12,681	11,814	2,146	2,466	2,669	2,480	1,548	1,783	1,867	1,680
<i>Nursing</i>	18,768	22,527	21,596	22,176	14,061	15,865	15,627	16,934	10,859	11,993	11,489	12,633
<i>Dental Studies</i>	3,553	3,547	4,084	3,964	1,069	1,103	1,114	1,100	683	684	695	660
<i>Veterinary Studies</i>	2,378	2,007	2,100	2,302	699	595	598	601	429	399	377	392
Health Other	22,197	24,875	25,695	28,605	17,342	18,438	20,116	23,112	11,535	12,603	13,532	15,959
Education	22,858	24,684	23,402	23,542	16,871	17,843	18,470	19,010	12,258	13,055	13,234	13,928
Management and Commerce	35,308	34,788	34,790	35,182	28,394	29,194	30,327	30,949	21,426	21,838	22,099	23,357
Society and Culture	55,451	56,737	55,024	55,231	46,515	47,889	49,243	51,491	33,179	34,642	34,138	34,635
Creative Arts	25,668	28,139	27,455	26,417	17,044	18,921	19,054	19,120	12,369	13,232	13,590	14,055
<b>Total</b>	<b>249,743</b>	<b>266,996</b>	<b>267,210</b>	<b>273,167</b>	<b>191,068</b>	<b>204,794</b>	<b>211,485</b>	<b>222,476</b>	<b>138,697</b>	<b>149,230</b>	<b>150,966</b>	<b>159,837</b>

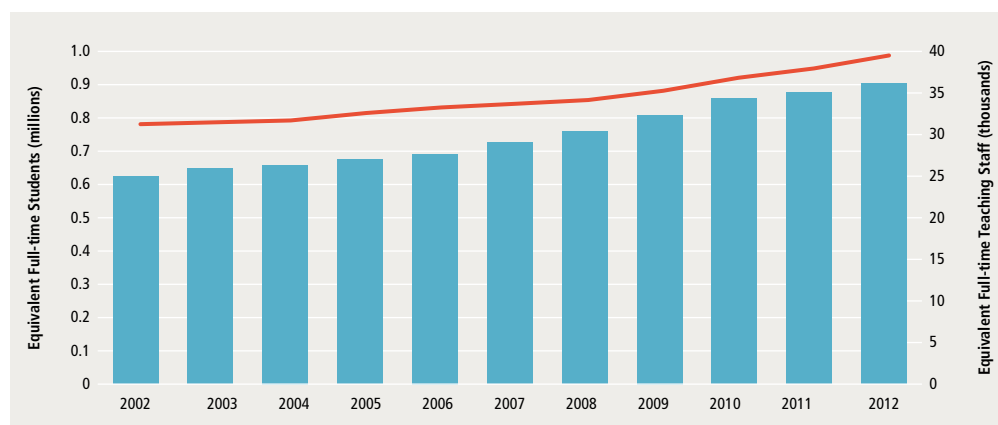
Source: Department of Education, *Undergraduate Applications, Offers and Acceptances 2012*.

Notes: (a) Unpaid Victorian Tertiary Admission Centre (VTAC) applicants are included in the 2009 and 2010 applications and excluded in the subsequent years.

(b) Victoria made supplementary offers from 2010 onwards. A supplementary offer is an offer of a place in a course for which there was no expressed preference in the application. In 2012, VTAC made 4,923 supplementary offers.



**Figure 2.3 Total academic teaching staff (FTE) and students (EFTSL), all fields of education, 2002–12**



“While student load has increased 44% over the period, staff growth has been in the order of 26%.”

Source: Department of Education—Higher Education Statistics Data Cube (uCube).

Table 2.20 presents data on staff–student ratios by Academic Organisational Unit group, from 2002–12. It demonstrates that:

- » On average, over the period 2002–12, HASS student to staff ratio was 22.6 students per FTE staff member, while the STEM student to staff ratio was 16.8 students per FTE staff member.
- » Within HASS, Management and Commerce had the highest staff–student ratio, at an average of 28.5 students per FTE staff member.
- » Education and Society and Culture also have comparatively high student to staff ratios, averaging 22.3 and 22.61, respectively.
- » Of all the HASS disciplines, Creative Arts had the lowest student to staff ratio, at 19.09 students per FTE staff member, which reflects the relatively high level of cluster funding going to some of these disciplines compared to most other HASS disciplines. The differential was based on the established need for small group instruction (training in a musical instrument, for instance) in some of these programmes.
- » All HASS disciplines experienced an increase in student to staff ratios over the 2002–12 time period, with Creative Arts experiencing the highest rate of growth at an increase of 14.01 percentage points from 2002–12. Management and Commerce experienced the lowest increase, of the HASS fields, at an increase of 4.72 percentage points.
- » SSRs in some STEM areas have recorded larger percentage increases over the period than the HASS average. This is largely due to the fact that HASS SSRs were already significantly higher than those in STEM; the increasing productivity gains across the system occurred first in HASS and have had their greatest impact in HASS.

**Table 2.20 Number of students per staff member: onshore student EFTSL and staff FTE in all Academic Organisational Unit group (broad), for full-time, fractional full-time and actual casual staff, 2002–12**

Academic Organisational Unit group	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average 2002–12	% Change 2002–12
Natural and Physical Sciences	15.26	15.75	15.53	15.49	15.64	16.11	16.26	16.63	17.80	17.66	19.11	16.48	25.25
Information Technology	22.78	20.82	21.01	20.91	17.96	19.24	20.07	22.16	23.40	21.67	20.87	20.99	-8.41
Engineering and Related Technologies	16.65	17.56	17.79	16.64	16.85	17.71	18.35	19.14	21.11	20.50	20.71	18.45	24.40
Architecture and Building	18.94	20.89	21.53	22.24	22.13	21.51	22.02	20.13	18.71	19.36	20.63	20.74	8.92
Agriculture, Environmental and Related Studies	13.19	13.67	14.09	11.62	13.06	12.34	12.03	12.57	13.61	13.51	13.87	13.05	5.12
Health	13.57	14.42	14.30	14.51	15.57	15.35	15.29	15.91	16.13	15.97	16.51	15.23	21.63
Education	22.16	22.43	22.06	21.19	21.35	22.69	22.88	22.26	22.37	22.22	23.71	22.30	6.99
Management and Commerce	26.56	27.66	29.12	29.05	30.15	28.65	29.01	28.40	29.48	28.04	27.82	28.54	4.72
Society and Culture	22.18	22.13	21.97	21.58	22.11	21.43	22.66	22.90	24.43	23.81	23.47	22.61	5.78
Creative Arts	18.24	19.17	18.53	18.14	17.85	18.99	18.60	19.34	20.29	20.07	20.80	19.09	14.01
<b>All</b>	<b>19.33</b>	<b>19.78</b>	<b>19.55</b>	<b>19.26</b>	<b>19.38</b>	<b>19.55</b>	<b>19.74</b>	<b>20.05</b>	<b>20.63</b>	<b>20.18</b>	<b>20.44</b>	<b>19.81</b>	<b>5.72</b>

Source: Department of Education, customised data.

Notes: (a) Data included Table A/B providers, student figures include only onshore student load (exclude work experience).

(b) Data include Academic department teaching academic staff E510=1xxx, University staff E511=1 and E412=1 or 3 for full-time, fractional full-time and actual casual staff.

(c) Staff FTE: full-time, fractional full-time in an AOU group.

(d) Only staff whose function is 'Teaching-only' or 'Teaching and Research' has an appropriate AOU group mapping.

## 2.6 Course Provision

The data which would enable a comprehensive study of changes in course provision are not readily available and it was beyond the resources of this study to remedy this situation. These data would need to be collected manually from websites, course handbooks, and through survey work. However, the Australasian Deans of Arts, Social Sciences and Humanities (DASSH) has conducted work of note in this area in relation to Bachelor of Arts (BA) programmes and, while its observations are limited to the BA, it is useful in providing indicators of significant trends, particularly over the last five years, that would affect the greater part of the HASS sector.

The report *Benchmarking the Australian Bachelor of Arts* (2012) found that in the period prior to 2008 there ‘was a fair degree of change and faculty restructuring’ that impacted on the management of BA programmes across the country.<sup>17</sup> In the period 2008–12, however, ‘only eight of the 35 institutions with a BA programme report[ed] a restructure’ that had an impact.<sup>18</sup> It is quite another story in terms of the changes to the BA programme itself, however. DASSH reports that in the period 2008 to 2012 there was ‘substantial change’ to 30 of 39 institutions under examination. Again, in the period prior to 2008, programme changes were essentially the outcomes of ‘institutional restructuring or large-scale institution-wide changes’ whereas in the recent period to 2012 most changes are attributable to programme reviews.<sup>19</sup> The DASSH report also foresees further likely rationalisation of majors ‘particularly in the form of rationalising the number offered and the units offered within the majors’ and anecdotal evidence over the last few years would certainly support this.<sup>20</sup>

### Some key findings from the DASSH study:

- » There has been a significant rethinking of the market for the BA, with the so-called ‘tagged’ degrees that were in favour ten years ago giving way to the return of more generalist degree nomenclature; an increasing number of concurrent diplomas are available particularly in languages, global and international studies, music and fine arts; since 2008, DASSH reports, nine institutions have adapted programme rules to accommodate double degree structures and many institutions report an increasing demand for double degrees.
- » The presence of the BA is weakening in certain parts of the system; most of the Australian Technology Network (ATN) universities, with the exception of University of South Australia and Curtin University, do not offer a BA, and most regional institutions offer limited and highly prescriptive BA programmes. The top BA enrolling institutions are Group of Eight (Go8) universities.
- » There has been some change in the provision of majors within the BA, with fewer majors offered in 2012 than in 2008, and Psychology losing its position as the most offered major in 2008 (followed by History and Sociology) to History (followed by Sociology and then Psychology). The largest increase in majors offered was in Languages Other Than English (LOTE) courses between 2008–12 (the introduction of the Melbourne model is one of the specific factors involved in this result).
- » The numbers enrolling in the Society and Culture FoE, as noted earlier in this report, have increased but their proportion of the sector has decreased. For the BA, numbers underwent a steep decline in 2008 but have recovered significantly, although to a level only slightly higher

than 2001. The numbers of students enrolling in dual degrees increased by 3% between 2001 and 2010, but it is likely that more recent figures on the uptake of dual degrees would return a much stronger increase.

- » While the evidence on ATAR scores is difficult to obtain, and indeed plays almost a commercial role for institutions wishing to advertise to prospective students, the report does conclude that BA programmes offered on regional campuses or in regional universities have lower entry scores and appear to have dropped further in the period 2001–12. Where ATAR scores drop, the report notes, this tends to coincide with a drop in student numbers.
- » The ongoing process of rationalisation—that is, in effect, reducing the number of majors and the units offered within majors—has the potential to weaken the value of the broadly based BA that provides access to LOTE, studies of cultures, and History as core content knowledge; this, notwithstanding the fact that there has been an apparent expansion in the total number of LOTE offerings and History is the most widely offered major.
- » It is in the area of course provision that some of the more intractable issues around the effect of a demand-driven system occur; the specific institutional logics which drive rationalisation are not always going to be in the national interest, nor indeed in the interest of particular disciplines or fields of education. The *Health of Australian Science* (2012) report, as well as the DASSH report, has raised concerns about the importance of what have been called enabling disciplines—in STEM, the situation of mathematics is one example, and within HASS we could nominate, for example, History. Allowing the presence of such fields to decline to the point where it affects the national capacity is clearly not desirable. However, the demand-driven system does not encourage individual institutions to take responsibility for what is in the end a national capability. The data provided in this report is aimed at assisting policy responses to this situation which might articulate a more explicit planning process to protect the long-term national interest.

## 2.7 Graduate Destinations

In this section some background to the position of university graduates in the overall workforce is provided—based on census data from the Australian Bureau of Statistics (ABS)—before examining labour market engagement of recent Bachelor degree graduates (primarily via the Graduate Destinations Survey). Table 2.21 summarises select demographic characteristics of the Australian population who are HASS qualified (at Bachelor level and above). The HASS tertiary-trained population represents 60.4% of people with a Bachelor degree or higher qualification in any field.

The numbers in each of the broad HASS fields (Table 2.22) demonstrate how large the HASS ‘constituencies’ are.

The next set of tables and figures present data collected by Graduate Careers from the Bachelor Graduate Destinations, Postgraduate Destinations and Beyond Graduation questionnaires.

It should be acknowledged that the Graduate Destinations Survey is limited by the fact that graduates are surveyed only four months after receiving their Bachelor’s degree by their awarding institution. Nonetheless, it is a standard tool for

**Table 2.21 Selected demographic characteristics of the HASS tertiary-qualified population in 2011 (Bachelor degree and above qualification)\***

	Architecture and Building	Education	Management and Commerce	Society and Culture	Creative Arts	Total HASS	Total STEM (excl. Health and Agriculture)	All fields
<b>Numbers ('000)</b>	<b>62</b>	<b>511</b>	<b>700</b>	<b>542</b>	<b>161</b>	<b>1976</b>	<b>651</b>	<b>3269</b>
<b>Sex (%)</b>								
Male	65	26	53	39	37	44	72	45
Female	35	74	47	61	63	56	28	55
<b>Age (%)</b>								
20–29	26	14	26	19	34	24	22	22
30–39	31	24	32	27	33	29	32	29
40–49	21	22	23	22	19	21	22	22
50–59	15	25	13	19	10	16	15	17
60–69	8	15	6	13	4	9	8	10
<b>Qualification level (%)</b>								
Bachelor Degree	78	67	67	79	83	75	72	72
Graduate Diploma/Certificate	6	20	9	9	5	10	4	9
Postgraduate Degree	16	13	25	21	12	17	24	19

Source: Australian Bureau of Statistics, 2011 Census of Population and Housing.

\*Based on a table in 'The STEM Labour Market in Australia' report for Australian Council of Learned Academies.<sup>21</sup>

**Table 2.22 Age profile of HASS tertiary-qualified population aged 20–69 years (Bachelor degree and above) in 2011, by broad field of education**

	Architecture and Building	Education	Management and Commerce	Creative Arts	Society and Culture
20-29 years	14,772	69,066	177,230	54,299	97,784
30-39 years	18,332	114,667	221,602	51,694	138,766
40-49 years	12,843	108,362	154,512	29,405	113,187
50-59 years	9,093	119,959	92,139	15,589	97,443
60-69 years	5,038	70,562	40,135	6,746	64,685
<b>Total</b>	<b>60,078</b>	<b>482,616</b>	<b>685,618</b>	<b>157,733</b>	<b>511,865</b>

Source: Australian Bureau of Statistics, 2011 Census of Population and Housing.

assessing graduates' employability, and so this chapter provides a summary of trends that the survey picks up in relation to graduates from the HASS sector. The following discussion of these trends responds to data on Bachelor's degree, Master's and PhD graduates' labour market activities, including whether graduates are engaged in full-time employment, the type of industry/sector they are employed in, and the relationship between graduates' field of education and the importance of their qualification and skills for their employment.

## Overall trends from Graduate Destinations Survey, 2012

### Main activity of Bachelor graduates in 2012:

- » In 2012, 63% of all graduates responding to the survey were available for full-time employment, and 21% were available for full-time study. Only 5% of all graduates across the system were unavailable for full-time study or full-time employment.
- » Of the HASS disciplines, Building had the highest proportion of graduates available for full-time employment at 79.3%. Psychology had the lowest rate of graduates available for full-time employment, at 40.3%, though this low percentage is likely to be related to the high rate of Psychology graduates fulfilling accreditation requirements by enrolling in full-time study (38% were enrolled in full-time study).
- » There was a high percentage of HASS graduates enrolled in full-time study, ranging from 38% of Psychology graduates to 29.5% of Visual/Performing Arts graduates.
- » Only 44% of Visual/Performing Arts graduates responded that they were available for full-time employment, while only 29% of graduates stated they were available for full-time study. These are comparatively low numbers. However, a relatively high percentage of Visual/Performing Arts graduates were engaged in part-time or casual employment and not seeking full-time work.

### Percentage of Bachelor degree graduates in full-time employment:

- » Of all graduates who indicated they were available for full-time employment, 76% were in full-time employment.
- » Of the HASS disciplines, Building was the discipline with the highest percentage of graduates in full-time employment (83%); this was followed by Law (also 83%), Accounting (80%) and Social Work (75%).

- » Visual/Performing Arts had the lowest percentage of graduates, who were available for full-time employment, in full-time employment at only 54%.
- » Interestingly, Education (Post/Other) also had a comparatively low percentage of graduates available for full-time work, in full-time work at 59%. Of Education (Post/Other) graduates who were available for full-time work, 41% were seeking full-time work; this was second to the rate of Visual/Performing Arts graduates (46%).
- » Social Science graduates also had relatively high rates of unemployment. Only 62% of Social Science graduates who indicated in the survey that they were available for full-time employment had full-time employment, while a further 16% were seeking full-time employment and not working, and a further 22% were working part-time or casually and seeking full-time employment. Of Social Work graduates who were available for full-time employment, 75% were employed full-time.
- » The survey results indicate that fields of education that have clearer vocational pathways post-Bachelor degree have higher rates of full-time employment. For example, Building, Urban and Regional Planning, Social Work, Education (initial) and Law all have full-time employment rates at over 70%.

While these data are useful up to a point, a more reliable and accurate picture of the destinations of graduates in the long term (if less representative due to the lower response ratio) is the Beyond Graduation Survey, which is taken four years after graduation and thus provides a more realistic assessment of graduates' employability as well as their career destination. The most recent survey was conducted in 2012, and covers the 2009 graduate cohort.

### Overall trends from Beyond Graduation Survey, 2012

Differences between the outcomes of the Graduate Destinations Survey and the Beyond Graduations Survey are immediately apparent in Table 2.23, with data from the latter survey providing a more positive perspective on the employment prospects of HASS graduates:

- » In 2009 (four months after graduation), 77% of the cohort of Society and Culture graduates available for full-time employment were in full-time employment. By 2012 (four years after graduation), this figure had risen to 90%. Comparable figures for Creative Arts Bachelor graduates were 59% and 88%.
- » Across all STEM and HASS disciplines there was a 13% increase in the proportion of Bachelor graduates in full-time employment, of those available for full-time employment, as the period post-graduation extended from four months to four years.
- » By 2012 three out of five HASS fields had graduates employed full-time at or above the average for all Bachelor graduates. However, Society and Culture and Creative Arts graduates, while employed at a high percentage, in 2012 were still under the overall system average.

**Table 2.23 The 2009 cohort Bachelor graduates working full-time as a proportion of those available for full-time employment, by sex and broad field of education, 2009 and 2012 (four months, and four years after graduation)**

	2009		2012	
	%	n	%	n
<b>Males</b>				
Natural and Physical Sciences	63.9	133	87.1	170
Information Technology	82.7	133	93.2	147
Engineering and Related Technologies	88.1	260	97.7	264
Architecture and Building	82.9	35	94.7	38
Agriculture and Environmental Studies	82.1	39	91.3	46
Health	93.3	165	94.4	179
Education	83.6	128	94.1	135
Management and Commerce	83.9	360	94.1	391
Society and Culture	76.5	302	90.4	363
Creative Arts	53.2	109	83.1	118
<b>Total</b>	<b>80.3</b>	<b>1,664</b>	<b>92.4</b>	<b>1,851</b>
<b>Females</b>				
Natural and Physical Sciences	63.0	235	85.6	263
Information Technology	76.6	47	93.9	49
Engineering and Related Technologies	90.7	54	98.2	57
Architecture and Building	72.7	44	91.5	47
Agriculture and Environmental Studies	76.1	71	94.3	88
Health	91.1	653	94.3	601
Education	81.1	460	92.8	461
Management and Commerce	80.8	521	95.5	552
Society and Culture	76.6	790	90.2	897
Creative Arts	61.7	274	90.2	306
<b>Total</b>	<b>78.8</b>	<b>3,149</b>	<b>92.1</b>	<b>3,321</b>
Natural and Physical Sciences	63.3	368	86.1	433
Information Technology	81.1	180	93.4	196
Engineering and Related Technologies	88.5	314	97.8	321
Architecture and Building	77.2	79	92.9	85
Agriculture and Environmental Studies	78.2	110	93.3	134
Health	91.6	818	94.4	780
Education	81.6	588	93.1	596
Management and Commerce	82.1	881	94.9	943
Society and Culture	76.6	1,092	90.2	1,260
Creative Arts	59.3	383	88.2	424
<b>Total</b>	<b>79.3</b>	<b>4,813</b>	<b>92.2</b>	<b>5,172</b>

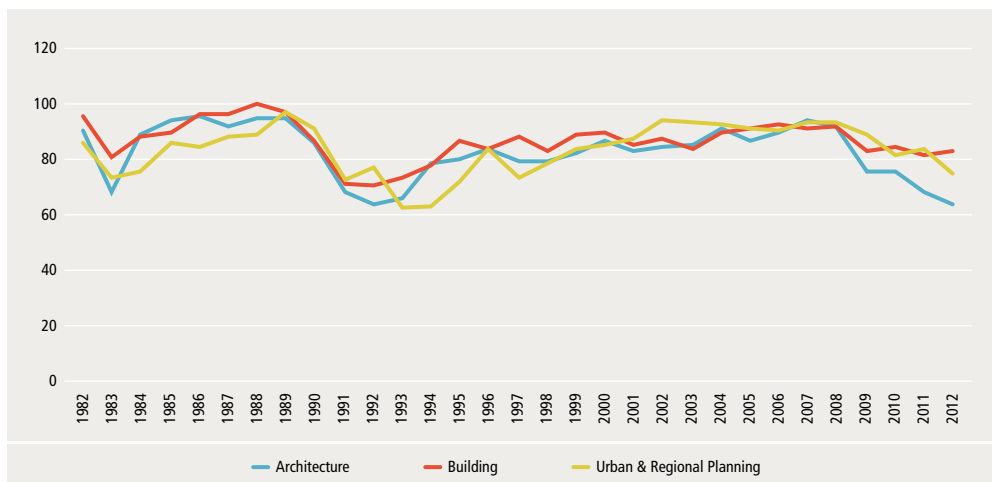
Source: Beyond Graduation 2012, Graduate Careers Australia, p. 3.

### Overall trends from Graduate Destinations Survey, 1982–2012

The following set of figures present time series data (over the period 1982–2012) for HASS Bachelor degree graduates (based on Graduates Destinations Survey data). Patterns regarding HASS Bachelor graduates who were available for full-time employment are as follows:

- » Building graduates overall consistently experience the highest rates of full-time employment, varying between about 98% and 82% over the 20-year period. In the last four years (2008–12) the gap between Building and Architecture graduates widened to nearly 20%, which is the highest margin reported in the 20-year period (Figure 2.4).
- » Visual/Performing Arts graduates had the lowest rates of full-time employment across all HASS fields of education for the period between 1982 and 2012 (Figure 2.5).
- » By 2012 Languages graduates had the second highest rate of full-time employment, at around 65%, very close to the employability rate of Psychology graduates. Social Science graduates also clustered around the same full-time employment rates as Languages, and Humanities, ranging between 78% and 65% over the 1982–2012 period (Figure 2.5).
- » The full-time employment rates of Education graduates have remained fairly consistent since the mid-1990s, although Education (initial) graduates experienced a sharp decrease in full-time employment rates from the late 1980s to the early 1990s of over 20%. The full-time employment rates of Education (initial) gradually increased over the 1990s and by 2012, Education (initial) full-time employment rates had levelled out to just under 80% (Figure 2.6).
- » Education (Post/Other) graduates experienced a steep decrease in full-time employment rates in 2009 while Education (initial) employment rates remained steady. Most other HASS graduates also experienced a decline in full-time employment rates around 2008 when the effects of the global financial crisis were beginning to be felt, but Education (initial) graduate full-time employment rates only experienced a very minor decrease around this time (Figure 2.6).
- » Law graduates also experienced a modest fall in full-time employment rates across the 1982–2012 survey period. In 1982, close to 90% of Law Bachelor graduates were in full-time work, and in 2012 about 82% of Law graduates were in full-time employment, representing an 8% decrease over the 20-year period (Figure 2.7).

**Figure 2.4 Bachelor degree graduates working full-time as a proportion of those available for full-time employment, four months after graduation, by select aggregated field of education, 1982–2012: Architecture and Building**

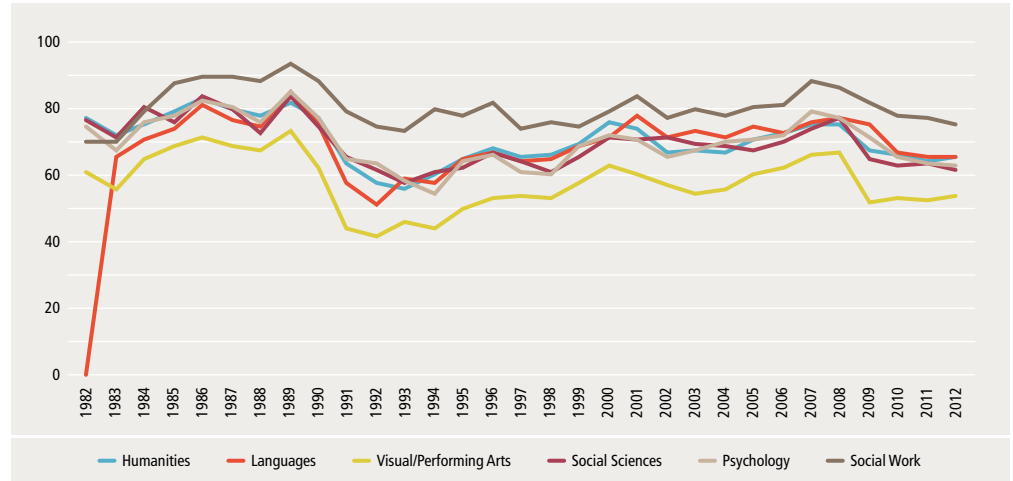


Source: Graduate Destinations Tables and Figures, 2012, Graduate Careers Australia.

Note: Figures for years before 1990 are based on all graduates, and not just Australian citizens and permanent residents. Figures from 1990 on are based on Australian citizens and permanent residents only. Figures prior to 1995 might not match those from previous reports due to being recalculated on Australian citizens and permanent resident responses only.



**Figure 2.5 Bachelor degree graduates working full-time as a proportion of those available for full-time employment, four months after graduation, by select aggregated field of education, 1982–2012: Humanities, Languages, Visual/Performing Arts, Social Sciences, Psychology and Social Work**



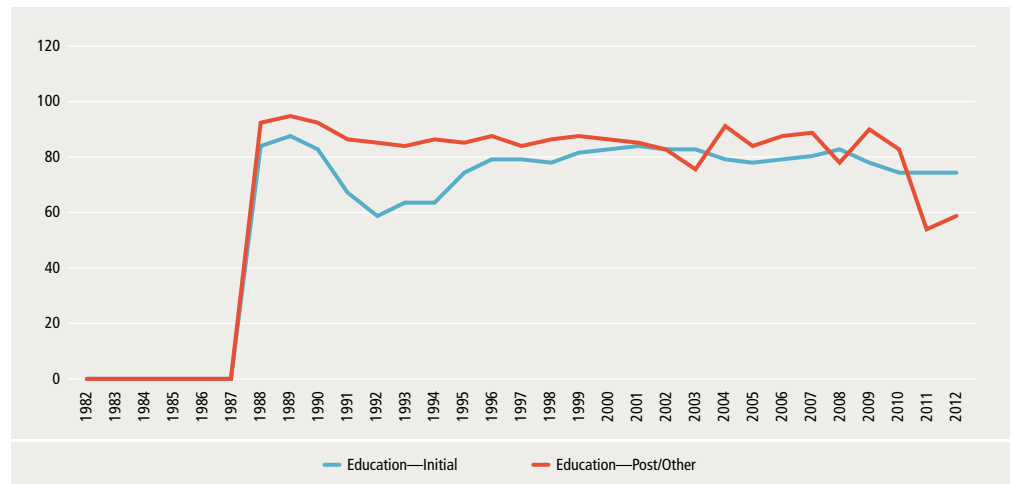
Source: Graduate Destinations Tables and Figures, 2012, Graduate Careers Australia.

Notes:

a) A different coding scheme for fields of education used until 1987 means that some fields are impossible to disaggregate from others. Data for Languages as a separate field of education was only available from 1983.

b) Figures for years before 1990 are based on all graduates, and not just Australian citizens and permanent residents. Figures from 1990 on are based on Australian citizens and permanent residents only. Figures prior to 1995 might not match those from previous reports due to being recalculated on Australian citizens and permanent resident responses only.

**Figure 2.6 Bachelor degree graduates working full-time as a proportion of those available for full-time employment, four months after graduation, by select aggregated field of education, 1982–2012: Education**



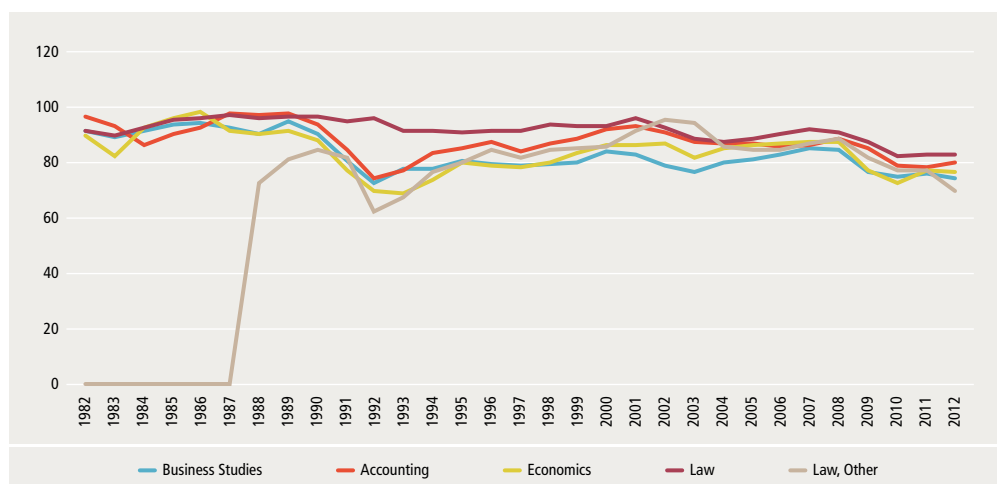
Source: Graduate Destinations Tables and Figures, 2012, Graduate Careers Australia.

Notes:

a) A different coding scheme for fields of education used until 1987 means that some fields are impossible to disaggregate from others. Initial and post-initial education figures are combined for the years 1982 to 1987.

b) Figures for years before 1990 are based on all graduates, and not just Australian citizens and permanent residents. Figures from 1990 on are based on Australian citizens and permanent residents only. Figures prior to 1995 might not match those from previous reports due to being recalculated on Australian citizens and permanent resident responses only.

**Figure 2.7 Bachelor degree graduates working full-time as a proportion of those available for full-time employment, four months after graduation, by select aggregated field of education, 1982–2012: Economics and Law**



Source: Graduate Destinations Tables and Figures, 2012, Graduate Careers Australia.

Notes:

a) A different coding scheme for fields of education used until 1987 means that some fields are impossible to disaggregate from others. Data for Law, Other as a separate field of education was only available from 1988.

b) Figures for years before 1990 are based on all graduates, and not just Australian citizens and permanent residents. Figures from 1990 on are based on Australian citizens and permanent residents only. Figures prior to 1995 might not match those from previous reports due to being recalculated on Australian citizens and permanent resident responses only.

#### Turning now to **Occupations of Bachelor Graduates:**

- » In 2012, most (68%) Bachelor degree graduates who were working full-time were employed in a professional occupation.
- » HASS graduates were mostly employed in either a professional occupation (51%) or a clerical, sales or service occupation (34%).
- » Education graduates were employed in professional occupations at a much higher rate than the average, at 88%.
- » Law and Legal Studies graduates were mostly employed in either professional occupations (49%) or clerical, sales and services occupations.

#### Respondents are also surveyed about the **Importance of Qualification, Field of Education and Skills for Full-time Employment, Bachelor Graduates:**

Surveys of the perceived importance of the higher education qualification have the limitation of smoothing over major differences between the purposes of, and expectations from, degree programmes aimed primarily at occupational training, at one end of the spectrum, and, at the other end, generalist degrees aimed at serving a particular field of education—often with the prospect of a graduate degree or diploma to provide the vocational content, but also often producing graduates who will be employed, productively and satisfactorily, outside their field of education or training. The results of these surveys can then be open to significant misinterpretation, which underplays the significance of these different purposes and expectations. That said, the following findings are of interest here:

- » Most graduates stated that their qualification was either a formal requirement or important to their main job (75%); within the HASS fields, Education (initial) graduates stated that their qualification was important or a formal requirement of their employment at the highest rate (90%), with Law and Social Work graduates also taking this view.

- » Most Languages, and Visual/Performing Arts graduates stated that their qualification was either somewhat important or not important for their occupation, while Social Science, Psychology and Humanities graduates reported nearly evenly that their qualification was either important/a formal requirement or somewhat/not important for their occupation.
- » Many HASS graduates are employed across a range of occupational groupings, which reflects the relationship between fields of education and full-time employment. So, while, Law, Social Work and Education graduates regarded their field of education as either important or a formal requirement of their full-time occupation (at 76%, 79% and 80%, respectively), only 40% of Languages graduates reported that their field of education was either important or a formal requirement of their full-time job.
- » Significantly, for those HASS graduates who have not taken courses in fields of education with such a direct connection to a particular occupation, the skills and knowledge they have acquired were rated the most important. More Humanities and Social Science graduates stated that their skills and knowledge were important or a formal requirement than those who stated that their skills and knowledge was only somewhat/not important. For example, 50% of Visual/Performing Arts graduates stated that their skills and knowledge in their main job was either important or a formal requirement, while only 44% of Visual/Performing Arts graduates stated that their qualification and field of education was important or a formal requirement in their main job. This same pattern is also found in the responses of Languages, Social Sciences, and Psychology graduates.

#### **Master's and PhD Graduate Outcomes:**

With regard to the perceived importance of qualification, field of education, and skills for full-time employment, the Graduate



Destinations results for this cohort are broadly reflective of the findings for Bachelor graduates, with the exception of a few notable cases:

- » Education (initial and post/other) graduates perceived their degree to be a lot less important than Bachelor graduates. Only 44% of coursework Master's, and 33% of research Master's/PhD graduates in Education perceived their qualification to be a formal requirement of their full-time employment, compared with 79% of Bachelor degree Education (initial) graduates. This difference in the perceived importance is likely to be a result of workforce entry requirements.
- » Few Humanities coursework or research Master's/PhD graduates perceived their qualification to be a formal requirement of their employment, at 12% and 30% respectively.
- » When asked if the skills and knowledge from their degree was important to their employment, many graduates responded that it was not a formal requirement, but it was important. For example, 82% of Social Work graduates responded that their skills and knowledge were important to their employment. Of the Humanities graduates, 63% responded that their skills and knowledge were important to their occupation.

#### Course Experience Questionnaire:

The Graduate Course Experience and Postgraduate Research Experience surveys conducted by Graduate Careers provide evidence of positive appraisals and experiences from the HASS student perspective.<sup>22</sup> In the 2012 Graduate Course Experience survey, HASS Bachelor graduates reported among the highest rates of overall satisfaction with their course. For example, 89.7% of History graduates reported satisfaction with their course. Further, 88.9% of Literature, 85.5% of Marketing and 84.6% of Law graduates were satisfied with their course. Overall, the Graduate Course Experience survey demonstrates that in many of the course satisfaction indicators, HASS graduates report their experience very highly.

The Postgraduate Research Experience survey presents a similar picture. Studies in Human Society postgraduates reported an overall satisfaction rate of 81.1%, while Political Science and Policy Studies postgraduates reported 100% overall satisfaction. Architecture and Urban Environment postgraduates also reported very high rates of overall satisfaction, at 88.9%.

### 2.8 HASS Teaching and Learning Capabilities: Critical Issues for the Future

Enrolments, load and completions in HASS FoEs are growing. There is significant and rapid growth in Master's level coursework offerings, and the HASS student body is becoming more internationalised. There has been significant growth in traditional disciplines, such as Philosophy, as well as in newer, interdisciplinary developments such as those in International Relations and Media and Communications. While rhetoric from the United States and the United Kingdom, in particular, consistently describes a 'crisis' in the humanities, in Australia these fields have demonstrated a high degree of resilience, retaining strong demand from undergraduates and highly positive appraisals from their graduates even within a climate where the funding for teaching has declined.

It is also clear from the evidence in this chapter, however, that the contingencies of managing institutions within a system overwhelmingly subject to the demands of school-leavers have led to choices that have reduced the number of HASS offerings within the sector, and significantly reduced the presence of HASS offerings within regional campuses and regional institutions. There is a risk that, if these trends were to continue, HASS teaching, over time, would contract to the metropolitan universities, and perhaps even only to the Go8. There is the potential, then, for significant structural change that is unmoderated and contingent rather than based on a process of strategic planning aimed at ensuring capabilities for the future. When the central business of the university—teaching and research—is so dependent upon student choices, there is very little in the system to enable it to prioritise its activities in alignment with broader national interests, however these might be conceived.

This study does not have access to the indices driving the internal distribution of funding, and so it is not possible for it to draw conclusions about the role being played by intra-institutional decisions, as against those made necessary by strategic shifts in government funding. There is evidence, however, in the review of base funding for instance, that in some universities there has been a gradual institutional disinvestment in HASS fields of education.<sup>23</sup> Advocates of the sector have long claimed that universities have implicitly been encouraged to shift their strategic emphasis from HASS to STEM in order to participate in schemes which offer some forms of external co-funding.

It has not been possible, however, for this study to investigate these issues in relation to specific disciplines or patterns of offerings. There are some cases where such work has already been done. The provision of languages is the obvious example of this, where not only is there a question about the nation's overall capability in languages teaching and learning but there is also a question of how this capability is distributed: the indications are that it is disappearing from regional universities. The evidence in this report, together with that of the DASSH report, highlights the risk that the regional universities in particular are becoming more oriented towards training programmes targeted towards specific professions rather than the more generalist degrees. In the long term, this may result in graduates who are more vulnerable to cultural and industrial shifts, and thus less adaptable to a changing labour market.

The evidence in this chapter suggests that there are two overwhelming critical issues for the future:

- » The first concerns the need for greater oversight of the system in order to monitor and, where considered necessary, moderate the effects of the market on our national capabilities in teaching and learning.
- » The second issue is related: the need for systemic incentives for individual institutions to make decisions about patterns of offerings that take into account agreed national priorities rather than merely responding to short-term shifts in the market for their services. The universities themselves have played the major role in determining the current conditions for the HASS contribution to teaching and learning in Australia; they should be assisted to take on their share of the responsibility to ensure that this contribution, within their own institution, is of world standard in scale, focus and quality.

## Endnotes

- 1 Dobson, I (2013) *Mapping the Humanities and Social Sciences: Analysis of University Statistics 2002–2011*. Dobson was initially contracted to look at statistics over a ten-year period to 2012, but 2012 student enrolment statistics were not available at the time. Dobson's full report is available on the Academy of the Humanities' website <http://www.humanities.org.au>. When performing checks on the data contained in this report prior to publication, one issue of note was raised with respect to student enrolments, load and completions data. There are minor discrepancies (within a 1% error margin) between the Department of Education's published figures (uCube) and the figures in Dobson's report for the year 2011. Dobson undertook his overview of these data in May 2013. Since that time, the Department of Education has updated its figures on uCube due to a coding error.
- 2 Gannaway, D. and K. Shepherd (2012) *Benchmarking the Australian Bachelor of Arts: A Summary of Trends Across the Australian Bachelor of Arts Degrees Programs*. Teaching and Educational Development Institute (TEDI), University of Queensland. Available from [http://dassh.edu.au/resources/uploads/publications/project\\_reports/1.\\_Benchmarking\\_the\\_Australian\\_BA\\_-\\_Trends\\_Report\\_.pdf](http://dassh.edu.au/resources/uploads/publications/project_reports/1._Benchmarking_the_Australian_BA_-_Trends_Report_.pdf)
- 3 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 9.
- 4 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 8.
- 5 The Department of Education's uCube system is available from <http://www.highereducationstatistics.deewr.gov.au/>
- 6 This FoE incorporates Political Science and Policy Studies, Studies in Human Society (History, Gender Studies, Indigenous Studies, Sociology), Human Welfare Studies and Services, Behavioural Science, Law Justice and Law Enforcement, Librarianship, Informational Management and Curatorial Studies, Language and Literature, Philosophy and Religious Studies, Economics, and Sport and Recreation.
- 7 The Australian Government's contribution, together with the student's contribution, by way of the Higher Education Contribution Scheme (HECS)/Higher Education Loan Program (HELP), is the amount of funding per student place. The Commonwealth Government's funding is determined by 'cluster' funding rates available on the Department of Education's website <http://education.gov.au/funding-clusters-and-indexed-rates> HASS fields are generally in the lowest funded clusters. In the case of Higher Degree by Research (HDR) students, Commonwealth Government allocations for the Research Training Scheme (RTS) are also available on the Department's website <http://education.gov.au/research-training-scheme> These allocations take into account an institution's research income, output, HDR completions, and include a weighting for 'high cost' and 'low cost' fields of study.
- 8 Dunne, K. and M. Pavlyshyn (2012) 'Swings and Roundabouts: Changes in Language Offerings at Australian Universities 2005–2011', in J. Hajek, C. Nettelbeck and A. Woods (Eds.), *The Next Step: Introducing the Languages and Cultures Network for Australian Universities: Selected Proceedings of LCNAU's Inaugural Colloquium in 2011* (pp. 9–19). Australia: LCNAU. Available from [http://www.lcnau.org/pdfs/lcnau\\_2011\\_dunne\\_pavlyshyn.pdf](http://www.lcnau.org/pdfs/lcnau_2011_dunne_pavlyshyn.pdf)
- 9 Dunne and Pavlyshyn (2012) 'Swings and Roundabouts', p. 13.
- 10 Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *Undergraduate Applications, Offers and Acceptances*, p. 33. Available from <http://www.industry.gov.au/HigherEducation/ResourcesAndPublications/Documents/HEReports/UndergraduateApplicationsOffersandAcceptances2012.pdf>
- 11 Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *Undergraduate Applications, Offers and Acceptances*, p. 10.
- 12 Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *Undergraduate Applications, Offers and Acceptances*, p. 7.
- 13 Edwards, D. and A. Radloff (2013) *Higher Education Enrolment Growth, Change and the Role of Private HEPs*, p. 8. Prepared for the Australian Council of Educational Research. Available from <http://www.acpet.edu.au/uploads/files/ACER%20Background%20Paper%20for%20ACPET%20-%20Growth%20in%20HE%20FINAL%20131115%281%29.pdf>
- 14 The Department of Education's HEIMS HELP page defines an AOU as follows: 'A unit formed by a Higher Education Provider to undertake as their primary objective teaching only, research only or teaching-and-research functions, or which is used for statistical reporting purposes. Such units are referred to by various names, such as "schools" and "departments"'. See HEIMS glossary <http://heimshelp.deewr.gov.au/sites/heimshelp/resources/glossary/pages/glossaryterm?title=Academic%20Organisational%20Unit>
- 15 Australian Vice Chancellor's Committee (2000) *Key Statistics on Australian Universities*, p. 25. Australian Vice Chancellor's Committee: Canberra. Available from [http://pandora.nla.gov.au/pan/24424/20020404-0000/www.avcc.edu.au/policies\\_activities/resource\\_analysis/key\\_stats/KEY\\_STAT\\_2000.pdf](http://pandora.nla.gov.au/pan/24424/20020404-0000/www.avcc.edu.au/policies_activities/resource_analysis/key_stats/KEY_STAT_2000.pdf) There may be slight differences in the classification of HASS and STEM between the 1990s and 2000s, but the figures provide indicative trends.
- 16 Australian Vice Chancellor's Committee (2000) *Key Statistics on Australian Universities*, p. 25.
- 17 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 9.
- 18 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 10.
- 19 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 11.
- 20 Gannaway and Shepherd (2012) *Benchmarking the Australian Bachelor of Arts*, p. 11.

- 21 Healy, J., K. Mavromaras and R. Zhu (2013) *The STEM Labour Market in Australia*, report for Securing Australia's Future: STEM Country Comparisons. Available from <http://www.acola.org.au/PDF/SAF02Consultants/Consultant%20Report%20-%20Australian%20Labour%20Market.pdf>
- 22 Graduate Careers Australia (2012) *Graduate Course Experience: A Report on the Course Experience Perceptions of Recent Graduates*. Graduate Careers Australia: Melbourne, Victoria. Available from <http://www.graduatecareers.com.au/research/researchreports/graduatecourseexperience/>
- 23 Lomax-Smith, J. (2011) *Higher Education Base Funding Review: Final Report, October 2011*. Available from [http://www.industry.gov.au/highereducation/Policy/BaseFundingReview/Documents/HigherEd\\_FundingReviewReport.pdf](http://www.industry.gov.au/highereducation/Policy/BaseFundingReview/Documents/HigherEd_FundingReviewReport.pdf)



# 3

## Research Profile

## 3. Research Profile

This chapter provides an analysis of the humanities, arts and social sciences (HASS) research investment, activity and performance. It focuses on publicly-funded research in the higher education sector and, as a consequence of the primary sources of research funding in the HASS sector, on trends and patterns in competitive grant funding administered by the Australian Research Council (ARC).

### 3.1 Introduction

In order to provide a picture of research capacity across the system, the report examines performance at the level of the individual researcher, at the organisational level (discipline/field of research, university), as well as at the level of the system as a whole. The picture that emerges is one of strong achievement, but it also raises significant questions for the higher education sector and for government policy. What, for instance, might future policy settings regard as the appropriate critical mass for those disciplines and research areas we wish to support? What is the scale, intensity, breadth or diversity required to ensure sustainability of these fields of research? In order to inform the consideration of such questions, this report collects data that can tell us how the HASS disciplines in Australia are currently placed—not only in terms of the health of each field or discipline, but also in terms of their contribution to the economic, social, cultural and environmental benefit to the community. This information will assist in the assessment of the strengths and the weaknesses that determine how well the HASS research disciplines are currently equipped to address the nation's key societal challenges.

For the purposes of analysis, in sections of this chapter and associated appendices HASS fields of research (FoRs) are sub-divided into:

- » Humanities and Creative Arts (HCA): which comprises Built Environment and Design; Law and Legal Studies; Studies in Creative Arts and Writing; Language, Communication and Culture; History and Archaeology; and Philosophy and Religious Studies; and
- » Social, Behavioural and Economic Sciences (SBE): which comprises Education; Economics; Commerce, Management, Tourism and Services; Studies in Human Society; and Psychology and Cognitive Sciences.

The ARC uses the same terminology to refer to administrative units for its Excellence in Research for Australia (ERA) exercises, and also for assessment panels for its National Competitive Grants Programme (NCGP), but this report's classification of fields into HCA and SBE may differ from the ARC's usage.<sup>1</sup>

### 3.2 Summary

- » The scale of the HASS sector's contribution to the national research and innovation system is considerable. The HASS sector generates 16.2% of the nation's research income, it receives 28.5% of the nation's higher education research and development (R&D) expenditure, and it contributed 44.2% of the total number of Units of Evaluation in the 2012 ERA research assessment exercise.

- » The quality of research as assessed by the ERA ratings demonstrates strong performance against world standard for most of the HASS fields of research, with many fields, particularly in the humanities, achieving outstanding results. In terms of scale and quantity, the numbers of research outputs are growing across the sector.
- » According to the ERA's Discipline Growth Index, of the 62 disciplines across the system recording growth rates above the average (12%), 32 are HASS disciplines.
- » The developing picture of the HASS sector is of consistently strong performance in national competitive grants. The ARC's Discovery Programme plays a fundamental role in supporting HASS basic research (53% of the HASS research income from the ARC's competitive schemes is derived from this scheme), but data also reveals that there is considerable participation in the ARC's Linkage Programme (22% of the HASS sector's research income) which establishes research partnerships with public and private sector organisations.

However, the evidence gathered in this chapter also reveals significant areas of concern for the future:

- » The HASS sector attracts a significant share of publicly funded R&D, but the level of investment from business and from the universities is low. There has also been minimal government investment in research infrastructure (through the National Collaborative Research Infrastructure Scheme (NCRIS), for example), for these fields.
- » The HASS sector does not enjoy the same levels of access to government-funded strategic research initiatives as the science, technology, engineering and mathematics (STEM) sector. Some strategic research programmes, such as the Cooperative Research Centres (CRC) programme, some ARC Special Research Initiatives, the Super Science Fellowships, and the International Science Linkages scheme have either been restricted to STEM by their eligibility criteria, or in some cases by an operational preference away from the HASS disciplines. While there are notable instances where this has been acknowledged and to some extent addressed in recent years, such as the CRC programme, there is evidence of significant consequences for the HASS share of research income over the period surveyed.
- » The HASS sector's exclusion from the industry R&D tax concession scheme restricts opportunities to engage in industry-based research and to develop collaborations.
- » There is a high degree of variation across Australian universities in the distribution of national competitive grant funding. The Group of Eight (Go8) universities were awarded 65% of all ARC NCGP funding over the period 2002–13, while regional universities received only 4% of



funding. Regional universities rate of increase of ARC funding over the period was also relatively low, at only 28%, compared to a 105% increase for Go8 universities.

- » There is evidence that the geographic and institutional spread of the HASS disciplines is shrinking and that some important or enabling disciplines are registering a declining institutional presence (Language Studies, Applied Ethics, Demography, and Historical Studies, for instance) outside the metropolitan areas. The ERA evidence suggests that a high proportion of quality HASS research is taking place in the metropolitan universities, and particularly the Go8 universities. This, in combination with the data on the ARC funding noted above, raises questions of scale and research capacity for future strategic purposes, but it also raises questions about the distribution of opportunity in the regions.

### 3.3 Trends in Research and Development Investment and Performance

Australia’s gross expenditure on research and development (GERD)—total expenditure devoted to R&D by the business, government, higher education and non-profit sectors—has grown strongly since the late 1990s, more than doubling between 1998–2008—although the rate of growth has slowed between 2008–09 and 2010–11.<sup>2</sup>

Government expenditure on R&D in 2011–12 was \$3.5B, HASS share of total government expenditure was 6.51%. Business expenditure on R&D in 2010–11 was \$17.9B, with the HASS proportion of that total 2.85%. For the HASS sector, higher education R&D expenditure is much more important than for other sectors of activity: in 2010, HASS comprised \$2.3B or 28.50% of total higher education R&D effort (research for which a higher education institution has responsibility, irrespective of the source of funding). Other government, non-profit and business R&D expenditure in the HASS sector was low, particularly in the case of the business sector. The fields of research in which there was the most business R&D activity were Built Environment and Design, and Studies in Human Society.

In the more detailed analysis which follows, the HASS disciplines are aggregated and compared to aggregate STEM disciplines in order to show trends across the entire system. Additional tables are in Appendix 6.

#### Government Expenditure on R&D

Figure 3.1 shows the relative proportion of expenditure on R&D by state, territory and Commonwealth governments. While the Commonwealth Government makes substantial investment in research, for example, via the ARC and the National Health and Medical Research Council (NHMRC), most of the R&D activity takes place within the higher education sector which is excluded from these data and addressed later in this chapter. The HASS share of the total government expenditure on R&D in 2008–09 was 4.92%, and in 2011–12, it was 6.51%; the STEM share was 95.08% and 93.49% respectively. While there were areas of growth in the HASS fields, they came off a low base. Built Environment and Design, Studies in Human Society and Economics were the top three HASS performers.

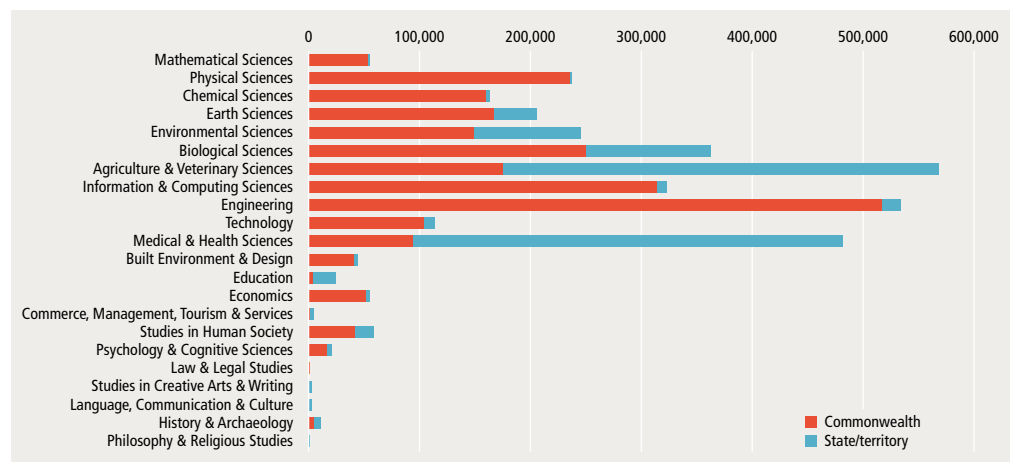
#### Business expenditure on R&D

Table 3.1 lists business expenditure on R&D over four financial years. It shows limited R&D expenditure in the HASS fields; the highest performing fields are Built Environment and Design, and Commerce, Management, Tourism and Services.

It is not possible to discern from the R&D data where corporate organisations are spending on research—although other sources, such as the ERA and Higher Education Research Development Collections (HERDC—Category 3, Industry income) data, would indicate that there is activity in areas of community engagement, corporate responsibility, social impact assessment, engagement with traditional owners, native title, and resource management and sustainability. While the lack of business investment in HASS research is not unexpected, it is important to note that there is at least one systemic feature which acts as a serious disincentive for this situation to change. The current industry tax concessions for R&D expenditure explicitly exclude research in HASS from core R&D activities.<sup>3</sup>

“The HASS share of the total government expenditure on R&D in 2008–09 was 4.92%, and in 2011–12, it was 6.51%.”

Figure 3.1 Government expenditure on R&D, total funding by Commonwealth and state/territory, by field of research (two-digit level), 2011–12



Source: Australian Bureau of Statistics 8109.0 Research and Experimental Development, Government and Private Non-Profit Organisations, Australia 2011–12.



Table 3.1 Business expenditure on R&amp;D, by field of research (two-digit level), 2007–08 to 2010–11

Broad field of research	2007–08	2008–09	2009–10	2010–11
	\$'000	\$'000	\$'000	\$'000
<b>STEM</b>				
Mathematical Sciences	12,455	18,466	13,478	20,587
Physical Sciences	28,976	19,221	21,414	24,173
Chemical Sciences	223,991	265,977	246,067	275,030
Earth Sciences	206,896	175,464	153,063	200,390
Environmental Sciences	128,348	178,407	154,503	192,269
Biological Sciences	99,843	73,342	67,974	73,530
Agricultural and Veterinary Sciences	329,550	367,414	440,653	502,775
Information and Computing Sciences	3,763,262	4,508,532	4,835,004	5,019,259
Engineering	8,424,286	9,570,150	8,789,028	9,210,029
Technology	704,441	792,540	771,617	919,238
Medical and Health Sciences	899,702	1,003,303	920,658	929,910
<b>HASS</b>				
Built Environment and Design	113,663	177,889	201,860	298,086
Education	7,928	12,519	19,369	15,301
Economics	12,737	12,229	8,006	10,990
Commerce, Management, Tourism and Services	78,639	94,037	99,316	168,274
Studies in Human Society			2,232	1,364
Psychology and Cognitive Sciences	2,646	4,088	1,780	2,162
Law and Legal Studies	1,416	5,199	4,204	1,803
Studies in Creative Arts and Writing	6,151	9,448	10,676	12,354
Language, Communication and Culture	1,471	1,627		
History and Archaeology				
<b>Total</b>	<b>15,047,360</b>	<b>17,291,228</b>	<b>16,762,030</b>	<b>17,879,661</b>

Source: ABS 8104.0 Research and Experimental Development, Businesses, Australia, 2010–11.

NB: blank cells: 'not available for publication but included in totals where applicable, unless otherwise indicated'.

### Higher education organisations expenditure on R&D

In 2010 total higher education organisations expenditure on R&D (HERD) was \$8.2B. General University Funds (that is, the balance of expenditure on R&D covered directly by the institution, including funds provided by external sources) comprised 56% of that total, with the next largest funds derived from Australian competitive grants (16%). See tables in Appendix 6 for more details.

Table 3.2 provides figures by state for higher education R&D expenditure in 2010 by field of research. The STEM fields received 71.50% of total expenditure, with HASS at 28.50%; within HASS, HCA fields received a share of 9.51%, and SBE fields 19.00%. SBE leads the HASS sector in securing R&D investment: the most active FoRs are Studies in Human Society, Commerce, Management, Tourism and Services, and Education.

This study does not have access to the strategic principles underpinning the expenditure by the higher education organisations on building and maintaining research capacity. Nor has it been possible to access the underlying demand profiles for R&D expenditure across the disciplines. There is clear evidence of a commitment to medical and health sciences as a high priority, but it is difficult to identify any other clear strategic settings. There are some instances where the institutional support for high performing FoRs (in terms of ARC performance or ERA ratings) seems surprisingly low.

Psychology, and History and Archaeology are examples of this, but there may be field-specific reasons involved (such as the high research costs and the size of the field in the case of Archaeology). There are significant variations in the scale and focus of investment from state to state which raises the possibility that local institutional and political objectives and research capabilities may impact upon the national research capacity, but it has been beyond the scope of this study to investigate this possibility.

### 3.4 Government Policies and Programmes

#### Science, research and innovation

Mapping Australian research in HASS faces challenges in capturing quantitative information about these discipline areas within research-active government departments and agencies, as measured through inputs (spending, staff effort, grants) or outputs (publications and reports). Some of the information needed to carry out such mapping may be available in annual reports and budget tables, but the information is not reported directly against fields of research codes as occurs in datasets such as the ARC's NCGP data, and university sector audits such as ERA. The latter two datasets, while valuable and comprehensive, are also limited in their coverage of activity in Publicly-Funded Research Agencies (e.g. CSIRO and Geoscience Australia) and government departments and

Table 3.2 Higher education expenditure on R&amp;D, by location, by field of research (two-digit level), 2010

Broad Field of Research	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.	% of total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	
<b>STEM</b>										
Mathematical Sciences	43,047	36,571	23,580	11,026	10,482	2,307	27	23,296	150,337	2
Physical Sciences	75,102	56,111	26,387	14,256	17,406	2,384	754	71,501	263,901	3
Chemical Sciences	84,450	76,429	55,737	28,920	18,275	5,447	606	23,473	293,338	4
Earth Sciences	45,644	36,183	41,541	14,070	22,982	12,662	147	33,673	206,903	3
Environmental Sciences	39,263	38,410	88,697	21,401	24,516	10,652	14,220	14,808	251,967	3
Biological Sciences	179,107	194,175	199,909	42,007	60,500	18,724	4,085	52,799	751,305	9
Agricultural and Veterinary Sciences	76,636	41,992	73,518	41,792	40,537	20,527	6,063	6,832	307,897	4
Information and Computing Sciences	118,554	136,047	43,656	11,774	23,084	7,855	344	17,267	358,582	4
Engineering	246,252	212,456	150,967	37,751	86,236	2,785	986	34,804	772,237	9
Technology	26,259	56,406	40,508	17,504	5,493	665	16	10,259	157,110	2
Medical and Health Sciences	740,902	706,473	365,043	206,567	177,527	28,102	30,292	96,316	2,351,222	29
	1,675,216	1,591,253	1,109,543	447,068	487,038	112,110	57,540	385,028	5,864,799	72
<b>HASS</b>										
Built Environment and Design	17,457	50,622	15,544	8,965	12,840	824	200	847	107,299	1
Education	93,440	78,468	46,102	17,000	45,389	3,465	7,189	23,396	314,449	4
Economics	76,022	64,575	15,635	5,036	14,878	1,284	880	40,532	218,841	3
Commerce, Management, Tourism and Services	103,190	100,037	85,655	15,454	25,578	1,647	1,668	18,828	352,057	4
Studies in Human Society	89,605	112,209	67,804	20,383	35,674	3,173	3,936	99,957	432,741	5
Psychology and Cognitive Sciences	93,019	54,331	46,007	13,965	19,013	2,168	101	11,634	240,237	3
Law and Legal Studies	41,647	34,629	26,846	1,317	6,566	695	1,359	24,729	137,788	2
Studies in Creative Arts and Writing	43,898	32,083	16,075	5,062	6,507	1,253	933	16,542	122,353	1
Language, Communication and Culture	73,203	56,740	35,145	8,481	14,950	2,437	979	20,617	212,551	3
History and Archaeology	37,526	31,466	10,159	1,565	6,381	819	619	24,137	112,672	1
Philosophy and Religious Studies	44,882	24,961	5,641	637	3,071	359	28	7,634	87,213	1
	713,889	640,121	370,613	97,865	190,847	18,124	17,892	288,853	2,338,201	28
<b>Total</b>	<b>2,389,104</b>	<b>2,231,374</b>	<b>1,480,154</b>	<b>544,932</b>	<b>677,887</b>	<b>130,234</b>	<b>75,434</b>	<b>673,881</b>	<b>8,202,999</b>	<b>100</b>

Source: ABS 8111.0 Research and Experimental Development, Higher Education Organisations, Australia, 2010.

units within them (e.g. Department of Agriculture, Bureau of Meteorology, Australian Antarctic Division), as their focus is the university sector.

The Science, Research and Innovation (SRI) budget tables provide some indication of expenditure across government departments by Socio-Economic Code (SEO), although this is not aligned with either the fields of research or fields of education codes.<sup>4</sup> According to the latest available SRI table (2013–14), the portfolio with the biggest outlay over the period 2004–05 to 2013–14 was the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) comprising 72.7% (or \$6,629.5M) of the total. DIICCSRTE housed the key publicly funded research organisations (including the ARC; the NHMRC is housed within the Health portfolio), and has mounted a number of large capacity-building research sector programmes, including the International Science Linkages (ISL) programme and the NCRIS.

### International Science Linkages

From 2001 to 2011 the ISL programme provided \$94.2M to foster international research collaboration.<sup>5</sup> HASS researchers were ineligible to apply to this programme until its final two years when a \$1.1M allocation was shared between the Australian Academy of the Humanities, and the Academy of the Social Sciences in Australia to support competitive grant schemes.<sup>6</sup>

### National Collaborative Research Infrastructure

The NCRIS was also funded over the period from 2005–06 through to 2010–11. Total NCRIS funding in this period was \$542M. Expenditure from this fund on HASS fields was negligible over its initial years. However, working groups were established to develop a HASS capability in 2008 and 2009. Unfortunately neither capability was successful in securing funding. The 2010 evaluation report on the programme itemises

Table 3.3 National Health and Medical Research Council expenditure on HASS fields of research (four-digit level), 2004–13

Main Category Field of Research	2004 \$	2005 \$	2006 \$	2007 \$	2008 \$	2009 \$	2010 \$	2011 \$	2012 \$	2013 \$	Ten Year Total	Ten Year % (of total NHMRC)
Applied Economics	2,294,968	4,928,968	4,799,193	4,814,258	3,110,507	3,943,807	2,719,887	1,552,217	2,373,366	2,442,390	32,979,561	0.5%
Applied Ethics	231,790	189,225	124,968	162,413	190,092	221,405	72,508	159,876	680,182	761,984	2,794,443	
Cognitive Science							339,580	656,045	641,269	784,809	2,421,703	
Econometrics							223,250	149,382	147,427	13,452	533,511	
Library and Information Studies										113,981	113,981	
Other Psychology and Cognitive Science							72,508	582,325	576,525	929,306	2,160,664	
Psychology	3,102,388	4,947,193	4,046,143	4,652,882	6,641,713	8,172,029	8,038,382	9,814,278	9,524,168	12,173,366	69,381,907	1.1%
<b>Total</b>	<b>5,629,146</b>	<b>3,405,783</b>	<b>8,970,304</b>	<b>9,629,553</b>	<b>9,942,312</b>	<b>12,337,241</b>	<b>11,466,115</b>	<b>12,914,123</b>	<b>13,942,937</b>	<b>17,219,288</b>	<b>110,385,770</b>	<b>1.8%</b>

Source: The Last Ten Years of NHMRC Research Funding Dataset: 2004–13. Available from <http://www.nhmrc.gov.au/grants/research-funding-statistics-and-data/funding-datasets>  
 Note: not adjusted for 2013 dollars.

capability areas which have been funded—HASS secured some limited funding via the Australian National Data Service (ANDS), and also through the Australian Social Science Data Archive.<sup>7</sup> An additional programme, funded as part of the Super Science initiative, the NeCTAR (National eResearch Collaboration Tools and Resources) programme received \$47M in funding; this competitive grant programme has funded over 40 projects to date, six of which are HASS initiatives.<sup>8</sup>

### National Health and Medical Research Council

The NHMRC provides funding through its competitive grant, fellowship and scholarship programmes for health and medical research, including areas related to HASS in the public health arena, such as research into road safety. Statistics are available on funding awarded and successful applicants by fields of research.<sup>9</sup>

Over the 2004–13 period the total funding awarded to HASS disciplines across all NHMRC schemes was \$110.4M, which represents 1.8% of total funds (Table 3.3). Psychology received by far the largest share of those funds (62.85%). The other two most successful HASS fields were Applied Economics (28.97%) and Applied Ethics (2.53%). The NHMRC grant application forms provide only a small subset of HASS FoR codes<sup>10</sup> so it is not possible to determine the full extent of HASS involvement in NHMRC schemes on the basis of publicly available data.

