

Research Australia

An alliance for discoveries in health

TRENDS IN HEALTH AND MEDICAL RESEARCH FUNDING

April 2009

Sydney

The Exchange Centre,
20 Bridge Street, Sydney NSW 2000
Telephone • 61 2 8298 8365 Facsimile • 61 2 9227 0636

Melbourne

Suite 2, Mezzanine
257 Collins Street, Melbourne VIC 3000
Telephone • 61 3 9662 9366 Facsimile • 61 3 9639 4126

Research Australia Limited ABN 28 095 324 379

www.researchaustralia.org Email • enquiries@researchaustralia.org

All correspondence: PO Box H224 Australia Square NSW 1215

About Research Australia

Research Australia is a unique national alliance of over 180 member and donor organisations with a common mission to make health and medical research a higher national priority. For more information on Research Australia visit www.researchaustralia.org

This document and the ideas and concepts set out in this document are subject to copyright. No part of the document, ideas or concepts are to be reproduced or used either in identical or modified form, without the express written consent of Research Australia.

Contents

1.	A history of innovation.....	4
2.	Funding by the National Health and Medical Research Council	4
3.	Focus of NHMRC research	8
4.	Performers of health and medical research	11
5.	Other competitive grants	12
6.	Other health portfolio support.....	14
7.	Infrastructure support	14
8.	State and territory funding.....	15
9.	Business R&D	16
10.	Philanthropic giving	16
11.	Return on investment.....	18

Figures

Figure 1:	NHMRC expenditure over the past decade	4
Figure 2:	NHMRC expenditure as a proportion of Commonwealth R&D funding	5
Figure 3:	NHMRC expenditure as a proportion of GDP	5
Figure 4:	OECD government spending on health R&D as share of GDP 2006.....	6
Figure 5:	OECD government spending on health R&D per capita 2006.....	6
Figure 6:	OECD government spending on health R&D as share of health budget 2006.....	7
Figure 7:	NHMRC spending as a share of Health portfolio – projections to 2014-15	7
Figure 8:	Health and Ageing portfolio, by days of health budget	8
Figure 9:	NHMRC expenditure by Broad Research Area	8
Figure 10:	NHMRC expenditure by Broad Research Area – percentage share	9
Figure 11:	NHMRC funding by National Research Priority 2006-07	10
Figure 12:	Proportion of NHMRC annual expenditure by National Research Priority.....	10
Figure 13:	NHMRC funding by National Health Priority	11
Figure 14:	NHMRC annual expenditure by sector	12
Figure 15:	Workforce supported by NHMRC	12
Figure 16:	ARC National Competitive Grants Program funding 2002-2008	13
Figure 17:	ARC support for health and medical research 2008.....	13
Figure 18:	All Department of Health and Ageing research programs	14
Figure 19:	Block funding support for research	15
Figure 20:	R&D funded by states and territories, by performing sector 2004-05.....	15
Figure 21:	Health-related Business Expenditure on R&D	16
Figure 22:	Average donation by cause	17
Figure 23:	Australian philanthropic giving by cause.....	17

1. A history of innovation

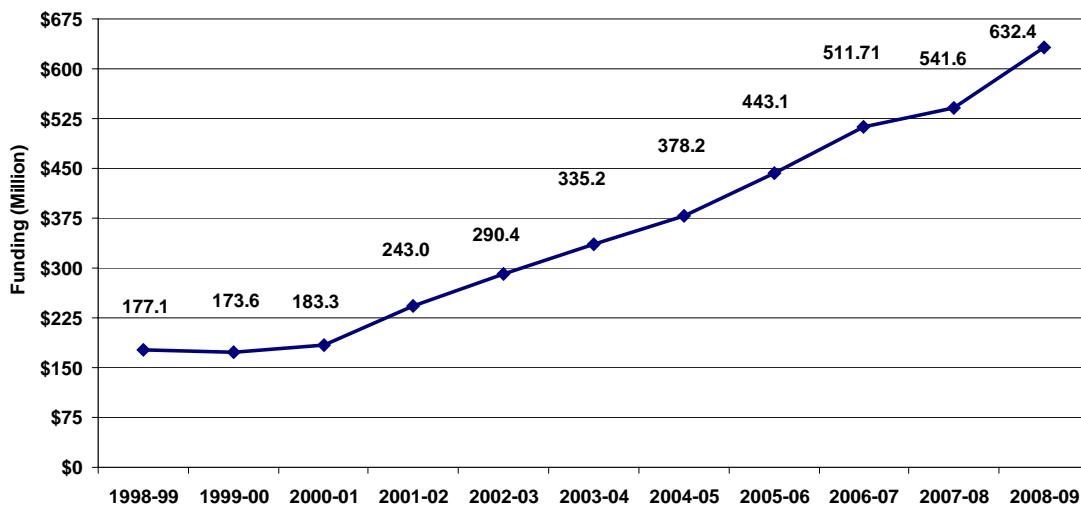
Historically, medical research has been an area of particular strength for Australia. Australia has been home to six Nobel laureates in medicine: from Howard Florey's involvement in the discovery of penicillin through to Barry Marshall and Robin Warren's discovery of the *Helicobacter pylori* bacterium. The ground-breaking vaccine for human papilloma virus was the result of Australian medical research. Despite having only 0.3 per cent of the world's population, Australia contributes 3 per cent of the OECD's medical research publications¹.

Medical research in Australia is undertaken by a number of sectors, including public, private and not-for-profit. Research occurs in universities, hospitals, independent medical research institutes, government agencies, clinical trial facilities and private laboratories. Funding is provided by all levels of government, local and multinational companies and the philanthropic sector. This produces a complex system, whereby the different players all have the ability to influence each other. The 1999 Health and Medical Research Strategic Review (the Wills Review) identified a "virtuous cycle", whereby government, research and industry mutually support and feed into each other, delivering returns to the community.

2. Funding by the National Health and Medical Research Council

National Health and Medical Research Council (NHMRC) funding has increased nearly five-fold since 1995. This funding increase has been warmly embraced by the Australian community, with recent Research Australia public opinion polling finding that 72% of people believe that the government should continue increasing funding for health and medical research². Public opinion polling has consistently yielded evidence of high levels of public support for government funding of health and medical research, on par with traditionally high ranking areas, such as education.

Figure 1: NHMRC expenditure over the past decade



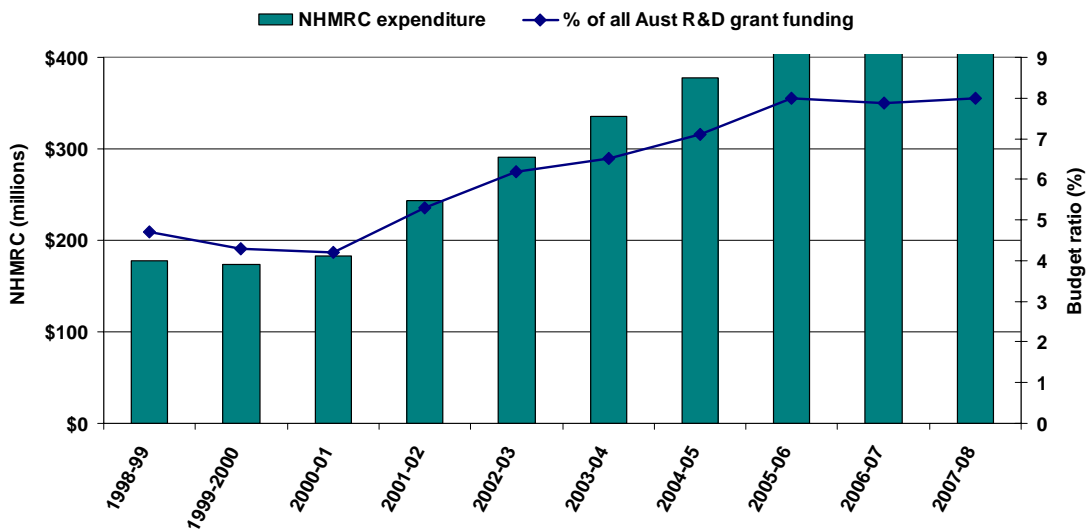
Source: NHMRC research funding trend data, Portfolio Budget Statements

NHMRC funding as a percentage of total Commonwealth Government science and innovation funding has also increased since 2000-01.

