

Parliamentary Inquiry into
Research Training and Research Workforce
Issues in Australian Universities

Submission by the College of Experts

EXECUTIVE SUMMARY

With respect to the current state of research training in Australia, the College of Experts identified four issues that it believes constitute the major challenges faced by universities:

1. the length, content and support of research education at the PhD level;
2. the internationalisation of research training;
3. career pathways and structure for researchers; and
4. the basic environment for research in this country.

Members of the College strongly believe that an extension of the tenure of scholarships and normative PhD completion times is needed in the Australian system. The current system provides insufficient encouragement for many of our most creative and innovative university graduates to embark on a research career. **This situation could be ameliorated by introducing an element of creativity in the schemes providing scholarship support for our best graduates at a level that is reasonable and attractive and tenable for a flexible duration from three to five years.**

Further consideration needs to be given to maximising Australia's opportunities to attract the best international research trainees at the doctoral and postdoctoral levels. International trainees are a valuable resource for contributing to the overall research effort, enhancing the training experience for all trainees and contributing to Australian research post-training by either remaining as part of the national research team or serving as an international link with Australian researchers. **Restrictions on the tenure of studentships and fellowships by foreign nationals could be relaxed and the overall pool of awards available to both Australian and international trainees could be increased. In addition, flexibility could be a feature in more fellowship programs for Australian trainees to enable them to acquire unique skills overseas for importation back to Australia.**

There are limited opportunities at the entry level to the research career pathway and researchers and would-be researchers perceive a real lack of a secure career pathway. **The career structure for researchers could be enhanced by strategically aligning the number of entry level research and academic positions with the number of positions that become available as senior staff rotate out of the research workforce and nascent researchers reach independence. Current efforts at providing career stability and enhanced research opportunities in Australia, including the Federation and Future Fellowship programs are commendable and we encourage the continuation and possible expansion of such schemes. We also encourage long-term planning that includes consideration of the establishment of additional large scale research and infrastructure projects that include trainees and early career researchers.**

The issue of the basic environment for research is far larger and more complex. To meet the expectations of the Australian community with regard to outputs and outcomes from research, researchers need to be provided with an appropriate level of support – a level which is comparable with support enjoyed by colleagues in competitor nations. **We need to have strategic goals that aim toward keeping our national research commitment in line with the research commitments of our competitor nations.**

INTRODUCTION

The College of Experts

The College of Experts is an advisory body engaged by the Australian Research Council (ARC). It currently includes 77 ministerial appointees from outside the ARC who represent a broad spectrum of the public and private research establishment.

The College members assess and rank ARC grant applications submitted under the National Competitive Grants Program (NCGP), make funding recommendations to the ARC and provide strategic advice to the ARC on emerging disciplines and cross-disciplinary developments. The members are ‘experts of international standing’ who are leaders in their fields. Those fields, as defined by the committees into which the College is organised, are: Biological Sciences and Biotechnology; Engineering and Environmental Science; Humanities and Creative Arts; Mathematics, Information and Communication Sciences; Physics, Chemistry and Geosciences; and Social, Behavioural and Economic Sciences.

In addition to being independent researchers and former research trainees themselves, virtually all members of the College have experience in training researchers in their fields, mentoring junior colleagues and participating in the selection of individuals for research positions in the public or private sector. Among the functions performed by the College for the ARC is the assessment and ranking of the applications for research fellowships, including junior level postdoctoral awards administered by the ARC.

This submission

This document is submitted by and from the perspective of the College of Experts as an expression of the consensus opinion of the College membership. It is neither directly linked to the College’s engagement by the ARC nor necessarily representative of the views of the ARC itself.

This document has been circulated to and includes opinions collected from College members across all the research fields. We feel strongly that research and innovation provides skills that are essential to the future of the nation, and should be promoted across the full breadth of creative endeavour. A majority of members of the College have contributed to drafting this submission and/or endorsed the final version. In drafting the submission a number of key issues, cutting across the terms of reference, were reiterated by College members. Consequently the submission has focused on these issues (see Inquiry Discussion Points).

BACKGROUND

Contribution of training programs to the national research output

Research trainees (here we include Masters and PhD students, as well as early career postdoctoral researchers) play a critical role in the overall effort to maintain and expand Australia's competitiveness in virtually every area in which innovation is a driving force. Among other things, research training schemes contribute to following:

- renewal and reinvigoration of Australia's research capacity;
- development of a strong tertiary education effort;
- continued growth of the Australian economy; and
- maintenance of a skilled workforce.