## 3.5 Research Income

### Excellence in Research for Australia research income data

The ERA exercises collected research income data according to HERDC categories. These data show that in HASS fields there is significant variation between the disciplines' research incomes and source/mix of that income in the 2006–10 period.<sup>11</sup>

The four categories of HERDC income are:

- » HERDC Category 1 (Australian Competitive Grants Research Income)

- » HERDC Category 2 (Other Public Sector Research Income)
- » HERDC Category 3 (Industry and Other Research Income). This category of income is also broken down into international and Australian sources.
- » HERDC Category 4 (Cooperative Research Centre (CRC) Income)

Trends across the five-year period:

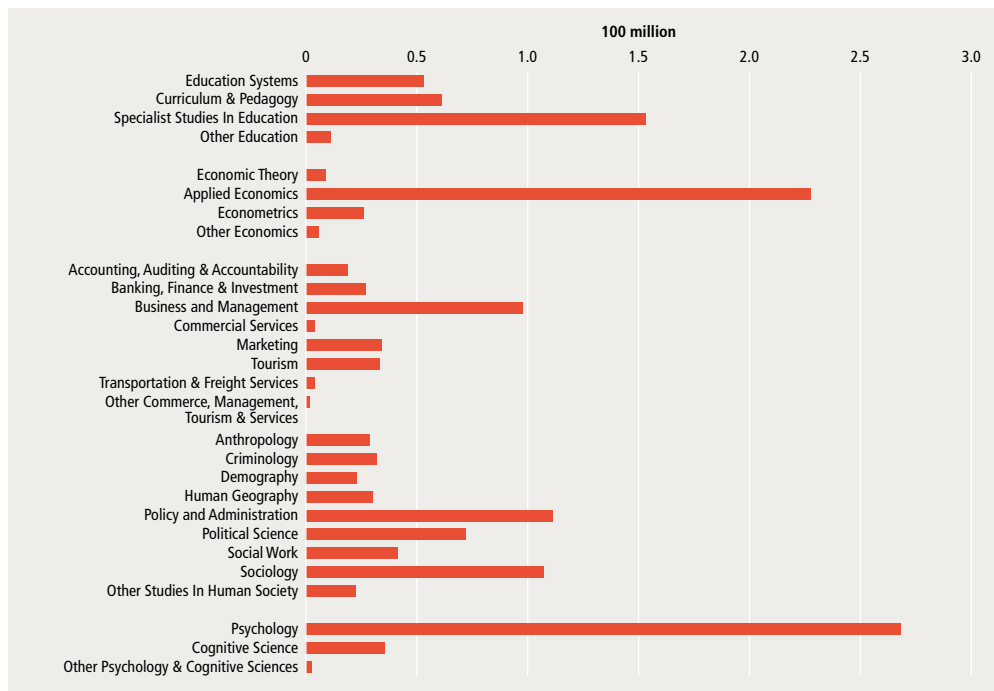
- » ERA data reveal consistent performance in Category 1 (Australian Competitive Grants Research Income) by HASS fields, securing 14% of the national funds.
- » In HERDC Category 2 (Other Public Sector Research Income) the HASS share of the total (19.62%) is larger than in Category 1. This is primarily due to the strong performance of the SBE disciplines, indicating high levels of engagement with the public sector and the need for evidence-based policy and evaluation. While the HCA performance is weaker, its leading FoRs (Historical Studies and Cultural Studies), have good records for public sector engagement. SBE has strong performers in a wider range of FoRs: Applied Economics, Psychology, Policy and Administration, Sociology, and Specialist Studies in Education.
- » In HERDC Category 3 (Industry and Other Research Income) data, SBE secures more than double the funds of HCA, with success spread across the FoRs.
- » HERDC Category 4 (CRC Income) results are extremely low across the board. This undoubtedly reflects restrictive eligibility criteria which, for some years, made it extremely difficult for HASS researchers to apply for CRC funding. This has been modified in recent years, particularly with the introduction of the 'public good' criteria for the programme, but the HASS share of CRC income (only 11.07%) remains a significant issue.

Figure 3.2 shows total HERDC income received from 2006–10 across all fields of research for SBE. Psychology, Applied Economics, and Specialist Studies in Education were the top performers, followed by Sociology, Policy and Administration, and Business and Management.

Note that different scales are used on the graphs throughout this chapter, so direct scale comparisons are not possible.

Proportions of HERDC income by category are shown in Figures 3.4 and 3.5. The largest share of HCA income was derived from national competitive grants (at 47%), while for SBE disciplines Category 2 research income just outstripped national competitive grant income (at 36% of the total).

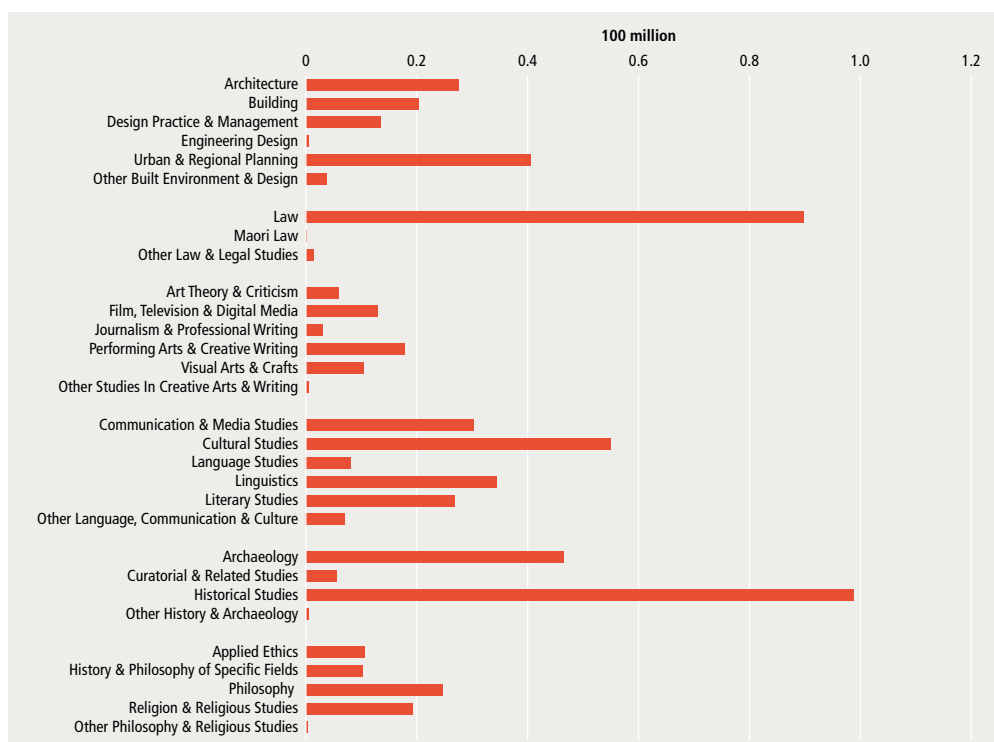
**Figure 3.2 Total HERDC research income for Social, Behavioural and Economic Sciences, by field of research (two-digit level), 2006–10**



“Psychology, Applied Economics and Specialist Studies in Education received the largest amount of HERDC income over the period 2006–10.”

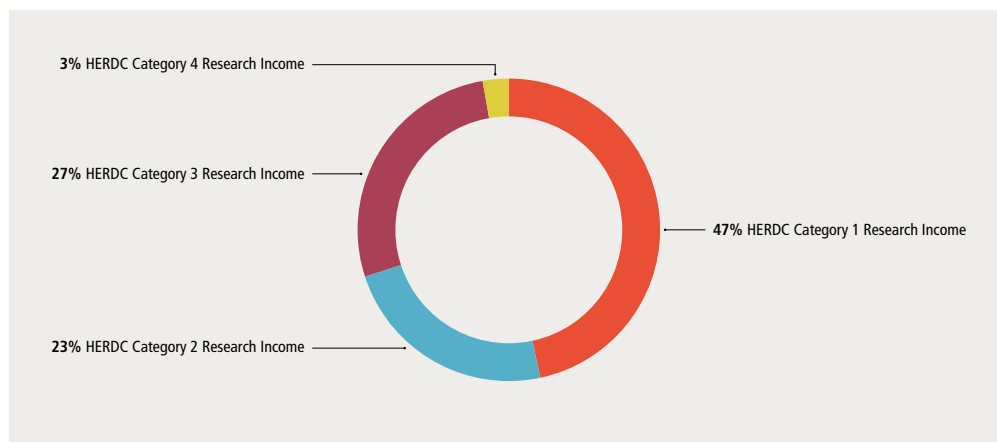
Source: ARC, ERA National Reports 2010 and 2012.

**Figure 3.3 Total HERDC research income for Humanities and Creative Arts, by field of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.

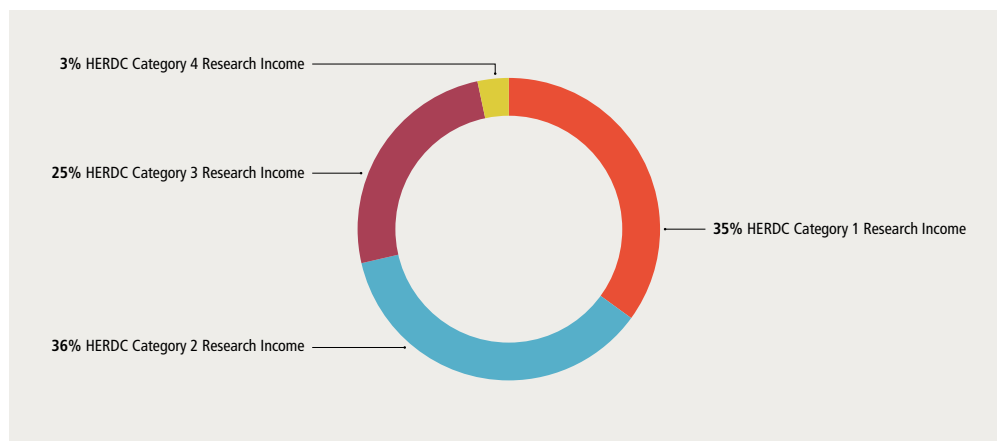
**Figure 3.4 Total HERDC research income for Humanities and Creative Arts fields of research, 2006–10**



“The largest share of HCA income was derived from national competitive grants (at 47%), while for SBE disciplines Category 2 research income just outstripped national competitive grant income (at 36% of the total).”

Source: ARC, ERA National Reports 2010 and 2012.

**Figure 3.5 Total HERDC research income for Social, Behavioural and Economic Sciences fields of research, 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.

### HERDC Category 1 (Australian Competitive Grants Research Income)

Table 3.4 presents data on HERDC Category 1 income (adjusted to 2012 equivalent dollars) for all HASS fields of research. From 2006 to 2010 total HASS and STEM Category 1 income increased by 24.27%, while HASS income increased by 22.87% across the period.

Figure 3.6 presents Category 1 research income for the five SBE two-digit FoRs (adjusted to 2012 equivalent dollars) across the 2006–10 period. For most disciplines, Category 1 research income increased with Studies in Human Society experiencing the largest growth and Commerce, Management, Tourism and Services the least.

Figure 3.7 presents data on Category 1 income for the six HCA two-digit FoRs over the period 2006–10. Language, Communication and Culture, and History and Archaeology received the largest share of Category 1 income, and Studies in Creative Arts and Writing the least. All disciplines, with the exceptions of Philosophy and Religious Studies, and Language, Communication and Culture, received more funding in 2010 than in 2006.

HCA fields of research received between about \$5M and \$16M of income while SBE received between \$11M and about \$47M. The size of requested research budgets for HCA researchers, rather than significant differences in success rates, seems to be the key factor influencing the disparity in earnings.

### HERDC Category 2 (Other Public Sector Research Income)

From 2006 to 2010 HERDC Category 2 income increased by 18.5%. HASS Category 2 income increased by 49.24% across the period largely driven by growth in HCA, albeit from a very small base. Table 3.5 shows total Category 2 income across the 2006–10 period.

Figures 3.8 and 3.9 plot HERDC Category 2 income for SBE and HCA fields of research over the five-year period at the two-digit FoR level.

Figure 3.8 presents a very different pattern to that found in HERDC Category 1 income for SBE. The trend in Category 1 was a steady increase year on year across the period for all fields, which is not the case with Category 2 income. It is much more varied from year to year, which matches with other key trends, for example fluctuations in annual business expenditure on R&D. The comparative stability of Category 1 income across

Table 3.4 HERDC Category 1 research income, HASS fields of research, 2006–10

	2006	2007	2008	2009	2010	Total
Total HCA	58,060,223	63,254,987	64,815,207	67,285,959	66,764,740	320,181,116
Total SBE	103,958,981	111,130,558	117,310,140	128,058,294	132,313,005	592,770,977
Total HASS	162,019,205	174,385,544	182,125,347	195,344,252	199,077,745	912,952,093
Total all fields	1,125,011,010	1,214,367,922	1,272,797,924	1,342,582,336	1,398,061,423	6,352,820,615
<b>HASS% of total</b>	<b>14.40%</b>	<b>14.36%</b>	<b>14.31%</b>	<b>14.55%</b>	<b>14.24%</b>	<b>14.37%</b>

Source: ARC, ERA National Reports 2010 and 2012.

Note: Data is adjusted to 2012 equivalent dollars.

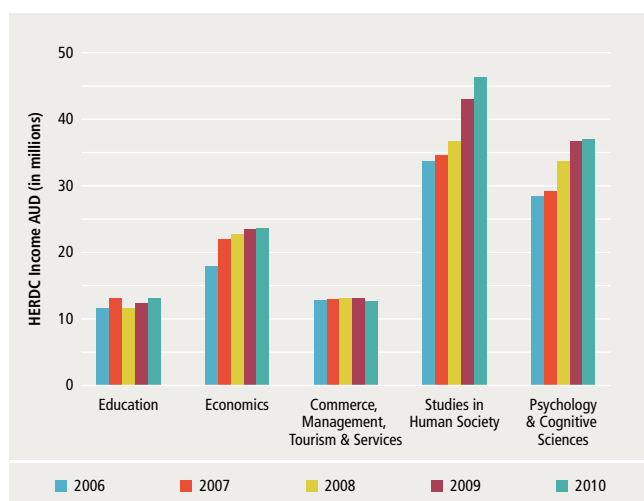
Table 3.5 HERDC Category 2 research income, HASS fields of research, 2006–10

	2006	2007	2008	2009	2010	Total
Total HCA	18,235,123	29,319,019	29,129,922	29,739,844	54,361,505	160,785,413
Total SBE	113,251,369	113,168,905	110,749,006	135,947,461	141,876,729	614,993,470
Total HASS	131,486,491	142,487,925	139,878,928	165,687,305	196,238,234	775,778,883
Total all fields	754,050,092	878,412,552	841,716,575	827,121,981	893,614,099	4,194,915,298
<b>HASS % of total</b>	<b>17.44%</b>	<b>16.22%</b>	<b>16.62%</b>	<b>20.03%</b>	<b>21.96%</b>	<b>18.49%</b>

Source: ARC, ERA National Reports 2010 and 2012.

Note: Data is adjusted to 2012 equivalent dollars.

Figure 3.6 Total HERDC Category 1 research income, Social, Economic and Behavioural Sciences fields of research (two-digit level), 2006–10



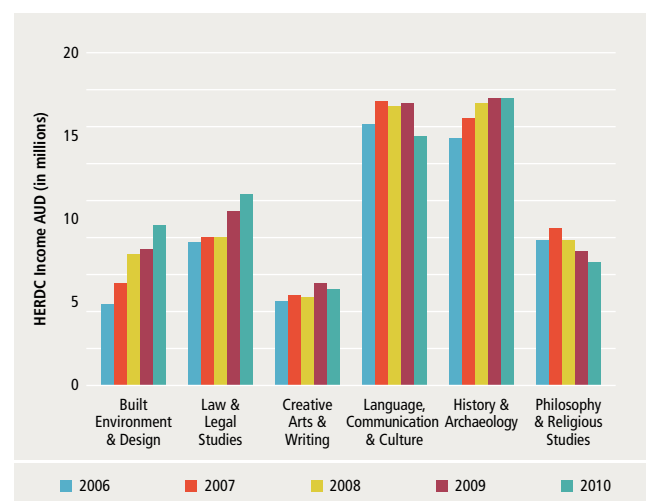
Source: ARC, ERA National Reports 2010 and 2012.

Note: Data is adjusted to 2012 equivalent dollars.

the period is noteworthy alongside much more variable income for both Category 2 and 3 categories (see following section).

Studies in Human Society received the most Category 2 income over the 2006–10 period, while Commerce, Management, Tourism and Services received the least. Education received significantly more Category 2 funding than Category 1 funding, though after a sharp rise in income in 2009, the 2010 income level was lower than in 2006. The data presented in Figure 3.9 indicates that HCA receives less Category 2 funding than SBE fields. History and Archaeology received a sharp increase in income in 2010 but all the HCA disciplines received more Category 2 funding in 2010 than in 2006.

Figure 3.7 Total HERDC Category 1 research income, Humanities and Creative Arts fields of research (two-digit level), 2006–10



Source: ARC, ERA National Reports 2010 and 2012.

Note: Data is adjusted to 2012 equivalent dollars.

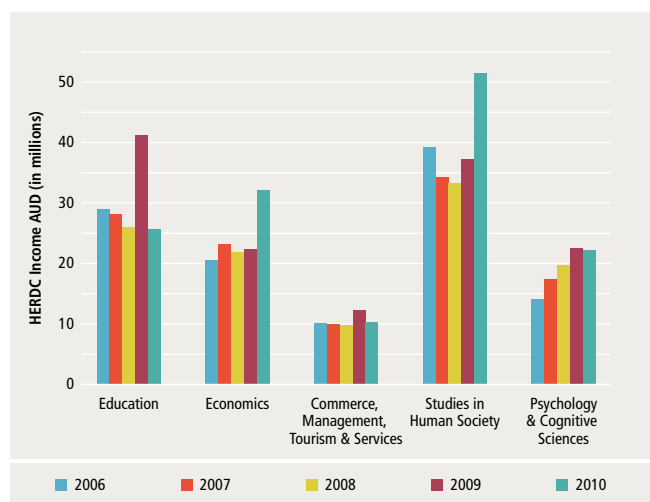
### HERDC Category 3 (Industry and Other Research Income)

Table 3.6 shows total Category 3 income across 2006–10. The data indicate that across all fields, Category 3 income increased by 15% between 2006 and 2010, while HASS Category 3 income increased by 70% to comprise almost 20% of total Category 3 income in 2010.

HERDC Category 3 income can be disaggregated by source into Australian industry and International A and B income. International A income is competitive, peer-reviewed grants from non-Australian industry or non-Australian Government agencies. Income received from international sources is an indicator of internationalisation. International A income

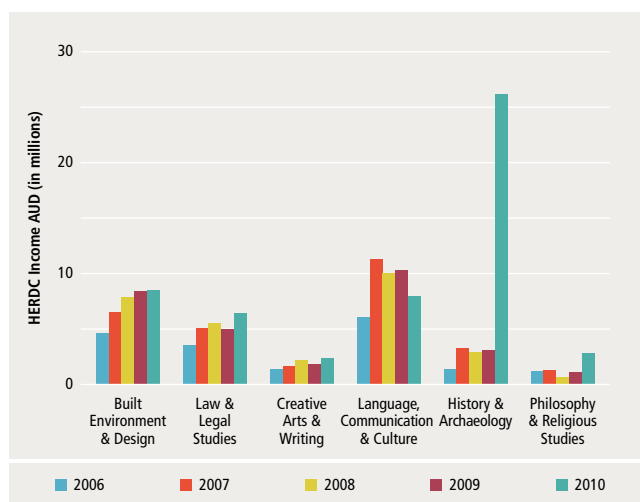


**Figure 3.8 Total HERDC Category 2 research income, Social, Behavioural and Economic Sciences fields of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.  
Note: Data is adjusted to 2012 equivalent dollars.

**Figure 3.9 Total HERDC Category 2 research income, Humanities and Creative Arts fields of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.  
Note: Data is adjusted to 2012 equivalent dollars.

**Table 3.6 HERDC Category 3 research income, HASS fields of research, 2006–10**

	2006	2007	2008	2009	2010	Total
Total HCA	25,847,086	35,955,066	36,596,898	32,470,721	56,027,714	186,897,485
Total SBE	73,116,053	70,155,436	80,914,566	86,159,495	111,966,340	422,311,891
Total HASS	98,963,139	106,110,502	117,511,465	118,630,216	167,994,054	609,209,376
Total all fields	733,382,013	770,314,084	852,946,835	726,871,562	845,054,158	3,928,568,653
<b>HASS% of total</b>	<b>13.49%</b>	<b>13.77%</b>	<b>13.78%</b>	<b>16.32%</b>	<b>19.88%</b>	<b>15.51%</b>

Source: ARC, ERA National Reports 2010 and 2012.  
Note: Data is adjusted to 2012 equivalent dollars.

as a percentage of total HERDC 3 income for HASS in the 2008–10 period (from ERA 2012 National Report) was as follows: Built Environment and Design 12.96%, Education 2.08%, Economics 7.21%, Commerce, Management and Tourism Services 2.7%, Studies in Human Society 6.91%, Psychology 10.64%, Law and Legal Studies 26.1%, Studies in Creative Arts and Writing 3.32%, Language, Communication and Culture 8.2%, History and Archaeology 6.27%, Philosophy and Religious Studies 4.36%. STEM comparators are as follows: Mathematical Studies 8.96%, Chemical Sciences 7.3%, Earth Sciences 4.4%, Engineering 4.1%, Medical and Health Sciences 10.2%. Detailed tables are in Appendix 6.

Figures 3.10 and 3.11 plot HERDC Category 3 income for SBE and HCA fields of research over 2006–10 at the two-digit FoR level.

**HERDC Category 4 (Cooperative Research Centre (CRC) Income)**

Table 3.7 shows total Category 4 CRC income across the 2006–10 period for HCA, SBE, HASS, HASS and STEM combined, and then HASS as a percentage of the total system.

Figures 3.12 and 3.13 plot HERDC Category 4 income for SBE and HCA fields of research over the five-year period at the two-digit FoR level. Non-science fields represent a small proportion

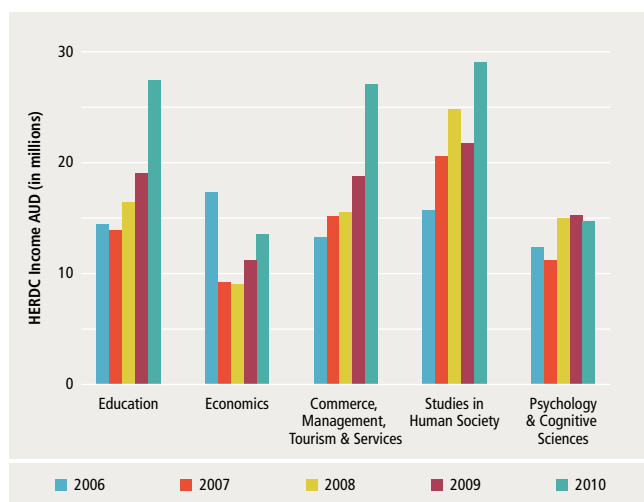
of CRC activity—of the activity in HASS it is concentrated in Commerce, Management, Tourism and Services, Studies in Human Society, Psychology, and Built Environment. The re-instatement of the ‘public good’ criteria to the CRC programme in 2008<sup>12</sup> may not have percolated through the system by 2010 and so later years may show better results for HASS, but the combination of the sheer scale of the funding available through this programme and its initially restrictive eligibility generates questions about the strategic benefit of policy settings which do not at least allow access, if not ensure success, across the whole sector.

**Research Commercialisation Income**

Total research commercialisation income for the HASS disciplines over the two ERA audit periods was \$9,814,150, which is less than 4% of the total income. There was some considerable variation across the two ERA audits as can be seen in Table 3.8 and this points to a high level of contingency in securing this funding, rather than a strong systemic connection (this applies to all disciplines not just HASS). HASS fields generating research commercialisation income include Education (specifically Specialist Studies in Education), Commerce, Management, Tourism and Services (specifically Business and Management), and Psychology.

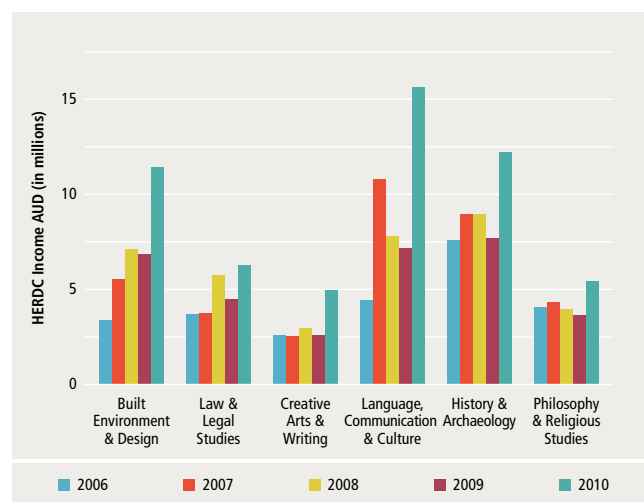


**Figure 3.10 Total HERDC Category 3 research income, Social, Behavioural and Economic Sciences fields of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.  
 Note: Data is adjusted to 2012 equivalent dollars.

**Figure 3.11 Total HERDC Category 3 research income, Humanities and Creative Arts fields of research (two-digit level), 2006–10**



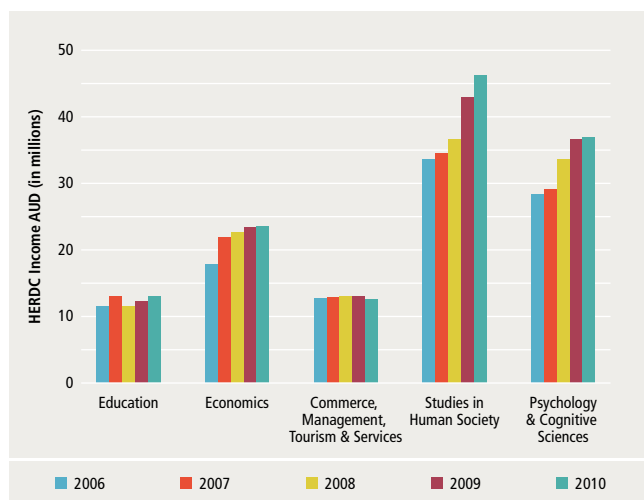
Source: ARC, ERA National Reports 2010 and 2012.  
 Note: Data is adjusted to 2012 equivalent dollars.

**Table 3.7 HERDC Category 4 research income, HASS fields of research, 2006–10**

	2006	2007	2008	2009	2010	Total
Total HCA	3,774,813	4,034,379	3,602,386	4,322,793	2,465,955	18,200,326
Total SBE	11,831,702	12,801,735	11,281,610	12,233,782	10,415,469	58,564,298
Total HASS	15,606,515	16,836,114	14,883,996	16,556,575	12,881,424	76,764,625
Total all fields	153,087,520	144,549,001	138,341,560	135,145,088	126,737,756	697,860,925
<b>HASS% of total</b>	<b>10.19%</b>	<b>11.65%</b>	<b>10.76%</b>	<b>12.25%</b>	<b>10.16%</b>	<b>11.00%</b>

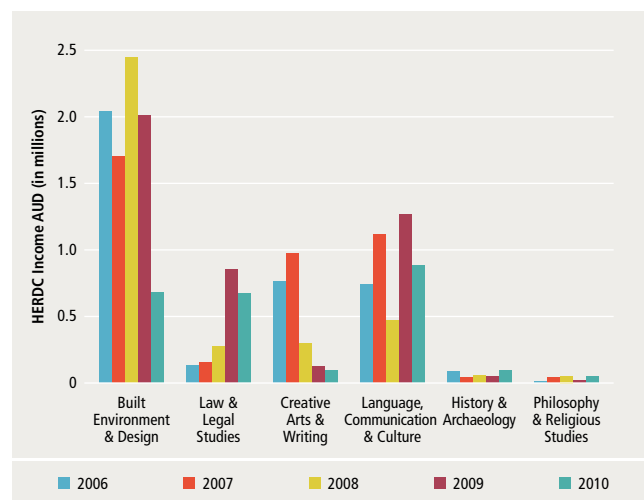
Source: ARC, ERA National Reports 2010 and 2012.  
 Note: Data is adjusted to 2012 equivalent dollars.

**Figure 3.12 Total HERDC Category 4 research income, Social, Behavioural and Economic Sciences fields of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.  
 Notes: Data is adjusted to 2012 equivalent dollars.

**Figure 3.13 Total HERDC Category 4 research income, Humanities and Creative Arts fields of research (two-digit level), 2006–10**



Source: ARC, ERA National Reports 2010 and 2012.  
 Notes: Data is adjusted to 2012 equivalent dollars.

**Table 3.8 Research commercialisation income, HASS fields of research (two-digit level), 2010 and 2012**

Broad Field of Research	2010	2012
Built Environment and Design	\$1,637	\$98,333
Education	\$1,853,031	\$1,453,868
Economics	\$175,041	\$198,175
Commerce, Management, Tourism and Services	\$84,580	\$1,344,615
Studies in Human Society	\$50,975	\$65,468
Psychology and Cognitive Sciences	\$1,249,032	\$2,241,599
Studies in Creative Arts and Writing	\$721,725	\$127,013
Language, Communication and Culture	\$47,277	\$34,288
History and Archaeology	\$58,681	\$7,990
Philosophy and Religious Studies	\$822	\$0

Source: ARC, ERA National Reports 2010 and 2012.

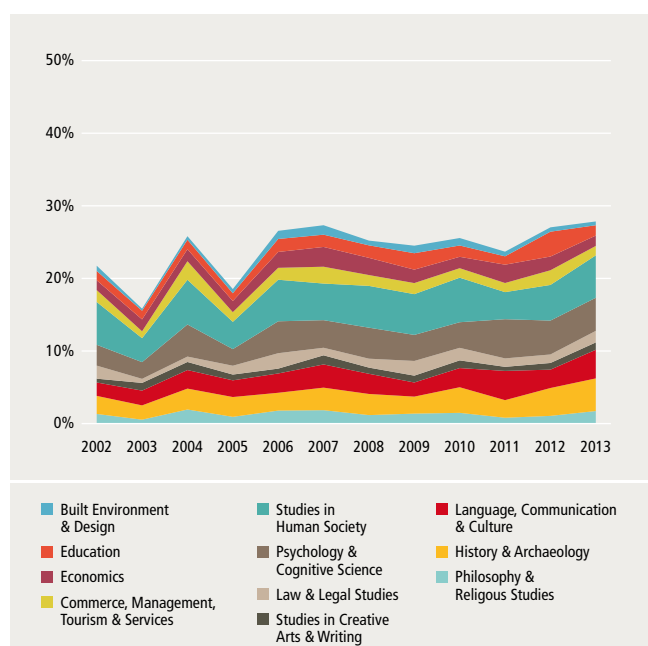
### 3.6 Performance in Competitive Grant Programmes

#### Australian Research Council National Competitive Grants Programme

Graphs available from the ARC (see Figure 3.14 and in Appendix 6) give a useful overview of various system elements and key trends over the 2002–13 period:

- » In terms of volume of numbers of proposals received over the period—the largest FoRs (two-digit) were Medical and Health Sciences, and Engineering and Biological Sciences.
- » The largest amount of funds was also awarded to Physical Sciences, Medical and Health Science, Engineering, Earth Sciences, Chemical Sciences, and Biological Sciences.
- » HASS represented approximately 26% of total funding awarded; humanities was roughly 8% of total ARC funding.

**Figure 3.14 Humanities, arts and social sciences percentage of ARC National Competitive Grants Programme funding, by year, 2002–13**



Source: ARC presentations [http://www.arc.gov.au/media/arc\\_presentations.htm](http://www.arc.gov.au/media/arc_presentations.htm)

The study accessed publicly available ARC National Competitive Grants Programmes (NCGP) data to profile HASS sector's performance across all schemes. The project also worked with customised data in order to conduct analysis of the support gained through the ARC's competitive grant schemes; indicators include the number of projects funded over 2002–12, the number of applications, the success rate of HASS disciplines across all programmes; and the distribution of funding by discipline and university type.

For analytic purposes, the project also profiled distribution of funding across institutional types and geographical location. In combination with other indicators these data contribute to building an overall picture of research scale and viability. Data at the individual institutional level by field of research was not available, so customised data was requested from the ARC aggregated by 'university type'.<sup>13</sup> As current institutional affiliations (Australian Technology Network of Universities (ATN), Group of Eight (Go8), Regional Universities Network (RUN) and Innovative Research Universities (IRU)) leave a number of unaffiliated universities,<sup>14</sup> a typology of Australian universities, developed by Gavin Moodie, was employed. This groups universities according to their size, research income, inauguration and geographic location into the following five categories: Group of Eight, 1960s-1970s, ATN-like, New Generation and Regional. The typology is available in Appendix 6.

#### Funding trends across all schemes<sup>15</sup>

- » The overall percentage increase in ARC funds (adjusted for 2012 dollars) across all FoRs (STEM and HASS) from 2002–12 was 62.6%; the HASS percentage increase was 89.1% and STEM was 55.2% (calculated on 2012 equivalent dollars). Total funding awarded to HASS over the period was \$1,713,553,571 to a total of 5,621 projects (Tables 3.9 and 3.10).<sup>16</sup> HASS share of total funds in 2002 was 21.8% and in 2012 this had increased to 25.3%. The trend for HASS over this period, then, is positive.
- » HCA share of funding in 2002 was 8.71% of the total and in 2012 the HCA share was 10.56%; SBE was 13.04% and 14.74%, respectively. Overall, across the sum total of ARC funds awarded over the ten-year period, HCA disciplines received 9.71% and SBE disciplines received 13.79% of the total.
- » The tabulation of the funding awarded by scheme (Figure 3.16) shows that HASS received its largest share of funds from the Discovery Projects scheme (53%).<sup>17</sup>
- » The distribution of Discovery Project scheme funding across institutions reflects the overall distribution of ARC funding in HASS. Go8 universities received the vast majority of Discovery Projects funding (68%), with regional universities only receiving 4%.
- » Significantly, HASS engagement with the Linkage Projects scheme is high; with 22% of total research funds across the period coming from this scheme.
- » Go8 institutions receive the most Linkage Projects funding (55%), but there was a more even distribution across other institutional types than is the case with Discovery Project outcomes.
- » At the two-digit level the FoRs with the largest share of total ARC NCGP funding in HASS were Studies in Human Society (21%), Psychology (16%), and History and Archaeology (12%) (Figure 3.17).

**Table 3.9 Total funding ARC National Competitive Grants Programme, STEM and HASS, by year, 2002–12**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
STEM	\$339,526,823	\$658,768,605	\$432,374,086	\$670,168,383	\$408,285,493	\$385,096,385	\$402,176,993	\$535,364,811	\$534,503,890	\$737,178,342	\$527,020,347
HASS	\$94,369,964	\$123,858,403	\$150,429,412	\$152,452,243	\$147,590,461	\$144,784,814	\$135,533,774	\$173,787,341	\$183,540,536	\$228,757,479	\$178,449,144
<b>Total</b>	<b>\$433,896,787</b>	<b>\$782,627,008</b>	<b>\$582,803,498</b>	<b>\$822,620,626</b>	<b>\$555,875,955</b>	<b>\$529,881,199</b>	<b>\$537,710,767</b>	<b>\$709,152,152</b>	<b>\$718,044,426</b>	<b>\$965,935,821</b>	<b>\$705,469,491</b>

Source: ARC National Competitive Grants Programme Dataset, Research Funding Trend Data, [http://www.arc.gov.au/general/searchable\\_data.htm](http://www.arc.gov.au/general/searchable_data.htm)

Note: Data is adjusted to 2012 equivalent dollars.

**Table 3.10 Total ARC National Competitive Grants Programme projects funded in HASS, by year, 2002–12**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
HCA	151	230	198	240	210	208	177	194	221	206	217
SBE	281	361	335	332	298	270	290	304	294	291	313
<b>Total HASS</b>	<b>432</b>	<b>591</b>	<b>533</b>	<b>572</b>	<b>508</b>	<b>478</b>	<b>467</b>	<b>498</b>	<b>515</b>	<b>497</b>	<b>530</b>

Source: ARC National Competitive Grants Programme Dataset, Research Funding Trend Data, [http://www.arc.gov.au/general/searchable\\_data.htm](http://www.arc.gov.au/general/searchable_data.htm)

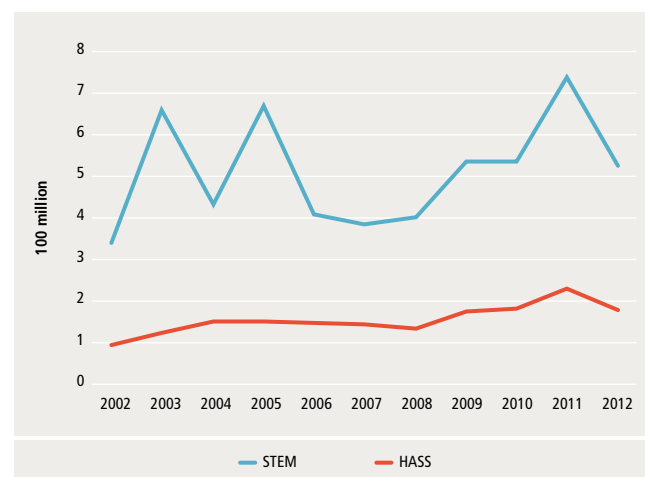
- » Top performers over 2002–12 in SBE were Studies in Human Society, and Psychology; in HCA, History and Archaeology, and Language, Communication and Culture.
- » Performance in the Discovery Early Career Research Award (DECRA) and Future Fellowships schemes are something of an indicator of the ‘health’ and the renewal of disciplines. While a direct correlation is not necessarily expected, the Future Fellowship outcomes do not necessarily go to researchers from the strongest ERA research fields (e.g. Film, Television and Digital Media, and Communication and Media Studies, both received only one award).<sup>18</sup> This is particularly worth noting as this is a capacity-building scheme. The majority of Future Fellowships and DECRA projects were awarded to Go8 universities, at 69% and 68%, respectively.
- » HASS is under-represented in the Special Research Initiatives scheme (SRI); this seems to be an issue of access to and/or the focus of the scheme rather than quality.

There has been debate within the higher education sector, as well as within broader discussions of national research strategy, about the sector’s dependence on project funding. This is especially pertinent for the HASS disciplines, which rely heavily on support through the Discovery Projects scheme. This has a number of consequences:

- » there is the opportunity cost of repeated application for three year grants
- » the funding logic works against cross-institutional and interdisciplinary collaborations
- » the scheme cannot easily support long-term or longitudinal research
- » there is no possibility of using these grants to establish a career path for researchers
- » there is a loss of the kind of continuity that programme-based research can deliver.

Most importantly for the HASS sector, its reliance on the Discovery Projects scheme has major implications for the building of critical mass over time in discipline areas. Schemes that do focus on building such capacity through programme-based research and research infrastructure are the Centres of Excellence (CoE) and the Linkage Infrastructure Equipment Fund (LIEF) schemes, but HASS has had limited participation in these schemes, and as a consequence limited success, securing three of 32 CoEs, and 73 of 810 LIEF grants

over the 2002–12 period. While the HASS success rate in LIEF is comparatively high, HASS researchers are not major participants in this funding scheme.

**Figure 3.15 Total funding ARC National Competitive Grants Programme, STEM and HASS, by year, 2002–12**

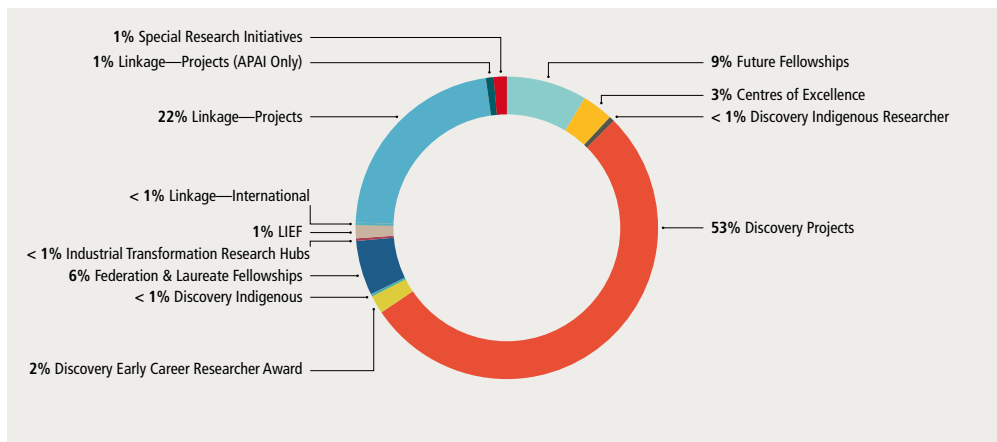
Source: ARC National Competitive Grants Programme Dataset, Research Funding Trend Data, [http://www.arc.gov.au/general/searchable\\_data.htm](http://www.arc.gov.au/general/searchable_data.htm)

Note: Data is adjusted to 2012 equivalent dollars.

When considered by university type, ARC NCGP funding is heavily concentrated in the Go8 institutions. Go8 universities received 65% of all ARC funding over the period 2002–13 (Figure 3.18). 1960s-1970s universities received 17% of ARC funding, while ATN-like institutions received 10%, and New Generation and Regional universities received 4% each. When change over time is considered (Table 3.11 and Figure 3.19), all university groupings experienced an increase in funding. ARC funding awarded to New Generation universities increased the most over 2002–13 at 123%, while Regional universities funding increased by the smallest margin at 28%.

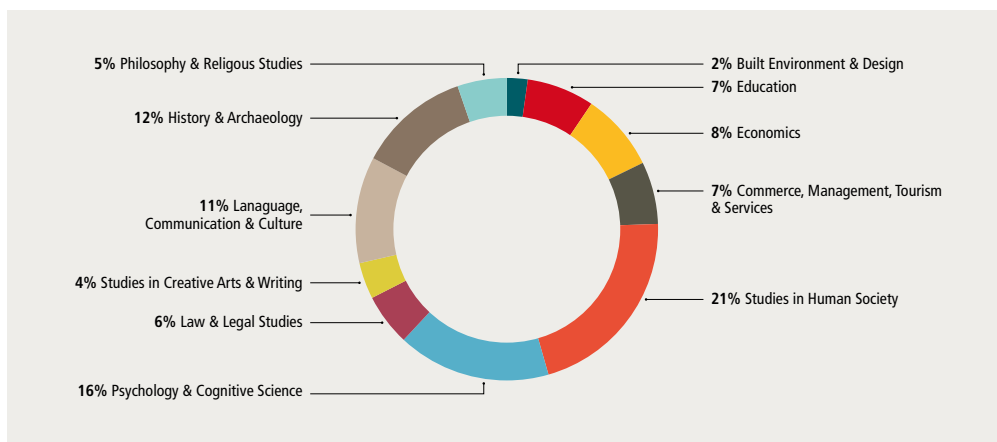
Distribution of NCGP funding by university type and field of research (Table 3.12) indicates that in a number of fields the Go8 share of funding was lower than the HASS system average: this was the case for Built Environment and Design (45%), Education (42%) and Commerce, Management, Tourism and Services (55%). Fields with the highest amount of funding awarded to Go8 institutions were Economics (83%) and Philosophy and Religious Studies (76%).

**Figure 3.16 ARC National Competitive Grants Programme funding awarded, by scheme, HASS, 2002–12**



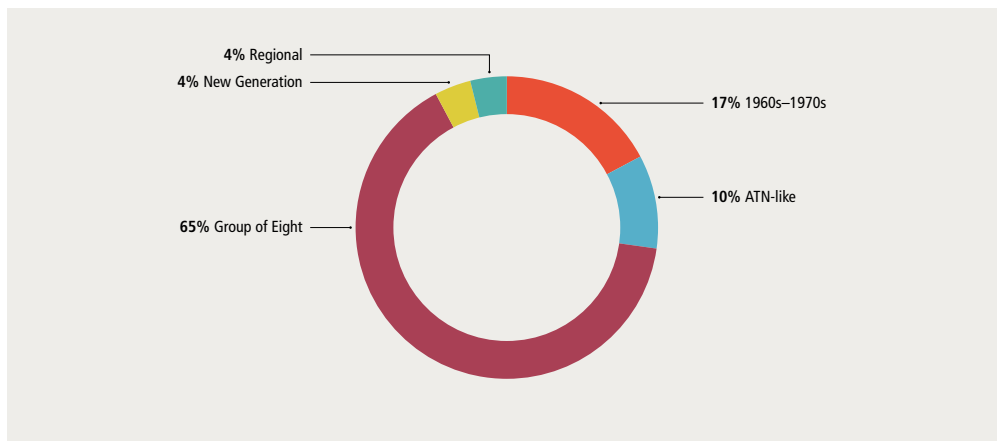
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure 3.17 ARC National Competitive Grants Programme funding awarded, by all HASS fields of research (two-digit), 2002–12**



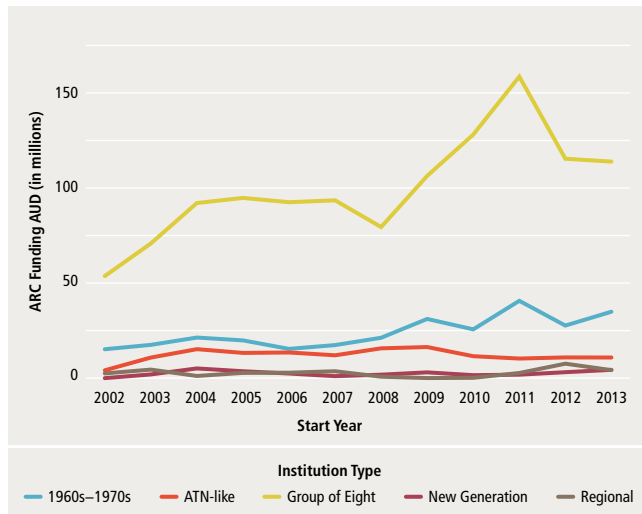
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars.

**Figure 3.18 ARC National Competitive Grants Programme funding, by university type, 2002–13**



Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars.

Figure 3.19 ARC National Competitive Grants Programme funding, by university type, by year, 2002–13



Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

There is a clear divergence between Go8 and Regional institutions’ funding which is to be expected given differences in remit, size and investment, but this raises questions of access to opportunity at the individual researcher level as well as questions about the sustainability of capacity across the system. Education had the highest proportion of NCGP funding in Regional universities (10%). More detailed tables available in Appendix 6 show trends at the four-digit level; for example, 5% of Language Studies NCGP funding over 2002–13 went to Regional universities, only 2% of ARC funding for Historical Studies research went to Regional universities, and only 8% was awarded to Regional universities for Demography research.

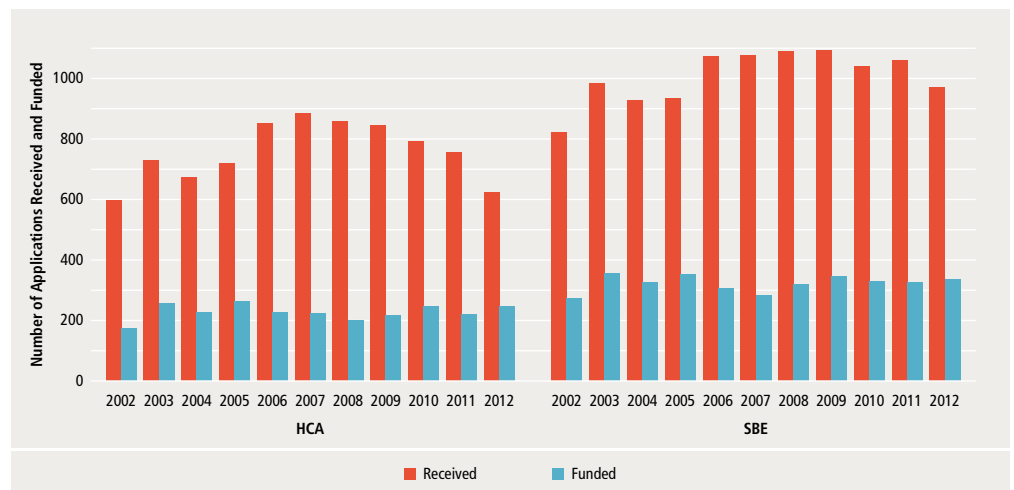
Application trends

For most FoRs in HASS, the number of applications submitted and the number funded has remained relatively consistent over 2002–12. Across all the HASS FoRs reviewed here, Studies in Human Society submitted the largest volume of ARC NCGP funding applications, with a high of nearly 400 applications in 2007. A high volume of applications is received by the ARC each year for Psychology and Cognitive Science.

Among those fields experiencing significant levels of variation were Built Environment and Design, where increased numbers of applications reflect its growth and recognition as a research field; Creative Arts, which grew from a low base over the 2002–07 period; Management and Commerce, which has seen some decline in the number of applications since 2009; and History and Archaeology, which has seen significant growth in the numbers of applications submitted since 2008.

Success rates have, of course, varied across the different programmes; typically, Discovery and Linkage Projects schemes have offered most success to this sector. To aggregate the results across all programmes in order to provide an indicative figure, the success rate for HASS over the period surveyed is usually in the range of 20%–30%, with some fields (Economics, Psychology and Cognitive Sciences, and Law and Legal Studies) often doing significantly better than that (30%–40%). Fields where success rates are showing a slight decline include Creative Arts and Language, Communication and Culture. Despite low levels of university R&D investment, History and Archaeology have returned success rates of 30% to 40% in 2005 and 2012.

Figure 3.20 Number of ARC National Competitive Grants Programme applications received and funded (all schemes), by year, by panel, 2002–12



Source: ARC, customised data.

Table 3.11 ARC National Competitive Grants Programme funding, by university type, by year, 2002–13

University Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	TOTAL	% change
1960s–1970s	18,387,459	20,637,387	24,408,589	22,946,636	18,568,026	20,526,282	24,302,847	34,003,374	28,628,039	43,348,781	30,589,369	37,717,555	324,064,344	17
ATN-like	7,546,164	14,098,591	18,433,223	16,493,432	16,723,538	15,260,795	18,859,337	19,524,547	14,799,737	13,594,302	14,176,618	14,120,631	183,630,915	10
Group of Eight	56,082,181	72,902,335	93,757,472	96,376,863	94,166,612	95,140,659	81,383,101	107,749,828	129,024,022	158,903,402	116,585,688	115,091,318	1,217,163,481	65
New Generation	3,492,106	5,403,467	8,499,031	7,045,219	5,874,063	4,512,499	5,285,532	6,479,831	5,024,876	5,285,650	6,562,459	7,773,077	71,237,810	4
Regional	5,937,653	7,897,143	4,611,008	6,192,580	6,296,788	7,048,173	4,227,922	3,539,402	3,654,425	6,144,647	10,939,563	7,626,413	74,115,717	4
<b>Total</b>	<b>91,445,563</b>	<b>120,938,923</b>	<b>149,709,323</b>	<b>149,054,730</b>	<b>141,629,027</b>	<b>142,488,408</b>	<b>134,058,739</b>	<b>171,296,982</b>	<b>181,131,099</b>	<b>227,276,782</b>	<b>178,853,697</b>	<b>182,328,994</b>	<b>1,870,212,267</b>	<b>100</b>

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.

Table 3.12 ARC National Competitive Grants Programme funding, by university type, by field of research (two-digit), 2002–13

	1960s–1970s		ATN-like		Group of Eight		New Generation		Regional		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Built Environment and Design	8,273,797	21	12,975,060	32	18,037,341	45	805,691	2	246,201	1	40,338,090	100
Education	21,784,287	19	25,456,822	22	48,952,969	42	8,714,531	7	11,295,570	10	116,204,179	100
Economics	4,798,522	3	15,358,329	10	126,567,056	83	3,556,820	2	1,472,427	1	151,753,154	100
Commerce, Management, Tourism and Services	17,752,878	14	31,399,510	25	68,540,353	55	3,335,463	3	4,485,161	4	125,513,366	100
Studies in Human Society	73,624,734	19	33,836,493	9	256,789,356	65	14,490,207	4	18,431,373	5	397,172,163	100
Psychology and Cognitive Sciences	77,921,617	26	15,346,652	5	192,569,276	63	13,524,203	4	6,156,393	2	305,518,140	100
Law and Legal Studies	11,317,303	11	10,524,217	10	77,318,345	72	3,164,181	3	4,968,184	5	107,292,230	100
Studies in Creative Arts and Writing	11,548,980	16	5,856,167	8	47,876,338	67	2,528,831	4	3,761,968	5	71,572,284	100
Language, Communication and Culture	32,051,883	15	26,568,555	12	136,225,926	62	14,981,872	7	10,301,458	5	220,129,694	100
History and Archaeology	48,845,376	21	5,567,184	2	167,608,475	72	3,006,491	1	8,323,222	4	233,350,748	100
Philosophy and Religious Studies	16,144,967	16	741,926	1	76,678,045	76	3,129,520	3	4,673,759	5	101,368,217	100
<b>Total</b>	<b>324,064,345</b>		<b>183,630,915</b>		<b>1,217,163,479</b>		<b>71,237,810</b>		<b>74,115,716</b>		<b>1,870,212,265</b>	

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.



**Table 3.13 Number of ARC National Competitive Grants Programme applications received, funded and amount awarded, for HASS fields of research, selected schemes, 2002–12**

Scheme	Number of Applications Received	Number of Applications Funded	Amount Awarded
Discovery Projects	14,098	3,355	\$900,003,071
LIEF	156	73	\$25,229,036
Linkage Projects	3,147	1,400	\$373,887,216
Linkage-APAI	312	155	\$14,486,686

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.

LIEF= Linkage Infrastructure, Equipment and Facilities.

Tables representing the number of ARC applications and the number funded for each field of research over 2002–12 can be found in Appendix 6.

### Distribution of funding awarded by scheme

#### Discovery and Linkage Programmes:

The Discovery Projects scheme is the primary source of funding for basic research across all the HASS fields of research, accounting for 53% of all research funding. When the various Fellowship schemes are included (they have varied in focus and eligibility over the period and include Federation Fellowships, Laureates, Future Fellows, and DECRA's), the total proportion of HASS funding derived from this suite of schemes is around 70%. This underlines the fact that, for these disciplines, given their limited access to other sources of funding for basic research, the ARC Discovery scheme is fundamental to their activity.

The Linkage Projects scheme is also extremely important. While it is commonly held that HASS research (and that of the humanities in particular) is not closely connected to public agency or industry agendas, Linkage Projects account for around 22% of funding overall, and for some FoRs, this can be even higher (Commerce, Management and Tourism Services earn more from the Linkage Projects scheme than from Discovery Projects—43% as against 42%).

Performance in the Fellowship schemes is highly variable across the HASS fields of research, ranging from 8% of total funding (Education) to 32% (Philosophy and Religious Studies). Some HASS fields derive a large share of total funds from the Future Fellowship scheme as the graphs for the individual FoRs contained in Appendix 6 demonstrate. Fields doing best in this scheme include Studies in Human Society (16% of funding), Philosophy and Religious Studies (also 16%), Law (14%) and History and Archaeology (11%).

#### Centres of Excellence (CoE):

In the period 2002–12 HCA share of total funds was 4.78%; total funding awarded (\$24,250,000) was for one CoE in 2011 in Literary Studies (ARC CoE for the History of Emotions). SBE share of total funds over the period was 6.65% for two CoEs in 2011: CoE for the Study of Cognition and its Disorders (\$21,000,000) and CoE for Population Ageing Research (\$12,700,000)—in the fields of Other Psychology and Cognitive Science, and Applied Economics, respectively. These figures do not include funding through co-funded centres, ARC

Special Research Initiatives, extension funding for ARC CoEs or CoEs funded in the 2014 funding round. The exclusions include the ARC CoE in Policing and Security awarded to Griffith University for a total amount of original funding of \$10M in 2007 and the ARC CoE in Cultural and Media Industries for Queensland University of Technology, with a total funding of \$12,495,542 commencing in 2005. It is possible that the 'problem-based' model for the ideal CoE does not fit some of the HASS disciplines as well as those from STEM; a 'theme-based' model might be more typical of the large scale programmes of research likely to come from the HASS fields. The apparent lack of fit with the prevailing research model does seem to discourage HASS researchers from applying to this scheme, and there is a perception that it disadvantages them when they do.

#### Linkage Infrastructure Equipment and Facilities (LIEF):

The success rates for the LIEF scheme are tabulated in Table 3.14. There has been limited, and by international standards<sup>19</sup> inadequate, national investment, overall, in research infrastructure for the HASS disciplines, despite some recent interest in the emergence of the 'digital humanities'. However, there are a number of longstanding infrastructure projects, Austlit, for example, that have been funded through this scheme.<sup>20</sup>

**Table 3.14 Number of LIEF applications received, funded, amount awarded, and success rates for HASS fields of research, by year, 2002–12**

Start Year	Number Applications Received	Number Applications Funded	Amount Funded	Success Rate %
2002	17	7	\$1,634,449	41
2003	16	11	\$3,160,173	69
2004	10	7	\$2,658,560	70
2005	12	8	\$3,034,495	67
2006	16	7	\$3,129,867	44
2007	13	4	\$1,259,293	31
2008	19	8	\$2,345,344	42
2009	14	5	\$1,869,666	36
2010	17	6	\$2,917,681	35
2011	12	5	\$1,799,508	42
2012	10	5	\$1,420,000	50

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.

#### Future Fellowships:

While on a much smaller scale, the Future Fellowships are nonetheless also conceived as capacity-building awards: they are directed towards mid-career researchers, they have a slightly longer duration than the typical Discovery, and they require a commitment from the host institution to supporting the Fellow's research into the future. Across the period 2009–12, the total number of Future Fellowships awarded across the system was 812. HASS disciplines were awarded 197 of the Fellowships (SBE received 101 and HCA 96). Over half of the Future Fellowships in SBE were in Studies in Human Society which received 51 (50.5%). Psychology's share was 35.6% (36). For HCA the distribution was more even, though a high proportion was awarded to History and Archaeology—30 of the



**Table 3.15 Number of Future Fellowship applications funded and amount of funding awarded, HASS fields of research, by year, 2002–12**

Field of Research (four-digit level)	Number of Applications Funded					Amount of Funding Received				
	2009	2010	2011	2012	Total	2009	2010	2011	2012	Total
1201 Architecture	2	1	0	1	4	1,704,963	637,982	0	670,336	3,013,281
1205 Urban and Regional Planning	0	0	2	2	4	0	0	1,289,658	1,238,588	2,528,246
1301 Education Systems	0	1	0	1	2	0	835,829	0	889,328	1,725,157
1303 Specialist Studies in Education	1	0	1	0	2	852,481	0	856,314	0	1,708,795
1402 Applied Economics	1	1	1	0	3	775,239	739,137	872,191	0	2,386,567
1403 Econometrics	1	0	1	0	2	901,547	0	760,305	0	1,661,852
1501 Accounting, Auditing and Accountability	0	0	1	0	1	0	0	676,689	0	676,689
1503 Business and Management	1	1	0	2	4	963,148	911,808	0	1,561,519	3,436,476
1601 Anthropology	2	1	4	2	9	1,604,751	814,942	2,575,341	1,415,657	6,410,691
1602 Criminology	4	1	0	1	6	2,895,787	876,572	0	727,146	4,499,505
1603 Demography	2	0	0	0	2	1,594,296	0	0	0	1,594,296
1604 Human Geography	1	1	2	2	6	741,814	624,846	1,303,222	1,621,224	4,291,107
1605 Policy and Administration	0	0	3	0	3	0	0	2,238,075	0	2,238,075
1606 Political Science	3	3	3	3	12	2,280,016	1,911,269	1,915,041	2,515,350	8,621,676
1608 Sociology	0	4	2	3	9	0	2,826,502	1,488,878	2,013,295	6,328,675
1699 Other Studies in Human Society	0	3	0	1	4	0	2,296,784	0	686,151	2,982,935
1701 Psychology	6	3	8	8	25	4,676,269	2,210,480	6,314,566	5,934,035	19,135,350
1702 Cognitive Science	1	3	2	4	10	741,814	2,253,906	1,258,784	2,899,534	7,154,038
1799 Other Psychology and Cognitive Science	0	0	0	1	1	0	0	0	803,734	803,734
1801 Law	2	4	6	4	16	1,493,788	3,297,507	4,651,046	3,077,591	12,519,932
1901 Art Theory and Criticism	0	0	1	1	2	0	0	770,379	716,570	1,486,949
1902 Film, Television and Digital Media	0	1	0	0	1	0	757,523	0	0	757,523
1904 Performing Arts and Creative Writing	1	1	2	1	5	741,814	651,265	1,305,643	797,935	3,496,657
2001 Communication and Media Studies	0	1	0	0	1	0	832,919	0	0	832,919
2002 Cultural Studies	2	0	2	1	5	1,382,120	0	1,619,033	677,195	3,678,348
2003 Language Studies	0	0	0	0	0	0	0	0	0	0
2004 Linguistics	1	2	0	3	6	592,673	1,502,327	0	2,099,566	4,194,566
2005 Literary Studies	1	0	1	2	4	726,931	0	575,532	1,239,438	2,541,901
2101 Archaeology	2	3	0	6	11	1,478,225	2,230,370	0	4,361,460	8,070,055
2102 Curatorial and Related Studies	1	0	0	0	1	755,649	0	0	0	755,649
2103 Historical Studies	2	7	5	4	18	1,704,963	4,478,824	3,257,175	2,565,579	12,006,541
2201 Applied Ethics	0	1	0	0	1	0	588,010	0	0	588,010
2202 History and Philosophy of Specific Fields	1	3	2	1	7	584,676	2,174,368	1,288,807	799,683	4,847,534
2203 Philosophy	2	3	2	2	9	1,616,734	2,404,667	1,503,045	1,344,682	6,869,128
2204 Religion and Religious Studies	0	0	1	0	1	0	0	705,803	0	705,803
<b>Total</b>	<b>40</b>	<b>49</b>	<b>52</b>	<b>56</b>	<b>197</b>	<b>30,809,700</b>	<b>35,857,837</b>	<b>37,225,526</b>	<b>40,655,596</b>	<b>144,548,658</b>

Source: ARC, customised data.

Note: Fields of research not appearing in the table did not receive any Future Fellowship funding during the period 2009–12.

**Table 3.16 Future Fellowships awarded HASS and STEM, by year, 2009–13**

	2009	2010	2011	2012	2013
HASS	41 (20.5%)	49 (24.5%)	52 (25.6%)	56 (26.8%)	52 (25.9%)
STEM	159 (79.5%)	151 (75.6%)	151 (74.4%)	153 (73.2%)	149 (74.1%)
<b>Total</b>	<b>200</b>	<b>200</b>	<b>203</b>	<b>209</b>	<b>201</b>

Note: Based on manual counts of outcome reports available on the ARC's website [http://www.arc.gov.au/nccgp/futurefel/ft\\_outcomes.htm](http://www.arc.gov.au/nccgp/futurefel/ft_outcomes.htm)

**Table 3.17 Future Fellowships awarded to Group of Eight universities, by year, 2009–13**

	2009	2010	2011	2012	2013
Go8	120 (60%)	141 (70.5%)	139 (68.5%)	127 (60.8%)	127 (63.2%)
<b>Total</b>	<b>200</b>	<b>200</b>	<b>203</b>	<b>209</b>	<b>201</b>

Note: Based on manual counts of outcome reports available on the ARC's website [http://www.arc.gov.au/nccgp/futurefel/ft\\_outcomes.htm](http://www.arc.gov.au/nccgp/futurefel/ft_outcomes.htm)

96 awarded (or 31.3% of the HCA total). The assessment process for these Fellowships differs from that used for Discovery, with the HCA and SBE panels combined.

In 2009, Biological Sciences alone received 42 Future Fellowships, which was 21% of the total. There is evidence that a high proportion of total Future Fellowships (across both STEM and HASS) have been awarded to the Go8.

#### Australian Laureate Fellowships:

Table 3.18 presents data on the Australian Laureate Fellowships scheme awarded by panel. The Laureate scheme is open to Australian and international researchers of outstanding reputation. It is expected that recipients will 'play a significant, sustained leadership and mentoring role in building Australia's internationally competitive research capacity'.

There are significant flow-on benefits of this scheme for early career researchers, with a number of postdoctoral fellowships and PhD scholarships involved in the project. A number of fellowships may also be 'allocated to exceptional female researchers who will also undertake an ambassadorial role to promote women in research'. In HASS, recipients of the Kathleen Fitzpatrick Award receive additional funding to mentor early career researchers, particularly women, to encourage them to enter and establish careers in research in Australia.

Tables which represent ARC funding awarded from each scheme to each field of research over the period 2002–12 are collected in Appendix 6.

#### Distribution of funding by institution type:

As noted earlier, the distribution of Discovery Project funding across the different types of Australian universities has seen 68% of Discovery Project funding awarded to Go8 universities. There was a different pattern in the distribution of Linkage project funding with 55% awarded to Go8 universities over the period. ATN-like universities received 19% of Linkage funds, and 1960s–1970s universities 14%.

