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# State and Territory based assessment of Australian research

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## **Background**

This bibliometric analysis has been undertaken by the Research Evaluation and Policy Project (REPP) for the Productivity Commission. It provides State and Territory data on scientific research publications and the citations they attract in the international journal literature. The main output of the study will be provided in the form of Excel files. This paper seeks to outline the methodology used, and identify any issues relating to the data that need to be highlighted.

## **Time period covered**

Data is extracted for two years, 1995 and 2002. The choice of years was made to allow sufficient time for any underlying changes to the distribution and performance of scientific output to become apparent; and to allow time for the most recent year (2002) to attract sufficient citations for an analysis of performance based on the data to be reasonably robust.

## **The Research Evaluation and Policy Project database**

The REPP database is created from data files purchased from Thomson Scientific, and currently covers the period 1981-2005. It captures all publications with an Australian address in their three major Indices: Science Citation Index (SCI), Social Sciences Citation Index (SSCI) and Arts & Humanities Citation Index (A&HCI).

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The database also contains the yearly counts of citations to each of the Australian publications.

## Data specifications

For this project, publications were restricted to those that appeared in journals indexed in the SCI. The data was also limited to the main types of articles reporting original research, or new syntheses of prior research: research articles and review articles. It excludes editorials, letters to the editor, book reviews, opinion pieces, etc.

The analysis is based on whole publication counts – where more than one State or Territory collaborated on a publication, each was given a count of 1 for that publication (‘whole counting’).

Because ‘whole counting’ is employed, the sum of publications from all States and Territories will be more than the Australian total from which the effect of collaboration has been removed.

## Classification to fields of research – journal set analysis

The ideal scenario for field of research classification would be to classify each publication separately. As this is clearly impossible for a study of this size and complexity, the standard practice of classifying the journal which carries the publication has been adopted. Thomson Scientific has its own descriptive classification system involving about 200 subject categories and we have, for a number of previous exercises, translated these as closely as possible into the fields and sub-fields<sup>1</sup> of the Research Fields, Courses, and Disciplines (RFCD) classification scheme. Most Thomson subject categories slot neatly into one of the RFCD sub-fields, though some problems are encountered.

One particular example has significant implications for any analysis of Australian research.

Thomson Scientific journal sets do not distinguish between research that focuses on animals or plants, and that which focuses on humans.

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<sup>1</sup> ‘Fields’ and ‘sub-fields’ in our terminology equate to Divisions and Disciplines respectively in the RFCD.

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As a consequence, subject categories such as Physiology, Virology and Parasitology can have elements of two or more RFCD fields in their composition. To avoid allocating too many categories to interdisciplinary codes, REPP classified a journal set to a particular field where more than half the journals clearly related to that field. Where this was not possible, the subject category was allocated to a ‘science – general’ journal set.

It should be noted that ISI allocates some journals to more than one subject category with the effect that some double-counting between fields exists.

The translation of ISI subject categories into the science fields of the RFCD can be supplied on request.

## **Small numbers**

A special note of caution is required concerning the small numbers of publications tabulated in some fields. In the SCI system as a whole, many publications receive no citations at all, and the majority receive less than 5 citations. The number achieving a high citation count is extremely small. The very nature of citation practice means that averages can be disproportionately affected by a single highly cited publication. The smaller the number of publications being analysed, the greater the effect such an item will have on the average.

For the bibliometric measures used in this analysis, citation information based on any units with less than 100 publications have been omitted.

Our experience suggests that extra caution should also be used for citation figures based on units with between 100 and 200 publications.

## **The bibliometric performance indicators**

A general description of the bibliometric measures used is given below.

### **Citation per publication rates (cpp)**

The number of publications produced by each State and Territory in 1995 was tabulated, together with the number of citations these publications receive between 1995 and 2005, the most recent citing year available (i.e. these publications had 11 years in which to attract citations). An average citation rate was then calculated. For 2002 publications, the citation ‘window’ was only 4 years (2002-2005). The

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calculations were made for the total output from each jurisdiction, and for their output in each field of science.

Analytical use of this measure is restricted to comparisons between States and Territories within a field. Direct comparison between the two time periods cannot be made because of the different citation windows employed. To overcome this shortcoming, comparisons over time can be made using relative citation and journal impact calculations (described below).

In addition, cross-field citation rate comparisons cannot be made, even within the same year, as the citation practices in different fields vary markedly. The world benchmark data for each field demonstrates this clearly. Again, the field-normalised relative citation and journal impacts overcome this problem.

## **Relative impact**

An assessment of relative impact has two field-normalised components. The relative citation impact compares the citation rate of a unit's output with the relevant world average. It is calculated by dividing the average number of citations per publication for the unit in a given field by the average number of citations for all publications in that field (i.e. the world citation rate for that field).

Thus, a relative citation impact of more 1.0 indicates a higher/better position than the world average, while a relative citation impact of less than 1.0 would indicate a relatively low performance.

Likewise, the relative journal impact compares the average impact of the journals in which the unit publishes in a particular field to the average impact of all journals classified to that field. A score of more than 1.0 indicates that the unit is publishing in high impact journals, while a score of less than 1.0 indicates the placement of publications is in relatively low impact journals.

## **Identification of State and Territory publications**

State and Territory publication sets were identified by using two address fields in the REPP database. Initially, the "province" field was used, which in the majority of cases specified either the state and/or the postcode for Australian publications. Where neither was present, they were identified on the basis of the "city" field. In the process, the publications of a number of institutions and organisations that crossed political boundaries were split. For example, CSIRO publications are to be found in every jurisdiction, and ANSTO publications, and those from many

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Cooperative Research Centres also cross boundaries. Publications from ADFA fall within the ACT, and are not linked to their parent institution in New South Wales.

## **SCI Coverage**

Before any discussion of publications and citations occurs, it is important to be clear what proportion of research output from the units under study is covered by bibliometric measures.

Fields of research vary in the extent to which journal publication can be regarded as the normal mode of research dissemination, and the extent to which its journal output is captured in Thomson (previously referred to as ISI) indexes. Data from a REPP research project illustrates this issue clearly. Table 1 shows the proportion of total output for each of the research schools and faculties of the university that appears in ISI journals (column 3). It also shows the proportion of the journals in which each unit publishes that are indexed by ISI (column 4).

