SECTION 1

ERA 2015 National Overview

Section 1 provides a national summary of research performance, a summary of all data submitted for the ERA 2015 evaluation, a snapshot of comparative data for ERA 2010, ERA 2012 and ERA 2015, and some preliminary analyses of selected ERA 2015 submission data.

Research Quality

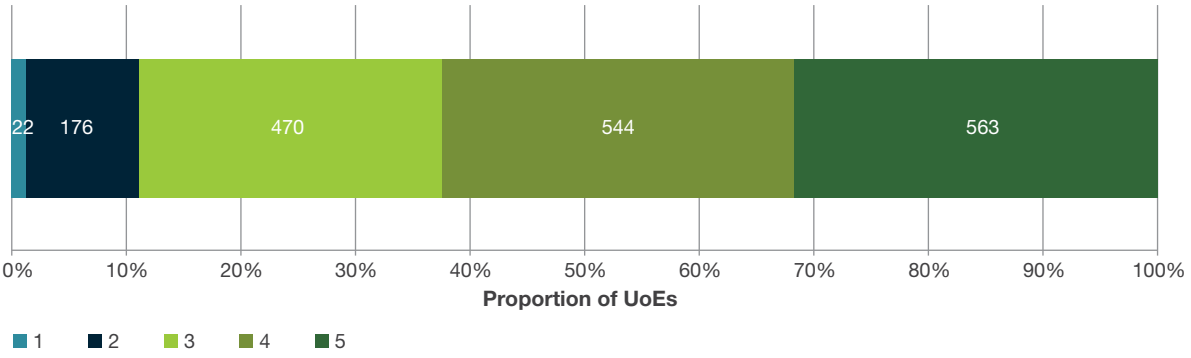
This sub–section presents the research quality results from ERA 2015. It summarises the ratings results for all four-digit Units of Evaluation (UoEs), then presents a number of analyses that highlight areas of research excellence in Australia's eligible institutions. It then shows the results of the two–digit evaluations. The final four charts display the full array of results at the four–digit level—for every assesed UoE and each four–digit FoR code.

Research quality — four–digit UoEs

Of the 1,775 four–digit UoEs that were rated during ERA 2015, 563 (32 per cent) attracted a rating of 5 (i.e. well above world standard). A further 544 (31 per cent) received a rating of 4—above world standard—while 470 (26 per cent) were rated 3—at world standard. Overall, 62 per cent of four–digit UoEs were rated above or well above world standard.

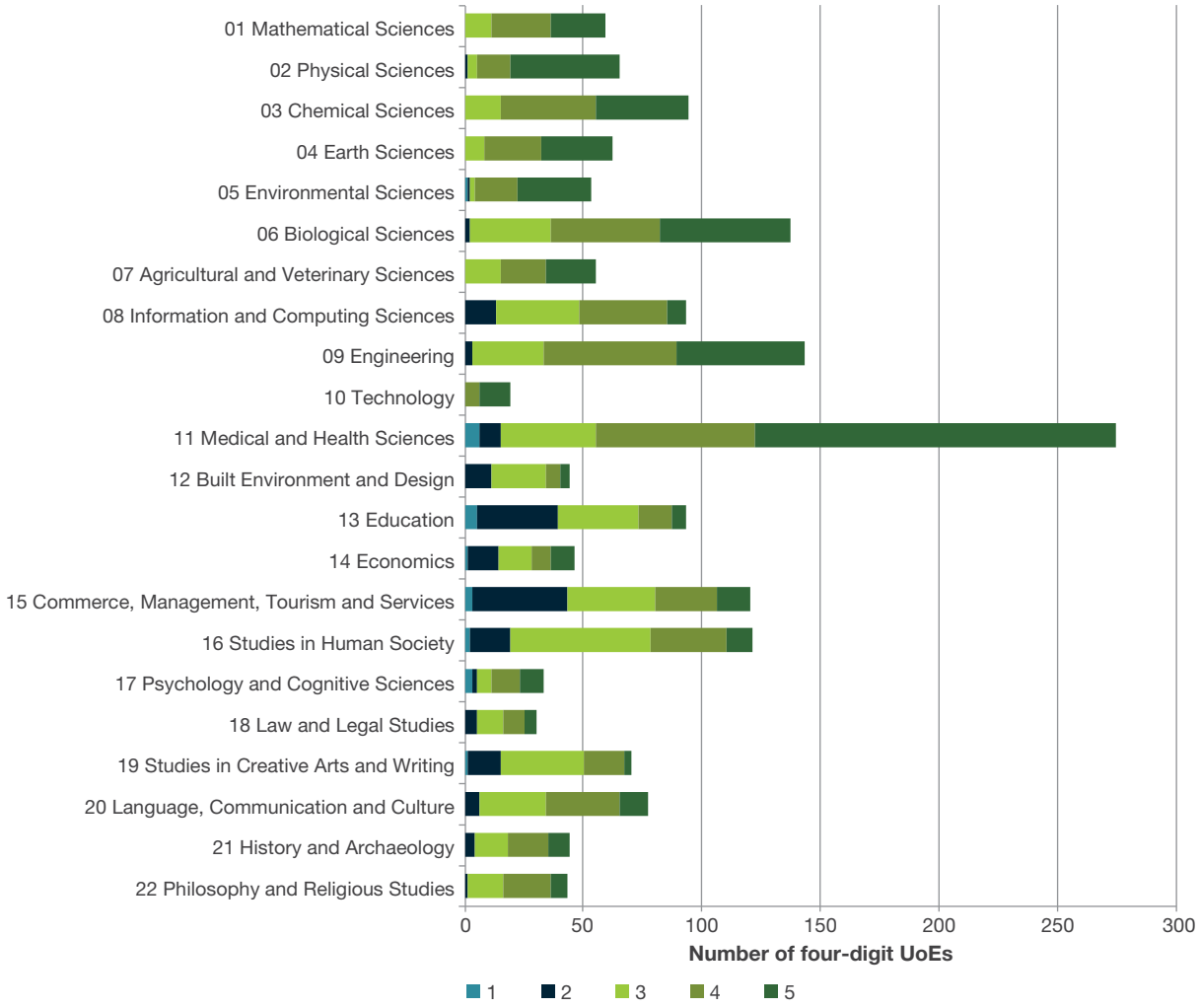
The number of assessed UoEs and the distribution of ratings among these UoEs varied by discipline. In absolute terms, 11 Medical and Health Sciences had the largest number of four–digit UoEs (274). The FoR 10 Technology had the fewest (19), but achieved excellent results: all 19 were rated above or well above world standard.

DISTRIBUTION OF RATINGS ACROSS ALL FOUR–DIGIT UOES



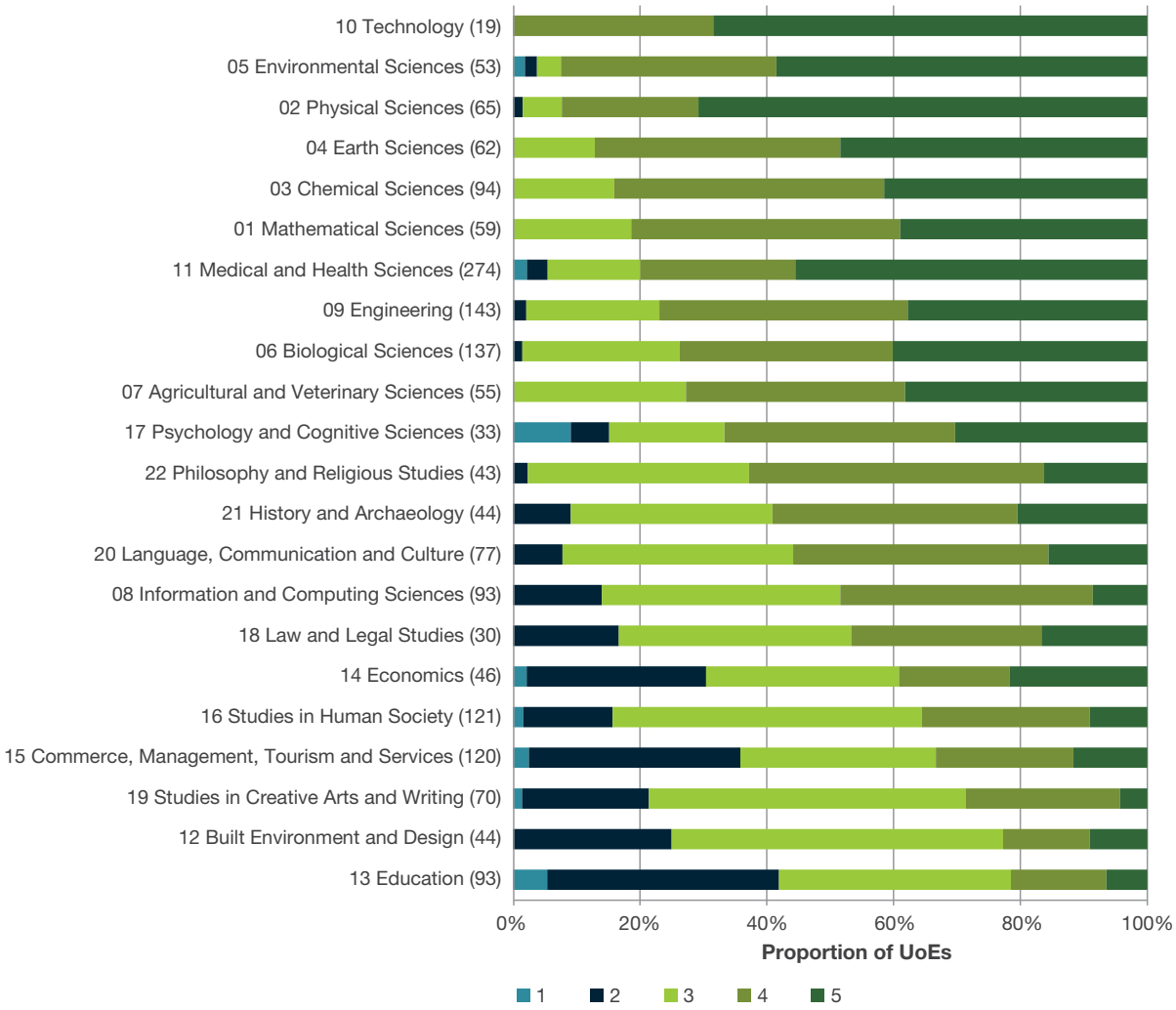
Note: Numbers in bar chart show the number of four–digit UoEs that received each rating.

UOE RATINGS (AGGREGATED FOUR–DIGIT RESULTS, GROUPED BY TWO–DIGIT FOR CODE)



The following chart shows the percentage distribution of four–digit UoEs, allowing comparisons between disciplines of different sizes. The FoRs 10 Technology, 05 Environmental Sciences and 02 Physical Sciences each had more than 90 per cent of their underlying four–digit UoEs rated as 4 or 5.

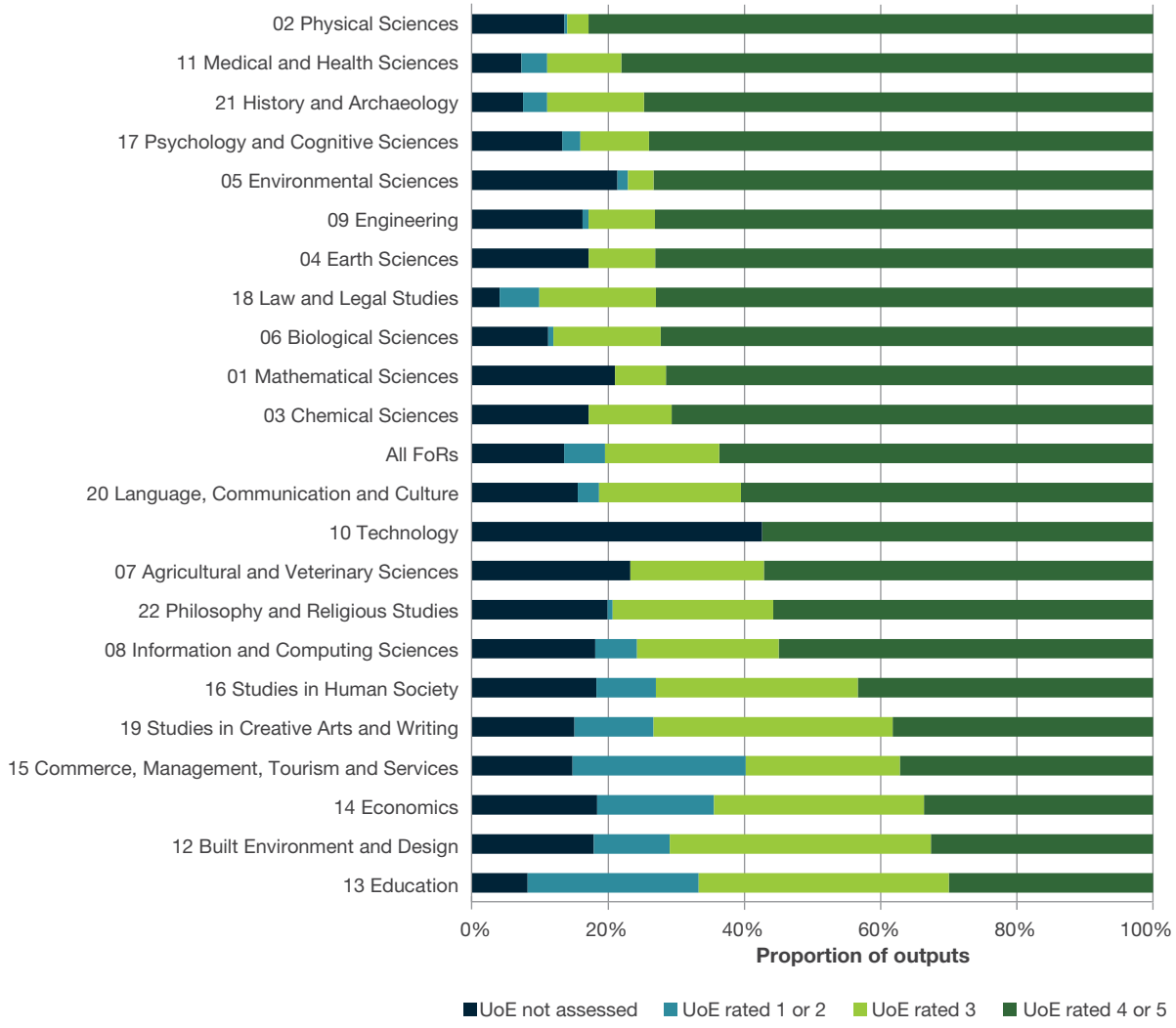
DISTRIBUTION OF RATINGS FOR FOUR–DIGIT UOES (AGGREGATED FOUR–DIGIT RESULTS, GROUPED BY TWO–DIGIT FOR CODE)



Notes: FoRs are ordered by the proportion of four–digit UoEs that received a rating of 4 or 5. The numbers in the brackets following the FoR name show the total number of four–digit UoEs that were rated in that two–digit FoR.

Another approach to identifying research excellence across disciplines is to consider the national distribution of all outputs that were submitted for assessment. In doing so, it is important to distinguish between the peer review and the citation disciplines. In peer review disciplines, this refers to all eligible outputs, while in citation disciplines, this refers to indexed journal articles. The figure below shows that nearly two–thirds (64 per cent) of these outputs were in UoEs rated 4 or 5 (above or well above world standard). Eleven two–digit disciplines had at least two–thirds of their outputs contributed to UoEs rated 4 or 5.

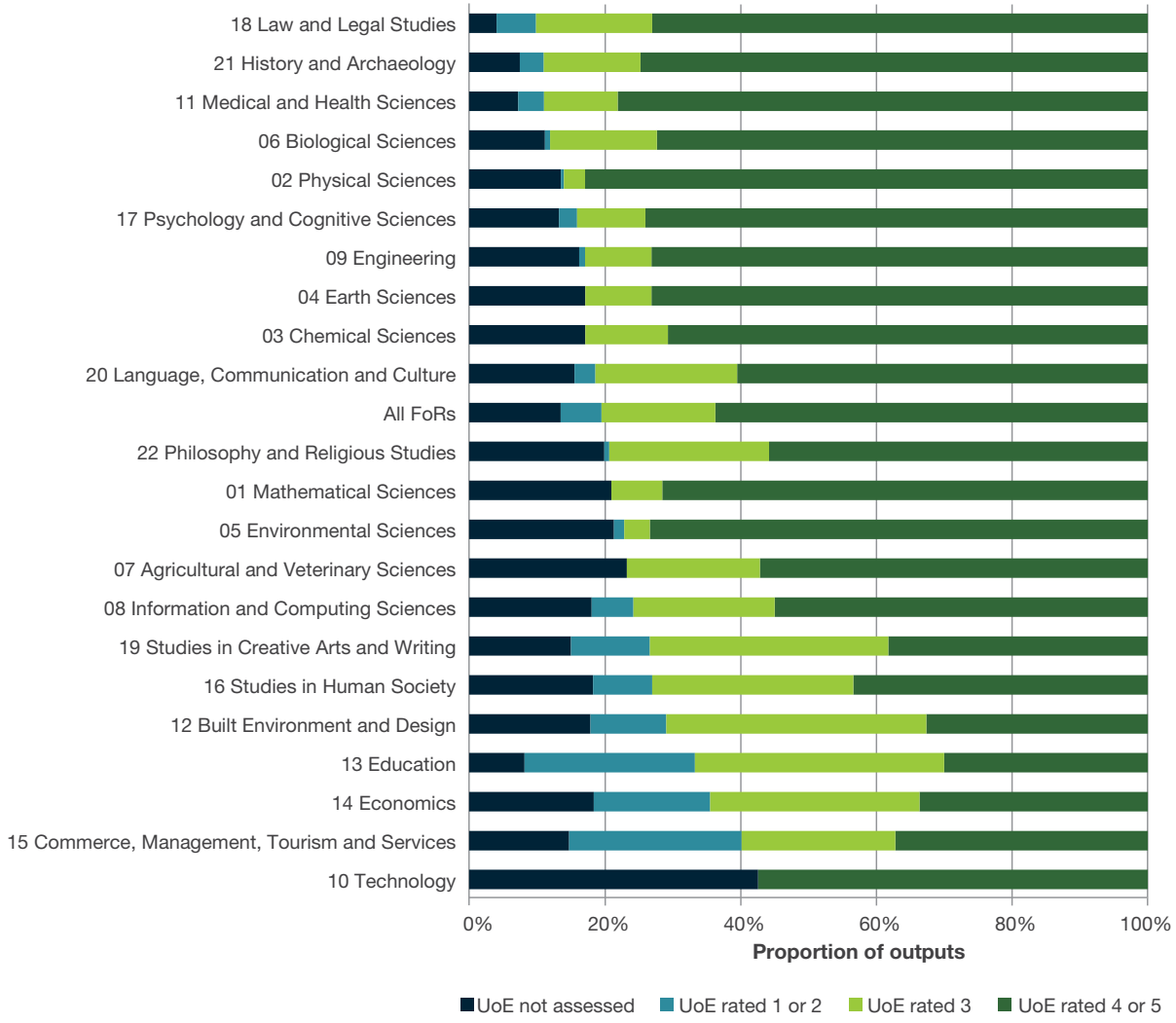
DISTRIBUTION OF OUTPUTS BY FOUR–DIGIT UOE RATING (AGGREGATED FOUR–DIGIT RESULTS, GROUPED BY TWO–DIGIT FOR CODE)



Note: FoRs are ordered by the proportion of outputs submitted for UoEs that received a rating of 4 or 5.