It is notable that the senior fellowship awards—the Federation Fellowships and the Australian Laureate Fellowships—were overwhelmingly vested in the Go8 and 1960s–1970s universities. The distribution across institution types in the case of fellowships directed at the early career and mid-career cohorts effectively mirrors the picture for Discovery Project funding. From 2012 the DECRA scheme has accounted for 3% of total HASS NCGP funding, 68% of which was awarded to Go8 institutions, 20% to 1960s–1970s universities, 7% to ATN-like, 3% to New Generation, and 2% to Regional universities. The respective figures for the Future Fellowships scheme (in operation since 2009) were as follows: Go8 69%, 1960s–1970s 22%, ATN-like 5%, New Generation 2% and Regional universities 2%.

The data also indicate that LIEF funding for New Generation and Regional universities was very limited. CoEs funding is largely concentrated in research-intensive institutions, but the figures do not include the CoE for Creative Industries and Innovation at Queensland University of Technology, or the CoE in Policing and Security at Griffith University.

Table A6.10 in Appendix 6 shows trends over 2002–13 for select schemes by institutional type. It is important to note that the available data do not reveal numbers of applications to these schemes, so it is not possible to determine levels of demand or success across schemes by institutional type.

**Table 3.18 Australian Laureate Fellowships awarded, HASS fields of research, by year, 2009–13**

	2009	2010	2011	2012	2013
HCA	1	2	1	3	6
SBE	2	2	5	1	0
Total HASS	3	4	6	4	6
Total all fields	15	15	17	17	17
<b>% Total HASS</b>	<b>20%</b>	<b>26.7%</b>	<b>35.3%</b>	<b>23.5%</b>	<b>35.3%</b>

Note: Based on manual counts of outcome reports available on the ARC's website [http://www.arc.gov.au/nccgp/laureate/laureate\\_outcomes.htm](http://www.arc.gov.au/nccgp/laureate/laureate_outcomes.htm)

Table 3.19 ARC National Competitive Grants Programme funding for HASS fields of research, by scheme, by university type, 2002–13

	1960s–1970s		ATN-like		Group of Eight		New Generation		Regional		TOTAL	
	\$	% (row)	\$	% (row)	\$	% (row)	\$	% (row)	\$	% (row)	\$	% (col)
Future Fellowships	39,199,045	22	9,970,104	5	125,332,189	69	3,494,119	2	4,076,362	2	182,071,818	9.74
ARC Research Networks	1,868,486	9	2,179,901	10	15,072,457	70	2,491,315	12	0	0	21,612,159	1.16
Australian Laureate Fellowships	10,598,408	19	0	0	41,801,042	76	0	0	2,416,141	4	54,815,590	2.93
Centres of Excellence	21,254,032	36	0	0	37,396,975	64	0	0	0	0	58,651,007	3.14
Discovery Early Career Researcher Award	11,273,943	20	4,059,819	7	37,646,229	68	1,489,614	3	1,097,448	2	55,567,054	2.97
Discovery Indigenous	309,741	5	1,404,825	25	2,460,854	43	991,304	17	502,977	9	5,669,700	0.30
Discovery Indigenous Researchers Development	1,579,238	25	705,440	11	1,935,307	31	1,677,082	27	403,378	6	6,300,446	0.34
Discovery Projects	166,180,012	17	75,058,327	8	655,974,314	68	32,049,625	3	41,096,106	4	970,358,384	51.88
Federation Fellowships	3,750,963	6	6,057,571	10	50,260,753	84	0	0	0	0	60,069,286	3.21
Industrial Transformation Research Hubs	0	0	0	0	2,000,000	44	0	0	2,500,000	56	4,500,000	0.24
Linkage Infrastructure, Equipment and Facilities	4,186,365	15	4,007,110	14	17,768,874	64	1,244,137	5	430,000	2	27,636,487	1.48
Linkage International	1,275,006	24	1,029,023	19	2,520,851	47	136,888	3	439,176	8	5,400,945	0.29
Linkage Projects	58,034,562	14	76,330,910	19	222,965,353	55	25,749,800	6	19,992,077	5	403,072,703	21.55
Linkage Projects (APAI Only)	4,554,543	31	2,827,886	20	4,028,281	28	1,913,926	13	1,162,050	8	14,486,686	0.77
<b>TOTAL (\$)</b>	<b>324,064,345</b>		<b>183,630,915</b>		<b>1,217,163,479</b>		<b>71,237,810</b>		<b>74,115,716</b>		<b>1,870,212,265</b>	<b>100</b>
<b>TOTAL (% row)</b>	<b>17</b>		<b>10</b>		<b>65</b>		<b>4</b>		<b>4</b>		<b>100</b>	

Source: ARC, customised data.

Notes: (a) Percentages rounded up and may not always equal 100.

(b) Data is adjusted to 2012 equivalent dollars.

(c) Not all schemes were funded across 2002–13. The DECRA scheme has had one selection round each year from 2012; the last selection round for the Federation Fellowships was in 2007 (for funding in 2008), this scheme was superseded by the Australian Laureate Fellowships; the Future Fellowship scheme commenced in 2009; the ARC Research Networks scheme had one selection round for funding commencing in 2005 (networks were funded from 2005–10). ARC Centres of Excellence were funded in 2003, 2005 and 2011. Two HASS Centres of Excellence were funded during this period but are not included in the data presented in the above table: the Centre of Excellence for Policing and Security, and the Centre for Excellence for Creative Industries and Innovation.

### 3.7 Research Quality

#### Excellence in Research for Australia (ERA)

The profile here uses data from the two ERA audits (2010 and 2012), which assessed the quality of Australian university research against world standards. The National Report for each exercise provides comprehensive, detailed disciplinary profiles, so the purpose here is to contextualise those results. It is important to note that the ERA data does not provide us with the full picture at the level of the individual institution; it is not possible to correlate ERA ratings with institutional investment. It is also important to note that it is not possible to directly correlate the various performance indicators—that is, research income data, performance in NCGP, and ERA performance; as a result it is difficult to examine how the various components of the research and innovation system contribute to the overall outcomes.

To start with the indicators of scale, Table 3.20 shows number of Units of Evaluation (UoE), outputs, income and number of full-time equivalent (FTE) at two-digit level across the system; we have provided the totals for HASS and STEM since the comparison helps to indicate the scale of activity in the sector. The reference to ‘weighted’ research outputs in the table (and elsewhere in this chapter) refers to a multiplier that applies to books in the ERA exercise. Books are weighted 5:1 compared with other research outputs, such as journal articles and conference papers. In ERA, this weighting is used only when calculating whether a UoE has met the low-volume threshold of 50 apportioned research outputs in the reference period.

#### Performance in ERA 2012

Inevitably, as is the case with all rating systems in the current environment, the ERA ratings have become highly commodified as universities integrate them into their promotional programmes. Therefore, it is important to look carefully at what the ratings actually tell us. Figure 3.21 shows the number of Australian universities rated at world standard or above in ERA 2012 by broad field of research.

Contrary to some of the media commentary when these results were first released, a notable feature of this table is the strong performance of the HCA FoRs. The FoRs with the results in ERA’s top rating of 5 (well above world standard), in Figure 3.21, are the highest achievers across the whole sector and include Medical and Health Sciences, Law and Legal Studies, Chemical Sciences, History and Archaeology, and Language, Communication and Culture.

The proportion of UoEs per four-digit FoR scoring at 3 or above (i.e. world class or above) in core humanities discipline areas includes Communication and Media Studies 81%; Cultural Studies 88%; Language Studies 75%; Linguistics 87%; Literary Studies 89%; Archaeology 92%; Historical Studies 88%; Applied Ethics 100%; History and Philosophy of Specific Fields 100%; Philosophy 83%; Religion and Religious Studies 69%. The highest performing Social Science FoR, Studies in Human Society, recorded 76%. In some cases, this result is influenced by the field size but the overall picture is one of great consistency at high levels of performance.

**Table 3.20 Total Units of Evaluation in ERA 2012, staff numbers (FTE), research outputs and research income, STEM and HASS**

	Assessed UoEs (total four-digit)	Staff (FTE)	Research Outputs	Weighted Research Outputs	Research Income (\$)
STEM	956 (55.8%)	23,933.80 (57.2%)	272,724.10 (66%)	273,272.10 (63.4%)	\$7,344,210,709 (83.8%)
HASS	758 (44.2%)	17,840.2 (42.7%)	140,753.00 (34%)	157,870.20 (36.6%)	\$1,423,514,361 (16.2%)
<b>Total</b>	<b>1,714</b>	<b>41,774.00</b>	<b>413,477.10</b>	<b>431,142</b>	<b>\$8,767,725,070</b>

Source: ARC, ERA 2012 National Report.

Note: Calculations are based on the study’s classification of HASS and STEM disciplines and not the ARC’s.

**Table 3.21 Total Units of Evaluation in ERA 2012, staff numbers (FTE), research outputs and research income, STEM, by two-digit field of research**

Code	Broad Field of Research	Assessed UoEs (four-digit)	Staff (FTE)	Research Outputs	Weighted Research Outputs	Research Income (\$)
1	Mathematical Sciences	60	882.6	10,233.90	10,359.90	\$131,544,129
2	Physical Sciences	64	1,052.80	16,272.80	16,272.80	\$245,768,684
3	Chemical Sciences	82	1,288.30	16,124.10	16,124.10	\$262,652,699
4	Earth Sciences	56	805.1	10,198.20	10,198.20	\$248,412,581
5	Environmental Sciences	38	746.6	7,549.00	7,549.00	\$293,936,492
6	Biological Sciences	130	3,327.50	30,867.30	30,867.30	\$968,397,230
7	Agricultural and Veterinary Sciences	42	1,102.10	11,032.10	11,032.10	\$461,716,131
8	Information and Computing Sciences	95	1,734.00	24,164.70	24,563.10	\$221,997,038
9	Engineering	126	3,131.00	48,366.80	48,366.80	\$965,457,937
10	Technology	17	626.9	6,055.30	6,078.90	\$116,716,243
11	Medical and Health Sciences	246	9,236.90	91,859.90	91,859.90	\$3,427,611,545
	<b>Total</b>	<b>956</b>	<b>23,933.80</b>	<b>272,724.10</b>	<b>273,272.10</b>	<b>\$7,344,210,709</b>

Source: ARC, ERA 2012 National Report.

Note: Calculations are based on the study’s classification of HASS and STEM disciplines and not the ARC’s.

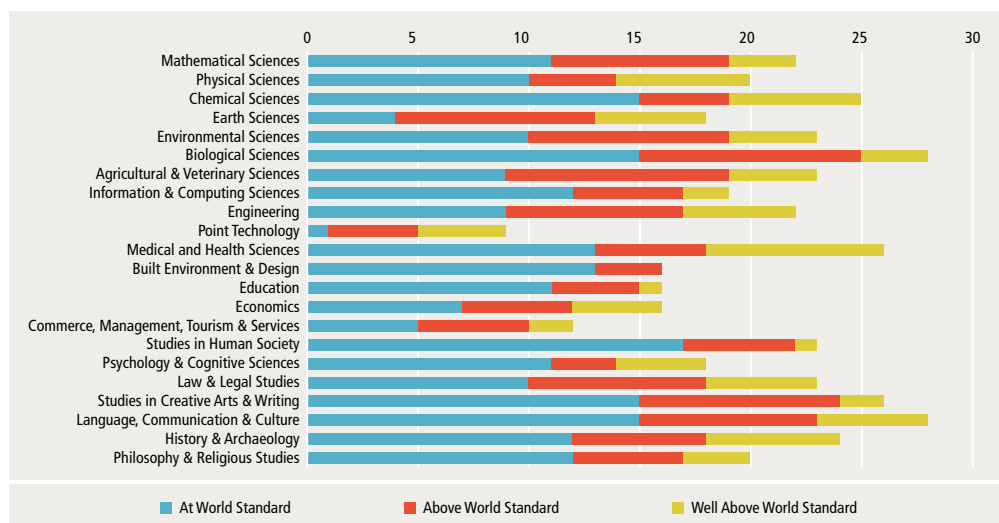
**Table 3.22 Total Units of Evaluation in ERA 2012, staff numbers (FTE), research outputs and research income, HASS, by two-digit field of research**

Code	Broad Field of Research	Assessed UoEs (four-digit)	FTEs	Research Outputs	Weighted* Research Outputs	Research Income (\$)
12	Built Environment and Design	45	958.4	7,930.20	8,600.20	\$75,603,783
13	Education	118	2,973.90	18,703.60	20,204.00	\$182,068,131
14	Economics	45	1,063.60	7,629.30	8,261.30	\$170,490,185
15	Commerce, Management, Tourism and Services	126	3,239.70	24,640.60	25,988.60	\$139,010,593
16	Studies in Human Society	125	2,343.80	20,495.30	24,084.50	\$307,417,007
17	Psychology and Cognitive Sciences	37	1,428.60	14,951.30	14,951.30	\$206,928,540
18	Law and Legal Studies	29	1,324.30	9,177.50	10,816.30	\$61,740,745
19	Studies in Creative Arts and Writing	73	1,566.10	12,377.00	13,532.20	\$32,424,756
20	Language, Communication and Culture	79	1,602.30	12,179.60	14,85248.00	\$102,880,603
21	History and Archaeology	39	730.1	6,941.70	9,260.10	\$105,713,930
22	Philosophy and Religious Studies	42	609.4	5,726.90	7,313.70	\$39,236,088
	<b>Total</b>	<b>758</b>	<b>17,840.2</b>	<b>140,753.00</b>	<b>157,870.20</b>	<b>\$1,423,514,361</b>

Source: ARC, ERA 2012 National Report.

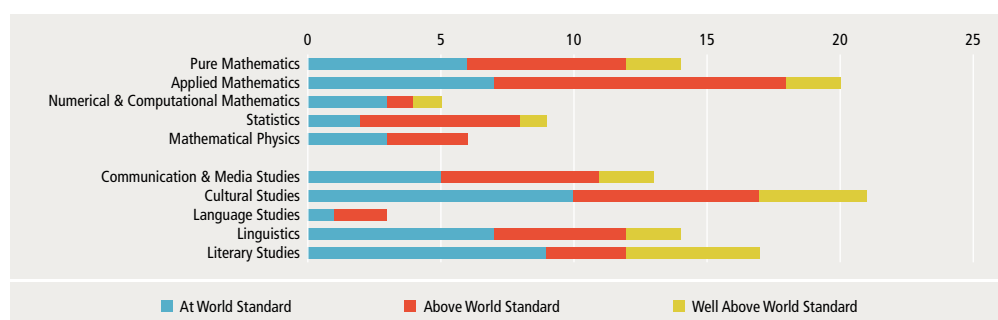
Note: Calculations are based on the project’s classification of HASS and STEM disciplines and not the ARC’s. This is of particular relevance in ERA 2012 when FoR 17 Psychology and Cognitive Science was included in the National Report in an administrative grouping—Medical Health Sciences—that links these fields more to STEM than to HASS (see p. 342 of the ERA 2012 National Report).

**Figure 3.21 Number of universities rated at ‘world standard or above’ (3–5) in ERA 2012, by two-digit field of research**



Source: ARC, ERA 2012 National Report, p. 13.

**Figure 3.22 Number of universities rated at ‘world standard or above’ (3–5) in ERA 2012, by four-digit field of research for Mathematical Studies and Language, Communication and Culture**



Source: ARC presentations [http://www.arc.gov.au/media/2013\\_Presentations/CEO\\_impact.pdf](http://www.arc.gov.au/media/2013_Presentations/CEO_impact.pdf)

While the bulk of research investment, as seen earlier, goes into the STEM fields, it is clear that the quality of the research produced by HASS is more than comparable when judged against world standards. Figure 3.22 demonstrates this by comparing the performance of HASS and STEM fields at the four-digit level through the examples of Mathematical Studies and Language, Communication and Culture. Applied Mathematics has a total of 13 universities achieving a rating of 4 or above, and Cultural Studies has a total of 11; Cultural Studies had four universities at a rating of 5, while Applied Mathematics has a total of two at this rating.

### Units of Evaluation

Table 3.23 lists total UoEs assessed in the 2010 and 2012 ERA audits. In 2012 the low volume threshold was increased from 30 to 50 weighted research outputs for HASS, so the decrease in UoEs in 2012 was expected.<sup>21</sup> Nevertheless, Language Studies went from a relatively low nine UoEs submitted in 2010 to an extremely low figure of four in 2012; this, in combination with other factors, raises questions of capacity and sustainability. It is the low number, rather than the reduction per se, that is important here because low numbers implies lack of activity, and stands out against the overall growth in outputs across HASS disciplines between the two rounds. Similarly, Demography, while always a small field, submitted only two UoEs in 2012 (from five in 2010), and this level of activity also raises questions of sustainability for a research field that is crucial in dealing with societal challenges in the future.

It is important that the fields of research we wish to retain or develop are operating at a level that maintains critical mass, and that ensures their sustainability over time. ERA provides us with warning signs; when even large, and important, fields such as Historical Studies (from 31 to 26 UoEs submitted), Sociology (from 34 to 29), or Political Science (from 30 to 21) show significant reductions in the number of UoEs submitted, meaning that universities are unable to meet even a modest

**Table 3.23 Total numbers of Humanities and Creative Arts Units of Evaluation across the 2010 and 2012 ERA audits**

	2010	2012
12 Built Environment and Design	50	45
18 Law and Legal Studies	35	29
19 Studies in Creative Arts and Writing	95	73
20 Language, Communication and Culture	100	79
21 History and Archaeology	43	39
22 Philosophy and Religious Studies	50	42

Source: ARC, ERA National Reports 2010 and 2012.

low-volume threshold (50 weighted outputs in five years), these concerns become relevant to future investment and policy settings.

The only HASS fields where there was an increase in UoEs between the two audits were Econometrics; Transportation and Freight Services; Other Commerce, Management, Tourism and Services; Psychology; and Archaeology. That being said, it is worth noting that even the 2012 numbers put HASS disciplines well above many others in terms of assessable UoEs. A full list of assessable UoEs is in Appendix 6.

Collected in Appendix 6 are tables representing the performance of the four-digit FoRs by listing the numbers of FTE staff, the proportion of FTE staff allocated to this FoR code, the number and percentage of research outputs for each FoR, as well as brief analysis of the results. A key focus for the analysis is the spread and concentration of UoEs; each FoR has been analysed in relation to institutional groupings: regional, Go8, and other metropolitan.

Although the tables provide evidence of consistently excellent performance across many four-digit FoRs, there are some critical issues which emerge from the data:

- » The range of variation in performance is wide: the strongest performer is History and Archaeology with 89.7% of its 27 UoEs (at four-digit level) rated at or above world standard and the weakest is Commerce, Management, Tourism and Services with 48.4% of its 38 UoEs (at four-digit level) rated at or above world standard.
- » The contraction of disciplinary presence from the regional or non-metropolitan campuses to the metropolitan and Go8 universities. Certain disciplines—Anthropology, Political Science, Archaeology, Sociology, for instance—are now overwhelmingly concentrated in Go8 universities.
- » Research output for FoRs with a small presence in regional universities tends to be rated below world standard.

**Table 3.24 Total numbers of Social, Behavioural and Economic Sciences Units of Evaluation across the 2010 and 2012 ERA audits**

	2010	2012
13 Education	109	85
14 Economics	55	45
15 Commerce, Management, Tourism and Services	149	126
16 Studies in Human Society	170	125
17 Psychology and Cognitive Sciences	39	37

Source: ARC, ERA National Reports 2010 and 2012.



Table 3.25 Number of HASS Units of Evaluation in ERA 2010 and ERA 2012, by four-digit field of research

		2010	2012
<b>12</b>	<b>Built Environment and Design</b>		
1201	Architecture	16	16
1202	Building	11	10
1203	Design Practice and Management	8	6
1204	Engineering Design	0	0
1205	Urban and Regional Planning	15	13
1299	Other Built Environment and Design	0	0
	<b>Total</b>	<b>34</b>	<b>21</b>
<b>13</b>	<b>Education</b>		
1301	Education Systems	32	20
1302	Curriculum and Pedagogy	37	29
1303	Specialist Studies in Education	36	34
1399	Other Education	4	2
	<b>Total</b>	<b>39</b>	<b>38</b>
<b>14</b>	<b>Economics</b>		
1401	Economic Theory	10	7
1402	Applied Economics	33	30
1403	Econometrics	6	8
1499	Other Economics	6	0
	<b>Total</b>	<b>35</b>	<b>33</b>
<b>15</b>	<b>Commerce, Management, Tourism and Services</b>		
1501	Accounting, Auditing and Accountability	28	22
1502	Banking, Finance and Investment	19	17
1503	Business and Management	39	36
1504	Commercial Services	8	4
1505	Marketing	29	24
1506	Tourism	24	16
1507	Transportation and Freight Services	1	2
1599	Other Commerce, Management, Tourism and Services	1	5
	<b>Total</b>	<b>39</b>	<b>38</b>
<b>16</b>	<b>Studies in Human Society</b>		
1601	Anthropology	12	11
1602	Criminology	13	12
1603	Demography	5	2
1604	Human Geography	19	14
1605	Policy and Administration	27	16
1606	Political Science	30	21
1607	Social Work	18	16
1608	Sociology	34	29
1699	Other Studies in Human Society	12	4
	<b>Total</b>	<b>38</b>	<b>38</b>
<b>17</b>	<b>Psychology and Cognitive Sciences</b>		
1701	Psychology	28	30
1702	Cognitive Science	11	7
1799	Other Psychology and Cognitive Sciences	0	0
	<b>Total</b>	<b>31</b>	<b>30</b>
<b>18</b>	<b>Law and Legal Studies</b>		
1801	Law	35	29
1802	Maori Law	0	0
1899	Other Law and Legal Studies	0	0
	<b>Total</b>	<b>35</b>	<b>29</b>
<b>19</b>	<b>Studies in Creative Arts and Writing</b>		
1901	Art Theory and Criticism	10	9
1902	Film, Television and Digital Media	21	14
1903	Journalism and Professional Writing	12	8
1904	Performing Arts and Creative Writing	30	24
1905	Visual Arts and Crafts	22	18
1999	Other Studies in Creative Arts and Writing	0	0
	<b>Total</b>	<b>38</b>	<b>35</b>
<b>20</b>	<b>Language, Communication and Culture</b>		
2001	Communication and Media Studies	19	16
2002	Cultural Studies	30	24
2003	Language Studies	9	4
2004	Linguistics	18	16
2005	Literary Studies	24	19
2099	Other Language, Communication and Culture	0	0
	<b>Total</b>	<b>36</b>	<b>34</b>
<b>21</b>	<b>History and Archaeology</b>		
2101	Archaeology	11	12
2102	Curatorial and Related Studies	1	1
2103	Historical Studies	31	26
2199	Other History and Archaeology	0	0
	<b>Total</b>	<b>33</b>	<b>27</b>
<b>22</b>	<b>Philosophy and Religious Studies</b>		
2201	Applied Ethics	8	5
2202	History and Philosophy of Specific Fields	8	6
2203	Philosophy	19	18
2204	Religion and Religious Studies	15	13
2299	Other Philosophy and Religious Studies	0	0
	<b>Total</b>	<b>25</b>	<b>23</b>

Source: ARC, ERA National Reports 2010 and 2012.

### Research outputs

Publishing practice in the HASS disciplines differs from the STEM disciplines; the contrast is shown in Figures 3.23 and 3.24, which plot research outputs by category. Books and book chapters represent a much higher proportion of outputs in HASS than in STEM fields. Combined they represent more than 40% of outputs. The high level of variation of output types within both STEM and HASS fields is also clear from the graphs. Journal articles are the dominant form of publication in many STEM disciplines, but not in Information and Computing Sciences or Technology fields where conference paper outputs are the dominant form of output. Studies in Creative Arts and Writing fields have a diversity of outputs across all categories, with original creative works the dominant form of output. Studies in Creative Arts and Writing and Built Environment and Design had the highest number of non-traditional research outputs submitted for assessment in ERA 2012. As the National Report notes, these non-traditional outputs ‘provide an important insight into applied research, and creative and practitioner-based research’ in HASS.<sup>22</sup>

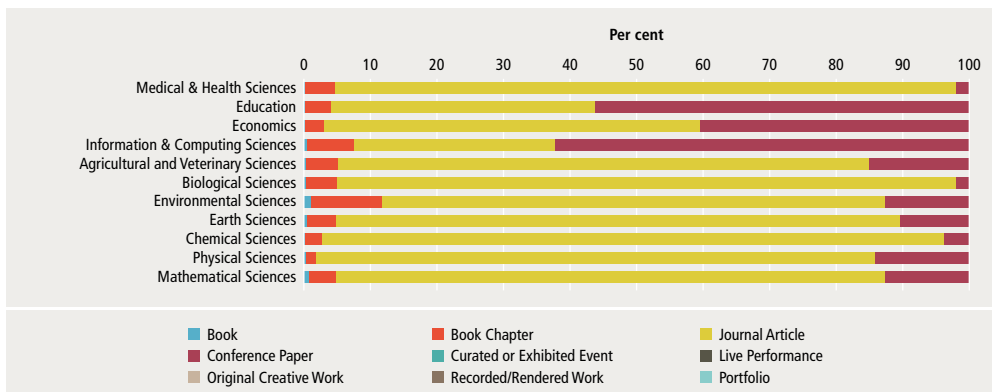
Graphs which tabulate weighted research outputs for SBE and HCA at the two-digital FoR level can be found in Appendix 6.

### Discipline Growth Index

The ERA 2012 National Report contains a Discipline Growth Index and reports on 62 disciplines that were growing at a rate greater than average (12%), 32 of which are HASS disciplines (p. 37). Growth is measured in outputs (not normalised for volume, and not including portfolios). Urban and Regional Planning is the highest scoring of the HCA fields by this measure (at 46%), other fields include: Communication and Media Studies (36%); Applied Ethics (27%); Language Studies (24%); Cultural Studies (22%); Archaeology (22%); Religion and Religious Studies (22%); Visual Arts and Crafts (22%); Performing Arts and Creative Writing (18%); Film, Television and Digital Media (16%); Architecture (16%); History and Philosophy of Specific Fields (14%); Journalism and Professional Writing (14%); and Historical Studies (14%).

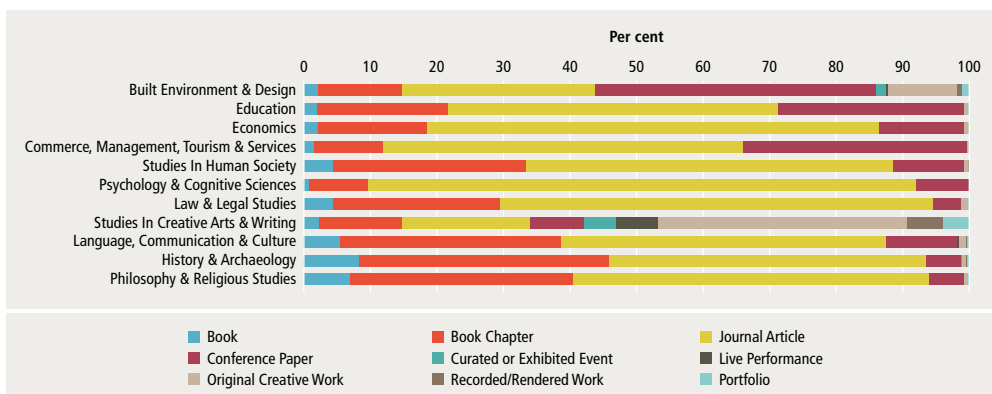
In the social sciences, Cognitive Science had the highest two-period growth rate by the ARC’s measure at 37%, followed by Education Systems (33%); Anthropology (31%); Other Education (31%); Criminology (26%); Curriculum and Pedagogy (26%); Accounting, Auditing and Accountability (26%); Social Work (26%); Banking, Finance and Investment (20%); Tourism (19%); Marketing (18%); Psychology (15%); and Political Science (14%).

Figure 3.23 STEM research outputs in ERA 2012, by category (%)



Source: ARC, ERA 2012 National Report.

Figure 3.24 HASS research outputs in ERA 2012, by category (%)



Source: ARC, ERA 2012 National Report.

## What are Australian HASS Researchers Publishing?

What are researchers publishing about? What are the emerging or critical areas of current inquiry in specific discipline areas? What is the extent of cross-publishing between fields of research?

The Australian Research Council's (ARC) Excellence in Research for Australia (ERA) National Reports provide a wealth of information about the quality of and publishing activity within fields of research, but do not contain details about the subject matter of that research. So the study requested some preliminary analysis that would shed light on two thematic areas: Asia-related research and health research.

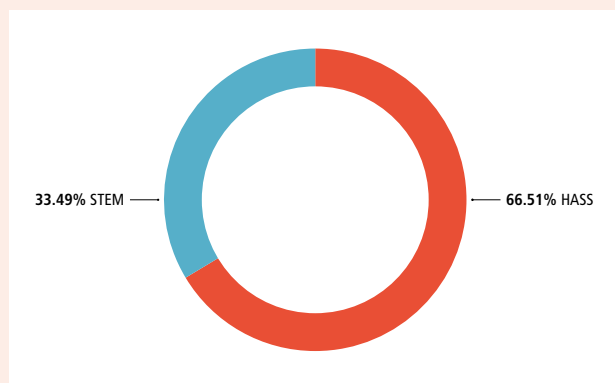
The ARC used a series of keywords as the basis to search through the publications submitted to ERA 2012 and identify relevant research outputs and their distribution across humanities, arts and social sciences (HASS) and science, technology, engineering and mathematics (STEM) fields of research (FoR).

### Asia Knowledge

**Keywords:** Asia, Asia Pacific, China, Indonesia, Singapore, Malaysia, South Korea, Japan, Taiwan, Hong Kong, Thailand, Vietnam

A total of 8,031 research outputs were submitted to ERA 2012 that matched against the 'Asia knowledge' keywords. As shown in Figure 1, research outputs were mostly related to the HASS disciplines with a total of 66.51% of all matches, while 33.49% of the matched outputs were from STEM disciplines.

**Figure 1** Proportion of research outputs related to 'Asia knowledge' keywords for HASS and STEM fields of research



Source: Australian Research Council, customised data.

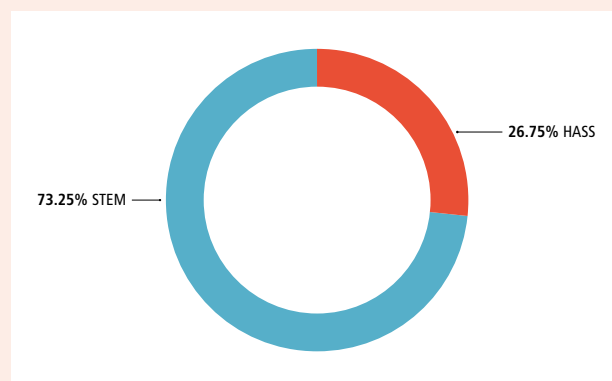
Figure 3 shows the number of research outputs apportioned to HASS FoRs. The five largest FoR codes are Political Science (FoR 1606) with a total of 673.3 apportioned outputs, followed by Business and Management (FoR 1503) with 561.2 research outputs, Applied Economics (FoR 1402) with 549.9 research outputs, Law (FoR 1801) with 352.1 research outputs, and Historical Studies (FoR 2103) with 226.0 research outputs.

### Health

**Keywords:** health, well being, public health, Indigenous [and] health, aboriginal [and] health, Torres Strait Islander [and] health

The total number of research outputs that match to the 'Health' keywords is 8,383 within the six-year reference period. Of these research outputs, 73.25% were assigned to FoRs within STEM disciplines with 26.75% assigned to HASS disciplines (Figure 2).

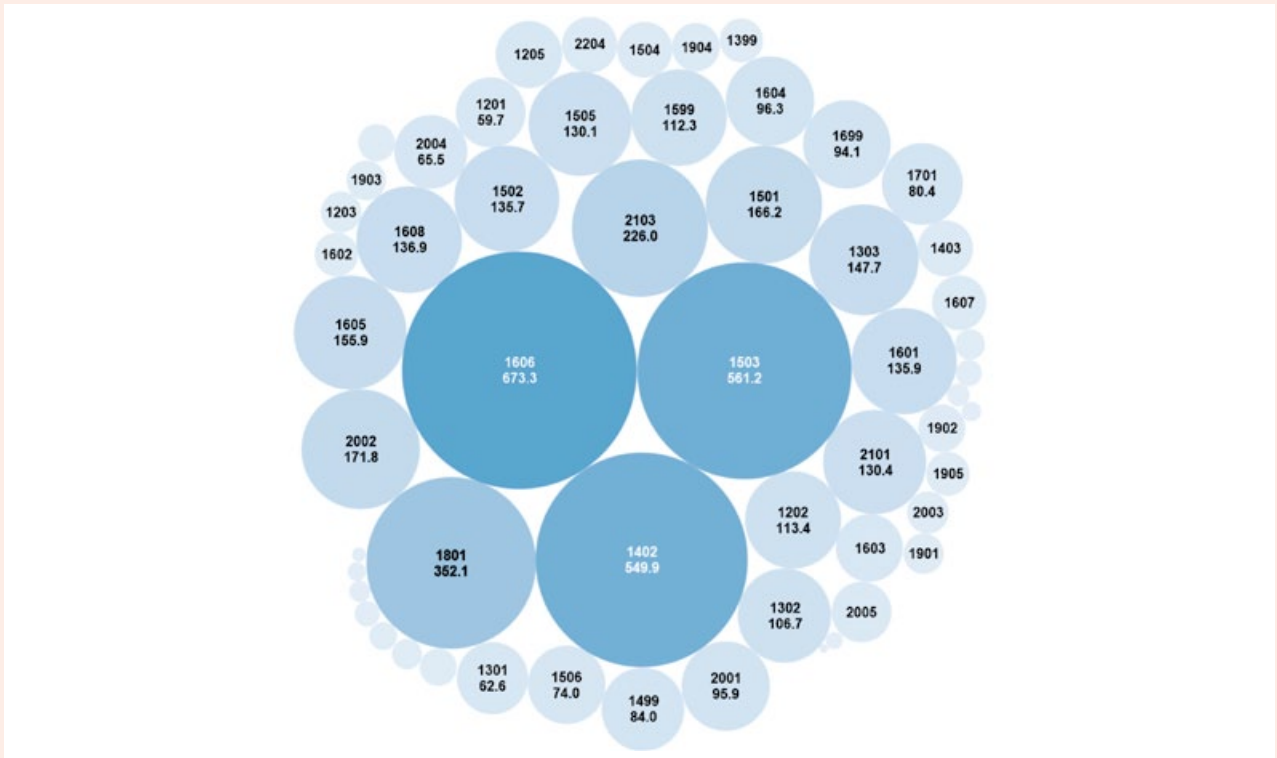
**Figure 2** Proportion of research outputs related to 'Health' keywords for STEM and HASS fields of research



Source: ARC, customised data.

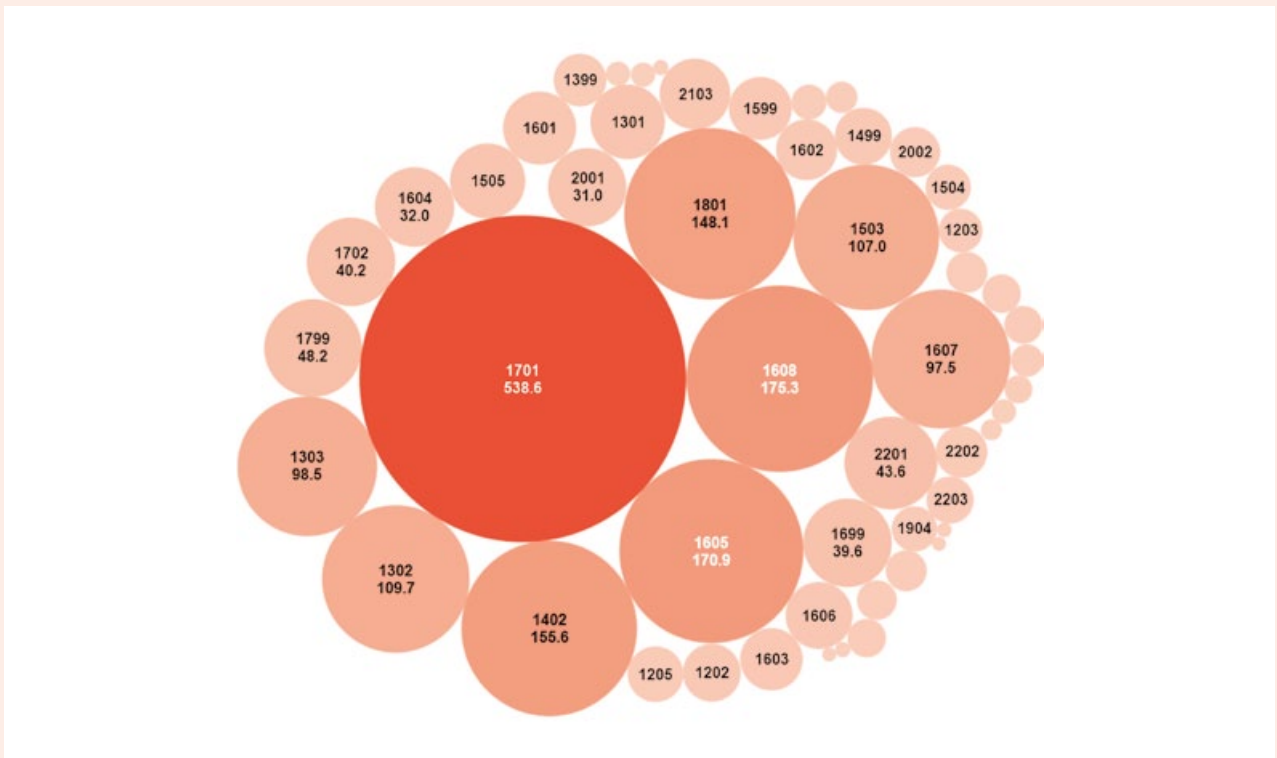
Figure 4 shows the number of research outputs apportioned to HASS FoRs. The three largest FoR codes are Sociology (FoR 1608) with 175.3 research outputs, followed by Policy and Administration (FoR 1605) with 170.9 research outputs, and Applied Economics (FoR 1402) with 155.6. These are also the top three fields in the Social Behavioural and Economic Sciences (SBE) on the basis of this keyword search; in the Humanities and Creative Arts (HCA), the top three fields are Law (FoR 1801), Applied Ethics (FoR 2001) and Historical Studies (FoR 2103).

Figure 3 Number of research outputs appORTioned to HASS disciplines by four-digit field of research\* for 'Asia knowledge' keywords



Source: ARC, customised data.  
 \* For a full list of four-digit FoRs refer to Appendix 2.

Figure 4 Number of research outputs appORTioned to HASS disciplines by four-digit field of research\* for 'Health' keywords



Source: ARC, customised data.  
 \* For a full list of four-digit FoRs refer to Appendix 2.

### 3.8 Research Collaboration

#### International collaboration

The *Health of Australian Science* (2012) report relied on bibliometrics and citation analysis to chart the international collaboration and impact of science disciplines (where international co-authored journal articles are an index of collaboration). These measures are not fit-for-purpose for HASS for a number of reasons, chiefly because they do not capture books and book chapters, which comprise a significant amount of the output of HASS disciplines. The limitations of bibliometric data are well documented, including problems around capturing the full range of research engagement across the disciplines (including conferences, research projects, and joint supervisions) and industry-research connections.<sup>23</sup>

Much international research collaboration in HASS, therefore, remains undetected. Connections at the individual researcher or team level are simply not traceable, especially when that collaboration is unfunded, does not formally go through a university research office, or is 'limited' to conference participation or individual links. More and better indicators, which go beyond superficial incidence counts, need to be developed to accurately capture international collaborations in this sector.

The evidence that can be drawn on to chart the extent of international collaboration in HASS, then, is indicative at this stage. Since 1999 the ARC has documented the incidence of international collaboration across its national competitive grants schemes. Applications can be analysed for patterns of collaboration and networking. An incidence of international collaboration is where a researcher on a proposal has identified an intention to collaborate with a researcher or researchers in another country.

Data from the Discovery and Linkage schemes are presented in Tables 3.26 and 3.27. The figures indicate that about 30% of Discovery and Linkage projects with the intention of international collaboration were from HASS disciplines.

**Table 3.26 Number of Discovery Projects funded and incidence of international collaboration, 2002–14**

	Projects Funded		International Collaboration Incidence	
	n	%	n	%
HASS	3,602	34.36	3,685	28.06
STEM	6,881	65.64	9,520	72.09
<b>Total</b>	<b>10,483</b>	<b>100</b>	<b>13,205</b>	<b>100</b>

Source: ARC, customised data.

Note: 'Projects Funded' refers to the number of Discovery Projects funded that indicated the intent to collaborate internationally.

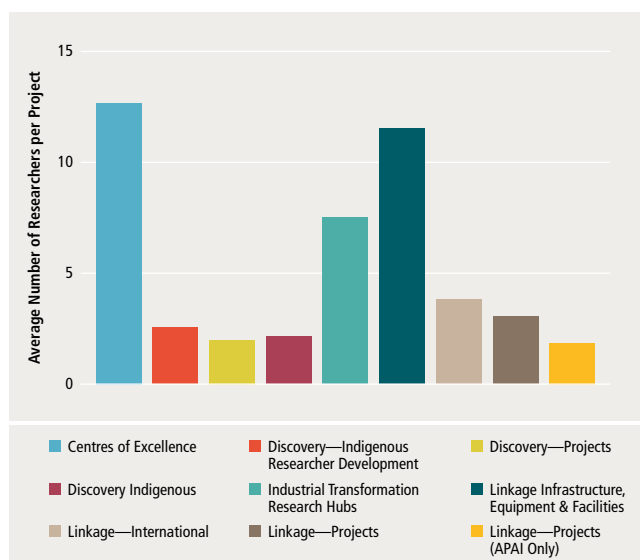
**Table 3.27 Number of Linkage Projects funded and incidence of international collaboration, 2002–14**

	Projects Funded		International Collaboration Incidence	
	n	%	n	%
HASS	1,659	31.62	817	30.66
STEM	3,587	68.38	1,848	69.34
<b>Total</b>	<b>5,246</b>	<b>100</b>	<b>13,205</b>	<b>100</b>

Source: ARC, customised data.

Note: 'Projects Funded' refers to the number of Linkage Projects funded that indicated the intent to collaborate internationally.

**Figure 3.25 Average number of researchers per project, by select ARC scheme, HASS fields of research, 2002–12**



Source: ARC, customised data.

The number of international partner investigators on ARC funded projects is a further source of data which give a more concrete indication of international collaboration. These data show that across all HASS disciplines, most international partner investigators were from Europe (56%) or North America (27%). Nearly 10% of all partner investigators were from Asia, and a further 5% were from Oceanic countries. Of all HASS Discovery projects with an international partner investigator listed, Psychology and Cognitive Science had the highest incidence, at 25%. Studies in Human Society also had a comparatively high rate of international partner investigators at 18%. This is followed by History and Archaeology, and Economics, both at 11% of the total. Built Environment and Design had the lowest rate of listing an international partner investigator at just 1% of the total.

#### Team-based research and industry collaboration

Two types of data were accessed to further examine collaborative, team-based research in HASS. The first set of data was the average number of researchers on ARC-funded projects per project per scheme. The data do not include partner investigators or partner organisations, so under-represents the extent of collaboration. Figure 3.25 shows that across all HASS fields the average number of researchers involved in Centres of Excellence was 12.7, followed by LIEF projects where the average number of researchers involved was 11.5. Across the ten-year period Linkage projects had on average three researchers and Discovery projects two researchers. More detailed graphs are available in Appendix 6.

Certain ARC schemes are specifically designed for collaborative approaches and/or team-based applications. The Linkage scheme requires involvement of partner organisations and projects may involve more than one partner organisation. Since 2004 the ARC has recorded data on types of partner organisations. Figure 3.26 and Table 3.29 present these data for HASS. The highest rates of involvement as partner organisations for HASS on Linkage projects were for Government (State and Local) at 31.6%, followed by Non-Profit Australian



Table 3.28 Number of international Partner Investigators on funded Discovery Projects in HASS, by geographic region, 2002–14

	Africa	Asia	Europe	North America	Oceania	South America	Western Asia	Total	
	n	n	n	n	n	n	n	n	%
Built Environment and Design		2	7	5	2			16	0.98
Education		11	30	20	6		1	68	4.15
Economics		12	106	53	4	1	1	177	10.80
Commerce, Management, Tourism and Services		9	56	40	2			107	6.53
Studies in Human Society	4	45	171	58	14	2		294	17.94
Psychology and Cognitive Sciences	1	12	240	138	20	1	2	414	25.26
Law and Legal Studies	2	7	26	23	4			62	3.78
Studies in Creative Arts and Writing	1	11	39	11	6	1	1	70	4.27
Language, Communication and Culture	1	14	96	25	2	3		141	8.60
History and Archaeology	4	31	73	51	21		1	181	11.04
Philosophy and Religious Studies		3	75	25	6			109	6.65
<b>Total (n)</b>	<b>13</b>	<b>157</b>	<b>919</b>	<b>449</b>	<b>87</b>	<b>8</b>	<b>6</b>	<b>1,639</b>	<b>100</b>
<b>Total (%)</b>	<b>0.79</b>	<b>9.58</b>	<b>56.07</b>	<b>27.39</b>	<b>5.31</b>	<b>0.49</b>	<b>0.37</b>	<b>100</b>	<b>100</b>

Source: ARC, customised data.

Note: The ARC's regional classifications do not follow the Australian Bureau of Statistics standard country classification.

organisations at 21.8%, and Private Company Australian 20.3%. Commonwealth Government partner organisations represented 9.2% of the total, followed by Private Company International (3%), Non-Profit International (2.4%), Government International (1.8%) and Higher Education International (1%). In terms of sectors, Government (Australian and International) partner organisations comprised 40.8%, Private Sector 23.3% and Non-Profit sector 21.8% of the total.

The data on partner organisation types on Linkage projects, then, presents a varied picture: rather than being concentrated in one type, a range of partner organisations are being engaged in HASS research.

When the data is examined by broad field of research, two fields stand out: Studies in Human Society comprises 28.4% of partner organisations, nearly double the next strongest field which was Education (at 14.6%).

In terms of fields with the strongest links to state or local government organisations, Education (42%), followed by Studies in Human Society (36%) and Built Environment and Design (36%) had the highest rates of partnering with these organisations. The highest rates of partnering with private Australian companies were in Built Environment and Design, and Commerce, Management, Tourism and Services both at 41% and 39% of Linkage projects, respectively.

### Multi-institutional and multidisciplinary collaboration

The ERA 2012 National Report includes a measure of multidisciplinary collaboration. The 'highest multidisciplinary percentage occurs between Psychology and Cognitive Sciences (FoR 17) and Medical and Health Sciences (FoR 11) (74.3%)', and this is an indication that research in Psychology is of a clinical nature and closely linked to medical research. The report also provides information on co-apportioned research outputs to codes outside a FoR across STEM and HASS two-digit fields. The relevant table is in Appendix 6.

The ERA 2012 National Report also calculates cross-institutional collaboration by examining research outputs submitted by multiple institutions (which could be an indicator of co- or multi-authorship, or that a single researcher has a publishing relationship with more than one institution). Figure 3.27 (extracted from the report) shows the distribution of these outputs.

There has been frequent discussion of the so-called solo researcher model within HASS, but the evidence related to research funding applications would suggest this is changing. There is also an increasing tendency for HASS disciplines to be organised into successful and productive multidisciplinary research centres and institutes. In an era when collaboration is encouraged by institutions and by funding mechanisms, the pattern of collaboration is becoming an important consideration. The ARC's ERA report provides an illustration of the current practice across the whole sector by tabulating the average number of authors per research output for each FoR (Figure 3.28). On this evidence, the HCA codes were still dominated by single author outputs, with SBE codes more inclined towards collaborative outputs; the level of collaborative publishing in Psychology and Cognitive Sciences is particularly notable.

What constitutes collaboration, however, is also discipline-specific, and this is not fully captured by the data. Interdisciplinarity, for example, might be a synonym

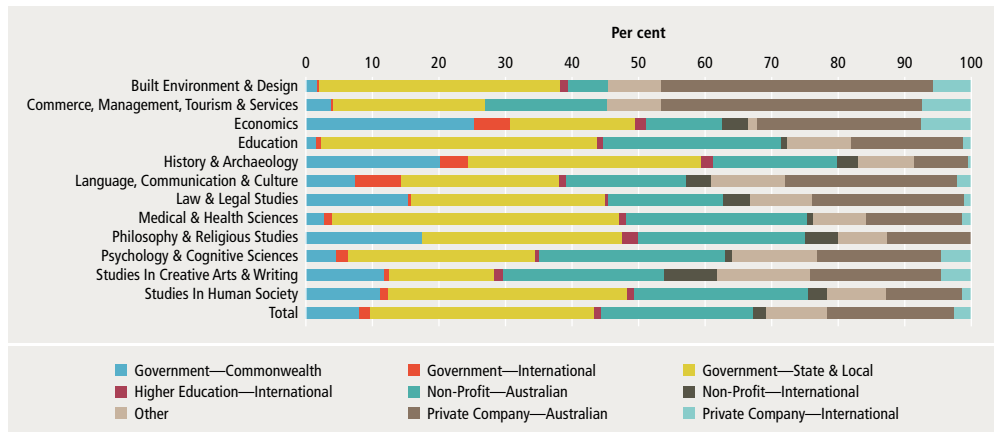


Table 3.29 Number of Partner Organisations on Linkage Projects, HASS fields of research, 2005–13

	Government: Commonwealth		Government: International		Government: State and Local		Higher Education International		Non-Profit: Australian		Non-Profit: International		Other		Private Company: Australian		Private Company: International		Grand Total		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Built Environment and Design	3	2	1	1	69	36	2	1	12	6			15	8	78	41	11	6			191
Commerce, Management, Tourism and Services	12	4	1	0	71	23		0	58	19			25	8	123	39	23	7			313
Economics	33	25	7	5	25	19	2	2	15	11	5	4	2	2	32	24	10	8			131
Education	6	1	3	1	173	42	4	1	111	27	4	1	40	10	70	17	5	1			416
History and Archaeology	43	20	9	4	74	35	4	2	39	18	7	3	18	8	17	8	1	0			212
Language, Communication and Culture	14	7	13	7	45	24	2	1	34	18			21	11	49	26	4	2			189
Law and Legal Studies	30	15	1	1	57	29	1	1	34	17	8	4	18	9	45	23	2	1			196
Philosophy and Religious Studies	7	18		0	12	30	1	3	10	25	2	5	3	8	5	13					40
Psychology and Cognitive Sciences	10	5	4	2	62	28	1	0	62	28	2	1	28	13	41	19	10	5			220
Studies in Creative Arts and Writing	15	12	1	1	20	16	2	2	31	24	10	8	18	14	25	20	6	5			128
Studies in Human Society	89	11	11	1	289	36	9	1	211	26	22	3	72	9	92	11	11	1			806
<b>Total</b>	<b>262</b>	<b>9</b>	<b>51</b>	<b>2</b>	<b>897</b>	<b>32</b>	<b>28</b>	<b>1</b>	<b>617</b>	<b>22</b>	<b>67</b>	<b>2</b>	<b>260</b>	<b>9</b>	<b>577</b>	<b>20</b>	<b>83</b>	<b>3</b>			<b>2,842</b>

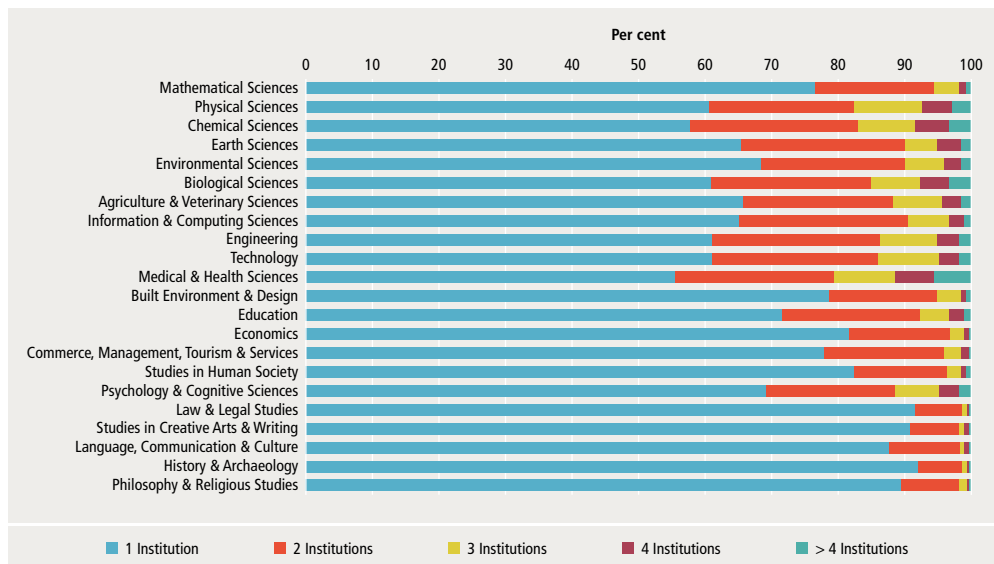
Source: ARC, customised data.

Figure 3.26 Partner Organisations on Linkage Projects, HASS fields of research, 2005–13



Source: ARC, customised data.  
 Note: One STEM field—Medical and Health Sciences—is also included in the figure.

Figure 3.27 Distribution of research outputs across Australian institutions, by broad field of research (two-digit)



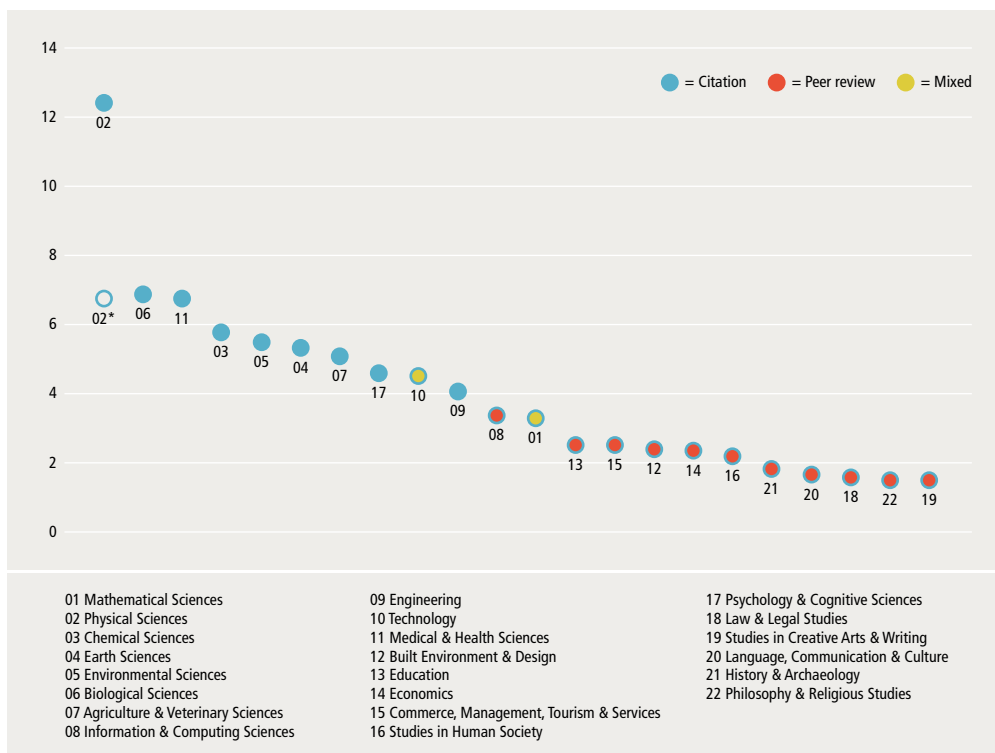
Source: ARC, ERA 2012 National Report, p. 53.

for collaboration in the STEM disciplines but it is not necessarily so for HASS. However, these differences do affect HASS participation in such schemes as the CoEs and the Laureate Fellowships. They are also implicated in what are effective restrictions on HASS eligibility for some of the larger collaborative schemes—the CRC programme, and International Science Linkages—which impacts on the forming of international collaborations.

### 3.9 HASS Research Capabilities: Critical Issues for the Future

- » R&D investment in the HASS sector is low—not just from business but also at the university level. While the former is not unexpected, it should not be assumed that this is a natural condition that cannot be improved. Nor is the latter an inevitable or necessary outcome of government funding settings. Greater commitment to supporting these fields within individual universities is both possible and necessary, as is the government’s reconsideration of the HASS sector’s exclusion from the tax concessions for core R&D expenditure.

Figure 3.28 Average authors per research outputs, by field of research (two-digit level)



Source: ARC, ERA 2012 National Report, p. 54.

Note: Presents the average authors/output for Physical Sciences (FoR 02) not including Astronomical and Space Sciences (FoR 0201). Astronomical and Space Sciences has an average authors/output of about 27 compared with the average of about 7 for the other four-digit FoRs in Physical Sciences.

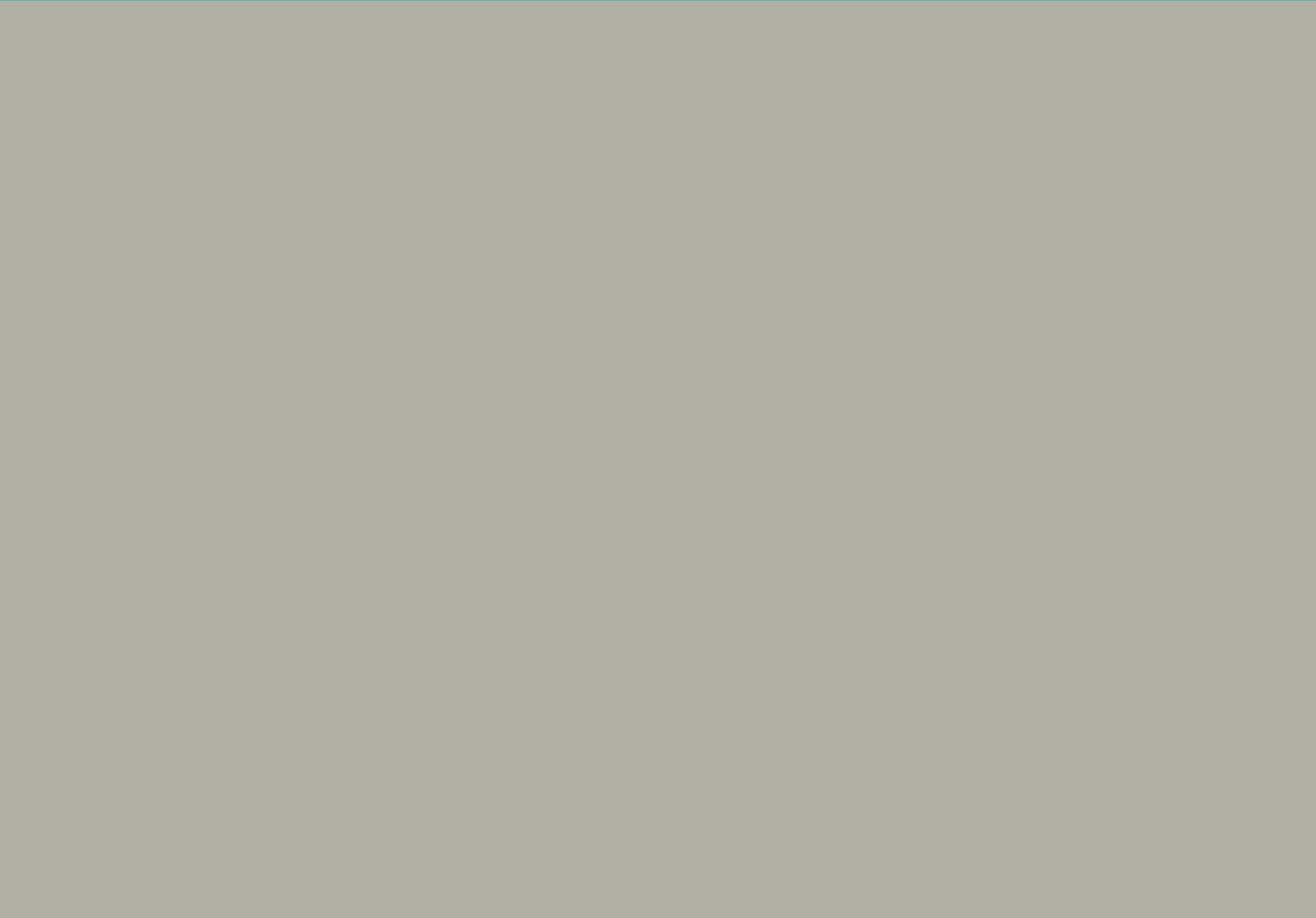
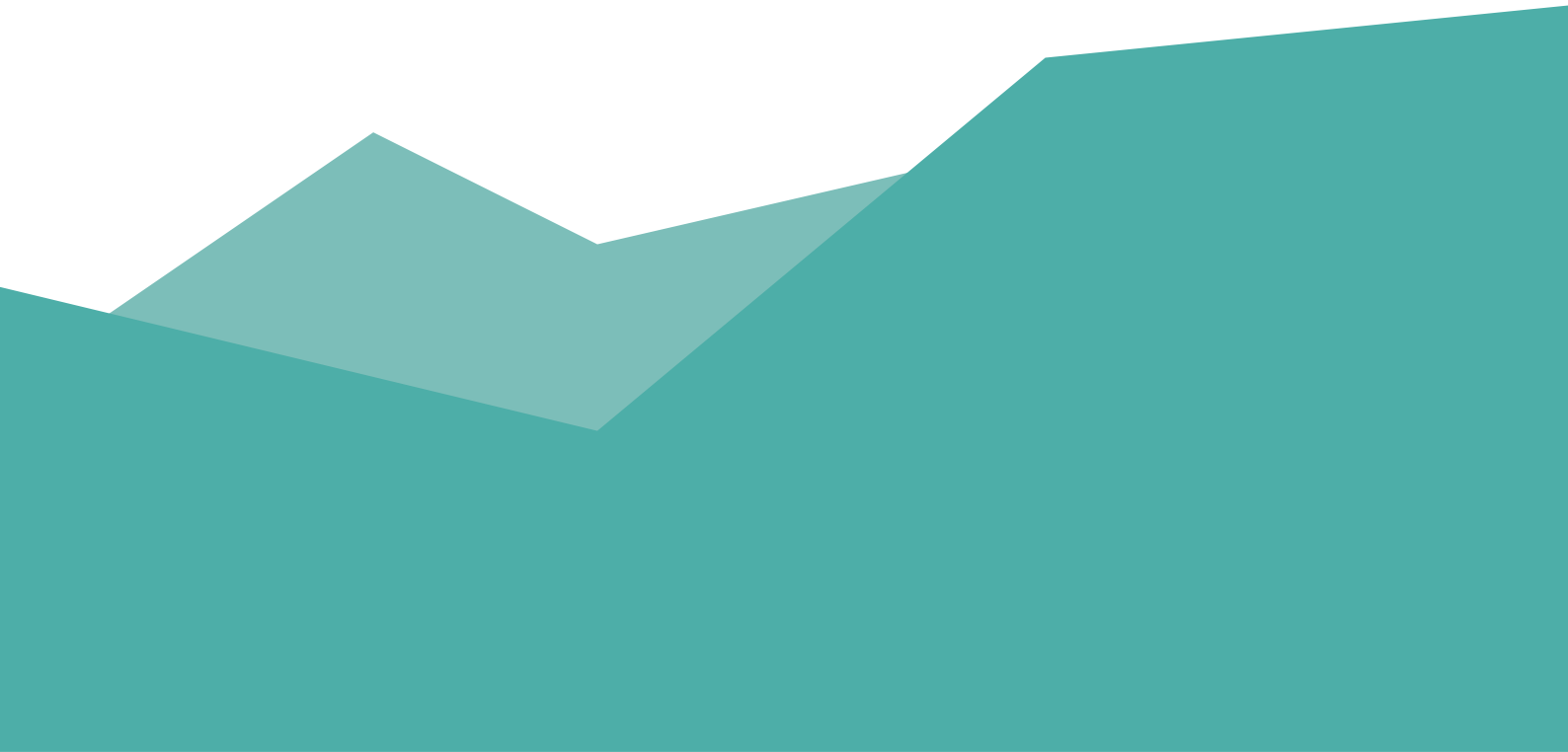
- » The picture derived from the R&D data is different to that derived from the ERA quality data in that R&D investment and ERA quality assessments do not perfectly align. Among other things, differences in R&D investment across HASS disciplines reflect differences in research practice, the costs of research and the funding strategies pursued by researchers. The comparatively low R&D investment in HASS research relative to STEM research does, however, raise implications that should be considered at a policy level.
- » While the ERA performance suggests an underlying strength in the HASS research fields that is enabling them to produce above-world standard research, and the leading HCA FoRs have increased their number of research outputs, there is at least one area of research excellence where there are signs of pressure: in Language, Communication and Culture, there is evidence of a slight decline in both outputs and capacity.
- » While this tendency is not quite as clear with the SBE FoRs, there is evidence of an increasing concentration of high performing HCA FoRs in the Go8, albeit with significant exceptions (University of Wollongong in Archaeology, and La Trobe University for History, for instance). One of the indicators of national capacity must be the geographic distribution of the UoEs across the sector, as well as the maintenance of sufficient critical mass in particular locations. The evidence in this report suggests that a number of FoRs that are of national importance for

various reasons—commercialisation (for example, Built Environment and Design), policy relevance (Demography; Film, Television and Digital Media), relation to national research priorities (Applied Ethics, Languages), enabling disciplines (Historical Studies, Sociology)—are either poorly represented outside the metropolitan areas, or else, where they are represented in regional universities, they are at a scale where their sustainability is an issue, or their outputs have been rated below world standard.