**Table 1: Distribution of Australian University research by type of publication and field, 1999-2001**

<i>Field</i>	<i>Total publications</i>	<i>No. ISI journal publications</i>	<i>% Total output in ISI</i>	<i>% Journal publications in ISI.</i>
Chemistry	3234	2688	<b>83</b>	87
Physics	2964	2180	<b>74</b>	82
Biology	4626	3328	<b>72</b>	79
Medicine	18075	11734	<b>65</b>	72
Land Sciences	3487	2123	<b>61</b>	78
Earth Sciences	2256	1354	<b>60</b>	73
Mathematics	2735	1497	<b>55</b>	66
Psychology	2040	1058	<b>52</b>	68
Engineering	9650	3400	<b>35</b>	69
Philosophy	613	157	<b>26</b>	40
Economics	1917	460	<b>24</b>	37
Studies in Human Society	1070	188	<b>18</b>	28
Politics and Policy	993	148	<b>15</b>	32
Computing	2904	430	<b>15</b>	45
History	1160	158	<b>14</b>	27
Management	4826	533	<b>11</b>	21
Language	1167	113	<b>10</b>	19
Education	3165	283	<b>9</b>	17
The arts	446	33	<b>7</b>	15
Architecture	936	51	<b>5</b>	15
Communication	334	15	<b>4</b>	8
Law	1925	86	<b>4</b>	6
<b>Total</b>	<b>78709</b>	<b>33774</b>	<b>43</b>	<b>61</b>

The data in Table 1 clearly shows why bibliometric analysis is problematic in some fields of research. In the applied sciences, and particularly in the social sciences and humanities, much of their research is not published in journal articles, and even when it is, the capture rate in ISI indices may be very small. Bibliometric analysis is most appropriate for the natural and life sciences, and less so for the more applied sciences.

## Acknowledgments

Certain data included herein are derived from the Australian National Citation Report prepared by the Institute for Scientific Information®, Inc. (ISI®), Philadelphia, Pennsylvania, USA: © Copyright Institute for Scientific Information® 2005. All rights reserved.

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### Sheet Index

#### Publication Output by Field

Publication output for each State and Territory classified by field

#### Citation per Publication

Citation per publication rates, in aggregate and for each field

#### Relative Impact Data

Relative citation impact and relative journal impact of each State and Territory's publications, in aggregate and by field. This worksheet also contains data for publications, citations, journal impact, the world journal impact, and the world citations per publication rate for each field that are used to calculate the relative citation impact and relative journal impact.

#### Relative Impact - Sample Charts

This worksheet contains two sample charts together with relevant data.

#### Collaborations 1995

Collaboration between States and Territories, in aggregate and by field for 1995. "Interstate collaborations" and "International collaborations" indicate the total number of publications that were produced with the interstate and international collaborations respectively.

#### Collaborations 2002

Collaboration between States and Territories, in aggregate and by field for 2002

#### Collaborations -Total Publications

Summary of total publications by year for each State and Territory

**Publication output for each State and Territory by field - 1995**

<b>Field</b>	<b>ACT</b>	<b>NSW</b>	<b>NT</b>	<b>QLD</b>	<b>SA</b>	<b>TAS</b>	<b>VIC</b>	<b>WA</b>	<b>AUST</b>	<b>World</b>
Mathematical Sciences	73	167	3	59	37	12	108	60	486	21039
Physical Sciences	442	760	12	159	152	45	473	95	1947	114000
Chemical Sciences	176	488	6	213	173	42	428	112	1451	94166
Earth Sciences	158	230	16	120	98	80	248	112	939	21863
Biological Sciences	461	823	62	603	387	105	863	288	3241	111871
Information, Computing and Communication Science	10	68		44	8	6	42	25	185	9418
Engineering and Technology	149	752	5	268	100	33	499	177	1843	92876
Agricultural, Veterinary and Environmental Sciences	179	531	20	505	153	75	335	236	1844	38513
Medical and Health Sciences	255	1909	43	758	723	80	1779	516	5571	218187
Science - general	85	275	7	253	118	46	288	107	1069	31890
<b>Total</b>	<b>1633</b>	<b>4725</b>	<b>126</b>	<b>2220</b>	<b>1541</b>	<b>385</b>	<b>3971</b>	<b>1326</b>	<b>14496</b>	<b>755502</b>

**Publication output for each State and Territory by field - 2002**

<b>Field</b>	<b>ACT</b>	<b>NSW</b>	<b>NT</b>	<b>QLD</b>	<b>SA</b>	<b>TAS</b>	<b>VIC</b>	<b>WA</b>	<b>AUST</b>	<b>World</b>
Mathematical Sciences	83	220		72	46	8	127	68	583	24243
Physical Sciences	457	894	19	233	163	36	451	94	2109	120673
Chemical Sciences	177	501	2	268	177	44	445	135	1524	100472
Earth Sciences	219	286	21	201	108	145	286	206	1245	23311
Biological Sciences	460	1133	60	782	411	201	1023	410	3864	115217
Information, Computing and Communication Science	27	86	1	68	21	5	60	30	278	10211
Engineering and Technology	149	820	9	414	162	31	630	213	2221	101449
Agricultural, Veterinary and Environmental Sciences	194	487	36	525	189	141	410	289	1885	42257
Medical and Health Sciences	279	2397	63	1119	782	114	2303	714	6857	226056
Science - general	89	316	18	295	122	99	349	144	1250	32393
<b>Total</b>	<b>1792</b>	<b>5718</b>	<b>178</b>	<b>3051</b>	<b>1729</b>	<b>590</b>	<b>4899</b>	<b>1779</b>	<b>17269</b>	<b>797819</b>

### Citations per publication - 1995

Field	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	AUST	World
Mathematical Sciences		8.3					6.9		7.5	6.7
Physical Sciences	22.7	15.2		16.5	24.6		13.3		17.4	13.5
Chemical Sciences	17.5	15.6		15.0	13.4		15.4	13.4	14.9	13.2
Earth Sciences	37.9	15.5		12.4			15.3	13.5	19.0	14.7
Biological Sciences	27.4	22.0		19.6	26.5	16.0	25.4	18.4	22.9	24.8
Information, Computing and Communication Science									10.1	9.9
Engineering and Technology	13.5	10.3		7.4	11.4		8.6	8.3	9.4	8.3
Agricultural, Veterinary and Environmental Sciences	17.9	10.5		10.1	16.6		11.7	9.3	11.5	10.8
Medical and Health Sciences	22.9	22.3		18.3	21.5		23.9	19.0	21.4	20.7
Science - general		22.3		24.0	26.1		37.5	16.7	26.8	34.7
<b>Total</b>	<b>23.6</b>	<b>18.0</b>	<b>12.1</b>	<b>16.6</b>	<b>21.5</b>	<b>16.6</b>	<b>21.4</b>	<b>15.3</b>	<b>19.1</b>	<b>17.2</b>