The chart below is the same as the previous chart, but disciplines are sorted by the proportion of outputs in UoEs that received a rating of 3, 4 or 5 (rather than just 4 and 5). Overall, just over 80 per cent of these outputs were in UoEs that were rated at or above world standard. Less than a fifth of these outputs were in UoEs that were either not assessed or were submitted by UoEs rated below world standard (1 or 2).

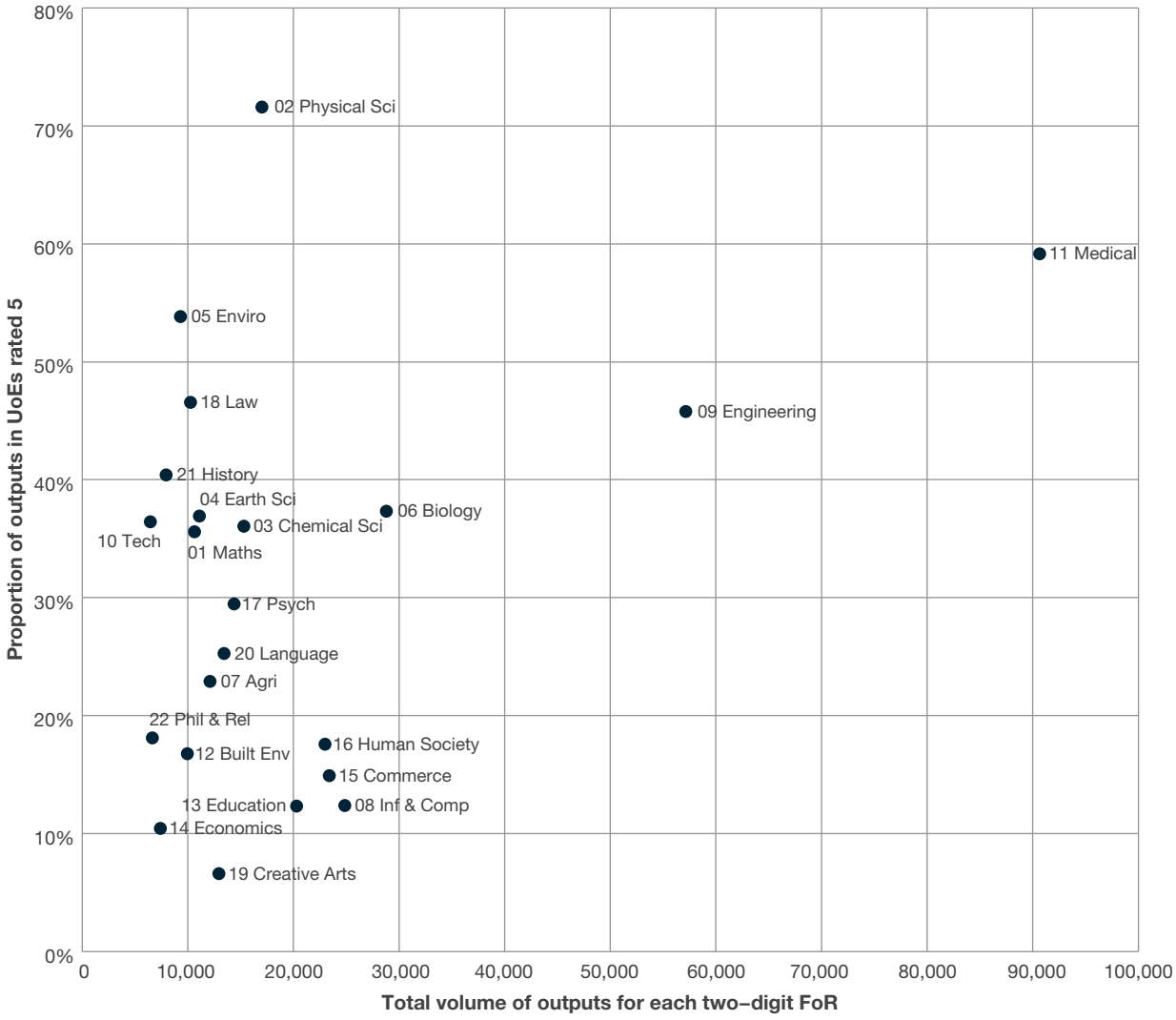
DISTRIBUTION OF OUTPUTS BY FOUR–DIGIT UOE RATING (AGGREGATED FOUR–DIGIT RESULTS, GROUPED BY TWO–DIGIT FOR CODE)



Note: FoRs are ordered by the proportion of outputs submitted for UoEs that received a rating of 3, 4 or 5.

The following chart plots disciplines along the vertical axis according to the proportion of their outputs that were submitted by UoEs that received a 5 rating. Results are shown for each two–digit FoR, but each is an aggregation of ratings and volume from the underlying four–digit UoEs. The plot also indicates the scale of the national research effort in each discipline by showing the total volume of outputs for each two–digit FoR (for the six–year reference period, along the horizontal axis).

PROPORTION OF OUTPUTS IN UOES RATED 'WELL ABOVE WORLD STANDARD' (5) VS. DISCIPLINE VOLUME

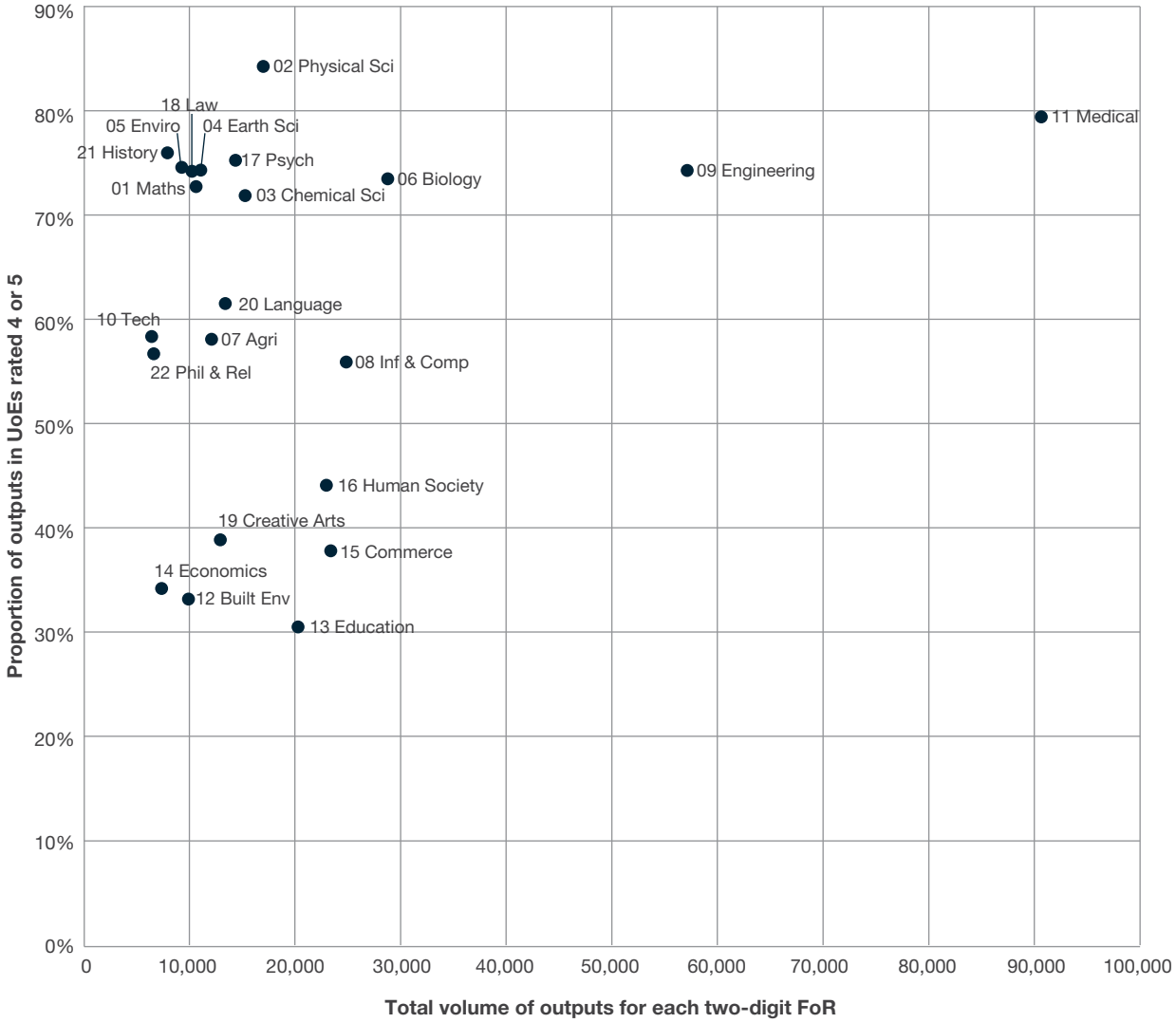


Note: Output volume includes all output types, no weighting is applied.

The following FoR abbreviations have been used: 01 Maths = Mathematical Sciences; 02 Physical Sci = Physical Sciences; 03 Chemical Sci = Chemical Sciences; 04 Earth Sci = Earth Sciences; 05 Enviro = Environmental Sciences; 06 Biology = Biological Sciences; 07 Agri = Agricultural and Veterinary Sciences; 08 Inf & Comp = Information and Computing Sciences; 10 Tech = Technology; 11 Medical = Medical and Health Sciences; 12 Built Env = Built Environment and Design; 15 Commerce = Commerce, Management, Tourism and Services; 16 Human Society = Studies in Human Society; 17 Psych = Psychology and Cognitive Sciences; 18 Law = Law and Legal Studies; 19 Creative Arts = Studies in Creative Arts and Writing; 20 Language = Language, Communication and Culture; 21 History = History and Archaeology; 22 Phil & Rel = Philosophy and Religious Studies.

The next chart is similar to the previous one, except that it plots disciplines along the vertical axis according to the proportion of their outputs that were submitted by UoEs that received a 4 or a 5 rating (not just 5). Again the plot indicates the scale of the national research effort in each discipline by showing the total volume of outputs for each two–digit FoR (along the horizontal axis).

PROPORTION OF OUTPUTS IN UOES RATED 'ABOVE WORLD STANDARD' OR 'WELL ABOVE WORLD STANDARD' (4 OR 5) VS. DISCIPLINE VOLUME



Note: Output volume includes all output types, no weighting is applied.

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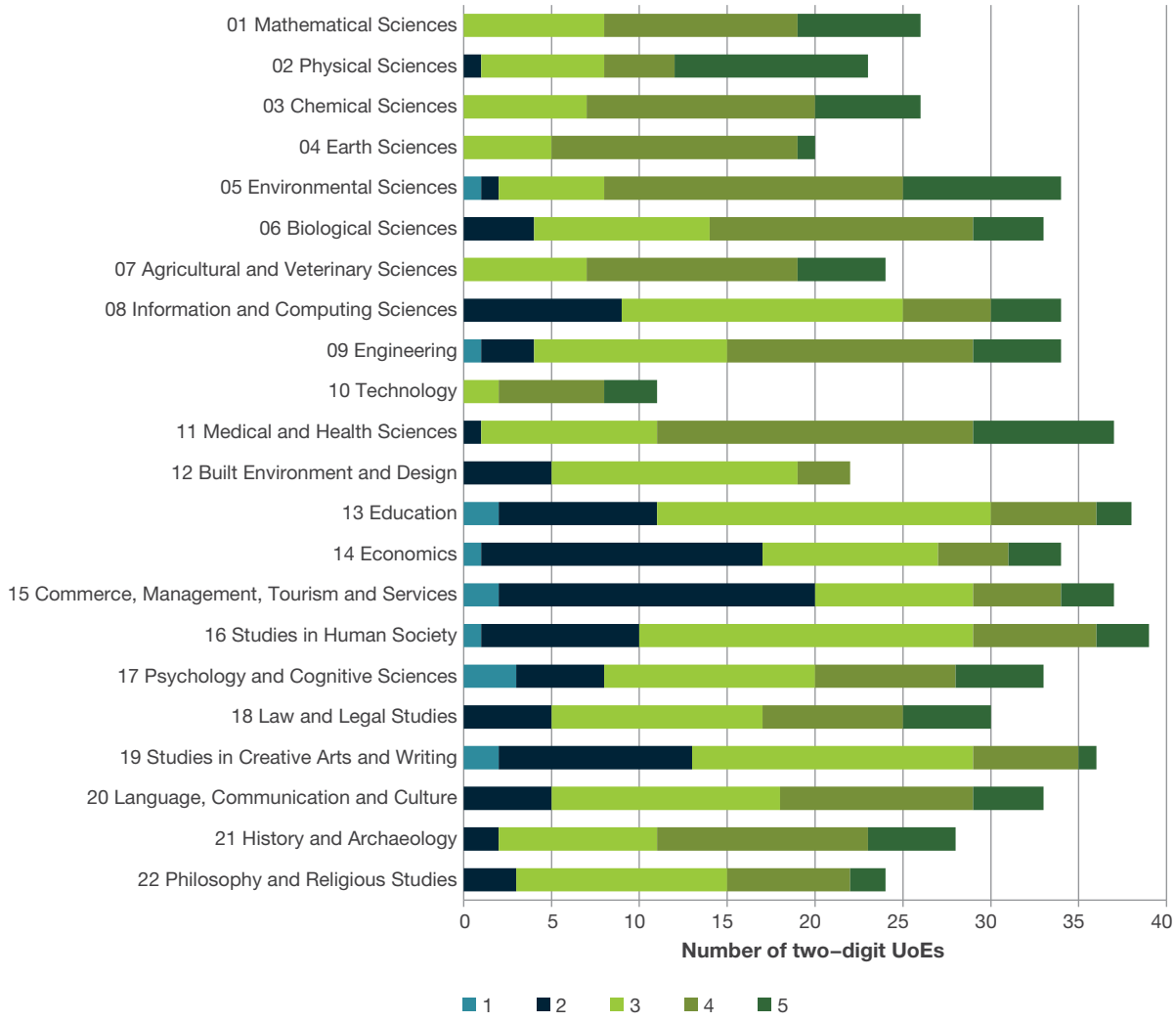
Two–digit UoEs — all results

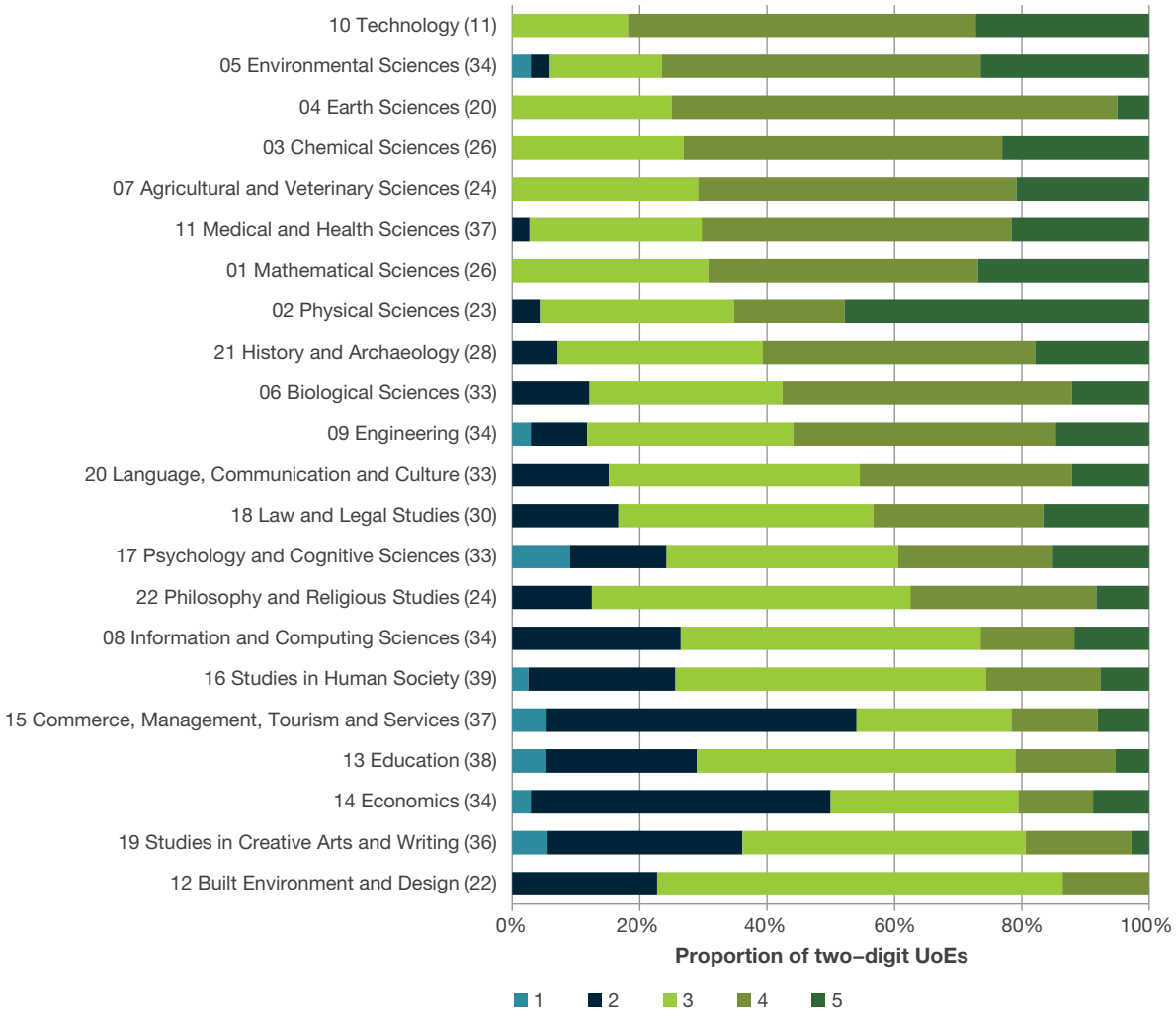
Of the 656 two–digit Units of Evaluation (UoEs) that were rated during ERA 2015, 96 attracted a rating of 5 (well above world standard) and 206 received a rating of 4 (above world standard). This is a total of 302 two–digit UoEs rated above or well above world standard.