¹ Grant, J. 2004. *Sustaining the Virtuous Cycle*. Australian Government, Canberra

² Research Australia. 2008. *Health and Medical Research Public Opinion Poll 2008*, <http://researchaustralia.org/content/documents/Poll%20FINAL%20WEB.pdf>

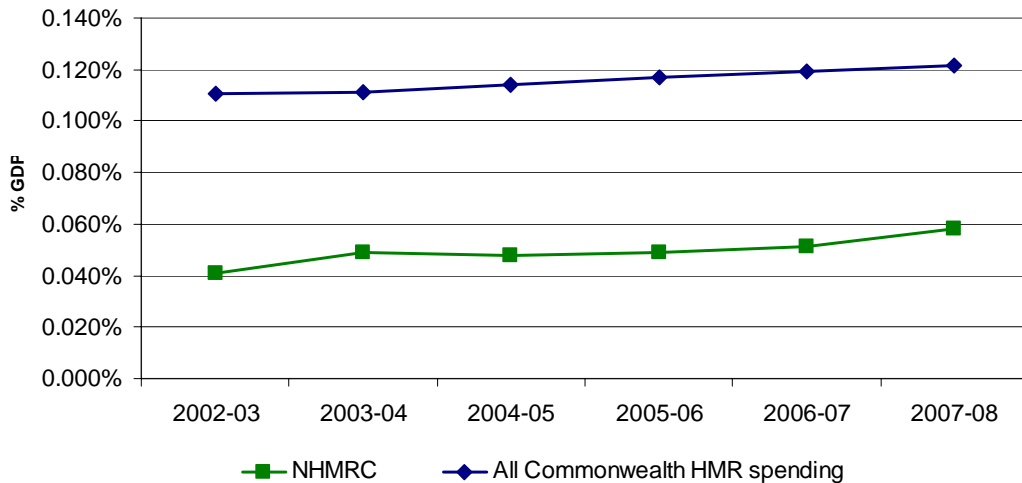
Figure 2: NHMRC expenditure as a proportion of Commonwealth R&D funding



Source: NHMRC research funding trend data, Science & Innovation Budget Tables,

NHMRC expenditure has been increasingly steadily over the past decade. The growth in funding followed the release of the Wills Review (1999) which identified the important investment returns from health and medical research and the need to substantially increase public funding. This was followed by the Investment Review of Health and Medical Research (Grant Review, 2004) which further promoted the need for research investment to generate social and economic benefits to the community.

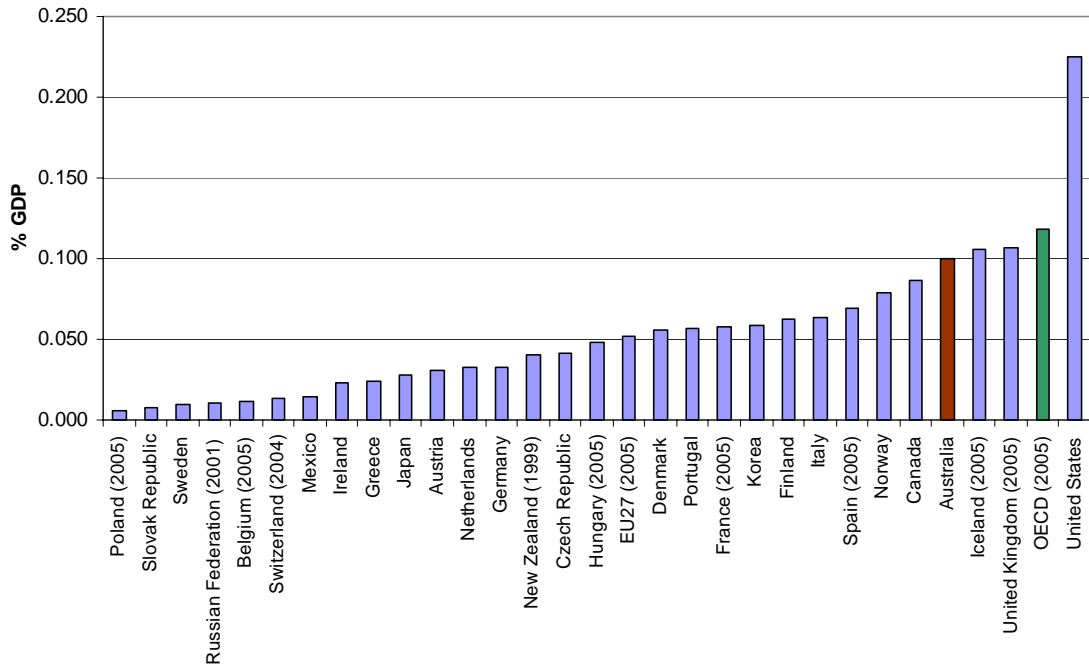
Figure 3: NHMRC expenditure as a proportion of GDP



Source: NHMRC research funding trend data

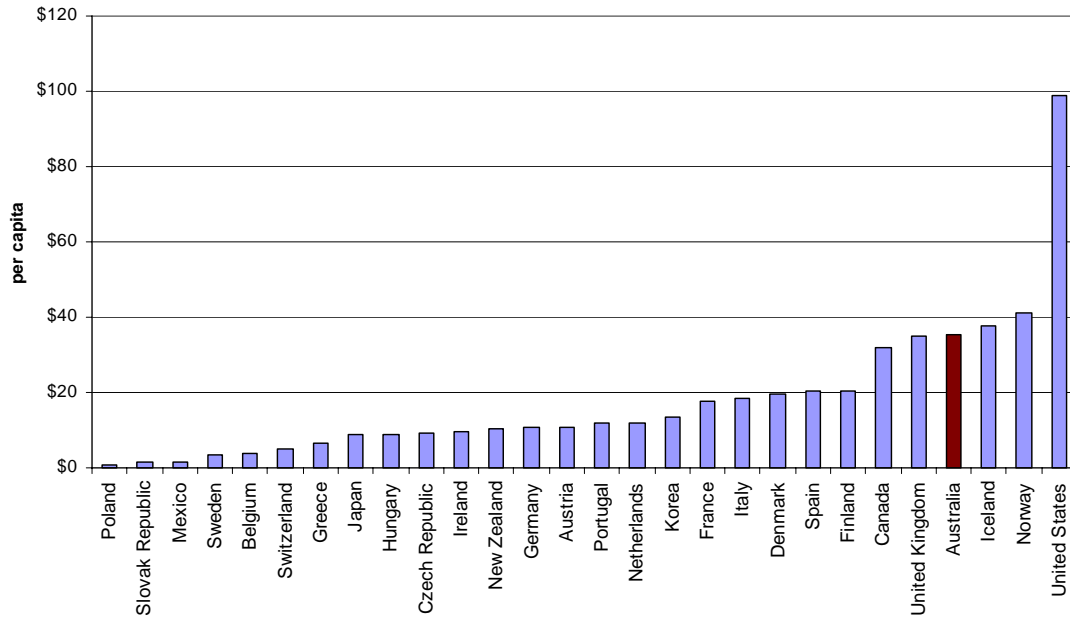
Commonwealth Government spending on research and development into health is currently high by OECD standards, although significantly behind the United States. Australian government expenditure on health and medical research as a percentage of GDP has been within the 0.11%-0.12% band for the past six years. Given significant investments in other OECD nations, this strong position could be lost if funding growth is not maintained.