Australia's research capacity

Research traineeships typically attract highly motivated and dedicated individuals, and the "fresh outlook" represented by early-career researchers is often associated with a high degree of creativity and productivity. Thus, by virtue of the key role played by these individuals in the hands-on performance of research, they make a significant contribution to advances in science and other creative endeavours.

If Australia is to remain competitive among peer nations, continued renewal and reinvigoration of our research effort is an absolute requirement. Australia has been able to overcome the so-called tyranny of distance through the innovative edge it has forged in key areas and as a result Australia has been recognised internationally as a leader in research and innovation in many fields. However, we need to ensure that this innovative edge is maintained.

Tertiary education effort

Research training programs are essential in providing the next generations of researchers, and this contribution cannot be overstated. Additionally, academic postgraduate researchers typically gain instruction and experience in teaching undergraduates, as lecturers, tutors and laboratory instructors. This makes research training programs integral to our tertiary education effort and an essential step in training tertiary educators, which is important given the ageing of the current academic workforce.

The Australian economy

Expansion of Australia's research training capacity will help keep the economy robust. For example, the resources sector (minerals, petroleum, gas, etc.) is a key driver of the Australian economy – responsible for approximately 10 per cent of our gross national product and accounting for approximately 49 per cent of total goods and services exports¹, it is growing faster than any other economic area. With the skills shortage in this and other key economic sectors potentially a limiting factor we need to think carefully about how to balance the 'production' of and demand for research-trained graduates. In particular we need to ensure that Australia's training schemes are flexible enough to accommodate changes in demand.

Solutions to the problems related to these shortages clearly depend on innovation and research, and it will be our future researchers who will provide these solutions, both through their creative endeavours and their contribution to present and future university teaching.

A skilled workforce

Finally, research training confers benefits that are not limited to preparing individuals to become independent research scientists or heads of research teams. In many careers (for example, in industries such as information technology and engineering)

¹ About Australia, Department of Foreign Affairs and Trade (www.dfat.gov.au)

background and experience in research are valued assets, providing know-how and attitudes that are in themselves important for leadership and decision making.

Research training also offers benefits in areas such as commerce, education, arts, government and law, where rigorous and analytical thinking and articulate communication are important skills.

INQUIRY DISCUSSION POINTS

Research training in Australia is a complex issue. Much in the current system is positive but there are continuing challenges that defy simple solutions. Investment in Australia's future through appropriate and adequate support of research training is costly, but with proper targeting and careful allocation of resources, it is an investment that will continue to contribute to our economy and society many fold over the initial outlay.

The College of Experts has identified four key issues with regard to research training that constitute challenges for universities today:

1. the length, content and support of research education at the PhD level;
2. the internationalisation of research training;
3. career pathways and structure for researchers; and
4. the environment for research in this country.

The order reflects the increasing complexity and costs involved, and we recognise that even the first issue does not lend itself to the implementation of any quick and easy changes. Internationalisation is a broader endeavour and involves a number of departments of government and the engagement of universities. Enhancing career pathways requires long-term commitments to individuals, the research community, institutions and society while buttressing the broader research environment is an issue of national priorities and substantial long-term investment.

It is impossible to dissociate these four aspects or to accept the first by itself and dismiss the fourth because of relative costs and complexities. Training of PhDs in research does not occur in a vacuum; without a fertile research environment, bright young innovators will neither be drawn into a PhD program nor will PhD graduates be able to realise the creative potential for which they were trained.

Length, content and support of research education at the PhD level

Length of PhDs

In some areas of research, the present training schemes in Australia do not allow sufficient time for development of world-class analytical, technical and communication skills.

The College members strongly believe that the current expected completion time for a PhD (3-3.5 years for students in all disciplines undertaking every type of dissertation research) needs re-examination. The duration is mandated by the expiration of scholarships and often by the necessity for trainees to earn a competitive wage as soon as possible. We need to ask ourselves what is a reasonable expectation – noting firstly that the current limit is not met by many Australian students and secondly that the PhD completion time in some overseas countries is much longer (for example, six years in Spain and 7.5 years in the United States²).