The clear message is that we have developed a HASS research sector that is, at its best, world class, and efficient. However, there are some indications of weak institutional investment, and the degree of integration into the strategic direction of the national research and innovation system, while in some ways improving, remains patchy and unplanned. The HASS sector is still poorly served by major infrastructure schemes such as NCRIS, and poorly accommodated in the CRC and CoEs programmes. In order for the nation to continue to benefit from the HASS sector's research, it needs to consider how it might make more substantial, and more strategic, commitments to its ongoing support.

## Endnotes

- 1 For example, in the ERA 2010 National Report FoR 17 (Psychology and Cognitive Science) was in SBE, but in the ERA 2012 National Report it was grouped with MHS (Medical and Health Sciences) for administrative purposes.
- 2 Australian Bureau of Statistics (2013) 'Gross Expenditure on R&D (GERD)' Available from <http://www.abs.gov.au/Ausstats/abs@.nsf/Previousproducts/8104.0Appendix12010-11?opendocument&tabname=Notes&prodno=8104.0&issue=2010-11&num=&view> The ABS previously produced a Research and Experimental Development, Australia All Sector Summary, the most recent version is 2008–09, but the ABS no longer issues this summary.
- 3 Australian Government, Department of Industry (2014) *The R&D Tax Incentive: A Guide to Interpretation*, p. 31. Available from <http://www.ausindustry.gov.au/programs/innovation-rd/RD-TaxIncentive/ProgramInformation/Guide-to-Interpretation/Documents/RD%20Tax%20Incentive%20-%20A%20Guide%20to%20Interpretation.pdf>
- 4 The Australian Government's Science, Research and Innovation Budget Tables, available from <http://www.innovation.gov.au/innovation/reportsandstudies/Pages/SRIBudget.aspx>
- 5 See Science, Research and Innovation Budget Tables.
- 6 Australian Government, Department of Industry, Innovation, Science and Research (2011) *Evaluation of the International Science Linkages Program*. See <http://www.industry.gov.au/science/internationalcollaboration/Pages/Library%20Card/ISLEvaluationTermsofReference.aspx>
- 7 Department of Innovation, Industry, Science and Research, *National Collaborative Research Infrastructure Strategy Evaluation Report*, June 2010. Available from <http://docs.education.gov.au/documents/national-collaborative-research-infrastructure-strategy-evaluation-report-2010>
- 8 HuNI (Humanities Networked Infrastructure); Humanities Communications Science Virtual Laboratory; FAIMS (Federated Archaeological Information Management System); AustESE Project; Industrial Ecology Virtual Lab; Quadrant (includes both STEM and HASS fields). See <https://nectar.org.au/full-list-nectar-funded-projects>
- 9 The Last Ten Years of NHMRC Research Funding Dataset: 2004–2013. Available from <http://www.nhmrc.gov.au/grants/research-funding-statistics-and-data/funding-datasets>
- 10 At the four-digit level these fields are Applied Economics (1402), Econometrics (1403), Psychology (1701), Cognitive Science (1702), Other Psychology and Cognitive Sciences (1799), and Applied Ethics (2201). See 'National Health and Medical Research Council Fields of Research', available from [http://www.nhmrc.gov.au/\\_files\\_nhmrc/file/grants/policy/fields\\_of\\_research\\_nhmrc\\_111202.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/grants/policy/fields_of_research_nhmrc_111202.pdf)
- 11 The ERA 2010 National Report provides research income data over three years from 2006 to 2008 inclusive, while the ERA 2012 National Report covered the 2008–10 period. The project sought advice from the ARC about the use of research income data from 2008, which is the year of overlap between the two reports, and was advised to work with the 2008 data from the ERA 2012 report in order to conduct time series analysis for the 2006–10 period.
- 12 This followed an independent review of the CRC programme, led by Professor Mary O'Kane: *Collaborating to a Purpose: Review of the Cooperative Research Centres Program*, July 2008. Available from <https://www.crc.gov.au/About-the-program/Documents/CRCReviewReport.pdf>
- 13 Funding data by institution by scheme is available, but data at greater levels of disaggregation for some schemes is unavailable.
- 14 Unaffiliated universities are Edith Cowan University, Swinburne University, University of Tasmania, University of Western Sydney, Deakin University, Macquarie University, Australian Catholic University, Bond University, University of Wollongong, Notre Dame University, University of Canberra, and Charles Sturt University.
- 15 Publicly available data and data on request from the ARC both exclude co-funded Centres of Excellence, Linkage Learned Academies Special Projects, the ARC Centre of Excellence in Policing and Security, and the ARC Centre of Excellence in Creative Industries and Innovation.
- 16 These figures are based on publicly available datasets from the ARC's National Competitive Grants Programme Dataset, Research Funding Trend Data, see [http://www.arc.gov.au/general/searchable\\_data.htm](http://www.arc.gov.au/general/searchable_data.htm) These data were used to calculate total STEM and HASS figures. These figures may differ slightly from the tailored data request.
- 17 These calculations are based on HASS-specific data received on request from the ARC, and may differ slightly from publicly available data.
- 18 It should be noted that making comparisons across the ARC's NCGP and ERA datasets is difficult. In this case, it should be observed that Future Fellowships are individual awards whereas ERA results are for whole disciplines within institutions; ERA is also a retrospective exercise, whereas the Future Fellowships scheme is prospective.
- 19 In Europe, for example, as part of the European Strategy Forum on Research Infrastructures (ESFRI) roadmap, major infrastructure investments in the social and cultural research sector have been made in the past ten years. Major HASS infrastructures include CLARIN (Common Languages Resources and Technology Infrastructure), CESSDA (Consortium of Social Sciences Data Archives), DARIAH (Digital Research Infrastructure for the Arts and Humanities), the European Social Survey (ESS), and SHARE (Survey of Health, Ageing and Retirement in Europe).
- 20 Austlit: The Australian Literature Database. Available from <http://www.austlit.edu.au/>
- 21 There was no change in low-volume threshold for STEM disciplines which was at 50 for 2010 and 2012.
- 22 ERA 2012 National Report, p. 45.
- 23 See, for example: van Leewen, T. (2010) 'Application of Bibliometric Analysis: Advantages and Pitfalls', Workshop on Research Evaluation in Statistical Sciences, Bologna 25 March 2010. Presentation available from <http://www.slideshare.net/roger961/advantages-and-drawbacks-of-bibliometrics>; Archambault, E. and V. Larivière (2010) 'The Limits of Bibliometrics for the Analysis of the Social Sciences and Humanities Literature', pp. 251–254, in *2010 World Social Science Report*, International Social Science Council, Unesco Publishing. Available from <http://unesdoc.unesco.org/images/0018/001883/188333e.pdf>



# 4

## Academic Workforce



## 4. Academic Workforce

Over the course of the past two decades, there have been considerable changes to the size and composition of Australia's academic workforce. This chapter provides an overview of the humanities, arts and social sciences (HASS) academic workforce, including its size, institutional and geographical distribution, and demographic profile.

### 4.1 Introduction

Demographic studies, such as that conducted by Graeme Hugo, have explored the ramifications of the academic workforce's ageing profile, as well as the shift in contractual and employment conditions over this time.<sup>1</sup> We know that over the past ten years, as student enrolments have increased significantly, there has been more limited growth in staff numbers in general. This is true for both the HASS and the science, technology, engineering and mathematics (STEM) sectors. Nonetheless, more detailed and recent data is needed to inform what has become a significant arena of debate within the higher education sector in general; that is, the future implications of these changes for the academic workforce in Australia.

In this chapter, analysis has been limited by the available data sources; therefore, it has not always been possible to generate definitive accounts of significant shifts across the sector. It has not been possible, for example, to determine the extent of casualisation across the sector. The available data from the Department of Education does not provide headcount figures so this raises the likelihood of a significant level of undercounting. It is also clear from preliminary analysis that there is a great deal of variation across disciplines and institutions, so further work disaggregating the data would be required in order to generate a more accurate assessment of particular points of pressure. The data assembled here does, however, provide the foundation for such further work.

The staffing data employed for this analysis comes from two sources, which, in effect, produce parallel maps of the system. The first is a map of the research workforce and the second, a map of the teaching workforce. As these maps are produced from different datasets and based on different units of analysis, it is not appropriate to attempt to directly correlate them, but they do provide the basis for comparative observations about the health of the sector. The two major sources for the evidence in this chapter are:

- » The Excellence in Research for Australia (ERA) audits in 2010 and 2012 provide a 'snapshot' of full-time equivalent (FTE) staff numbers mapped to Fields of Research (FoRs) at the census dates of 31 March 2009 and 31 March 2011. This gives us a broad profile of the research workforce that includes both staff classified as 'teaching and research' or as 'research only'. It does not, however, enable differentiation between these classifications.
- » Publicly available data and data on request from the Department of Education's Higher Education Statistics Collections have been used to profile the teaching workforce (staff classified as 'teaching and research' or 'teaching only') over 2002–12 mapped to Academic Organisational Unit groups.<sup>2</sup>

In this report, 'academic staff' refers to staff of a tertiary institution on the academic remuneration scale, which includes Levels A–E, with Level E being the most highly salaried level. Level A refers to Associate Lecturer, Level B is Lecturer, Level C refers to Senior Lecturer, Level D is Associate Professor and Level E refers to Professor. Academic staff can be classified according to their function as 'research only', 'teaching and research', or 'teaching only' staff, and can be employed on a full-time, fractional full-time or casual basis.

### 4.2 Summary

- » Between 2002 and 2012 the teaching workforce across the higher education system grew by 27% while growth in HASS staff FTE was at 22%. Growth in student enrolments over the period to 2011 (36%) and student load (40%) outstripped the growth in teaching staff (see Chapter 2).
- » HASS staff comprise approximately 52% of the total teaching workforce in higher education. In 2012, Society and Culture staff comprise approximately 22% of total teaching FTE staff, but this represents a proportional decline from a figure of 24% in 2002.
- » The ERA 2012 audit (with a census date of 31 March 2011), had HASS research workforce numbers at 42% of the system with Humanities and Creative Arts (HCA) at 16% and Social, Behavioural and Economic Sciences (SBE) at 26%. This could reflect lower levels of 'research only' staff in HASS compared to the STEM disciplines, but without access to these data it was not possible to verify this.
- » Staffing profiles vary significantly across HASS, but there are indications of an over-reliance on Level A and Level B appointments in some instances (Education, and Commerce, Management and Tourism, for example), and 'top-heavy' staffing profiles in others (Law, and History).
- » The growth in staff numbers across all broad fields in the ten-year period has been extremely variable. For example, Management and Commerce experienced staff growth of 35% whereas Society and Culture growth experienced a 14% staff growth. In all cases, however, they have clearly failed to keep pace with the increase in student numbers.
- » The academic workforce overall is ageing; almost half of the HASS FoEs have more than 50% of their staff over the age of 50. This, together with the high proportion of appointments at junior levels, raises questions about succession planning, future leadership, and the renewal of the workforce into the future.
- » There is some specific evidence of gendered employment patterns. For instance, significantly more 'teaching only' staff are female.

- » While the evidence on the issue of casualisation is mixed, there are studies which suggest that casual staff deliver as much as 50% of teaching across the system.<sup>3</sup> In the HASS disciplines, there has been a 43% increase in the proportion of casual staff as compared to full-time and fractional full-time staff FTE over the 2002–12 period.
- » The evidence suggests that much of this casual work is being performed by recent graduates awaiting full-time employment. This, coupled with studies which report significant proportions of young academics choosing to leave the sector, at least partly in frustration at the lack of continuing appointments, raises serious concerns about the future quality of the academic workforce if the pool of qualified applicants diminishes.

### 4.3 Research Workforce

Statistics from the ERA 2012 National Report provide a snapshot of the academic workforce mapped to fields of research (FoRs). Total FTE staff numbers for the whole sector (that is, staff with a ‘teaching and research’ or ‘research only’ classification, across all employment levels—Level A through to Level E and including ‘other FTE’) were 41,774. Total HASS FTE staff numbers were 17,840 (which represented 42.71% of the total). Breaking this down further, SBE total staff numbers were 11,049.6 FTE (26.45% of the total), and HCA 6,790.6 FTE (16.26%). Figure 4.1 presents total staff numbers at the broad two-digit level across the system. It shows that Medical and Health Sciences was the largest field numerically overall. Within HASS, the largest fields at this two-digit level were: Commerce, Management, Tourism and Services; Education; Studies in Human Society; Language, Communication and Culture; and Studies in Creative Arts and Writing.

Appendix 7 includes a ranking in descending order of HASS FTE staff from the ERA 2012 National Report, reported at four-digit level. It shows that the top five fields in HASS at the four-digit level in terms of staff numbers were roughly equal in size: Law, Psychology, Business and Management, and Specialist Studies in Education are all over 1,000 FTE, with Curriculum and Pedagogy just under.

Figures 4.2 and 4.3 (overleaf) show changes in staff numbers across the 2010 and 2012 audits for SBE and HCA disciplines.

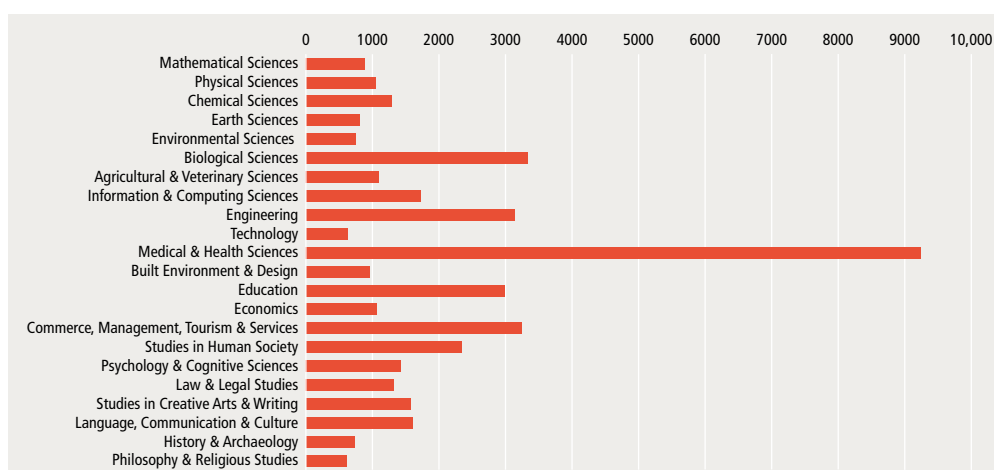
There was growth in staff numbers across all SBE fields at the two-digit level, while HCA staff numbers were more static. It is notable that Language, Communication and Culture is the only FoR in the HASS sector to register a small decline in staff numbers between the two audits. The next ERA, scheduled for 2015, will allow us to observe if this is a trend.

The next series of graphs use data from the ERA 2012 National Report to map FTE numbers and proportions by appointment level at the broad two-digit FoR. (Appendix 7 includes a more detailed series of graphs at the four-digit level.) There is no standard view on the ideal distribution of staff across appointment levels but it is reasonable to expect that an appropriate distribution of staff across all levels of appointment would support the ongoing provision of academic and administrative leadership, succession planning, and an equitable distribution of the teaching workload. Precisely how these expectations are met could well vary significantly across disciplines.

Overall, the data indicate that across all discipline groups Level B appointments were most common except for Law, where Level C appointments were more prevalent, and History and Archaeology, where there was an almost even distribution of staff across Level B and C appointments. Some disciplines reported a much higher percentage of staff at Level B than others: Philosophy and Religious Studies had nearly 60% of staff at this level. Other Studies in Human Society (which includes Gender Studies and Indigenous Studies), Anthropology, Criminology, and Social Work all had approximately 30%–40% of their FTE research workforce at Level B. High levels of staff at Level B might imply that this cohort is servicing the bulk of the teaching obligations for the organisational unit, and this in turn could raise concerns about the time available for these staff to produce research. In this context, it is also notable that Language Studies had a comparatively large percentage of Level A FTE academics, at just below 20% of their academic workforce for 2012. This too raises questions about the nature of the workload carried by these staff.

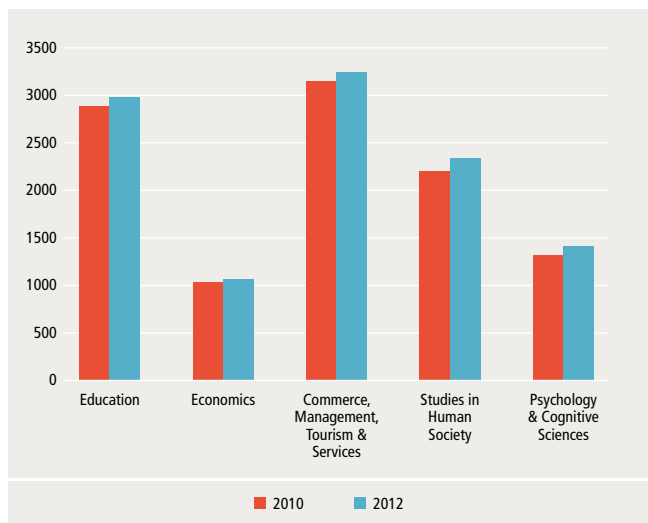
At the other end of the scale, Law has one of the highest proportions of Level D and Level E staff, comprising nearly 40% of its academic workforce. Historical Studies and Archaeology also have comparatively high proportions

Figure 4.1 Total number of staff (FTE), by field of research (two-digit level), ERA 2012



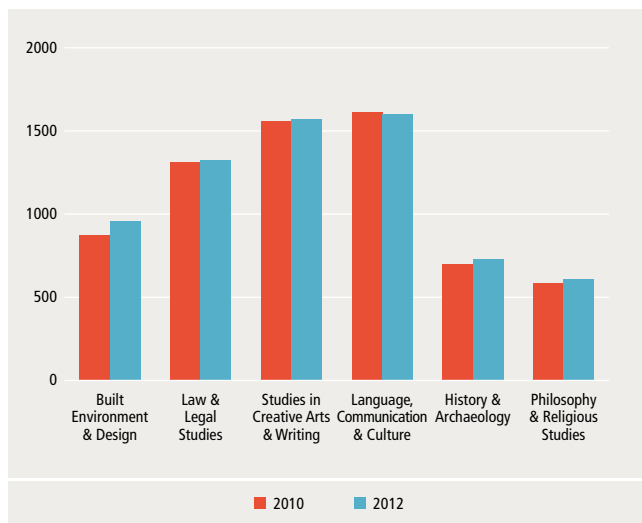
Source: ARC, ERA 2012 National Report.

**Figure 4.2 Total number of Social, Behavioural and Economic Sciences staff (FTE), by field of research (two-digit level), ERA 2010 and 2012**



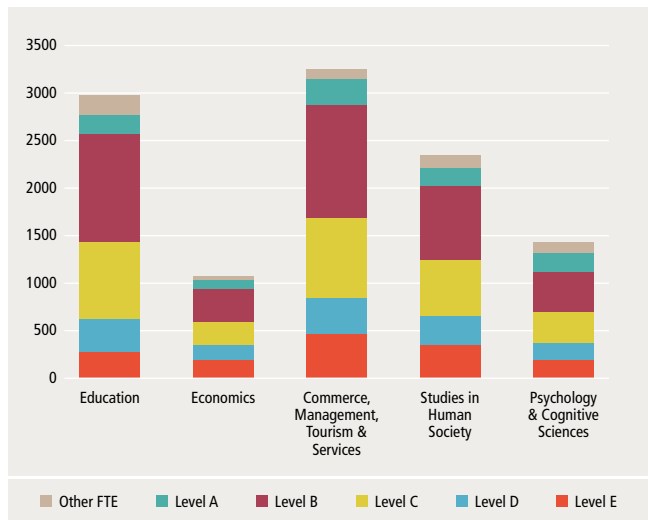
Source: ARC, ERA National Reports 2010 and 2012.

**Figure 4.3 Total number of Humanities and Creative Arts staff (FTE), by field of research (two-digit level), ERA 2010 and 2012**



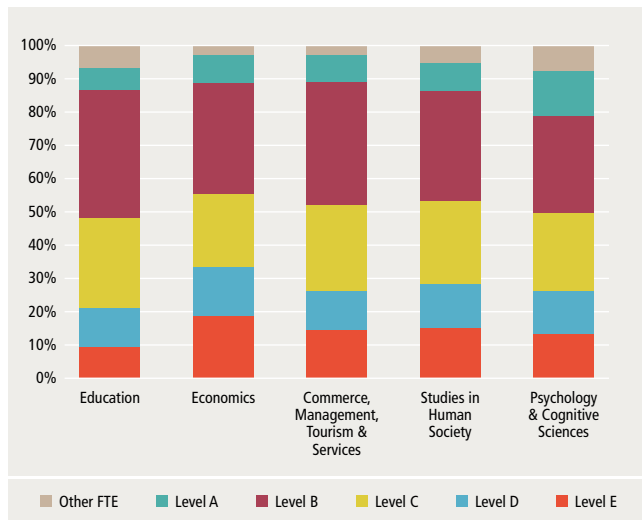
Source: ARC, ERA National Reports 2010 and 2012.

**Figure 4.4 Total number of Social, Behavioural and Economic Sciences staff (FTE), by field of research (two-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

**Figure 4.5 Proportion of Social, Behavioural and Economic Sciences staff (FTE), by field of research (two-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

of Level D and Level E staff, both at about 30%. These are comparatively top-heavy staffing profiles, which raise questions about succession planning for the future as well as about the distribution of teaching load.

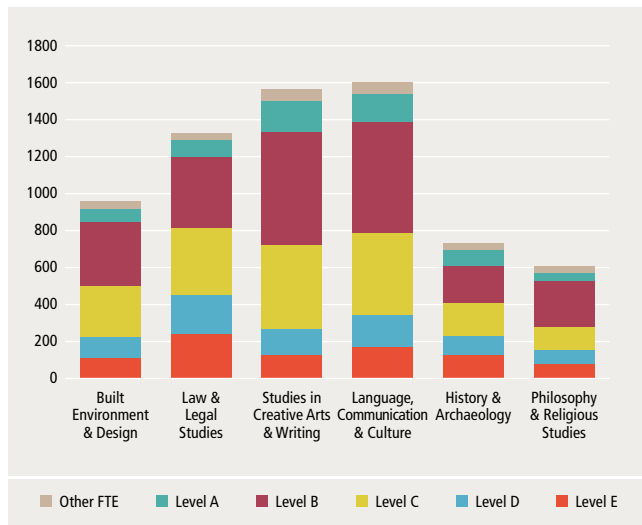
It is not possible to identify the proportion of the research workforce classified as 'research only' from the publicly available ERA data. As noted in the previous chapter, the lack of this information makes it difficult to assess the amount of time available to the workforce to commit to research, alongside teaching and other administrative responsibilities. Figure 4.8 (extracted from the ERA 2012 National Report) helps illuminate this by presenting research outputs mapped by employment level for the two-digit FoRs.

Figure 4.8 provides the basis for more analysis of the varying levels of research productivity per employment level. A key pressure point is that of mid-career staff, where there is a

strong expectation of increasing both research productivity and administrative involvement, as well as maintaining a full commitment to the teaching programme. There is a risk, right across the sector and for a variety of reasons, that mid-career staff are carrying especially heavy teaching and administrative loads that are impacting on the development of their research careers.

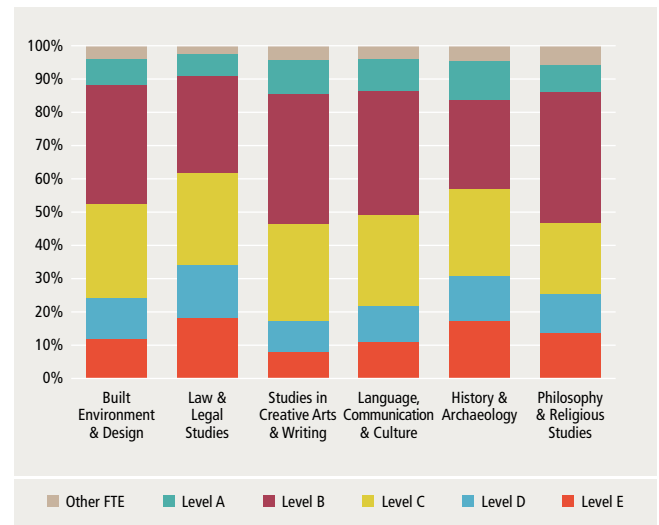
One of the features of these data, which is also relevant here, is the varying proportion of 'other FTE'. Within HASS this category of staff is comprised of unsalaried emeriti but also includes administrative staff who have published in the reference period and are on the general/professional scale rather than the academic staff scale. At the two-digit level, in the Medical and Health Sciences this comprises 12% of the workforce and produces 30% of the outputs; in HASS disciplines the picture is more variable. Two areas at the two-digit level stand out as relying on this cohort of

**Figure 4.6 Total number of Humanities and Creative Arts staff (FTE), by field of research (two-digit level), by employment level, ERA 2012**



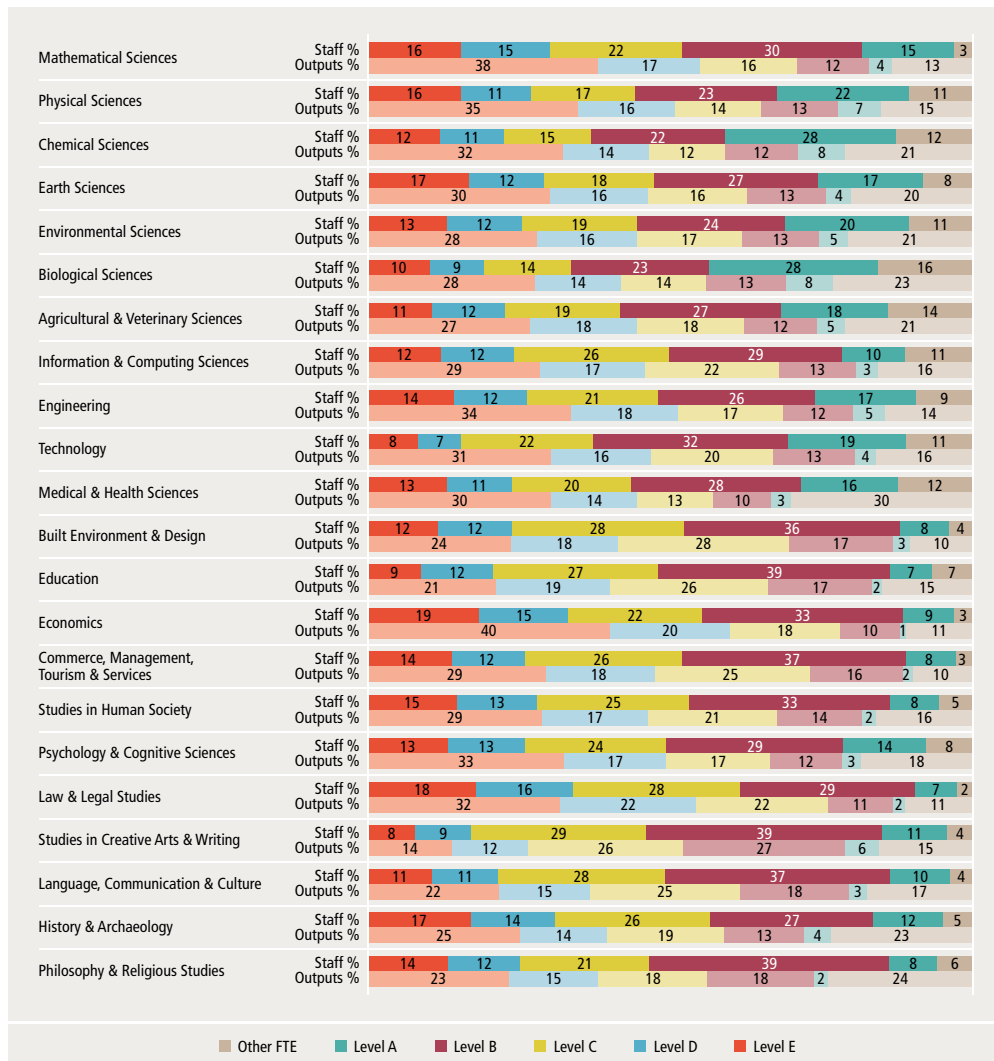
Source: ARC, ERA 2012 National Report.

**Figure 4.7 Proportion of Humanities and Creative Arts staff (FTE), by field of research (two-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

**Figure 4.8 Research outputs and staff, by two-digit field of research, by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report, p. 44.

researchers to produce a large proportion of the field's outputs. In History and Archaeology 'other FTE' comprises 5% of staff and produces 23% of outputs; in Philosophy and Religious Studies 'other FTE' comprises 6% of staff and produces 24% of outputs. While it is impressive to see such productivity maintained by unsalaried emeriti, it does raise questions about the workloads carried by the salaried staff. In principle, it does not seem desirable that such a major proportion of a discipline's outputs should be coming from this category of staff.

Appendix 7 includes a series of graphs obtained (on request) from the ARC which plot outputs and staff by employment levels at the four-digit level.

#### 4.4 Teaching Workforce

The Higher Education Statistics Staff Collection has also been reviewed to track the changes in staffing patterns over time. As noted above, these data are not mapped to FoRs, but are classified according to Academic Organisational Unit groups (AOU), which essentially map to fields of education. For definitions of appointment levels and functions see the Glossary.

Table 4.2 is a system overview of FTE staffing for full-time and fractional full-time staff in an AOU from 2002–12, which includes 'teaching only', and 'teaching and research' designations. Staff with a 'research only' or 'an other function within an AOU' are aggregated together and not reported against specific AOU's.

The major trends include the increasing proportion of the academic workforce employed on 'research only' or 'other than teaching and research' appointments (Table 4.2). The number of staff with a 'research only' or an 'other' function in an AOU increased from 23,413 in 2002 to 35,590 in 2012, which is a 52.01% increase over the period. A second trend is the disparity between the growth in the size of the teaching workforce and

in the numbers of students they are required to teach. Trends are shown in Table 4.3. Between 2002 and 2012 the growth of the teaching workforce across the whole higher education system was 26.7% (from 30,905 FTE in 2002 to 39,156 in 2012). This compares with overall student growth of approximately 36% (see Chapter 2). The growth in HASS staff FTE is less than the overall figure at 21.7% over the period. However, there is considerable variation across the two-digit fields in HASS with Management and Commerce growth at 35%, Creative Arts at 27%, Education at 21%, Architecture and Built Environment at 18.7%, and Society and Culture at a relatively low level of 13.6%. Given the proportion of the student load carried by Society and Culture (in 2011 25%), this last figure implies significant levels of strain as staff struggle to manage the growing disparity between staff numbers and student numbers.

#### Institutional distribution

Table 4.4 presents total HASS staff FTE by university provider across the 2002–12 period. There is no clear trend discernible across the HASS sector as the indicators suggest that local considerations are playing an important role. At a number of universities, notably in the regions, there was a slight decline in staff numbers over the ten-year period (including University of New England, University of Western Sydney, Central Queensland University, James Cook University, Edith Cowan University, University of Notre Dame, and Charles Darwin University). More generally, there is little staff growth in HASS at most institutions, and little change in their distribution. The Group of Eight (Go8) universities had 31.1% (5,223 FTE) of HASS staff in 2002, and that proportion was unchanged in 2012, at 31.1% or 6,359 FTE. In the regions, the overall share declined by 1% from 16.1% of the total in 2002 (2,698 FTE) to 15.1% in 2012 (3,084). However, there were some areas of noticeable growth, such as the University of Southern Queensland and the University of Wollongong.

Table 4.2 Full-time and fractional full-time staff (FTE), in an Academic Organisational Unit group, by function, by year 2002–12

Year	Staff with a 'Teaching only' or 'Teaching and Research' function in an Academic Organisational Unit Group											Total FTE in AOU's		
	Natural and Physical Sciences	Information Technology	Engineering and Related Technologies	Architecture and Building	Agriculture, Environmental and Related Studies	Health	Education	Management and Commerce	Society and Culture	Creative Arts	Mixed Field		No info. on AOU group	Staff with Research Only or an Other function in an AOU
2002	3,531	1,680	1,696	549	465	3,265	1,831	2,808	6,107	1,636	29	343	23,413	47,353
2003	3,552	1,716	1,701	521	472	3,312	1,809	2,998	6,116	1,673	31	294	24,543	48,738
2004	3,603	1,704	1,699	525	496	3,533	1,852	3,131	6,166	1,706	22	368	25,592	50,396
2005	3,684	1,535	1,759	551	537	3,669	1,912	3,195	6,202	1,808	22	642	26,778	52,293
2006	3,696	1,434	1,691	527	468	3,828	1,920	3,264	5,975	1,762	26	919	27,615	53,125
2007	3,763	1,261	1,713	542	518	4,116	1,850	3,478	6,397	1,685	31	717	29,081	55,151
2008	3,844	1,175	1,751	582	576	4,263	1,861	3,535	6,064	1,921	33	836	29,604	56,047
2009	3,913	1,045	1,889	650	485	4,484	1,909	3,788	6,058	1,915	7	1,017	31,442	58,601
2008	3,844	1,175	1,751	582	576	4,263	1,861	3,535	6,064	1,921	33	836	29,604	56,047
2009	3,913	1,045	1,889	650	485	4,484	1,909	3,788	6,058	1,915	7	1,017	31,442	58,601
2010	3,873	979	1,920	581	529	4,658	1,966	3,782	5,929	1,902	<5	np	32,485	60,163
2011	3,923	1,042	2,115	576	610	4,807	1,987	3,699	6,367	1,923	0	1,419	33,737	62,206
2012	3,889	1,050	2,126	590	632	5,139	2,117	3,758	6,458	1,958	0	1,549	35,590	64,855
<b>% of total FTE in 2012</b>	<b>6.0%</b>	<b>1.6%</b>	<b>3.5%</b>	<b>0.9%</b>	<b>1.0%</b>	<b>7.9%</b>	<b>3.3%</b>	<b>5.8%</b>	<b>10.0%</b>	<b>3.0%</b>	<b>0.0%</b>	<b>2.9%</b>	<b>54.9%</b>	<b>100.0%</b>

Source: Department of Education, Staff 2012: Selected Higher Education Statistics, <https://education.gov.au/selected-higher-education-statistics-2013-staff-data>. This table includes Avondale College of Higher Education, other tables based on customised data from the Department include only Table A/B providers.

Notes: (a) Data for 2009 do not include the Bachelor Institute of Indigenous Tertiary Education.

(b) Data for 2008 in this table is different from the 2009 Staff Publication Tables. This reflects full year rather than half year load data being used to derive AOU groups.

(c) np: not published.



Table 4.3 Full-time, fractional full-time and actual casual staff (FTE), in all Academic Organisation Unit group (broad), 2002–12

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Natural and Physical Sciences	4,386	4,405	4,462	4,542	4,633	4,709	4,779	4,944	4,930	5,107	4,944
Information Technology	2,345	2,339	2,199	1,935	1,819	1,584	1,485	1,353	1,305	1,388	1,379
Engineering and Related Technologies	2,127	2,115	2,087	2,138	2,051	2,138	2,208	2,437	2,510	2,751	2,772
Architecture and Building	764	719	731	768	755	768	818	950	861	916	907
Agriculture, Environmental and Related Studies	530	536	514	597	492	598	667	574	626	744	753
Health	4,170	4,157	4,478	4,788	4,960	5,337	5,657	5,984	6,302	6,687	6,959
Education	2,471	2,469	2,569	2,714	2,789	2,583	2,537	2,687	2,834	2,926	3,000
Management and Commerce	3,845	3,983	3,993	4,146	4,262	4,517	4,691	5,217	5,238	5,211	5,185
Society and Culture	7,372	7,494	7,492	7,647	7,422	7,869	7,493	7,645	7,639	8,303	8,371
Creative Arts	2,337	2,371	2,364	2,458	2,522	2,412	2,660	2,749	2,847	2,830	2,965
Mixed Field Programmes	33	34	22	22	31	37	39	7	7	19	0
No info. on AOU group	524	469	887	855	1,192	877	1,172	1,270	1,790	1,684	1,920
<b>All</b>	<b>30,905</b>	<b>31,089</b>	<b>31,798</b>	<b>32,610</b>	<b>32,926</b>	<b>33,431</b>	<b>34,206</b>	<b>35,817</b>	<b>36,890</b>	<b>38,567</b>	<b>39,156</b>

Source: Department of Education, customised data.

Notes: (a) Data included Table A/B providers.

(b) Data include Academic department teaching academic staff E510=1xxx, University staff E511=1 and E412=1 or 3 for Full-time, Fractional full-time and actual casual staff.

(c) Staff FTE: full-time, fractional full-time in an AOU group.

(d) Only staff whose function is 'Teaching-only' or 'Teaching and Research' has an appropriate AOU group mapping.

Table 4.4 Full-time, fractional full-time and actual casual staff (FTE), by provider, in a HASS Academic Organisational Unit group, by year, 2002–12

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total (n)	Total (%)
New South Wales													
Charles Stuart University	342	348	333	337	344	417	403	388	394	504	559	4,369	2.16
Macquarie University	633	621	606	622	647	661	619	607	666	744	748	7,174	3.55
Southern Cross University	198	190	238	243	220	233	208	238	230	237	230	2,465	1.22
The University of Sydney	980	1,018	1,053	1,041	977	1,015	1,016	1,118	1,166	1,206	1,156	11,746	5.81
University of New England	290	296	300	298	302	300	250	251	215	250	251	3,003	1.49
University of New South Wales	851	886	869	824	783	894	838	1,080	1,142	998	904	10,069	4.98
University of Newcastle	509	487	491	491	428	465	493	509	528	557	541	5,499	2.72
University of Technology, Sydney	637	607	643	663	674	639	548	635	618	700	667	7,031	3.48
University of Western Sydney	716	662	717	661	559	625	569	516	541	576	705	6,847	3.39
University of Wollongong	310	371	411	375	320	417	446	457	471	476	483	4,537	0.22
Deakin University	462	497	559	570	558	557	584	630	649	675	711	6,452	3.19
La Trobe University	499	481	492	489	561	546	543	539	577	568	519	5,814	2.88
MCD University of Divinity	0	0	0	0	10	81	89	75	78	53	91	477	0.24
Monash University	894	907	834	1,032	1,067	1,104	1,094	1,137	1,149	1,116	1,179	11,513	5.70





## Work contract

An issue on which considerable concern has been expressed in public debate as well as within sectoral fora, is the extent of the casualisation of the HASS academic workforce. While the Department of Education's Higher Education Staff Statistics Collections, as noted earlier, do not provide clear information on this, Hugo's update on his academic workforce study (2010) observed that in 2010 there were 67,000 casual academic staff, two thirds of whom were women in the 25–45 age range (Hugo estimated that 1 FTE equates to 7–8 actual casual staff). Several studies have suggested that there has been a decline in full-time staff and an increasing reliance on casual and contract staff to fill gaps and to reduce the costs associated with the delivery of the teaching programme.<sup>4</sup> Also relevant here has been an increase in the availability of limited-term research fellowships (such as Future Fellowships, Federation Fellowships, and Laureate Fellowships) and the allocation of funds for teaching relief within the ARC Discovery scheme. (Of course, not all recipients of the Fellowships would have originally been 'teaching and research' staff.) These research fellowships all contribute to an increased demand for limited term contract teaching positions. However, growth has been most evident in the employment of sessional staff. One report put the sessional count 'close to 40% rather than [the official figure of] 20% of the academic workforce'.<sup>5</sup> Other reports suggest that between a third and a half of all undergraduate teaching in Australian universities is delivered by casual staff. A recent study, using unpublished superannuation (UniSuper) data, is able to provide a more accurate picture of the extent of casualisation because it works with headcount data. This study suggests that over 50% of academic staff are sessional.<sup>6</sup> If this is the case, then it constitutes a critical structural change for the sector which has serious implications for the future.

There are indications in the available data that there has been proportional growth in casual staff compared to full-time and fractional full-time staff FTE over the 2002–12 period. It is further evident that the vast majority of these casual staff are on Level A and Level B appointments. In 2002, Level A casual staff FTE comprised 60.8% of total casual staff (or 2,371 FTE) and Level B 32.2% (or 1,256); together Level A and Level B represented 93% of casual FTE in HASS. By 2012 that proportion had not changed—Level A and Level B casual appointees comprised 94% of the total HASS casual FTE, however there has been an increase in the proportion of Level As (who now comprise 70.3% of total casual or 3,923 FTE) and a proportionate decrease in casual Level Bs (now 23.5% of the total or 1,309 FTE). This shift would have the effect of reducing teaching costs but it is likely there are also other effects, both short-term and long-term, on the availability of experienced staff for curriculum development, academic administration, student consultation, and future leadership. It is also likely that this trend is implicated in the difficulties faced by mid-career staff in managing their workloads while developing research careers.

Table 4.5 shows the percentage change in HASS staff numbers by contract type—full-time, fractional full-time, and actual casual. Between 2002 and 2012 the growth in actual casual staff was 43% and fractional full-time staff was 35%, whereas the percentage growth in full-time staff was 13%. Proportionally, the trend is similar with the share of fractional full-time staff increasing

(marginally) from 6.21% in 2002 to 6.91% in 2012, and casual staff also increasing from 23.21% of the system in 2002 to 27.35% in 2012. The proportion of full-time HASS academic staff has gone down from 70.57% in 2002 to 65.74% in 2012.

**Table 4.5 Numbers and percentage change in number of full-time, fractional full-time and actual casual staff (FTE), in all HASS Academic Organisational Units, 2002 and 2012**

FTE Staff	2002 (n)	2012 (n)	% Change
Full-time	11,848	13,439	13.42
Fractional full-time	1,043	1,409	35.09
Actual casual	3,897	5,580	43.18

Source: Department of Education, customised data.

The next set of tables overleaf provides a breakdown by contract type and gender for HASS broad organisational units.

Table 4.10 shows full-time and fractional full-time HASS academic staff by term of employment. The available data is broken down by gender and shows 'tenurial' staff and limited term staff numbers over the period 2002 to 2012. The Department of Education defines 'tenurial' staff as staff whose 'substantive appointment of current duties will normally last until retirement age', whereas 'limited term' denotes that the 'effective substantive appointment or current duties are for a fixed period of time'.<sup>7</sup> Proportions of tenured staff grew by 9.51% over the period, and limited term staff by 39.53%. Males comprised 60.5% of tenured HASS academic staff in 2002, this proportion had gone down to 53.17% by 2012; females comprised 39.48% of tenured staff in 2002, this proportion had increased to 46.83% by 2012.

A full set of tables providing a breakdown of these staff by gender for HASS broad organisational units is in Appendix 7. They reveal a higher proportion of females in 'teaching only' positions overall, and a correspondingly high proportion of males in 'teaching and research' positions. It has not been possible to investigate these differentials further.

Table 4.15 (overleaf) shows the numbers of Society and Culture staff by current duties classification and by gender in 2012. It shows a relatively even spread across the duties classifications, with the exception of Below Lecturer appointments (8% or 507 FTE); Above Senior Lecturer represented 29% of the Society and Culture workforce (1,857 in total FTE), Senior Lecturer at 27% (1,733 FTE); and Lecturer appointments accounted for 36% of the total (2,316 FTE). Across the HASS sector there have been changes in the proportions of males and females in the Above Senior Lecturer range over the period 2002 to 2012. In 2002 males accounted for 77% of these appointments, by 2012 that proportion had dropped to 64%. The Society and Culture figures demonstrate the continuing gender disparities in the senior range with proportions of males to females higher in the Senior Lecturer and Above Senior Lecturer range, whereas the proportion of females is higher in the Lecturer and Below Lecturer appointments.

A full set of tables providing a breakdown of staff by current duties classification by gender for the other HASS broad organisational units is in the Appendix 7.

Table 4.6 Full-time staff (FTE), by gender, in a HASS Academic Organisational Unit (broad), 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	370	114	357	106	338	115	384	136	374	140	353	142	352	172	387	207	332	183	337	183	330	197
Education	776	903	743	933	717	948	718	1,013	724	1,070	667	1,021	653	1,052	632	1,085	655	1,125	638	1,161	667	1,226
Management and Commerce	1,743	906	1,835	971	1,811	1,000	1,892	1,068	3,781	1,113	2,067	1,223	2,087	1,244	2,208	1,329	2,210	1,324	2,169	1,326	2,226	1,340
Society and Culture	3,369	2,232	3,340	2,255	3,280	2,307	3,311	2,372	3,101	2,308	3,239	2,501	3,024	2,378	3,012	2,383	2,877	2,397	3,071	2,650	3,080	2,675
Creative Arts	876	539	870	560	846	571	893	651	871	625	815	606	938	714	940	698	912	703	927	705	949	725
<b>Total</b>	<b>7,149</b>	<b>4,699</b>	<b>7,170</b>	<b>4,834</b>	<b>6,996</b>	<b>4,943</b>	<b>7,213</b>	<b>5,249</b>	<b>7,038</b>	<b>5,262</b>	<b>7,160</b>	<b>5,504</b>	<b>7,065</b>	<b>5,567</b>	<b>7,183</b>	<b>5,708</b>	<b>7,012</b>	<b>5,761</b>	<b>7,156</b>	<b>6,031</b>	<b>7,266</b>	<b>6,173</b>

Source: Department of Education, customised data.

Note: The sum of the data presented in the columns may not correspond to the total sum presented due to missing and incomplete data in the original table.

Table 4.7 Fractional full-time staff (FTE), by gender, in a HASS Academic Organisational Unit (broad), 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	35	17	30	19	28	22	34	28	31	25	29	18	38	20	34	22	36	29	33	23	39	22
Education	36	108	26	79	22	63	30	117	34	99	35	103	36	98	42	123	34	124	37	122	46	145
Management and Commerce	79	72	82	67	76	63	77	64	51	67	82	83	95	90	123	104	118	104	92	88	81	88
Society and Culture	174	284	167	303	189	310	186	342	193	349	231	359	249	374	249	394	215	336	227	383	261	391
Creative Arts	102	105	111	109	95	98	99	108	111	121	119	128	133	129	133	138	128	147	134	140	128	140
<b>Total</b>	<b>444</b>	<b>599</b>	<b>438</b>	<b>635</b>	<b>444</b>	<b>648</b>	<b>452</b>	<b>681</b>	<b>447</b>	<b>696</b>	<b>517</b>	<b>735</b>	<b>561</b>	<b>732</b>	<b>598</b>	<b>802</b>	<b>565</b>	<b>792</b>	<b>543</b>	<b>789</b>	<b>583</b>	<b>826</b>

Source: Department of Education, customised data.

Note: The sum of the data presented in the columns may not correspond to the total sum presented due to missing and incomplete data in the original table.

Table 4.8 Actual casual staff (FTE), by gender, in a HASS Academic Organisational Unit (narrow), 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	138	75	123	73	144	84	109	65	74	74	134	93	141	96	170	125	141	133	180	154	170	138
Education	205	443	212	454	242	531	265	557	271	584	230	506	206	474	230	545	234	631	256	688	252	645
Management and Commerce	646	388	597	389	606	405	586	397	613	419	622	416	698	454	886	537	853	597	860	648	829	604
Society and Culture	548	734	593	796	588	786	615	806	634	802	634	856	647	793	707	860	744	960	873	1,065	823	1,070
Creative Arts	344	362	345	362	359	360	341	353	393	363	359	357	374	344	403	421	465	469	453	453	496	505
<b>Total</b>	<b>1,887</b>	<b>2,010</b>	<b>1,878</b>	<b>2,081</b>	<b>1,943</b>	<b>2,174</b>	<b>1,950</b>	<b>2,188</b>	<b>2,039</b>	<b>2,269</b>	<b>1,993</b>	<b>2,241</b>	<b>2,088</b>	<b>2,184</b>	<b>2,428</b>	<b>2,531</b>	<b>2,471</b>	<b>2,818</b>	<b>2,645</b>	<b>3,023</b>	<b>2,585</b>	<b>2,995</b>

Source: Department of Education, customised data.

Note: The sum of the data presented in the columns may not correspond to the total sum presented due to missing and incomplete data in the original table.

Table 4.9 Percentage change in number of full-time, fractional full-time and actual casual staff (FTE), by gender, by HASS Academic Organisational Unit, 2002–12

	% Change in number of FTE full-time staff, 2002–12		% Change in number of FTE fractional full-time staff, 2002–12		% Change in number of FTE actual casual staff, 2002–12	
	Males	Females	Males	Females	Males	Females
Architecture and Building	-10.81	72.81	11.43	29.41	23.19	84.00
Education	-14.05	35.77	27.78	34.36	22.93	45.60
Management and Commerce	27.71	47.90	2.53	22.22	28.33	55.67
Society and Culture	-8.58	19.85	50.00	37.68	50.18	45.78
Creative Arts	8.33	34.51	25.49	33.33	44.19	39.50

Source: Department of Education, customised data.

Table 4.10 Tenurial full-time and fractional full-time staff (FTE), by gender, in a HASS Academic Organisational Unit, by year, 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	355	108	346	106	324	110	372	140	343	140	329	136	305	160	342	189	295	167	293	164	286	181
Education	683	773	636	822	620	840	626	909	631	930	565	874	544	882	533	921	533	919	532	981	536	1,034
Management and Commerce	1,502	754	1,604	824	1,574	880	1,682	941	1,685	993	1,745	1,054	1,747	1,035	1,844	1,086	1,817	1,041	1,731	1,070	1,769	1,082
Society and Culture	2,930	1,948	2,969	2,042	2,941	2,135	2,936	2,195	2,753	2,102	2,848	2,218	2,626	2,076	2,580	2,076	2,455	2,072	2,601	2,289	2,610	2,343
Creative Arts	812	514	821	561	807	556	837	614	825	599	748	561	857	660	855	666	802	656	818	659	838	677
<b>Total</b>	<b>6,283</b>	<b>4,099</b>	<b>6,382</b>	<b>4,357</b>	<b>6,272</b>	<b>4,523</b>	<b>6,462</b>	<b>4,807</b>	<b>6,245</b>	<b>4,767</b>	<b>6,242</b>	<b>4,848</b>	<b>6,077</b>	<b>4,815</b>	<b>6,159</b>	<b>4,946</b>	<b>5,901</b>	<b>4,861</b>	<b>5,983</b>	<b>5,170</b>	<b>6,045</b>	<b>5,324</b>
<b>Total (M+F)</b>	<b>10,382</b>	<b>10,739</b>	<b>10,739</b>	<b>10,739</b>	<b>10,795</b>	<b>10,795</b>	<b>11,269</b>	<b>11,269</b>	<b>11,012</b>	<b>11,012</b>	<b>11,090</b>	<b>11,090</b>	<b>10,892</b>	<b>10,892</b>	<b>11,105</b>	<b>11,105</b>	<b>10,762</b>	<b>10,762</b>	<b>11,153</b>	<b>11,153</b>	<b>11,369</b>	<b>11,369</b>
<b>% of Total</b>	<b>60.52</b>	<b>39.48</b>	<b>59.43</b>	<b>40.57</b>	<b>58.10</b>	<b>41.90</b>	<b>57.34</b>	<b>42.66</b>	<b>56.71</b>	<b>43.29</b>	<b>56.28</b>	<b>43.72</b>	<b>55.79</b>	<b>44.21</b>	<b>55.46</b>	<b>44.54</b>	<b>54.83</b>	<b>45.17</b>	<b>53.64</b>	<b>46.36</b>	<b>53.17</b>	<b>46.83</b>

Source: Department of Education, customised data.

Table 4.12 Limited term full-time and fractional full-time staff (FTE), by gender, in a HASS Academic Organisation Unit, by year, 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Architecture and Building	62	23	49	19	41	26	53	23	62	25	24	52	24	85	40	74	40	70	46	74	42	79	39
Education	130	233	135	203	122	202	120	217	125	235	255	133	255	145	272	136	288	156	335	142	306	180	340
Management and Commerce	309	222	323	226	320	190	290	201	328	202	256	407	256	440	300	492	350	523	389	536	346	547	355
Society and Culture	627	576	541	531	524	494	561	519	541	564	623	666	648	685	670	696	670	667	715	692	754	734	743
Creative Arts	166	122	154	108	136	123	157	139	170	148	185	168	210	184	212	169	242	196	248	248	184	249	186
<b>Total</b>	<b>1,300</b>	<b>1,187</b>	<b>1,217</b>	<b>1,096</b>	<b>1,159</b>	<b>1,053</b>	<b>1,196</b>	<b>1,107</b>	<b>1,230</b>	<b>1,181</b>	<b>1,383</b>	<b>1,422</b>	<b>1,383</b>	<b>1,539</b>	<b>1,484</b>	<b>1,605</b>	<b>1,559</b>	<b>1,666</b>	<b>1,688</b>	<b>1,707</b>	<b>1,642</b>	<b>1,798</b>	<b>1,672</b>
<b>TOTAL (M+F)</b>	<b>2,487</b>	<b>47.73</b>	<b>2,313</b>	<b>47.38</b>	<b>2,212</b>	<b>47.60</b>	<b>2,303</b>	<b>48.07</b>	<b>2,411</b>	<b>51.02</b>	<b>2,805</b>	<b>49.30</b>	<b>2,805</b>	<b>3,023</b>	<b>49.09</b>	<b>3,164</b>	<b>49.27</b>	<b>3,354</b>	<b>50.33</b>	<b>3,349</b>	<b>49.03</b>	<b>3,470</b>	<b>48.18</b>
<b>% of Total</b>	<b>52.27</b>	<b>47.73</b>	<b>52.62</b>	<b>47.38</b>	<b>52.40</b>	<b>47.60</b>	<b>51.93</b>	<b>48.07</b>	<b>51.02</b>	<b>48.98</b>	<b>50.70</b>	<b>49.30</b>	<b>50.91</b>	<b>49.09</b>	<b>50.73</b>	<b>49.27</b>	<b>49.67</b>	<b>50.33</b>	<b>50.97</b>	<b>49.03</b>	<b>51.82</b>	<b>51.82</b>	<b>48.18</b>

Source: Department of Education, customised data.

Notes: (a) Data do not include actual casual staff because tenurial term information is not collected.

(b) Only staff whose function is 'Teaching-only' or 'Teaching and Research' has an appropriate AOU group mapping.

(c) Totals may not be exact due to missing and non-numeric data in original dataset.

Table 4.11 Percentage change in number of tenurial full-time and fractional full-time staff (FTE), by gender, by HASS Academic Organisational Unit, 2002–12

	% Change 2002–12	
	Males	Females
Architecture and Building	-19.44	67.59
Education	-21.52	33.76
Management and Commerce	17.78	43.50
Society and Culture	-10.92	20.28
Creative Arts	3.20	31.71
<b>Total</b>	<b>-3.79</b>	<b>29.89</b>

Source: Department of Education, customised data.

Notes: (a) Data do not include actual casual staff because tenurial term information is not collected.

(b) Only staff whose function is 'Teaching-only' or 'Teaching and Research' has an appropriate AOU group mapping.

(c) Totals may not be exact due to missing and non-numeric data in original dataset.

Table 4.13 Percentage change in number of tenurial full-time and fractional full-time staff (FTE), by HASS Academic Organisational Unit, 2002–12

	% Change 2002–12	
	Males	Females
Architecture and Building	27.42	69.57
Education	38.46	45.92
Management and Commerce	77.02	59.91
Society and Culture	17.07	28.99
Creative Arts	50.00	52.46
<b>Total</b>	<b>38.31</b>	<b>40.86</b>

Source: Department of Education, customised data.

Notes: (a) Data do not include actual casual staff because tenurial term information is not collected.

(b) Only staff whose function is 'Teaching-only' or 'Teaching and Research' has an appropriate AOU group mapping.

(c) Totals may not be exact due to missing and non-numeric data in original dataset.

Table 4.14 Number and percentage change of 'Teaching Only' and 'Teaching and Research' staff (FTE), all HASS Academic Organisational Units, 2002 and 2012

FTE Staff	2002 (n)	2012 (n)	% Change
Teaching only	4,208	6,620	57.31
Teaching and research	12,581	13,809	9.76
<b>Total</b>	<b>16,789</b>	<b>20,429</b>	

Source: Department of Education, customised data.

Table 4.15 Current duties classification for Society and Culture 'Teaching Only' and 'Teaching and Research' staff (FTE), by gender, 2012 snapshot

Classification	M (n)	F (n)	Total (n)	Proportion (%)
Below Lecturer	199	308	507	7.91
Lecturer	1,066	1,250	2,316	36.11
Senior Lecturer	893	840	1,733	27.02
Above Senior Lecturer	1,178	679	1,857	28.96
<b>Total</b>	<b>3,336</b>	<b>3,077</b>	<b>6,413</b>	<b>100</b>

Source: Department of Education, customised data.



## Age profile

The analysis in this section concentrates on the proportion of HASS staff over the age of 50. Table 4.16 presents data on the percentage of FTE staff in selected HASS fields that are age 50 or over, for the year 2012.

**Table 4.16 Full-time, fractional full-time staff (FTE), percentage aged over 50 in an Education, Society and Culture, and Creative Arts Academic Organisational Unit group (narrow), 2012**

HASS Field of Education		Number of Staff	% Aged 50+
<b>Education</b>	Education	963	63
	Teacher Education	1,021	58
	Curriculum and Education Studies	85	60
	Other Education	0	0
<b>Society and Culture</b>	Society and Culture	2,612	48
	Political Science and Policy Studies	220	40
	Studies in Human Society	497	45
	Human Welfare Studies and Services	127	56
	Behavioural Science	704	41
	Law	1,008	43
	Justice and Law Enforcement	35	49
	Librarianship, Information Management and Curatorial Studies	0	0
	Language and Literature	443	49
	Philosophy and Religious Studies	245	62
	Economics and Econometrics	461	37
	Sport and Recreation	0	0
	Other Society and Culture	0	0
<b>Creative Arts</b>	Creative Arts	1,137	52
	Performing Arts	307	55
	Visual Arts and Crafts	175	59
	Graphic and Design Studies	13	100
	Communication and Media Studies	258	52
	Other Creative Arts	0	0

Source: Department of Education, customised data.

### Key issues of note:

- » Education, and Philosophy and Religious Studies had the highest proportion of staff aged over 50 at 63% and 62%, respectively. Graphic and Design Studies had 100% of staff over 50, but this figure is based on very small numbers, and hence should be interpreted with caution.<sup>8</sup>
- » Economics and Econometrics, and Behavioural Science had the lowest proportion of FTE staff age 50 and over at 37% and 41%, respectively.
- » Education and Creative Arts both have more disciplinary groups with higher levels of staff age over 50, though Human and Welfare Studies, and Philosophy and Religious Studies stand out as anomalies in Society and Culture with percentages of 56 and 62 respectively.
- » In comparison to 2006 statistics,<sup>9</sup> there appear to be some small changes, but they are all heading steadily upwards. In 2006, 60% of Education FTE staff were aged over 50, whereas in the 2012 data presented in Table 4.16, 63% were aged 50 or over. In 2006, 59% of Curriculum and Education

Studies FTE staff were aged 50 or above; in 2012, 60% were aged 50 or above.

- » Some areas that in earlier studies were presented as having the lowest levels of FTE staff aged 50 or over are still among the lowest, though, once again, the percentage has risen. For example, in 2006 38% of Law FTE staff were aged 50 or above, while in 2012, 43% of Law FTE staff were aged 50 and above.<sup>10</sup>
- » Over the period 2002 to 2012 the percentage change gives some context to the current figures: in Justice and Law Enforcement the growth has been in the order of 50% (though it is important to note the low numbers here); in Communication and Media Studies 34% of the workforce was aged over 50 in 2002, by 2012 that proportion was 52%; Performing Arts has gone from 42% to 55%, and Law from 32% to 43%. There are exceptions, however. In Education, while the proportion of staff over the age of 50 is comparatively high, there has been a decline in overall proportion over the decade in two fields at the four-digit level (Teacher Education –3% and Curriculum Studies by 8%); Studies in Human Society staff over 50 has declined by 13% and Human Welfare Studies by 15%.
- » With the exception of these two fields, the data presents an overwhelmingly clear account of an ageing workforce; even more so than was the case when Hugo's report was first released. This has to be viewed as constituting a serious concern for the capacity of the sector in the future.

## 4.5 HASS Academic Workforce Capabilities: Critical Issues for the Future

- » The ageing of the workforce, as outlined in the previous section, represents the greatest challenge for the sector in the future. While present across the entire workforce in Australia, and, indeed, a dominant feature of the demographic profile across OECD countries, the problem is particularly pronounced in higher education. Hugo observes that while 'Baby Boomers' comprise 42% of the current total workforce, they represent 56% of the academic workforce. Over the next couple of decades Hugo predicts there will be a significant task in finding appropriately qualified replacements for that group.<sup>11</sup>
- » The need to replace an ageing workforce might raise expectations that there will be growth in the availability of jobs within the sector, thus offering bright employment prospects for those wishing to enter an academic career. However, the figures on the numbers of FTEs employed clearly suggests that many of those who depart the sector will not be replaced—or if they are, they will be replaced by sessional appointments rather than in positions that are directed towards a long-term academic career. As universities continue to be asked to manage with reduced budgets, this trend is only likely to be reinforced.
- » There are indications that some areas of teaching have become heavily dependent upon casual labor, with the consequent effects on curriculum planning, the availability of staff for student advising and administrative service, and the reproduction of a skilled full-time workforce for the sector. While more detailed evidence on casualisation is needed, there is enough prima facie evidence to suggest this is an issue of great importance for the quality and sustainability of the academic workforce in HASS.

- » The evidence is that the current climate of employment for early career academics is steadily reducing the pool of likely applicants ready for the moment when the task of renewal begins. Graduates are exiting the sector. A study released by the Centre for the Study of Higher Education at the University of Melbourne suggests that ‘Close to 40% of academics under 30 years of age plan to leave Australian higher education in the next five to ten years, with 13 to 18% intending to leave in the immediate future. Around one-third of staff aged 30–39 years intend to leave in the next five to ten years.’<sup>12</sup> If this trend was to continue, or even to accelerate as seems likely, the sector faces a serious risk to the sustainability of the system at current levels of quality.
- » If a teaching career in a university is looking less attractive now, among the reasons must be the evidence that the growth in staffing is not keeping pace with the growth in student enrolments. This pattern will vary across disciplines and across locations—with some universities able to handle this situation better than others for a variety of reasons—however, the overall figures for HASS suggest that the academic workforce has been under steady pressure to teach more students with fewer staff over the last decade. Those most likely to carry this burden—sessional staff, staff at levels A and B—are also those who are reported as the most likely to seek work outside the system.
- » The expansion of the amount of time required to service teaching commitments (and although we have not been able to investigate this, maintaining online availability to students must be playing a significant role here) inevitably impacts on the amount of time available for staff to engage in high quality research. Increasing teaching loads for the academic workforce may well be creating a long-term consequence of eroding research capacity as well as impacting on the quality of teaching.

## Endnotes

- 1 Hugo, G. (2008) *The Demographic Outlook for Australian Universities’ Academic Staff*, CHASS Occasional Paper 6. Available from <https://www.chass.org.au/papers/PAP20081101GH.php> See also Hugo, G. and A. Morriss (2010) ‘Investigating the Ageing Academic Workforce: Stocktake’, report for Professions Australia. Available from [http://www.professions.com.au/Files/Academic\\_Workforce\\_Study.pdf](http://www.professions.com.au/Files/Academic_Workforce_Study.pdf)
- 2 These codes essentially map to FoEs and ‘are assigned to an academic organisational unit group on the basis of disciplines for which each academic organisational unit has a teaching and/or research responsibility’, see HEIMS glossary <http://heimshelp.deewr.gov.au/sites/heimshelp/resources/glossary/pages/glossaryterm?title=Academic%20Organisational%20Unit%20Group>
- 3 May, R. (2011) ‘Casualisation; Here to Stay? The Modern University and its Divided Workforce’, Paper presented at the 25th AIRAANZ Conference 2011. Available from <http://www.nteu.org.au/library/view/id/1321>
- 4 See Coates, H., I.R. Dobson, L. Goedegebuure and L. Meek (2009) ‘Australia’s Casual Approach to its Academic Teaching Workforce’, *People and Place*, 17 (4): 47–54.
- 5 Coates, H. and L. Goedegebuure (2010) *Changing Academic Profession: The Real Academic Revolution*, LH Martin Institute Research Briefing. Available from [http://www.lhmartininstitute.edu.au/userfiles/files/research/the\\_real\\_academic\\_revolution.pdf](http://www.lhmartininstitute.edu.au/userfiles/files/research/the_real_academic_revolution.pdf)
- 6 May (2011) ‘Casualisation; Here to Stay?’
- 7 See HEIMS glossary <http://heimshelp.education.gov.au/sites/heimshelp/resources/glossary/pages/glossaryterm?title=Term>
- 8 Hugo’s 2008 study looks at AOU’s where the number of FTE academic staff is over 60.
- 9 Hugo and Morriss (2010) *Investigating the Ageing Academic Workforce: Stocktake*, report for Professions Australia, p. 8. Available from [http://www.professions.com.au/Files/Academic\\_Workforce\\_Study.pdf](http://www.professions.com.au/Files/Academic_Workforce_Study.pdf)
- 10 Hugo and Morriss (2010) *Investigating the Ageing Academic Workforce: Stocktake*, p. 8.
- 11 Hugo, G. (2011) ‘The Future of the Arts, Humanities and Social Sciences Academic Workforce: A Demographic Perspective’. Keynote presentation at the DASSH Annual Conference, 29 September 2011. Available from [http://www.dassh.edu.au/resources/uploads/archive/conference2011/keynote\\_hugo2011.pdf](http://www.dassh.edu.au/resources/uploads/archive/conference2011/keynote_hugo2011.pdf)
- 12 Bexley, E., R. James and S. Arkoudis (2011) *The Australian Academic Workforce in Transition*, Centre for the Study of Higher Education commissioned report prepared for the Department of Education, Employment and Workplace Relations. Available from [http://www.cshe.unimelb.edu.au/people/bexley\\_docs/The\\_Academic\\_Profession\\_in\\_Transition\\_Sept2011.pdf](http://www.cshe.unimelb.edu.au/people/bexley_docs/The_Academic_Profession_in_Transition_Sept2011.pdf)



# Conclusion



This report provides the most comprehensive account of the humanities, arts and social sciences (HASS) sector to date. It tells us what the sector is currently delivering to the nation, how well it is positioned to respond to the changing needs of the nation in the future, and where we might look to further capitalise upon its potential.