### Citations per publication - 2002

Field	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	AUST	World
Mathematical Sciences		2.8					4.5		3.1	2.6
Physical Sciences	11.5	8.2		8.5	7.3		6.6		7.9	6.2
Chemical Sciences	6.9	7.8		6.3	6.4		6.9	6.2	7.0	6.7
Earth Sciences	8.0	5.1		5.2	5.2	6.8	5.8	6.3	6.0	5.1
Biological Sciences	9.6	8.8		8.8	10.5	5.8	12.6	8.4	9.8	10.7
Information, Computing and Communication Science									3.3	4.4
Engineering and Technology	3.4	3.6		3.4	4.9		3.5	4.1	3.7	3.8
Agricultural, Veterinary and Environmental Sciences	6.4	4.4		4.3	5.1	4.3	4.0	4.4	4.5	4.4
Medical and Health Sciences	9.2	10.0		8.9	8.2	6.1	11.3	10.0	9.7	9.1
Science - general		9.8		14.7	15.7		15.5	10.9	12.4	13.9
<b>Total</b>	<b>9.3</b>	<b>8.3</b>	<b>5.8</b>	<b>8.1</b>	<b>8.0</b>	<b>6.1</b>	<b>9.9</b>	<b>8.2</b>	<b>8.5</b>	<b>7.5</b>

Year	State	Field	Publications	Citations	Citations Per Publication	Journal Impact
1995	AUST	Mathematical Sciences	486	3621	7.45	7.25
1995	NSW	Mathematical Sciences	167	1392	8.34	7.30
1995	VIC	Mathematical Sciences	108	749	6.94	7.63
1995	World	Mathematical Sciences	21039	140152	6.66	7.67
1995	ACT	Physical Sciences	442	10032	22.70	17.49
1995	AUST	Physical Sciences	1947	33911	17.42	15.31
1995	NSW	Physical Sciences	760	11515	15.15	14.60
1995	QLD	Physical Sciences	159	2626	16.52	14.59
1995	SA	Physical Sciences	152	3745	24.64	17.34
1995	VIC	Physical Sciences	473	6306	13.33	14.15
1995	World	Physical Sciences	114000	1540407	13.51	14.28
1995	ACT	Chemical Sciences	176	3088	17.55	17.55
1995	AUST	Chemical Sciences	1451	21580	14.87	15.05
1995	NSW	Chemical Sciences	488	7621	15.62	14.83
1995	QLD	Chemical Sciences	213	3187	14.96	16.61
1995	SA	Chemical Sciences	173	2313	13.37	12.84
1995	VIC	Chemical Sciences	428	6583	15.38	14.40
1995	WA	Chemical Sciences	112	1500	13.39	12.93
1995	World	Chemical Sciences	94166	1246564	13.24	13.00
1995	ACT	Earth Sciences	158	5984	37.87	19.78
1995	AUST	Earth Sciences	939	17867	19.03	15.44
1995	NSW	Earth Sciences	230	3573	15.53	14.47
1995	QLD	Earth Sciences	120	1486	12.38	12.40
1995	VIC	Earth Sciences	248	3802	15.33	16.08
1995	WA	Earth Sciences	112	1508	13.46	14.04
1995	World	Earth Sciences	21863	320359	14.65	12.50
1995	ACT	Biological Sciences	461	12653	27.45	22.39
1995	AUST	Biological Sciences	3241	74310	22.93	22.00
1995	NSW	Biological Sciences	823	18133	22.03	19.80
1995	QLD	Biological Sciences	603	11823	19.61	19.16
1995	SA	Biological Sciences	387	10263	26.52	25.58
1995	TAS	Biological Sciences	105	1682	16.02	14.49
1995	VIC	Biological Sciences	863	21948	25.43	26.07
1995	WA	Biological Sciences	288	5290	18.37	19.41
1995	World	Biological Sciences	111871	2771633	24.78	18.66
1995	AUST	Information, Computing and Communication Science	185	1875	10.14	9.46
1995	World	Information, Computing and Communication Science	9418	92843	9.86	10.05
1995	ACT	Engineering and Technology	149	2012	13.50	10.16
1995	AUST	Engineering and Technology	1843	17360	9.42	9.54
1995	NSW	Engineering and Technology	752	7725	10.27	9.66
1995	QLD	Engineering and Technology	268	1983	7.40	9.06
1995	SA	Engineering and Technology	100	1140	11.40	10.64
1995	VIC	Engineering and Technology	499	4307	8.63	8.87
1995	WA	Engineering and Technology	177	1462	8.26	10.12
1995	World	Engineering and Technology	92876	773301	8.33	8.13
1995	ACT	Agricultural, Veterinary and Environmental Sciences	179	3211	17.94	13.92
1995	AUST	Agricultural, Veterinary and Environmental Sciences	1844	21275	11.54	11.13
1995	NSW	Agricultural, Veterinary and Environmental Sciences	531	5553	10.46	10.42
1995	QLD	Agricultural, Veterinary and Environmental Sciences	505	5125	10.15	10.89
1995	SA	Agricultural, Veterinary and Environmental Sciences	153	2542	16.61	11.78
1995	VIC	Agricultural, Veterinary and Environmental Sciences	335	3909	11.67	11.14
1995	WA	Agricultural, Veterinary and Environmental Sciences	236	2188	9.27	11.08
1995	World	Agricultural, Veterinary and Environmental Sciences	38513	415511	10.79	9.39
1995	ACT	Medical and Health Sciences	255	5827	22.85	21.18
1995	AUST	Medical and Health Sciences	5571	119036	21.37	20.45
1995	NSW	Medical and Health Sciences	1909	42491	22.26	20.13
1995	QLD	Medical and Health Sciences	758	13863	18.29	19.06
1995	SA	Medical and Health Sciences	723	15513	21.46	20.76
1995	VIC	Medical and Health Sciences	1779	42495	23.89	22.61
1995	WA	Medical and Health Sciences	516	9811	19.01	18.11