UOE RATINGS (TWO–DIGIT UOES)



Ratings among two–digit UoEs are also presented as a percentage distribution in the following chart, allowing comparisons between disciplines of different sizes. FoRs 10 Technology, 05 Environmental Sciences and 04 Earth Sciences each had 75 per cent or more of their two–digit UoEs rated as 4 or 5.

DISTRIBUTION OF UOE RATINGS AMONG TWO–DIGIT FOR CODES

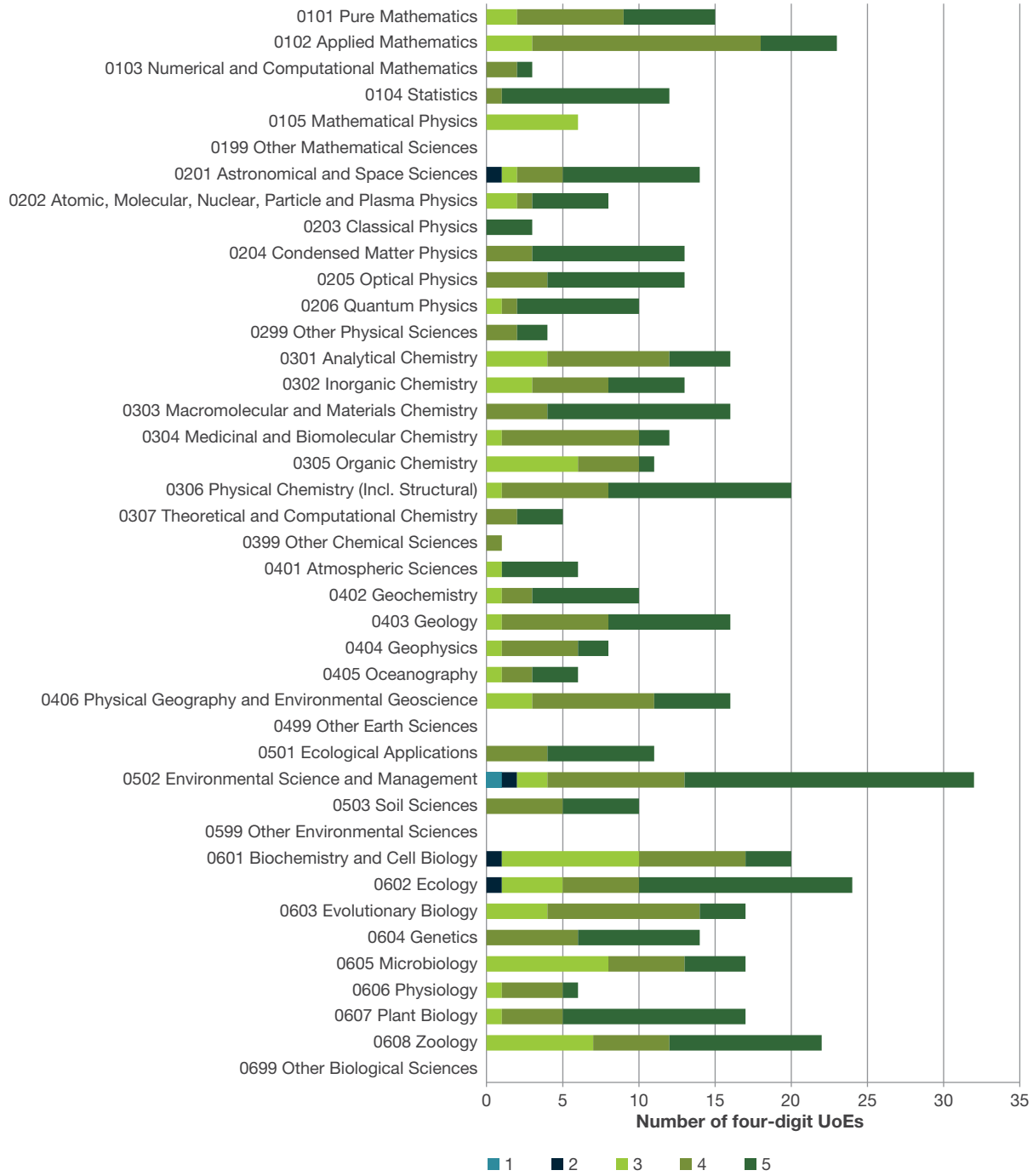


Notes: FoRs are ordered by the proportion of two–digit UoEs that received a rating of 4 or 5. The numbers in the brackets following the FoR name show the total number of two–digit UoEs that were rated in that FoR.

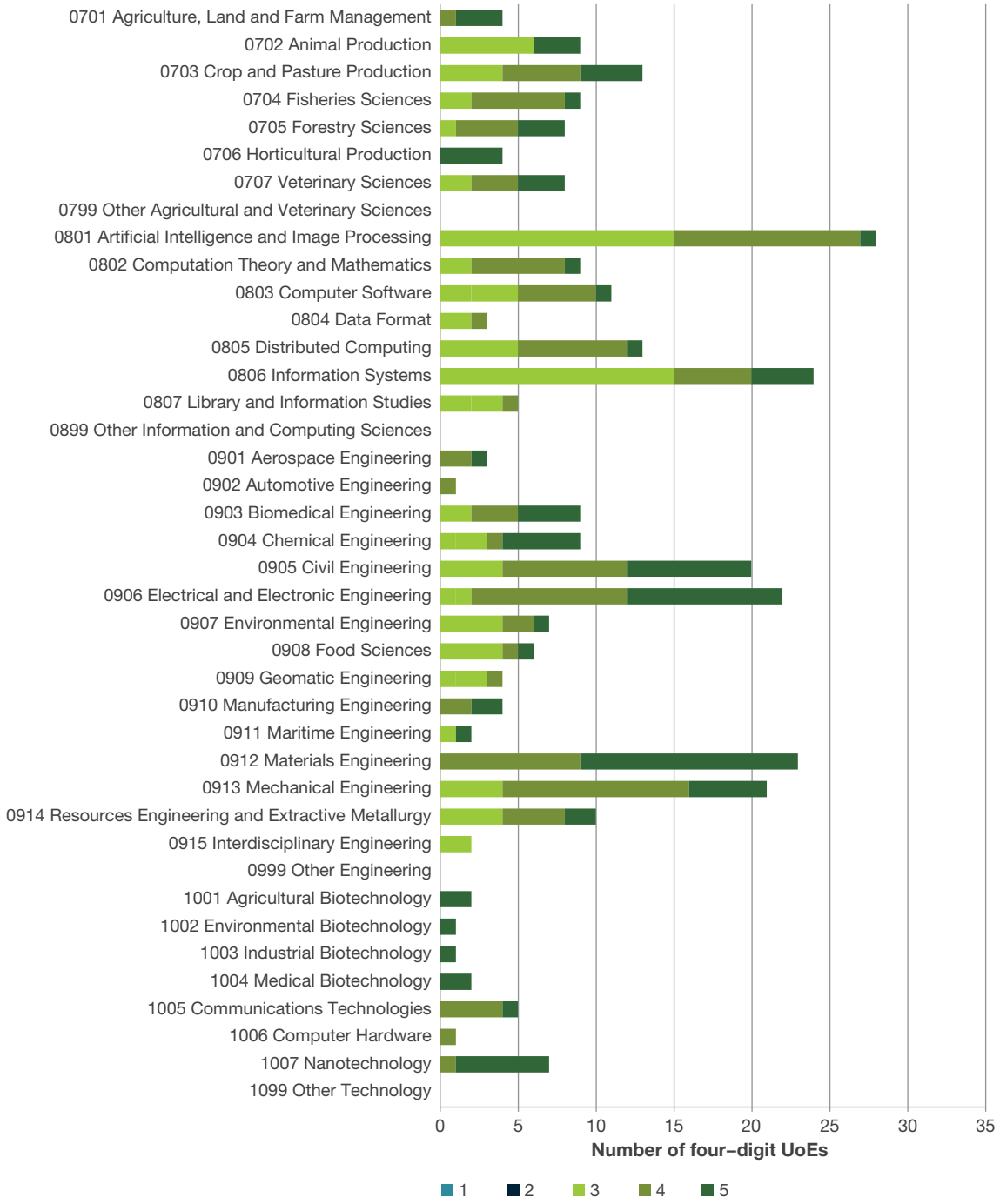
Four–digit UoEs — all results

The following charts present a full tally of UoE ratings for every four–digit FoR code. For ease of presentation, the 157 four–digit FoR codes are split across four charts.

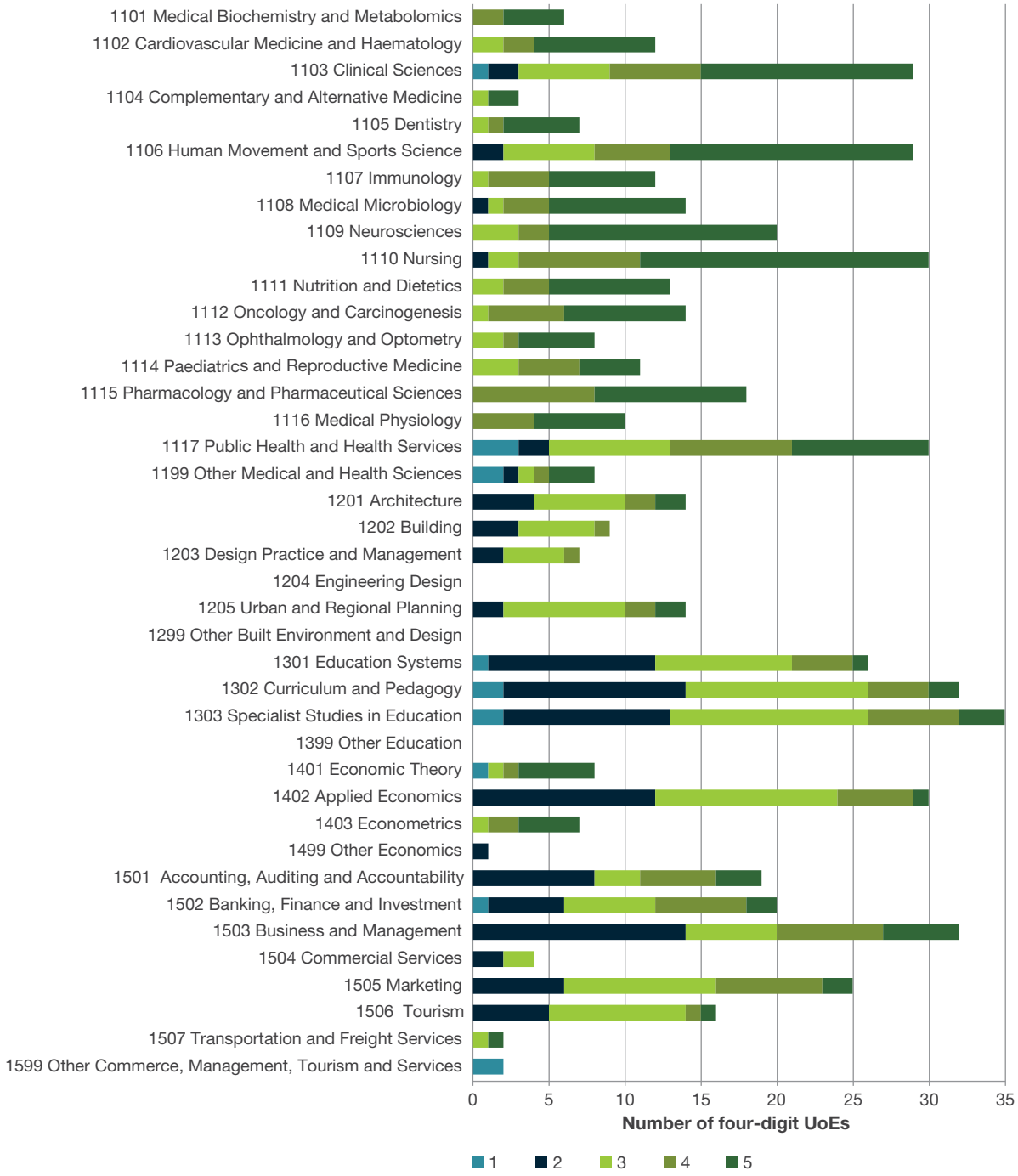
UOE RATING COUNT BY FOUR–DIGIT FOR (FORS 0101 THROUGH 0699)



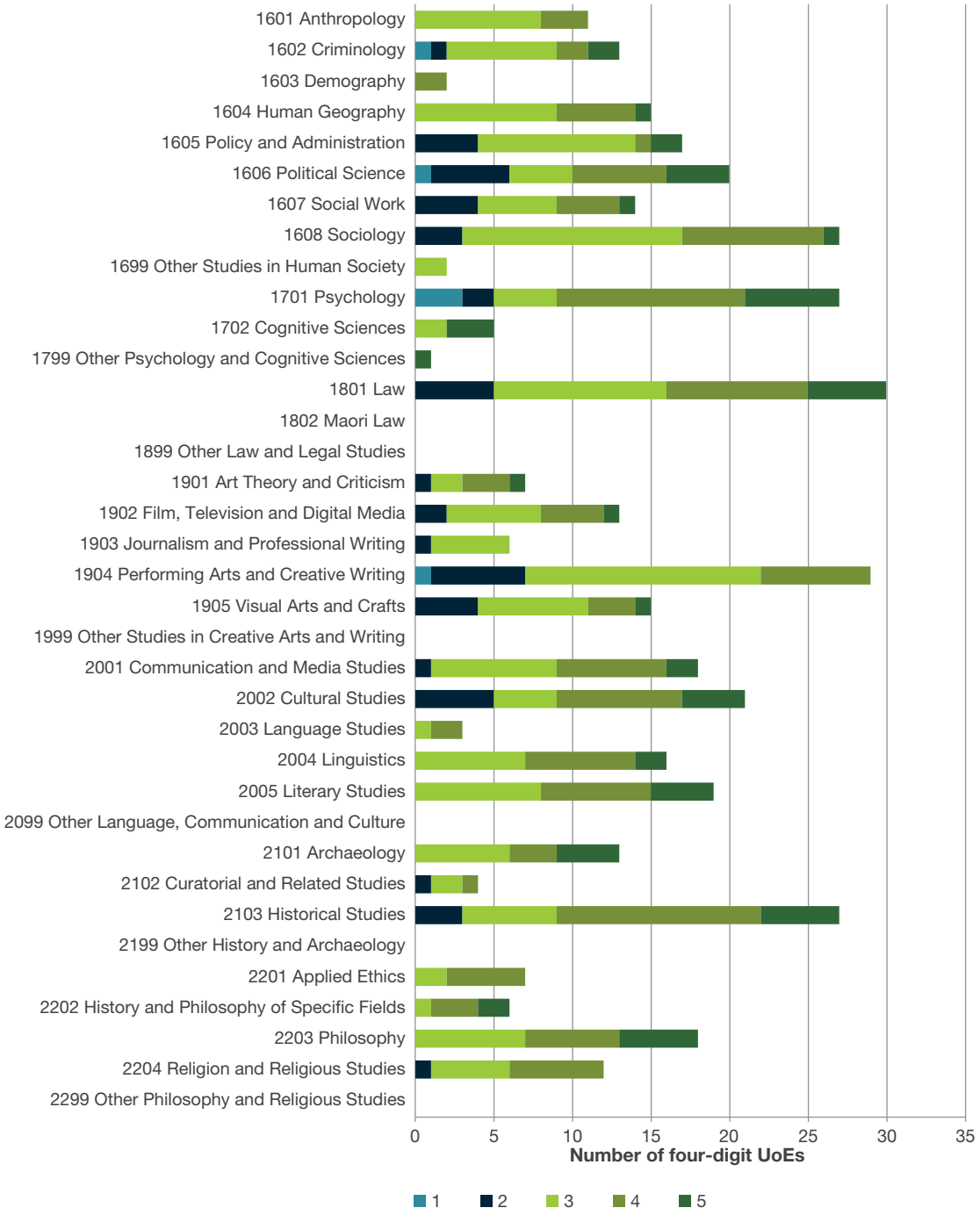
UOE RATING COUNT BY FOUR–DIGIT FOR (FORS 0701 THROUGH 1099)



UOE RATING COUNT BY FOUR–DIGIT FOR (FORS 1101 THROUGH 1599)



UOE RATING COUNT BY FOUR–DIGIT FOR (FORS 1601 THROUGH 2299)