Figure 4: OECD government spending on health R&D as share of GDP 2006



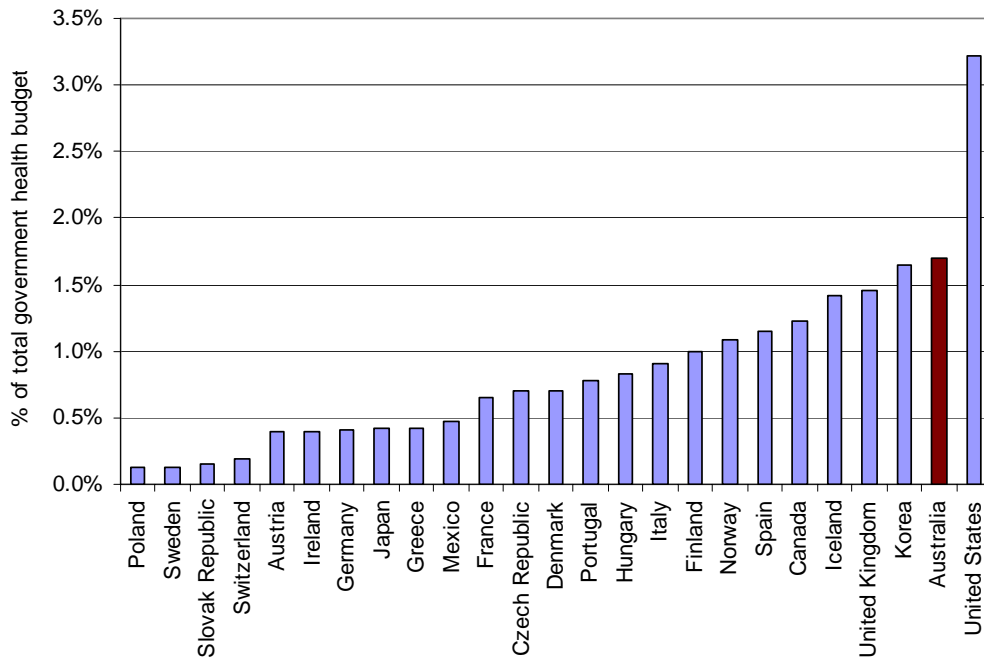
Source: OECD R&D Database 2007

Figure 5: OECD government spending on health R&D per capita 2006



Source: Research Australia analysis from OECD R&D Database 2007, OECD fact book

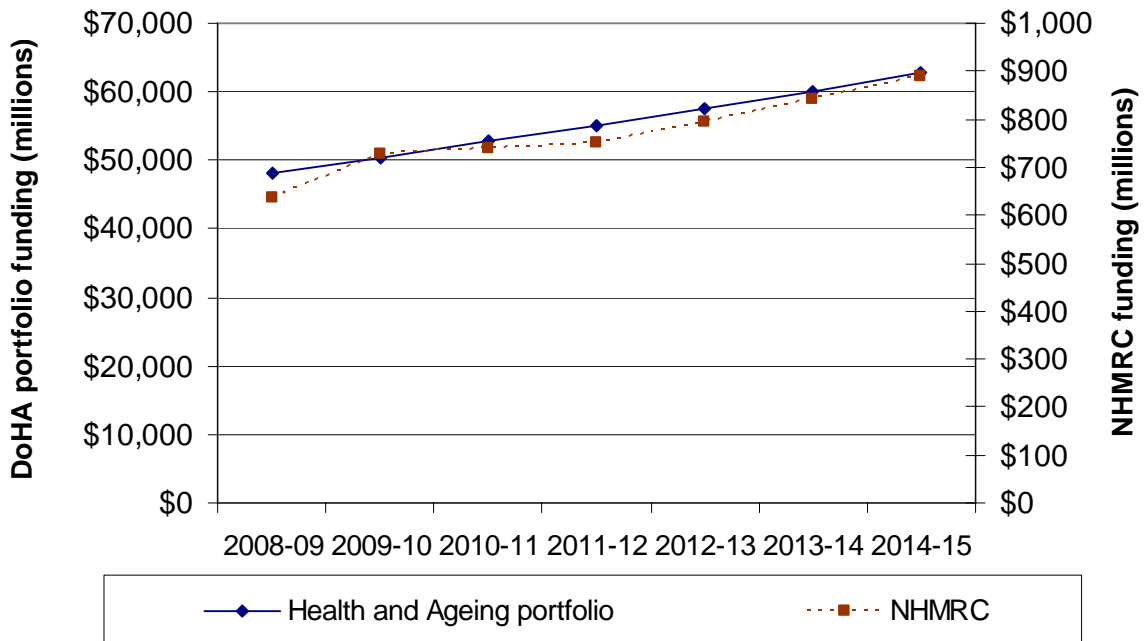
Figure 6: OECD government spending on health R&D as share of health budget 2006



Source: Research Australia analysis from OECD R&D Database 2007, OECD health data

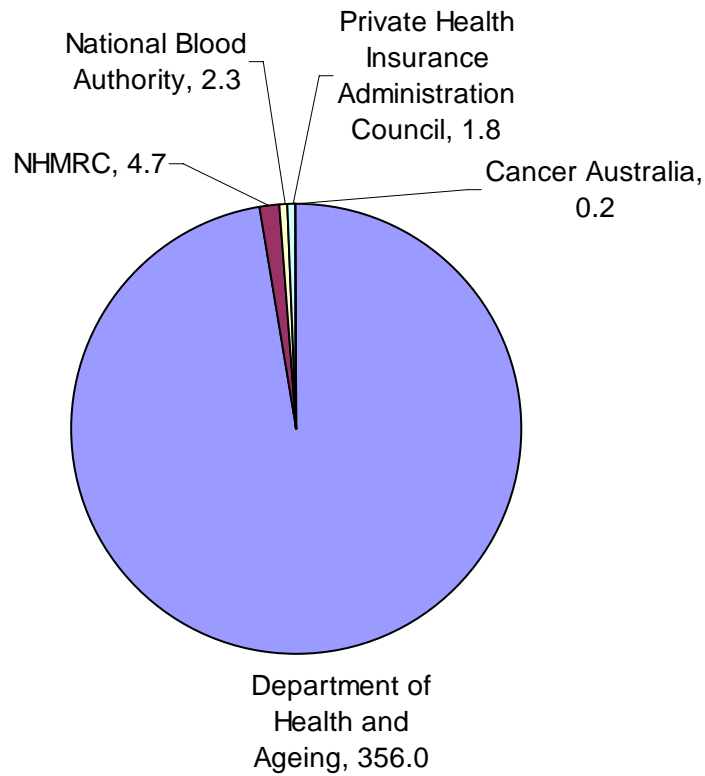
NHMRC funding has been around 1.3% of all Health and Ageing portfolio in recent years. Using departmental estimates for spending to 2011-12 and then projecting portfolio and NHMRC spending forward based on those growth rates, NHMRC funding should reach \$890 million by 2014-15.