Year	State	Field	Publications	Citations	Citations Per Publication	Journal Impact
1995	World	Medical and Health Sciences	218187	4513210	20.69	16.23
1995	AUST	Science - general	1069	28685	26.83	29.66
1995	NSW	Science - general	275	6129	22.29	27.94
1995	QLD	Science - general	253	6070	23.99	23.30
1995	SA	Science - general	118	3083	26.13	34.28
1995	VIC	Science - general	288	10799	37.50	41.32
1995	WA	Science - general	107	1782	16.65	20.58
1995	World	Science - general	31890	1106830	34.71	15.50
1995	ACT	Total	1633	38583	23.63	20.90
1995	AUST	Total	14496	277134	19.12	18.45
1995	NSW	Total	4725	85207	18.03	17.16
1995	NT	Total	126	1527	12.12	13.32
1995	QLD	Total	2220	36769	16.56	16.95
1995	SA	Total	1541	33183	21.53	20.71
1995	TAS	Total	385	6395	16.61	17.30
1995	VIC	Total	3971	84816	21.36	21.00
1995	WA	Total	1326	20311	15.32	15.85
1995	World	Total	755502	1.3E+07	17.22	14.20
2002	AUST	Mathematical Sciences	583	1817	3.12	2.78
2002	NSW	Mathematical Sciences	220	605	2.75	2.41
2002	VIC	Mathematical Sciences	127	568	4.47	2.75
2002	World	Mathematical Sciences	24243	62264	2.57	2.60
2002	ACT	Physical Sciences	457	5244	11.47	8.47
2002	AUST	Physical Sciences	2109	16703	7.92	7.22
2002	NSW	Physical Sciences	894	7341	8.21	7.02
2002	QLD	Physical Sciences	233	1973	8.47	6.77
2002	SA	Physical Sciences	163	1186	7.28	7.05
2002	VIC	Physical Sciences	451	2997	6.65	7.27
2002	World	Physical Sciences	120673	744243	6.17	6.06
2002	ACT	Chemical Sciences	177	1214	6.86	7.19
2002	AUST	Chemical Sciences	1524	10709	7.03	7.26
2002	NSW	Chemical Sciences	501	3921	7.83	7.10
2002	QLD	Chemical Sciences	268	1686	6.29	7.44
2002	SA	Chemical Sciences	177	1127	6.37	6.32
2002	VIC	Chemical Sciences	445	3059	6.87	7.24
2002	WA	Chemical Sciences	135	843	6.24	7.09
2002	World	Chemical Sciences	100472	674180	6.71	5.81
2002	ACT	Earth Sciences	219	1754	8.01	6.40
2002	AUST	Earth Sciences	1245	7516	6.04	5.28
2002	NSW	Earth Sciences	286	1446	5.06	5.21
2002	QLD	Earth Sciences	201	1044	5.19	4.66
2002	SA	Earth Sciences	108	559	5.18	4.86
2002	TAS	Earth Sciences	145	988	6.81	5.41
2002	VIC	Earth Sciences	286	1653	5.78	5.60
2002	WA	Earth Sciences	206	1288	6.25	5.21
2002	World	Earth Sciences	23311	118291	5.07	4.47
2002	ACT	Biological Sciences	460	4419	9.61	8.84
2002	AUST	Biological Sciences	3864	37983	9.83	9.24
2002	NSW	Biological Sciences	1133	10004	8.83	9.14
2002	QLD	Biological Sciences	782	6883	8.80	8.55
2002	SA	Biological Sciences	411	4305	10.47	9.66
2002	TAS	Biological Sciences	201	1163	5.79	6.52
2002	VIC	Biological Sciences	1023	12932	12.64	10.93
2002	WA	Biological Sciences	410	3463	8.45	8.39
2002	World	Biological Sciences	115217	1227645	10.66	8.22
2002	AUST	Information, Computing and Communication Science	278	914	3.29	3.85
2002	World	Information, Computing and Communication Science	10211	45285	4.43	4.07
2002	ACT	Engineering and Technology	149	513	3.44	3.95
2002	AUST	Engineering and Technology	2221	8186	3.69	3.73
2002	NSW	Engineering and Technology	820	2956	3.60	3.75

Year State	Field	Publications	Citations	Citations Per Publication	Journal Impact
2002 QLD	Engineering and Technology	414	1428	3.45	3.56
2002 SA	Engineering and Technology	162	795	4.91	4.11
2002 VIC	Engineering and Technology	630	2188	3.47	3.78
2002 WA	Engineering and Technology	213	872	4.09	3.62
2002 World	Engineering and Technology	101449	382745	3.77	3.30
2002 ACT	Agricultural, Veterinary and Environmental Sciences	194	1242	6.40	4.50
2002 AUST	Agricultural, Veterinary and Environmental Sciences	1885	8464	4.49	4.20
2002 NSW	Agricultural, Veterinary and Environmental Sciences	487	2122	4.36	4.31
2002 QLD	Agricultural, Veterinary and Environmental Sciences	525	2250	4.29	4.07
2002 SA	Agricultural, Veterinary and Environmental Sciences	189	960	5.08	4.18
2002 TAS	Agricultural, Veterinary and Environmental Sciences	141	612	4.34	4.04
2002 VIC	Agricultural, Veterinary and Environmental Sciences	410	1625	3.96	4.06
2002 WA	Agricultural, Veterinary and Environmental Sciences	289	1282	4.44	4.34
2002 World	Agricultural, Veterinary and Environmental Sciences	42257	187485	4.44	3.56
2002 ACT	Medical and Health Sciences	279	2573	9.22	9.81
2002 AUST	Medical and Health Sciences	6857	66476	9.69	8.97
2002 NSW	Medical and Health Sciences	2397	23991	10.01	8.68
2002 QLD	Medical and Health Sciences	1119	10000	8.94	8.20
2002 SA	Medical and Health Sciences	782	6377	8.15	8.52
2002 TAS	Medical and Health Sciences	114	699	6.13	7.22
2002 VIC	Medical and Health Sciences	2303	25952	11.27	10.20
2002 WA	Medical and Health Sciences	714	7128	9.98	8.94
2002 World	Medical and Health Sciences	226056	2054248	9.09	7.06
2002 AUST	Science - general	1250	15506	12.40	11.45
2002 NSW	Science - general	316	3092	9.78	11.89
2002 QLD	Science - general	295	4328	14.67	11.61
2002 SA	Science - general	122	1921	15.75	12.79
2002 VIC	Science - general	349	5402	15.48	13.39
2002 WA	Science - general	144	1570	10.90	12.82
2002 World	Science - general	32393	450396	13.90	6.38
2002 ACT	Total	1792	16677	9.31	8.38
2002 AUST	Total	17269	146549	8.49	7.93
2002 NSW	Total	5718	47503	8.31	7.68
2002 NT	Total	178	1026	5.76	5.59
2002 QLD	Total	3051	24615	8.07	7.47
2002 SA	Total	1729	13820	7.99	7.97
2002 TAS	Total	590	3576	6.06	6.41
2002 VIC	Total	4899	48456	9.89	9.01
2002 WA	Total	1779	14639	8.23	7.81
2002 World	Total	797819	5979393	7.49	5.98