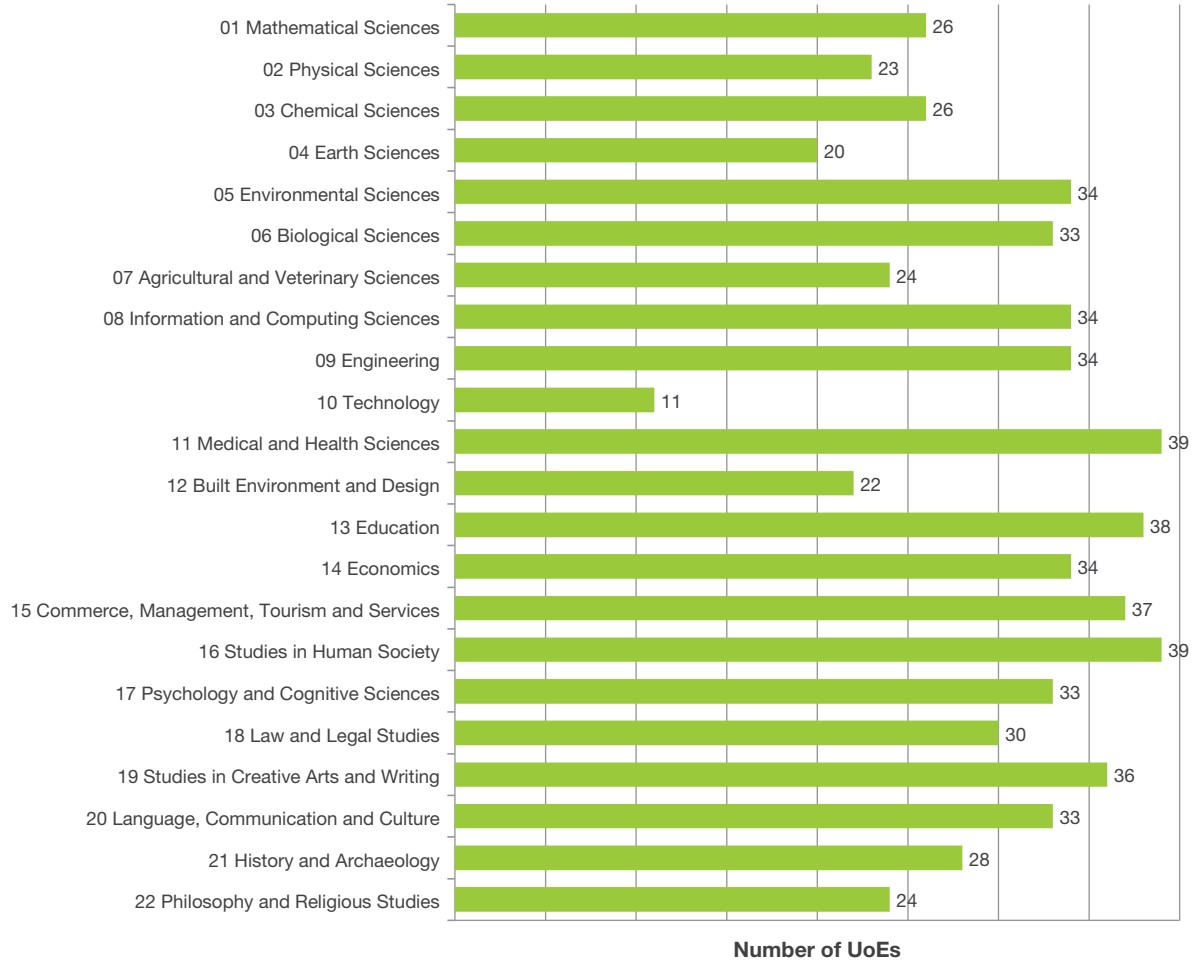


Assessed Units of Evaluation

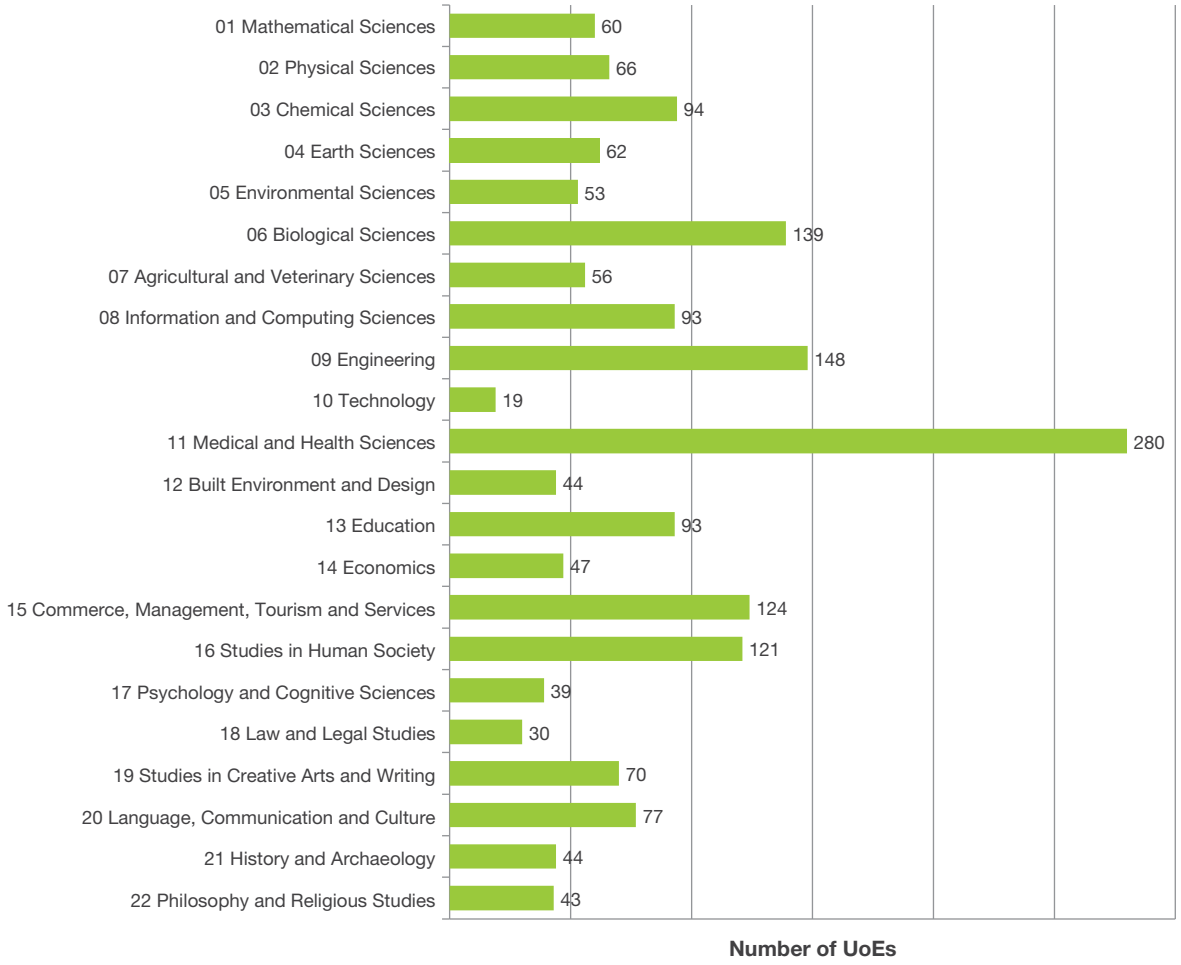
In ERA, a Unit of Evaluation (UoE) is the research discipline, as defined by the ANZSRC two– and four–digit FoR codes, for an eligible institution (**Appendix 1**). A UoE is assessed for a specific institution when it has sufficient research volume to be considered research active for the purposes of ERA. ERA evaluation occurs at both the two– and four–digit FoR code levels.

A total of 2,460 (UoEs) were assessed in the ERA 2015 evaluation process. There were 658 two–digit units assessed and 1,802 four–digit units assessed. The first chart below shows the number of two–digit assessed UoEs only. The second chart shows the number of four–digit UoEs assessed aggregated to the two–digit level.

UOES ASSESSED BY TWO–DIGIT FOR



UOES ASSESSED BY AGGREGATED FOUR–DIGIT FOR CODES (GROUPED BY TWO–DIGIT FOR CODE)



National ERA Volume at a Glance

The table below presents a summary, by discipline, of the number of UoEs assessed and the volume of research outputs submitted to ERA 2015. With the exception of the assessed UoEs column, the two–digit information presented is the aggregate of the corresponding four–digit data.

For each two– and four–digit FoR the following summary information is provided:

- **Assessed UoEs**

  The number of UoEs assessed in ERA 2015 which met the low volume threshold.

- **Research Outputs**

  The total number of apportioned research outputs (all research output types) submitted to ERA 2015.

- **Weighted Research Outputs**

  The total number of research outputs (all research output types) submitted to ERA 2015. For the purposes of calculating the low volume threshold for peer review disciplines, one book was equivalent to five research outputs. Only peer review disciplines (where weighting was applied) are shown in this column.

- **Higher Education Research Data Collection (HERDC) Research Income**

  The total amount of research income across HERDC Categories 1—4 research income (in Australian dollars) submitted to ERA 2015.

- **FTEs**

  The total number of Full–Time Equivalent staff (FTE) submitted to ERA 2015 (as of the staff census date of 31 March 2014).

- **Esteem**

  The total number of esteem measures submitted to ERA 2015.

- **Patents Granted**

  The total number of patents submitted to ERA 2015.

- **Research Commercialisation Income**

  The total amount of research commercialisation income (in Australian dollars) submitted to ERA 2015.

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
01	**Mathematical Sciences**	**26**	**10,632.6**	**10,703.2**	**150,725,932**	**922.6**	**147.2**	**0.2**	**162,956**
0101	Pure Mathematics	15	2,732.0	2,802.7	42,964,638	241.5	67.2	0.0	0
0102	Applied Mathematics	23	3,463.8	–	56,492,855	245.7	38.0	0.2	123,679
0103	Numerical and Computational Mathematics	4	1,149.4	–	4,642,731	86.5	5.8	0.0	0
0104	Statistics	12	1,943.3	–	33,834,938	207.8	20.2	0.0	39,278
0105	Mathematical Physics	6	720.3	–	12,297,553	56.6	15.1	0.0	0
0199	Other Mathematical Sciences	0	623.8	–	493,216	84.5	1.0	0.0	0
02	**Physical Sciences**	**23**	**16,990.8**	**–**	**354,091,710**	**1,148.8**	**243.9**	**44.6**	**2,593,697**
0201	Astronomical and Space Sciences	14	4,849.1	–	86,227,319	303.6	59.4	1.0	1,107,396
0202	Atomic, Molecular, Nuclear, Particle and Plasma Physics	8	2,756.4	–	41,793,129	148.4	32.2	5.5	0
0203	Classical Physics	3	704.2	–	10,881,057	52.9	7.5	0.0	252,472
0204	Condensed Matter Physics	14	2,343.4	–	63,500,674	178.5	47.0	6.8	200,406
0205	Optical Physics	13	3,630.3	–	73,666,007	219.6	54.1	20.9	431,981
0206	Quantum Physics	10	1,582.0	–	59,210,001	130.4	39.3	3.0	190,071
0299	Other Physical Sciences	4	1,125.4	–	18,813,523	115.3	4.3	7.4	411,371
03	**Chemical Sciences**	**26**	**15,288.8**	**–**	**335,252,137**	**1,333.9**	**209.5**	**92.9**	**4,158,444**
0301	Analytical Chemistry	16	1,897.3	–	41,653,841	167.6	16.0	9.1	226,674
0302	Inorganic Chemistry	13	1,956.2	–	30,710,568	144.9	28.9	1.0	394,966
0303	Macromolecular and Materials Chemistry	16	2,236.5	–	55,076,926	156.7	44.9	32.9	0
0304	Medicinal and Biomolecular Chemistry	12	2,045.9	–	77,309,865	263.9	38.5	19.3	987,107
0305	Organic Chemistry	11	1,788.9	–	36,987,461	171.6	18.8	6.9	5,042
0306	Physical Chemistry (Incl. Structural)	20	3,597.4	–	75,988,538	231.1	47.6	23.3	1,161,207
0307	Theoretical and Computational Chemistry	5	934.1	–	15,361,739	71.0	13.0	0.0	1,383,448
0399	Other Chemical Sciences	1	832.6	–	2,163,199	127.2	1.9	0.5	0
04	**Earth Sciences**	**20**	**11,090.4**	**–**	**360,562,621**	**980.5**	**118.4**	**5.0**	**3,921,917**
0401	Atmospheric Sciences	6	1,147.1	–	33,359,713	119.1	13.3	0.0	96,169
0402	Geochemistry	10	1,453.1	–	40,982,251	141.3	23.4	2.0	2,596,226

** All two–digit FoR codes shown in this table are aggregates of the four–digit FoR codes below, with the exception of the 'Assessed UoEs' column which are the actual values at the two–digit FoR code level.*

Continued

*** One book is equivalent to five research outputs in ERA 2015 for the calculation of low volume threshold for relevant disciplines.*

**** Triadic patents count as three patents in the Total.*

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
0403	Geology	16	3,165.8	–	103,169,768	251.0	40.0	3.0	340,393
0404	Geophysics	8	1,168.5	–	43,171,071	96.8	8.7	0.0	5,444
0405	Oceanography	6	1,227.2	–	43,297,764	108.2	17.6	0.0	24,871
0406	Physical Geography and Environmental Geoscience	16	2,472.5	–	95,965,947	206.5	15.3	0.0	858,814
0499	Other Earth Sciences	0	456.1	–	616,107	57.7	0.1	0.0	0
05	**Environmental Sciences**	**34**	**9,288.4**	**–**	**418,507,503**	**828.2**	**83.2**	**14.8**	**974,593**
0501	Ecological Applications	11	1,520.5	–	65,430,639	142.2	17.3	0.0	3,057
0502	Environmental Science and Management	32	5,462.9	–	310,110,818	499.5	55.2	9.7	749,166
0503	Soil Sciences	10	1,474.7	–	39,259,428	114.4	10.3	5.1	222,370
0599	Other Environmental Sciences	0	830.3	–	3,706,618	72.0	0.5	0.0	0
06	**Biological Sciences**	**33**	**28,786.3**	**–**	**988,548,549**	**3,294.0**	**520.5**	**125.2**	**4,064,145**
0601	Biochemistry and Cell Biology	21	6,114.3	–	347,952,946	931.4	199.8	76.5	1,361,373
0602	Ecology	24	4,374.8	–	145,435,449	415.2	51.2	0.0	10,142
0603	Evolutionary Biology	17	2,518.3	–	58,387,989	210.7	52.1	0.0	10,142
0604	Genetics	14	2,527.8	–	138,894,656	312.2	78.7	18.6	139,404
0605	Microbiology	17	2,942.7	–	79,106,077	342.2	39.4	11.5	868,673
0606	Physiology	6	1,191.9	–	20,877,198	147.3	11.9	0.0	0
0607	Plant Biology	17	3,297.7	–	125,541,109	419.1	52.8	16.7	1,638,064
0608	Zoology	22	4,789.5	–	68,137,488	339.4	33.2	2.0	36,347
0699	Other Biological Sciences	1	1,029.4	–	4,215,636	176.5	1.5	0.0	0
07	**Agricultural and Veterinary Sciences**	**24**	**12,094.8**	**–**	**531,922,829**	**1,287.5**	**33.2**	**22.3**	**35,495,083**
0701	Agriculture, Land and Farm Management	5	1,042.2	–	47,038,502	104.4	3.5	0.0	96,456
0702	Animal Production	9	1,804.2	–	91,724,799	155.8	0.6	1.5	23,557,000
0703	Crop and Pasture Production	13	2,660.0	–	198,690,176	254.4	15.0	8.8	11,218,833
0704	Fisheries Sciences	9	1,687.6	–	67,473,980	178.5	2.3	0.0	0
0705	Forestry Sciences	8	1,028.4	–	42,539,449	92.9	4.9	7.0	0

** All two–digit FoR codes shown in this table are aggregates of the four–digit FoR codes below, with the exception of the 'Assessed UoEs' column which are the actual values at the two–digit FoR code level.*

Continued

*** One book is equivalent to five research outputs in ERA 2015 for the calculation of low volume threshold for relevant disciplines.*

**** Triadic patents count as three patents in the Total.*

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
0706	Horticultural Production	4	994.7	–	32,820,142	103.4	1.0	0.0	223,110
0707	Veterinary Sciences	8	2,424.9	–	50,162,175	294.8	5.9	5.0	399,685
0799	Other Agricultural and Veterinary Sciences	0	452.9	–	1,473,605	103.3	0.0	0.0	0
08	**Information and Computing Sciences**	**34**	**24,856.6**	**25,246.7**	**248,350,121**	**1,749.6**	**89.1**	**52.9**	**6,716,113**
0801	Artificial Intelligence and Image Processing	28	9,196.0	9,316.0	109,038,927	523.7	41.0	28.8	3,362,209
0802	Computation Theory and Mathematics	9	1,460.2	1,478.2	12,047,043	92.0	11.5	0.0	0
0803	Computer Software	11	2,359.9	2,385.4	31,063,317	178.1	4.6	0.5	1,408,730
0804	Data Format	3	879.4	883.4	3,558,521	43.7	1.0	0.0	42,493
0805	Distributed Computing	13	2,578.3	2,620.5	22,060,799	153.3	3.8	6.1	100,757
0806	Information Systems	24	6,064.2	6,193.4	60,767,939	422.8	26.0	17.4	1,795,437
0807	Library and Information Studies	5	1,393.4	1,433.4	7,970,135	159.2	1.2	0.0	6,488
0899	Other Information and Computing Sciences	0	925.3	936.5	1,843,439	176.9	0.0	0.0	0
09	**Engineering**	**34**	**57,124.6**	**–**	**1,085,215,725**	**3,711.3**	**312.9**	**293.3**	**15,873,506**
0901	Aerospace Engineering	3	1,066.1	–	10,664,120	62.9	0.5	0.0	0
0902	Automotive Engineering	1	655.1	–	1,374,886	38.3	2.5	0.0	0
0903	Biomedical Engineering	9	2,707.1	–	61,069,681	238.7	27.0	28.0	3,124,344
0904	Chemical Engineering	10	5,627.6	–	107,121,668	356.6	50.8	59.4	709,376
0905	Civil Engineering	21	9,363.9	–	176,684,496	523.9	40.1	11.6	1,586,881
0906	Electrical and Electronic Engineering	22	12,481.1	–	187,053,396	619.8	61.9	77.7	4,476,909
0907	Environmental Engineering	7	1,863.8	–	32,867,313	141.2	5.9	3.4	66,694
0908	Food Sciences	7	1,172.6	–	27,698,851	109.0	0.5	2.0	305,781
0909	Geomatic Engineering	4	1,454.2	–	21,213,305	104.6	4.6	0.0	0
0910	Manufacturing Engineering	4	1,315.8	–	32,324,058	86.5	4.3	0.0	0
0911	Maritime Engineering	2	762.3	–	6,383,005	61.1	0.2	0.0	22,730
0912	Materials Engineering	23	7,087.7	–	145,460,084	417.7	60.1	48.3	1,162,400
0913	Mechanical Engineering	21	5,752.9	–	133,406,912	382.0	30.4	19.0	1,152,215
0914	Resources Engineering and Extractive Metallurgy	10	2,544.4	–	130,209,762	224.8	21.7	43.0	3,146,202

** All two–digit FoR codes shown in this table are aggregates of the four–digit FoR codes below, with the exception of the 'Assessed UoEs' column which are the actual values at the two–digit FoR code level.*

Continued

*** One book is equivalent to five research outputs in ERA 2015 for the calculation of low volume threshold for relevant disciplines.*