This report demonstrates that Australia has a strong and resilient HASS sector which makes a major contribution to the national higher education system, to the national research and innovation system, and to preparing our citizens for participation in the workforce. It also demonstrates the significant capacity of the HASS sector to contribute to Australia's education, research and innovation system. It is critical that this capacity is fully recognised and utilised. That said, this report also points to some concerning trends, which, if left unaddressed, would severely test the sector's resilience.

The following are the key conclusions drawn from the data collated and research undertaken for this report.

## 1. The Australian HASS sector produces world-class research and teaching in many fields

- 1.1 The best performers in HASS research in Australia are producing work that has been assessed through the Excellence in Research for Australia (ERA) process as well above world standard, and equivalent to the outstanding quality levels attained by the best research in the science, technology, engineering and mathematics (STEM) sector.
- 1.2 In terms of its academic quality, the Australian HASS academic workforce is in very good health, with high levels of international visibility, recognition and respect.
- 1.3 According to the ERA's Discipline Growth Index, of the 62 disciplines across the system recording growth rates above the average (12%), 32 are HASS disciplines.
- 1.4 There has been significant development, modernisation, and internationalisation across the HASS sector, and the levels of productivity within both teaching and research have risen dramatically over the last two decades.

## 2. The HASS disciplines are major contributors to the Australian economy, education sector, and society

- 2.1 In a world where young people are continually told to expect to pursue several careers over the course of their working lives, the long-term value of generalist degrees in the humanities, arts and social sciences, as well as in the sciences, is emerging as an increasingly important consideration for the planning of their future.

- 2.2 The HASS disciplines teach the majority of students in the Australian higher education system with 65% of all students in Australian universities enrolled in HASS degrees.
- 2.3 Around 60% of the Australian population aged 20–69 with a Bachelor degree are HASS-trained.
- 2.4 Increasing levels of internationalisation within the HASS sector make it a major contributor to the higher education industry, which is Australia's fourth largest Australian export industry.
- 2.5 The strategic value of HASS research in addressing complex national and global problems that require multidisciplinary solutions has been explicitly acknowledged by federal politicians, by leading members of the science community and by such authoritative figures as Australia's Chief Scientist.

## 3. The HASS academic workforce faces risks and challenges, including casualisation, the ageing workforce and workloads

- 3.1 Between 2002–12 the teaching workforce across the higher education sector grew by 27%, and growth of HASS FTE staff was 22%. During this period, student load increased by 44%. Significantly increased teaching workloads, including the added burden of managing students' online access to teaching staff, put pressure not only on teaching but also on the capacity for research.
- 3.2 Over half the staff in many HASS disciplines are aged 50 or more, and there is evidence that the number of FTE staff aged 50 or more is increasing. At the same time, there is also an over-reliance on Level A and Level B academics in some HASS disciplines and, between 2002–12, a 43% increase in the proportion of casual academic staff, as compared to full-time (13%) and fractional full-time staff (35%).
- 3.3 The prevalence of the casualisation of teaching, together with unbalanced staff profiles and an ageing cohort of senior staff, all carry risks and challenges for succession planning, future leadership and the renewal of the academic workforce.

#### 4. Some systemic impediments act as barriers to the full contribution of the HASS sector

- 4.1 The level of infrastructure investment in the HASS sector through such programmes as the National Collaborative Research Infrastructure Strategy has been minimal.
- 4.2 While the report notes some improvement in this area, the continuing pattern of exclusions that restrict the HASS sector's participation in the full range of nationally funded research grants schemes seems unnecessarily counterproductive.

#### 5. The demand-driven system has led to some market failures with implications for the national interest

- 5.1 Fluctuations in student demand have put pressure on areas of low enrolment, risking the loss of expertise in areas of national, strategic, or academic importance.
- 5.2 As a result of the higher education sector's response to trends in demand, there is an increasing concentration of HASS offerings in the metropolitan universities, thus limiting the opportunities of those students wishing to study HASS subjects in regional Australia.
- 5.3 Shifts in the current shape of the HASS sector demonstrates that changes in policy settings—such as those determining discipline cluster funding—can have significant ramifications on course offerings and research expertise in the medium to long term that are not necessarily evident in the short term.
- 5.4 A strong capacity in HASS education and research is clearly in the national interest, but the maintenance of that capacity may, from time to time, require the prioritisation of certain areas within these fields of education and research as a means of protecting them from the consequences of short-term fluctuations in demand.
- 5.5 Expertise in regional cultures and languages is the most often cited example where this should occur, and indeed the positive efforts this report cites in this area provide useful models of strategies for others to adopt. Additional examples of market failure and the need for intervention are provided in this report.

#### 6. Institutional investments are critical to the future of the HASS sector

- 6.1 Government and the universities themselves are the custodians of significant national capabilities. However there are few mechanisms currently available to be used by government to intervene in key areas of market failure in the HASS sector as well as in higher education in general, and few incentives for the universities to act (individually and in general) in order to accept their national responsibility for these capabilities.

- 6.2 The evidence in this report suggests that institutional investments are critical to the future of the HASS sector and universities need to think strategically and maintain their capabilities in fields that are in the national interest. There is reason, therefore, to look more closely at how the universities themselves have allocated their funding to the HASS disciplines, and the degree to which it can be claimed there has been a pattern of gradual institutional disinvestment by at least some universities. The current absence of comparative institutional data makes it difficult for those advocating on behalf of the HASS sector to take up this issue in appropriate fora.

#### 7. Further work

It is unsurprising, with a teaching and research sector as large as HASS, and an environment as complex as the research and innovation system, that this study has identified the need for further work in certain areas, including:

- 7.1 The assessment of the scale, focus, and impact of the growing number of interdisciplinary centres and institutes in the HASS sector.
- 7.2 The role played by intra-institutional policy decisions, not just those responding to strategic shifts in government and student funding, and the effects upon the national capacity in the HASS fields.
- 7.3 More detailed analysis of collaboration within the HASS fields, including outcomes of the collaborative activities proposed through the various National Competitive Grants Schemes.
- 7.4 Closer attention to the issue of casualisation at the level of the individual institution, faculty or school.

A detailed list of areas highlighted for future work is provided in Appendix 4.

Finally, we have become accustomed to hearing accounts from the United Kingdom and the United States which consistently describe a 'crisis' in the HASS disciplines, and especially in the humanities. It is true that there are significant funding concerns for these disciplines in Australia, and they have proven vulnerable to some of the more negative consequences of an increasingly market-oriented system. The evidence in this report suggests that, notwithstanding such difficulties, the HASS fields continue to deliver high quality research; to make major contributions to the Australian economy, education sector, and society; to attract high levels of demand from students; and to generate positive educational and employment outcomes for those students.

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# Glossary

Term	Definition	Abbreviation used in this report
<b>Academic Organisational Unit</b>	Academic Organisational Unit is a code assigned by a Higher Education Provider, which uniquely identifies the academic organisational unit providing a unit of study or part of a unit of study. These codes must be consistent with the units reported in the Department of Education's Higher Education Student Collection. For more information see: <a href="http://heimshelp.education.gov.au/sites/heimshelp/2013_data_requirements/2013dataelements/pages/510">http://heimshelp.education.gov.au/sites/heimshelp/2013_data_requirements/2013dataelements/pages/510</a>	<b>AOU</b>
<b>academic staff</b>	In this report, 'academic staff' refers to staff of a university on the academic remuneration scale, which includes levels A through to E, with Level E being the highest salary level. Level A refers to Associate Lecturer, Level B is Lecturer, Level C is Senior Lecturer, Level D is Associate Professor and Level E is Professor. Academic staff can be classified according to their function as 'research only', 'teaching and research', or 'teaching only', and may be full-time, fractional full-time or casual staff.	
<b>Australian Technology Network of Universities</b>	The Australian Technology Network of Universities is a coalition of universities that comprises Curtin University, University of South Australia, RMIT University, University of Technology Sydney and Queensland University of Technology. For more information see: <a href="http://www.atn.edu.au/About-ATN/">http://www.atn.edu.au/About-ATN/</a>	<b>ATN</b>
<b>Australian Tertiary Admission Rank</b>	The Australian Tertiary Admission Rank is a relative ranking of an applicant's performance in their final year of secondary school and is used by university and tertiary education institutions to determine entry into undergraduate level courses. The ATAR score can be between 0.00 and 99.95. An ATAR score of 80, for example, denotes that the student performed better than 80 per cent of his/her peers and is in the top 20th percentile of students in a given year. ATAR scores are used in every Australian state, except Queensland. For more information see: <a href="http://www.uac.edu.au/undergraduate/atar/">http://www.uac.edu.au/undergraduate/atar/</a>	<b>ATAR</b>
<b>Australian Laureate Fellowships</b>	The Australian Laureate Fellowships is a competitive grant scheme which provides project funding, salary supplementation and salary-related on-cost support. The scheme is part of the Australian Research Council's (ARC) Discovery Programme and aims to attract outstanding researchers of international repute who have significant leadership qualities and who will play a mentoring role in building Australia's research capacity. For more information see: <a href="http://www.arc.gov.au/ncgp/laureate/laureate_default.htm">http://www.arc.gov.au/ncgp/laureate/laureate_default.htm</a>	
<b>Australian Research Council</b>	The Australian Research Council is a statutory agency and the main government organisation that provides competitive research funding to all disciplines, excluding clinical medicine and dentistry. It manages the National Competitive Grants Program and has responsibility for the Excellence in Research for Australia initiative. For more information see: <a href="http://www.arc.gov.au/about_arc/default.htm">http://www.arc.gov.au/about_arc/default.htm</a> .	<b>ARC</b>
<b>cluster funding or base funding</b>	<p>Funding per place for higher education students in Australia (domestic students, not full-fee paying) comprises the Commonwealth Government's contribution and the individual student's contribution, by way of the Higher Education Contribution Scheme (HECS). The Commonwealth Government's funding is determined by 'cluster' funding rates. HASS fields are generally in the lowest funded clusters. The latest cluster funding rates are available on the Department of Education's website <a href="http://education.gov.au/funding-clusters-and-indexed-rates">http://education.gov.au/funding-clusters-and-indexed-rates</a>.</p> <p>In the case of Higher Degree by Research (HDR) students, Commonwealth Government block funding for the Research Training Scheme is allocated on the basis of an institution's research income, output, HDR completions, and include a weighting for 'high cost' and 'low cost' fields of study. Within HASS, Psychology is the only field classified as 'high cost'. More information is available on the Department's website <a href="http://education.gov.au/research-training-scheme">http://education.gov.au/research-training-scheme</a></p>	



Term	Definition	Abbreviation used in this report
<b>completions</b>	The term 'completions' in this report is used to refer to the number of course completions (graduations in a tertiary programme, e.g. Bachelor of Arts, or Doctor of Philosophy) in a given year from a university. A student is counted in completions data when they have met all the requirements of their course.	
<b>Cooperative Research Centres</b>	The Cooperative Research Centres (CRC) programme is an Australian Government initiative administered by AusIndustry, a division within the Department of Industry. The CRC programme aims to support industry-led research partnerships between publicly funded researchers, business and the community to address major long-term challenges. For more information see: <a href="http://www.crc.gov.au/About-the-program/Pages/default.aspx">http://www.crc.gov.au/About-the-program/Pages/default.aspx</a>	<b>CRC</b>
<b>Discovery Programme</b>	The Discovery Programme is a nationally competitive grant programme administered by the ARC. The Discovery Programme includes Australian Laureate Fellowships, the Discovery Early Career Researcher Award, Discovery Indigenous, Discovery Projects and Future Fellowships. For more information see: <a href="http://www.arc.gov.au/ncgp/default.htm">http://www.arc.gov.au/ncgp/default.htm</a>	
<b>Discovery Early Career Researcher Award</b>	The Discovery Early Career Researcher Award is part of the ARC's Discovery Programme and provides focused research support and opportunities for early career researchers in both 'teaching and research', and 'research only' positions. Researchers are eligible to apply for a DECRA only if they have been awarded a PhD within five years of applying for the award. For more information see: <a href="http://www.arc.gov.au/ncgp/decra.htm">http://www.arc.gov.au/ncgp/decra.htm</a>	<b>DECRA</b>
<b>Discovery—Indigenous scheme</b>	The Discovery—Indigenous scheme provides funding to support research led by an Indigenous Australian researcher and build capacity of higher degree and early career researchers. For more information see: <a href="http://www.arc.gov.au/ncgp/di/di_default.htm">http://www.arc.gov.au/ncgp/di/di_default.htm</a>	
<b>Discovery—Indigenous Researcher Development</b>	The Discovery—Indigenous Researcher Development scheme is a past ARC scheme that provided support for Indigenous Researchers to undertake research projects. For more information see: <a href="http://www.arc.gov.au/ncgp/previous/dird.htm">http://www.arc.gov.au/ncgp/previous/dird.htm</a>	
<b>Discovery Projects</b>	The ARC's Discovery Projects scheme is a competitive grant programme that funds research projects for individuals or teams of researchers. Discovery Projects are primarily focused on supporting basic and applied research. For more information see: <a href="http://www.arc.gov.au/ncgp/dp/dp_default.htm">http://www.arc.gov.au/ncgp/dp/dp_default.htm</a>	
<b>enrolments</b>	In this report, a student is counted as enrolled when they register in a university course. The number of enrolments is the sum of all students enrolled at a given time.	
<b>Excellence in Research for Australia</b>	Excellence in Research for Australia is Australia's national research assessment exercise. ERA evaluates the quality of research undertaken in Australian universities. For more information see: <a href="http://www.arc.gov.au/era/default.htm">http://www.arc.gov.au/era/default.htm</a>	<b>ERA</b>
<b>Federation Fellowships</b>	The Federation Fellowships was a competitive grant scheme administered by the ARC that ceased providing new funding in 2008. The Federation Fellowships scheme aimed to attract outstanding researchers of international renown and was superseded by the Australian Laureate Fellowships Scheme. For more information see: <a href="http://www.arc.gov.au/ncgp/fedfellows/ff_default.htm">http://www.arc.gov.au/ncgp/fedfellows/ff_default.htm</a>	
<b>Field of Education</b>	Fields of Education are part of the education classification typology, 'Australian Standard Classification of Education', developed by the Australian Bureau of Statistics. See <a href="http://www.abs.gov.au/ausstats/abs@.nsf/0/E7779A9FD5C8D846CA256AAF001FCA5C?opendocument">http://www.abs.gov.au/ausstats/abs@.nsf/0/E7779A9FD5C8D846CA256AAF001FCA5C?opendocument</a>	<b>FoE</b>
<b>Field of Research</b>	Fields of Research are part of the research classification typology, 'Australian and New Zealand Standard Research Classification', developed by the Australian Bureau of Statistics and Statistics New Zealand for use in the measurement and analysis of research and experimental development undertaken in the two countries. The FoR classification has three hierarchical levels: Divisions, Groups and Fields. For more information see: <a href="http://www.abs.gov.au/Ausstats/abs@.nsf/Latestproducts/4AE1B46AE2048A28CA25741800044242?opendocument">http://www.abs.gov.au/Ausstats/abs@.nsf/Latestproducts/4AE1B46AE2048A28CA25741800044242?opendocument</a>	<b>FoR</b>

Term	Definition	Abbreviation used in this report
<b>Future Fellowships</b>	The Future Fellowships scheme is a competitive fellowship programme administered by the ARC established in 2009. Future Fellowships provides four-year research and salary funding, in addition to non-salary infrastructure, equipment and travel funding and aims to support outstanding mid-career researchers. For more information see: <a href="http://www.arc.gov.au/ncgp/futurefel/future_default.htm">http://www.arc.gov.au/ncgp/futurefel/future_default.htm</a>	
<b>Group of Eight universities</b>	The Group of Eight universities is a coalition of Australian universities that comprises The Australian National University, Monash University, The University of Adelaide, The University of Melbourne, The University of New South Wales, The University of Sydney, The University of Queensland and The University of Western Australia. For more information see: <a href="https://go8.edu.au/">https://go8.edu.au/</a>	<b>Go8</b>
<b>humanities, arts and social sciences</b>	<p>In this report, humanities, arts and social sciences refers to 11 broad fields of research. For the purposes of analysis, the report subdivides HASS fields into: Humanities and Creative Arts (HCA), which comprises Built Environment and Design; Law and Legal Studies; Studies in Creative Arts and Writing; Language, Communication and Culture; History and Archaeology; and Philosophy and Religious Studies; and Social, Behavioural and Economic Sciences (SBE), which comprises Education; Economics; Commerce, Management, Tourism and Services; Studies in Human Society; and Psychology and Cognitive Sciences. The five broad HASS fields of education are: Architecture and Building, Education, Management and Commerce, Society and Culture, and Creative Arts.</p> <p>For more detailed information on the HASS FoRs and FoEs see Appendix 2 of this report.</p>	<b>HASS</b>
<b>Higher Degree Research</b>	In this report, Higher Degree Research refers to Master of Philosophy by research and Doctor of Philosophy by research courses.	<b>HDR</b>
<b>Higher Education Research Data Collection</b>	<p>The Higher Education Data Collection comprises research income and research publications data submitted by universities each year. The data collected, along with Higher Education Student Data is used to determine annual allocation to universities for research block grants (Australian Government, Department of Education).</p> <p>HERDC includes four categories of research income:</p> <ol style="list-style-type: none"> <li>1. category one is Australian Competitive grants</li> <li>2. category two is other public sector research income</li> <li>3. category three is industry and other research income and</li> <li>4. category four is Cooperative Research Centre research income.</li> </ol> <p>For more information see: <a href="https://education.gov.au/higher-education-research-data-collection">https://education.gov.au/higher-education-research-data-collection</a>.</p> <p>This report uses data from the ARC's ERA exercises in 2010 and 2012, which was collected against HERDC research income categories. There are differences between ERA and HERDC collections. ERA data map HERDC income to field of research codes, the data are reported across different periods, and ERA employs a different staff census date.</p>	<b>HERDC</b>
<b>higher degree</b>	A higher degree is either a Master of Philosophy by research, a Master's degree by coursework or a Doctor of Philosophy by research, or a professional Doctorate.	
<b>honours</b>	An Honours degree is a Bachelor-level research degree that is awarded to a student who achieved beyond the standard academic performance, either as part of a three-year Bachelor degree, or as part of a one-year stand-alone degree attached to a Bachelor's degree. It may be structured such that students with higher grades graduate 'with Honours' or it may be awarded on the completion of a research thesis with a coursework component.	
<b>Innovative Research Universities</b>	Innovative Research Universities is a network of seven universities. Member universities are located in outer metropolitan and regions, and include: James Cook University, Griffith University, The University of Newcastle, La Trobe University, Flinders University, Murdoch University and Charles Darwin University. See for more information: <a href="http://iru.edu.au/">http://iru.edu.au/</a>	<b>IRU</b>

Term	Definition	Abbreviation used in this report
<b>International Science Linkages</b>	The International Science Linkages was a government programme administered by the then Department of Innovation, Industry, Science and Research to encourage research collaboration between Australian and international researchers. It was funded over 2001 to 2011. Humanities, arts and social sciences (HASS) researchers were ineligible to apply for funding until 2009, when a separate allocation was made for the Australian Academy of the Humanities and the Academy of the Social Sciences in Australia to promote access and participation for Australian HASS researchers in strategically focused, leading edge, international research in the HASS disciplines; and to increase strategic alliances between Australian and overseas HASS researchers.	<b>ISL</b>
<b>Linkage Programme</b>	The Linkage Programme is part of the ARC's National Competitive Grants Programme. The Linkage schemes are a suite of programmes which aim to encourage collaboration between higher education institutions, researchers and business, industry and community organisations and other publicly funded research agencies. The Linkage Programme comprises the following funding schemes: Linkage Projects scheme; Linkage Infrastructure, Equipment and Facilities; ARC Centres of Excellence; Industrial Transformation Programme; Special Research Initiatives scheme; and Linkage Learned Academies Special Projects scheme. For more information see: <a href="http://www.arc.gov.au/about_arc/arc_profile.htm#linkage">http://www.arc.gov.au/about_arc/arc_profile.htm#linkage</a>	
<b>Linkage Projects</b>	The Linkage Projects scheme supports collaborative research and development projects between higher education research and other parts of the national innovation system, which are undertaken to acquire new knowledge and which involve risk or innovation (ARC, <a href="http://www.arc.gov.au/about_arc/arc_profile.htm#linkage">http://www.arc.gov.au/about_arc/arc_profile.htm#linkage</a> ).	
<b>Linkage International</b>	The Linkage International programme was part of the ARC's Linkage Scheme until funding ceased in 2009. The Linkage International scheme provided salary and associated research funding to outstanding research fellows to work or write research proposals in eligible Australian or international organisations. For more information see: <a href="http://www.arc.gov.au/ncgp/lx/lx_default.htm">http://www.arc.gov.au/ncgp/lx/lx_default.htm</a>	
<b>Linkage Infrastructure, Equipment and Facilities</b>	The Linkage, Infrastructure, Equipment and Facilities scheme is a competitive programme that provides funding for research infrastructure, equipment and facilities to eligible organisations. For more information see: <a href="http://www.arc.gov.au/ncgp/lief/lief_default.htm">http://www.arc.gov.au/ncgp/lief/lief_default.htm</a>	<b>LIEF</b>
<b>student load</b>	Student Load refers to the equivalent full-time study load of students, which is the representation of the standard amount of study load a student would have when studying full-time for a year.	<b>EFSTL</b>
<b>National Competitive Grants Programme</b>	The ARC funds research and researchers under the National Competitive Grants Programme. The NCGP comprises two main elements—the Discovery Programme and the Linkage Programme. For more information see: <a href="http://www.arc.gov.au/ncgp/default.htm">http://www.arc.gov.au/ncgp/default.htm</a>	<b>NCGP</b>
<b>National Collaborative Research Infrastructure Strategy</b>	The National Collaborative Research Infrastructure Strategy commenced in 2004 and funds major research infrastructure to support collaboration between the research sector, industry and the Australian Government. For more information see: <a href="https://www.education.gov.au/national-collaborative-research-infrastructure-strategy-ncris">https://www.education.gov.au/national-collaborative-research-infrastructure-strategy-ncris</a>	<b>NCRIS</b>
<b>Research and Experimental Development</b>	Research and Experimental Development (R&D) as defined by the ABS, and in accordance with the OECD standard is: 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'. R&D includes three expenditure categories: <ul style="list-style-type: none"> <li>» GERD—Gross Expenditure on Research and Experimental Development</li> <li>» HERD—Higher Education Research and Experimental Development</li> <li>» BERD—Business Expenditure on Research and Experimental Development.</li> </ul> For more information, see: <a href="http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/8104.0Explanation+Notes12011-12">http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/8104.0Explanation+Notes12011-12</a>	<b>R&amp;D</b>

Term	Definition	Abbreviation used in this report
<b>Regional Universities Network of Universities</b>	The Regional Universities Network is a network of six universities with headquarters in regional Australia. Members universities include: Central Queensland University, Southern Cross University, Federation University Australia, University of New England, University of Southern Queensland and University of the Sunshine Coast.	<b>RUN</b>
<b>service teaching</b>	Service teaching is the practice in tertiary institutions whereby academic staff teach courses to students outside of the course discipline. For example, a sociology lecturer presenting an introduction to sociology course to a class that includes medical students who are taking the subject as part of their degree.	
<b>staff–student ratio</b>	In this report, staff–student ratio refers to the number of students per full-time equivalent (FTE) staff member. The Department of Education uses the following calculation to determine staff–student ratio: numbers of onshore student (EFTSL) per academic staff member (FTE full-time, fractional full-time and actual casual staff) in an AOU group.	<b>SSR</b>
<b>science, technology, engineering and mathematics</b>	<p>In this report, science, technology, engineering and mathematics refers to 11 different fields of research, including: Mathematical Sciences, Physical Sciences, Chemical Sciences, Earth Sciences, Environmental Sciences, Biological Sciences, Agricultural and Veterinary Sciences, Information and Computing Sciences, Engineering, Technology, and Medical and Health Sciences. The broad STEM fields of education are Natural and Physical Sciences; Information Technology; Engineering and Related Technologies; Agriculture, Environmental and Related Studies; and Health.</p> <p>For more detail, see Appendix 2 of this report.</p>	<b>STEM</b>
<b>tagged degrees</b>	A tagged degree is a Bachelor’s, Master’s or doctoral degree with a particular specialty. A tagged degree usually incorporates the name of the specialty into the degree title, and generally requires more specialised coursework than an untagged degree. Tagged degrees can be general, such as Bachelor of Arts (sociology) or more specialised, such as a Master’s of Business Administration.	
<b>Unit of Evaluation</b>	Under the ARC’s ERA research assessment exercise, Unit of Evaluation refers to a disciplinary unit used for ERA assessment. UoEs are consistent with FoRs.	<b>UoE</b>



# Appendices



# Appendix 1

## Key Data Sources

### Australian Bureau of Statistics

8104.0 Research and Experimental Development, Businesses, Australia 2010–11

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/8104.0>

8109.0 Research and Experimental Development, Government and Private Non-Profit Organisations, Australia 2011–12

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/8109.0>

8111.0 Research and Experimental Development, Higher Education Organisations, Australia 2011–12

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/8111.0>

### Australian Research Council

National Competitive Grants Programme Datasets

[http://www.arc.gov.au/general/searchable\\_data.htm](http://www.arc.gov.au/general/searchable_data.htm)

Excellence in Research for Australia (ERA) 2010 National Report

[http://www.arc.gov.au/era/era\\_2010/outcomes\\_2010.htm](http://www.arc.gov.au/era/era_2010/outcomes_2010.htm)

Excellence in Research for Australia (ERA) 2012 National Report

[http://www.arc.gov.au/era/era\\_2012/outcomes\\_2012.htm](http://www.arc.gov.au/era/era_2012/outcomes_2012.htm)

### Department of Education

Staff 2012: Selected Higher Education Statistics

<https://education.gov.au/selected-higher-education-statistics-2012-staff-data>

Students 2012: Selected Higher Education Statistics

<https://education.gov.au/selected-higher-education-statistics-2012-student-data>

Undergraduate Acceptances and Offers reports

<https://education.gov.au/undergraduate-applications-offers-and-acceptances-publications>

### Graduate Careers Australia

Graduate Destinations Surveys

<http://www.graduatecareers.com.au/research/researchreports/graduatedestinations/>

# Appendix 2

## Fields of Research

FoRs are part of the research classification typology, 'Australian and New Zealand Standard Research Classification', developed by the Australian Bureau of Statistics and Statistics New Zealand.<sup>1</sup>

The report groups FoRs into humanities, arts and social sciences (HASS) fields, and science, technology, engineering, and mathematics (STEM) fields as follows:

**Table A2.1 Humanities, arts and social sciences (HASS) fields of research, two- and four-digit level**

Social, Behavioural and Economic Sciences (SBE)	Humanities and Creative Arts (HCA)
<b>13 EDUCATION</b>	<b>12 BUILT ENVIRONMENT AND DESIGN</b>
1301 Education Systems	1201 Architecture
1302 Curriculum and Pedagogy	1202 Building
1303 Specialist Studies in Education	1203 Design Practice and Management
1399 Other Education	1204 Engineering Design
<b>14 ECONOMICS</b>	1205 Urban and Regional Planning
1401 Economic Theory	1299 Other Built Environment and Design
1402 Applied Economics	<b>18 LAW AND LEGAL STUDIES</b>
1403 Econometrics	1801 Law
1499 Other Economics	1802 Maori Law
<b>15 COMMERCE, MANAGEMENT, TOURISM AND SERVICES</b>	1899 Other Law and Legal Studies
1501 Accounting, Auditing and Accountability	<b>19 STUDIES IN CREATIVE ARTS AND WRITING</b>
1502 Banking, Finance and Investment	1901 Art Theory and Criticism
1503 Business and Management	1902 Film, Television and Digital Media
1504 Commercial Services	1903 Journalism and Professional Writing
1505 Marketing	1904 Performing Arts and Creative Writing
1506 Tourism	1905 Visual Arts and Crafts
1507 Transportation and Freight Services	1999 Other Studies in Creative Arts and Writing
1599 Other Commerce, Management, Tourism and Services	<b>20 LANGUAGE, COMMUNICATION AND CULTURE</b>
<b>16 STUDIES IN HUMAN SOCIETY</b>	2001 Communication and Media Studies
1601 Anthropology	2002 Cultural Studies
1602 Criminology	2003 Language Studies
1603 Demography	2004 Linguistics
1604 Human Geography	2005 Literary Studies
1605 Policy and Administration	2099 Other Language, Communication and Culture
1606 Political Science	<b>21 HISTORY AND ARCHAEOLOGY</b>
1607 Social Work	2101 Archaeology
1608 Sociology	2102 Curatorial and Related Studies
1699 Other Studies in Human Society	2103 Historical Studies
<b>17 PSYCHOLOGY AND COGNITIVE SCIENCES</b>	2199 Other History and Archaeology
1701 Psychology	<b>22 PHILOSOPHY AND RELIGIOUS STUDIES</b>
1702 Cognitive Science	2201 Applied Ethics
1799 Other Psychology and Cognitive Sciences	2202 History and Philosophy of Specific Fields
	2203 Philosophy
	2204 Religion and Religious Studies
	2299 Other Philosophy and Religious Studies

<sup>1</sup> For more information see: Australian Bureau of Statistics (2008) 'Australian and New Zealand Standard Research Classification (ANZSRC)', cat. no. 297.0. Available from <http://www.abs.gov.au/Ausstats/abs@.nsf/Latestproducts/4AE1B46AE2048A28CA25741800044242?opendocument>

Table A2.2 Science, technology, engineering and mathematics (STEM) fields of research, two- and four-digit level

<b>01 MATHEMATICAL SCIENCES</b>	<b>07 AGRICULTURAL AND VETERINARY SCIENCES</b>
0101 Pure Mathematics	0701 Agriculture, Land and Farm Management
0102 Applied Mathematics	0702 Animal Reproduction
0103 Numerical and Computational Mathematics	0703 Crop and Pasture Production
0104 Statistics	0704 Fisheries Sciences
0105 Mathematical Physics	0705 Forestry Sciences
0199 Other Mathematical Sciences	0706 Horticultural Production
<b>02 PHYSICAL SCIENCES</b>	0707 Veterinary Sciences
0201 Astronomical and Space Sciences	0799 Other Agricultural and Veterinary Sciences
0202 Atomic, Molecular, Nuclear, Particle and Plasma Physics	0905 Civil Engineering
0203 Classical Physics	0906 Electrical and Electronic Engineering
0204 Condensed Matter Physics	0907 Environmental Engineering
0205 Optical Physics	0908 Food Sciences
0206 Quantum Physics	0909 Geomatic Engineering
0299 Other Physical Sciences	0910 Manufacturing Engineering
<b>03 CHEMICAL SCIENCES</b>	0911 Maritime Engineering
0301 Analytical Chemistry	0912 Materials Engineering
0302 Inorganic Chemistry	0913 Mechanical Engineering
0303 Macromolecular and Materials Chemistry	0914 Resources Engineering and Extractive Metallurgy
0304 Medicinal and Biomolecular Chemistry	0915 Interdisciplinary Engineering
0305 Organic Chemistry	0999 Other Engineering
0306 Physical Chemistry (including Structural)	<b>10 TECHNOLOGY</b>
0307 Theoretical and Computational Chemistry	1001 Agricultural Biotechnology
0399 Other Chemical Sciences	1002 Environmental Biotechnology
<b>04 EARTH SCIENCES</b>	1003 Industrial Biotechnology
0401 Atmospheric Sciences	1004 Medical Biotechnology
0402 Geochemistry	1005 Communications Technologies
0403 Geology	1006 Computer Hardware
0404 Geophysics	1007 Nanotechnology
0405 Oceanography	1099 Other Technology
0406 Physical Geography and Environmental Geoscience	<b>11 MEDICAL AND HEALTH SCIENCES</b>
0499 Other Earth Sciences	1101 Medical and Health Sciences
1799 Other Psychology and Cognitive Sciences	1102 Cardiorespiratory Medicine and Haematology
<b>05 ENVIRONMENTAL SCIENCES</b>	1103 Clinical Sciences
0501 Ecological Applications	1104 Complementary and Alternative Medicine
0502 Environmental Science and Management	1105 Dentistry
0503 Soil Sciences	1106 Human Movement and Sports Science
0599 Other Environmental Sciences	1107 Immunology
<b>06 BIOLOGICAL SCIENCES</b>	1108 Medical Microbiology
0601 Biochemistry and Cell Biology	1109 Neurosciences
0602 Ecology	1110 Nursing
0603 Evolutionary Biology	1111 Nutrition and Dietetics
0604 Genetics	1112 Oncology and Carcinogenesis
0605 Microbiology	1113 Ophthalmology and Optometry
0606 Physiology	1114 Paediatrics and Reproductive Medicine
0607 Plant Biology	1115 Pharmacology and Pharmaceutical Sciences
0699 Other Biological Sciences	1116 Medical Physiology
	1117 Public Health and Health Sciences
	1199 Other Medical and Health Sciences

## Fields of Education

FoEs are part of the education classification typology, 'Australian Standard Classification of Education', developed by the Australian Bureau of Statistics.<sup>2</sup> The report groups fields of education into HASS fields and STEM fields as follows:

Table A2.3 Humanities, arts and social sciences fields of education, broad, narrow and detailed levels

04 ARCHITECTURE AND BUILDING		
0401	Architecture and Urban Environment	
	040101	Architecture
	040103	Urban Design and Regional Planning
	040105	Landscape Architecture
	040107	Interior and Environmental Design
	040199	Architecture and Urban Environment not elsewhere classified
0403	Building	
	040301	Building Science and Technology
	040303	Building Construction Management
	040305	Building Surveying
	040307	Building Construction Economics
	040309	Bricklaying and Stonemasonry
	040311	Carpentry and Joinery
	040313	Ceiling, Wall and Floor Fixing
	040315	Roof Fixing
	040317	Plastering
	040319	Furnishing Installation
	040321	Floor Coverings
	040323	Glazing
	040325	Painting, Decorating and Sign Writing
	040327	Plumbing
	040329	Scaffolding and Rigging
	040399	Building not elsewhere classified
07 EDUCATION		
0701	Teacher Education	
	070101	Teacher Education: Early Childhood
	070103	Teacher Education: Primary
	070105	Teacher Education: Secondary
	070107	Teacher-Librarianship
	070109	Teacher Education: Vocational Education and Training
	070111	Teacher Education: Higher Education
	070113	Teacher Education: Special Education
	070115	English as a Second Language Teaching
	070117	Nursing Education Teacher Training
	070199	Teacher Education not elsewhere classified
0703	Curriculum and Education Studies	
	070301	Curriculum Studies
	070303	Education Studies
0799	Other Education	
	079999	Education not elsewhere classified
08 MANAGEMENT AND COMMERCE		
0801	Accounting	
	080101	Accounting
0803	Business and Management	
	080301	Business Management
	080303	Human Resource Management
	080305	Personal Management Training
	080307	Organisation Management
	080309	Industrial Relations
	080311	International Business
	080313	Public and Health Care Administration
	080315	Project Management
	080317	Quality Management
	080319	Hospitality Management
	080321	Farm Management and Agribusiness
	080323	Tourism Management
	080399	Business and Management not elsewhere classified
0805	Sales and Marketing	
	080501	Sales
	080503	Real Estate
	080505	Marketing
	080507	Advertising
	080509	Public Relations
	080599	Sales and Marketing not elsewhere classified
0807	Tourism	
	080701	Tourism
0807	Office Studies	
	080901	Secretarial and Clerical Studies
	080903	Keyboard Skills
	080905	Practical Computing Skills
	080999	Office Studies not elsewhere classified
0811	Banking, Finance and Related Fields	
	081101	Banking and Finance
	081103	Insurance and Actuarial Studies
	081105	Investment and Securities
	081199	Banking, Finance and Related Fields not elsewhere classified
0899	Other Management and Commerce	
	089901	Purchasing, Warehousing and Distribution
	089903	Valuation
	089999	Management and Commerce not elsewhere classified

<sup>2</sup> For more information see: ABS (2001) 'Australian Standard Classification of Education (ASCEd)', cat. no. 272.0. Available from <http://www.abs.gov.au/ausstats/abs@.nsf/0/E779A9FD5C8D846CA256AAF001FCA5C?opendocument>

<b>09 SOCIETY AND CULTURE</b>	
<b>0901</b>	<b>Political Science and Policy Studies</b>
090101	Political Science
090103	Policy Studies
<b>0903</b>	<b>Studies in Human Society</b>
090301	Sociology
090303	Anthropology
090305	History
090307	Archaeology
090309	Human Geography
090311	Indigenous Studies
090313	Gender Specific Studies
090399	Studies in Human Society not elsewhere classified
<b>0905</b>	<b>Human Welfare Studies and Services</b>
090501	Social Work
090503	Children's Services
090505	Youth Work
090507	Care for the Aged
090509	Care for the Disabled
090511	Residential Client Care
090513	Counselling
090515	Welfare Studies
090599	Human Welfare Studies and Services not elsewhere classified
<b>0907</b>	<b>Behavioural Science</b>
090701	Psychology
090799	Behavioural Science not elsewhere classified
<b>0909</b>	<b>Law</b>
090901	Business and Commercial Law
090903	Constitutional Law
090905	Criminal Law
090907	Family Law
090909	International Law
090911	Taxation Law
090913	Legal Practice
090999	Law not elsewhere classified
<b>0911</b>	<b>Justice and Law Enforcement</b>
091101	Justice Administration
091103	Legal Studies
091105	Police Studies
091199	Justice and Law Enforcement not elsewhere classified
<b>0913</b>	<b>Librarianship, Information Management and Curatorial Studies</b>
091301	Librarianship and Information Management
091303	Curatorial Studies
<b>0915</b>	<b>Language and Literature</b>
091501	English Language
091503	Northern European Languages
091505	Southern European Languages
091507	Eastern European Languages
091509	Southwest Asian and North African Languages
091511	Southern Asian Languages
091513	Southeast Asian Languages

	091515	Eastern Asian Languages
	091517	Australian Indigenous Languages
	091519	Translating and Interpreting
	091521	Linguistics
	091523	Literature
	091599	Language and Literature not elsewhere classified
<b>0917</b>	<b>Philosophy and Religious Studies</b>	
	091701	Philosophy
	091703	Religious Studies
<b>0919</b>	<b>Economics and Econometrics</b>	
	091901	Economics
	091903	Econometrics
<b>0921</b>	<b>Sport and Recreation</b>	
	092101	Sport and Recreation Activities
	092103	Sports Coaching, Officiating and Instruction
	092199	Sport and Recreation not elsewhere classified
<b>0999</b>	<b>Other Society and Culture</b>	
	099901	Family and Consumer Studies
	099903	Criminology
	099905	Security Services
	099999	Society and Culture not elsewhere classified
<b>10 CREATIVE ARTS</b>		
<b>1001</b>	<b>Performing Arts</b>	
	100101	Music
	100103	Drama and Theatre Studies
	100105	Dance
	100199	Performing Arts not elsewhere classified
<b>1003</b>	<b>Visual Arts and Crafts</b>	
	100301	Fine Arts
	100303	Photography
	100305	Crafts
	100307	Jewellery Making
	100309	Floristry
	100399	Visual Arts and Crafts not elsewhere classified
<b>1005</b>	<b>Graphic and Design Studies</b>	
	100501	Graphic Arts and Design Studies
	100503	Textile Design
	100505	Fashion Design
	100599	Graphic and Design Studies not elsewhere classified
<b>1007</b>	<b>Communication and Media Studies</b>	
	100701	Audio Visual Studies
	100703	Journalism
	100705	Written Communication
	100707	Verbal Communication
	100799	Communication and Media Studies not elsewhere classified
<b>1099</b>	<b>Other Creative Arts</b>	
	109999	Creative Arts not elsewhere classified

**Table A2.4 Science, technology, engineering and mathematics fields of education, broad, narrow and detailed levels**

<b>01 NATURAL AND PHYSICAL SCIENCES</b>	
0101	Mathematical Sciences
0103	Physics and Astronomy
0105	Chemical Sciences
0107	Earth Sciences
0109	Biological Sciences
0199	Other Natural and Physical Sciences
<b>02 INFORMATION TECHNOLOGY</b>	
0201	Computer Science
0203	Information Systems
0299	Other Information Technology
<b>03 ENGINEERING AND RELATED TECHNOLOGIES</b>	
0301	Manufacturing Engineering and Technology
0303	Process and Resources Engineering
0305	Automotive Engineering and Technology
0307	Mechanical and Industrial Engineering and Technology
0309	Civil Engineering
0311	Geomatic Engineering
0313	Electrical and Electronic Engineering and Technology
0315	Aerospace Engineering and Technology
0317	Maritime Engineering and Technology
0399	Other Engineering and Related Technologies
<b>05 AGRICULTURE, ENVIRONMENTAL AND RELATED STUDIES</b>	
0501	Agriculture
0503	Horticulture and Viticulture
0505	Forestry Studies
0507	Fisheries Studies
0509	Environmental Studies
0599	Other Agriculture, Environmental and Related Studies
<b>06 HEALTH</b>	
0601	Medical Studies
0603	Nursing
0605	Pharmacy
0607	Dental Studies
0609	Optical Science
0611	Veterinary Studies
0613	Public Health
0615	Radiography
0617	Rehabilitation Therapies
0619	Complementary Therapies
0699	Other Health

### Academic Organisational Unit groups

Academic Organisational Unit (AOU) group is a code assigned by a Higher Education Provider, which uniquely identifies the academic organisational unit providing a unit of study or part of a unit of study. These codes are consistent with the units reported in the Higher Education Student Collection, and map to the fields of education (at the two- and four-digit levels).<sup>3</sup>

<sup>3</sup> For more information see: Australian Government, Department of Education HEIMS HELP [http://heimshelp.education.gov.au/sites/heimshelp/2013\\_data\\_requirements/2013dataelements/pages/510](http://heimshelp.education.gov.au/sites/heimshelp/2013_data_requirements/2013dataelements/pages/510)



## Appendix 3

### Institutions and University Groupings

**Table A3.1 Australian Higher Education Providers, by location and state**

Institution	Location	State	Abbreviation used in the report
Australian Catholic University	Metropolitan	Multiple	ACU
The University of Adelaide	Group of Eight (Go8)	SA	
The Australian National University	Go8	ACT	ANU
University of Ballarat	Regional	VIC	
Batchelor Institute of Indigenous Tertiary Education	Regional	NT	
Bond University	Regional	QLD	
University of Canberra	Metro	ACT	UC
Charles Darwin University	Regional	NT	CDU
Charles Sturt University	Regional	NSW	CSU
Central Queensland University	Regional	QLD	CQU
Curtin University of Technology	Metro	WA	
Deakin University	Metro	VIC	
Edith Cowan University	Metro	WA	ECU
Flinders University of South Australia	Metro	SA	
Griffith University	Metro	QLD	
James Cook University	Regional	QLD	JCU
La Trobe University	Metro	VIC	
Macquarie University	Metro	NSW	
MCD University of Divinity	Metro	VIC	
The University of Melbourne	Go8	VIC	
Monash University	Go8	VIC	
Murdoch University	Metro	WA	
University of New England	Regional	NSW	UNE
University of Newcastle	Regional	NSW	
The University of Notre Dame Australia	Metro	WA	
The University of Queensland	Go8	QLD	UQ
Queensland University of Technology	Metro	QLD	QUT
RMIT University	Metro	VIC	RMIT
University of South Australia	Metro	SA	
Southern Cross University	Regional	NSW	SCU
University of the Sunshine Coast	Regional	QLD	USC
Swinburne University of Technology	Metro	VIC	Swinburne
The University of Sydney	Go8	NSW	
University of Tasmania	Metro	TAS	
University of New South Wales	Go8	NSW	UNSW
University of Southern Queensland	Regional	QLD	USQ
University of Technology, Sydney	Metro	NSW	UTS
The University of Western Australia	Go8	WA	UWA
University of Western Sydney	Metro	NSW	UWS
Victoria University	Metro	VIC	
University of Wollongong	Regional	NSW	UoW

**Table A3.2 Group of Eight universities, by state**

Institution	State
The University of Adelaide	SA
The Australian National University	ACT
The University of Melbourne	VIC
Monash University	VIC
The University of Queensland	QLD
The University of Sydney	NSW
University of New South Wales	NSW
The University of Western Australia	WA

**Table A3.3 Metropolitan universities (excluding Group of Eight), by state**

Institution	State
Australian Catholic University	Multi
University of Canberra	ACT
Curtin University of Technology	WA
Deakin University	VIC
Edith Cowan University	WA
Flinders University of South Australia	SA
Griffith University	QLD
La Trobe University	VIC
Macquarie University	NSW
MCD University of Divinity	VIC
Murdoch University	WA
The University of Notre Dame Australia	WA
Queensland University of Technology	QLD
RMIT University	VIC
University of South Australia	SA
Swinburne University of Technology	VIC
University of Tasmania	TAS
University of Technology, Sydney	NSW
University of Western Sydney	NSW
Victoria University	VIC

**Table A3.4 Regional universities, by state**

Institution	State
University of Ballarat	VIC
Batchelor Institute of Indigenous Tertiary Education	NT
Bond University	QLD
Charles Darwin University	NT
Charles Sturt University	NSW
Central Queensland University	QLD
James Cook University	QLD
University of New England	NSW
University of Newcastle	NSW
Southern Cross University	NSW
University of the Sunshine Coast	QLD
University of Southern Queensland	QLD
University of Wollongong	NSW

# Appendix 4

## Methodology and Data Limitations

### Research Design

The *Mapping the Humanities, Arts and Social Sciences in Australia* project was designed as a sector-wide data mapping exercise. The overarching aim of the project was to chart Australia's current capabilities in the humanities, arts and social sciences (HASS) and identify gaps and opportunities for the future by developing a comprehensive understanding of student enrolment trends, and teaching and research activity, quality and potential.

The Australian Academy of the Humanities (AAH) led the project, which was co-funded by the AAH, the Academy of the Social Sciences in Australia (ASSA), the Department of Industry, and the Office of the Chief Scientist.

The project was directed by Professor Graeme Turner FAHA, and a Steering Committee comprising Fellows of both Academies:

Professor Graeme Turner FAHA, Chair  
 Professor Mark Western FASSA, Deputy Chair  
 Professor Joy Damousi FAHA FASSA  
 Professor Stephen Garton FAHA FASSA  
 Professor Sue Richardson AM FASSA

The project was managed by the AAH through Dr Kylie Brass (Policy and Projects Manager, AAH); and a Project Researcher, Rebecca Coates, based at the University of Queensland.

Research began in May 2013 and the project was contracted to deliver a final report to the Department of Industry in June 2014. Within time and resource limitations, the project sought to focus on the higher education sector, and provide an overview of the HASS sector across three key areas: teaching and learning, research, and academic workforce over the period 2002–12. A ten-year timeframe allowed for longitudinal analysis, and provided insight into current settings and foreseeable trends. The project was able to include data from 2013 and 2014 where these data were available.

The key research questions were:

1. What are major areas of research and teaching strength in HASS in Australia?
2. What is Australia's public investment in teaching and research in HASS disciplines?
3. What are the current major trends in HASS enrolments in Australian universities?
4. Where are the gaps in research capabilities and research infrastructure now and for the future?
5. What is the current profile and capability of the academic workforce in HASS?

The first phase of research identified the main data sources and collections of relevance to the project, and included consultation with relevant organisations—the Office of the Chief Scientist, Australian Research Council (ARC) and Australian Bureau of Statistics (ABS), and the then Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE)—to facilitate access

to statistical collections and advice. At the time DIICCSRTE held the higher education statistical collections, these are now located in the Department of Education.

The project worked with both publicly available data and data on request from relevant departments and agencies. The main sources of data were:

- » ABS: Research and Experimental Development, Businesses, Government and Private Non-Profit Organisations, and Higher Education Organisations data
- » ARC: National Competitive Grants Programme data, and Excellence in Research for Australia (ERA) National Reports 2010 and 2012
- » Department of Education: Higher Education Staff and Student Statistical Collections
- » Graduate Careers Australia: Graduate Destinations Survey and Beyond Graduation Survey

Five key phases of the project were identified and undertaken:

1. A system-wide overview of enrolment trends in HASS. The project commissioned Dr Ian Dobson to produce a report 'Mapping the Humanities and Social Sciences: Analysis of University Statistics 2002–2011'. The project researchers worked closely with the Higher Education Statistics Collections staff in the then DIICCSRTE on tailored data requests for this component of the project.
2. Mapping and analysis of research capacity in the humanities and social sciences focused on three key components of the system:
  - » current expenditure on, and support for, humanities and social sciences research in Australia by government, industry, and the higher education sector
  - » research workforce: current size, distribution by employment level and
  - » research quality, performance and output
3. A third phase of data mapping focused on the demand side of the system: analysing publicly available data on undergraduate applications, offers and acceptances, and Graduate Destinations surveys.
4. The fourth and final phase involved a more focused analysis of particular fields of research and education, including collaborations across and between disciplines and sectors. Further detailed consultation with sector experts was part of this phase of the project.
5. The project consulted with key organisations, including the ARC, Office of the Chief Scientist and ABS, and also sought advice from Commonwealth Scientific and Industrial Research Corporation (CSIRO) and the National Health and Medical Research Council (NHMRC). A roundtable consultation took place on 3 March 2014 at the University of Sydney in which sector and discipline-based experts provided feedback on the data mapping completed to date. A second roundtable was held with representatives from the ARC on 2 April 2014 in Canberra.

The project submitted a draft of the final report to the Department of Industry on 30 April 2014 as per the terms of the agreement. A draft copy of the final report was also circulated

to the Steering Committee and Councils of both Academies for extensive review. Sections of the draft report were also the subject of review by relevant departments and agencies.

### Analytic Approach

Descriptive statistical approaches were used to provide an overview of the data, which were largely quantitative in nature. With many of the data sources, time series data were available and allowed for an analysis of changes in the variables of interest, for example, increases or decreases in funding or research output. Strengths and weaknesses in disciplines were identified and possible future vulnerabilities were also assessed. The project's approach to data collection, analysis and capability mapping drew upon the Office of the Chief Scientist's report, *Health of Australian Science* (2012).

The approach was necessarily 'top down' and driven by available units of analysis. The main units of analysis used were Fields of Research (FoR), Fields of Education (FoE), Academic Organisational Unit groups (AOU) (see Appendix 2), and ERA Units of Evaluation (UoE) (see Appendix 6). Analysis was undertaken of HASS in aggregate, at the broad two-digit level, and at the narrow four-digit level.

The project also sought to track patterns in student enrolments and research performance and distribution of funding by institutional type and geographical location.

### Data Limitations

Working with different taxonomies and categories of analysis meant that while the project sought to draw correlations across these datasets, direct comparisons were not possible. The data limitations, outlined below, point to the need for future improvement to data collection, commensurability and access.

- » It has not always been possible to capture the level of detail required at the discipline level—for example, the History FoE is incorporated at the four-digit level under Studies in Human Society, which means that the project had to work at the six-digit level to track enrolments in History. In terms of the analysis of the academic workforce, it was only possible to work at the four-digit level. While broad trends can be drawn, it was not possible to pick out discipline-specific trends in this case.
- » HASS is not well-served by some of these taxonomies, especially by the fields of education (as noted above). A particular problem is that the current classificatory systems do not assist in 'counting' emerging areas and interdisciplinary studies areas (such as Gender Studies or Indigenous Studies) where there are significant cross-overs between humanities and social sciences. These interdisciplinary fields constitute some of the major growth areas in the sector.
- » Determining the extent of casualisation of the HASS academic workforce was not possible from the Department of Education's Higher Education Staff Statistics Collections—headcount data is not available as data are reported and provided at full-time equivalent level. There are also indications that the extent of casualisation varies across disciplines and institutions, further complicating the task of making a broad assessment of its significance for the current workforce in HASS. More focused research is needed to improve our information on this issue.
- » The Department of Education was also unable to provide data on 'research only' staff mapped to AOU groups, which effectively meant that it was only possible to map the teaching workforce from these data. Research workforce data from the ARC's ERA National Reports provided an indicative snapshot of the research workforce, but again, it was not possible to draw out the 'research only' component of this workforce and any changes to this cohort over time.
- » Government expenditure on science, research and innovation is available across the ten-year period of reporting, but it is not collected or reported by field of research. The report's treatment of these data will therefore only produce indicative trends.
- » Where possible we have worked with time series data over the ten-year period: for example, the ARC's National Competitive Grants Programme (NCGP) data coverage is 2002–12, but the ARC's ERA research income data is only available over a five-year period 2006–10, by field of research. The next ERA exercise in 2015 will allow more longitudinal analysis.
- » It was not always possible to gain access to data on request at individual institutional level—from either the ARC (ERA or NCGP data) or the Department of Education's Higher Education Statistics collections. In this case, aggregated data (according to institutional groupings) was requested where possible.
- » Gender data across the ARC's NCGP programme is publicly available by scheme but without access to more detailed data it was not possible to map research applications, and performance/success rate by gender across HASS fields of research at the two- or four-digit level.
- » Some of the data used in the report is already adjusted for inflation (such as ABS R&D survey data), in other cases Consumer Price Index (CPI) adjustments have been applied to funding and expenditure data. ARC NCGP funding data and ERA research income data was adjusted for inflation and figures reported at 2012 equivalent dollars. This adjustment was conducted using the CPI provided by the ABS. By adjusting research funding and expenditure income, the monetary data is meaningful and able to be interpreted over time.
- » While it is possible to make some general calculations with regards to university block funding (for example, with respect to Commonwealth Supported Places, Research Training Scheme formula), there are no publicly available data on how such funding is distributed within institutions. It is nonetheless crucial to a proper understanding of the sector that we have better information of the role that individual institutions play. A report produced by the Australasian Deans of Arts, Social Sciences and Humanities (DASSH)<sup>4</sup> provides some of this kind of information but the picture is incomplete without a better accounting for the impact of individual institutional policy decisions in these fields.

4 Gannaway, D. and Shepherd, K. (2012) *Benchmarking the Australian Bachelor of Arts: A Summary of Trends Across the Australian Bachelor of Arts Degrees Programs*. Teaching and Educational Development Institute (TEI), University of Queensland. Available from [http://dassh.edu.au/resources/uploads/publications/project\\_reports/1.\\_Benchmarking\\_the\\_Australian\\_BA\\_-\\_Trends\\_Report\\_.pdf](http://dassh.edu.au/resources/uploads/publications/project_reports/1._Benchmarking_the_Australian_BA_-_Trends_Report_.pdf)

- » There is limited data available on international collaboration in HASS. Bibliometric data, which underpins analyses of international collaboration in the sciences, do not take into account different publishing cultures across the disciplines; the primary citation databases do not yet provide full coverage of citations in books and book chapters, a prevalent and prestigious form of publication used by much of the HASS sector. It should also be noted that international rankings exercises do not adequately capture the strengths of the humanities in particular.<sup>5</sup>

### Further Work

This study is envisaged as a first step towards providing a comprehensive data profile of HASS in Australia. The data contained in the report can be used to conduct further detailed enquiry at the discipline-specific level.

In terms of building towards a more comprehensive understanding of capabilities across the overall HASS system, key priorities for future work include:

1. the relationship between HASS supply and demand: including student demand for HASS subjects, and employer demand for HASS knowledge and skills
2. benchmarking Australian HASS teaching and research within Australian institutions as well as against other countries in order to better understand performance relative to resources
3. the contribution HASS teaching and research makes to the economic, social and cultural life of the nation, the region, and globally.

For the most part the project was able to track fields of education and research, though was unable to appraise the content of HASS research, emerging areas of research, HASS's contribution to national research priority areas and problem-based research on societal challenges. These are all areas for further work.

Other areas for future work, identified during the course of the project and through its consultation processes, are as follows:

### Course provision

What are students studying and how has this changed over time? The data which would enable a comprehensive study of changes in course provision are not readily available and it was beyond the resources of this study to remedy this situation. Profiling changes in course provision would require detailed manual/desktop research and follow-up survey work. DASSH has conducted work of note in this area in relation to Bachelor of Arts programmes and, while its observations are limited to the BA, it is useful in providing indicators of significant trends, particularly over the last five years, that would affect the greater part of the HASS sector.

DASSH studies also point to faculty restructures, particularly in the pre-2008 period. Again, this was an area in which the project was unable to conduct research, but it is a vital part of the picture in understanding the institutional infrastructures in which HASS teaching and research occurs. Anecdotal evidence suggests that faculty restructuring and amalgamation in HASS can have a negative impact on discipline areas and the future sustainability of disciplines. The other area of note here is online learning and the changing contexts for educational provision in the digital environment. These are areas for further enquiry.

### Institutional investment and disinvestment

This study did not have access to the indices driving the internal distribution of funding, and so it was not possible to draw conclusions about the role being played by intra-institutional decisions, as against those made necessary by strategic shifts in government funding. There is evidence, however, in the review of base funding for instance,<sup>6</sup> that there has been a gradual institutional disinvestment in HASS fields of education. Advocates of the sector have long claimed that universities have implicitly been encouraged to shift their strategic emphasis from HASS to STEM in order to participate in schemes that require some form of co-funding. Further detailed investigation of these issues is needed in relation to specific disciplines or patterns of offerings.

### Student demand

Further investigation of student demand for courses, student retention and attrition is needed. The extent of influence of institutional imperatives and financing on demand is also an area for future work. Some preliminary research conducted by the Group of Eight universities has investigated demand for education by field and has found a shift in student enrolments to more expensive funding clusters over the 2001 to 2010 period.

The demand-driven system is a key driver of patterns in relation to teaching. However because teaching income is important in all universities and, proportionately, generates a larger share of university income outside the Group of Eight, the demand driven system also fundamentally drives research capability through university employment practices. Central elements of university business—teaching and research—are very largely dependent on student choices, with only relatively indirect mechanisms to steer directions and priorities.

Student choice is also often a function of subject provision and/or access. The interrelation of languages provision and demand is a case in point that the report provides some preliminary work on. Structural initiatives at individual universities have seen dramatic improvements in languages enrolments at both the University of Melbourne and the University of Western Australia, for example.

The study provides a 'stocktake' of HASS, which will allow future exercises to undertake comparative analysis against this baseline data. This will be particularly useful in the context of the new demand-driven system.

5 Rauhvargers, A. (2011) *Global University Rankings and Their Impact*, European Universities Association. Available from [http://www.eua.be/pubs/global\\_university\\_rankings\\_and\\_their\\_impact.pdf](http://www.eua.be/pubs/global_university_rankings_and_their_impact.pdf)

6 Lomax-Smith, J. (2011) *Higher Education Base Funding Review: Final Report*, October 2011. Available from [http://www.industry.gov.au/highereducation/Policy/BaseFundingReview/Documents/HigherEd\\_FundingReviewReport.pdf](http://www.industry.gov.au/highereducation/Policy/BaseFundingReview/Documents/HigherEd_FundingReviewReport.pdf)

### Research training

Further work is needed in tracking the postgraduate cohort and drawing out discipline-specific trends in Higher Degree by Research (HDR) provision and training—the higher degree research programmes on offer, the role of Honours as a pathway to higher degrees, and the research workforce ‘pipeline’. An area of some focus internationally in recent times has been the extent and quality of the methods-based training that HDR candidates receive. In the United Kingdom there has been a shift towards emphasising quantitative skills and funding universities specifically to develop those skills in the next generation of social sciences. Perhaps, then, the question needs to be asked whether the Australian system’s training in quantitative skills is constrained by the three-year PhD and thus putting Australian students at a competitive disadvantage in the international context?

### Graduate destinations

The Graduate Destinations Survey is limited by the fact that graduates are surveyed four months after receiving their Bachelor’s degree by their awarding institution. Nonetheless, it is a standard tool for assessing graduates’ employability, and so the study accessed key trend data to report on graduates from the HASS sector. The follow-up Beyond Graduation Survey offers a better index of graduate destinations because it is taken four years after graduation, though has a relatively small sample of respondents. To fully understand the application of HASS skills in different sectors, data is required on labour force needs in specific sectors of employment, as well as some work on the longer term vitality of recruitment patterns.

### Government policies and programmes: science, research and innovation

Capturing quantitative information about research in HASS discipline areas in research-active government departments and agencies, as measured through inputs (spending, staff effort, grants) or outputs (publications and reports) is a difficult task. The Science, Research and Innovation budget tables identify government outlay by programme, and this expenditure is also reported against Socio-Economic Objectives, but not by field of research. Further survey work is needed to build up a comprehensive profile of government expenditure and activity on HASS research.

### Academic workforce—extent of casualisation

The available data from the Department of Education does not provide headcount figures on casual academic staff, making it difficult to know whether there has been a significant level of undercounting as is suggested anecdotally by those working in the HASS disciplines. It is also clear from the preliminary analysis in the report that there is a great deal of variation across disciplines and institutions, so further work disaggregating the data would be required in order to generate a more accurate assessment of particular points of pressure. The data assembled in the report does, however, provide the foundation for such further work.

A related area of enquiry is the career path for PhD graduates in HASS and the extent to which new PhD graduates are having to rely on casual appointments as their entry point into academia. Graeme Hugo’s work predicts huge demand within academia on the basis of demographic change, but what is the extent of replenishment of that workforce with Australian PhD graduates? Here the global market for academics and the extent of recent migrants who comprise the academic workforce in Australia must also be taken into account.

### International comparisons

The project has been unable to undertake a comprehensive review and comparison of HASS settings in other countries. This is an area for further work, especially in terms of key indicators such as share of income, student enrolment patterns, composition of the academic workforce, graduate destinations, and research methods training.



# Appendix 5

## International Comparisons

International mapping and survey exercises of note to the project are listed below.

### Canada

*The State of Science and Technology in Canada, 2012* considers ‘the full range of disciplines in which research is conducted, including the humanities, arts, and social sciences.’<sup>7</sup> The report uses bibliometric data and other metrics as well as survey data to appraise the state of Canadian research. The six research fields in which Canada ‘excels’ are clinical medicine, historical studies, information and communication technologies, physics and astronomy, psychology and cognitive sciences, and visual and performing arts.

### United States

In the United States, the American Academy of Arts and Sciences (AAAS) convenes the Commission on the Humanities and Social Sciences. In 2013 it released its first report *The Heart of the Matter*.<sup>8</sup>

The AAAS has explicitly sought to redress knowledge gaps about the humanities by partnering with major humanities institutions to develop an infrastructure for the compilation, analysis and publication of comprehensive trend data about the humanities, which is consciously modelled on Science and Engineering Indicators routinely published by the National Science Board.<sup>9</sup>

### United Kingdom

The Arts and Humanities Research Council (AHRC) reports to the Department for Business, Innovation and Skills on the impact of arts and humanities research and postgraduate training.<sup>10</sup> The Economic and Social Research Council reports on research performance and economic impact in the social sciences.<sup>11</sup>

The Higher Education Funding Council for England (HEFCE) publishes statistics, surveys and reports on the higher education sector, including data on demand and supply in higher education subjects, and graduate destinations surveys.<sup>12</sup>

### European Union

The Monitoring European Trends in Social Sciences and Humanities (METRIS) resource is funded by the European Commission.<sup>13</sup> METRIS provides comparative country profiles of humanities and social science research structures, systems and funding, and national research priorities for member countries as well as Canada, the United States, and Japan.