Figure 7: NHMRC and total Health portfolio spending – projections to 2014-15



Source: Research Australia analysis from Budget papers

Figure 8: Health and Ageing portfolio, by days of health budget

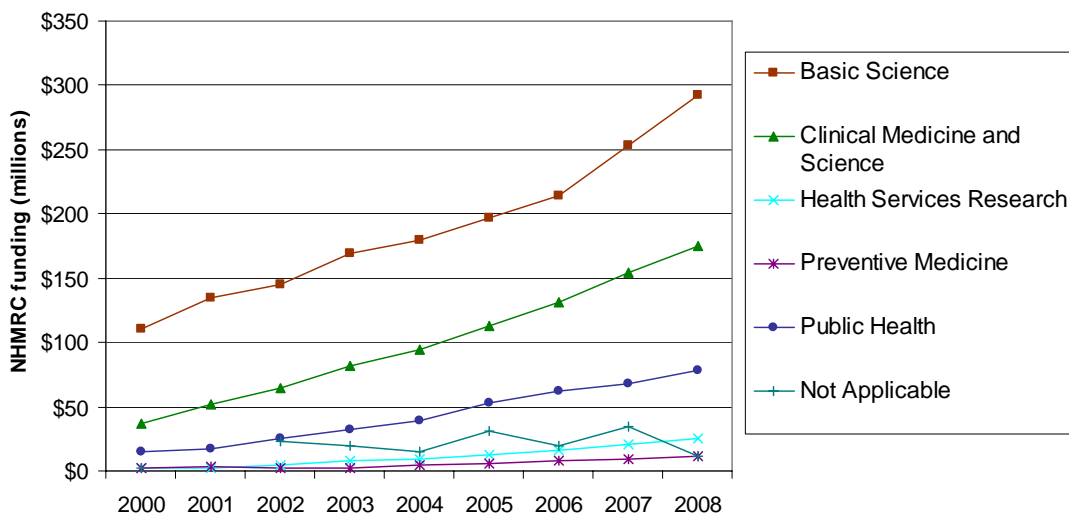


Source: Research Australia analysis from Budget papers

3. Focus of NHMRC research

NHMRC funding growth has consistently supported a large body of basic scientific research. Increasingly, funding is also being allocated to applied health and medical research, including clinical research, public health and health services.

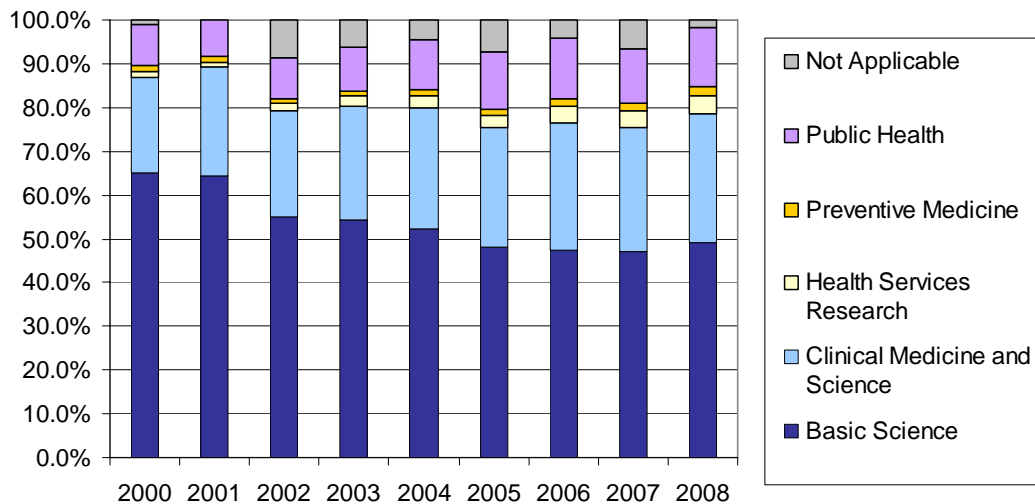
Figure 9: NHMRC expenditure by Broad Research Area



Source: NHMRC grant data set

As NHMRC research funding has diversified into a range of areas, the share of funding allocated to basic science has declined as a proportion of total funding.

Figure 10: NHMRC expenditure by Broad Research Area – percentage share



Note: Not Applicable represents Equipment Grants and Independent Medical Research Institute Infrastructure funding, and any other grants for which applications are not required.

Source: NHMRC research grant data

Research funding allocation is also informed by government research priorities. Australia's National Research Priorities, as announced by the Prime Minister in late 2002, seek to align the research needs of the nation into specific areas that are of critical importance to ensuring the future prosperity of Australia. The four priority areas selected by the Government are:

1. An environmentally sustainable Australia
2. Promoting and maintaining good health
3. Frontier technologies for building and transforming Australian industries
4. Safeguarding Australia

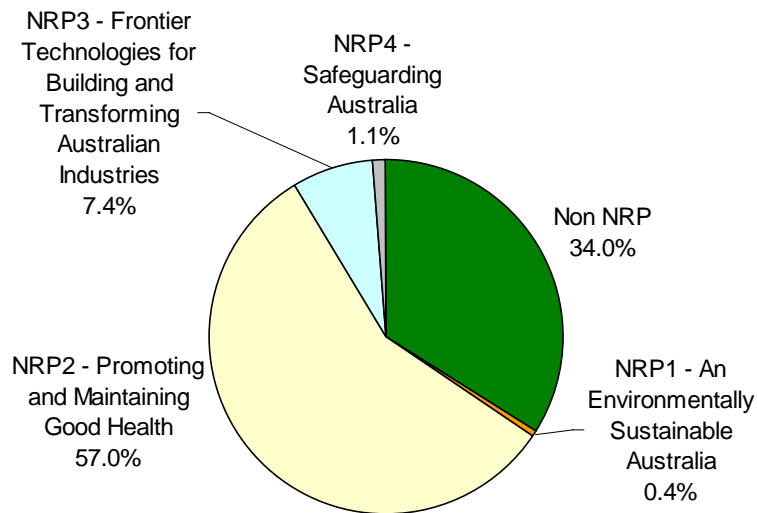
NHMRC funding is principally health related and therefore mostly falls under NRP 2 or outside the scope of the National Research Priorities. Although a much smaller share, funding for frontier technologies has increased in recent years.

The Australian Research Council also reports research funding against NRPs. For grants commencing in 2008, 19% of funding was for health research under NRP 2. The leading priority was NRP 3 with 41%³.

Funding allocated to NRPs 1 and 4, focusing on environmental sustainability and ensuring Australia's safety, continues to play a small role in overall NHMRC expenditure. Promoting and maintaining good health continues to be the dominant focus of NHMRC funding.

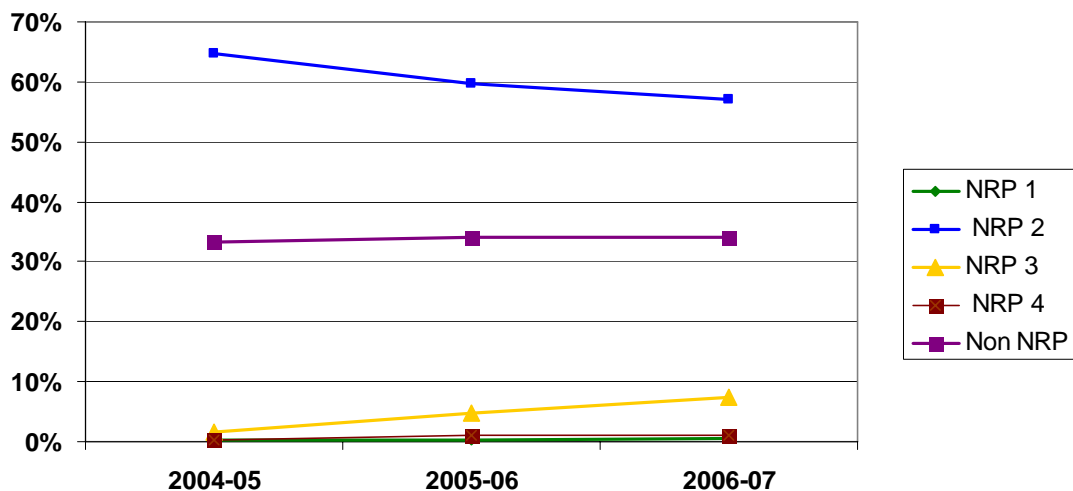
³ Australian Research Council. 2008. *Research funding trend data*, http://www.arc.gov.au/xls/WebData_Trends.xls