World Journal Impact	World CPP	Relative Journal Impact	Relative Citation Impact
7.67	6.66	0.94	1.12
7.67	6.66	0.95	1.25
7.67	6.66	0.99	1.04
7.67	6.66	1.00	1.00
14.28	13.51	1.22	1.68
14.28	13.51	1.07	1.29
14.28	13.51	1.02	1.12
14.28	13.51	1.02	1.22
14.28	13.51	1.21	1.82
14.28	13.51	0.99	0.99
14.28	13.51	1.00	1.00
13.00	13.24	1.35	1.33
13.00	13.24	1.16	1.12
13.00	13.24	1.14	1.18
13.00	13.24	1.28	1.13
13.00	13.24	0.99	1.01
13.00	13.24	1.11	1.16
13.00	13.24	0.99	1.01
13.00	13.24	1.00	1.00
12.50	14.65	1.58	2.58
12.50	14.65	1.24	1.30
12.50	14.65	1.16	1.06
12.50	14.65	0.99	0.85
12.50	14.65	1.29	1.05
12.50	14.65	1.12	0.92
12.50	14.65	1.00	1.00
18.66	24.78	1.20	1.11
18.66	24.78	1.18	0.93
18.66	24.78	1.06	0.89
18.66	24.78	1.03	0.79
18.66	24.78	1.37	1.07
18.66	24.78	0.78	0.65
18.66	24.78	1.40	1.03
18.66	24.78	1.04	0.74
18.66	24.78	1.00	1.00
10.05	9.86		
10.05	9.86	1.00	1.00
8.13	8.33	1.25	1.62
8.13	8.33	1.17	1.13
8.13	8.33	1.19	1.23
8.13	8.33	1.11	0.89
8.13	8.33	1.31	1.37
8.13	8.33	1.09	1.04
8.13	8.33	1.24	0.99
8.13	8.33	1.00	1.00
9.39	10.79	1.48	1.66
9.39	10.79	1.19	1.07
9.39	10.79	1.11	0.97
9.39	10.79	1.16	0.94
9.39	10.79	1.25	1.54
9.39	10.79	1.19	1.08
9.39	10.79	1.18	0.86
9.39	10.79	1.00	1.00
16.23	20.69	1.30	1.10
16.23	20.69	1.26	1.03
16.23	20.69	1.24	1.08
16.23	20.69	1.17	0.88
16.23	20.69	1.28	1.04
16.23	20.69	1.39	1.15
16.23	20.69	1.12	0.92

World Journal Impact	World CPP	Relative Journal Impact	Relative Citation Impact
16.23	20.69	1.00	1.00
15.50	34.71	1.91	0.77
15.50	34.71	1.80	0.64
15.50	34.71	1.50	0.69
15.50	34.71	2.21	0.75
15.50	34.71	2.67	1.08
15.50	34.71	1.33	0.48
15.50	34.71	1.00	1.00
14.20	17.22	1.47	1.37
14.20	17.22	1.30	1.11
14.20	17.22	1.21	1.05
14.20	17.22	0.94	0.70
14.20	17.22	1.19	0.96
14.20	17.22	1.46	1.25
14.20	17.22	1.22	0.96
14.20	17.22	1.48	1.24
14.20	17.22	1.12	0.89
14.20	17.22	1.00	1.00
2.60	2.57	1.07	1.21
2.60	2.57	0.93	1.07
2.60	2.57	1.06	1.74
2.60	2.57	1.00	1.00
6.06	6.17	1.40	1.86
6.06	6.17	1.19	1.28
6.06	6.17	1.16	1.33
6.06	6.17	1.12	1.37
6.06	6.17	1.16	1.18
6.06	6.17	1.20	1.08
6.06	6.17	1.00	1.00
5.81	6.71	1.24	1.02
5.81	6.71	1.25	1.05
5.81	6.71	1.22	1.17
5.81	6.71	1.28	0.94
5.81	6.71	1.09	0.95
5.81	6.71	1.25	1.02
5.81	6.71	1.22	0.93
5.81	6.71	1.00	1.00
4.47	5.07	1.43	1.58
4.47	5.07	1.18	1.19
4.47	5.07	1.17	1.00
4.47	5.07	1.04	1.02
4.47	5.07	1.09	1.02
4.47	5.07	1.21	1.34
4.47	5.07	1.25	1.14
4.47	5.07	1.17	1.23
4.47	5.07	1.00	1.00
8.22	10.66	1.08	0.90
8.22	10.66	1.12	0.92
8.22	10.66	1.11	0.83
8.22	10.66	1.04	0.83
8.22	10.66	1.18	0.98
8.22	10.66	0.79	0.54
8.22	10.66	1.33	1.19
8.22	10.66	1.02	0.79
8.22	10.66	1.00	1.00
4.07	4.43	0.94	0.74
4.07	4.43	1.00	1.00
3.30	3.77	1.20	0.91
3.30	3.77	1.13	0.98
3.30	3.77	1.14	0.96

World Journal Impact	World CPP	Relative Journal Impact	Relative Citation Impact
3.30	3.77	1.08	0.91
3.30	3.77	1.24	1.30
3.30	3.77	1.15	0.92
3.30	3.77	1.10	1.09
3.30	3.77	1.00	1.00
3.56	4.44	1.26	1.44
3.56	4.44	1.18	1.01
3.56	4.44	1.21	0.98
3.56	4.44	1.14	0.97
3.56	4.44	1.17	1.14
3.56	4.44	1.13	0.98
3.56	4.44	1.14	0.89
3.56	4.44	1.22	1.00
3.56	4.44	1.00	1.00
7.06	9.09	1.39	1.01
7.06	9.09	1.27	1.07
7.06	9.09	1.23	1.10
7.06	9.09	1.16	0.98
7.06	9.09	1.21	0.90
7.06	9.09	1.02	0.67
7.06	9.09	1.44	1.24
7.06	9.09	1.27	1.10
7.06	9.09	1.00	1.00
6.38	13.90	1.79	0.89
6.38	13.90	1.86	0.70
6.38	13.90	1.82	1.06
6.38	13.90	2.00	1.13
6.38	13.90	2.10	1.11
6.38	13.90	2.01	0.78
6.38	13.90	1.00	1.00
5.98	7.49	1.40	1.24
5.98	7.49	1.33	1.13
5.98	7.49	1.28	1.11
5.98	7.49	0.94	0.77
5.98	7.49	1.25	1.08
5.98	7.49	1.33	1.07
5.98	7.49	1.07	0.81
5.98	7.49	1.51	1.32
5.98	7.49	1.31	1.10
5.98	7.49	1.00	1.00