### World Social Science Report

The World Social Science Report, published by the International Social Science Council (established by UNESCO in 1952), includes basic statistics on the production of social science research.<sup>14</sup>

7 Council of Canadian Academies (2012) *The State of Science and Technology in Canada, 2012: The Expert Panel on the State of Science and Technology in Canada*. Council of Canadian Academies: Ottawa, Canada. Available from <http://www.scienceadvice.ca/en/assessments/completed/science-tech.aspx>

8 American Academy of Arts and Sciences (2013) *The Heart of the Matter: The Humanities and Social Sciences*. Cambridge, Massachusetts: American Academy of Arts and Sciences. Available from <http://www.humanitiescommission.org/>

9 Humanities Indicators: A Project of the American Academy of Arts and Sciences. See <http://www.humanitiesindicators.org/>

10 Arts and Humanities Research Council (2014) *The Impact of AHRC Research*. Arts and Humanities Research Council: Wiltshire, UK. Available from <http://www.ahrc.ac.uk/News-and-Events/Publications/Documents/AHRC%20Impact%20Report%202013%20%28A%29.pdf>

11 Economic and Social Research, Economic Impact Reports. Available from <http://www.esrc.ac.uk/research/evaluation-impact/impact-evaluation/economic-impact-reports.aspx>

12 Higher Education Funding Council for England, Data and Statistics. Available from <https://www.hefce.ac.uk/data/>

13 Monitoring European Trends in Social Sciences and Humanities (METRIS). Available from <http://www.metrisnet.eu/metris/>

14 International Social Science Council, *World Social Science Report*. Available from <http://www.worldsocialscience.org/activities/world-social-science-report/>

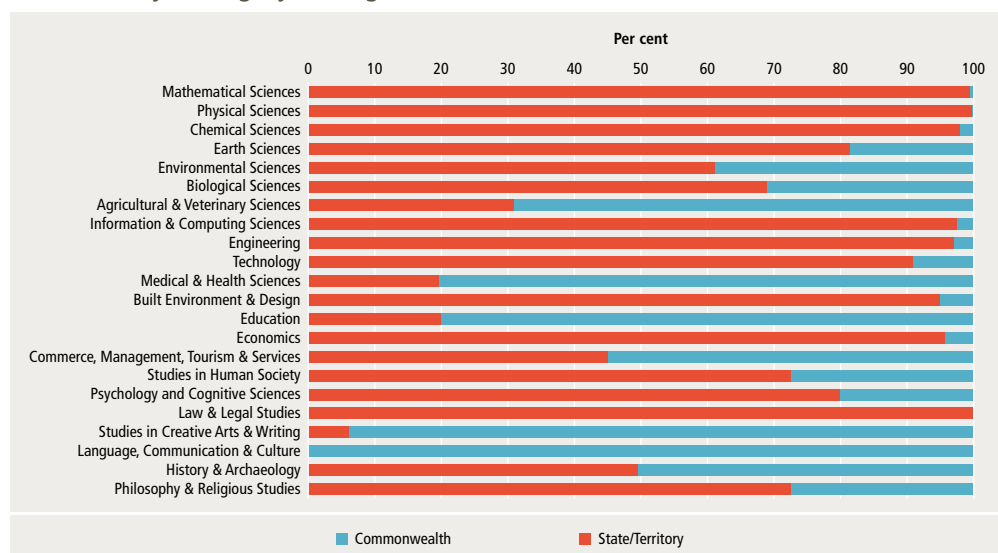


# Appendix 6

## Research Profile Appendices

### Research and Development

**Figure A6.1 Government expenditure on R&D, percentage distribution of Commonwealth and State/Territory funding, by two-digit field of research, 2011–12**



Source: Australian Bureau of Statistics, 8109.0 Research and Experimental Development, Government and Private Non-Profit Organisations, Australia 2011–12.

**Table A6.1 Government expenditure on R&D, STEM and HASS, by two-digit field of research, 2008–09 and 2011–12**

Field of research	2008–09 \$'000	2011–12 \$'000
Mathematical Sciences	55,817	53,870
Physical Sciences	211,215	237,888
Chemical Sciences	132,025	164,623
Earth Sciences	239,422	207,163
Environmental Sciences	277,706	247,270
Biological Sciences	311,136	363,813
Agricultural and Veterinary Sciences	544,992	570,100
Information and Computing Sciences	290,518	324,305
Engineering	610,762	535,793
Technology	127,107	114,817
Medical and Health Sciences	451,549	483,316
<b>STEM subtotal</b>	<b>3,252,249</b>	<b>3,302,958</b>
Built Environment and Design	15,439	44,547
Education	13,935	24,672
Economics	38,582	55,260
Commerce, Management, Tourism and Services	5,101	5,081
Studies in Human Society	49,716	59,877
Psychology and Cognitive Sciences	22,424	21,048
Law and Legal Studies	12,483	2,270
Studies in Creative Arts and Writing	1,682	3,493
Language, Communication and Culture	2,295	2,492
History and Archaeology	6,364	10,786
Philosophy and Religious Studies	196	481
<b>HASS subtotal</b>	<b>168,217</b>	<b>230,007</b>
<b>Total</b>	<b>3,420,468</b>	<b>3,532,963</b>

Source: ABS, 8109.0 Research and Experimental Development, Government and Private Non-Profit Organisations, Australia 2011–12.

Note: The ABS did not conduct a survey in 2009–10.

Table A6.2 Business expenditure on R&amp;D, by two-digit field of research, 2007–08 to 2010–11

Field of research	2007–08	2008–09	2009–10	2010–11
	\$'000	\$'000	\$'000	\$'000
Mathematical Sciences	12,455	18,466	13,478	20,587
Physical Sciences	28,976	19,221	21,414	24,173
Chemical Sciences	223,991	265,977	246,067	275,030
Earth Sciences	206,896	175,464	153,063	200,390
Environmental Sciences	128,348	178,407	154,503	192,269
Biological Sciences	99,843	73,342	67,974	73,530
Agricultural and Veterinary Sciences	329,550	367,414	440,653	502,775
Information and Computing Sciences	3,763,262	4,508,532	4,835,004	5,019,259
Engineering	8,424,286	9,570,150	8,789,028	9,210,029
Technology	704,441	792,540	771,617	919,238
Medical and Health Sciences	899,702	1,003,303	920,658	929,910
Built Environment and Design	113,663	177,889	201,860	298,086
Education	7,928	12,519	19,369	15,301
Economics	12,737	12,229	8,006	10,990
Commerce, Management, Tourism and Services	78,639	94,037	99,316	168,274
Studies in Human Society			2,232	1,364
Psychology and Cognitive Sciences	2,646	4,088	1,780	2,162
Law and Legal Studies	1,416	5,199	4,204	1,803
Studies in Creative Arts and Writing	6,151	9,448	10,676	12,354
Language, Communication and Culture	1,471	1,627		
History and Archaeology				
<b>Total</b>	<b>15,047,360</b>	<b>17,291,228</b>	<b>16,762,030</b>	<b>17,879,661</b>

Source: ABS, 8104.0 Research and Experimental Development, Businesses, Australia, 2010–11.

Note: blank cells denote 'not available for publication but included in totals where applicable, unless otherwise indicated'.

Table A6.3 Higher education expenditure on R&amp;D, by source of funds, 2010

	\$'000	Percentage share of total
<b>Australian competitive grants</b>		
Commonwealth schemes	1,294,205	15.78
Other schemes	66,123	0.81
<b>Total</b>	<b>1,360,328</b>	<b>16.58</b>
General university funds	4,636,818	56.53
Other Commonwealth government	1,108,738	13.52
State and local government	423,611	5.16
Business	335,271	4.09
Donations, bequests and foundations	140,177	1.71
Other Australian	19,027	0.23
Overseas	179,030	2.18
<b>Total</b>	<b>8,202,999</b>	<b>83.42</b>

Source: ABS, 8111.0 Research and Experimental Development, Higher Education Organisations, Australia, 2010.

Table A6.4 HERDC Category 3: Industry and Other research income—Australian, by year, 2008–10

Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>12</b>	<b>Built Environment and Design</b>	<b>151,814</b>	<b>3,267,617</b>	<b>4,750,887</b>	<b>3,773,202</b>	<b>6,406,292</b>	<b>14,930,381</b>
1201	Architecture	80,836	1,150,138	1,355,064	818,876	1,328,460	3,502,400
1202	Building	295,846	779,800	1,464,922	907,638	1,150,782	3,523,342
1203	Design Practice and Management	47,311	1,452,519	505,393	826,832	1,703,382	3,035,607
1204	Engineering Design	19,173	23,630	23,630	9,989	4,727	38,346
1205	Urban and Regional Planning	73,197	804,417	963,381	1,002,772	1,809,695	3,775,848
1299	Other Built Environment and Design	49,631	935,873	438,497	207,095	409,246	1,054,838
<b>13</b>	<b>Education</b>	<b>578,963</b>	<b>12,220,333</b>	<b>12,326,364</b>	<b>14,516,342</b>	<b>16,049,017</b>	<b>42,891,723</b>
1301	Education Systems	119,214	2,032,973	2,985,553	2,290,531	1,643,039	6,919,123
1302	Curriculum and Pedagogy	192,154	959,999	2,138,542	2,101,948	3,297,445	7,537,935
1303	Specialist Studies in Education	240,931	9,504,534	6,673,263	9,823,547	10,390,858	26,887,668
1399	Other Education	49,552	437,774	529,006	300,316	717,675	1,546,997
<b>14</b>	<b>Economics</b>	<b>165,620</b>	<b>3,485,188</b>	<b>6,047,670</b>	<b>5,811,453</b>	<b>6,145,835</b>	<b>18,004,958</b>
1401	Economic Theory	20,590	436,676	68,176	322,676	241,616	632,468
1402	Applied Economics	121,834	1,928,698	4,532,938	4,789,788	4,992,588	14,315,314
1403	Econometrics	41,207	1,535,899	1,289,232	693,554	678,245	2,661,031
1499	Other Economics	3,965	350,166	157,324	5,435	233,386	396,145
<b>15</b>	<b>Commerce, Management, Tourism and Services</b>	<b>421,619</b>	<b>5,206,126</b>	<b>9,666,445</b>	<b>11,319,074</b>	<b>12,264,659</b>	<b>33,250,178</b>
1501	Accounting, Auditing and Accountability	34,188	1,075,111	1,541,507	1,497,991	1,388,173	4,427,671
1502	Banking, Finance and Investment	40,028	2,074,640	888,838	2,586,375	1,638,895	5,114,108
1503	Business and Management	247,911	2,465,539	4,968,515	4,461,847	6,265,542	15,695,904
1504	Commercial Services	22,574	143,485	50,796	39,756	224,912	315,464
1505	Marketing	69,606	2,326,213	1,499,592	1,578,952	1,726,226	4,804,770
1506	Tourism	67,852	429,252	532,459	984,417	834,830	2,351,706
1507	Transportation and Freight Services	39,637	328,093	125,432	136,103	157,072	418,607
1599	Other Commerce, Management, Tourism and Services	15,754	40,072	59,306	33,633	29,009	121,948
<b>16</b>	<b>Studies in Human Society</b>	<b>594,798</b>	<b>5,757,035</b>	<b>16,266,795</b>	<b>13,660,274</b>	<b>15,308,527</b>	<b>45,235,596</b>
1601	Anthropology	161,027	1,060,535	1,612,321	857,829	1,008,340	3,478,490
1602	Criminology	96,605	686,975	1,105,600	937,473	664,460	2,707,533
1603	Demography	57,256	1,147,588	302,609	315,844	910,299	1,528,752
1604	Human Geography	48,933	572,243	804,200	523,093	694,136	2,021,429
1605	Policy and Administration	146,973	3,195,807	3,824,326	3,377,267	4,403,079	11,604,672
1606	Political Science	90,769	947,743	2,162,136	1,169,825	1,726,873	5,058,834
1607	Social Work	140,799	1,292,087	2,767,129	1,521,293	1,978,711	6,267,133
1608	Sociology	157,618	1,971,440	2,693,376	3,921,756	3,188,132	9,803,264
1699	Other Studies in Human Society	36,459	1,317,998	995,098	1,035,894	734,497	2,765,489
<b>17</b>	<b>Psychology and Cognitive Sciences</b>	<b>495,368</b>	<b>4,012,893</b>	<b>9,643,718</b>	<b>10,000,731</b>	<b>8,031,067</b>	<b>27,675,516</b>
1701	Psychology	448,489	3,584,282	9,098,461	9,209,202	7,809,951	26,117,614
1702	Cognitive Science	29,972	423,886	286,753	791,529	221,116	1,299,398
1799	Other Psychology and Cognitive Sciences	15,555	177,306	258,504	0	0	258,504
<b>18</b>	<b>Law and Legal Studies</b>	<b>124,385</b>	<b>946,907</b>	<b>2,260,624</b>	<b>2,086,478</b>	<b>2,346,422</b>	<b>6,693,524</b>
1801	Law	124,385	946,907	2,202,969	2,034,781	2,346,422	6,584,172
1802	Maori Law	0	0	0	0	0	0
1899	Other Law and Legal Studies	54,676	106,569	57,655	51,697	0	109,352

Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>19</b>	<b>Studies in Creative Arts and Writing</b>	<b>108,785</b>	<b>1,534,802</b>	<b>2,324,331</b>	<b>1,653,657</b>	<b>2,102,342</b>	<b>6,080,330</b>
1901	Art Theory and Criticism	38,900	250,650	145,136	137,139	138,257	420,532
1902	Film, Television and Digital Media	36,054	82,097	249,626	208,014	60,392	518,032
1903	Journalism and Professional Writing	24,367	41,724	37,589	5,435	92,098	135,122
1904	Performing Arts and Creative Writing	48,734	789,962	897,007	720,877	613,752	2,231,636
1905	Visual Arts and Crafts	44,249	1,244,091	983,184	543,834	1,192,145	2,719,163
1999	Other Studies in Creative Arts and Writing	11,550	37,642	11,789	38,358	5,698	55,845
<b>20</b>	<b>Language, Communication and Culture</b>	<b>135,430</b>	<b>1,728,160</b>	<b>3,537,869</b>	<b>3,329,383</b>	<b>5,242,385</b>	<b>12,109,637</b>
2001	Communication and Media Studies	38,236	649,758	564,039	496,862	1,160,536	2,221,437
2002	Cultural Studies	70,585	881,430	1,548,027	1,107,458	1,534,727	4,190,212
2003	Language Studies	16,585	764,355	173,369	109,890	643,492	926,751
2004	Linguistics	19,920	704,733	863,499	722,292	936,941	2,522,732
2005	Literary Studies	82,070	640,598	372,806	852,990	862,065	2,087,861
2099	Other Language, Communication and Culture	37,642	69,581	16,129	39,891	104,624	160,644
<b>21</b>	<b>History and Archaeology</b>	<b>145,671</b>	<b>10,667,999</b>	<b>7,147,010</b>	<b>5,501,338</b>	<b>9,888,806</b>	<b>22,537,154</b>
2101	Archaeology	147,498	8,134,970	2,232,585	3,960,400	7,384,681	13,577,666
2102	Curatorial and Related Studies	31,882	490,343	352,205	261,144	286,127	899,476
2103	Historical Studies	59,690	2,533,030	4,542,519	1,279,794	2,217,056	8,039,369
2199	Other History and Archaeology	10,321	19,701	19,701	0	942	20,643
<b>22</b>	<b>Philosophy and Religious Studies</b>	<b>125,640</b>	<b>5,638,249</b>	<b>3,479,716</b>	<b>2,587,573</b>	<b>3,834,360</b>	<b>9,901,649</b>
2201	Applied Ethics	21,134	211,606	170,336	140,233	150,866	461,435
2202	History and Philosophy of Specific Fields	8,152	120,240	0	47,103	89,442	136,545
2203	Philosophy	14,019	336,757	333,318	190,323	367,803	891,444
2204	Religion and Religious Studies	111,222	5,638,249	2,976,062	2,209,914	3,226,249	8,412,225
2299	Other Philosophy and Religious Studies	0	0	0	0	0	0
<b>Total</b>					<b>74,239,505</b>	<b>87,619,712</b>	<b>239,310,646</b>

Source: Australian Research Council, ERA 2012 National Report.

Note: Median and maximum income are based on total research income over the three-year period.

Table A6.5 HERDC Category 3: Industry and other research income—International A, by year, 2008–10

Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>12</b>	<b>Built Environment and Design</b>	<b>106,826</b>	<b>2,090,076</b>	<b>790,171</b>	<b>1,146,040</b>	<b>1,146,283</b>	<b>3,082,494</b>
1201	Architecture	54,049	118,042	41,659	103,971	200,330	345,960
1202	Building	11,106	41,252	5,829	6,658	44,950	57,437
1203	Design Practice and Management	152,978	152,978	7,538	326,026	29,870	363,434
1204	Engineering Design	0	0	0	0	0	0
1205	Urban and Regional Planning	75,221	2,036,027	735,145	709,385	871,133	2,315,663
1299	Other Built Environment and Design	0	0	0	0	0	0
<b>13</b>	<b>Education</b>	<b>40,534</b>	<b>341,176</b>	<b>178,560</b>	<b>536,849</b>	<b>506,891</b>	<b>1,222,300</b>
1301	Education Systems	17,751	105,187	10,428	206,433	127,656	344,517
1302	Curriculum and Pedagogy	35,323	291,543	54,741	252,242	297,995	604,978
1303	Specialist Studies in Education	23,590	102,848	113,391	78,174	81,240	272,805
1399	Other Education	0	0	0	0	0	0
<b>14</b>	<b>Economics</b>	<b>50,305</b>	<b>1,142,668</b>	<b>129,537</b>	<b>1,677,812</b>	<b>476,193</b>	<b>2,283,542</b>
1401	Economic Theory	45,903	56,683	0	58,006	33,800	91,806
1402	Applied Economics	40,661	1,072,420	126,018	1,478,850	394,400	1,999,268
1403	Econometrics	35,123	42,064	0	55,076	42,064	97,140
1499	Other Economics	6,191	83,208	3,519	85,880	5,929	95,328
<b>15</b>	<b>Commerce, Management, Tourism and Services</b>	<b>47,475</b>	<b>576,851</b>	<b>378,116</b>	<b>646,518</b>	<b>527,452</b>	<b>1,552,086</b>
1501	Accounting, Auditing and Accountability	16,985	91,723	18,817	114,258	63,784	196,859
1502	Banking, Finance and Investment	10,167	83,208	1,738	83,208	20,330	105,276
1503	Business and Management	35,323	347,605	292,354	190,882	334,006	817,242
1504	Commercial Services	12,903	15,082	11,940	963	21,011	33,914
1505	Marketing	18,871	54,316	0	32,226	64,128	96,354
1506	Tourism	86,807	95,822	36,902	144,469	11,336	192,707
1507	Transportation and Freight Services	42,453	42,453	16,365	18,433	7,655	42,453
1599	Other Commerce, Management, Tourism and Services	33,640	62,079	0	62,079	5,202	67,281
<b>16</b>	<b>Studies in Human Society</b>	<b>90,036</b>	<b>1,346,678</b>	<b>977,310</b>	<b>1,763,317</b>	<b>2,131,496</b>	<b>4,872,123</b>
1601	Anthropology	30,265	115,103	73,301	11,241	102,462	187,004
1602	Criminology	41,234	80,938	47,391	0	35,078	82,469
1603	Demography	170,446	325,657	98,574	125,781	116,538	340,893
1604	Human Geography	19,158	95,424	49,592	53,334	23,851	126,777
1605	Policy and Administration	28,871	1,326,830	469,591	642,016	583,798	1,695,405
1606	Political Science	81,709	648,547	130,411	713,658	879,832	1,723,901
1607	Social Work	72,936	134,586	0	73,439	72,433	145,872
1608	Sociology	8,774	183,599	82,692	90,215	257,852	430,759
1699	Other Studies in Human Society	43,671	88,781	25,758	53,633	59,652	139,043
<b>17</b>	<b>Psychology and Cognitive Sciences</b>	<b>48,120</b>	<b>1,225,879</b>	<b>1,851,213</b>	<b>1,407,640</b>	<b>1,199,503</b>	<b>4,458,356</b>
1701	Psychology	48,120	845,083	1,400,693	1,129,758	1,038,472	3,568,923
1702	Cognitive Science	141,949	417,789	450,520	277,882	161,031	889,433
1799	Other Psychology and Cognitive Sciences	0	0	0	0	0	0
<b>18</b>	<b>Law and Legal Studies</b>	<b>32,403</b>	<b>2,951,500</b>	<b>2,636,919</b>	<b>367,862</b>	<b>1,010,266</b>	<b>4,015,047</b>
1801	Law	32,403	2,951,501	2,636,919	305,783	1,010,266	3,952,968
1802	Maori Law	0	0	0	0	0	0
1899	Other Law and Legal Studies	62,079	62,079	0	62,079	0	62,079

Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>19</b>	<b>Studies in Creative Arts and Writing</b>	<b>11,717</b>	<b>146,879</b>	<b>35,602</b>	<b>285,015</b>	<b>6,694</b>	<b>327,311</b>
1901	Art Theory and Criticism	7,983	90,223	33,504	69,112	0	102,616
1902	Film, Television and Digital Media	7,323	7,323	0	7,323	0	7,323
1903	Journalism and Professional Writing	3,020	129,317	2,098	130,239	765	133,102
1904	Performing Arts and Creative Writing	36,973	64,368	0	73,947	0	73,947
1905	Visual Arts and Crafts	5,161	5,929	0	4,394	5,929	10,323
1999	Other Studies in Creative Arts and Writing	0	0	0	0	0	0
<b>20</b>	<b>Language, Communication and Culture</b>	<b>58,408</b>	<b>567,908</b>	<b>965,989</b>	<b>838,369</b>	<b>553,082</b>	<b>2,357,440</b>
2001	Communication and Media Studies	20,755	20,891	1,496	41,646	0	43,142
2002	Cultural Studies	20,142	68,069	29,175	105,325	65,207	199,707
2003	Language Studies	18,371	46,166	21,700	49,026	84,862	155,588
2004	Linguistics	58,408	429,611	409,706	539,004	230,758	1,179,468
2005	Literary Studies	20,755	150,264	158,175	20,755	117,166	296,096
2099	Other Language, Communication and Culture	241,720	477,831	345,737	82,613	55,089	483,439
<b>21</b>	<b>History and Archaeology</b>	<b>37,349</b>	<b>1,068,678</b>	<b>529,945</b>	<b>741,747</b>	<b>418,575</b>	<b>1,690,267</b>
2101	Archaeology	73,651	1,004,310	365,270	617,177	415,610	1,398,057
2102	Curatorial and Related Studies	13,274	13,274	0	13,274	0	13,274
2103	Historical Studies	9,717	154,958	164,675	111,296	2,965	278,936
2199	Other History and Archaeology	0	0	0	0	0	0
<b>22</b>	<b>Philosophy and Religious Studies</b>	<b>76,859</b>	<b>186,585</b>	<b>6,898</b>	<b>310,103</b>	<b>213,497</b>	<b>530,498</b>
2201	Applied Ethics	4,484	6,794	6,029	0	2,940	8,969
2202	History and Philosophy of Specific Fields	5,888	26,768	0	25,624	13,685	39,309
2203	Philosophy	50,091	142,089	0	231,093	71,878	302,971
2204	Religion and Religious Studies	89,624	177,445	869	53,386	124,994	179,249
2299	Other Philosophy and Religious Studies	0	0	0	0	0	0
<b>Total</b>					<b>9,721,272</b>	<b>8,189,932</b>	<b>26,391,464</b>

Source: ARC, ERA 2012 National Report.

Note: Median and maximum income are based on total research income over the three-year period.



Table A6.6 HERDC Category 3: Industry and other research income—International B, by year, 2008–10

Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>12</b>	<b>Built Environment and Design</b>	<b>159,225</b>	<b>1,270,456</b>	<b>954,361</b>	<b>1,440,794</b>	<b>3,378,244</b>	<b>5,773,399</b>
1201	Architecture	84,686	690,470	102,807	596,849	1,423,918	2,123,574
1202	Building	193,243	763,255	556,429	445,716	939,670	1,941,815
1203	Design Practice and Management	12,349	219,372	94,759	117,517	236,257	448,533
1204	Engineering Design	31,749	31,749	4,360	7,919	19,470	31,749
1205	Urban and Regional Planning	76,151	315,787	168,818	272,793	758,929	1,200,540
1299	Other Built Environment and Design	27,188	27,188	27,188	0	0	27,188
<b>13</b>	<b>Education</b>	<b>219,630</b>	<b>2,799,979</b>	<b>2,483,005</b>	<b>2,615,406</b>	<b>9,596,305</b>	<b>14,694,716</b>
1301	Education Systems	80,091	924,088	553,567	332,167	2,430,288	3,316,022
1302	Curriculum and Pedagogy	91,222	929,513	512,105	295,065	2,272,288	3,079,458
1303	Specialist Studies in Education	111,457	2,233,208	883,874	1,917,557	4,617,289	7,418,720
1399	Other Education	131,940	510,076	533,459	70,617	276,440	880,516
<b>14</b>	<b>Economics</b>	<b>329,192</b>	<b>2,792,378</b>	<b>2,124,942</b>	<b>2,909,335</b>	<b>6,330,343</b>	<b>11,364,620</b>
1401	Economic Theory	28,217	137,033	102,594	85,587	73,160	261,341
1402	Applied Economics	246,070	1,910,531	1,612,723	2,091,165	4,937,281	8,641,169
1403	Econometrics	121,685	874,891	408,055	717,641	478,835	1,604,531
1499	Other Economics	99,544	651,534	1,570	14,942	841,067	857,579
<b>15</b>	<b>Commerce, Management, Tourism and Services</b>	<b>442,717</b>	<b>4,220,009</b>	<b>4,133,561</b>	<b>5,437,786</b>	<b>13,089,183</b>	<b>22,660,530</b>
1501	Accounting, Auditing and Accountability	111,645	475,772	149,074	447,346	2,061,640	2,658,060
1502	Banking, Finance and Investment	34,282	522,285	481,376	194,587	1,073,019	1,748,982
1503	Business and Management	188,592	1,044,141	893,782	1,463,512	4,715,973	7,073,267
1504	Commercial Services	36,582	108,642	17,030	9,238	195,016	221,284
1505	Marketing	114,638	3,882,322	2,352,357	2,804,190	3,951,318	9,107,865
1506	Tourism	169,226	386,344	170,716	394,910	809,980	1,375,606
1507	Transportation and Freight Services	15,896	23,713	0	10,659	21,134	31,793
1599	Other Commerce, Management, Tourism and Services	443,673	443,673	69,226	113,344	261,103	443,673
<b>16</b>	<b>Studies in Human Society</b>	<b>229,452</b>	<b>4,147,478</b>	<b>5,389,038</b>	<b>4,708,629</b>	<b>10,340,572</b>	<b>20,438,239</b>
1601	Anthropology	37,705	938,598	564,344	450,919	522,649	1,537,912
1602	Criminology	68,797	201,989	19,338	119,215	390,005	528,558
1603	Demography	171,671	478,022	286,171	213,693	324,753	824,617
1604	Human Geography	33,224	208,247	127,242	21,093	436,274	584,609
1605	Policy and Administration	29,826	1,133,918	600,583	1,476,391	1,638,842	3,715,816
1606	Political Science	253,117	2,245,882	3,175,650	1,020,451	3,942,906	8,139,007
1607	Social Work	6,972	303,018	149,995	221,831	358,045	729,871
1608	Sociology	56,729	940,572	429,430	1,106,883	2,294,685	3,830,998
1699	Other Studies in Human Society	66,337	345,959	36,285	78,153	432,413	546,851
<b>17</b>	<b>Psychology and Cognitive Sciences</b>	<b>199,411</b>	<b>2,121,426</b>	<b>2,226,179</b>	<b>2,712,112</b>	<b>4,839,365</b>	<b>9,777,656</b>
1701	Psychology	183,739	1,455,464	1,827,966	2,063,171	3,594,750	7,485,887
1702	Cognitive Science	33,745	1,658,940	398,213	648,941	1,044,742	2,091,896
1799	Other Psychology and Cognitive Sciences	199,873	199,873	0	0	199,873	199,873
<b>18</b>	<b>Law and Legal Studies</b>	<b>105,580</b>	<b>767,813</b>	<b>349,420</b>	<b>1,696,868</b>	<b>2,629,986</b>	<b>4,676,274</b>
1801	Law	105,580	767,814	343,423	1,384,166	2,626,981	4,354,570
1802	Maori Law	0	0	0	0	0	0
1899	Other Law and Legal Studies	160,852	309,330	5,997	312,702	3,005	321,704

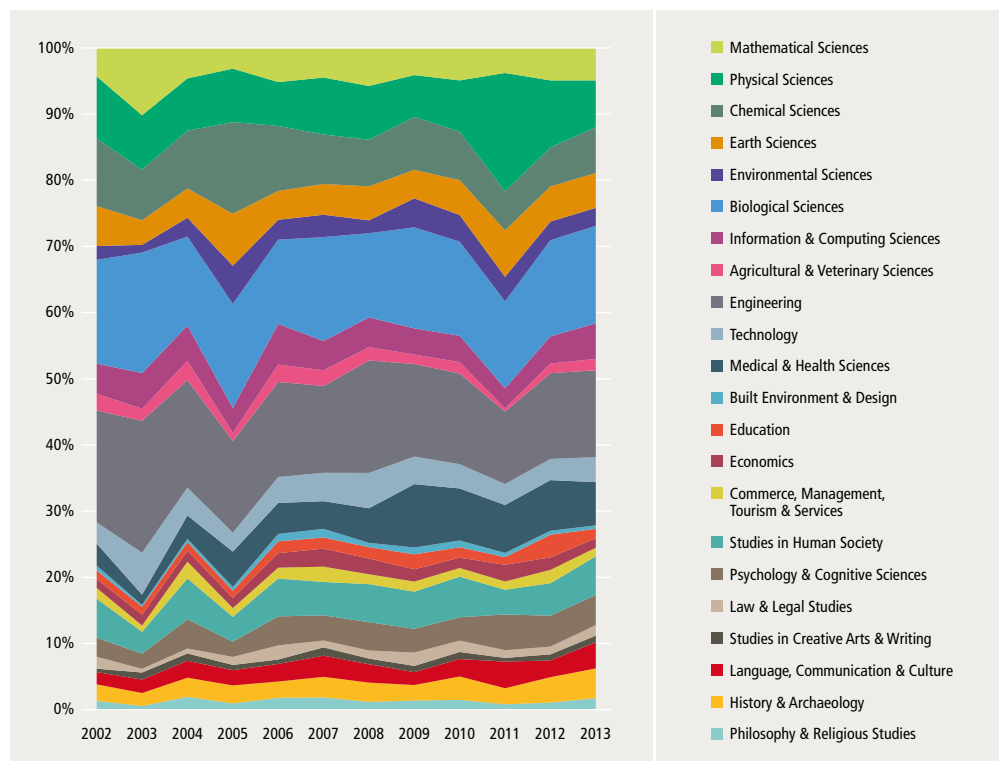
Code	Name	Median Income (\$)	Maximum Income (\$)	2008 Income (\$)	2009 Income (\$)	2010 Income (\$)	Total Income (\$)
<b>19</b>	<b>Studies in Creative Arts and Writing</b>	<b>100,434</b>	<b>747,614</b>	<b>353,116</b>	<b>455,899</b>	<b>2,636,211</b>	<b>3,445,226</b>
1901	Art Theory and Criticism	52,654	160,289	66,970	102,736	181,054	350,760
1902	Film, Television and Digital Media	35,659	291,998	23,351	90,501	463,575	577,427
1903	Journalism and Professional Writing	7,941	228,921	1,090	2,640	265,467	269,197
1904	Performing Arts and Creative Writing	78,762	419,943	168,275	188,425	1,048,805	1,405,505
1905	Visual Arts and Crafts	54,092	247,773	93,430	71,597	602,927	767,954
1999	Other Studies in Creative Arts and Writing	74,383	74,383	0	0	74,383	74,383
<b>20</b>	<b>Language, Communication and Culture</b>	<b>250,683</b>	<b>3,862,702</b>	<b>2,642,359</b>	<b>2,474,193</b>	<b>9,149,014</b>	<b>14,265,566</b>
2001	Communication and Media Studies	102,012	970,347	448,041	572,638	1,478,857	2,499,536
2002	Cultural Studies	73,887	324,966	416,261	373,303	887,589	1,677,153
2003	Language Studies	158,268	382,960	192,233	182,038	876,036	1,250,307
2004	Linguistics	196,122	885,434	301,479	205,439	2,696,286	3,203,204
2005	Literary Studies	128,451	744,594	609,040	396,379	1,051,284	2,056,703
2099	Other Language, Communication and Culture	1,789,332	3,093,258	675,305	744,396	2,158,962	3,578,663
<b>21</b>	<b>History and Archaeology</b>	<b>55,509</b>	<b>865,536</b>	<b>486,708</b>	<b>884,410</b>	<b>1,375,106</b>	<b>2,746,224</b>
2101	Archaeology	43,535	474,815	275,997	225,945	672,863	1,174,805
2102	Curatorial and Related Studies	15,434	153,278	21,301	126,242	73,307	220,850
2103	Historical Studies	27,057	390,720	189,410	532,223	628,936	1,350,569
2199	Other History and Archaeology	0	0	0	0	0	0
<b>22</b>	<b>Philosophy and Religious Studies</b>	<b>40,418</b>	<b>510,268</b>	<b>137,277</b>	<b>472,188</b>	<b>1,123,142</b>	<b>1,732,607</b>
2201	Applied Ethics	47,257	68,531	33,161	47,162	111,940	192,263
2202	History and Philosophy of Specific Fields	30,573	152,055	1,090	89,490	130,665	221,245
2203	Philosophy	84,941	358,214	58,448	304,596	705,877	1,068,921
2204	Religion and Religious Studies	8,577	138,536	44,578	30,940	174,660	250,178
2299	Other Philosophy and Religious Studies	0	0	0	0	0	0
<b>Total</b>					<b>25,807,620</b>	<b>64,487,471</b>	<b>111,575,057</b>

Source: ARC, ERA 2012 National Report.

Note: Median and maximum income are based on total research income over the three-year period.

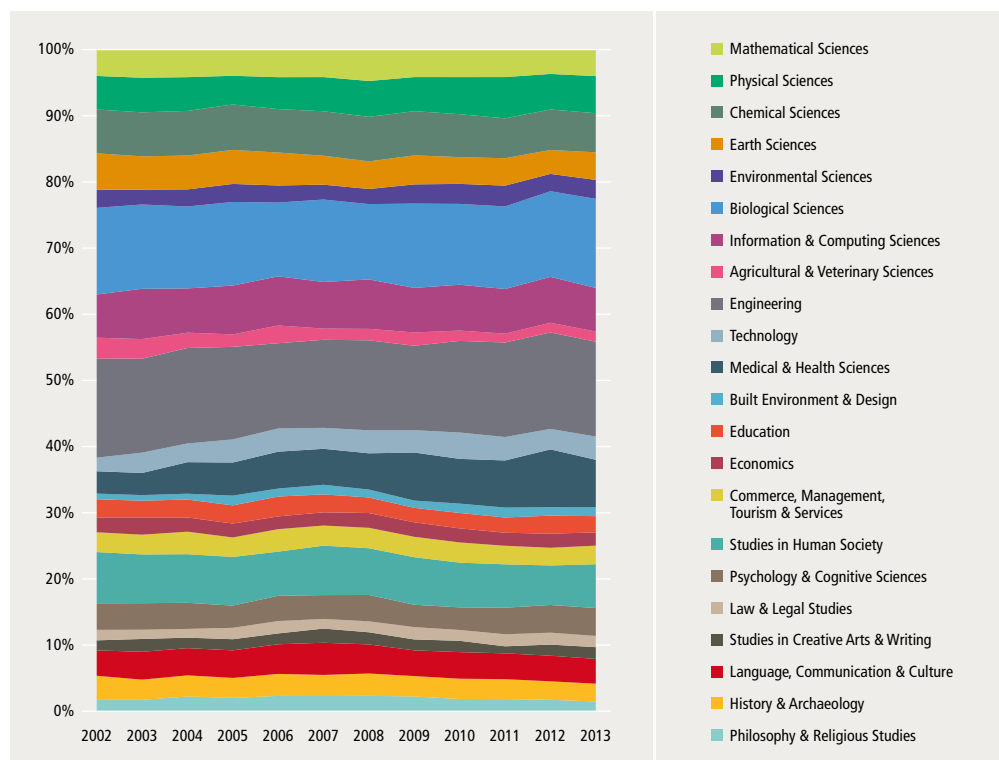
### Australian Research Council (ARC) National Competitive Grants Programme (NCGP)

**Figure A6.2 ARC National Competitive Grants Programme funding awarded, by two-digit field of research, 2002–13**



Source: ARC presentations [http://www.arc.gov.au/media/arc\\_presentations.htm](http://www.arc.gov.au/media/arc_presentations.htm)

**Figure A6.3 ARC National Competitive Grants Programme proposals received, by two-digit field of research, 2002–13**



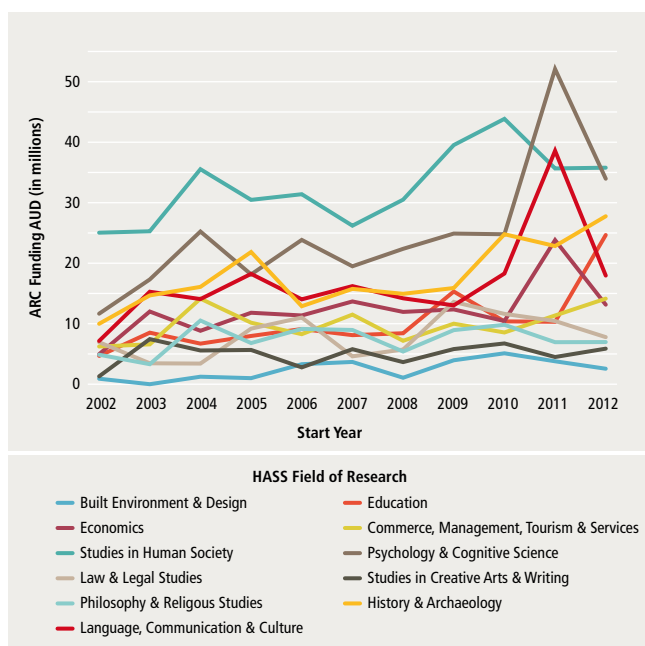
Source: ARC presentations [http://www.arc.gov.au/media/arc\\_presentations.htm](http://www.arc.gov.au/media/arc_presentations.htm)

Table A6.7 Types of Australian universities by Moodie Classification

ATN-like	Group of Eight	1960s–1970s	New generation	Regional
Curtin University	Australian National University	Deakin University	Australian Catholic University	Ballarat University[ now Federation]
Queensland University of Technology	Monash University	Flinders University	Bond University	Central Queensland University
RMIT University	University of Adelaide	Griffith University	University of Canberra	Charles Darwin University
Swinburne University	University of Melbourne	La Trobe University	Edith Cowan University	James Cook University
University of South Australia	University of New South Wales	Macquarie University	University of Notre Dame	University of the Sunshine Coast
University of Technology, Sydney	University of Queensland	Murdoch University	Victoria University	Southern Cross University
	University of Sydney	University of Newcastle	University of Western Sydney	University of Tasmania
	University of Western Australia	University of Wollongong		University of New England
				University of Southern Queensland

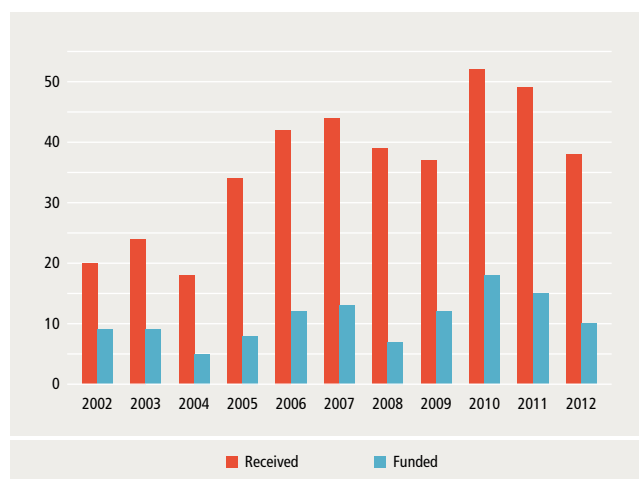
Source: Developed by Gavin Moodie, [http://www.academia.edu/310547/Types\\_of\\_Australian\\_universities](http://www.academia.edu/310547/Types_of_Australian_universities)

Figure A6.4 ARC National Competitive Grants Programme funding awarded for HASS, by two-digit field of research, by funding commencement year, by year, 2002–12



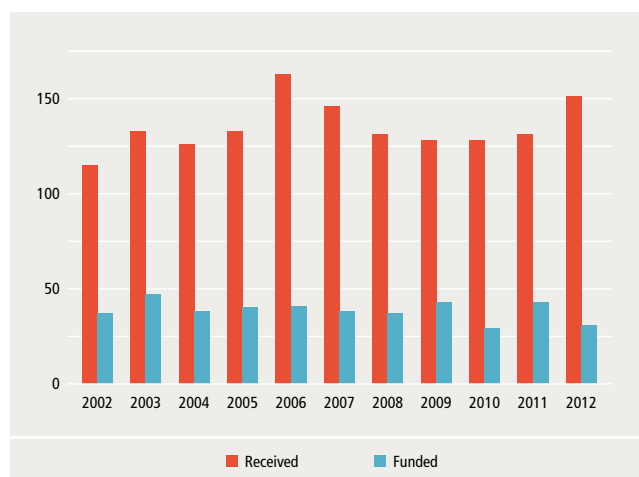
Source: ARC, customised data.  
Note: Data is adjusted to 2012 equivalent dollars.

Figure A6.5 Number of ARC National Competitive Grants Programme applications received and number funded, Built Environment and Design, by year, 2002–12



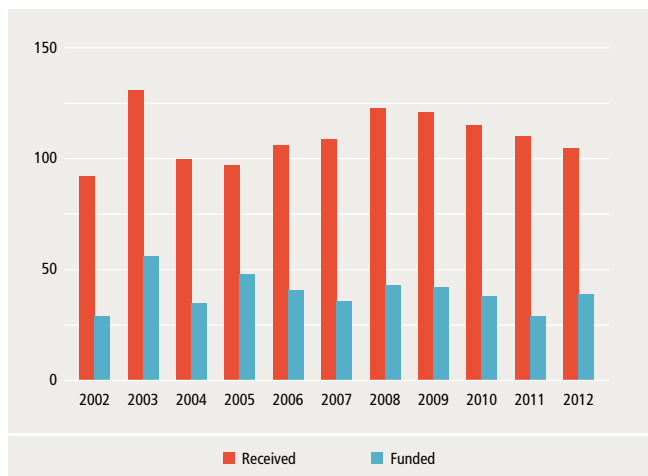
Source: ARC, customised data.

Figure A6.6 Number of ARC National Competitive Grants Programme applications received and number funded, Education, by year, 2002–12



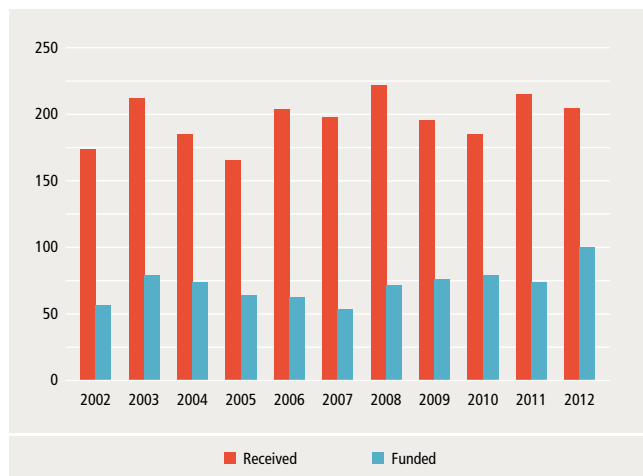
Source: ARC, customised data.

**Figure A6.7** Number of ARC National Competitive Grants Programme applications received and number funded, Economics, by year, 2002–12



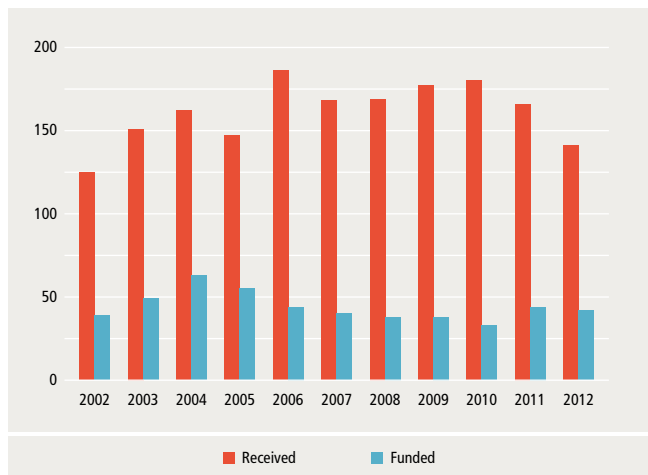
Source: ARC, customised data.

**Figure A6.10** Number of ARC National Competitive Grants Programme applications received and number funded, Psychology and Cognitive Science, by year, 2002–12



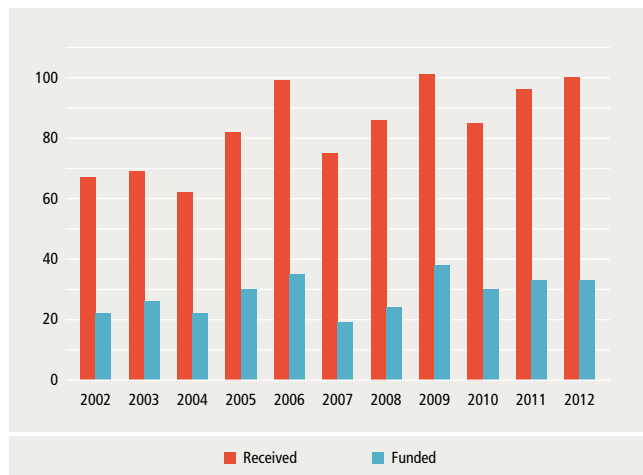
Source: ARC, customised data.

**Figure A6.8** Number of ARC National Competitive Grants Programme applications received and number funded, Management and Commerce, by year, 2002–12



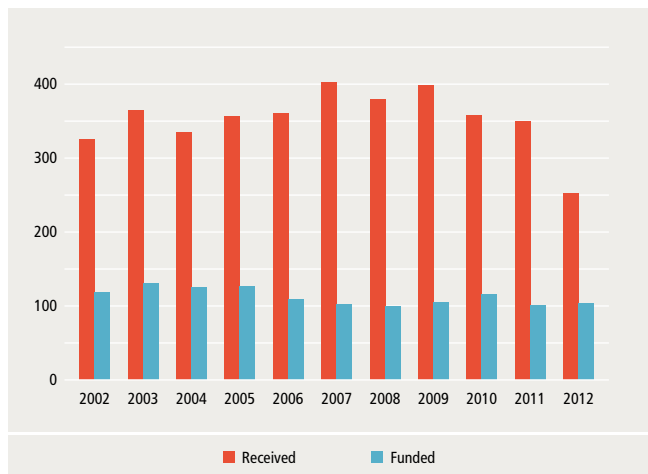
Source: ARC, customised data.

**Figure A6.11** Number of ARC National Competitive Grants Programme applications received and number funded, Law and Legal Studies, by year, 2002–12



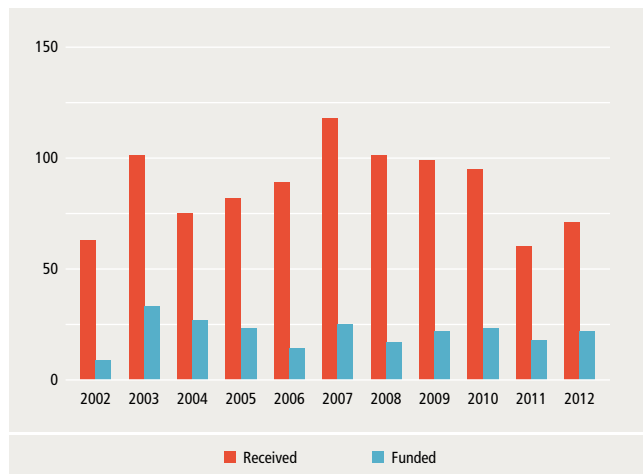
Source: ARC, customised data.

**Figure A6.9** Number of ARC National Competitive Grants Programme applications received and number funded, Studies in Human Society, by year, 2002–12



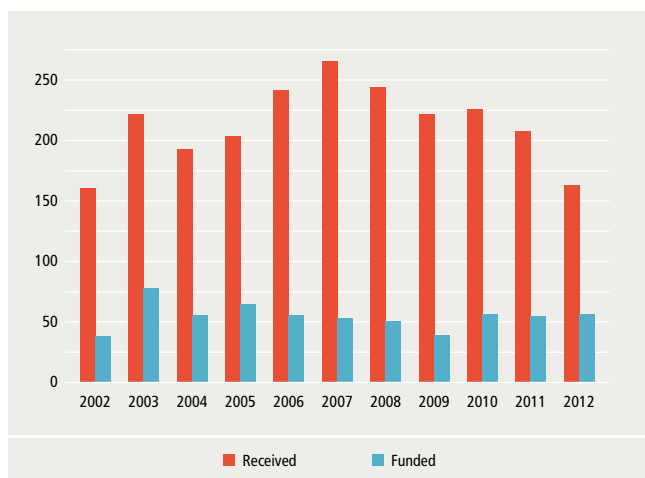
Source: ARC, customised data.

**Figure A6.12** Number of ARC National Competitive Grants Programme applications received and number funded, Studies in Creative Arts and Writing, by year, 2002–12



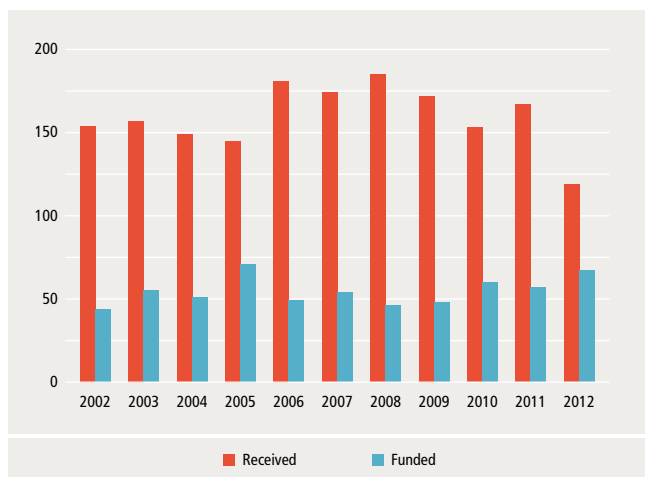
Source: ARC, customised data.

**Figure A6.13** Number of ARC National Competitive Grants Programme applications received and number funded, Language, Communication and Culture, by year, 2002–12



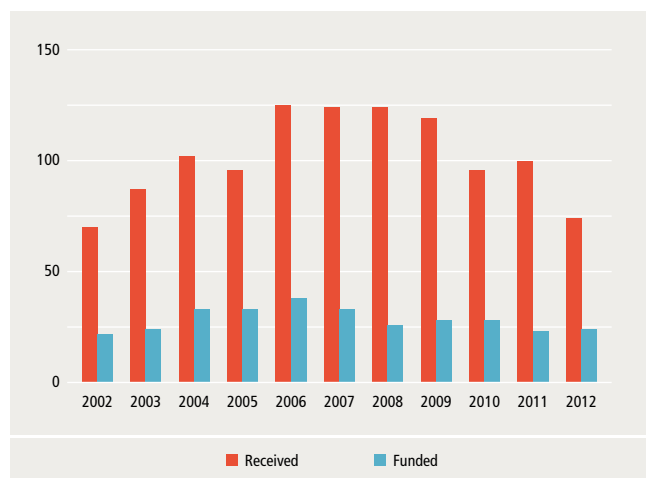
Source: ARC, customised data.

**Figure A6.14** Number of ARC National Competitive Grants Programme applications received and number funded, History and Archaeology, by year, 2002–12



Source: ARC, customised data.

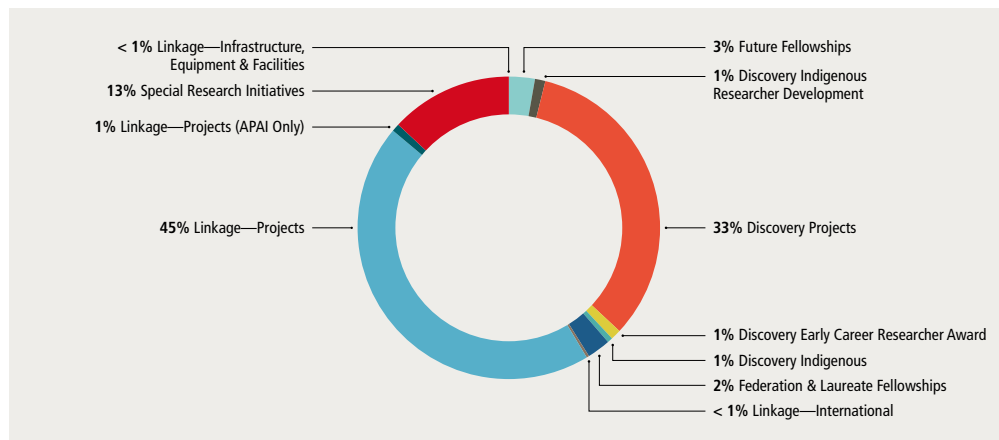
**Figure A6.15** Number of ARC National Competitive Grants Programme applications received and number funded, Philosophy and Religious Studies, by year, 2002–12



Source: ARC, customised data.

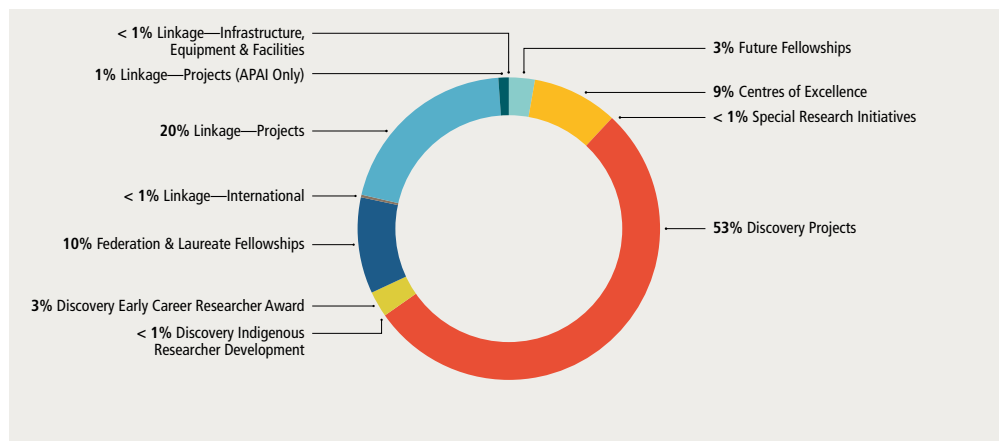


**Figure A6.16 ARC National Competitive Grants Programme funding awarded, by scheme, Education, 2002–12**



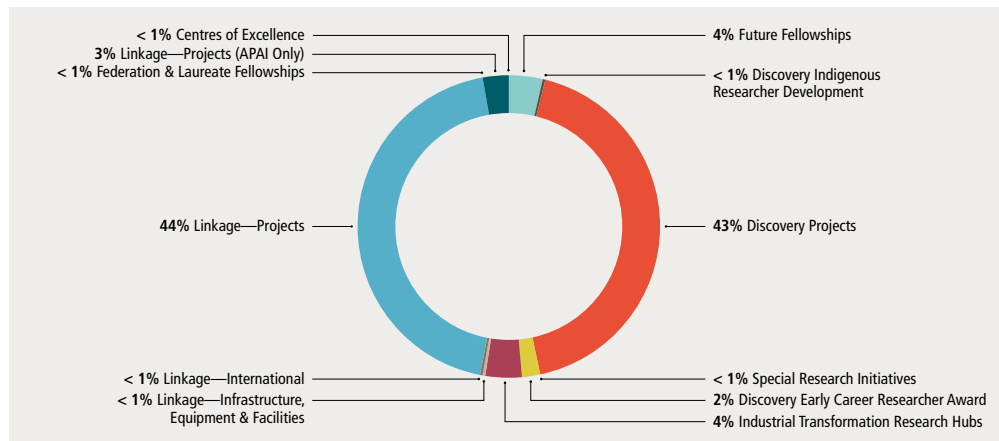
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.17 ARC National Competitive Grants Programme funding awarded, by scheme, Economics, 2002–12**



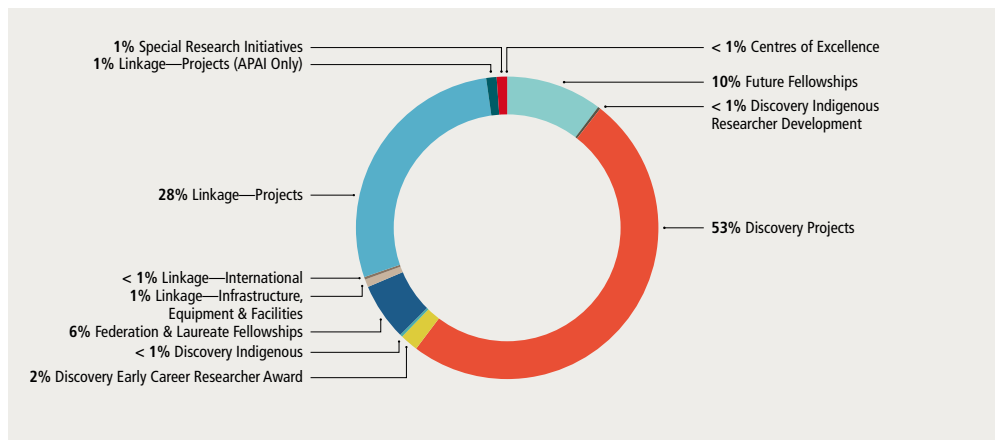
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.18 ARC National Competitive Grants Programme funding awarded, by scheme, Commerce, Management, Tourism and Services, 2002–12**



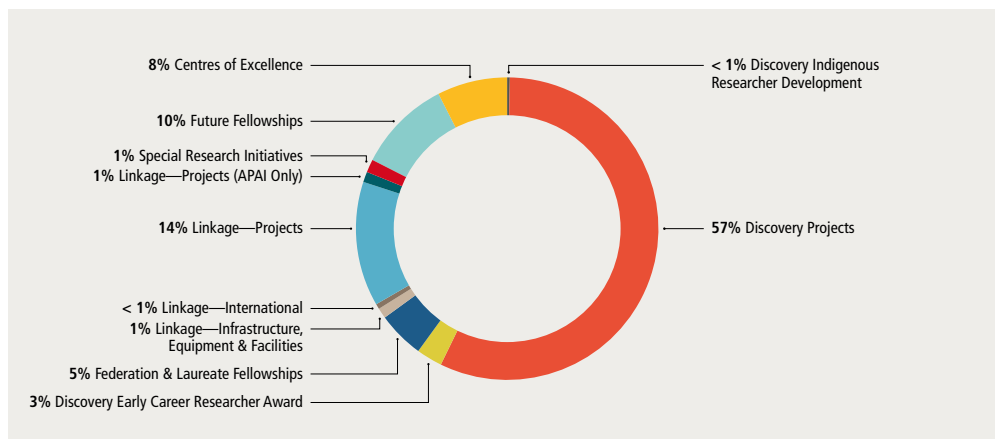
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.19 ARC National Competitive Grants Programme funding awarded, by scheme, Studies in Human Society, 2002–12**



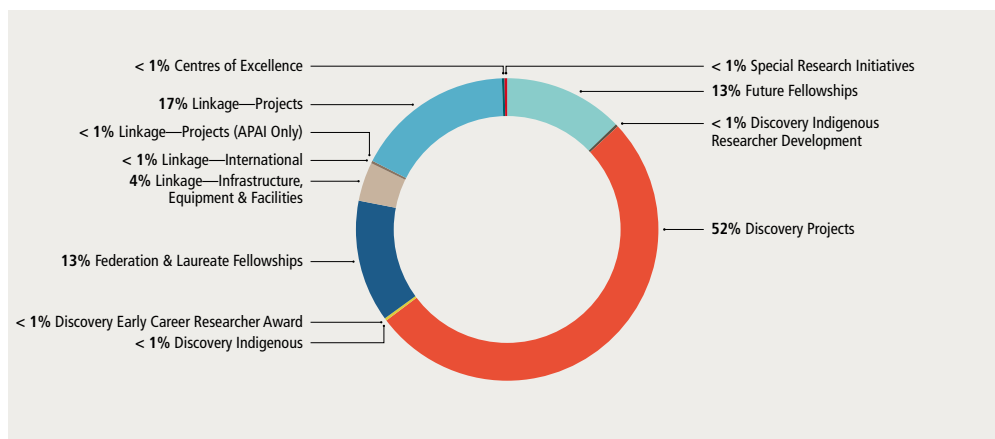
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.20 ARC National Competitive Grants Programme funding awarded, by scheme, Psychology and Cognitive Sciences, 2002–12**



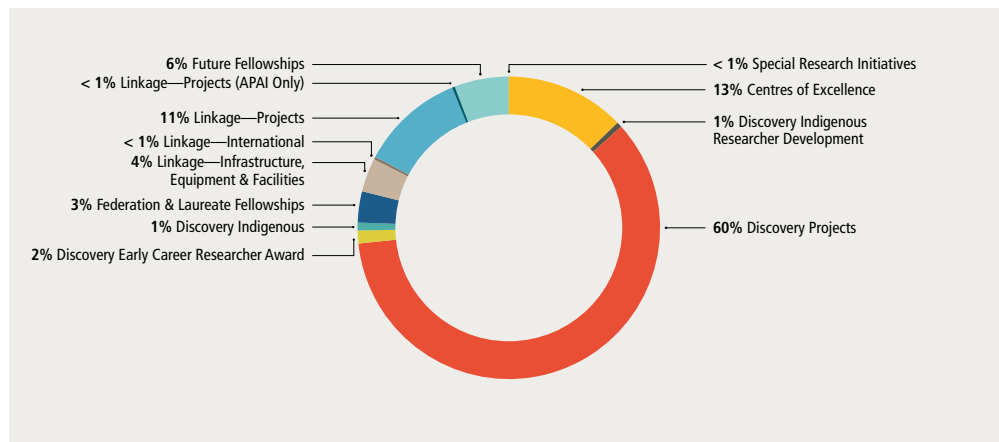
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.21 ARC National Competitive Grants Programme funding awarded, by scheme, Law and Legal Studies, 2002–12**



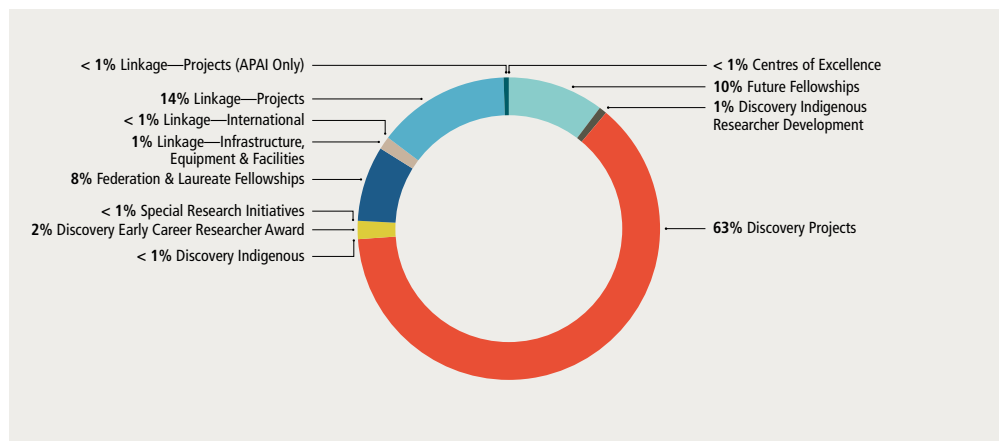
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.22 ARC National Competitive Grants Programme funding awarded, by scheme, Language, Communication and Culture, 2002–12**



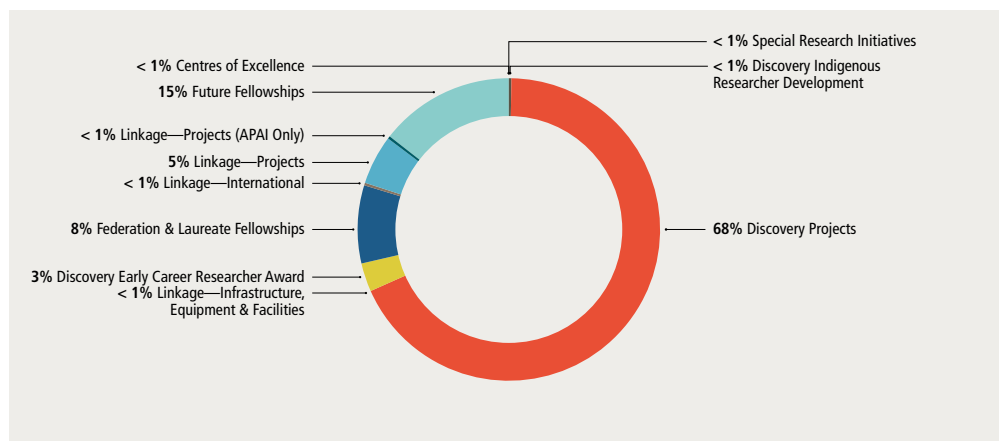
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.23 ARC National Competitive Grants Programme funding awarded, by scheme, History and Archaeology, 2002–12**



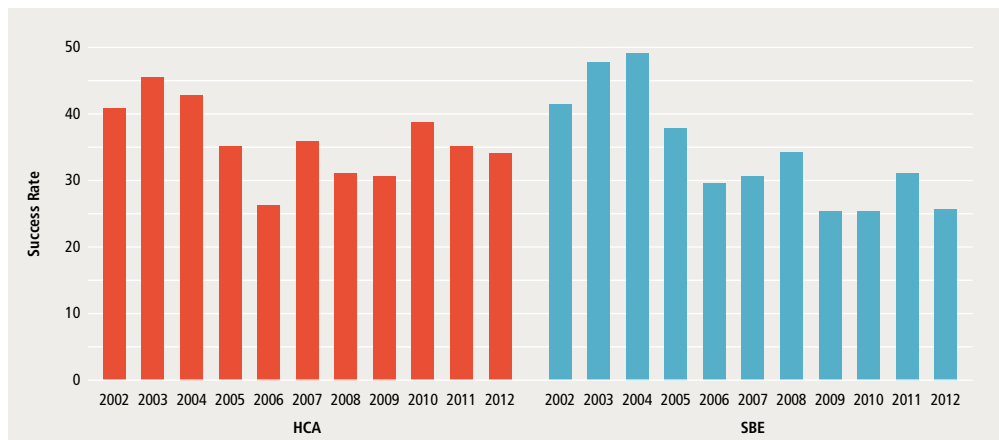
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.24 ARC National Competitive Grants Programme funding awarded, by scheme, Philosophy and Religious Studies, 2002–12**



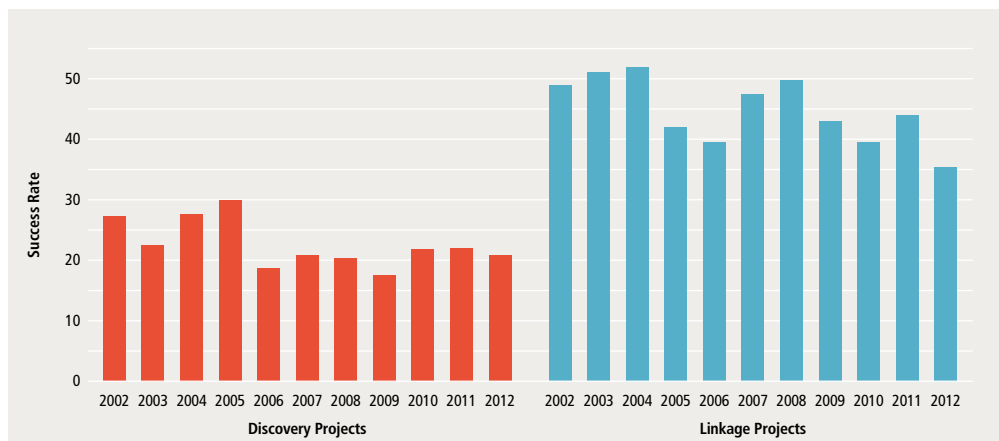
Source: ARC, customised data.  
 Note: Data is adjusted to 2012 equivalent dollars. Only schemes where funding has been awarded are included in the chart. Federation Fellowships and Laureate Fellowships have been aggregated for the purpose of this analysis.