Figure 11: NHMRC funding by National Research Priority 2006-07



Source: NHMRC research funding trend data

Figure 12: Proportion of NHMRC annual expenditure by National Research Priority



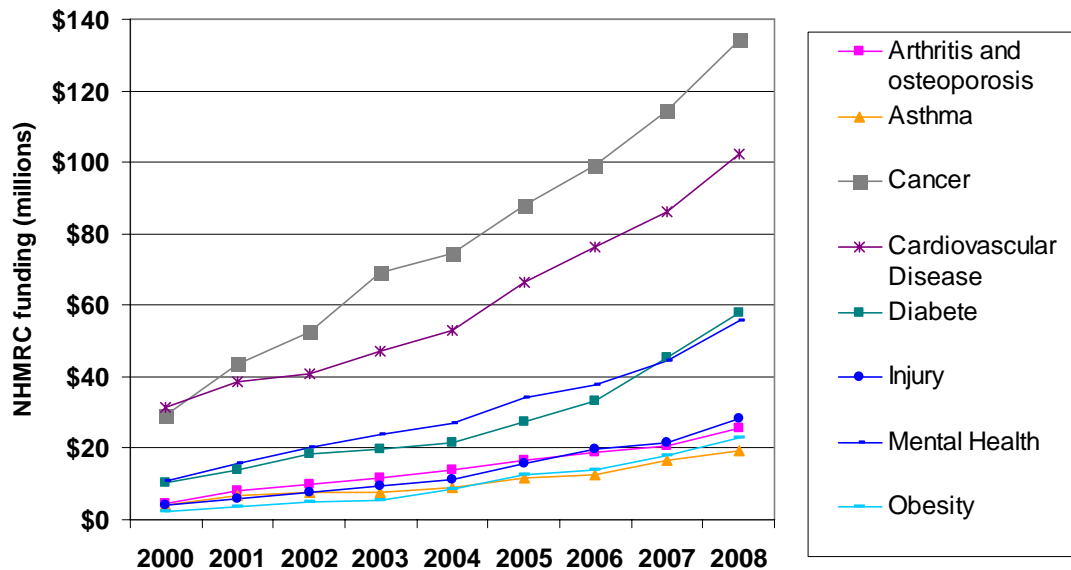
Source: NHMRC research funding trend data

The Federal Government's National Health Priority Areas initiative seeks to focus collaboration by federal and state governments and private sector expertise towards chronic diseases that pose a significant health burden to the Australian public. The following eight areas have been identified as priority areas:

- asthma
- cancer
- cardiovascular health
- diabetes
- injury prevention
- mental health
- arthritis and musculoskeletal conditions
- obesity

Cancer and cardiovascular disease continue to attract a significant share of NHMRC funding. Mental health and diabetes also receive substantial support. Obesity was only introduced as a National Health Priority in 2008, although funding was growing substantially prior to that point.

Figure 13: NHMRC funding by National Health Priority



Source: NHMRC research funding trend data

4. Performers of health and medical research

Universities and medical research institutes are both the most significant performers of publicly-funded health and medical research, but also the largest recipients of NHMRC funding. While hospitals and health service providers are participants in clinical and health services research and are usually eligible to administer grants, they are rarely the recipient of the NHMRC grant.

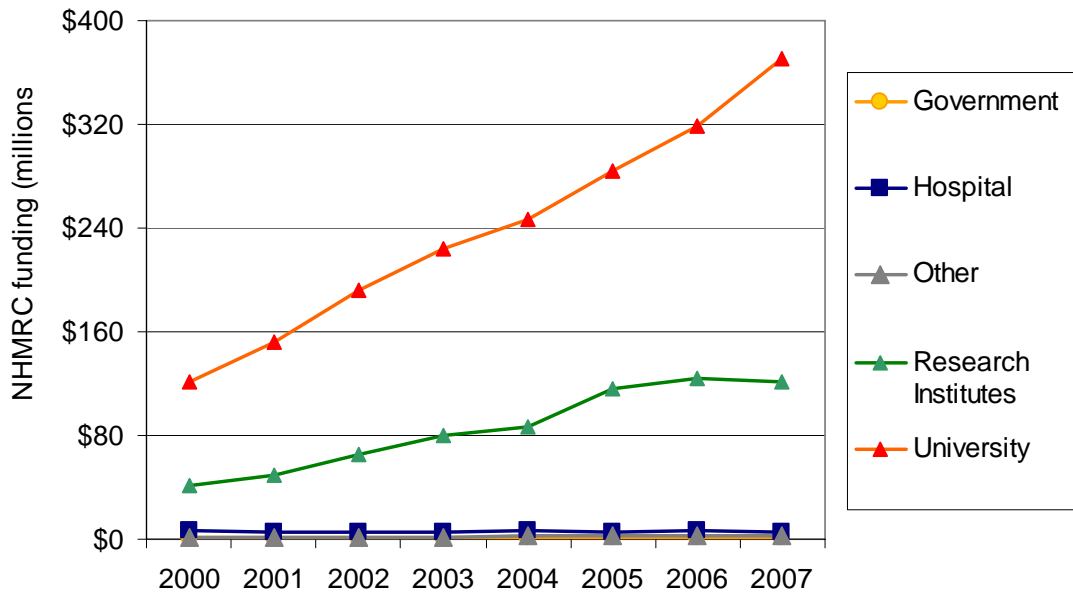
Health and medical research within Australia's universities is substantially funded by the NHMRC and other competitive grants programs. However, around 60 per cent of research in universities is funded from general university funds and only 12 per cent of R&D in universities is from Commonwealth grants programs. A quarter of university R&D is directed towards medical and health science⁴.

The NHMRC supports researchers directly through fellowships and scholarships, as well as through program and project grants. Current estimates of the workforce supported by the NHMRC are around 7,500⁵. Growth in workforce has mirrored growth in total funding.

⁴ Australian Bureau of Statistics, *Research and Experimental Development, Higher Education 2004*, 8111.0

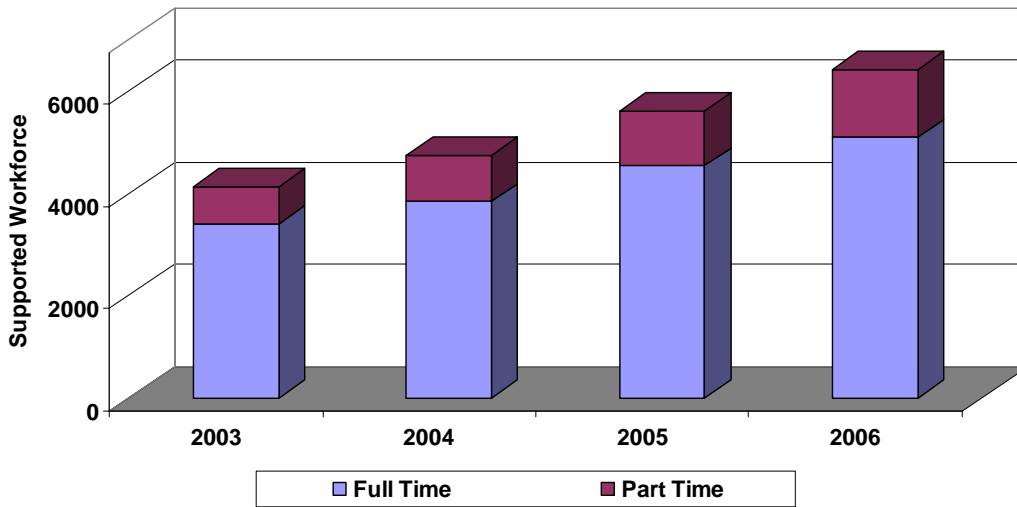
⁵ Anderson, W. 2008. *CEO Newsletter – October 2008*, National Health and Medical Research Council, http://www.nhmrc.gov.au/about/senior_staff/newsletters/previous/0810.htm

Figure 14: NHMRC annual expenditure by sector



Source: NHMRC research funding trend data

Figure 15: Workforce supported by NHMRC



NHMRC research funding trend data

Source:

5. Other competitive grants

The Australian Research Council (ARC) also supports research related to health and medicine. While the NHMRC is specifically focused on health and medical research, the ARC is responsible for supporting research in the sciences and humanities. The ARC explicitly does not fund some kinds of health research, principally in clinical medicine and dentistry. It does, however, support research into human health topics including psychology, immunology and pharmacology (Figure 15 refers), as well as basic biological sciences with potential applications in health.