## Relative Impact for ACT - 1995

Year	State	Field	Publications	Citations	Citations Per Publication	Journal Impact	World Journal Impact	World CPP	Relative Journal Impact	Relative Citation Impact
1995	ACT	Physical Science:	442	10032	22.70	17.49	14.28	13.51	1.22	1.68
1995	ACT	Chemical Science:	176	3088	17.55	17.55	13.00	13.24	1.35	1.33
1995	ACT	Earth Sciences	158	5984	37.87	19.78	12.50	14.65	1.58	2.58
1995	ACT	Biological Science:	461	12653	27.45	22.39	18.66	24.78	1.20	1.11
1995	ACT	Engineering and	149	2012	13.50	10.16	8.13	8.33	1.25	1.62
1995	ACT	Agricultural, Vete	179	3211	17.94	13.92	9.39	10.79	1.48	1.66
1995	ACT	Medical and Heal	255	5827	22.85	21.18	16.23	20.69	1.30	1.10
1995	ACT	Total	1633	38583	23.63	20.90	14.20	17.22	1.47	1.37

## Relative Impact for Australia - 1995

Year	State	Field	Publications	Citations	Citations Per Publication	Journal Impact	World Journal Impact	World CPP	Relative Journal Impact	Relative Citation Impact
1995	AUST	Mathematical Sci	486	3621	7.45	7.25	7.67	6.66	0.94	1.12
1995	AUST	Physical Science:	1947	33911	17.42	15.31	14.28	13.51	1.07	1.29
1995	AUST	Chemical Science:	1451	21580	14.87	15.05	13.00	13.24	1.16	1.12
1995	AUST	Earth Sciences	939	17867	19.03	15.44	12.50	14.65	1.24	1.30
1995	AUST	Biological Science:	3241	74310	22.93	22.00	18.66	24.78	1.18	0.93
1995	AUST	Information, Com	185	1875	10.14	9.46	10.05	9.86	0.94	1.03
1995	AUST	Engineering and	1843	17360	9.42	9.54	8.13	8.33	1.17	1.13
1995	AUST	Agricultural, Vete	1844	21275	11.54	11.13	9.39	10.79	1.19	1.07
1995	AUST	Medical and Heal	5571	119036	21.37	20.45	16.23	20.69	1.26	1.03
1995	AUST	Science - general	1069	28685	26.83	29.66	15.50	34.71	1.91	0.77
1995	AUST	Total	14496	277134	19.12	18.45	14.20	17.22	1.30	1.11

## Collaborations between states by field - 1995

### ACT

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				NSW	NT	QLD	SA	TAS	VIC	WA
Mathematical Sciences	73	10	42	4		2	1		1	2
Physical Sciences	442	93	194	56	1	8	7	1	22	3
Chemical Sciences	176	52	55	20	1	11	9	1	13	6
Earth Sciences	158	42	51	17	2	4	2	4	10	10
Biological Sciences	461	118	148	40	4	24	23	7	24	10
Information, Computing and Communication Science	10	3	5	1		1	1			
Engineering and Technology	149	36	46	19		3	1		13	1
Agricultural, Veterinary and Environmental Sciences	179	54	45	23	1	11	3	2	11	7
Medical and Health Sciences	255	94	66	55	2	19	14	1	22	14
Education	7	1	1							1
Science - general	85	20	31	6		8	3	3	3	3
<b>Total</b>	<b>1633</b>	<b>421</b>	<b>564</b>	<b>194</b>	<b>9</b>	<b>70</b>	<b>55</b>	<b>16</b>	<b>97</b>	<b>43</b>

### NSW

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NT	QLD	SA	TAS	VIC	WA
Mathematical Sciences	167	13	65	4	1	1	1	1	2	3
Physical Sciences	760	126	314	56		9	9	8	42	4
Chemical Sciences	488	88	118	20		22	5	10	30	12
Earth Sciences	230	55	72	17		7	7	9	11	10
Biological Sciences	823	147	199	40	2	33	25	8	42	12
Information, Computing and Communication Science	68	9	19	1		1	2	1	1	3
Engineering and Technology	752	94	182	19		19	9	2	39	8
Agricultural, Veterinary and Environmental Sciences	531	98	82	23		33	14	8	22	8
Medical and Health Sciences	1909	248	361	55	3	75	61	8	90	27
Education	49	5	6			2		1	1	2
Science - general	275	49	70	6	1	11	7	9	22	6
<b>Total</b>	<b>4725</b>	<b>713</b>	<b>1193</b>	<b>194</b>	<b>7</b>	<b>157</b>	<b>110</b>	<b>48</b>	<b>239</b>	<b>69</b>

### NT

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	VIC	WA	TAS
Mathematical Sciences	3	1	2			1				
Physical Sciences	12	2	3	1		1		1		1
Chemical Sciences	6	1	4	1		1		1		
Earth Sciences	16	3	5	2			1			

Biological Sciences	62	18	13	4	2	5	3	5	1
Engineering and Technology	5		2						
Agricultural, Veterinary and Environmental Sciences	20	9	4	1		7	1	1	
Medical and Health Sciences	43	22	5	2	3	6	5	13	5
Education	1		1						
Science - general	7	4	3		1	2	2	1	
<b>Total</b>	<b>126</b>	<b>43</b>	<b>32</b>	<b>9</b>	<b>7</b>	<b>14</b>	<b>8</b>	<b>14</b>	<b>5</b>

## QLD

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	NT	SA	TAS	VIC	WA
Mathematical Sciences	59	13	27	2	1		2		6	2
Physical Sciences	159	28	48	8	9	1	2		10	1
Chemical Sciences	213	48	60	11	22	1	4	4	16	7
Earth Sciences	120	22	33	4	7		1	3	9	2
Biological Sciences	603	105	150	24	33	5	12	6	25	10
Information, Computing and Communication Science	44	8	13	1	1				3	3
Engineering and Technology	268	45	70	3	19		4	3	12	4
Agricultural, Veterinary and Environmental Sciences	505	80	120	11	33	7	3	2	20	12
Medical and Health Sciences	758	144	172	19	75	6	25	6	50	19
Education	62	10	16		2				3	5
Science - general	253	36	74	8	11	2	2	2	7	9
<b>Total</b>	<b>2220</b>	<b>399</b>	<b>580</b>	<b>70</b>	<b>157</b>	<b>14</b>	<b>46</b>	<b>21</b>	<b>126</b>	<b>49</b>