In fields where extensive field work, prospective data collection or other procedures measured in years are part of the research, there is potential for the current system to lead to premature termination of a critical phase of research training, limiting the creativity and curiosity that are expected elements of doctoral research, discouraging innovation, curtailing personal development within the field and placing Australian graduates at a disadvantage when competing against international PhDs for placement and funding at the postdoctoral level. College members believe that the current research training system within Australia inadvertently prevents some PhD students from fully developing their work because of the short length of their scholarships. This results in a marked reduction of the benefits from research training, both to the student and to Australian society. Short scholarships and tight completion schedules represent false economy.

² OECD Science, Technology and Industry Outlook 2006

As research supervisors ourselves, we are concerned that in some disciplines Australian PhDs are at a disadvantage when competing for postdoctoral fellowships immediately on receiving their degree because they have had to rush through a project that truncates a complete research experience or limits their ability to demonstrate their achievements in publications. Alternatively, the students may have been assigned to a relatively unambitious project to ensure that they will have some record of achievement by the time their scholarships have expired.

The currently PhD scholarship time is a particular disadvantage in certain disciplines, for example in multi-year ecological, climatological and epidemiological research, or in certain fields of biomedical sciences. The typical length of a PhD in earth sciences in the United States is 4-5 years, a period of time that allows greater flexibility to develop a problem and learn wider research skills. Notably, the French system for students in the sciences grants 1-2-year "apprenticeships" following the PhD, providing a transition period to write papers, teach and mentor the next batch of PhD students (that is, be truly trained as an academic). This provides a model in which Australia might consider extending PhD scholarships or creating another category of post-PhD award to enhance the education of research trainees.

Content of PhDs

The present PhD training schemes do not encourage a broadening of the theoretical bases of research, by advanced coursework.

Members of the College believe that any extension of the tenure of scholarships should be long enough to allow inclusion of elements of advanced coursework when it is appropriate for the discipline and part of a specific degree program. The current one-size-fits-all PhD has prevented institutions from requiring completion of advanced coursework in any form, despite the recognised advantages of such training to the students' skill and knowledge base. Advanced methodological, technological and academic studies, including in some cases field training, would be desirable enhancements possible in a longer PhD program. The absence of such opportunities places our trainees at a great disadvantage in comparison with North American and many European students who receive rigorous formal training in addition to thesis-

related work. This is often accomplished during a two to three year “qualifying period” followed by barrier examinations that select for the most suitably qualified and creative students to continue in research training.

There are obvious benefits to including in-depth instruction in the degree requirements. In addition, supervisors can become well acquainted with their research trainees and assist them in developing suitable projects, allowing supervisors to choose the most challenging and often complex research topics with a degree of confidence. This is essential when good research is often a risky and expensive venture. The flexibility to extend PhD scholarships would be tied to attainment of completion milestones during candidacy to prevent misuse of the extended support.

Support for PhDs

The level and nature of support provided for PhD students also requires re-examination.

The financial support provided by standard Commonwealth postgraduate scholarships (Australian Postgraduate Awards) is relatively low given the high levels of education postgraduates have already attained (Bachelors, Honours and sometimes Masters degrees) and the level of demand in many areas of employment, particularly those they ultimately intend to serve by providing research services and innovation. In numerous areas, such as geology and engineering, research training programs are suffering because the financial support levels for trainees is far lower than can be expected in direct employment in the industry.

High market demands in such areas as geoscience, agriculture and information technology often result in diminished research activity in the very industries that would benefit most. While one may argue that the financial pain during the PhD project could be seen as a personal investment towards obtaining top-level skills (and potential employability), it may be discouraging many potential trainees. According

to an OECD report³ only 2.3 per 100 university graduates went on to a research degree in Australia and the United States compared to Canada (3.9), Switzerland (10.1) and Germany (11.2).

Creative solutions may help ensure that trainee scholarships remain competitive in disciplines where research-qualified graduates are in demand and even university graduates command starting salaries well in excess of the basic stipend. A possible option is to encourage sectors that benefit from hiring individuals trained in advanced research to contribute to that training by providing for a funding pool that supplements the scholarship support.

Internationalisation of research training

Currently and historically international students have not been eligible for many Commonwealth-funded scholarships.