Figure 16: ARC National Competitive Grants Program funding 2002-2008

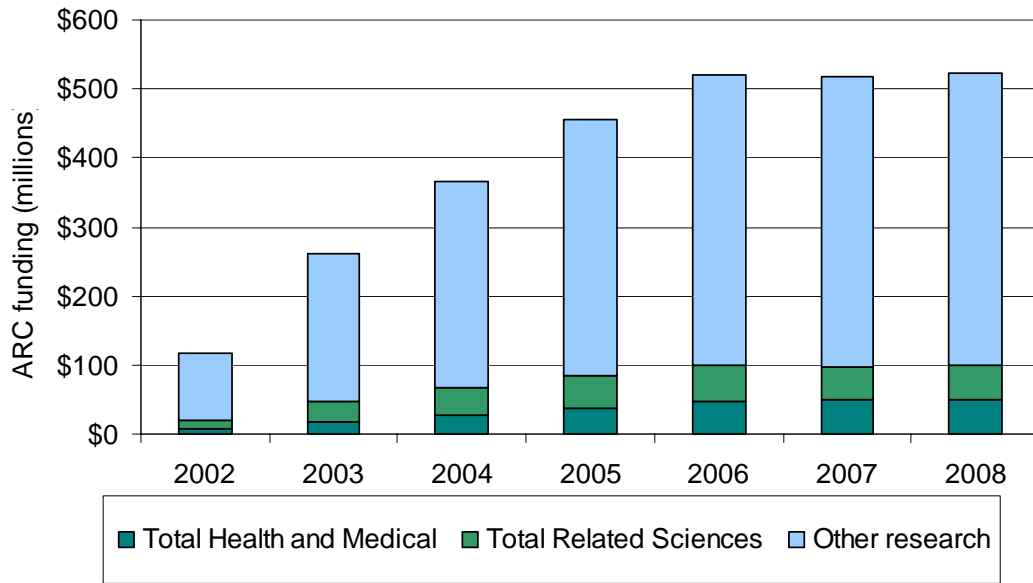
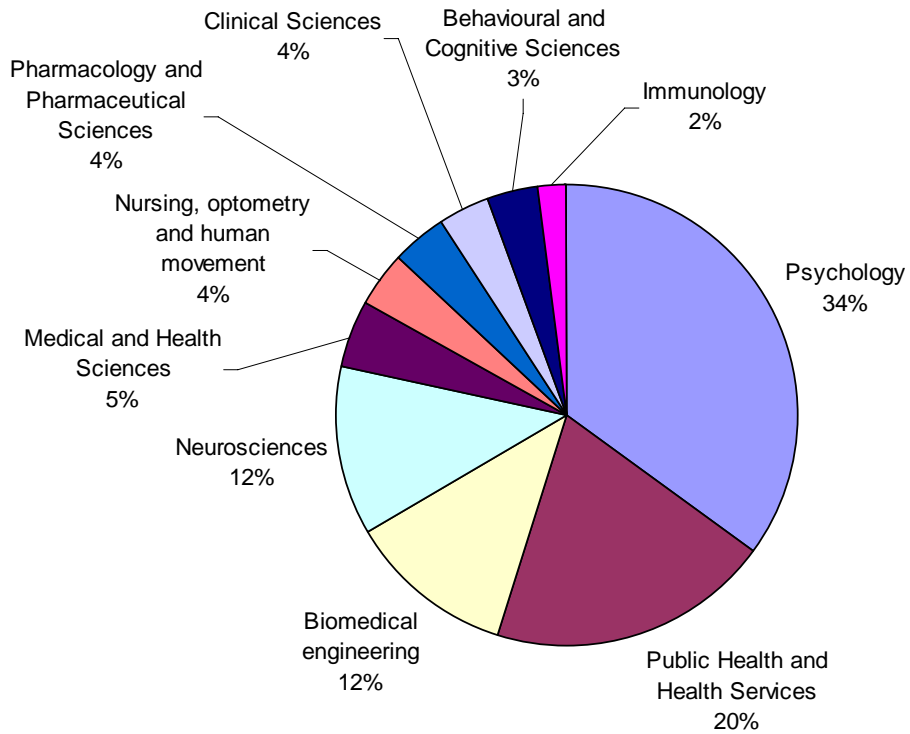


Figure 17: ARC support for health and medical research 2008

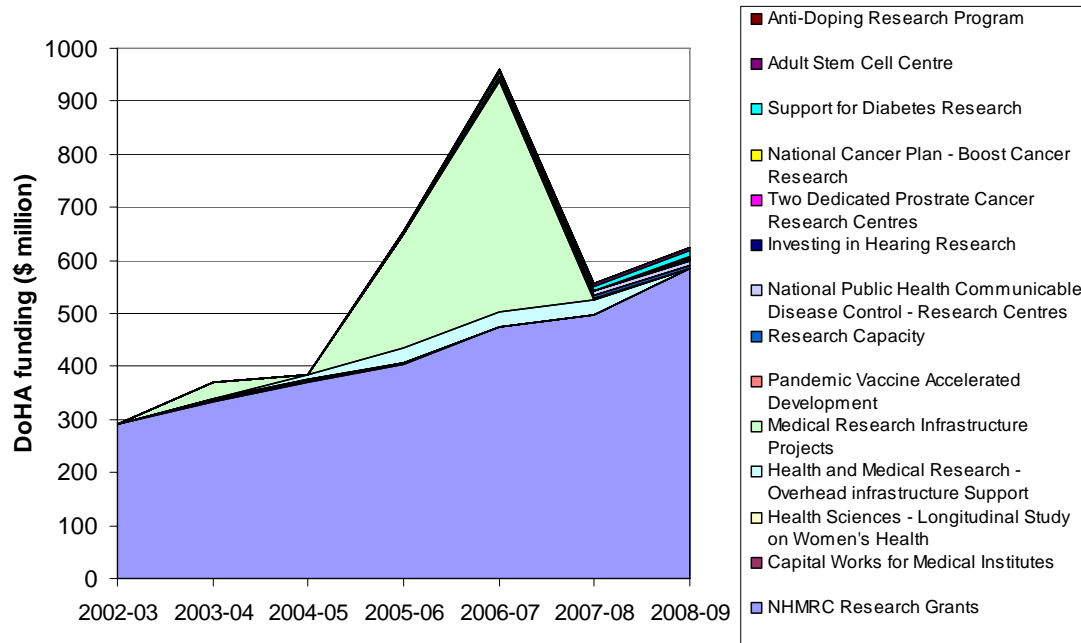


Source: NCGP Dataset, Research Australia analysis

6. Other health portfolio support

As well as the NHMRC, the Department of Health and Ageing funds a range of other health research programs. Some of these are one-off expenditure and others are continuing programs in specialised areas such as cancer or data collection.