**** Triadic patents count as three patents in the Total.*

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
0915	Interdisciplinary Engineering	3	1,506.3	–	10,680,921	111.8	2.3	1.0	119,974
0999	Other Engineering	1	1,763.8	–	1,003,268	232.4	0.0	0.0	0
10	**Technology**	**11**	**6,442.7**	**6,464.7**	**114,779,676**	**670.5**	**42.0**	**48.3**	**1,314,395**
1001	Agricultural Biotechnology	2	339.5	–	15,771,407	53.2	2.5	6.0	177,491
1002	Environmental Biotechnology	1	323.3	–	7,168,788	27.5	1.2	4.4	0
1003	Industrial Biotechnology	1	263.3	–	12,984,355	32.5	1.4	6.0	59,306
1004	Medical Biotechnology	2	567.1	–	15,872,284	163.6	7.7	24.0	131,598
1005	Communications Technologies	5	1,811.4	1,833.4	27,690,661	107.9	9.9	4.0	946,000
1006	Computer Hardware	1	244.9	244.9	4,027,525	24.4	0.0	0.0	0
1007	Nanotechnology	7	1,051.3	–	30,763,221	104.0	19.3	4.0	0
1099	Other Technology	0	1,841.8	–	501,435	157.5	0.0	0.0	0
11	**Medical and Health Sciences**	**39**	**90,650.5**	**–**	**3,670,303,937**	**9,788.8**	**1,537.6**	**236.5**	**75,292,607**
1101	Medical Biochemistry and Metabolomics	6	1,027.0	–	27,250,438	149.8	8.2	9.1	302,637
1102	Cardiovascular Medicine and Haematology	12	3,771.5	–	197,695,308	292.9	86.9	11.0	1,654,137
1103	Clinical Sciences	30	22,926.4	–	681,414,047	1,846.4	203.3	31.0	9,380,344
1104	Complementary and Alternative Medicine	3	973.7	–	6,483,885	134.9	8.5	0.0	–
1105	Dentistry	7	1,557.2	–	36,118,015	179.1	8.0	33.7	315,906
1106	Human Movement and Sports Science	29	5,292.5	–	55,160,670	500.4	32.7	5.3	–
1107	Immunology	12	2,801.7	–	226,259,312	351.8	106.2	19.7	33,903,755
1108	Medical Microbiology	14	2,004.9	–	129,879,071	244.7	62.6	12.5	522,967
1109	Neurosciences	20	5,321.6	–	351,620,865	598.6	163.8	32.8	1,811,511
1110	Nursing	30	4,976.8	–	115,145,636	876.4	32.9	0.8	–
1111	Nutrition and Dietetics	14	1,604.3	–	53,477,941	192.7	30.4	0.5	–
1112	Oncology and Carcinogenesis	14	4,466.8	–	340,239,844	396.3	73.5	19.2	12,206,998
1113	Ophthalmology and Optometry	8	2,313.6	–	59,880,990	201.2	14.3	20.5	628,426
1114	Paediatrics and Reproductive Medicine	11	4,954.1	–	165,204,242	340.6	79.0	5.5	971,457
1115	Pharmacology and Pharmaceutical Sciences	19	5,001.5	–	154,179,844	491.2	62.0	29.3	13,258,364

Continued

** All two–digit FoR codes shown in this table are aggregates of the four–digit FoR codes below, with the exception of the 'Assessed UoEs' column which are the actual values at the two–digit FoR code level.*

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FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
1116	Medical Physiology	11	1,636.2	–	57,422,599	195.7	40.7	2.0	336,108
1117	Public Health and Health Services	32	16,986.2	–	956,673,866	1,986.1	502.9	3.0	–
1199	Other Medical and Health Sciences	8	3,034.5	–	56,197,363	810.1	21.5	0.5	–
12	**Built Environment and Design**	**22**	**9,934.2**	**10,726.7**	**89,679,775**	**1,109.6**	**27.5**	**0.0**	**92,692**
1201	Architecture	14	2,685.2	2,937.9	21,356,181	314.3	11.9	0.0	0
1202	Building	9	2,050.2	2,127.8	9,133,862	152.0	1.1	0.0	0
1203	Design Practice and Management	7	1,899.3	2,022.3	11,298,329	240.6	3.5	0.0	92,692
1204	Engineering Design	0	85.4	94.7	869,787	13.6	0.0	0.0	0
1205	Urban and Regional Planning	14	2,885.2	3,178.3	46,409,900	263.1	11.0	0.0	0
1299	Other Built Environment and Design	0	328.8	365.6	611,716	125.9	0.0	0.0	0
13	**Education**	**38**	**20,286.9**	**21,684.5**	**215,728,415**	**2,938.7**	**63.7**	**–**	**1,362,916**
1301	Education Systems	26	4,060.0	4,348.9	48,768,590	588.3	17.9	–	689,052
1302	Curriculum and Pedagogy	32	6,611.2	7,039.6	65,041,577	903.3	16.5	–	451,416
1303	Specialist Studies in Education	35	8,669.1	9,301.8	100,857,219	1,049.7	29.3	–	222,448
1399	Other Education	0	946.5	994.2	1,061,028	397.4	0.0	–	0
14	**Economics**	**34**	**7,386.5**	**7,870.3**	**151,172,292**	**947.3**	**91.9**	**–**	**12,843**
1401	Economic Theory	8	752.5	812.5	6,738,091	107.8	9.3	–	0
1402	Applied Economics	31	5,312.8	5,655.3	127,426,803	611.5	70.3	–	7,201
1403	Econometrics	7	683.0	714.6	14,198,254	100.7	12.0	–	5,642
1499	Other Economics	1	638.2	687.9	2,809,144	127.3	0.4	–	0
15	**Commerce, Management, Tourism and Services**	**37**	**23,384.0**	**24,333.8**	**153,344,580**	**3,175.4**	**46.9**	**–**	**148,065**
1501	Accounting, Auditing and Accountability	20	2,612.7	2,711.1	13,151,821	576.9	7.2	–	0
1502	Banking, Finance and Investment	20	2,486.6	2,574.5	29,824,126	428.1	4.2	–	0
1503	Business and Management	33	8,920.8	9,370.3	70,560,712	1,030.6	29.6	–	18,139
1504	Commercial Services	4	908.9	952.9	3,507,985	129.0	0.0	–	122,387
1505	Marketing	26	3,759.2	3,792.8	22,417,165	441.0	2.1	–	7,539

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*** One book is equivalent to five research outputs in ERA 2015 for the calculation of low volume threshold for relevant disciplines.*

**** Triadic patents count as three patents in the Total.*

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
1506	Tourism	16	2,471.6	2,586.6	11,644,448	192.2	2.7	–	0
1507	Transportation and Freight Services	2	756.6	764.6	1,398,734	66.6	1.1	–	0
1599	Other Commerce, Management, Tourism and Services	3	1,467.5	1,581.1	839,589	311.2	0.0	–	0
16	**Studies in Human Society**	**39**	**22,976.7**	**26,849.2**	**392,138,498**	**2,411.9**	**294.2**	**–**	**0**
1601	Anthropology	11	1,748.2	2,144.9	24,461,024	193.9	66.7	–	0
1602	Criminology	13	2,131.6	2,450.8	22,399,866	206.1	11.6	–	0
1603	Demography	2	508.6	562.0	16,054,430	53.0	8.3	–	0
1604	Human Geography	15	2,032.3	2,221.0	31,161,707	188.1	29.4	–	0
1605	Policy and Administration	17	3,156.5	3,596.8	82,878,935	314.9	30.1	–	0
1606	Political Science	20	5,277.3	6,600.7	80,312,217	505.7	82.3	–	0
1607	Social Work	14	2,097.4	2,321.5	33,776,902	262.5	1.7	–	0
1608	Sociology	27	4,992.6	5,793.7	90,502,800	476.7	54.6	–	0
1699	Other Studies in Human Society	2	1,032.3	1,157.8	10,590,617	211.1	9.4	–	0
17	**Psychology and Cognitive Sciences**	**33**	**14,377.1**	**–**	**265,456,454**	**1,421.5**	**203.7**	**–**	**3,236,394**
1701	Psychology	32	11,896.6	–	247,392,700	1,135.9	195.5	–	3,236,394
1702	Cognitive Sciences	5	1,520.0	–	11,271,220	140.6	7.9	–	0
1799	Other Psychology and Cognitive Sciences	2	960.5	–	6,792,533	145.0	0.3	–	0
18	**Law and Legal Studies**	**30**	**10,252.5**	**11,954.9**	**75,699,347**	**1,339.2**	**65.4**	**–**	**–**
1801	Law	30	10,035.1	11,729.5	75,432,849	1,243.2	65.4	–	–
1802	Maori Law	0	0.0	0.0	0	2.2	0.0	–	–
1899	Other Law and Legal Studies	0	217.4	225.4	266,498	93.8	0.0	–	–
19	**Studies in Creative Arts and Writing**	**36**	**12,939.7**	**14,177.4**	**38,443,728**	**1,557.1**	**162.7**	**0.0**	**255,837**
1901	Art Theory and Criticism	7	1,183.5	1,418.3	5,295,516	109.9	16.2	0.0	0
1902	Film, Television and Digital Media	13	2,145.7	2,418.0	6,794,972	279.2	25.8	0.0	154,457
1903	Journalism and Professional Writing	6	686.8	824.4	1,421,114	108.6	2.0	0.0	0
1904	Performing Arts and Creative Writing	29	5,308.6	5,729.0	17,655,903	604.8	65.7	0.0	94,953

Continued

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**** Triadic patents count as three patents in the Total.*

FoR Code	FoR Name	Assessed UoEs*	Research Outputs	Weighted** Research Outputs	Research Income ($)	FTEs	Esteem	Patents Granted***	Research Commercialisation Income ($)
1905	Visual Arts and Crafts	15	3,352.7	3,479.1	6,943,075	357.5	52.0	0.0	6,427
1999	Other Studies in Creative Arts and Writing	0	262.5	308.6	333,149	97.1	1.0	0.0	0
20	**Language, Communication and Culture**	**33**	**13,409.7**	**16,701.1**	**96,737,219**	**1,574.9**	**224.0**	**–**	**12,963**
2001	Communication and Media Studies	18	2,349.1	2,830.2	18,336,776	275.0	17.8	–	7,539
2002	Cultural Studies	21	3,486.7	4,408.8	23,587,083	350.4	48.1	–	0
2003	Language Studies	3	836.2	1,079.4	4,980,847	153.7	15.6	–	0
2004	Linguistics	16	3,104.7	3,753.8	27,597,691	304.8	60.2	–	5,424
2005	Literary Studies	19	3,275.9	4,204.9	21,377,776	345.0	81.9	–	0
2099	Other Language, Communication and Culture	0	357.0	424.0	857,046	146.0	0.3	–	0
21	**History and Archaeology**	**28**	**7,934.1**	**10,553.1**	**116,037,147**	**773.6**	**303.6**	**0.0**	**24,871**
2101	Archaeology	13	1,797.4	2,027.8	43,731,055	144.7	71.7	–	24,871
2102	Curatorial and Related Studies	4	389.2	425.9	4,827,176	45.2	6.6	0.0	0
2103	Historical Studies	27	5,586.3	7,860.2	67,326,993	543.5	225.4	–	0
2199	Other History and Archaeology	0	161.2	239.2	151,923	40.3	0.0	–	0
22	**Philosophy and Religious Studies**	**24**	**6,619.1**	**8,375.8**	**47,552,105**	**616.8**	**118.1**	**–**	**40,895**
2201	Applied Ethics	7	1,181.8	1,353.4	7,648,574	100.5	12.1	–	40,895
2202	History and Philosophy of Specific Fields	6	960.5	1,172.6	9,601,187	86.8	24.1	–	0
2203	Philosophy	18	2,204.8	2,695.6	16,705,077	201.6	64.3	–	0
2204	Religion and Religious Studies	12	2,115.8	2,978.0	13,597,267	190.0	17.2	–	0
2299	Other Philosophy and Religious Studies	0	156.2	176.2	0	38.0	0.3	–	0

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Comparison of ERA 2010, ERA 2012 and ERA 2015

Percentage changes between 2012 and 2015

Number of outputs, applied and esteem measures in the three ERA rounds

The following table provides an overview of the types and volume of research outputs, applied measures (excluding income) and esteem measures submitted to ERA 2010, ERA 2012 and ERA 2015.[1]

Traditional research outputs (books, book chapters, journal articles and conference publications) apply to all disciplines. In ERA 2015 there is a new category of non–traditional research outputs, entitled 'research report for an external body' which applies to all disciplines. Other non–traditional outputs (curated or exhibited event, live performance, original creative work, recorded/rendered work) and portfolios only apply to some disciplines.[2]

There has been an increase in the number of traditional research outputs over the three ERA time periods, particularly journal articles. This may have been influenced by a number of factors, such as additional journals included in the *2015 ERA Submission Journal List* resulting in more articles being eligible for ERA; improvements in institutions' data collection practices; and an increase in the number of full–time equivalent staff (FTE) employed in the higher education research system.

[1] ***Section 4*** *provides a more detailed breakdown of research outputs submitted to ERA 2015.*

[2] *See the* ERA 2015 Discipline Matrix *(available at arc.gov.au/era-2015-submission-documents).*

Research Outputs*	2010	2012	2015
Traditional outputs			
Book	4,912	5,270	5,488
Book chapter	34,755	39,597	45,269
Journal article	206,816	286,637	301,499
Conference publication	73,741	72,977	69,610
Non–traditional outputs			
Curated or exhibited event	750	777	753
Live performance	1,807	821	913
Original creative work	9,052	6,026	5,244
Recorded/rendered work	1,260	790	727
Research report for an external body	–	–	2,453
Portfolio of non–traditional research outputs	374	583	791
TOTAL**	**333,467**	**413,477**	**432,747**
Applied measures			
NHMRC Endorsed Guidelines	49	50	64
Patents	671	781	936
Registered designs	1	0	7
Plant Breeder's Rights	31	39	30
Esteem measures			
Editor of a prestigious work of reference	34	48	57
Membership of a learned academy or AIATSIS	1,038	1,287	1,416
Recipient of a Nationally Competitive Research Fellowship	2,566	2,729	3,120
Membership of a statutory committee	332	366	262
Recipient of an Australia Council Grant or Fellowship	75	56	84

Notes:

** Totals are as reported in the respective ERA national reports, please note the algorithm for removing duplicated outputs has been refined between ERA rounds.*

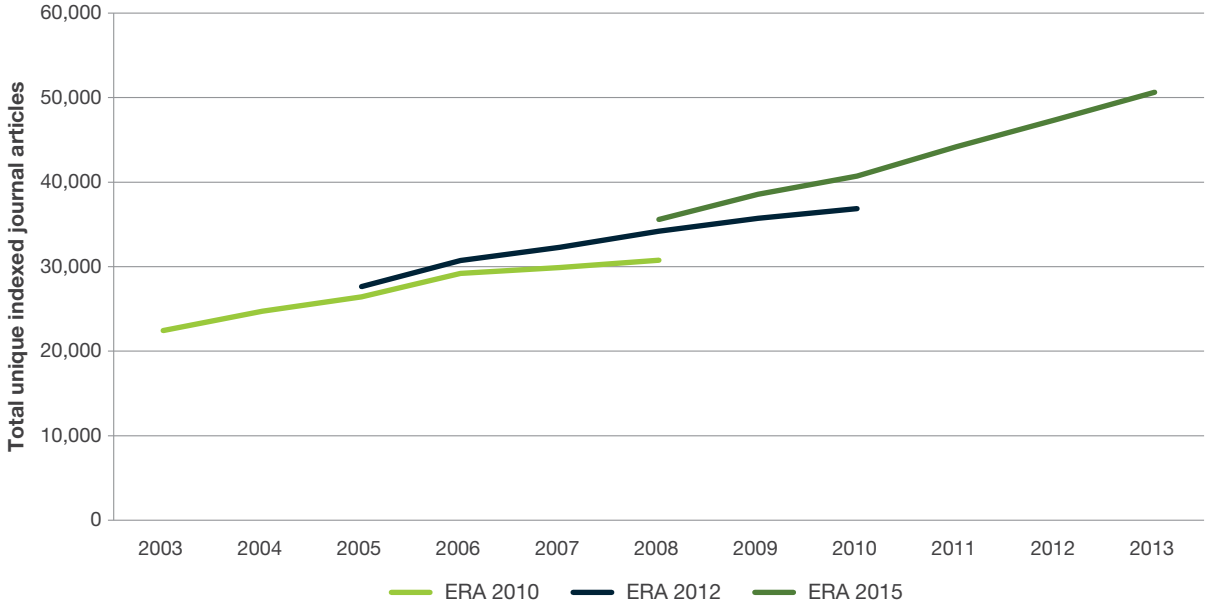
***Output types within portfolios are not included in the total.*

Trends in indexed journal articles in the three ERA rounds

The following chart presents the yearly volume of indexed journal articles in each of the three ERA rounds to date: ERA 2010, ERA 2012 and ERA 2015. In ERA 2010, eligible institutions submitted a total of 22,483 unique indexed journal articles for the year 2003. In ERA 2015, eligible institutions submitted a total of 50,646 unique indexed journal articles for the year 2013 — a more than doubling in volume.

Since the algorithm for removing output duplication is refined between ERA rounds, the chart focusses on indexed journal articles. Indexed journal articles have a unique article identifier which allows the most accurate removal of duplicates and therefore enables comparisons across ERA rounds.