## SA

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	NT	TAS	VIC	WA
Mathematical Sciences	37	6	17	1	1	2			2	
Physical Sciences	152	23	51	7	9	2			4	2
Chemical Sciences	173	34	32	9	5	4		2	17	3
Earth Sciences	98	21	28	2	7	1	1	2	7	2
Biological Sciences	387	94	93	23	25	12	3		33	13
Information, Computing and Communication Science	8	4	2	1	2					1
Engineering and Technology	100	19	20	1	9	4			4	2
Agricultural, Veterinary and Environmental Sciences	153	28	28	3	14	3	1		5	6
Medical and Health Sciences	723	126	146	14	61	25	5	3	51	19
Education	19		3							
Science - general	118	24	26	3	7	2	2	1	12	3
<b>Total</b>	<b>1541</b>	<b>305</b>	<b>370</b>	<b>55</b>	<b>110</b>	<b>46</b>	<b>8</b>	<b>8</b>	<b>112</b>	<b>44</b>

## TAS

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	VIC	WA	NT
Mathematical Sciences	12	1	5	1						
Physical Sciences	45	14	16	1	8			5		
Chemical Sciences	42	21	10	1	10	4	2	3	7	
Earth Sciences	80	25	16	4	9	3	2	10	1	
Biological Sciences	105	22	15	7	8	6		4	1	
Information, Computing and Communication Science	6	1	4	1						
Engineering and Technology	33	7	3	2		3		2		
Agricultural, Veterinary and Environmental Sciences	75	17	8	2	8	2		6	1	
Medical and Health Sciences	80	18	24	1	8	6	3	7	3	
Education	2	1	1	1				1		
Science - general	46	12	9	3	9	2	1	4	1	
<b>Total</b>	<b>385</b>	<b>102</b>	<b>86</b>	<b>16</b>	<b>48</b>	<b>21</b>	<b>8</b>	<b>26</b>	<b>14</b>	

## VIC

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	TAS	NT	WA
Mathematical Sciences	108	13	55	1	2	6	2			2
Physical Sciences	473	83	158	22	42	10	4	5	1	3
Chemical Sciences	428	75	95	13	30	16	17	3	1	5
Earth Sciences	248	46	83	10	11	9	7	10		5
Biological Sciences	863	127	229	24	42	25	33	4	5	9
Information, Computing and Communication Science	42	6	15	1		3				2
Engineering and Technology	499	73	116	13	39	12	4	2		5
Agricultural, Veterinary and Environmental Sciences	335	59	65	11	22	20	5	6	1	4
Medical and Health Sciences	1779	192	391	22	90	50	51	7	13	20
Science - general	288	46	81	3	22	7	12	4	1	5
<b>Total</b>	<b>3971</b>	<b>562</b>	<b>1007</b>	<b>97</b>	<b>239</b>	<b>126</b>	<b>112</b>	<b>26</b>	<b>14</b>	<b>49</b>

## WA

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	TAS	VIC	NT
Mathematical Sciences	60	9	29	2	3	2			2	
Physical Sciences	95	14	30	3	4	1	2		3	1
Chemical Sciences	112	35	30	6	12	7	3	7	5	
Earth Sciences	112	25	27	10	10	2	2	1	5	
Biological Sciences	288	48	73	10	12	10	13	1	9	1
Information, Computing and Communication Science	25	9	11	3		3	1		2	
Engineering and Technology	177	20	39	1	8	4	2		5	

Agricultural, Veterinary and Environmental Sciences	236	32	33	7	8	12	6	1	4	
Medical and Health Sciences	516	68	115	14	27	19	19	3	20	5
Science - general	107	18	27	3	6	9	3	1	5	
<b>Total</b>	<b>1326</b>	<b>210</b>	<b>317</b>	<b>43</b>	<b>69</b>	<b>49</b>	<b>44</b>	<b>14</b>	<b>49</b>	<b>5</b>

## Collaborations between states by field - 2002

### ACT

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				NSW	NT	QLD	SA	TAS	VIC	WA
Mathematical Sciences	83	11	50	4		3	1		3	3
Physical Sciences	457	112	287	80		12	6	4	16	9
Chemical Sciences	177	40	78	19		7	6		7	4
Earth Sciences	219	69	124	29		5	9	7	16	14
Biological Sciences	460	150	209	70	5	28	16	7	35	9
Information, Computing and Communication Science	27	4	10	3			1			
Engineering and Technology	149	44	71	23		1	3		14	7
Agricultural, Veterinary and Environmental Sciences	194	78	82	39	1	15	10	4	23	9
Medical and Health Sciences	279	131	74	71	1	13	13	4	44	5
Education	11	5	1	1			1		2	1
Science - general	89	29	41	13		6	9		4	2
<b>Total</b>	<b>1792</b>	<b>561</b>	<b>868</b>	<b>289</b>	<b>7</b>	<b>79</b>	<b>61</b>	<b>24</b>	<b>140</b>	<b>57</b>

### NSW

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NT	QLD	SA	TAS	VIC	WA
Mathematical Sciences	220	20	142	4		2	1		10	3
Physical Sciences	894	162	564	80		19	8	11	56	7
Chemical Sciences	501	103	189	19		25	6	2	46	13
Earth Sciences	286	83	126	29	2	13	7	8	22	10
Biological Sciences	1133	299	426	70	15	85	42	15	79	32
Information, Computing and Communication Science	86	16	47	3	1			1	7	4
Engineering and Technology	820	121	332	23	2	21	10	1	56	13
Agricultural, Veterinary and Environmental Sciences	487	160	144	39	2	60	20	10	44	19
Medical and Health Sciences	2397	454	761	71	14	125	67	11	211	56
Education	82	8	19	1		1	3		4	
Science - general	316	75	134	13	3	24	7	6	23	8
<b>Total</b>	<b>5718</b>	<b>1190</b>	<b>2303</b>	<b>289</b>	<b>30</b>	<b>311</b>	<b>135</b>	<b>45</b>	<b>445</b>	<b>131</b>

### NT

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	TAS	VIC	WA
Physical Sciences	19		6							
Chemical Sciences	2		1							
Earth Sciences	21	7	6		2	3		1		1
Biological Sciences	60	37	14	5	15	11	4	1	7	1

Information, Computing and Communication Science	1	1	1	1						
Engineering and Technology	9	3	5	2	1					
Agricultural, Veterinary and Environmental Sciences	36	18	14	1	2	12	3		7	3
Medical and Health Sciences	63	39	13	1	14	10	10	1	16	3
Education	1	1				1				
Science - general	18	9	8		3	7				
<b>Total</b>	<b>178</b>	<b>90</b>	<b>47</b>	<b>7</b>	<b>30</b>	<b>33</b>	<b>15</b>	<b>2</b>	<b>25</b>	<b>8</b>