Figure 18: All Department of Health and Ageing research programs



Source: 2008-09 Science and Innovation Budget Tables

www.innovation.gov.au/Section/AboutDIISR/Documents/Budget0809ScienceandInnovation.pdf

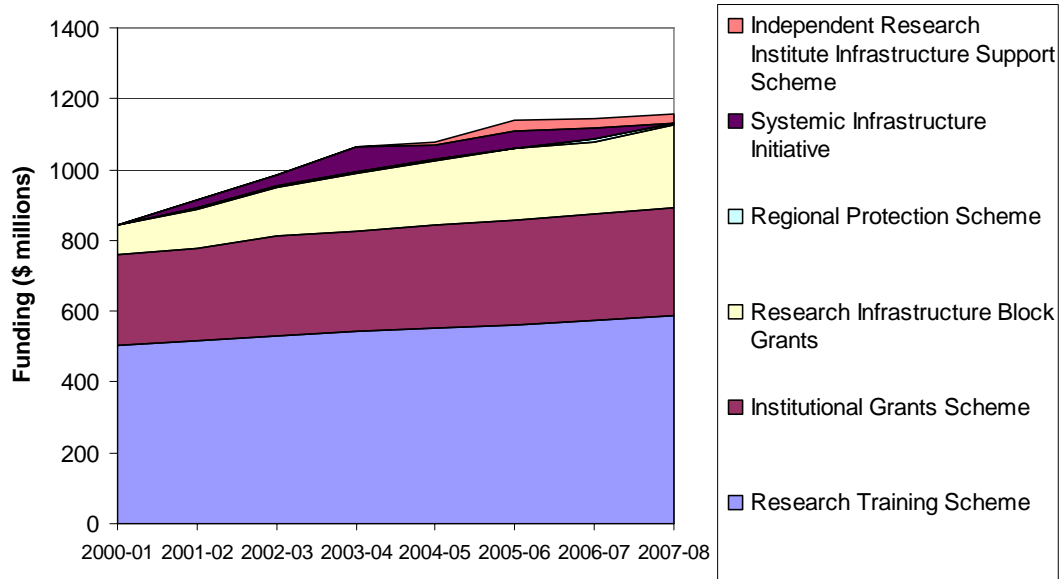
7. Infrastructure support

Competitive grants funded by NHMRC and ARC do not cover the full cost of research projects. As well as direct costs not supported by project grants, there are a range of indirect costs incurred: facilities, information systems, laboratory equipment and support and administrative services. The Commonwealth provides support through block funding for indirect costs.

In universities, this support is provided by a number of block funding schemes, including Research Infrastructure Block Grants (RIBG), which pays 20 cents for every dollar of competitive research grants received.

Independent medical research institutes previously could only access funding for indirect costs through partner universities. With the introduction in 2004 of the Independent Research Institute Infrastructure Support Scheme (IRIISS), they now have access to indirect cost support at the same rate as universities. Indirect cost assistance is not directly accessible by other types of institutions, including hospitals or health service providers.

Figure 19: Block funding support for research

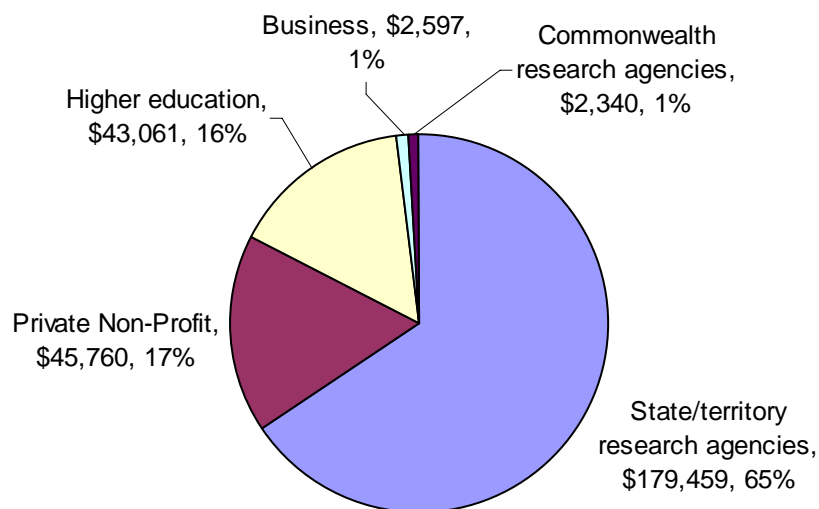


Source: 2008-09 Science and Innovation Budget Tables
www.innovation.gov.au/Section/AboutDIISR/Documents/Budget0809ScienceandInnovation.pdf

8. State and territory funding

Funding by state and territory governments includes grants for local research institutions, competitive grants, infrastructure support and capital works funding. According to ABS figures, support is primarily for research undertaken by state/territory government agencies (see Figure 19). However, substantial funding is provided to non-profit agencies, including independent medical research institutes, and to universities.

Figure 20: R&D funded by states and territories, by performing sector 2004-05



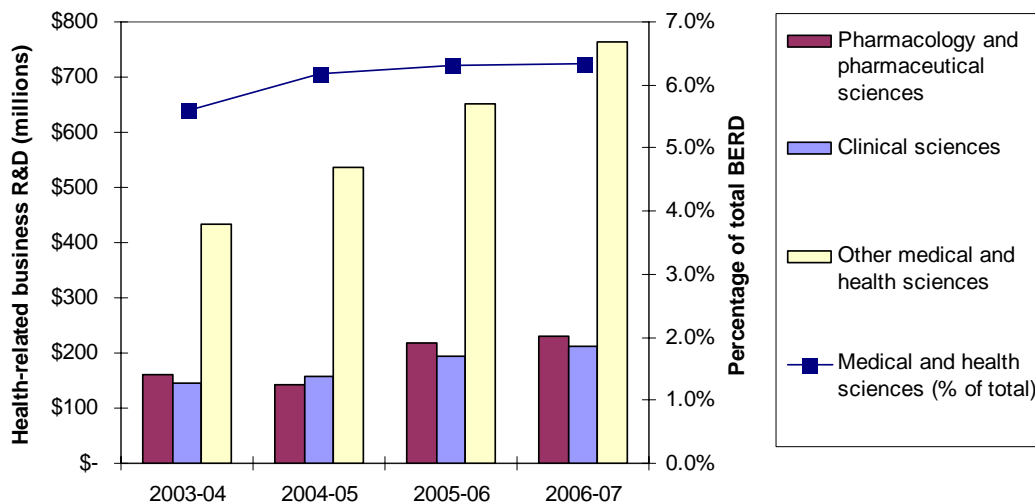
Source: Access Economics, from ABS data

9. Business R&D

The private sector, including pharmaceuticals companies, is also a growing supporter of health and medical research funding. Access Economics⁶ has found that between 2000-01 and 2004-05, Commonwealth funding nearly doubled, while business expenditure grew at an even greater rate. The business share of total health R&D funding increased from 25 per cent to 29 per cent, while Commonwealth funding grew from 46 per cent to 48 per cent.

While growing strongly, R&D in medical and health sciences is still a small proportion of total Business Expenditure on R&D (BERD).

Figure 21: Health-related Business Expenditure on R&D



Source: ABS Research and Experimental Development, Business, Australia, 2006-07: Business Expenditure on R&D, by research field

According to ABS statistics, business expenditure on research and development for the medical and health sciences sector was \$762 million in 2006-07, or 6.3% of all total business expenditure on research and development, up significantly from \$434 million in 2003-04 and \$537 million in 2004-05⁷. This is in comparison to the \$3.2 billion spent on research into information, computing and communication sciences and \$6.9 billion directed towards engineering and technology.