The College welcomes the recent announcement by Minister Carr making changes to the ARC schemes in regard to internationalisation. Making Australian Postgraduate Awards Industry available to international applicants (from 2009) will address growing concerns about our ability to fill these positions domestically. The Endeavour Program (administered by the Department of Education, Employment and Workplace Relations) has also expanded research training opportunities for students in specific target countries in Asia and the Middle East.

These recent changes recognise that overseas students represent a valuable talent pool that can enhance the domestic research effort during the tenure of the scholarship, as well as encourage bridge-building between Australian and international research institutions. Another benefit of extending support to overseas trainees is that, where opportunities for advancement can be found, the best and most productive are usually keen to remain in Australia and become permanently productive contributors to research and society.

³ *Labour market characteristics and international mobility of doctorate holders: results for seven countries*, STI Working Paper 2007/2

It bears noting that in our most advanced research areas, we attract and retain international researchers from other countries considered leaders in research. This is evidence both of our creative ability and niches where adequate support has provided a fertile research environment. It is also a reminder of the necessity to support research at the cutting edge if we expect to remain competitive as a nation. Given the current trends of relatively low turnover of Australian university graduates into postgraduate training programs, the recruitment of overseas research talent at the time of their highest potential represents a logical strategy to develop further.

Career pathways and structure for researchers

Support for early- and mid-career researchers

Part of the career structure for training independent researchers is the national research fellowship schemes.

The newly announced *Future Fellowships* scheme is a welcome addition to the research career structure. The large number available (1000 over 5 years) is encouraging as is their target toward mid-career researchers. The Future Fellowships will do much to reduce the gap between early-career and professorial level fellowships, previously a substantial hurdle for many active researchers. Such forward thinking is commendable and the College welcomes the *Future Fellowships* scheme.

Despite the addition of Future Fellowships to the career research opportunities available, College members are concerned that the number of postdoctoral research positions currently available will limit opportunities domestically for many of our most promising research trainees.

Postdoctoral research is a crucial career step in which the individual acquires a new level of intellectual independence in defining and running their own research program. Over the past 20 years, competition in the research environment has resulted in a widespread international (and Australian) expectation that successful candidates for entry level academic positions (Lecturer) have postdoctoral experience. This is

particularly true in the sciences, but it is also a trend extending to other fields. This expectation is matched by the large postdoctoral programs in North America and Europe but to a lesser extent in Australia.

In order to continue to build Australia's capacity we need to ensure our schemes supporting postdoctoral researchers are competitive, so that the net effect is that there is multilateral benefit from the exchange of researchers and ideas, rather than a one way movement of talent offshore.

Council members believe that the number of early-career Fellowships should be increased. As members of the College of Experts we are familiar with the fact that high-quality applications for funding from early-career researchers far outnumber the available Fellowships. Each year the ARC awards approximately 140 postdoctoral fellowships (including Australian Postdoctoral Fellowships (110) and Australian Postdoctoral Fellowships Industry (30)) across all discipline areas. With a success rate of around 18 per cent for postdoctoral fellowships under the *Discovery Projects* scheme (see Table 1) the College is highly aware of the number of excellent applicants who are unsuccessful. Although additional postdoctoral fellows are funded within research grants as research associates, this remains a difficulty for succession planning in universities. The difficulty of obtaining postdoctoral support for worthy fellows also potentially places domestic students at a disadvantage in obtaining academic positions at Australian institutions.

When obtaining support for postdoctoral support becomes an insurmountable hurdle between the completion of a PhD and one's establishment as a self-directed researcher it is perceived as negating a viable career structure in the Australian academic system. Although promising researchers find job opportunities elsewhere, the lack of a better career options in research negates the greater benefit Australian society might accrue from their knowledge and skills. Given the current demographic trends, strategic realignment of entry level research and academic positions as senior staff retire will help maintain Australia's research at an internationally competitive level.

In those cases where the creative opportunities for young researchers are best achieved by offering fellowships directly to the individual, we need to look at increasing the portability of the award and allowing the Fellow to use it as a means of entry into the best possible research environment, including opportunities for overseas collaboration and exchange.

We also need to consider mechanisms that encourage the best international postdoctoral fellows to come to Australia. The College endorses and commends the current initiatives where the ARC is funding overseas postdoctoral fellows, and any other equivalent schemes.