## QLD

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	NT	SA	TAS	VIC	WA
Mathematical Sciences	72	12	33	3	2		2	2	1	5
Physical Sciences	233	42	120	12	19		4	2	7	3
Chemical Sciences	268	69	108	7	25		12	1	32	4
Earth Sciences	201	51	87	5	13	3	9	4	17	9
Biological Sciences	782	193	349	28	85	11	25	8	57	14
Information, Computing and Communication Science	68	1	30							1
Engineering and Technology	414	65	168	1	21	1	3	1	36	6
Agricultural, Veterinary and Environmental Sciences	525	147	186	15	60	12	21	9	42	29
Medical and Health Sciences	1119	254	430	13	125	10	26	7	106	39
Education	47	7	12		1	1	1		3	1
Science - general	295	72	125	6	24	7	10	8	17	13
<b>Total</b>	<b>3051</b>	<b>721</b>	<b>1249</b>	<b>79</b>	<b>311</b>	<b>33</b>	<b>92</b>	<b>26</b>	<b>257</b>	<b>97</b>

## SA

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	NT	TAS	VIC	WA
Mathematical Sciences	46	4	26	1	1	2				1
Physical Sciences	163	23	93	6	8	4		2	3	5
Chemical Sciences	177	57	85	6	6	12			30	13
Earth Sciences	108	41	51	9	7	9		4	17	6
Biological Sciences	411	125	153	16	42	25	4	10	39	17
Information, Computing and Communication Science	21	2	8	1					1	
Engineering and Technology	162	26	65	3	10	3		1	9	5
Agricultural, Veterinary and Environmental Sciences	189	68	60	10	20	21	3	6	26	8
Medical and Health Sciences	782	170	224	13	67	26	10	6	83	28
Education	22	6	7	1	3	1			1	1
Science - general	122	39	47	9	7	10		2	15	2
<b>Total</b>	<b>1729</b>	<b>448</b>	<b>664</b>	<b>61</b>	<b>135</b>	<b>92</b>	<b>15</b>	<b>23</b>	<b>184</b>	<b>71</b>

## TAS

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	NT	VIC	WA

Mathematical Sciences	8	3	3			2				1
Physical Sciences	36	19	25	4	11	2	2		1	4
Chemical Sciences	44	11	30		2	1			2	8
Earth Sciences	145	34	79	7	8	4	4	1	7	7
Biological Sciences	201	56	75	7	15	8	10	1	23	5
Information, Computing and Communication Science	5	2	1		1					1
Engineering and Technology	31	7	10		1	1	1		3	1
Agricultural, Veterinary and Environmental Sciences	141	44	47	4	10	9	6		13	6
Medical and Health Sciences	114	46	35	4	11	7	6	1	32	4
Science - general	99	29	42		6	8	2		11	3
<b>Total</b>	<b>590</b>	<b>180</b>	<b>252</b>	<b>24</b>	<b>45</b>	<b>26</b>	<b>23</b>	<b>2</b>	<b>67</b>	<b>32</b>

## VIC

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	TAS	NT	WA
Mathematical Sciences	127	16	62	3	10	1				2
Physical Sciences	451	75	209	16	56	7	3	1		
Chemical Sciences	445	111	193	7	46	32	30	2		6
Earth Sciences	286	89	134	16	22	17	17	7		24
Biological Sciences	1023	231	427	35	79	57	39	23	7	22
Information, Computing and Communication Science	60	8	25		7		1			
Engineering and Technology	630	114	225	14	56	36	9	3		5
Agricultural, Veterinary and Environmental Sciences	410	137	132	23	44	42	26	13	7	20
Medical and Health Sciences	2303	464	791	44	211	106	83	32	16	76
Science - general	349	70	131	4	23	17	15	11		4
<b>Total</b>	<b>4899</b>	<b>1057</b>	<b>1898</b>	<b>140</b>	<b>445</b>	<b>257</b>	<b>184</b>	<b>67</b>	<b>25</b>	<b>132</b>

## WA

Field	State total	Interstate collaborations	International collaborations	Collaborating with						
				ACT	NSW	QLD	SA	TAS	VIC	NT
Mathematical Sciences	68	13	41	3	3	5	1	1	2	
Physical Sciences	94	23	53	9	7	3	5	4		
Chemical Sciences	135	44	62	4	13	4	13	8	6	
Earth Sciences	206	58	113	14	10	9	6	7	24	1
Biological Sciences	410	86	190	9	32	14	17	5	22	1
Information, Computing and Communication Science	30	6	18		4	1		1		
Engineering and Technology	213	32	97	7	13	6	5	1	5	
Agricultural, Veterinary and Environmental Sciences	289	68	96	9	19	29	8	6	20	3
Medical and Health Sciences	714	147	240	5	56	39	28	4	76	3
Science - general	144	27	69	2	8	13	2	3	4	
<b>Total</b>	<b>1779</b>	<b>412</b>	<b>747</b>	<b>57</b>	<b>131</b>	<b>97</b>	<b>71</b>	<b>32</b>	<b>132</b>	<b>8</b>

**Collaborations between states**  
**Total Publications - Summary**

**1995**

State	State Total	Interstate collaborations		International collaborations		Collaborating with								
		No. of Pubs	%	No. of Pubs	%	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	
ACT	1633	421	25.8	564	34.5									
NSW	4725	713	15.1	1193	25.2	194								
NT	126	43	34.1	32	25.4	9	7							
QLD	2220	399	18.0	580	26.1	70	157	14						
SA	1541	305	19.8	370	24.0	55	110	8	46					
TAS	385	102	26.5	86	22.3	16	48		21	8				
VIC	3971	562	14.2	1007	25.4	97	239	14	126	112	26			
WA	1326	210	15.8	317	23.9	43	69	5	49	44	14	49		

**2002**

State	State Total	Interstate collaborations		International collaborations		Collaborating with								
		No. of Pubs	%	No. of Pubs	%	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	
ACT	1792	561	31.3	868	48.4									
NSW	5718	1190	20.8	2303	40.3	289								
NT	178	90	50.6	47	26.4	7	30							
QLD	3051	728	23.9	1249	40.9	79	311	33						
SA	1729	448	25.9	664	38.4	61	135	15	92					
TAS	590	180	30.5	252	42.7	24	45	2	26	23				
VIC	4899	1057	21.6	1898	38.7	140	445	25	257	184	67			
WA	1779	412	23.2	747	42.0	57	131	8	97	71	32	132		