**Figure A6.25 Success rates for all ARC schemes, by Humanities and Creative Arts (HCA), and Social, Behavioural and Economic Sciences (SBE), by year, 2002–12**



Source: ARC, customised data.

**Figure A6.26 Success rates for HASS in ARC Discovery and Linkage Projects, by year, 2002–12**



Source: ARC, customised data.

Table A6.8 Success rates for ARC Discovery Projects, by field of research (four-digit), by year, 2002–12

Field of Research (4-digit level)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
[1201] Architecture	57	22	17	17	15	31	26	12	21	25	18
[1205] Urban and Regional Planning	0	14	40	0	0	12	0	33	33	22	15
[1301] Education Systems	12	7	40	12	20	1	18	29	6	12	7
[1302] Curriculum and Pedagogy	25	32	40	31	21	17	21	35	20	28	19
[1303] Specialist Studies in Education	21	24	8	19	17	16	23	25	8	30	7
[1399] Other Education	0	0	0	0	0	0	0	0	0	0	0
[1401] Economic Theory	20	18	12	82	33	27	43	0	21	22	38
[1402] Applied Economics	23	26	35	45	31	24	29	30	29	15	27
[1403] Econometrics	29	37	19	33	58	40	56	67	57	44	29
[1499] Other Economics	100	0	0	33	40	33	0	0	43	0	0
[1501] Accounting, Auditing and Accountability	27	33	30	40	33	9	44	0	0	33	20
[1502] Banking, Finance and Investment	25	43	30	33	23	27	19	12	22	14	42
[1503] Business and Management	27	15	16	15	10	13	4	11	15	16	18
[1504] Commercial Services	0	50	33	0	0	0	0	0	100	0	0
[1505] Marketing	25	60	22	33	30	10	44	33	18	33	0
[1506] Tourism	0	0	0	0	0	0	0	0	50	0	25
[1507] Transportation and Freight Services	100	0	33	33	0	38	25	0	0	50	29
1599 Other Commerce, Management, Tourism and Services	0	0	0	0	0	0	0	0	0	0	0
[1601] Anthropology	38	29	27	35	34	22	35	16	23	10	41
[1602] Criminology	60	17	67	44	17	36	35	25	33	20	23
[1603] Demography	25	38	89	56	42	29	44	18	33	44	33
[1604] Human Geography	18	17	36	33	17	24	28	4	29	19	20
[1605] Policy and Administration	21	10	10	25	10	5	28	24	15	18	8
[1606] Political Science	33	23	22	33	33	20	15	23	24	10	26
[1607] Social Work	20	17	0	0	0	33	14	20	0	0	0
[1608] Sociology	30	20	27	31	21	17	10	13	24	28	27
[1699] Other Studies in Human Society	40	33	24	28	22	6	18	20	7	11	7
[1701] Psychology	27	31	32	37	30	26	29	33	39	26	29
[1702] Cognitive Sciences	0	0	60	0	33	8	0	25	0	24	47
[1799] Other Psychology and Cognitive Sciences	0	0	0	100	0	0	50	0	0	17	38
[1801] Law	24	22	27	30	32	18	23	28	27	24	21
[1802] Maori Law	0	0	0	0	0	0	25	33	0	0	0
[1899] Other Law and Legal Studies	0	0	0	0	0	0	0	0	0	40	0
[1902] Film, Television and Digital Media	11	44	46	45	10	15	12	27	18	12	25
[1903] Journalism and Professional Writing	0	0	0	33	0	67	20	0	0	0	33
[1904] Performing Arts and Creative Writing	12	15	32	30	35	16	21	16	21	9	22
[1905] Visual Arts and Crafts	0	10	29	20	0	0	0	0	0	50	14
[1999] Other Studies in Creative Arts and Writing	0	0	0	0	0	0	0	0	0	100	0
[2001] Communication and Media Studies	62	56	29	33	18	14	29	22	33	9	12
[2002] Cultural Studies	13	26	25	29	23	9	17	14	16	16	15
[2003] Language Studies	0	14	33	23	0	6	11	12	29	25	14
[2004] Linguistics	20	28	26	22	24	20	17	10	15	23	24
[2005] Literary Studies	24	28	21	36	11	19	18	12	24	33	27
[2099] Other Language, Communication and Culture	100	0	0	0	0	0	0	0	0	17	33
[2101] Archaeology	19	26	31	37	28	52	39	45	38	37	61
[2102] Curatorial and Related Studies	50	0	0	50	0	0	25	25	33	14	40
[2103] Historical Studies	25	27	27	43	27	26	19	16	27	24	27
[2201] Applied Ethics	0	0	25	0	22	27	0	10	22	23	11
[2202] History and Philosophy of Specific Fields	43	19	35	44	27	19	23	30	21	19	27
[2203] Philosophy	21	26	28	31	32	28	22	17	25	18	13
[2204] Religion and Religious Studies	20	33	36	41	29	19	6	24	7	8	29
[2299] Other Philosophy and Religious Studies	0	0	0	0	0	0	0	0	0	0	0

Source: ARC, customised data.

Note: Success rate is research applications funded as a percentage of applications received.

Table A6.9 ARC National Competitive Grants Programme funding awarded, by university type, by field of research (two-digit), 2002–13

	1960s–1970s		ATN-like		Group of Eight		New Generation		Regional		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Built Environment and Design	8,273,797	21	12,975,060	32	18,037,341	45	805,691	2	246,201	1	40,338,090	100
Education	21,784,287	19	25,456,822	22	48,952,969	42	8,714,531	7	11,295,570	10	116,204,179	100
Economics	4,798,522	3	15,358,329	10	126,567,056	83	3,556,820	2	1,472,427	1	151,753,154	100
Commerce, Management, Tourism and Services	17,752,878	14	31,399,510	25	68,540,353	55	3,335,463	3	4,485,161	4	125,513,366	100
Studies in Human Society	73,624,734	19	33,836,493	9	256,789,356	65	14,490,207	4	18,431,373	5	397,172,163	100
Psychology and Cognitive Sciences	77,921,617	26	15,346,652	5	192,569,276	63	13,524,203	4	6,156,393	2	305,518,140	100
Law and Legal Studies	11,317,303	11	10,524,217	10	77,318,345	72	3,164,181	3	4,968,184	5	107,292,230	100
Studies in Creative Arts and Writing	11,548,980	16	5,856,167	8	47,876,338	67	2,528,831	4	3,761,968	5	71,572,284	100
Language, Communication and Culture	32,051,883	15	26,568,555	12	136,225,926	62	14,981,872	7	10,301,458	5	220,129,694	100
History and Archaeology	48,845,376	21	5,567,184	2	167,608,475	72	3,006,491	1	8,323,222	4	233,350,748	100
Philosophy and Religious Studies	16,144,967	16	741,926	1	76,678,045	76	3,129,520	3	4,673,759	5	101,368,217	100
<b>Total</b>	<b>324,064,345</b>		<b>183,630,915</b>		<b>1,217,163,479</b>		<b>71,237,810</b>		<b>74,115,716</b>		<b>1,870,212,265</b>	

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.

Table A6.10 ARC National Competitive Grants Programme funding awarded, by university type, by select ARC scheme, by year, 2002–13

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Grand Total
<b>1960s–1970s</b>	<b>14,875,801</b>	<b>18,604,688</b>	<b>18,952,093</b>	<b>22,845,532</b>	<b>18,355,640</b>	<b>20,163,456</b>	<b>23,981,966</b>	<b>31,005,150</b>	<b>28,462,452</b>	<b>21,561,934</b>	<b>22,979,842</b>	<b>25,811,429</b>	<b>267,599,984</b>
ARC Future Fellowships								8,462,979	6,468,998	3,437,834	10,054,039	10,775,195	39,199,045
Discovery Projects	11,445,567	12,387,316	13,556,155	17,248,455	12,687,252	12,358,039	19,534,541	15,810,735	16,517,883	13,436,193	8,978,851	12,219,024	166,180,012
Linkage Infrastructure Equipment and Facilities	393,211	1,150,896	256,356	469,998	759,721	343,444	131,528		681,211				4,186,365
Linkage Projects	3,037,023	5,066,476	5,139,582	5,127,078	4,908,667	7,461,973	4,315,897	6,731,436	4,794,360	4,687,908	3,946,952	2,817,210	58,034,562
<b>ATN-like</b>	<b>6,244,129</b>	<b>12,861,420</b>	<b>15,431,567</b>	<b>12,254,330</b>	<b>14,767,205</b>	<b>14,839,619</b>	<b>18,730,003</b>	<b>19,524,547</b>	<b>14,691,544</b>	<b>13,189,481</b>	<b>10,781,618</b>	<b>12,050,988</b>	<b>165,366,451</b>
ARC Future Fellowships								2,117,370	1,330,805	1,814,623	3,171,299	1,536,007	9,970,104
Discovery Projects	2,547,949	6,835,800	6,500,393	4,499,238	6,921,487	7,363,777	10,268,448	7,321,434	7,669,226	6,927,962	3,075,798	5,126,815	75,058,327
LIEF	363,065	998,847	998,847	138,610	945,378	493,231	493,231	351,238	171,877		330,000	214,864	4,007,110
Linkage Projects	3,333,115	6,025,620	7,932,328	7,616,483	6,900,340	7,475,842	7,968,323	9,734,505	5,519,636	4,446,896	4,204,521	5,173,302	76,330,910



Group of Eight	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Grand Total
ARC Future Fellowships	47,171,097	65,422,966	69,493,172	87,656,662	84,180,587	84,630,469	78,463,564	104,274,311	117,692,558	108,959,740	82,653,361	91,442,243	1,022,040,731
Discovery Projects	39,107,813	47,309,758	48,741,088	66,373,650	60,081,863	59,524,982	57,591,570	61,068,128	68,652,167	56,618,020	45,398,785	45,506,492	655,974,314
LIEF	878,172	1,843,221	1,403,357	2,425,887	1,249,448	915,850	1,720,584	1,296,878	1,383,382	1,799,508	660,000	2,192,588	17,768,874
Linkage Projects	7,185,111	16,269,986	19,348,728	18,857,126	22,849,277	24,189,637	19,151,411	21,679,955	20,434,481	20,480,235	13,328,804	19,190,603	222,965,353
<b>New Generation</b>	<b>2,812,460</b>	<b>4,621,660</b>	<b>5,391,150</b>	<b>6,952,144</b>	<b>5,817,867</b>	<b>4,449,535</b>	<b>4,858,064</b>	<b>6,382,565</b>	<b>4,532,558</b>	<b>4,865,059</b>	<b>5,437,459</b>	<b>6,417,160</b>	<b>62,537,681</b>
ARC Future Fellowships										601,680	2,201,836	690,603	3,494,119
Discovery Projects	1,224,500	1,860,766	2,142,025	3,717,706	2,892,648	3,020,389	2,179,661	3,306,500	1,657,906	3,193,062	1,968,788	4,885,674	32,049,625
LIEF		166,056			175,320			221,550	681,211				1,244,137
Linkage Projects	1,587,960	2,594,838	3,249,125	3,234,438	2,749,899	1,429,145	2,678,403	2,854,516	2,193,441	1,070,317	1,266,835	840,883	25,749,800
<b>Regional</b>	<b>5,440,735</b>	<b>7,418,635</b>	<b>4,288,238</b>	<b>6,192,580</b>	<b>6,158,472</b>	<b>6,771,128</b>	<b>4,138,731</b>	<b>3,539,402</b>	<b>3,654,425</b>	<b>5,942,789</b>	<b>5,273,422</b>	<b>6,775,988</b>	<b>65,594,545</b>
ARC Future Fellowships										1,309,411	1,962,650	804,301	4,076,362
Discovery Projects	3,619,448	6,025,694	2,761,204	3,168,607	3,412,559	6,136,902	2,502,901	1,732,413	2,969,518	3,004,201	1,612,751	4,149,909	41,096,106
LIEF											430,000		430,000
Linkage Projects	1,821,287	1,392,941	1,527,034	3,023,973	2,745,913	634,226	1,635,831	1,806,988	684,907	1,629,177	1,268,021	1,821,779	19,992,077
<b>Grand Total</b>	<b>76,544,222</b>	<b>108,929,369</b>	<b>113,556,221</b>	<b>135,901,248</b>	<b>129,279,771</b>	<b>130,854,206</b>	<b>130,172,329</b>	<b>164,725,975</b>	<b>169,033,536</b>	<b>154,519,004</b>	<b>127,125,702</b>	<b>142,497,808</b>	<b>1,583,139,391</b>

Source: ARC, customised data.

Note: Data is adjusted to 2012 equivalent dollars.

Note: Schemes not appearing in the above table did not receive any NCGP funding during the period 2009–12.

Note: Not all schemes were funded across 2002–13. The DECRA scheme has had one selection round each year from 2012; the last selection round for the Federation Fellowships was in 2007 (for funding in 2008), this scheme was superseded by the Australian Laureate Fellowships; the Future Fellowship scheme commenced in 2009; the ARC Research Networks scheme had one selection round for funding commencing in 2005 (networks were funded from 2005–2010). ARC Centres of Excellence were funded in 2003, 2005 and 2011. Two HASS Centres of Excellence were funded during this period but are not included in the data presented in the above table: the Centre of Excellence for Policing and Security, and the Centre for Excellence for Creative Industries and Innovation.

Note: LIEF= Linkage Infrastructure Equipment and Facilities.

## Excellence in Research for Australia (ERA): Units of Evaluation (UoE)

Table A6.11 ERA Assessed Units of Evaluation 2010 and 2012 for all fields of research, four-digit only

Code	Name	2010	2012	Code	Name	2010	2012
<b>01</b>	<b>Mathematical Sciences</b>			<b>07</b>	<b>Agricultural and Veterinary Sciences</b>		
0101	Pure Mathematics	18	17	0701	Agriculture, Land and Farm Management	0	2
0102	Applied Mathematics	17	22	0702	Animal Production	7	6
0103	Numerical and Computational Mathematics	5	5	0703	Crop and Pasture Production	9	11
0104	Statistics	12	10	0704	Fisheries Sciences	5	6
0105	Mathematical Physics	6	6	0705	Forestry Sciences	4	6
0199	Other Mathematical Sciences	0	0	0706	Horticultural Production	3	3
<b>02</b>	<b>Physical Sciences</b>			0707	Veterinary Sciences	8	8
0201	Astronomical and Space Sciences	13	15	0799	Other Agricultural and Veterinary Sciences	0	0
0202	Atomic, Molecular, Nuclear, Particle and Plasma Physics	11	7	<b>08</b>	<b>Information and Computing Sciences</b>		
0203	Classical Physics	1	3	0801	Artificial Intelligence and Image Processing	9	31
0204	Condensed Matter Physics	15	14	0802	Computation Theory and Mathematics	3	7
0205	Optical Physics	12	12	0803	Computer Software	1	10
0206	Quantum Physics	8	9	0804	Data Format	0	2
0299	Other Physical Sciences	5	4	0805	Distributed Computing	1	12
<b>03</b>	<b>Chemical Sciences</b>			0806	Information Systems	6	25
0301	Analytical Chemistry	17	15	0807	Library and Information Studies	3	6
0302	Inorganic Chemistry	12	10	0899	Other Information and Computing Sciences	0	2
0303	Macromolecular and Materials Chemistry	10	10	<b>09</b>	<b>Engineering</b>		
0304	Medicinal and Biomolecular Chemistry	9	9	0901	Aerospace Engineering	1	3
0305	Organic Chemistry	11	10	0902	Automotive Engineering	0	0
0306	Physical Chemistry (Including Structural)	21	23	0903	Biomedical Engineering	8	8
0307	Theoretical and Computational Chemistry	4	3	0904	Chemical Engineering	14	10
0399	Other Chemical Sciences	2	2	0905	Civil Engineering	15	19
<b>04</b>	<b>Earth Sciences</b>			0906	Electrical and Electronic Engineering	18	21
0401	Atmospheric Sciences	3	5	0907	Environmental Engineering	5	5
0402	Geochemistry	9	10	0908	Food Sciences	4	6
0403	Geology	15	15	0909	Geomatic Engineering	3	2
0404	Geophysics	9	7	0910	Manufacturing Engineering	2	2
0405	Oceanography	8	5	0911	Maritime Engineering	0	2
0406	Physical Geography and Environmental Geoscience	13	14	0912	Materials Engineering	18	18
0499	Other Earth Sciences	0	0	0913	Mechanical Engineering	12	18
<b>05</b>	<b>Environmental Sciences</b>			0914	Resources Engineering and Extractive Metallurgy	7	8
0501	Ecological Applications	5	6	0915	Interdisciplinary Engineering	4	4
0502	Environmental Science and Management	19	25	0999	Other Engineering	0	0
0503	Soil Sciences	6	7	<b>10</b>	<b>Technology</b>		
0599	Other Environmental Sciences	0	0	1001	Agricultural Biotechnology	0	1
<b>06</b>	<b>Biological Sciences</b>			1002	Environmental Biotechnology	1	1
0601	Biochemistry and Cell Biology	23	17	1003	Industrial Biotechnology	1	1
0602	Ecology	21	22	1004	Medical Biotechnology	0	2
0603	Evolutionary Biology	11	13	1005	Communications Technologies	2	6
0604	Genetics	14	14	1006	Computer Hardware	0	1
0605	Microbiology	20	17	1007	Nanotechnology	4	5
0606	Physiology	7	5	1099	Other Technology	0	0
0607	Plant Biology	17	20	<b>11</b>	<b>Medical and Health Sciences</b>		
0608	Zoology	19	21	1101	Medical Biochemistry and Metabolomics	4	4
0699	Other Biological Sciences	0	1	1102	Cardiovascular Medicine and Haematology	11	13
				1103	Clinical Sciences	30	28

Code	Name	2010	2012
1104	Complementary and Alternative Medicine	0	1
1105	Dentistry	6	6
1106	Human Movement and Sports Science	19	26
1107	Immunology	11	13
1108	Medical Microbiology	12	11
1109	Neurosciences	17	19
1110	Nursing	23	23
1111	Nutrition and Dietetics	13	8
1112	Oncology and Carcinogenesis	12	11
1113	Ophthalmology and Optometry	7	6
1114	Paediatrics and Reproductive Medicine	14	11
1115	Pharmacology and Pharmaceutical Sciences	19	17
1116	Medical Physiology	12	12
1117	Public Health and Health Services	27	33
1199	Other Medical and Health Sciences	0	4
<b>12</b>	<b>Built Environment and Design</b>		
1201	Architecture	16	16
1202	Building	11	10
1203	Design Practice and Management	8	6
1204	Engineering Design	0	0
1205	Urban and Regional Planning	15	13
1299	Other Built Environment and Design	0	0
<b>13</b>	<b>Education</b>		
1301	Education Systems	32	20
1302	Curriculum and Pedagogy	37	29
1303	Specialist Studies in Education	36	34
1399	Other Education	4	2
<b>14</b>	<b>Economics</b>		
1401	Economic Theory	10	7
1402	Applied Economics	33	30
1403	Econometrics	6	8
1499	Other Economics	6	0
<b>15</b>	<b>Commerce, Management, Tourism and Services</b>		
1501	Accounting, Auditing and Accountability	28	22
1502	Banking, Finance and Investment	19	17
1503	Business and Management	39	36
1504	Commercial Services	8	4
1505	Marketing	29	24
1506	Tourism	24	16
1507	Transportation and Freight Services	1	2
1599	Other Commerce, Management, Tourism and Services	1	5
<b>16</b>	<b>Studies in Human Society</b>		
1601	Anthropology	12	11
1602	Criminology	13	12
1603	Demography	5	2
1604	Human Geography	19	14
1605	Policy and Administration	27	16
1606	Political Science	30	21
1607	Social Work	18	16
1608	Sociology	34	29
1699	Other Studies in Human Society	12	4

Code	Name	2010	2012
<b>17</b>	<b>Psychology and Cognitive Sciences</b>		
1701	Psychology	28	30
1702	Cognitive Sciences	11	7
1799	Other Psychology and Cognitive Sciences	0	0
<b>18</b>	<b>Law and Legal Studies</b>		
1801	Law	35	29
1802	Maori Law	0	0
1899	Other Law and Legal Studies	0	0
<b>19</b>	<b>Studies in Creative Arts and Writing</b>		
1901	Art Theory and Criticism	10	9
1902	Film, Television and Digital Media	21	14
1903	Journalism and Professional Writing	12	8
1904	Performing Arts and Creative Writing	30	24
1905	Visual Arts and Crafts	22	18
1999	Other Studies in Creative Arts and Writing	0	0
<b>20</b>	<b>Language, Communication and Culture</b>		
2001	Communication and Media Studies	19	16
2002	Cultural Studies	30	24
2003	Language Studies	9	4
2004	Linguistics	18	16
2005	Literary Studies	24	19
2099	Other Language, Communication and Culture	0	0
<b>21</b>	<b>History and Archaeology</b>		
2101	Archaeology	11	12
2102	Curatorial and Related Studies	1	1
2103	Historical Studies	31	26
2199	Other History and Archaeology	0	0
<b>22</b>	<b>Philosophy and Religious Studies</b>		
2201	Applied Ethics	8	5
2202	History and Philosophy of Specific Fields	8	6
2203	Philosophy	19	18
2204	Religion and Religious Studies	15	13
2299	Other Philosophy and Religious Studies	0	0

Source: ARC, ERA National Reports 2010 and 2012.

## Excellence in Research for Australia: HASS Institutional Distribution

The institutional spread and concentration of Units of Evaluation (UoEs), i.e. units meeting a volume threshold of research activity, provide some indication of overall research depth, capacity and coverage across fields of research. Below is a brief review of results from the 2012 ERA exercise in terms of HASS UoEs and rating distribution by geographic location. Patterns for the Group of Eight (Go8), research-intensive institutions are shown, and also regional and metropolitan universities (not including the Go8).

The institutional typology employed is as follows (see Appendix 3):

Group of Eight universities	Metropolitan universities (Excluding Group of Eight)	Regional universities
The University of Adelaide	Australian Catholic University	University of Ballarat
The Australian National University	University of Canberra	Batchelor Institute of Indigenous Tertiary Education
The University of Melbourne	Curtin University of Technology	Bond University
Monash University	Deakin University	Charles Darwin University
The University of Queensland	Edith Cowan University	Charles Sturt University
The University of Sydney	Flinders University of South Australia	Central Queensland University
University of New South Wales	Griffith University	James Cook University
The University of Western Australia	La Trobe University	University of New England
	Macquarie University	University of Newcastle
	MCD University of Divinity	Southern Cross University
	Murdoch University	University of the Sunshine Coast
	The University of Notre Dame Australia	University of Southern Queensland
	Queensland University of Technology	University of Wollongong
	RMIT University	
	University of South Australia	
	Swinburne University of Technology	
	University of Tasmania	
	University of Technology, Sydney	
	University of Western Sydney	
	Victoria University	

Table A6.12 Rating scale from ERA 2012

Rating	Descriptor
5	The Unit of Evaluation profile is characterised by evidence of outstanding performance well above world standard presented by the suite of indicators used for evaluation.
4	The Unit of Evaluation profile is characterised by evidence of performance above world standard presented by the suite of indicators used for evaluation.
3	The Unit of Evaluation profile is characterised by evidence of average performance at world standard presented by the suite of indicators used for evaluation.
2	The Unit of Evaluation profile is characterised by evidence of performance below world standard presented by the suite of indicators used for evaluation.
1	The Unit of Evaluation profile is characterised by evidence of performance well below world standard presented by the suite of indicators used for evaluation.
NA	Not assessed due to low volume. The number of research outputs does not meet the volume threshold standard for evaluation in ERA.

Source: ARC, [http://www.arc.gov.au/era/era\\_2012/archive/rating\\_scale.htm](http://www.arc.gov.au/era/era_2012/archive/rating_scale.htm)

The following summary analysis is based on data available in the ERA 2012 National Report.

### 12 Built Environment and Design

- » 33 of 45 UoEs were rated at or above world standard (73.3%).
- » Urban and Regional Planning was the standout with 12 of its 13 UoEs at or above world standard (92.3%). This FoR has 30.9% of staff producing 24.1% of outputs.
- » There were no Urban and Regional Planning UoEs (meeting the volume threshold for assessment) at regional universities.
- » There were three UoEs at regional universities: Architecture rated a '3' at Newcastle University, Building also a '3' at Newcastle, and a '2' at Bond University.

Table A6.13 Staff FTE, by research outputs, Architecture and Building, ERA 2012

Field of Research (FoR)	Number and Percentage of Staff Full-Time Equivalent (FTE)	Number of Research Outputs
1201 Architecture	296.5 (30.94%)	2,613.2 (33%)
1202 Building	129.9 (13.55%)	1,651.5 (20.82%)
1203 Design Practice and Management	207.3 (21.62%)	1,412.4 (17.81%)
1204 Engineering Design	8.9 (0.93%)	79.8 (1%)
1205 Urban and Regional Planning	180.6 (18.84%)	1,907.9 (24.05%)
1299 Other Built Environment and Design	135.2 (14.10%)	265.4 (3.35%)
<b>Total</b>	<b>958.4</b>	<b>7,930.2</b>

Source: ARC, ERA 2012 National Report.

### 13 Education

- » 43 of 85 (or 50.6%) UoEs were at or above world standard, there was only one '5' at the University of Queensland in Specialist Studies in Education.
- » The Go8 universities had 15 of 85 UoEs or 21.1%, 14 of which were at world standard or above.
- » In the regional universities, seven of the 23 UoEs rated a '1' (30.4%); there were ten UoEs rating a '2' (43.5%), which means that 73.9% of this research output rated below world standard. Only six UoEs rated a '3'. Specialist Studies in Education was represented at ten of 12 regional universities, Curriculum and Pedagogy at eight of 12.
- » Specialist Studies in Education rated '3' at three regional universities.

Table A6.14 Staff FTE, by research outputs, Education, ERA 2012

FoR	Staff FTE	Outputs
1301 Education Systems	467.9 (15.7%)	3,060.0 (16.36%)
1302 Curriculum and Pedagogy	918.5 (30.9%)	6,165.0 (32.96%)
1303 Specialist Studies in Education	1,015.2 (34.1%)	8,323.5 (44.5%)
1304 Other Education	572.3 (19.24%)	1,155.1 (6.18%)
<b>Total</b>	<b>2,973.9</b>	<b>18,703.6</b>

Source: ARC, ERA 2012 National Report.

### 14 Economics

- » 28 of 45 (or 62%) UoEs were at or above world standard, 20 of which were at '4' or above (represents 44%).
- » UoEs were at nine regional universities (30%), 19 UoEs were Go8 (42%, all of which were world standard or above). Eight of the nine regional UoEs were in Applied Economics, the ninth was Economic Theory. Seven of those regional UoEs rated a '2' (77.8%).
- » Applied Economics was the lead discipline, which is reflected also in its share of HERDC research income at \$148,759,162 (of a total \$170,490,185) an 87% share.

Table A6.15 Staff FTE, by research outputs, Economics, ERA 2012

FoR	Staff FTE	Outputs
1401 Economic Theory	107.6 (10.1%)	739.0 (9.7)
1402 Applied Economics	647.7 (60.9%)	5,357.7 (70.2%)
1403 Econometrics	103.3 (9.7%)	808.3 (10.6%)
1499 Other Economics	205 (19.3%)	724.3 (9.5%)
<b>Total</b>	<b>1,063.6</b>	<b>7,629.3</b>

Source: ARC, ERA 2012 National Report.

### 15 Commerce, Management, Tourism and Services

- » 61 of 126 (or 48.4%) UoEs were at or above world standard.
- » Go8 had 34 UoEs or 27%, regional universities 26 UoEs or 20.6%.
- » Business and Management UoEs were at 17 of 19 metropolitan universities, of which ten UoEs had a rating of '2', and there was one '1'—so 58% below world standard.
- » Business and Management was the lead field in terms of spread—UoEs at 36 universities.

- » The research output from Tourism was from a proportionally small FTE cohort, with 6% of staff producing 9.3% of output. Tourism had 16 UoEs: it rated two '4' ratings, and six '3' ratings, so 50% were at or above world standard.
- » The picture at the Go8 for Tourism shows that there were two '3' ratings. In the regions there were four UoEs—three of which received a rating of '3' or above.

**Table A6.16 Staff FTE, by research outputs, Commerce, Management, Tourism and Services, ERA 2012**

FoR	Staff FTE	Outputs
1501 Accounting, Auditing and Accountability	590.6 (18.2%)	2,880.1 (11.7%)
1502 Banking, Finance and Investment	398.6 (12.24%)	221.0 (0.90%)
1503 Business and Management	1,061.0 (32.7%)	9,789.3 (39.7%)
1504 Commercial Services	118.6 (3.66%)	841.4 (3.42%)
1505 Marketing	411.0 (12.69%)	4,195.2 (17.02%)
1506 Tourism	194.0 (6%)	2,287.7 (9.3%)
1507 Transportation and Freight Services	41.2 (1.27%)	501.3 (2.04%)
1599 Other Commerce, Management, Tourism and Services	424.7 (13.12%)	1,924.6 (7.8%)
<b>Total</b>	<b>3,239.7</b>	<b>24,640.6</b>

Source: ARC, ERA 2012 National Report.

### 16 Studies in Human Society

- » 95 of 125 UoEs assessed were at or above world standard (76%).
- » There were 23 UoEs at regional universities (18.4%), while the Go8 had 48 UoEs (38.4%).
- » Demography (like Languages) submitted UoEs at only two Go8 universities (both rated a '4').
- » Anthropology, Political Science and Sociology UoEs were predominantly Go8-based; Anthropology's only regional UoE (at James Cook University) rated a '3'. Sociology UoEs were at five of 12 regional universities, Political Science at only three.
- » Political Science and Sociology had the biggest share of Staff FTE of Studies in Human Society. Other Studies in Human Society (inclusive of Gender Studies, Indigenous Studies) was a sizeable 'field' of its own.

**Table A6.17 Staff FTE, by research outputs, Studies in Human Society, ERA 2012**

FoR	Staff FTE	Outputs
1601 Anthropology	167.3 (7.1%)	1,514.9 (7.4%)
1602 Criminology	161.4 (6.88%)	1,400.9 (6.83%)
1603 Demography	51.8 (2.2%)	519.5 (2.54%)
1604 Human Geography	163.3 (7%)	1,691.3 (8.25%)
1605 Policy and Administration	303.7 (13%)	2,931.5 (14.3%)
1606 Political Science	491.8 (21%)	5,061.9 (24.7%)
1607 Social Work	260.1 (11.10%)	1,706.9 (8.33%)
1608 Sociology	456.5 (19.5%)	4,591.0 (22.4%)
1699 Other Studies in Human Society	287.9 (12.28%)	1,077.4 (5.26%)
<b>Total</b>	<b>2,343.8</b>	<b>20,495.3</b>

Source: ARC, ERA 2012 National Report.

### 17 Psychology and Cognitive Sciences

- » 26 of 37 UoEs were rated at or above world standard (70.3%).
- » Psychology UoEs were at all Go8 universities; Cognitive Science at three Go8.
- » Psychology UoEs were at seven of 12 regional universities—the ratings ran against the general trend with regional universities receiving ratings of one '5', one '4' and one '3', then there were three UoEs rated a '1' (43% below world standard).
- » Research outputs were dominated by journal articles—82.6% of outputs.

**Table A6.18 Staff FTE, by research outputs, Psychology and Cognitive Science, ERA 2012**

FoR	Staff FTE	Outputs
1701 Psychology	1,094.8 (76.6%)	11,755.8 (78.6%)
1702 Cognitive Science	178.7 (12.51%)	2,336.7 (15.63%)
1799 Other Psychology and Cognitive Sciences	155.1 (10.86%)	858.8 (5.74%)
<b>Total</b>	<b>1,428.6</b>	<b>14,951.3</b>

Source: ARC, ERA 2012 National Report.

### 18 Law and Legal Studies

- » 23 of 29 UoEs were rated at or above world standard (79.3%).
- » 64% of outputs in this FoR were journal articles.
- » There were Law UoEs at all the Go8 universities, and all were rated at or above world standard (100%).
- » In the regional universities there were Law UoEs at six of 13 universities—there were two universities rated a '2'.

**Table A6.19 Staff FTE, by research outputs, Law and Legal Studies, ERA 2012**

FoR	Staff FTE	Outputs
1801 Law	1,190.9 (90%)	8,934.6 (97%)
1802 Maori Law	0	0.6 (0.006%)
1899 Other Law and Legal Studies	132.8 (10%)	241.9 (2.64%)
<b>Total</b>	<b>1,324.3</b>	<b>9,177.5</b>

Source: ARC, ERA 2012 National Report.

### 19 Studies in Creative Arts and Writing

- » 58 of 73 UoEs were rated at or above world standard (79.5%).
- » Art Theory and Criticism had six UoEs at the Go8 universities—all of which were at or above world standard; the only Journalism UoE at a Go8 rated a '3'; Film, Television and Digital Media had four UoEs at the Go8, Performing Arts and Creative Writing at seven Go8 institutions, and Visual Arts and Crafts at five.
- » There were 11 UoEs across regional universities. There were no Art Theory and Criticism UoEs at regional universities, nor did Journalism and Professional Writing feature. However Performing Arts UoEs were at five of 13 regional institutions, likewise for Visual Arts and Crafts. Film, Television and Visual Media UoE was only at one regional university (rated a '2').



- » In the regional universities, Performing Arts was rated a '4', a '3', a '2', and a '1'. Visual Arts and Crafts rated one '3', then there were two '1' ratings, and two '2' ratings.
- » Journalism submitted seven UoEs, all at the metropolitan universities even though there were large teaching and research programmes at many more institutions than this. Journalism rated one '2' but otherwise rated '3' or '4'. There were no '5' ratings at metropolitan universities.

**Table A6.20 Staff FTE, by research outputs, Studies in Creative Arts and Writing, ERA 2012**

FoR	Staff FTE	Outputs
1901 Art Theory and Criticism	93.4 (6%)	1,057.7 (8.5%)
1902 Film, Television and Digital Media	262.5 (16.87%)	2,003.4 (16.19%)
1903 Journalism and Professional Writing	114.0 (7.28%)	699.8 (5.65%)
1904 Performing Arts and Creative Writing	631.7 (40%)	4,799.6 (38.79%)
1905 Visual Arts and Crafts	342.5 (21.9%)	3,673.4 (30%)
1999 Other Studies in Creative Arts and Writing	122.0 (7.8%)	143.1 (1.15%)
<b>Total</b>	<b>1,566.1</b>	<b>12,377.0</b>

Source: ARC, ERA 2012 National Report.

## 20 Language, Communication and Culture

- » 68 of 79 UoEs were rated at or above world standard (86.1%).
- » Go8 had 29 UoEs which represented 36.7%. Linguistics and Literary Studies UoEs were at all Go8 universities, Cultural Studies was at six; Language Studies had two Go8 UoEs.
- » There were only 11 UoEs at regional universities (13.9%). Literary Studies had four UoEs, Linguistics three UoEs, Cultural Studies three UoEs, Communication and Media Studies one UoE, and there were no Language Studies UoEs at regional universities. Ratings distribution across regional UoEs was as follows: six '3' ratings in total (55%) and five '2' ratings (45%).
- » Ratings distribution across Go8 was as follows: 12 '5' ratings (four of them in Literary Studies, four in Cultural Studies), 11 '4' ratings, three '3' ratings, two '2' ratings.

**Table A6.21 Staff FTE, by research outputs, Language, Communication and Culture, ERA 2012**

FoR	Staff FTE	Outputs
2001 Communication and Media Studies	272.2 (17%)	2,126.4 (17.45%)
2002 Cultural Studies	340.2 (21.2%)	3,210.5 (26.4%)
2003 Language Studies	170.0 (10.6%)	666.9 (5.5%)
2004 Linguistics	264.9 (16.53%)	2,654.1 (22%)
2005 Literary Studies	364.8 (22.8%)	3,262.3 (27%)
2099 Other Language, Communication and Culture	190.2 (12%)	259.4 (2.13%)
<b>Total</b>	<b>1,602.3</b>	<b>12,179.6</b>

Source: ARC, ERA 2012 National Report.

## 21 History and Archaeology

- » 35 of 39 UoEs were rated at or above world standard (89.7%); the top result for the HASS FoRs.
- » At the Go8 universities there were six UoEs for Archaeology; eight for History. These 14 UoEs represented 35.9% of total UoEs. 100% were at or above world standard.
- » In the regions: History UoEs were at six institutions, Archaeology at three. Ratings distribution across regional UoEs was as follows: one '4', five '3' and three '2' ratings.
- » History had the largest number of FTE staff in the humanities (522.2 FTE), whereas Archaeology had 134.7 FTE research staff.

**Table A6.22 Staff FTE, by research outputs, History and Archaeology, ERA 2012**

FoR	Staff FTE	Outputs
2101 Archaeology	134.7 (18.4%)	1,655.1 (23.8%)
2102 Curatorial and Related Studies	30.4 (4.16%)	236.9 (3.41%)
2103 Historical Studies	522.2 (71.5%)	4,828.8 (69.6%)
2199 Other History and Archaeology	42.8 (6%)	220.9 (3.2%)
<b>Total</b>	<b>730.1</b>	<b>6,941.7</b>

Source: ARC, ERA 2012 National Report.

Publication type output is of particular note in this FoR (Table A6.23).

**Table A6.23 Publication type output, Archaeology and History, compared to total system average (HASS and STEM), ERA 2012**

	Archaeology	History	Overall System (HASS + STEM)
Journals	59%	44.5%	69%
Books	4.4%	10.1%	1%
Book chapters	32.3%	39.5%	10%
Conference papers	3.4%	4.9%	18%
Non-traditional outputs	0.9%	1.1%	2%

Source: ARC, ERA 2012 National Report.



## 22 Philosophy and Religious Studies

- » 35 of 42 UoEs were rated at or above world standard (83.3%); with Applied Ethics returning 100% at or above world standard.
- » Go8 universities had 20 UoEs overall: Philosophy with eight UoEs; Applied Ethics at three UoEs.
- » In the regions there were only five UoEs across the board: three Philosophy, two Religion and Religious Studies, and one Applied Ethics. This is a major instance where activity has been concentrated in the metropolitan universities.

**Table A6.24 Staff FTE, by research outputs, Philosophy and Religious Studies, ERA 2012**

FoR	Staff FTE	Outputs
2201 Applied Ethics	96.5 (16%)	853.8 (15%)
2202 History and Philosophy of Specific Fields	83.2 (14%)	947.2 (16.54%)
2203 Philosophy	194.2 (31.9%)	2,026.2 (35.4%)
2204 Religion and Religious Studies	187.6 (30.8%)	1,756.9 (30.70%)
2299 Other Philosophy and Religious Studies	47.9 (8%)	142.8 (2.5%)
<b>Total</b>	<b>609.4</b>	<b>5,726.9</b>

Source: ARC, ERA 2012 National Report.

## Excellence in Research for Australia: Multidisciplinary Research

The ERA 2012 National Report's disciplinary profiles provide information on co-apportioned research outputs. The following table shows percentage of co-apportioned outputs for STEM and HASS two-digit fields of research (FoR). This is an indicator of the extent of multidisciplinary and/or inter-disciplinary research being undertaken. In STEM fields the highest amount of co-apportioned output were in Environmental Sciences, and there were also strong results for Technology, and Biological Sciences. In HASS fields Psychology and Cognitive Sciences registered the highest percentage of co-apportioned outputs, followed by Studies in Human Society.

The table overleaf is a multidisciplinary profile, which shows 'relationships' between fields of research in terms of the relative proportions of co-apportioned outputs. The highest levels of co-apportioned research in HASS occurred between: Psychology and Cognitive Sciences and Medical Health Sciences; Law and Legal Studies and Studies in Human Society; and Studies in Creative Arts and Language, Communication and Culture.

**Table A6.25 Proportion of total outputs apportioned within the field of research (two-digit level), ERA 2012**

Code	Name	%
01	Mathematical Sciences	92
02	Physical Sciences	94
03	Chemical Sciences	91
04	Earth Sciences	94
05	Environmental Sciences	80
06	Biological Sciences	88
07	Agricultural and Veterinary Sciences	89
08	Information and Computing Sciences	93
09	Engineering	94
10	Technology	84
11	Medical and Health Sciences	94
12	Built Environment and Design	93
13	Education	93
14	Economics	93
15	Commerce, Management, Tourism and Services	95
16	Studies in Human Society	90
17	Psychology and Cognitive Sciences	85
18	Law and Legal Studies	95
19	Studies in Creative Arts and Writing	95
20	Language, Communication and Culture	91
21	History and Archaeology	92
22	Philosophy and Religious Studies	91

Source: ARC, ERA 2012 National Report.

Table A6.26 Multidisciplinary research: percentage distribution of apportioned research output, by two-digit field of research, ERA 2012

Fields of Research	Mathematical	Physical Sciences	Chemical Sciences	Earth Sciences	Environmental Sciences	Biological Sciences	Agricultural and Veterinary Sciences	Information and Computing Sciences	Engineering	Technology	Medical and Health Sciences	Built Environment and Design	Education	Economics	Commerce, Management, Tourism and Services	Studies in Human Society	Psychology and Cognitive Sciences	Law and Legal Studies	Studies in Creative Arts and Writing	Language, Communication and Culture	History and Archaeology	Philosophy and Religious Studies	Total	Number of Apportioned Outputs
01 Mathematical Sciences	11.5	1.1	2.8	2.6	6.1	2.6	21.5	34.4	1.6	6.7	0.2	1.5	3.0	3.1	0.3	0.7	0.0	0.0	0.1	0.2	0.1	100	872	
02 Physical Sciences	10.5	22.8	3.9	0.0	1.6	0.1	1.0	47.6	8.9	2.7	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.3	100	911	
03 Chemical Sciences	0.5	12.3	1.2	4.6	20.9	0.8	0.3	41.1	4.8	12.8	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.0	100	1,651	
04 Earth Sciences	4.0	7.9	3.4	21.6	20.8	4.4	1.1	23.1	0.3	0.4	0.6	0.4	0.0	0.1	3.9	0.4	0.2	0.1	0.0	7.5	0.0	100	535	
05 Environmental Sciences	1.0	0.0	4.4	5.9	51.9	17.6	0.6	5.5	1.2	2.1	1.4	0.5	2.4	1.0	3.4	0.1	0.3	0.1	0.2	0.2	0.2	100	1,959	
06 Biological Sciences	0.9	0.3	7.9	2.6	22.5	14.3	1.9	1.6	1.8	44.3	0.0	0.1	0.0	0.0	0.3	0.9	0.0	0.0	0.0	0.0	0.2	100	4,379	
07 Agricultural and Veterinary Sciences	1.4	0.0	1.2	2.0	24.2	47.6	0.9	6.3	3.1	8.5	0.1	0.4	1.9	0.6	1.0	0.2	0.0	0.0	0.2	0.3	0.0	100	1,456	
08 Information and Computing Sciences	12.3	0.8	0.3	0.4	0.9	6.0	1.0	20.2	8.1	9.5	4.5	7.3	0.2	13.9	0.7	4.6	0.7	2.5	3.2	0.1	0.8	100	1,535	
09 Engineering	9.3	15.2	22.6	4.4	3.7	2.5	3.0	10.8	15.2	7.2	2.9	1.3	0.3	0.5	0.2	0.9	0.0	0.0	0.0	0.0	0.0	100	3,163	
10 Technology	1.8	7.6	9.3	0.2	2.3	9.6	4.8	12.1	42.7	6.8	0.2	0.4	0.1	0.8	0.3	0.1	0.6	0.0	0.2	0.0	0.1	100	1,053	
11 Medical and Health Sciences	0.9	0.4	4.0	0.0	0.8	35.2	1.9	2.7	4.4	1.1	0.3	3.4	1.1	1.1	6.2	35.0	0.3	0.1	0.6	0.1	0.7	100	5,224	
12 Built Environment and Design	0.3	0.4	0.1	0.7	5.2	0.1	0.3	12.7	14.4	0.3	3.1	3.7	2.9	10.2	23.5	2.3	1.6	10.2	2.8	4.6	0.5	100	559	
13 Education	1.0	0.1	0.2	0.1	0.9	0.5	0.6	8.7	4.0	0.3	15.0	1.7	0.3	8.8	15.4	13.6	2.2	10.1	11.2	1.4	3.8	100	1,210	
14 Economics	5.3	0.0	0.0	0.0	10.1	0.2	5.8	0.5	1.9	0.2	11.5	3.5	0.9	31.8	21.7	1.0	3.2	0.0	0.8	0.2	1.3	100	474	
15 Commerce, Management, Tourism and Services	2.8	0.0	0.0	0.0	1.7	0.1	1.1	17.3	1.4	0.8	4.8	4.2	9.5	13.6	15.4	11.3	5.7	1.0	4.3	1.2	3.6	100	1,131	
16 Studies in Human Society	0.1	0.0	0.1	1.2	3.6	0.7	0.9	2.0	0.5	0.2	16.4	6.8	9.2	5.0	8.6	5.6	10.5	2.2	12.0	7.2	7.3	100	1,899	
17 Psychology and Cognitive Sciences	0.2	0.0	0.0	0.1	0.1	1.7	0.1	2.3	1.2	0.1	74.3	0.4	6.1	0.2	5.1	4.0	0.5	0.7	1.8	0.0	1.3	100	2,752	
18 Law and Legal Studies	0.0	0.1	0.1	0.2	1.5	0.4	0.2	1.7	0.1	1.5	4.0	2.6	6.6	2.2	13.8	41.6	2.7	0.4	6.7	3.5	10.1	100	456	
19 Studies in Creative Arts and Writing	0.0	0.1	0.0	0.0	0.2	0.1	0.0	5.6	0.1	0.1	1.0	8.3	17.6	0.0	1.5	6.1	2.7	0.3	47.0	5.9	3.2	100	675	
20 Language, Communication and Culture	0.1	0.0	0.0	0.0	0.5	0.1	0.4	4.6	0.0	0.1	2.8	1.3	11.7	0.4	3.9	21.0	4.7	2.6	27.2	12.0	6.4	100	1,125	
21 History and Archaeology	0.1	0.1	0.9	7.6	0.6	1.4	0.6	0.4	0.2	0.0	0.5	3.9	2.7	0.3	3.2	25.5	0.2	3.3	6.8	24.3	17.4	100	542	
22 Philosophy and Religious Studies	0.3	0.4	0.0	0.1	1.0	0.6	0.0	1.8	0.1	0.3	6.4	0.4	8.0	1.2	6.4	24.9	6.7	7.0	3.4	12.2	19.0	100	557	

KEY: ■ = 20–29%; ■ = 30–39%; ■ = 40%  
 Source: ARC, ERA 2012 National Report, p. 42.

## International Research Collaboration

**Table A6.27** Number of international Partner Investigators on funded Linkage Projects in HASS, by geographic region, 2002–14

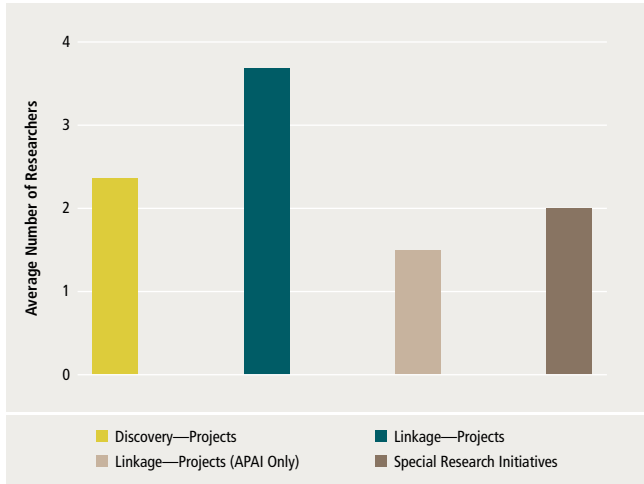
	Africa	Asia	Europe	North America	Oceania	South America	Western Asia	Total	
	n	n	n	n	n	n	n	n	%
Built Environment and Design		2	6	4				12	2.78
Education		1	22	12	2			37	8.58
Economics		8	23	16				47	10.90
Commerce, Management, Tourism and Services		3	28	14	4			49	11.37
Studies in Human Society		11	63	31	16			121	28.07
Psychology and Cognitive Sciences		5	19	18	10			52	12.06
Law and Legal Studies		1	4	4				9	2.09
Studies in Creative Arts and Writing		3	14	7	8			32	7.42
Language, Communication and Culture		8	9	4				21	4.87
History and Archaeology		2	27	6	10			45	10.44
Philosophy and Religious Studies			2		2		2	6	1.39
<b>Total (n)</b>		<b>44</b>	<b>217</b>	<b>116</b>	<b>52</b>		<b>2</b>	<b>431</b>	<b>100</b>
<b>Total (%)</b>		<b>10.21</b>	<b>50.35</b>	<b>26.91</b>	<b>12.06</b>		<b>0.46</b>	<b>100</b>	

Source: ARC, customised data.

Note: The ARC's regional classifications do not follow the ABS standard country classification.

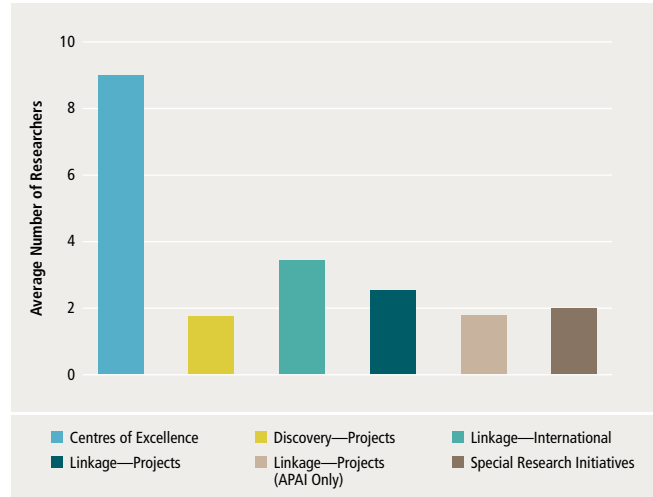
### Number of Researchers on ARC Projects

Figure A6.27 Average number of researchers, per project per ARC scheme, Built Environment and Design, 2002–12



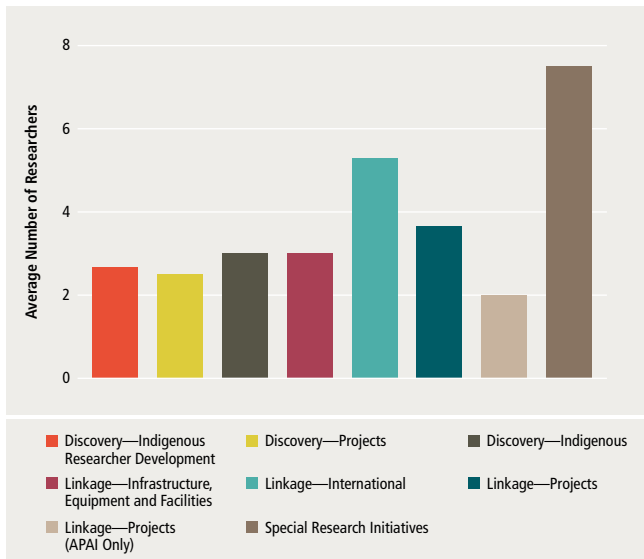
Source: ARC, customised data.

Figure A6.29 Average number of researchers, per project per ARC scheme, Economics, 2002–12



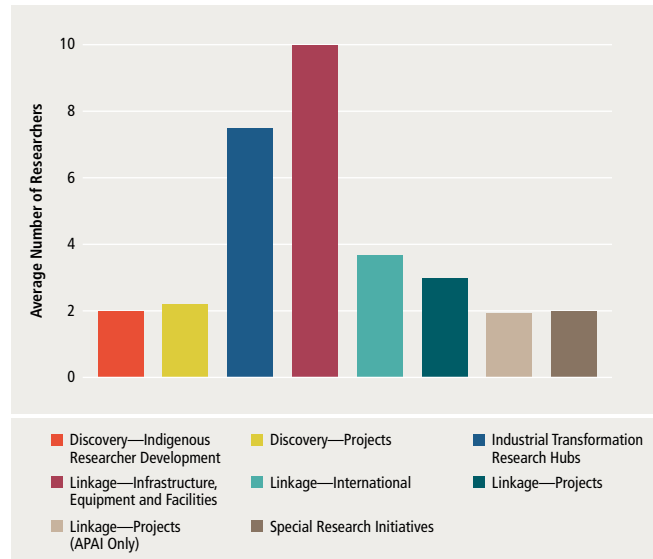
Source: ARC, customised data.

Figure A6.28 Average number of researchers, per project per ARC scheme, Education, 2002–12



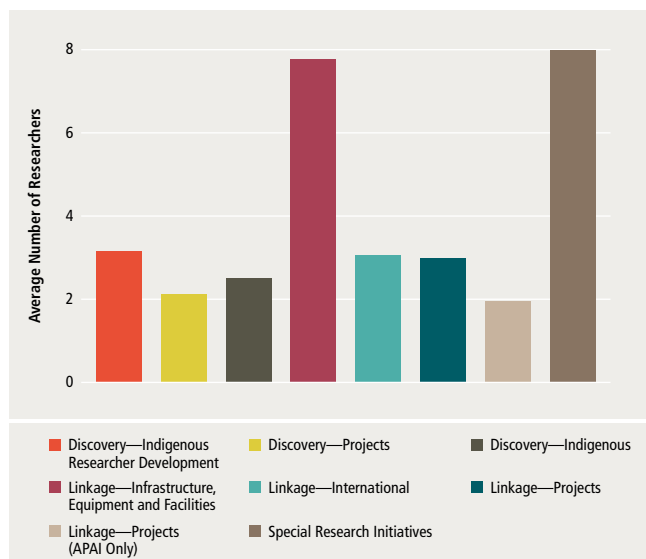
Source: ARC, customised data.

Figure A6.30 Average number of researchers, per project per ARC scheme, Commerce, Management, Tourism and Services, 2002–12



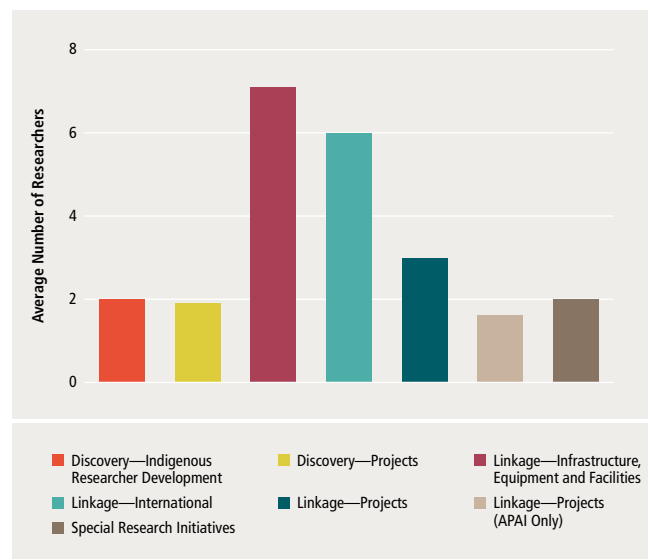
Source: ARC, customised data.

Figure A6.31 Average number of researchers, per project per ARC scheme, Studies in Human Society, 2002–12



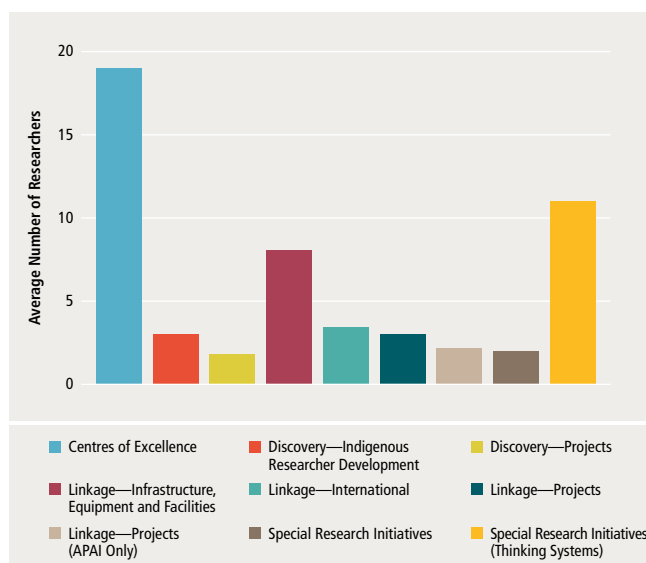
Source: ARC, customised data.

Figure A6.33 Average number of researchers, per project per ARC scheme, Law and Legal Studies, 2002–12



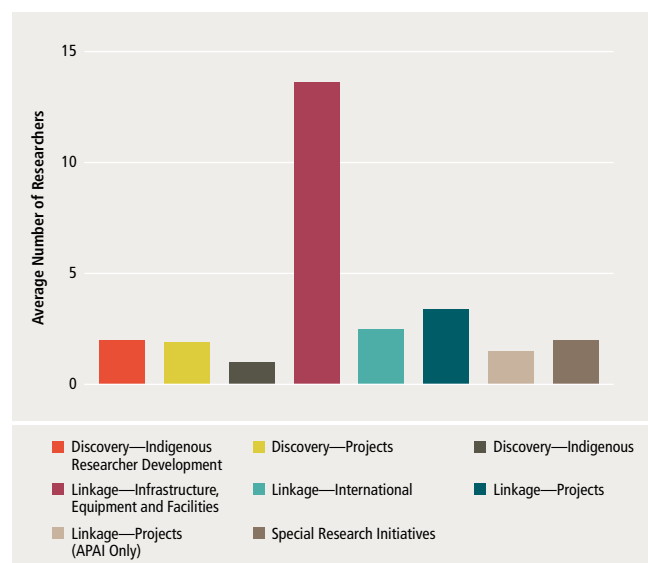
Source: ARC, customised data.

Figure A6.32 Average number of researchers, per project per ARC scheme, Psychology and Cognitive Sciences, 2002–12



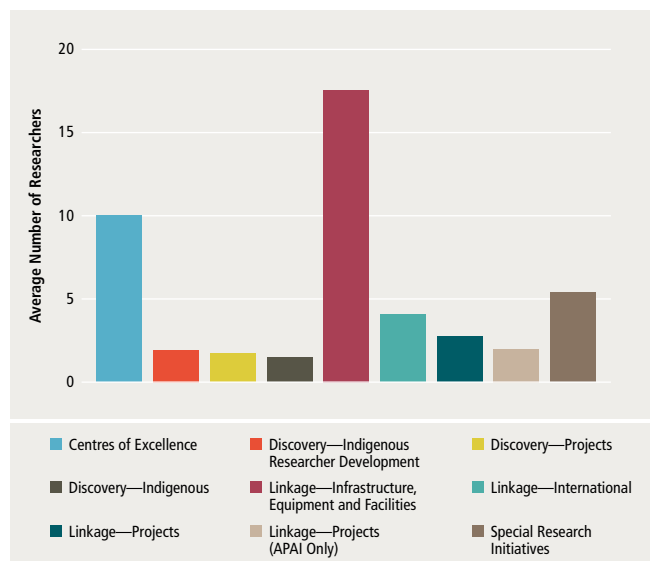
Source: ARC, customised data.

Figure A6.34 Average number of researchers, per project per ARC scheme, Creative Arts and Writing, 2002–12



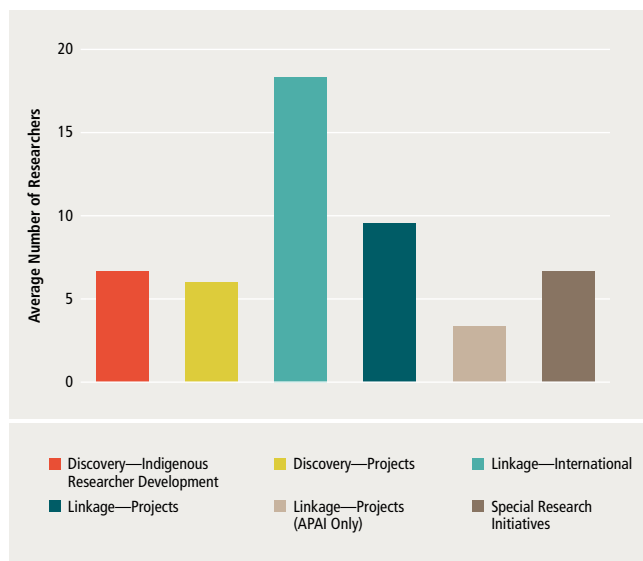
Source: ARC, customised data.

**Figure A6.35 Average number of researchers, per project per ARC scheme, Language, Communication and Culture, 2002–12**



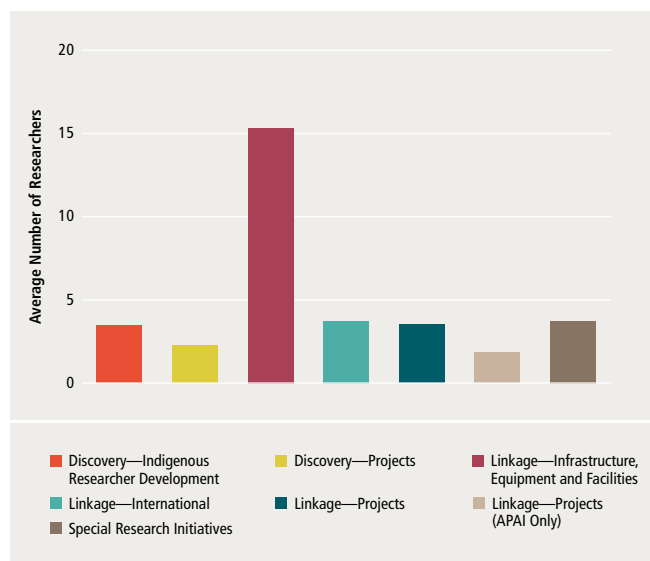
Source: ARC, customised data.

**Figure A6.37 Average number of researchers, per project per ARC scheme, Philosophy and Religious Studies, 2002–12**



Source: ARC, customised data.

**Figure A6.36 Average number of researchers, per project per ARC scheme, History and Archaeology, 2002–12**



Source: ARC, customised data.