VOLUME OF UNIQUE INDEXED JOURNAL ARTICLES: THREE ERA ROUNDS



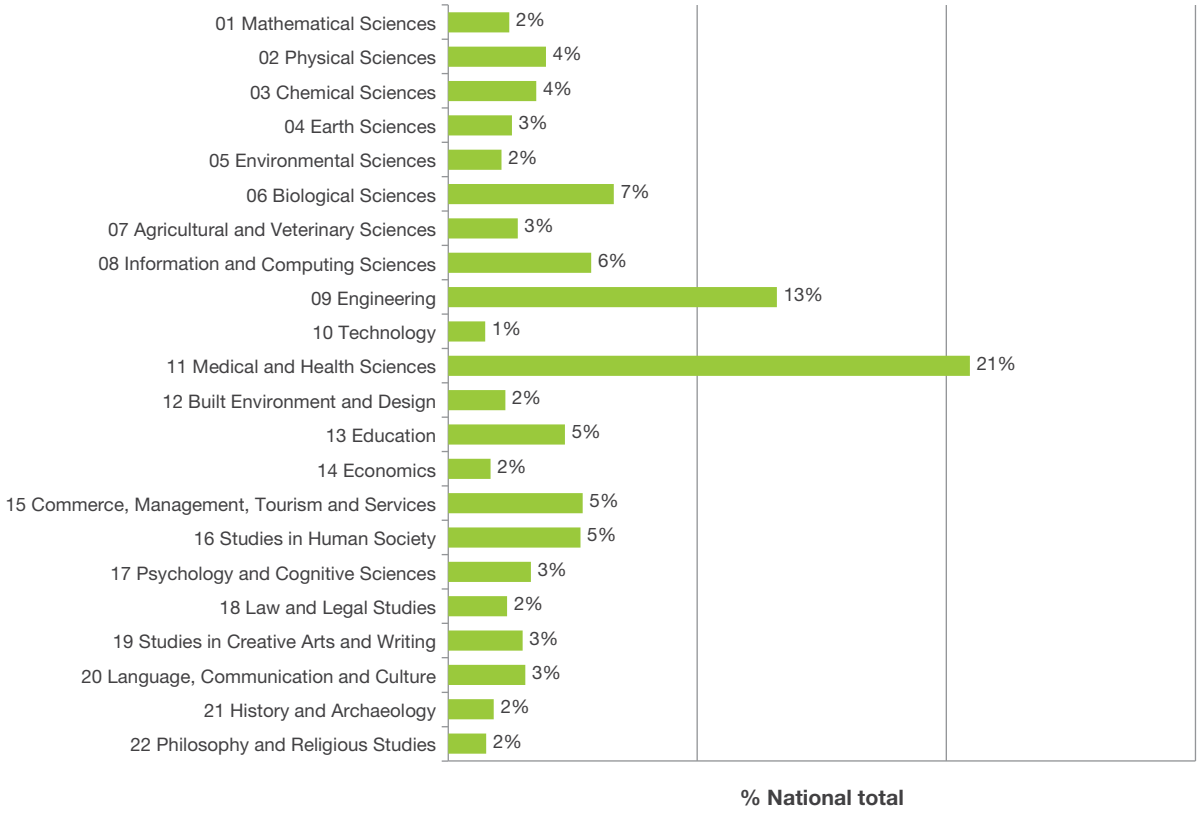
Note: There are some differences in the number of indexed journal articles for the overlap years between ERA rounds, this may be due to staff entering or leaving the system, changes in eligible research outputs, etc.

Percentage Contribution to the National Landscape

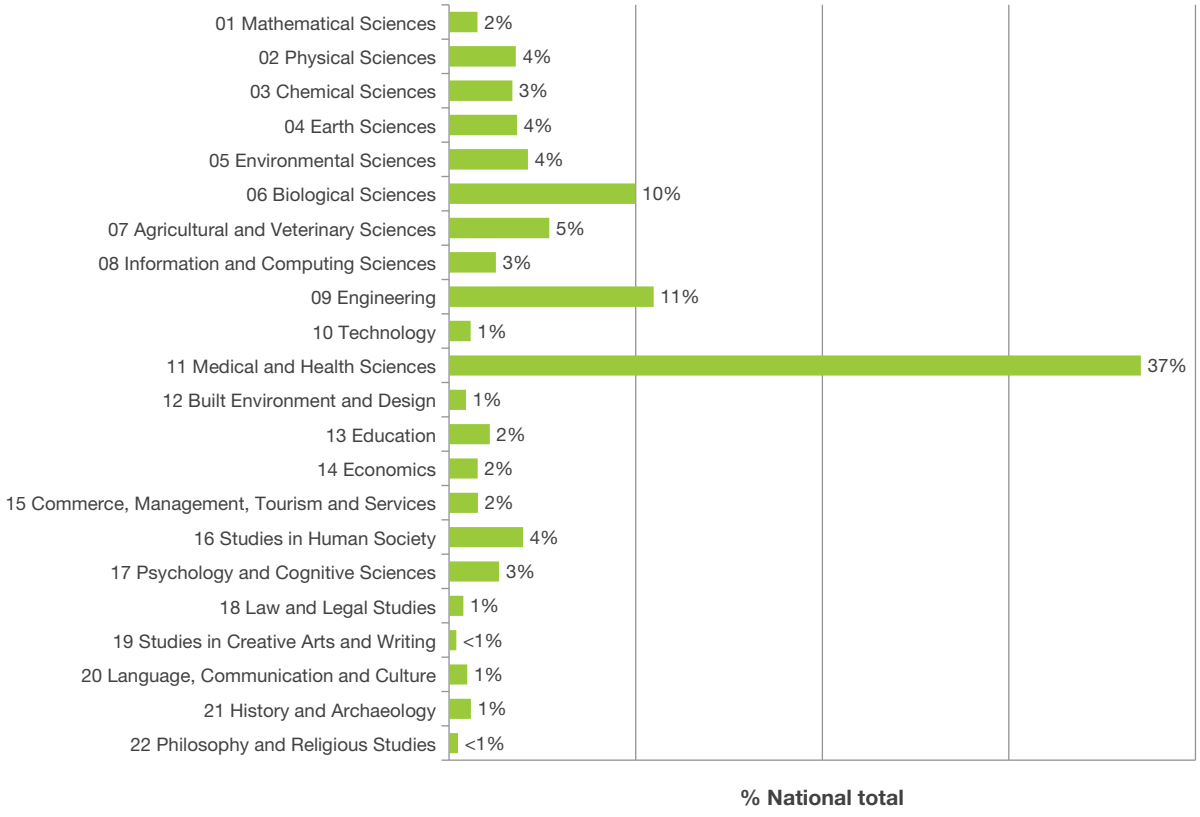
The following charts show the research activity attributed to two–digit FoRs as a proportion of total research activity submitted to all FoR codes in ERA 2015 for research outputs, research income, staff (FTE), esteem, patents granted and research commercialisation income.

Each chart shows how much of the total national share is contributed by the two–digit codes to each of the indicators that form part of the ERA 2015 evaluation. For example, 06 Biological Sciences account for a seven per cent share of the national total of research outputs, a 10 per cent share of the national total of research income, an eight per cent share of the national total of staff (FTE), an 11 per cent share of national total of esteem measures, a 13 per cent share of the national total of patents granted and a three per cent share of the national total of research commercialisation income.

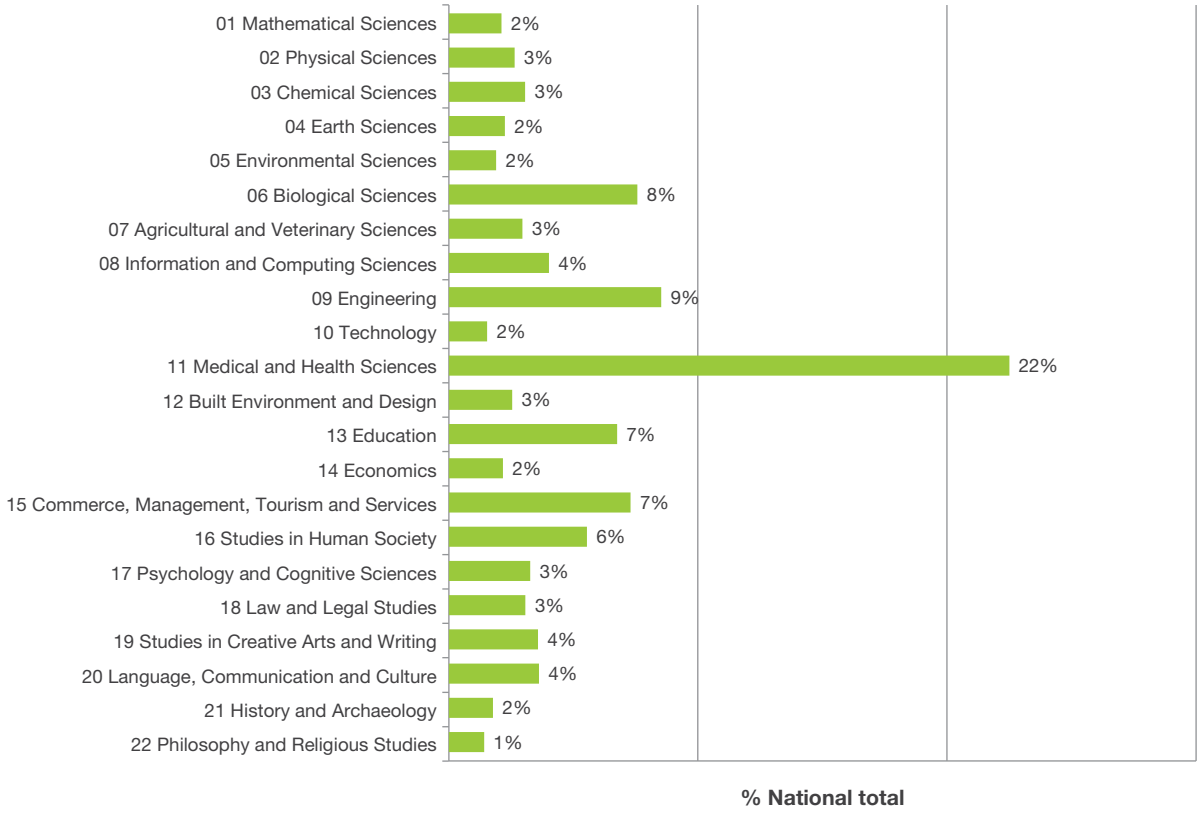
Research outputs



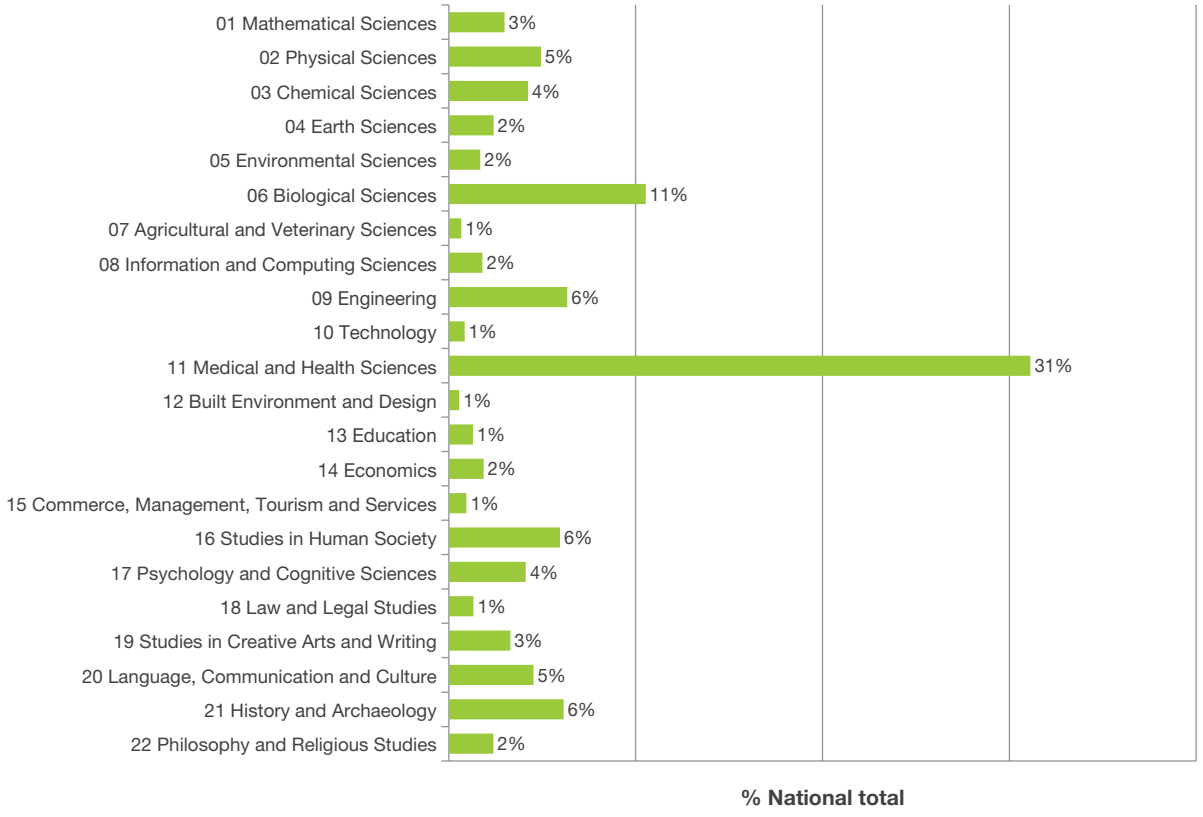
Research income



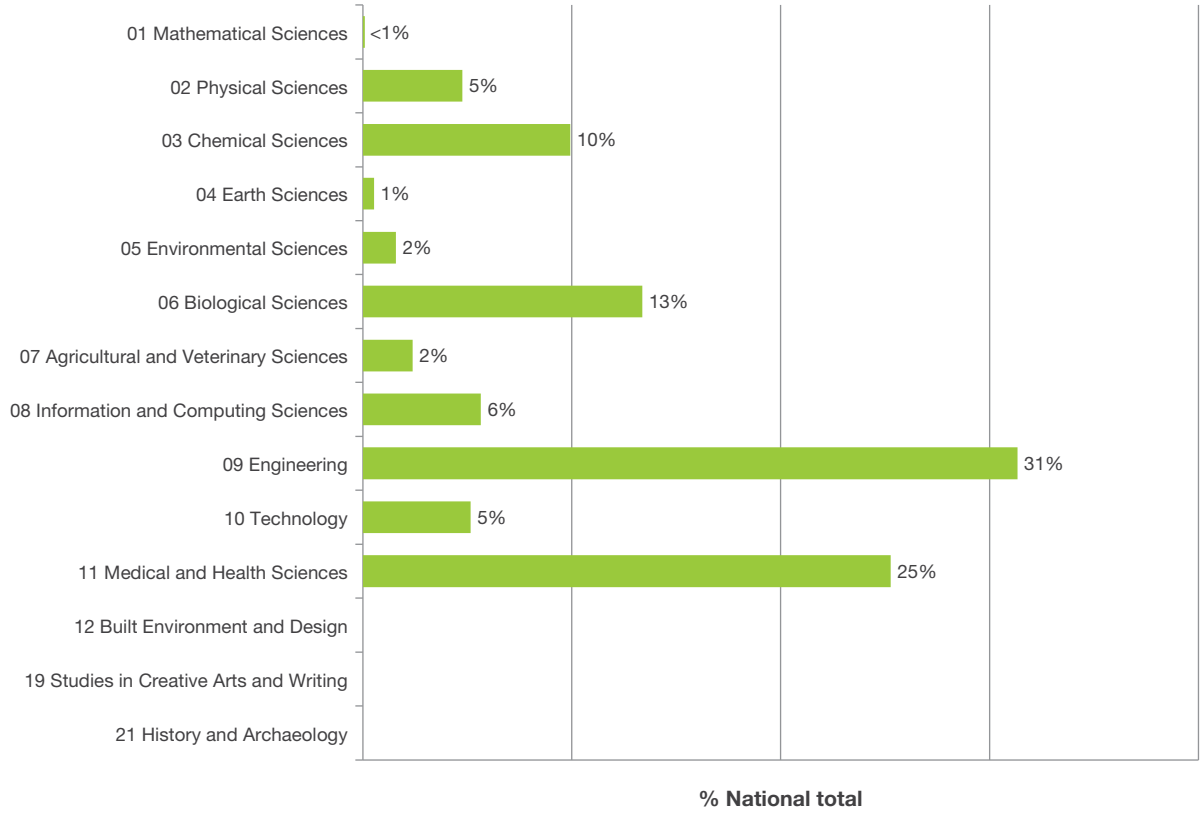
Staff (FTE)



Esteem

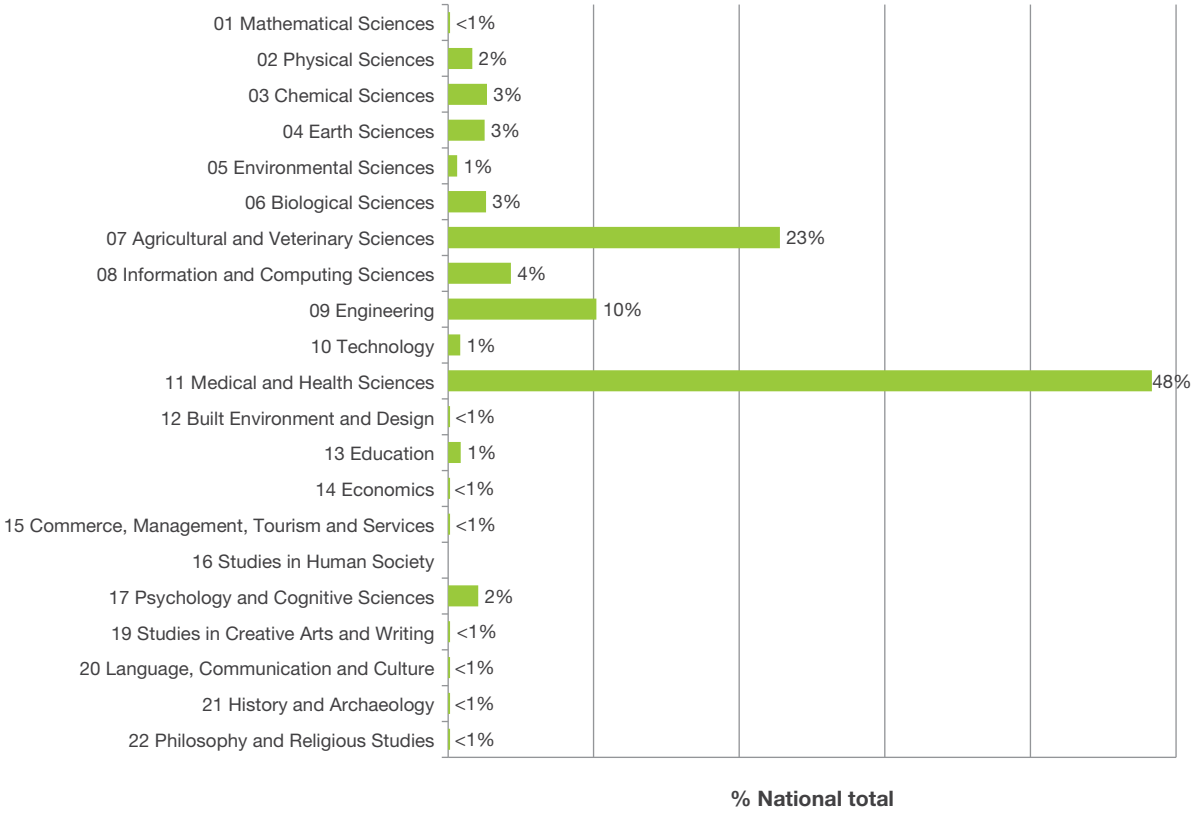


Patents granted



Note: The FoRs that do not use patents as an Applied Measure do not appear in the table.