Careers and fulfilment in research

The College of Experts recognise and commend this Committee of the House of Representatives for understanding that issues related to research training are not limited to those directly related to specific conditions of postgraduate awards and early career opportunity. A major challenge to attracting and retaining our best potential researchers is the long-term prospect of career opportunities, including a research environment that allows one to pursue studies that are as innovative and important as anywhere else in the world.

As part of the career structure for training independent researchers, it is necessary to examine funding of university-based teaching/research positions as well as other national research fellowship schemes. Both provide the means by which researchers will be able to stay in Australia, and ultimately for Australia to realise the benefits of the personal and national investment in their formation.

At the same time, the academic workforce is ageing and this may be a matter of immediate concern for research training in certain quarters. There are clear benefits in having active trainee researchers at the peak of their creative career involved in undergraduate and graduate training: such researchers often provide enthusiastic and current introductions to research fields, and serve as role models for undergraduates considering a scientific career. It is therefore also important that avenues are found to encourage the direct involvement of recently graduated researchers in direct teaching

roles, perhaps associated with their fields of expertise. Part-time research fellowships, perhaps matched by teaching appointments from universities, could be considered in this context.

The environment for research in this country

Lastly, we must remind ourselves of the truth that improving research training in any country will neither succeed nor serve the purpose of preparing the next generations of innovators unless the training itself involves the latest and most creative research and the nascent researchers can subsequently exercise their skills in a productive environment. Although the broader issues of research support may exceed the remit of the Committee, they must be borne in mind in the context of research training.

The impact of innovative thinking in modern society is easily appreciated by any consideration of the changes in the technological and creative areas over the last generation. This is a trend that is clearly accelerating. In addition to this, humanity is faced with an expanding list of critical challenges, such as climate change, that cannot be met by conventional thinking. The only way to avoid being overwhelmed is to ride the crest of innovation, and this will involve expanding the national research training effort – on a scale comparable to our international competitors.

Support in Australia for research and tertiary education has had difficulty keeping up with rising costs and the increased expectations of research dictated by the pace of change. The impact is felt at all levels in the research enterprise:

- some undergraduate feeder programs, for example, have been constricted or eliminated (one example being the mathematics majors at Flinders University and the Universities of New England and Southern Queensland);
- constraints have been placed on research training itself (as outlined below); and
- there is a perception that Australian researchers are becoming less able to pursue the kind of highly creative work that attracts them to research in the first place. This may be a perception based more on feeling than facts, but it is reinforced, for example, by statistics showing static or decreasing

success rates for grant applications, even when research spending is increasing.

In recent years, the complexity and cost of both research and research training have increased – as needs have grown for access to modern equipment and infrastructure, for the conduct of technical training associated with these resources, for access to information and the need for international engagement as well as the growing health, safety and statutory compliance requirements. All of these factors have contributed to an increase in research costs.

Council members believe that we need to monitor the impact of these trends on research training activities. College members are aware of, for example, Australian research students in science and technology performing routine technical tasks that, in other research-intensive countries, would be done by support technicians. In the humanities, some PhD students are using outmoded, time-consuming databases and analytical tools for working with quantitative data that do not conform to the highest international standards. Such diversion of students' efforts has a detrimental effect on the time available for higher level creativity, including the production of tangible outputs (such as papers, books, patents, prototypes, and reports aimed at community and government). It is such outputs that will contribute to innovative solutions to problems and answers to critical questions that will drive Australian progress in technological, economic, environmental and social arenas.

These anecdotes are illustrative of a system facing challenges in keeping pace with modern practise, particularly in the face of the dramatic growth of research activity abroad. The formation of the next generations of innovators requires consideration of Commonwealth funding schemes for universities and the intramural mechanisms for support of research. In the longer term we need also consider better strategic use of funding allocations within competitive grant schemes, which provide most of the resources used by our world-class, frontline research.

For purposes of this inquiry it is appropriate to point out the difficulty of maintaining research training programs at international standards if the resources available for research itself fail to keep up those standards as well. As mentioned above, good

research often depends on access to equipment and materials, and therefore the nature of the research conducted by trainees is directly related to the nature and scale of research being funded. Despite some positive steps being implemented toward larger research grants for longer durations, constraints have dictated, a reduction in highly innovative, high-risk (in terms of the potential of tangible short-term outcome) research. Utilitarian approaches to capacity building may not be in the long term best interests of a truly creative, dynamic and innovative society or economy. The best grounding for a creative society is a system that allows and encourages experimentation, expects and shoulders some failure and ultimately and cumulatively brings great benefits to the energy of a culture of invention and self-confidence. The optimal scenario is one in which projects that pursue groundbreaking, but perhaps long-term aims, and those aimed at more immediate applicability, are equally encouraged.