# Appendix 7

## Academic Workforce Profile Appendices

### Research Workforce

**Table A7.1 Number of full-time equivalent (FTE) research staff ('teaching and research' and 'research only') in HASS, rank order, ERA 2012**

1801	Law	1,190.9	1299	Other Built Environment and Design	135.2
1701	Psychology	1,094.8	2101	Archaeology	134.7
1503	Business and Management	1,061.0	1899	Other Law and Legal Studies	132.8
1303	Specialist Studies in Education	1,015.2	1202	Building	129.9
1302	Curriculum and Pedagogy	918.5	1999	Other Studies in Creative Arts and Writing	122.0
1402	Applied Economics	647.7	1504	Commercial Services	118.6
1904	Performing Arts and Creative Writing	631.7	1903	Journalism and Professional Writing	114.0
1501	Accounting, Auditing and Accountability	590.6	1401	Economic Theory	107.6
1399	Other Education	572.3	1403	Econometrics	103.3
2103	Historical Studies	522.2	2201	Applied Ethics	96.5
1606	Political Science	491.8	1901	Art Theory and Criticism	93.4
1301	Education Systems	467.9	2202	History and Philosophy of Specific Fields	83.2
1608	Sociology	456.5	1603	Demography	51.8
1599	Other Commerce, Management, Tourism and Services	424.7	2299	Other Philosophy and Religious Studies	47.9
1505	Marketing	411.0	2199	Other History and Archaeology	42.8
1502	Banking, Finance and Investment	398.6	1507	Transportation and Freight Services	41.2
2005	Literary Studies	364.8	2102	Curatorial and Related Studies	30.4
1905	Visual Arts and Crafts	342.5	1204	Engineering Design	8.9
2002	Cultural Studies	340.2	1802	Maori Law	0.6
1605	Policy and Administration	303.7			
1201	Architecture	296.5			
1699	Other Studies in Human Society	287.9			
2001	Communication and Media Studies	272.2			
2004	Linguistics	264.9			
1902	Film, Television and Digital Media	262.5			
1607	Social Work	260.1			
1203	Design Practice and Management	207.3			
1499	Other Economics	205.0			
2203	Philosophy	194.2			
1506	Tourism	194.0			
2099	Other Language, Communication and Culture	190.2			
2204	Religion and Religious Studies	187.6			
1205	Urban and Regional Planning	180.6			
1702	Cognitive Science	178.7			
2003	Language Studies	170.0			
1601	Anthropology	167.3			
1604	Human Geography	163.3			
1602	Criminology	161.4			
1799	Other Psychology and Cognitive Sciences	155.1			

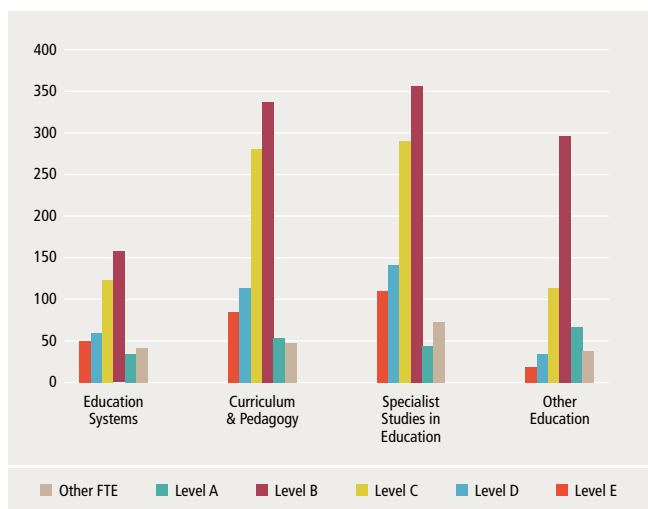
Source: Australian Research Council, ERA 2012 National Report.

The following figures present data obtained from the ERA 2012 National Report discipline profiles. The data present cross-sectional statistics on the full-time equivalent (FTE) staff numbers by four-digit discipline group, for academic level of appointment. Appointment levels are Level A (Below Lecturer), Level B (Lecturer), Level C (Senior Lecturer), Level D (Associate Professor) and Level E (Professor). 'Other FTE' includes unsalaried emeritus staff, also administrative staff who have published in the reference period and are on the professional staff scale (Higher Education Officer) rather than the academic A–E scale. These data contribute to the overall picture of the health of the humanities, arts and social sciences (HASS) fields in Australian universities.

Staff numbers are presented both proportionately and in real numbers by academic appointment type. By presenting the data by academic appointment the proportion of staff in leadership positions can be identified in each discipline. Further, considering the data by appointment type allows for preliminary evaluation of the future viability of the discipline/s under analysis.

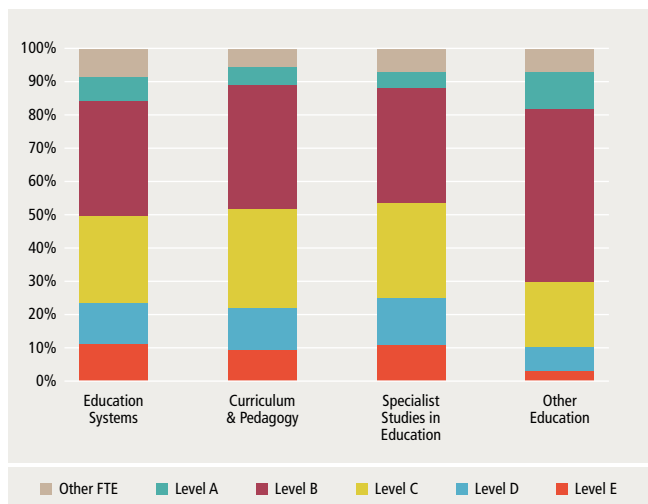


**Figure A7.1 Total number of staff (FTE), Education, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

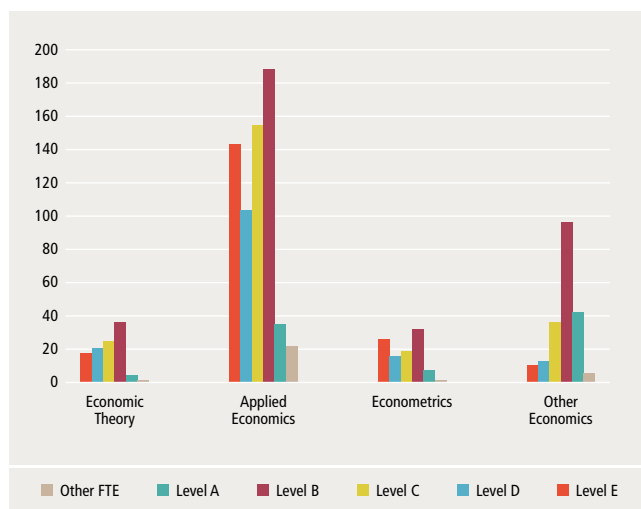
**Figure A7.2 Proportion of staff (FTE), Education, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

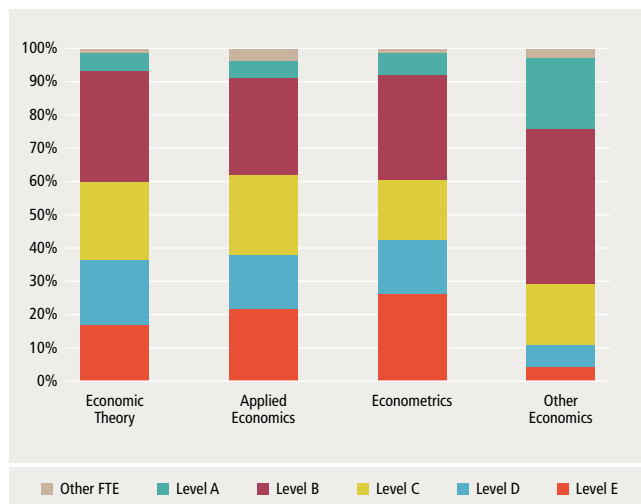
The staff profiles for Education disciplines indicate that across the four disciplinary groups, at the four-digit level, Level B appointments comprise the largest proportion of all appointments. Specialist Studies in Education have the largest number of Level B appointments (355 FTE) for the year 2012, but the Other Education discipline group has the highest proportion of Level B appointments, at 50% of all appointments. In terms of proportion, Level A and Level E appointments sit at the low end of the scale, comprising only between 5–15% of appointments across all discipline groups. Specialist Studies in Education had the highest number of Level E appointments (110). Level C appointments are the second largest appointment level across all disciplines, in terms of number and proportion, ranging from 289 appointments in Specialist Studies in Education to 113 appointments in Other Education.

**Figure A7.3 Total number of staff (FTE), Economics, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

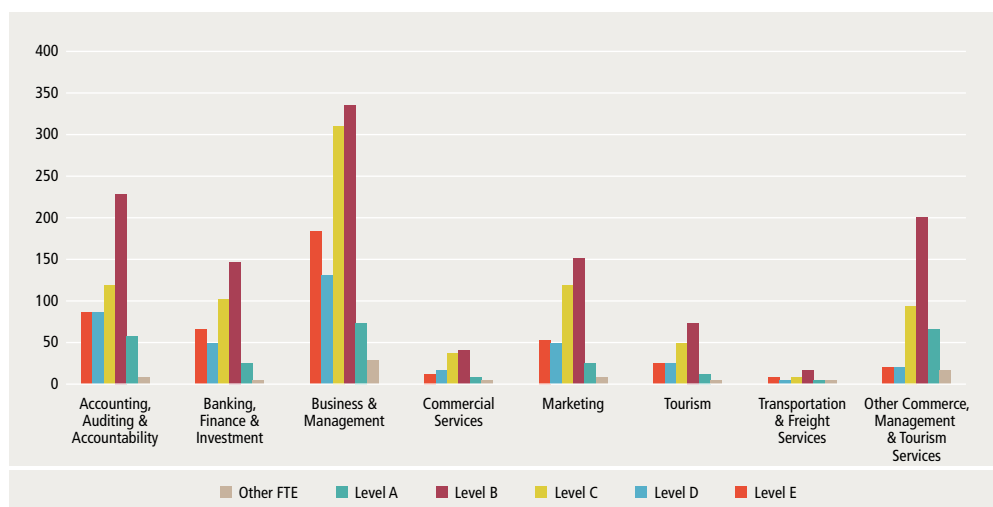
**Figure A7.4 Proportion of staff (FTE), Economics, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

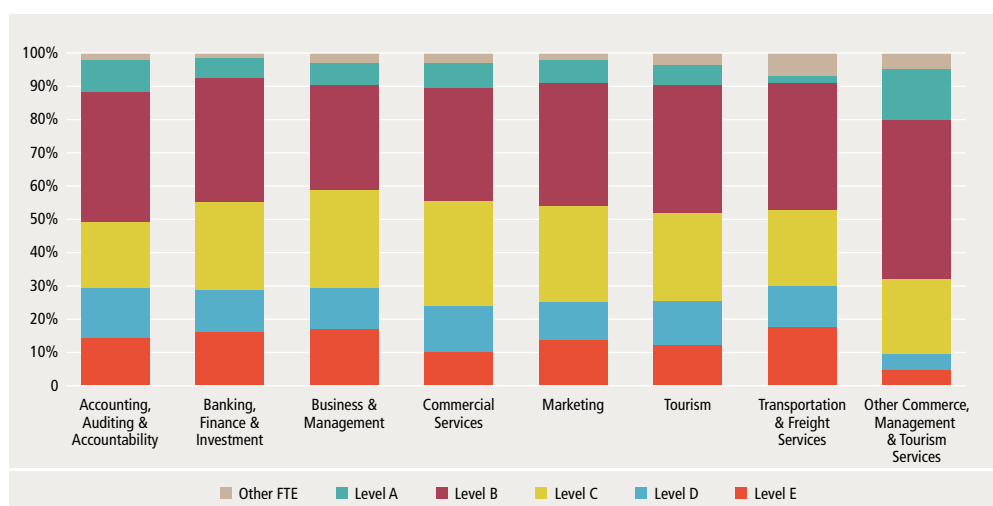
Economics is comprised of four discipline groups, including Economic Theory, Applied Economics, Econometrics and Other Economics. In terms of numbers, Applied Economics has the largest share of total staff for 2012. As with Education, most appointments in Economics are at Level B. Applied Economics has the most Level B staff appointments, at 188, while Econometrics has the smallest number of Level B appointments (32). The next most common appointments in both numeric and proportionate terms were at Level C, Level E and Level A. Applied Economics had the highest number of Level C appointments (154), followed by Other Economics (36), then Economic Theory (25) and Econometrics (18). Other Economics had the largest proportion of Level A and Level B appointments, comprising about 25% and 45%, respectively. In terms of seniority of appointments, Other Economics appears to have the most junior workforce, compared to the other Economics disciplines, with only 10% of FTE staff at Level D or Level E. Econometrics, on the other hand, has 40% of its workforce from Level D or Level E appointments.

Figure A7.5 Total number of staff (FTE), Commerce, Management, Tourism and Services, by field of research (four-digit level), by employment level, ERA 2012



Source: ARC, ERA 2012 National Report.

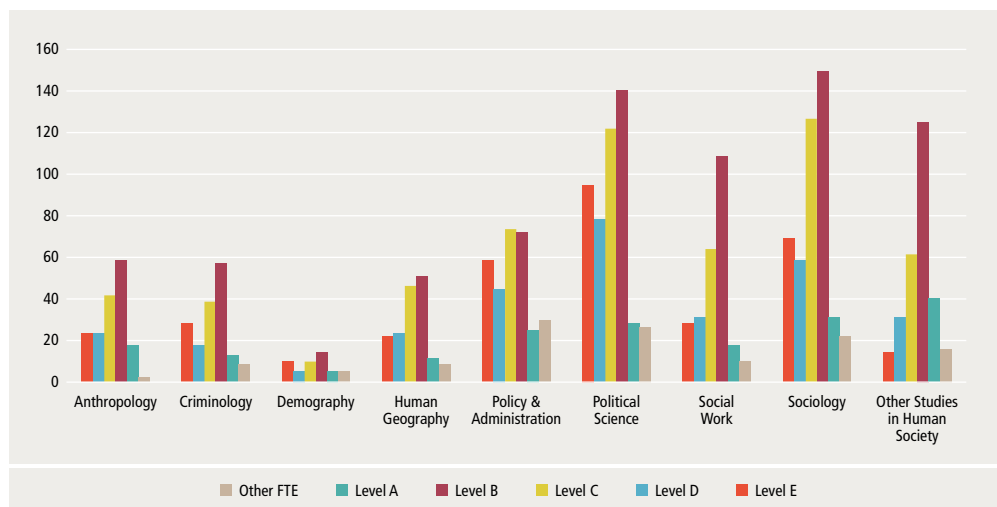
Figure A7.6 Proportion of staff (FTE), Commerce, Management, Tourism and Services, by field of research (four-digit level), by employment level, ERA 2012



Source: ARC, ERA 2012 National Report.

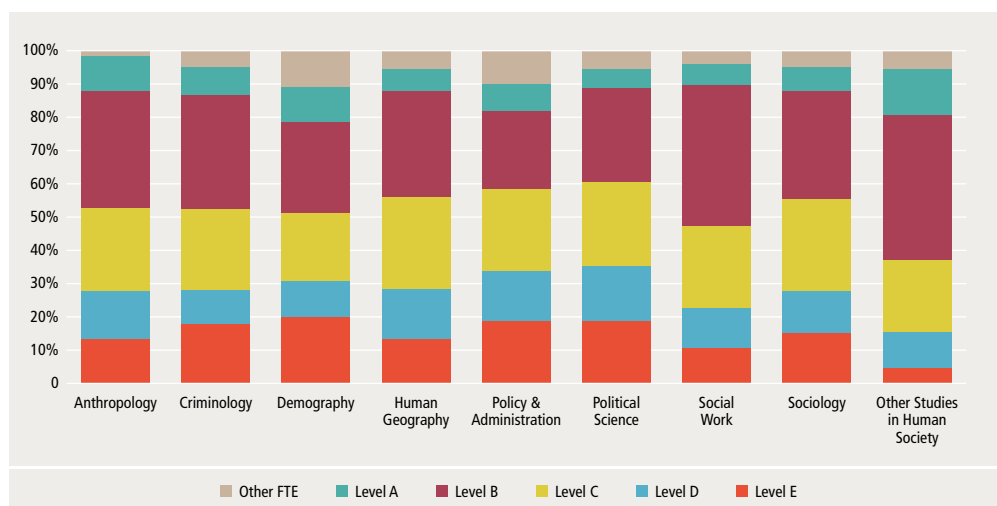
Commerce, Management, Tourism and Services is a diverse field, comprising eight different disciplines, at the four-digit level. Despite this diversity, there are still some commonalities in staffing profiles. As with Education and Economics, Level B and Level C appointments comprise the largest numbers and proportion of appointments over the ERA 2012 reporting period. Business and Management is the largest component of the workforce, with 335 Level B and 183 Level E staff. Transportation and Freight Services is the smallest discipline in this field, with only 41 FTE staff in total. Of this, seven staff were at Level E, one at Level A and 15 at Level B. Other Commerce, Management and Tourism have the smallest proportion of senior staff members, with about 65% of its workforce at either Level A or Level B. Only 10% of Commerce, Management and Tourism FTE staff are at Level D or Level E. Accounting, Auditing and Accountability, Banking, Financing and Investment, and Business and Management all had about 30% of their workforce at Level D and Level E.

**Figure A7.7 Total number of staff (FTE), Studies in Human Society, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

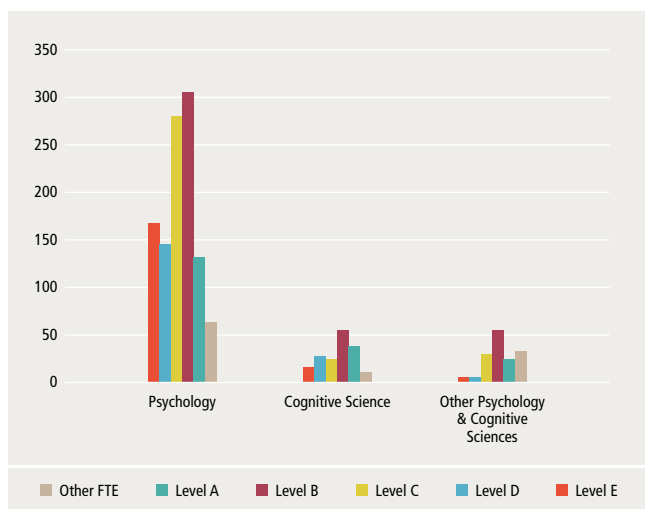
**Figure A7.8 Proportion of staff (FTE), Studies in Human Society, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

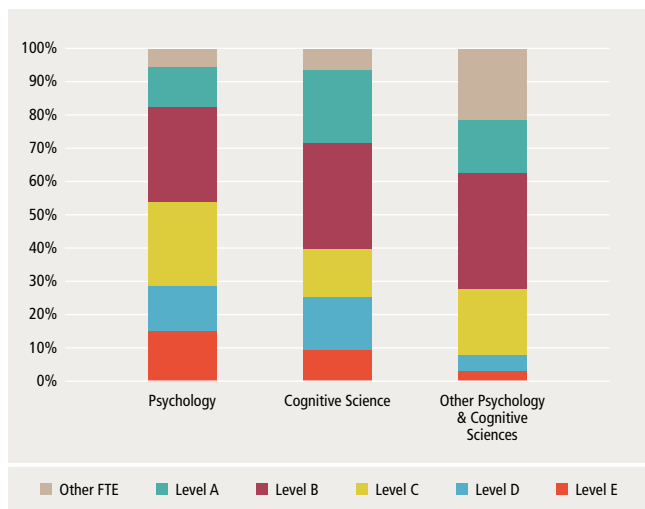
Studies in Human Society, like Commerce, is a diverse field, comprising nine disciplines. Across all disciplines, there is some variation in the profile of FTE staff. Political Science, Social Work, Sociology and Other Studies in Human Society have the highest FTE staff numbers. Most disciplines, except Policy and Administration, have the highest proportion of their FTE staff at Level B: Other Studies in Human Society, Anthropology, Criminology and Social Work all have approximately 30–40% of their FTE academic workforce at this level. As with the other fields of research discussed in this report, Level A is the least populated academic level, comprising only between 5–15% of the total academic FTE workforce in this field.

**Figure A7.9 Total number of staff (FTE), Psychology, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

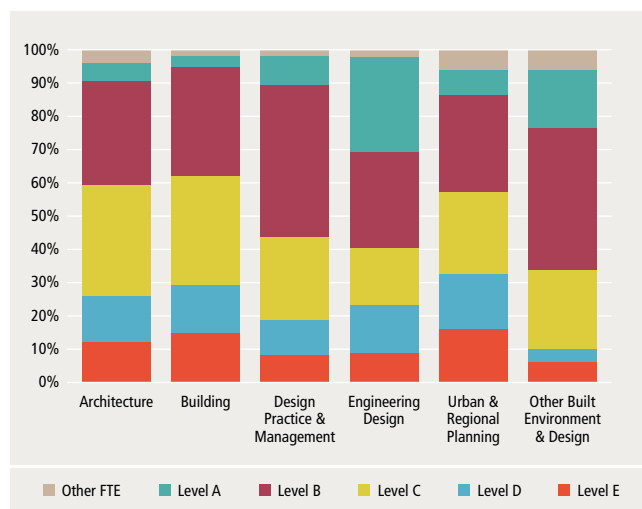
**Figure A7.10 Proportion of staff (FTE), Psychology, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

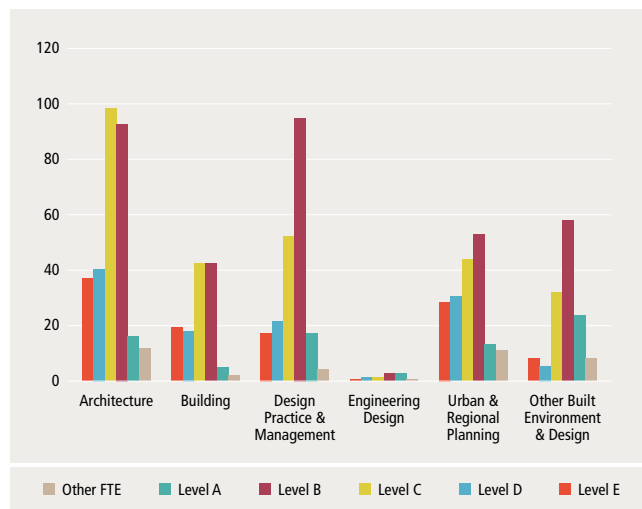
The staff profile for the Psychology field of research is distinctive: Psychology disciplines have more Other FTE staff, and Level A staff, than the other Fields of Research reviewed in this report. The distribution of staff across the academic levels is comparatively even, with fewer staff in the middle band of Level B than other FoRs. The field of Psychology has by far the largest number of FTE academic staff, at 1,094 in total. Of this, most were at Level B (306), followed by Level C at 280 staff members. The total FTE staff numbers of Cognitive Science and Other Psychology and Cognitive Sciences are 178 and 155 FTE respectively.

**Figure A7.11 Total number of staff (FTE), Built Environment and Design, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

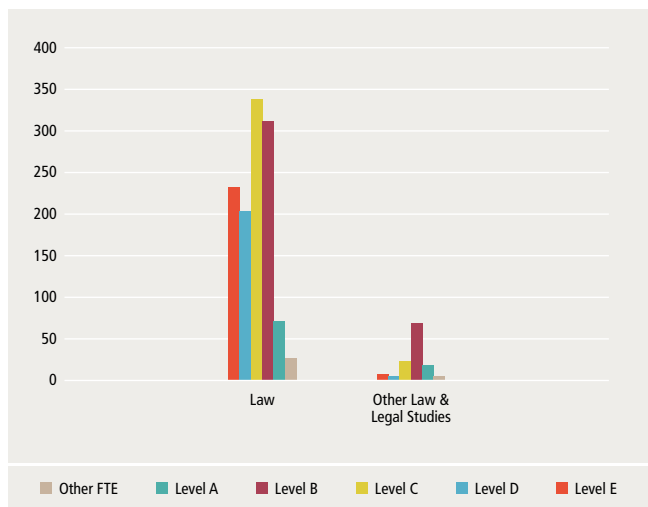
**Figure A7.12 Proportion of staff (FTE), Built Environment and Design, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

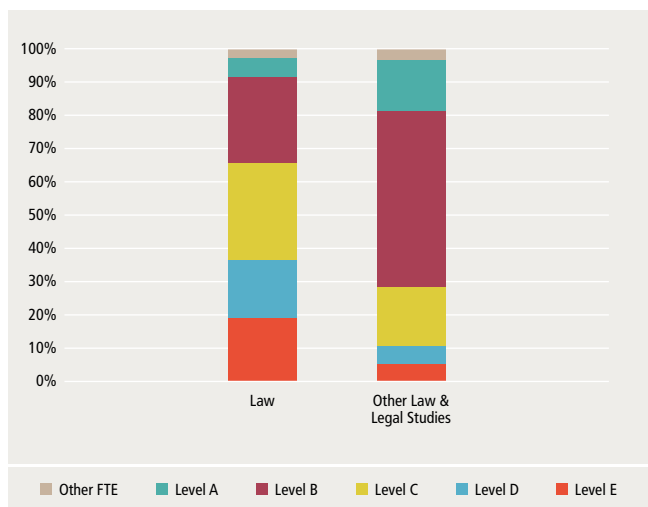
Built Environment and Design contains six discipline groups, ranging from Architecture to Other Built Environment and Design. Across each discipline group, academics at Level B comprise the largest proportion, with the largest amount of Level B FTE staff in the Design Practice and Management discipline, and the smallest amount in Engineering Design, and Urban and Regional Planning. Engineering Design also had the highest proportion of Level A academic FTE staff, at about 30% of its total workforce for 2012. In terms of the largest overall FTE workforce, Architecture, and Design Practice and Management were the largest, with 296 and 207 FTE staff, respectively.

**Figure A7.13 Total number of staff (FTE), Law and Legal Studies, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

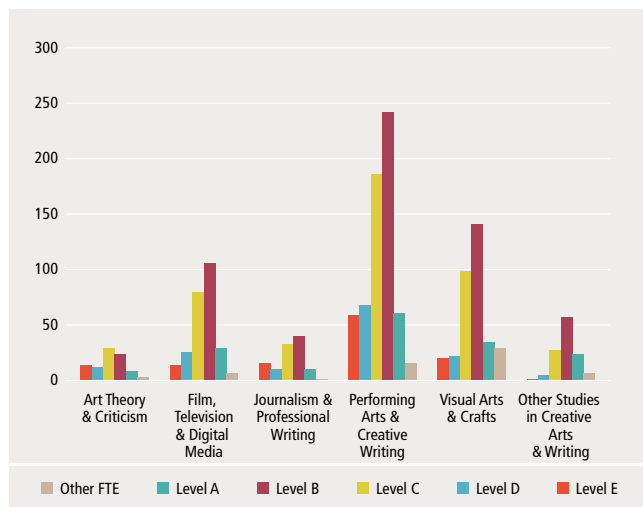
**Figure A7.14 Proportion of staff (FTE), Law and Legal Studies, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

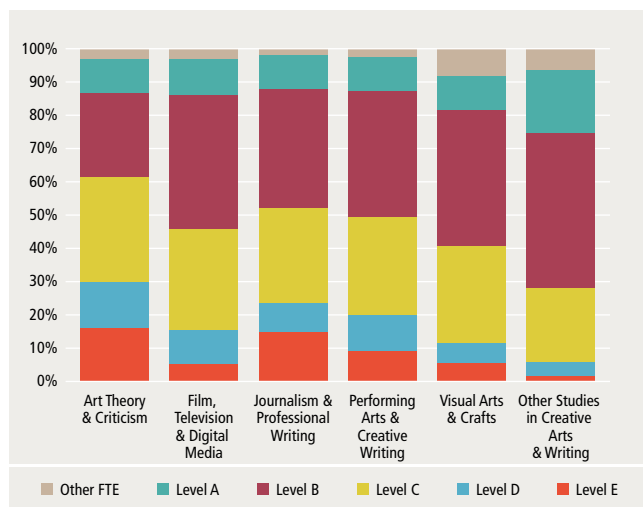
Law and Legal Studies contains three disciplinary groups—Law, Maori Law and Other Law and Legal Studies. In 2012, there were 1,190 FTE Law academic staff members, making Law one of the largest HASS disciplines for 2012. Law also has one of the highest proportions of Level D and Level E staff, comprising nearly 40% of its academic workforce. There were no Units of Evaluation submitted for Maori Law or Other Law and Legal Studies for the 2012 ERA report.

**Figure A7.15 Total number of staff (FTE), Studies in Creative Arts and Writing, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

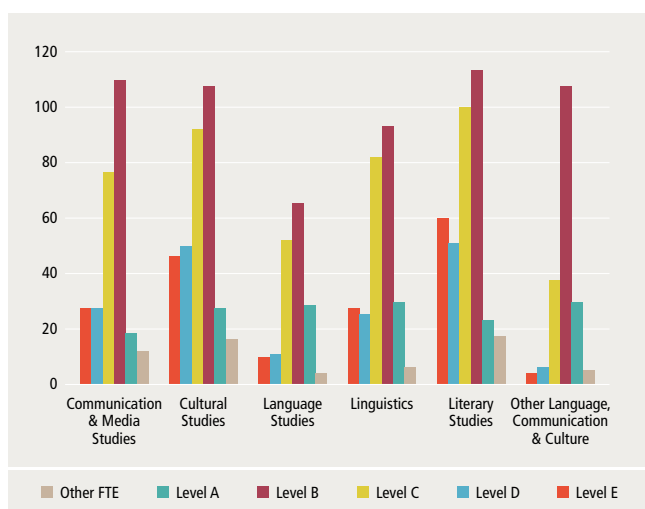
**Figure A7.16 Proportion of staff (FTE), Studies in Creative Arts and Writing, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

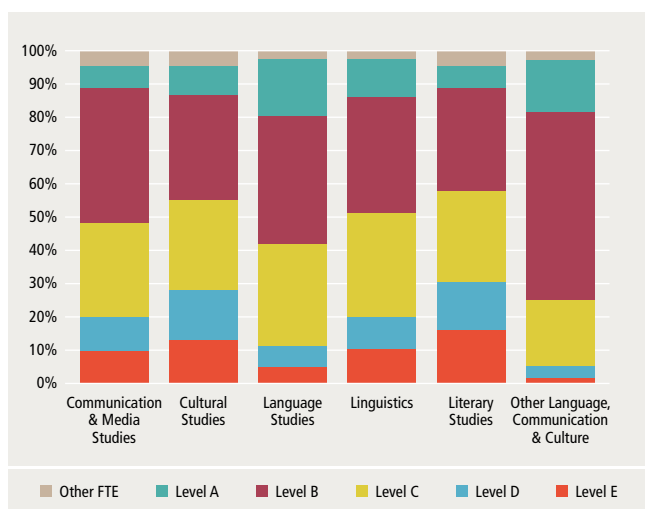
Studies in Creative Arts and Writing is comprised of six disciplines, ranging from Art Theory and Criticism to Visual Arts and Crafts. As with most of the other discipline groups reviewed here, Level B appointments are proportionately the largest grouping, followed closely by Level C. Other Studies in Creative Arts and Writing has the largest proportion of Level B appointments, at approximately 45%, while Art Theory and Criticism was the lowest at approximately 25%. The proportion of Level D and Level E appointments were comparatively low across all discipline groups, though Art Theory and Criticism had about 30% of all appointments at either Level D or Level E. Other Studies in Creative Arts and Writing had the lowest proportionate number of Level D and Level E appointments, at about 5%.

**Figure A7.17 Total number of staff (FTE), Language, Communication and Culture, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

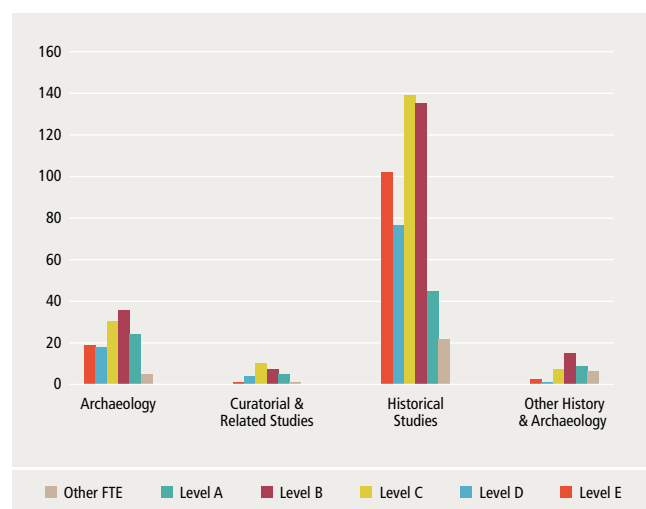
**Figure A7.18 Proportion of staff (FTE), Language, Communication and Culture, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

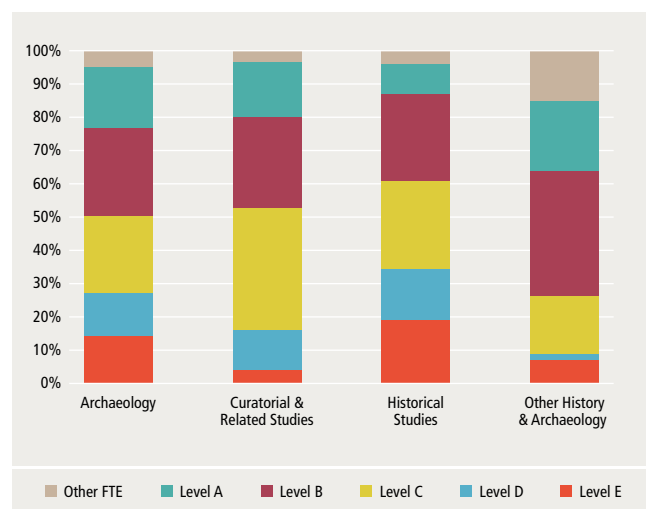
The Language, Communication and Culture Field of Research comprises six disciplinary groups, ranging from Communication and Media Studies to Literary Studies. Again, as with most of the other disciplines reviewed above, most FTE academic staff are at Level B. Other Language, Communication and Culture discipline has the highest proportion of Level B staff, at about 55% of FTE staff in 2012. Literary Studies has the highest number of FTE staff (364), followed by Cultural Studies at 340 FTE academic staff members. Language Studies had the smallest number of FTE academic staff members for 2012, at only 170. In terms of academic staff level of appointment, Cultural Studies and Literary Studies have the largest proportion of Level D and Level E academics, both at about 30%. Other Language, Communication and Culture discipline has the lowest percentage of Level D and Level E at less than 10%. Language Studies has a comparatively large percentage of Level A FTE academics, at just below 20% of their academic workforce for 2012.

**Figure A7.19 Total number of staff (FTE), History and Archaeology, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

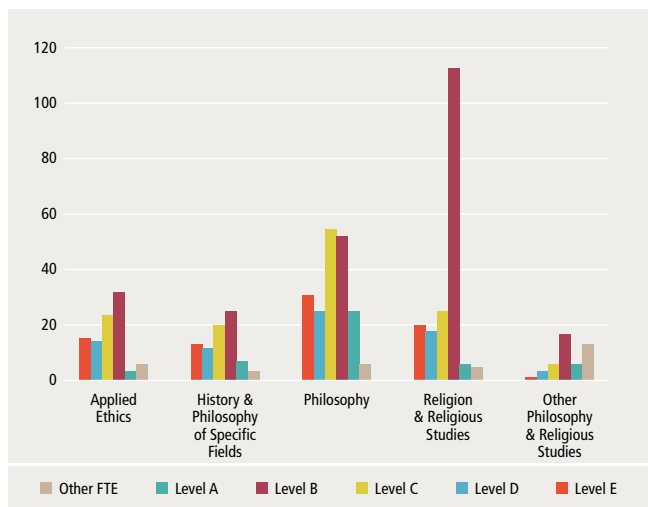
**Figure A7.20 Proportion of staff (FTE), History and Archaeology, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

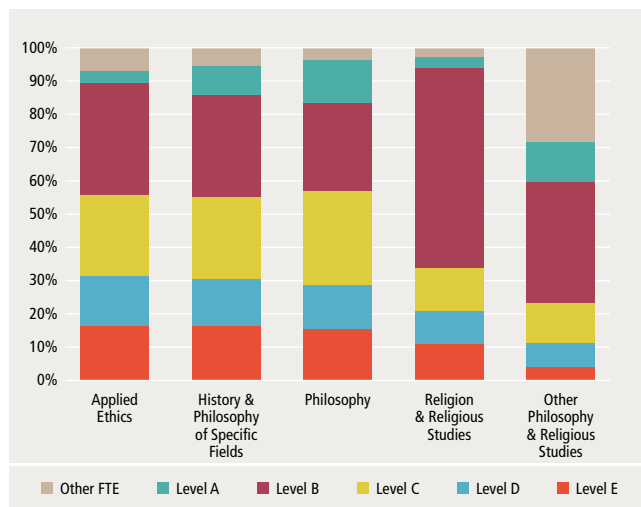
History and Archaeology is comprised of four disciplinary groups, including Archaeology, Curatorial and Related Studies, Historical Studies and Other History and Archaeology. Within this FoR Historical Studies had the highest number of FTE academics in 2012, with a total of 522. Archaeology was the second largest discipline, with 134 FTE academic staff members. Historical Studies and Archaeology both have comparatively high proportions of Level D and Level E staff, both at about 30%. Curatorial and Related Studies, and Historical Studies have more Level C staff than Level B, as does Historical Studies. This is comparatively unusual, as most disciplines reviewed in this report have more Level B appointments than any other level. Other History and Archaeology also has a significant percentage of its FTE staff from Other FTE staff sources, presumably non-salaried emeriti. There is also proportionately more Level A staff in the History and Archaeology FoR than most other disciplines reviewed here, with Level A FTE staff comprising between 7–18% of the total academic workforce for 2012.

**Figure A7.21 Total number of staff (FTE), Philosophy and Applied Ethics, by field of research (four-digit level), by employment level, ERA 2012**



Source: ARC, ERA 2012 National Report.

**Figure A7.22 Proportion of staff (FTE), Philosophy and Applied Ethics, by field of research (four-digit level), by employment level, ERA 2012**

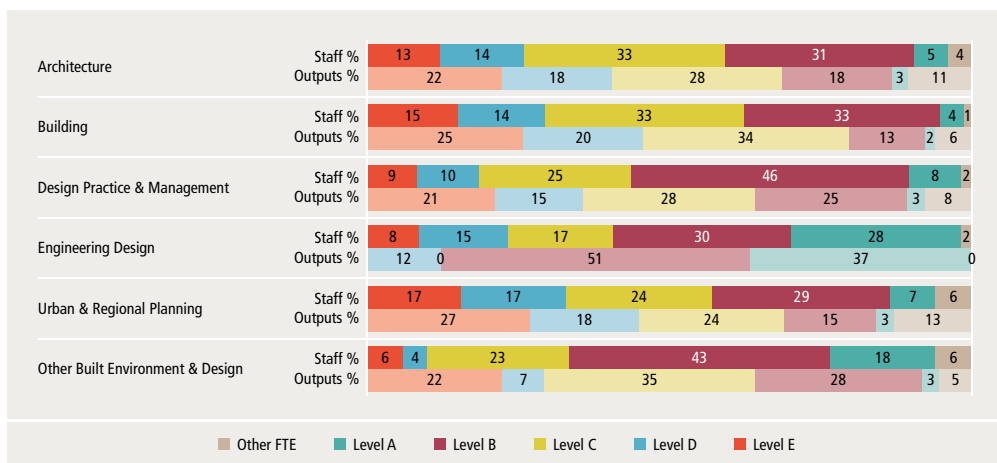


Source: ARC, ERA 2012 National Report.

Philosophy and Applied Ethics comprises five disciplines ranging from Applied Ethics to Other Philosophy and Religious Studies. Religion and Religious Studies stand out from the other discipline areas for the high proportion of FTE staff at a Level B appointment, with nearly 60% of staff at this level. For most other discipline groups, Level B appointments are proportionately higher, except for Philosophy, where Level C is higher. The discipline of Philosophy has the highest number of FTE staff, at 194; this is followed closely by Religion and Religious Studies with 187. Of interest is the high proportion (30%) of staff in Other Philosophy and Religious Studies, who have Other FTE appointments. Applied Ethics, History and Philosophy of Specific Fields, and Philosophy have about 30% of their FTE staff at Level D or Level E appointments.

The following figures map research outputs and staff by employment level for HASS fields of research.

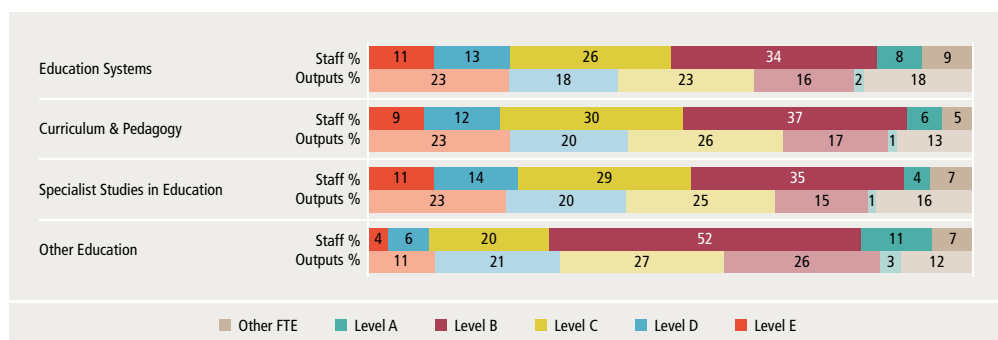
**Figure A7.23 Outputs and staff, by employment level: Built Environment and Design, ERA 2012**



Source: ARC, customised data.

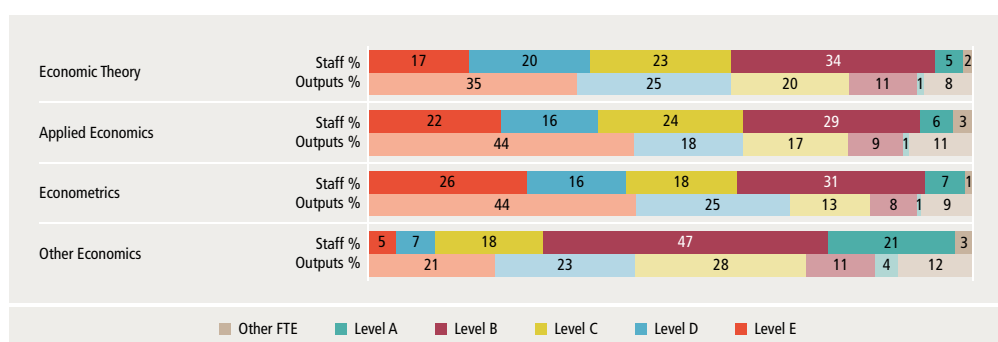


Figure A7.24 Outputs and staff, by employment level: Education, ERA 2012



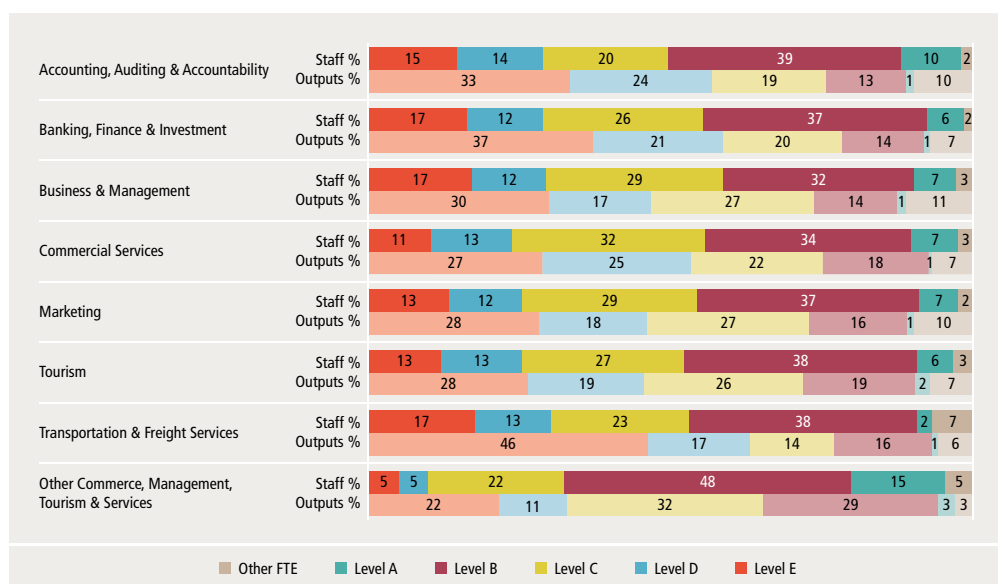
Source: ARC, customised data.

Figure A7.25 Outputs and staff, by employment level: Economics, ERA 2012



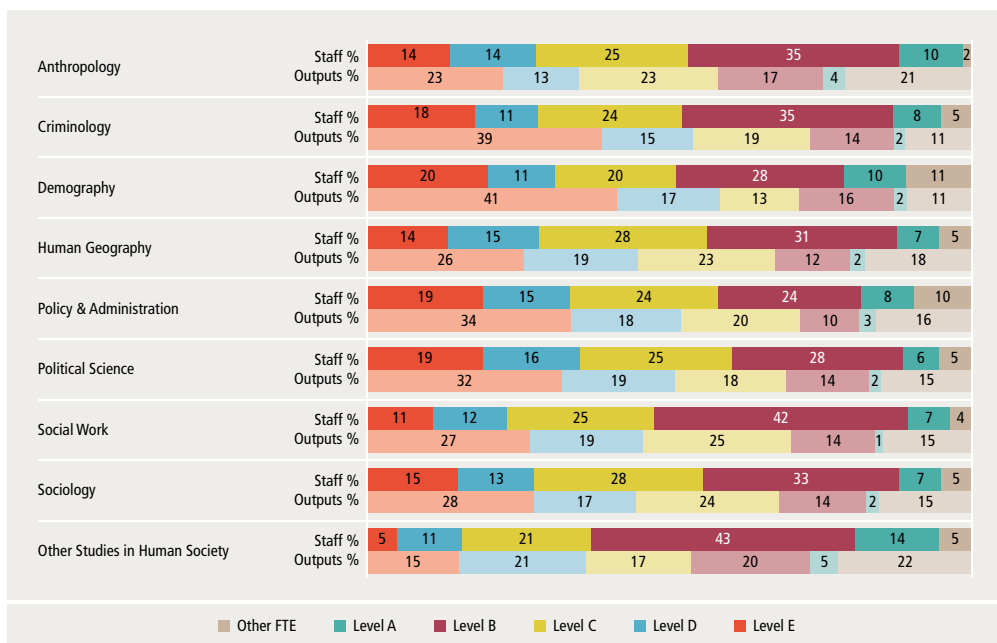
Source: ARC, customised data.

Figure A7.26 Outputs and staff, by employment level: Management and Commerce, ERA 2012



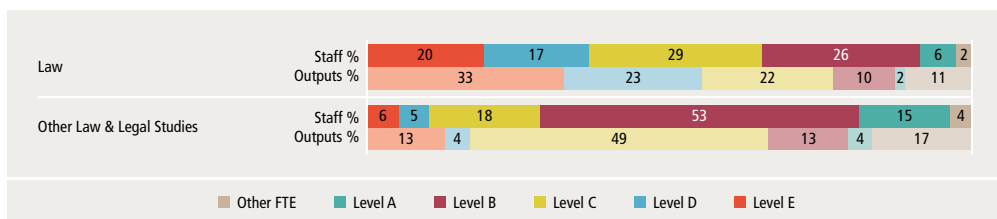
Source: ARC, customised data.

Figure A7.27 Outputs and staff, by employment level: Studies in Human Society, ERA 2012



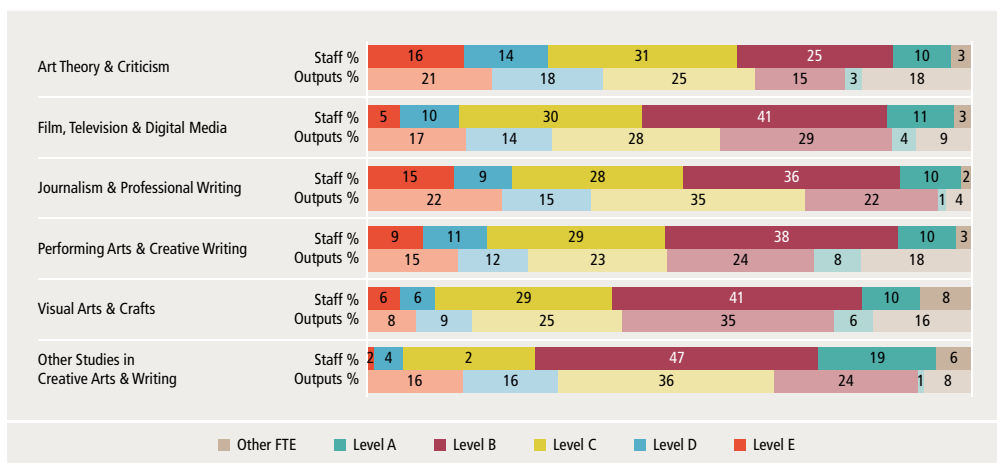
Source: ARC, customised data.

Figure A7.28 Outputs and staff, by employment level: Law and Legal Studies, ERA 2012



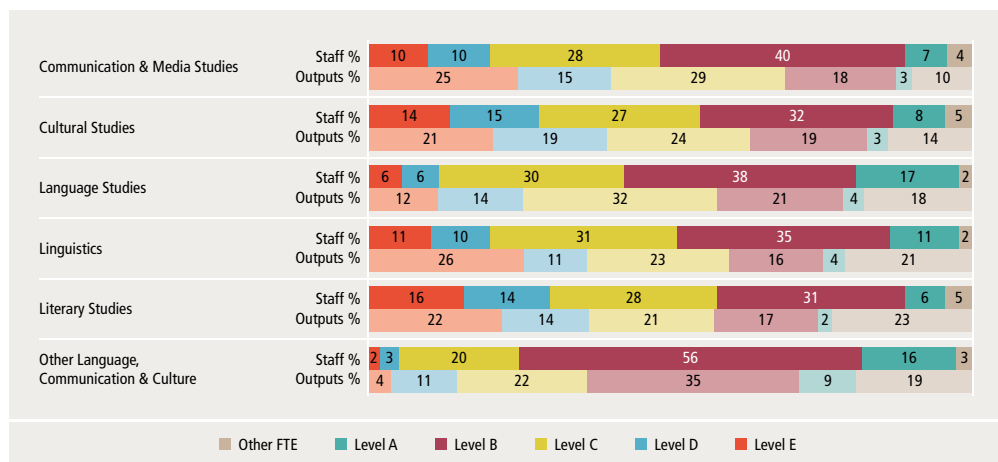
Source: ARC, customised data.

Figure A7.29 Outputs and staff, by employment level: Creative Arts and Writing, ERA 2012



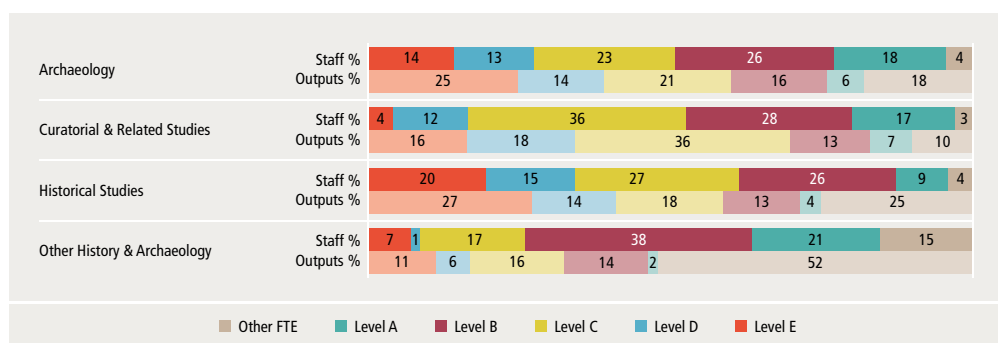
Source: ARC, customised data.

**Figure A7.30 Outputs and staff, by employment level: Language, Communication and Culture, ERA 2012**



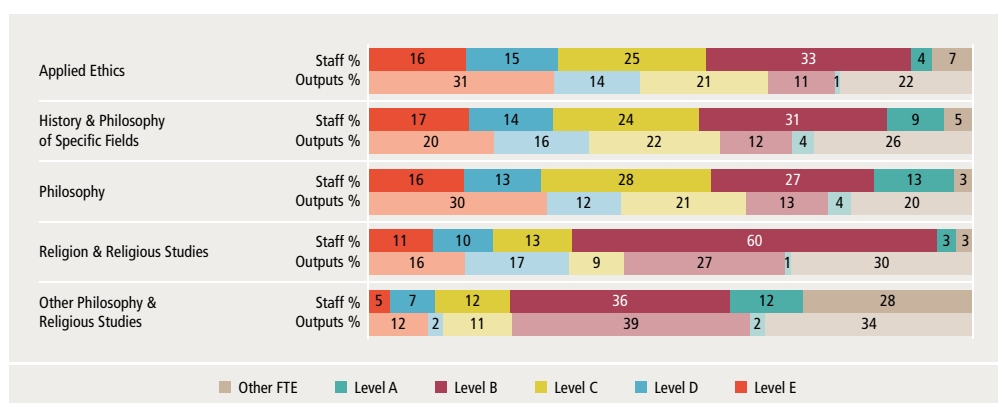
Source: ARC, customised data.

**Figure A7.31 Outputs and staff, by employment level: History and Archaeology, ERA 2012**



Source: ARC, customised data.

**Figure A7.32 Outputs and staff, by employment level: Philosophy and Religious Studies, ERA 2012**



Source: ARC, customised data.

## Teaching Workforce

Table A7.2 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by function ('teaching only'), by gender, by year, 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	144	77	128	75	145	85	112	69	113	74	135	91	139	94	174	127	147	142	187	149	190	153
Education	211	472	222	479	251	558	274	590	292	625	251	530	218	503	250	613	260	721	313	816	319	779
Management and Commerce	675	406	643	422	644	434	640	435	648	452	681	456	762	491	980	582	962	658	1023	768	993	728
Society and Culture	586	797	670	894	655	851	690	881	695	904	740	974	712	858	797	991	840	1,062	1,024	1,284	1,017	1,326
Creative Arts	418	409	426	415	432	414	366	372	439	389	392	375	433	407	462	468	503	505	558	518	560	549
<b>Total</b>	<b>2,042</b>	<b>2,166</b>	<b>2,096</b>	<b>2,295</b>	<b>2,131</b>	<b>2,346</b>	<b>2,093</b>	<b>2,362</b>	<b>2,197</b>	<b>2,449</b>	<b>2,210</b>	<b>2,433</b>	<b>2,278</b>	<b>2,363</b>	<b>2,677</b>	<b>2,788</b>	<b>2,726</b>	<b>3,096</b>	<b>3,112</b>	<b>3,540</b>	<b>3,082</b>	<b>3,538</b>

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.

Table A7.3 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by function (teaching and research), by gender, by year, 2002–12

	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	410	129	390	123	365	136	414	160	404	165	381	161	391	193	417	228	363	203	370	212	358	204
Education	805	984	763	1,004	736	1,022	739	1,098	741	1,130	688	1,107	677	1,132	657	1,159	667	1,178	623	1,171	649	1,240
Management and Commerce	1,794	963	1,885	1,018	1,861	1,046	1,951	1,107	1,985	1,169	2,100	1,273	2,129	1,298	2,253	1,392	2,245	1,370	2,120	1,298	2,152	1,313
Society and Culture	3,522	2,465	3,442	2,479	3,408	2,576	3,431	2,643	3,238	2,580	3,372	2,778	3,219	2,695	3,180	2,675	3,040	2,683	3,153	2,836	3,159	2,867
Creative Arts	906	598	901	621	881	635	976	740	955	733	913	723	1,024	796	1,018	797	1,005	832	966	781	1,023	827
<b>Total</b>	<b>7,439</b>	<b>5,142</b>	<b>7,390</b>	<b>5,255</b>	<b>7,253</b>	<b>5,419</b>	<b>7,521</b>	<b>5,756</b>	<b>7,326</b>	<b>5,777</b>	<b>7,460</b>	<b>6,047</b>	<b>7,437</b>	<b>6,121</b>	<b>7,532</b>	<b>6,252</b>	<b>7,321</b>	<b>6,275</b>	<b>7,232</b>	<b>6,303</b>	<b>7,352</b>	<b>6,457</b>

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.

**Table A7.4 Percentage change, and average number and percentage of full-time, fractional full-time and actual casual staff (FTE), by 'teaching only' function, by gender, in a HASS Academic Organisational Unit group, 2002–12**

	% Change in number of FTE 'teaching only' staff by AOU, 2002–12 (%)		Average number of FTE 'teaching only' staff by AOU, 2002–12 (n)		Average number of FTE 'teaching only' by AOU, 2002–12 (%)	
	Males	Females	Males	Females	Males	Females
Architecture and Building	31.94	98.70	146.73	103.27	58.69	41.31
Education	51.18	65.04	260.09	607.82	29.97	70.03
Management and Commerce	47.11	79.31	786.45	530.18	59.73	40.27
Society and Culture	73.55	66.37	766.00	983.82	43.78	56.22
Creative Arts	33.97	34.23	453.55	438.27	50.86	49.14
<b>Total</b>	<b>50.93</b>	<b>63.34</b>	<b>2,422.18</b>	<b>2,670.55</b>	<b>47.56</b>	<b>52.44</b>

Source: Department of Education, customised data.

**Table A7.5 Percentage change, and average number and percentage of full-time, fractional full-time and actual casual staff (FTE), by 'teaching and research' function, by gender, in a HASS Academic Organisational Unit group, 2002–12**

	% Change in number of FTE 'teaching and research' staff by AOU, 2002–12 (%)		Average number of FTE 'teaching and research' staff by AOU, 2002–12 (n)		Average number of FTE 'teaching and research' by AOU, 2002–12 (%)	
	Males	Females	Males	Females	Males	Females
Architecture and Building	-12.68	58.14	387.55	174.00	69.01	30.99
Education	-19.38	26.02	704.09	1,111.36	38.78	61.22
Management and Commerce	19.96	36.34	2,043.18	1,204.27	62.92	37.08
Society and Culture	-10.31	16.31	3,287.64	2,661.55	55.26	44.74
Creative Arts	12.91	38.29	960.73	734.82	56.66	43.34
<b>Total</b>	<b>-1.17</b>	<b>25.57</b>	<b>7,387.55</b>	<b>5,891.27</b>	<b>55.63</b>	<b>44.37</b>

Source: Department of Education, customised data.

Table A7.6 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by Current Duties Classification (Above Senior Lecturer), by gender, by year, 2002–12

Above Senior Lecturer	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	85	16	77	16	74	7	90	13	102	18	93	22	92	29	108	38	98	37	104	37	108	43
Education	190	103	180	110	183	122	180	139	189	150	200	152	183	164	182	182	194	214	183	226	198	241
Management and Commerce	458	96	498	119	509	119	542	144	535	169	644	201	657	213	706	247	709	267	713	255	717	267
Society and Culture	1,136	322	1,130	348	1,122	391	1,126	427	1,104	437	1,213	516	1,129	514	1,143	555	1,115	563	1,173	621	1,178	679
Creative arts	118	43	126	52	129	58	153	71	171	86	171	76	204	92	206	116	190	124	210	126	223	138
<b>Total</b>	<b>1,999</b>	<b>598</b>	<b>2,019</b>	<b>654</b>	<b>2,027</b>	<b>716</b>	<b>2,100</b>	<b>803</b>	<b>2,110</b>	<b>872</b>	<b>2,342</b>	<b>979</b>	<b>2,285</b>	<b>1,027</b>	<b>2,356</b>	<b>1,149</b>	<b>2,316</b>	<b>1,210</b>	<b>2,396</b>	<b>1,274</b>	<b>2,431</b>	<b>1,378</b>
<b>Total M+F</b>	<b>2,597</b>	<b>2,673</b>	<b>2,673</b>	<b>2,743</b>	<b>2,743</b>	<b>2,903</b>	<b>2,982</b>	<b>3,321</b>	<b>3,312</b>	<b>3,505</b>	<b>3,526</b>	<b>3,670</b>	<b>3,809</b>	<b>3,993</b>	<b>4,039</b>	<b>4,134</b>	<b>4,134</b>	<b>4,134</b>	<b>4,134</b>	<b>4,134</b>	<b>4,134</b>	<b>4,134</b>

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.

Table A7.7 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by Current Duties Classification (Senior Lecturer), by gender, by year, 2002–12

Senior Lecturer	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	142	30	139	30	139	39	154	54	142	53	133	57	138	67	136	76	117	70	127	72	128	68
Education	286	273	273	283	245	295	239	300	243	329	210	316	204	324	200	353	203	348	214	349	212	369
Management and Commerce	513	242	558	258	542	261	557	262	579	286	574	307	580	341	625	378	641	371	603	368	631	367
Society and Culture	1,121	693	1,096	713	1,051	720	1,080	753	1,014	745	1,013	824	972	777	948	759	877	771	884	823	893	840
Creative Arts	272	156	286	163	284	179	301	195	280	195	256	205	294	245	306	239	316	253	311	277	329	282
<b>Total</b>	<b>2,340</b>	<b>1,402</b>	<b>2,355</b>	<b>1,457</b>	<b>2,264</b>	<b>1,500</b>	<b>2,332</b>	<b>1,580</b>	<b>2,267</b>	<b>1,620</b>	<b>2,192</b>	<b>1,720</b>	<b>2,201</b>	<b>1,759</b>	<b>2,227</b>	<b>1,821</b>	<b>2,167</b>	<b>1,826</b>	<b>2,144</b>	<b>1,895</b>	<b>2,203</b>	<b>1,931</b>
<b>Total M+F</b>	<b>3,742</b>	<b>3,812</b>	<b>3,812</b>	<b>3,764</b>	<b>3,764</b>	<b>3,912</b>	<b>3,887</b>	<b>3,912</b>	<b>3,887</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>	<b>4,048</b>

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.

**Table A7.8 Percentage change and per cent of total, in number of full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by Current Duties Classification, 2002–12**

	% Change in number of FTE staff between 2002–12	% Of grand total number of FTE staff
Above Senior Lecturer	46.67	23.13
Senior Lecturer	10.48	28.51
Lecturer	10.54	38.73
Below Lecturer	-14.15	9.63
<b>TOTAL</b>		<b>100</b>

Source: Department of Education, customised data.

**Table A7.9 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by Current Duties Classification (Lecturer), by gender, by year, 2002–12**

Lecturer	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	159	68	153	62	134	73	154	78	142	82	135	71	137	80	148	98	130	83	121	81	114	96
Education	294	527	279	508	280	515	292	585	289	586	261	568	262	565	269	577	269	612	255	639	273	663
Management and Commerce	693	466	703	488	657	501	697	529	706	540	724	574	737	567	816	601	804	603	815	608	814	619
Society and Culture	1,035	1,087	1,028	1,123	1,057	1,159	1,035	1,147	944	1,107	1,025	1,177	952	1,110	919	1,108	918	1,136	1,036	1,258	1,066	1,250
Creative Arts	477	338	452	354	419	345	447	392	430	369	409	346	454	393	446	379	422	371	435	360	430	373
<b>Total</b>	<b>2,668</b>	<b>2,492</b>	<b>2,626</b>	<b>2,541</b>	<b>2,553</b>	<b>2,597</b>	<b>2,634</b>	<b>2,736</b>	<b>2,521</b>	<b>2,694</b>	<b>2,562</b>	<b>2,740</b>	<b>2,547</b>	<b>2,721</b>	<b>2,602</b>	<b>2,764</b>	<b>2,550</b>	<b>2,816</b>	<b>2,667</b>	<b>2,953</b>	<b>2,701</b>	<b>3,003</b>
<b>Total M+F</b>	<b>5,160</b>		<b>5,167</b>		<b>5,150</b>		<b>5,370</b>		<b>5,215</b>		<b>5,302</b>		<b>5,268</b>		<b>5,366</b>		<b>5,366</b>		<b>5,620</b>		<b>5,704</b>	

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.



Table A7.10 Full-time, fractional full-time and actual casual staff (FTE) in a HASS Academic Organisational Unit group, by Current Duties Classification (Below Lecturer), by gender, by year, 2002–12

Below Lecturer	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Architecture and Building	24	16	24	18	18	13	20	17	18	7	21	5	24	16	24	19	19	23	16	13	15	11
Education	42	108	41	124	33	115	32	102	39	101	31	92	34	96	18	94	16	79	21	74	35	100
Management and Commerce	149	170	163	183	177	192	172	205	189	197	201	220	192	209	181	205	175	187	137	177	148	178
Society and Culture	253	400	244	372	235	350	254	371	219	343	214	360	206	342	226	344	195	296	188	330	199	308
Creative Arts	106	96	115	101	111	101	97	98	103	95	93	96	108	108	110	92	110	90	110	83	98	72
<b>Total</b>	<b>586</b>	<b>806</b>	<b>598</b>	<b>813</b>	<b>584</b>	<b>774</b>	<b>589</b>	<b>808</b>	<b>579</b>	<b>767</b>	<b>571</b>	<b>793</b>	<b>575</b>	<b>786</b>	<b>575</b>	<b>764</b>	<b>537</b>	<b>700</b>	<b>490</b>	<b>697</b>	<b>510</b>	<b>685</b>
<b>Total M+F</b>	<b>1,392</b>		<b>1,411</b>		<b>1,358</b>		<b>1,397</b>		<b>1,346</b>		<b>1,364</b>		<b>1,361</b>		<b>1,339</b>		<b>1,237</b>		<b>1,187</b>		<b>1,195</b>	

Source: Department of Education, customised data.

Notes: Totals may not add to the aggregate cells above as original data contained non-specific and non-numeric figures that were coded as 'missing' for the purposes of this analysis.