Research commercialisation income



Note: Two– and four–digit FoR codes for Law and Legal Studies (18) do not use research commercialisation income as an applied measure nor do some underlying four–digit codes in Medical and Health Sciences (11).

Discipline Growth

This sub–section presents analyses of the changes in output volume over time at the two– and four–digit discipline levels for ERA 2015.

Two–digit discipline growth

The total volume of outputs (i.e. all output types excluding portfolios which do not report by year in the submitted data) for each year of the ERA 2015 reference period increased from 63,400 in 2008 to 81,740 in 2013, which represented a 29 per cent growth on 2008 levels. On a discipline basis, all two–digit disciplines grew from 2008 to 2013, with many experiencing steady, year on year increases.

The following table presents output volume for each two–digit discipline in 2008 and 2013. It also presents the percentage growth from 2008 to 2013 and indicates which year of the reference period had the highest volume. Most disciplines peaked in 2013, at the end of the period. Percentage growth from 2008 to 2013 varied between the disciplines, ranging from two per cent for 15 Commerce, Management, Tourism and Services, to 61 per cent for 12 Built Environment and Design. Other disciplines with high growth in outputs include 05 Environmental Sciences (54 per cent), 11 Medical and Health Sciences (42 per cent) and 09 Engineering (38 per cent).

The charts show volume data for selected disciplines in more detail. Trends in output volume over the period are presented for those disciplines that experienced above–average growth (>29 per cent, first two figures).

TWO–DIGIT DISCIPLINE GROWTH BETWEEN 2008 AND 2013

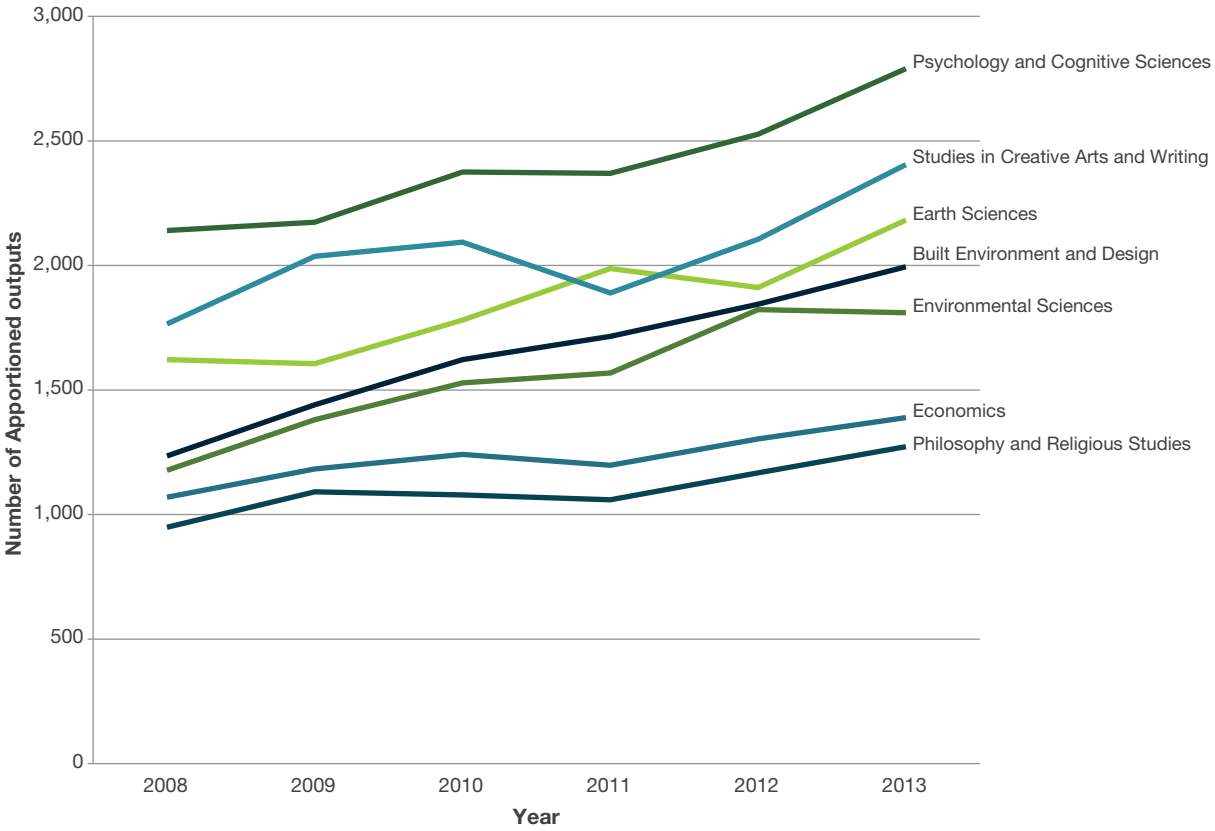
FoR Code	FoR Name	Outputs 2008	Outputs 2013	Growth 2008–2013	Peak year
12	Built Environment and Design	1,235.3	1,994.5	61%	2013
05	Environmental Sciences	1,177.8	1,810.1	54%	2012
11	Medical and Health Sciences	12,862.2	18,290.7	42%	2013
09	Engineering	7,938.7	10,969.0	38%	2013
19	Studies in Creative Arts and Writing	1,764.9	2,405.0	36%	2013
04	Earth Sciences	1,622.0	2,182.0	35%	2013
22	Philosophy and Religious Studies	948.8	1,272.4	34%	2013
17	Psychology and Cognitive Sciences	2,140.2	2,790.5	30%	2013
14	Economics	1,069.5	1,389.5	30%	2013
–	**All FoRs**	**63,400.0**	**81,740.0**	**29%**	**2013**
13	Education	2,996.7	3,877.5	29%	2013
21	History and Archaeology	1,190.3	1,525.2	28%	2013
16	Studies in Human Society	3,489.9	4,398.4	26%	2013
18	Law and Legal Studies	1,497.1	1,870.9	25%	2013
06	Biological Sciences	4,298.0	5,368.1	25%	2013
03	Chemical Sciences	2,235.0	2,748.7	23%	2013
02	Physical Sciences	2,448.4	3,011.1	23%	2012

Continued

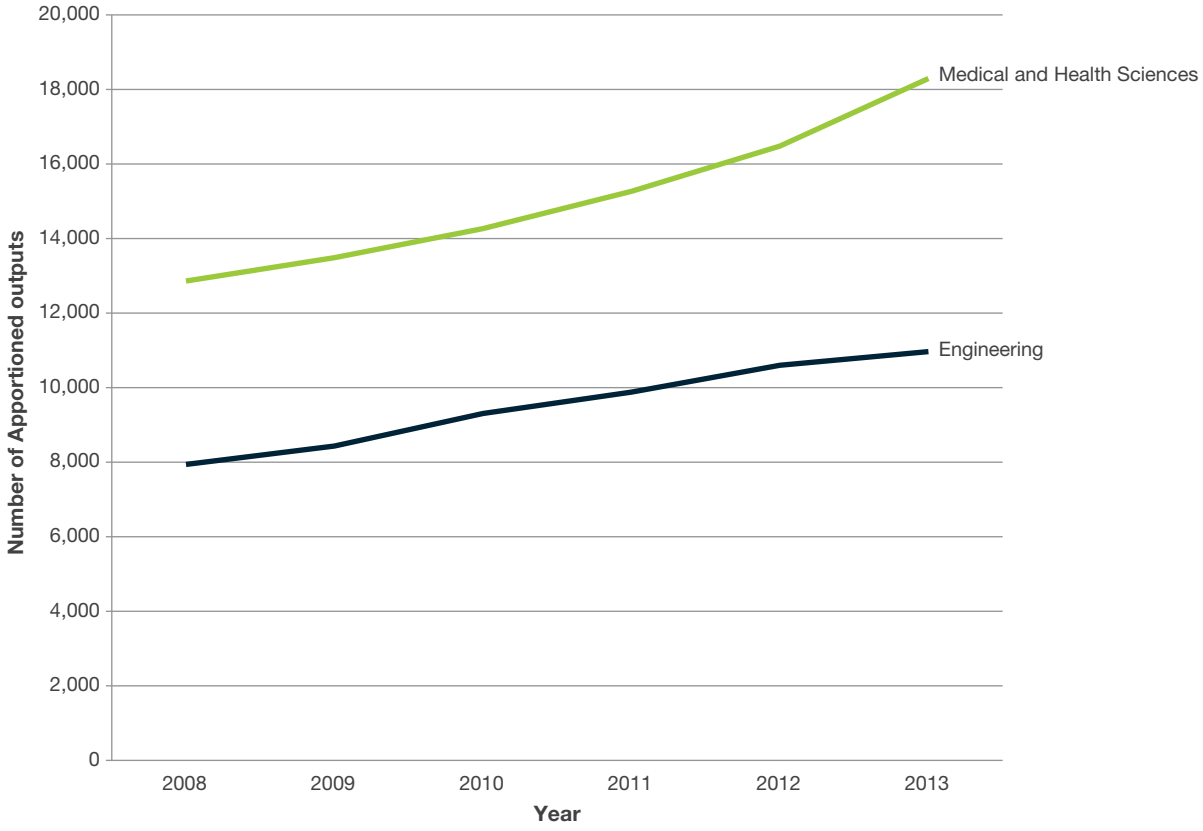
FoR Code	FoR Name	Outputs 2008	Outputs 2013	Growth 2008–2013	Peak year
08	Information and Computing Sciences	3,816.8	4,439.8	16%	2013
20	Language, Communication and Culture	2,106.6	2,398.9	14%	2013
01	Mathematical Sciences	1,697.9	1,836.9	8%	2013
10	Technology	1,097.2	1,180.3	8%	2013
07	Agricultural and Veterinary Sciences	1,913.3	2,054.0	7%	2012
15	Commerce, Management, Tourism and Services	3,853.2	3,926.4	2%	2011

TRENDS IN TWO–DIGIT OUTPUT VOLUME — HIGH–GROWTH DISCIPLINES

The first chart shows a selection of disciplines that had an above average growth in volume of outputs (i.e. >29 per cent) for the period 2008 to 2013. Medical and Health Sciences (11), and 09 Engineering also experienced above average growth for the period (42 per cent and 38 per cent, respectively), these two–digit FoR codes are shown separately in the second chart due to their much larger volume.



TRENDS IN TWO–DIGIT OUTPUT VOLUME — HIGH–GROWTH, LARGE VOLUME DISCIPLINES



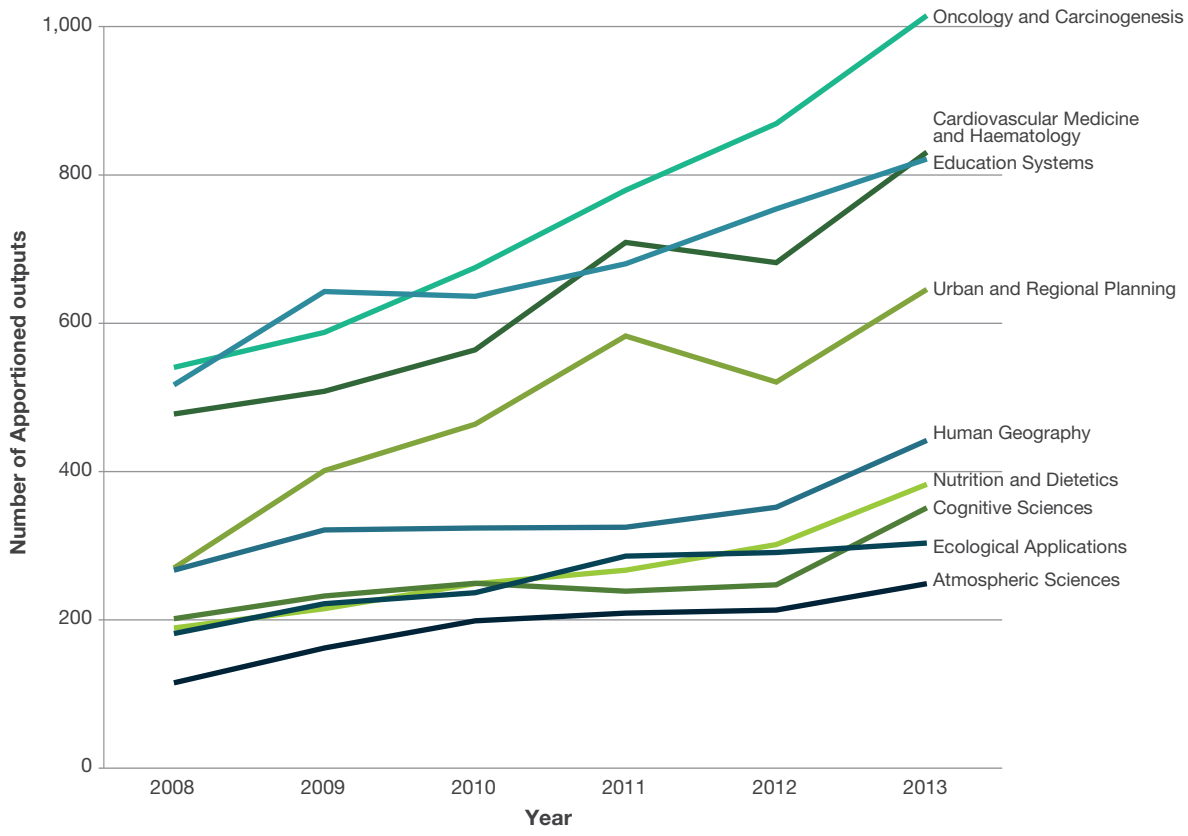
Four–digit discipline growth

The percentage growth in submitted outputs from 2008 to 2013 was calculated for all four–digit disciplines that had more than 1,000 outputs submitted for the whole reference period (disciplines with less than 1,000 outputs were considered too small to discern a meaningful trend). Most four–digit disciplines grew over the period 2008 to 2013 (108 out of 118 in this analysis), with only 10 showing negative growth. The majority of disciplines had their highest number of outputs in 2013, at the end of the period.

Growth rates ranged from –24 per cent (0103 Numerical and Computational Mathematics) to +139 per cent (1205 Urban and Regional Planning). The average for all disciplines was 29 per cent growth. In absolute terms, the disciplines that showed the largest growth were 1103 Clinical Sciences (1,320.8 more outputs in 2013 than in 2008), and 1117 Public Health and Health Services (1,198.7 more outputs in 2013). The figure below shows output growth for those four–digit disciplines that grew at more than twice the average of 29 per cent (i.e. > 58 per cent growth from 2008 to 2013). The table that follows presents output data for the four–digit disciplines that showed growth over the period 2008 to 2013 that was at or above the average rate of 29 per cent.

TRENDS IN FOUR–DIGIT OUTPUT GROWTH — HIGH–GROWTH DISCIPLINES

The chart shows those four–digit disciplines that had growth from 2008 to 2013 that was more than twice the average for all FoRs (> 58 per cent).



FOUR–DIGIT DISCIPLINE GROWTH BETWEEN 2008 AND 2013

FoR Code	FoR Name	2008	2009	2010	2011	2012	2013	Total 2008 to 2013	Growth 2008 to 2013	Peak year
1205	Urban and Regional Planning	269.9	401.3	464.0	582.8	520.6	645.6	2,884.2	139%	2013
0401	Atmospheric Sciences	115.2	162.1	198.8	209.1	213.1	248.8	1,147.1	116%	2013
1111	Nutrition and Dietetics	189.1	215.1	248.8	267.1	301.4	382.8	1,604.3	102%	2013
1112	Oncology and Carcinogenesis	540.5	587.6	674.9	779.5	869.3	1,014.9	4,466.8	88%	2013
1702	Cognitive Sciences	201.5	232.1	249.4	238.7	247.3	351.1	1,520.0	74%	2013
1102	Cardiovascular Medicine and Haematology	477.7	508.2	564.0	709.0	681.8	830.8	3,771.5	74%	2013
0501	Ecological Applications	181.5	221.9	236.5	286.0	290.8	303.7	1,520.5	67%	2013
1604	Human Geography	267.0	321.3	323.9	325.0	351.9	442.2	2,031.3	66%	2013
1301	Education Systems	516.9	642.9	636.2	680.1	754.2	821.5	4,051.7	59%	2013
1607	Social Work	287.2	342.5	317.8	335.3	366.4	448.2	2,097.4	56%	2013
0905	Civil Engineering	1,265.8	1,272.4	1,390.1	1,671.5	1,791.1	1,973.0	9,363.9	56%	2013
0303	Macromolecular and Materials Chemistry	298.7	296.2	384.4	408.0	384.3	464.9	2,236.5	56%	2013
0914	Resources Engineering and Extractive Metallurgy	329.0	383.2	434.7	412.8	472.8	511.8	2,544.4	56%	2013
1117	Public Health and Health Services	2,302.5	2,430.2	2,692.5	2,906.2	3,153.6	3,501.2	16,986.2	52%	2013
1203	Design Practice and Management	230.0	298.5	307.7	334.9	357.8	349.0	1,877.8	52%	2012
1109	Neurosciences	727.7	813.9	862.2	884.6	934.1	1,099.2	5,321.6	51%	2013
0503	Soil Sciences	176.2	206.4	302.7	222.2	302.0	265.3	1,474.7	51%	2010
0502	Environmental Science and Management	709.4	819.2	849.6	921.3	1,097.5	1,066.0	5,462.9	50%	2011
1904	Performing Arts and Creative Writing	660.0	785.6	828.1	769.3	949.5	986.5	4,979.0	49%	2013
0805	Distributed Computing	338.3	374.6	419.5	467.0	477.6	501.3	2,578.3	48%	2013
1602	Criminology	308.2	300.8	318.5	374.5	368.1	456.6	2,126.6	48%	2013
1113	Ophthalmology and Optometry	308.1	364.8	380.7	396.1	409.7	454.2	2,313.6	47%	2013
2204	Religion and Religious Studies	300.0	314.8	332.9	340.1	386.4	441.6	2,115.8	47%	2013
0406	Physical Geography and Environmental Geoscience	357.2	357.0	362.4	491.0	383.5	521.4	2,472.5	46%	2013
1114	Paediatrics and Reproductive Medicine	696.8	726.7	724.0	858.7	933.8	1,014.0	4,954.1	46%	2013
0702	Animal Production	220.5	330.6	326.8	333.2	273.7	319.5	1,804.2	45%	2011
0807	Library and Information Studies	189.0	180.0	260.4	237.6	252.7	273.7	1,393.4	45%	2013
0604	Genetics	346.0	378.8	365.8	456.2	483.8	497.1	2,527.8	44%	2013
1402	Applied Economics	717.3	821.1	895.3	889.3	959.5	1,029.2	5,311.8	43%	2013