10. Philanthropic giving

Philanthropic support for health and medical research in Australia is low by international standards, especially compared to the USA. It is also low compared to giving to other causes. The average yearly donation to medical research, according to *Giving Australia*, was \$77, compared to religious or spiritual organisations (\$529), international aid and development organisations (\$234) and arts/cultural associations (\$220)⁸.

However, giving to health and medical research is quite widespread, even if average donations are small. *Giving Australia* found that medical research received the fourth highest

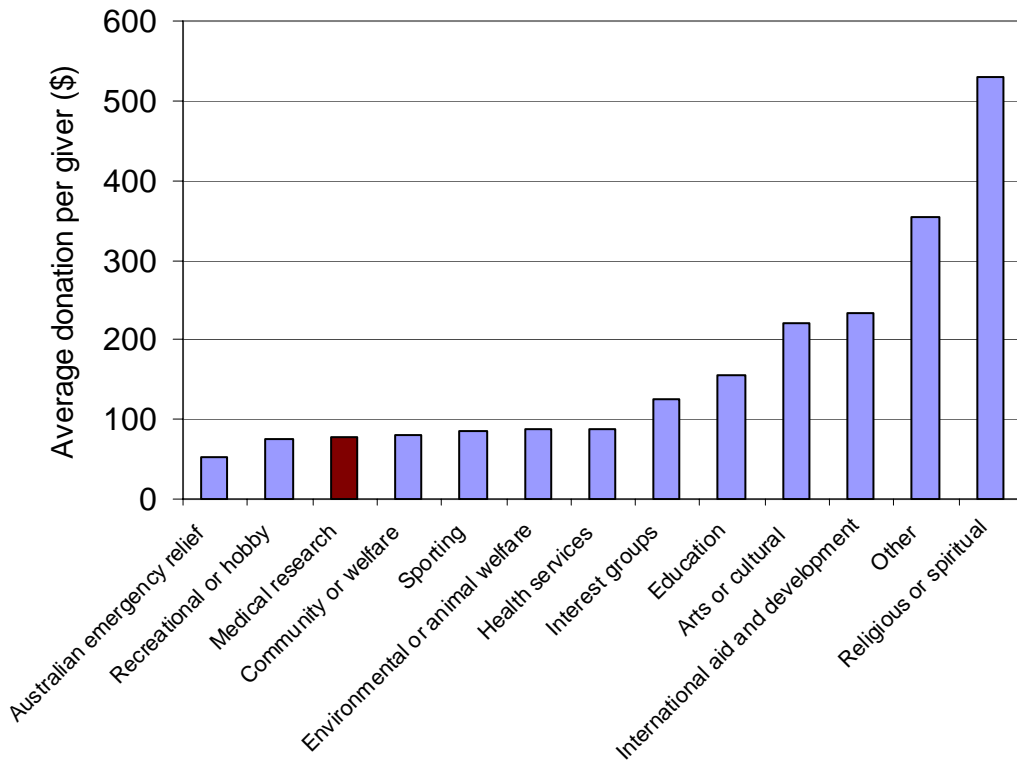
⁶ Access Economics. 2008. *Exceptional Returns: The Value of Investing in Health R&D in Australia II*. Report prepared for the Australian Society for Medical Research, <http://www.asmr.org.au/Excepth108.pdf>

⁷ Australian Bureau of Statistics, Research and Experimental Development, Businesses, Australia, 2006-07, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8104.0Main+Features12006-07?OpenDocument>

⁸ Prime Minister's Community Business Partnership. 2005. *Giving Australia: Research on Philanthropy in Australia*, October 2005, [http://www.fahcsia.gov.au/internet/facsinternet.nsf/via/pmcbp/\\$file/givingaustraliareport.pdf](http://www.fahcsia.gov.au/internet/facsinternet.nsf/via/pmcbp/$file/givingaustraliareport.pdf)

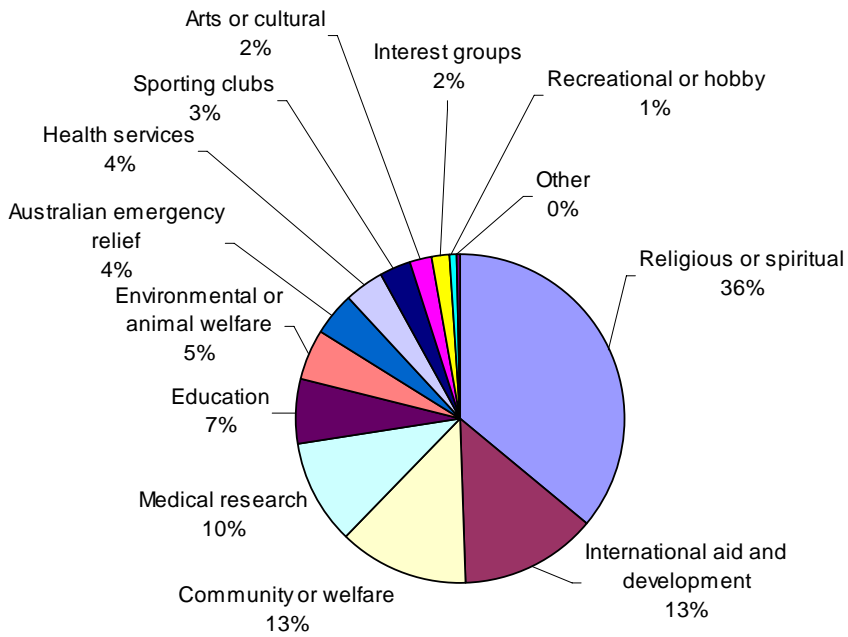
proportion of Australian philanthropic dollars, after religious causes, international aid and community/welfare.

Figure 22: Average donation by cause



Source: Giving Australia report

Figure 23: Australian philanthropic giving by cause



Source: Giving Australia report

An increasingly popular vehicle for philanthropic giving is the Prescribed Private Fund (PPF). According to QUT figures⁹, \$117 million was distributed by PPFs to charities in 2006-07. This constitutes nearly 10 per cent of the \$1.2 billion invested in PPFs at 30 June 2007, or 14 per cent of the funds invested at 30 June 2006. Of the \$301 million distributed to date, \$17 million has been to health-related charities and \$6 million to research.

11. Return on investment

Although it is difficult to determine the entire scope of potential returns from health and medical research – advances in medical technologies, treatments and awareness have both direct and indirect effects on health and wellbeing – estimated returns from strategic research and development into health are high. In the 2008 Exceptional Returns report¹⁰, Access Economics calculated the average return on investment in health and medical research was \$2.17 for every \$1 invested, with a range of \$0.57 to \$6.01. Only mining and wholesale/retail R&D delivered higher returns.

Access Economics also developed a number of case examples:

- Australian R&D into the cervical cancer vaccine Gardasil cost an estimated \$169 million (out of total development costs of \$1.3 billion) and could generate benefits of \$63 million per annum from cancer avoided.
- Extending blood glucose treatment to the 28 per cent of diabetics whose diabetes is not currently controlled would generate savings of \$7.6 billion by 2025 from preventing or delaying vision loss.
- If R&D could produce an effective treatment to reduce incidence of Alzheimer's disease by 5 per cent, savings of \$10.3 billion could be generated by 2050, half of these in residential care.
- Vaccinating against Group A Streptococci could prevent a range of invasive bacterial infections and provide wellbeing improvements worth \$319.7 million per annum to Australia. Indigenous Australians would receive a quarter of this benefit.

⁹ Queensland University of Technology. 2008. *Prescribed Private Funds*, CPNS Current Issues Sheet 2008/6 http://www.bus.qut.edu.au/research/cpns/documents/2008_6_PPFs_Final_Web.pdf

¹⁰ Access Economics. 2008. *Exceptional Returns: The Value of Investing in Health R&D in Australia II*. Report prepared for the Australian Society for Medical Research, <http://www.asmr.org.au/Exception108.pdf>