We cannot ignore that to succeed in attracting and retaining the most innovative researchers, there also has to be an overall feeling that the future is bright for research in Australia. Even when the research microenvironment is well supported, researchers become anxious if the broader picture at institutional and national levels is not optimistic.

RECOMMENDATIONS

The College offers the following recommendations to address the challenges facing Australia today in ensuring the adequate training of research professionals:

- 1) Government support for training of researchers for the degree of PhD should:
 - a) be sufficient to maintain the current numbers of PhD students, as a proportion of tertiary graduates, and future planning should include consideration of increasing the numbers;
 - b) provide flexibility in the granting of stipend support, including varying levels, depending on the field and individual trainee, plus creative combinations of government, university and private support to enable this;
 - c) be flexible to include tenure for up to five years, strictly dependant on the requirements of the individual candidate's institutional requirements and satisfactory progress toward the degree; and
 - d) enable institutions to revise degree requirements to bring the Australian PhD to a world leading standard in terms of coursework, barrier examinations for candidacy and evidence of novel and creative work in their dissertations, depending on the discipline and prescribed PhD program.
 - 2) Broadening our international perspective on scholarships and fellowships:
 - a) Funding rules should be relaxed to encourage more of the most outstanding international applicants to be trained Australia.
 - b) The best international trainees should be encouraged to stay permanently in Australia and immigration procedures should be reviewed.
 - c) Overall planning should take note of the requirements and capacity to train researchers so that the total numbers of studentships and fellowships maintains opportunities for all worthy research trainees, local and international.
 - d) More Australian fellowship programs should be made flexible to include potential for an international component allowing postdoctoral fellows to acquire unique skills and perspectives overseas for import back to Australia.
- The College commends current and proposed programs in which this is

possible. The level of funding of such fellowships should allow a reasonable standard of living to be maintained while overseas in order to make that component attractive.

- 3) Members of the College commend the Government for enhancing the research career structure in Australia by the implementation of the Future Fellowship scheme. We need to continue to monitor career structure, in particular:
 - a) We should carefully consider the opportunities pending as relatively large numbers of senior research and academic staff approach retirement. Given the current demographics, including numbers of nascent early career researchers and a larger pool of future university students, the number of entry level research positions can be increased on a cost-effective basis. Creative thinking and strategic planning are essential to achieve this.
 - b) As part of longer term national priorities, the Government should consider, on its own and in partnership with the private sector, potential establishment of additional large research projects and infrastructure projects aimed at benefiting the Australian economy and society, which will generate larger pools of postgraduate and postdoctoral training opportunities. This should be part of the mandate for the review of the National Innovation System.
- 4) As a nation we need to provide an environment to which innovative and creative trainees are drawn and in which current researchers can thrive:
 - a) Long term strategic planning should ensure Australia's commitment to research and development (both in terms of funding and incentives to increase proprietary research) remains consistent with our competitor nations.
 - b) The current structure of funding agencies, universities and other institutions should continue to distribute and administer funds according to appropriately revised rules.
 - c) With respect to funding of universities, we should recognise that in addition to providing infrastructure and direct input to the training of researchers, universities also contribute to the preparation and inspiration of future research trainees.

SUPPORTING TABLES

Table 1: ARC fellowships (2002 to 2008)

	2002	2003	2004	2005	2006	2007	2008
Australian Postdoctoral Fellowships							
Applications	449	579	489	570	679	726	676
Funded	110	110	112	112	110	110	120
Success rate	24.5%	19.0%	22.9%	19.6%	16.2%	15.2%	17.8%
Australian Postdoctoral Fellowships Industry							
Applications	59	73	82	75	62	76	58
Funded	27	32	46	33	30	32	30
Success rate	45.8%	43.8%	56.1%	44.0%	48.4%	42.1%	51.7%
Total							
Applications	508	652	571	645	741	802	734
Funded	137	142	158	145	140	142	150
Success rate	27.0%	21.8%	27.7%	22.5%	18.9%	17.7%	20.4%

Source: ARC