Continued

FOUR–DIGIT DISCIPLINE GROWTH BETWEEN 2008 AND 2013

FoR Code	FoR Name	2008	2009	2010	2011	2012	2013	Total 2008 to 2013	Growth 2008 to 2013	Peak year
0603	Evolutionary Biology	358.0	382.7	364.2	406.1	494.6	512.7	2,518.3	43%	2013
0701	Agriculture, Land and Farm Management	141.7	160.4	175.0	176.6	186.3	202.1	1,042.2	43%	2013
1199	Other Medical and Health Sciences	446.5	458.0	492.6	468.1	533.1	636.1	3,034.5	42%	2013
1901	Art Theory and Criticism	166.8	205.4	198.4	187.9	167.0	236.0	1,161.5	42%	2013
0904	Chemical Engineering	773.4	909.9	913.5	977.0	968.4	1,085.4	5,627.6	40%	2013
1202	Building	289.2	284.8	342.3	312.6	415.5	405.8	2,050.2	40%	2012
2201	Applied Ethics	160.3	199.5	191.9	188.9	215.5	224.7	1,180.8	40%	2013
1103	Clinical Sciences	3,331.4	3,435.5	3,589.3	3,792.8	4,125.4	4,652.1	22,926.4	40%	2013
2101	Archaeology	265.2	279.1	299.8	279.7	304.2	369.4	1,797.4	39%	2013
0304	Medicinal and Biomolecular Chemistry	255.0	313.7	356.2	360.3	406.8	353.9	2,045.9	39%	2012
0901	Aerospace Engineering	151.4	150.9	157.6	200.6	196.2	209.3	1,066.1	38%	2013
0903	Biomedical Engineering	384.5	371.9	451.7	477.7	489.9	531.4	2,707.1	38%	2013
0605	Microbiology	421.5	451.3	452.3	496.8	541.8	578.9	2,942.7	37%	2013
0906	Electrical and Electronic Engineering	1,713.8	1,805.3	1,985.2	2,211.0	2,425.3	2,340.4	12,481.1	37%	2012
1106	Human Movement and Sports Science	757.6	853.2	885.0	859.1	907.6	1,029.9	5,292.5	36%	2013
1110	Nursing	713.1	767.4	795.2	834.6	899.0	967.5	4,976.8	36%	2013
0202	Atomic, Molecular, Nuclear, Particle and Plasma Physics	371.4	368.1	385.4	479.5	648.1	503.9	2,756.4	36%	2012
0913	Mechanical Engineering	851.6	847.7	923.7	953.3	1,023.5	1,153.1	5,752.9	35%	2013
0907	Environmental Engineering	255.5	304.6	299.0	371.6	287.5	345.6	1,863.8	35%	2011
0201	Astronomical and Space Sciences	676.2	688.4	769.3	840.5	960.1	914.7	4,849.1	35%	2012
0915	Interdisciplinary Engineering	206.4	223.5	261.9	264.9	271.2	278.3	1,506.3	35%	2013
0909	Geomatic Engineering	213.9	252.2	228.6	250.7	222.1	286.7	1,454.2	34%	2013
0405	Oceanography	178.6	147.8	189.9	249.6	222.4	238.9	1,227.2	34%	2011
0912	Materials Engineering	938.8	1,072.2	1,297.7	1,154.9	1,376.1	1,248.0	7,087.7	33%	2012
1699	Other Studies in Human Society	162.7	168.6	158.2	157.8	171.7	213.3	1,032.3	31%	2013
2203	Philosophy	318.2	380.8	366.7	345.8	377.9	415.4	2,204.8	31%	2013
1902	Film, Television and Digital Media	337.8	361.3	340.6	311.7	322.4	440.9	2,114.6	31%	2013
1302	Curriculum and Pedagogy	971.7	1,018.5	1,081.1	1,076.0	1,203.5	1,259.5	6,610.4	30%	2013
0305	Organic Chemistry	245.9	277.9	292.9	310.0	344.0	318.2	1,788.9	29%	2012
	All four–digit FoRs	**63,400.0**	**66,819.0**	**70,203.0**	**72,484.0**	**77,310.0**	**81,740.0**	**431,955.9**	**29%**	**2013**

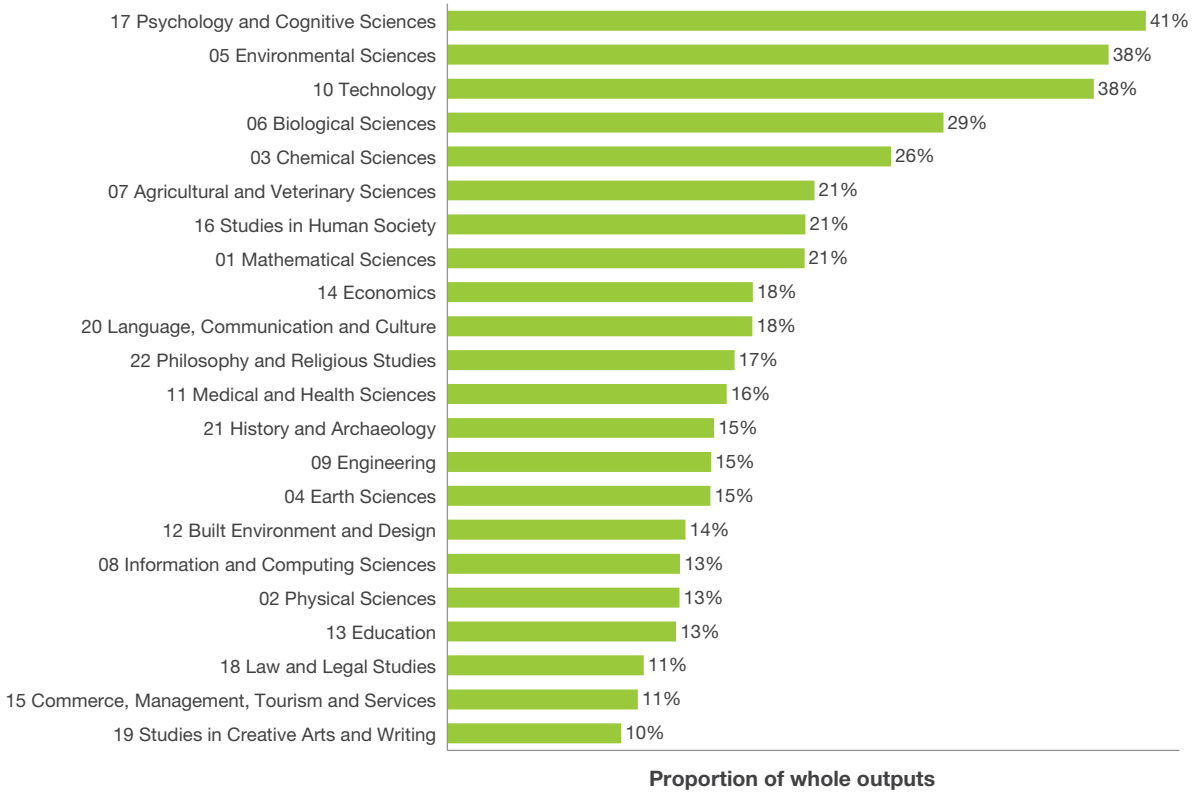
Multi–disciplinary Research

Increasingly, government, industry and the research sector are looking towards multi–disciplinary research to solve complex problems. Knowledge flows between usually distinct disciplines attract interest because major advances in innovation often involve collaboration across disciplinary boundaries.

Outputs submitted to ERA are assigned up to three four–digit FoR codes each, reflecting their disciplinary content. Where two or more codes are assigned to a single output, the differently coded content might be related at the two–digit level. An example is an output that has been assigned (apportioned) as part 0603 and part 0604 (i.e. Evolutionary Biology and Genetics—both of which are within 06 Biological Sciences). Multi–disciplinary (MD) research involves two or more academic disciplines that are considered more distinct. In this section a multi–disciplinary output is one where the content has been apportioned by universities to two or more FoR codes from different two–digit FoR groups. An example of a multi–disciplinary output is one where the research content draws on both Applied Mathematics (0102) and Genetics (0604) and the submitting university has apportioned the paper to each of these FoR codes from different two–digit groups (01 Mathematical Sciences and 06 Biological Sciences).

The chart below presents an analysis of ERA 2015 outputs for each two–digit FoR group, showing what proportion of outputs are multi–disciplinary. Of all outputs submitted with 17 Psychology and Cognitive Sciences content, 41 per cent were multi–disciplinary (co–apportioned with content from a discipline group other than 17). Conversely, 59 per cent of '17' outputs were either wholly apportioned to a single FoR within 17, or were co–apportioned with other FoRs from the 17 group. Other discipline groups with a high proportion of multi–disciplinary outputs were 05 Environmental Sciences and 10 Technology, both with around 38 per cent of submitted outputs being multi–disciplinary.

PROPORTION OF ERA 2015 OUTPUTS THAT ARE MULTI–DISCIPLINARY* BY TWO–DIGIT FOR CODE



**A 'multi–disciplinary' output is one where content has been assigned to two or more four–digit discipline codes from separate two–digit FoR groups. For example, an output assigned to both 0102 and 0905 (Applied Mathematics and Civil Engineering), is considered here to be 'multi–disciplinary'; by contrast, an output wholly–assigned to a single four–digit code, or to two or more codes within the same two–digit group (for example, to 0102 Applied Mathematics and 0104 Statistics; both within '01 Mathematical Sciences') is not classified as multi–disciplinary here.*

Multi–disciplinary profiles for two–digit FoR groups

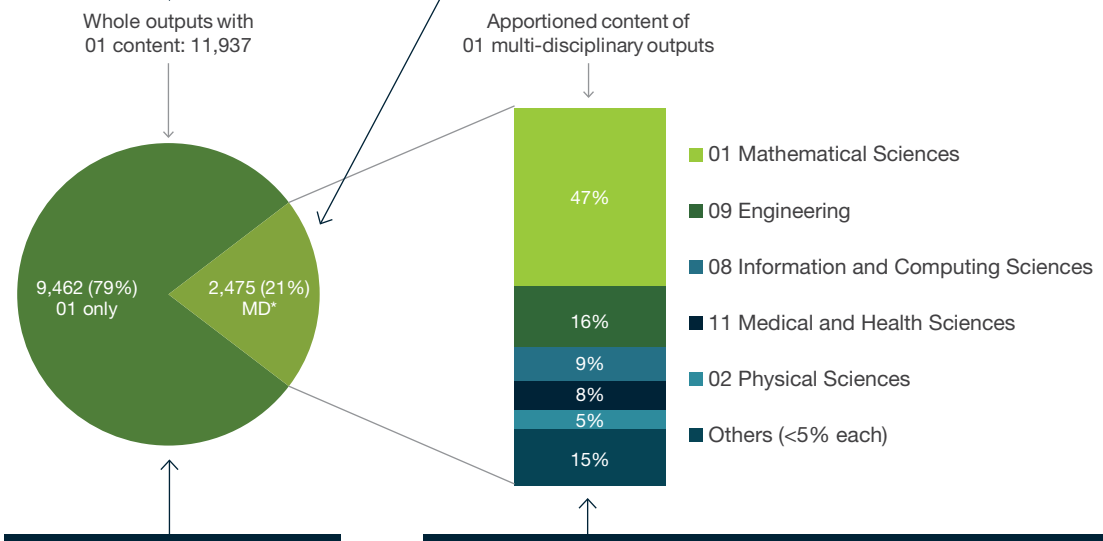
This section presents a profile of multi–disciplinary content for each two–digit FoR group. The profiles aim to show which disciplines are most likely to appear together in multi–disciplinary outputs. The profiles in the pie chart on the left show, for each two–digit discipline, what proportion of outputs are multi–disciplinary (as shown in the previous figure). On the right they show the apportioned content of the multi–disciplinary outputs. The first profile shows that of the 2,475 outputs identified as multi–disciplinary in 01 Mathematical Sciences, 47 per cent of their content was coded within 01 itself; 16 per cent of their content was apportioned within 09 Engineering; nine per cent was apportioned as 08 Information and Computing Sciences; and so forth. Most of the other codes held a less than five per cent share of the multi–disciplinary outputs' apportioned content, and have been grouped as 'other'. The highest apportionment goes to 01 Mathematical Sciences because that is what these outputs all have in common: they are multi–disciplinary outputs with Mathematical Sciences content, plus content apportioned to one or two other two–digit FoRs.

Guide to the multi–disciplinary profiles:

01 MATHEMATICAL SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE

There are 11,937 whole outputs with Mathematical Sciences content (either wholly or partially 01).

2,475 whole outputs (21 per cent of 11,937) were multi–disciplinary: they were apportioned to 01 plus one or two different two–digit FoR groups.

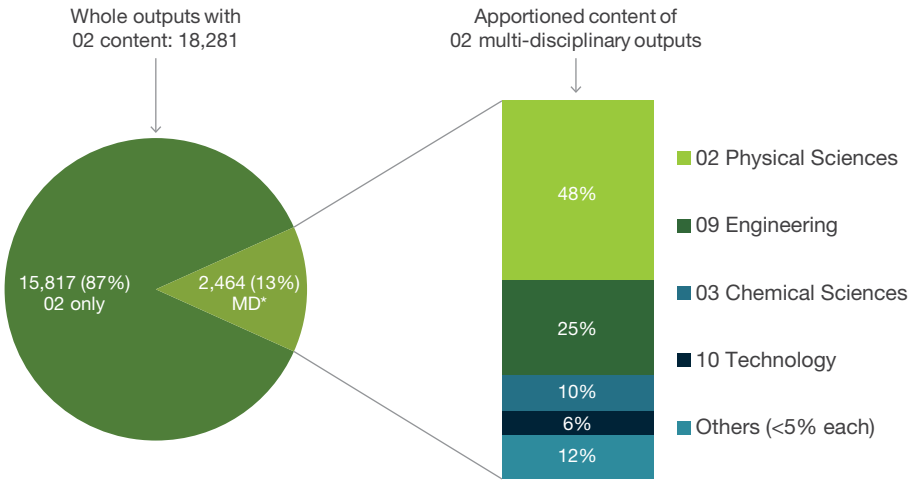


9,462 whole outputs (79% of 11,937) were 'maths–only': they were apportioned only to FoRs within 01.

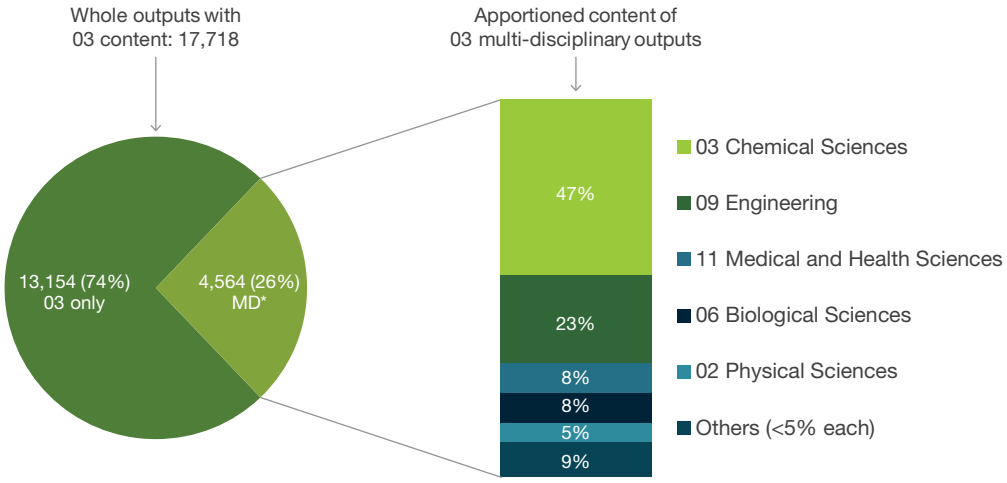
This part of the chart takes the 2,475 01 Mathematical Sciences outputs that are multi–disciplinary and shows how their combined content is apportioned across the disciplines. Every output has 01 content (this is what they have in common), so the largest apportionment goes to 01. On average, these papers have around half their content apportioned to 01 (47 per cent). 16 per cent of the content was apportioned to 09 Engineering. The remaining content was apportioned as shown. FoR groups with less than 5 per cent are grouped as 'others'.

** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

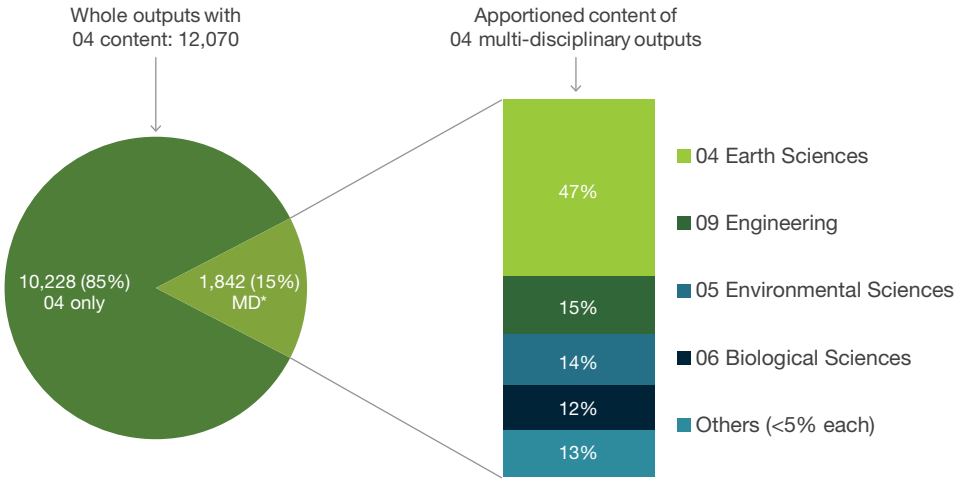
02 PHYSICAL SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE



03 CHEMICAL SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE

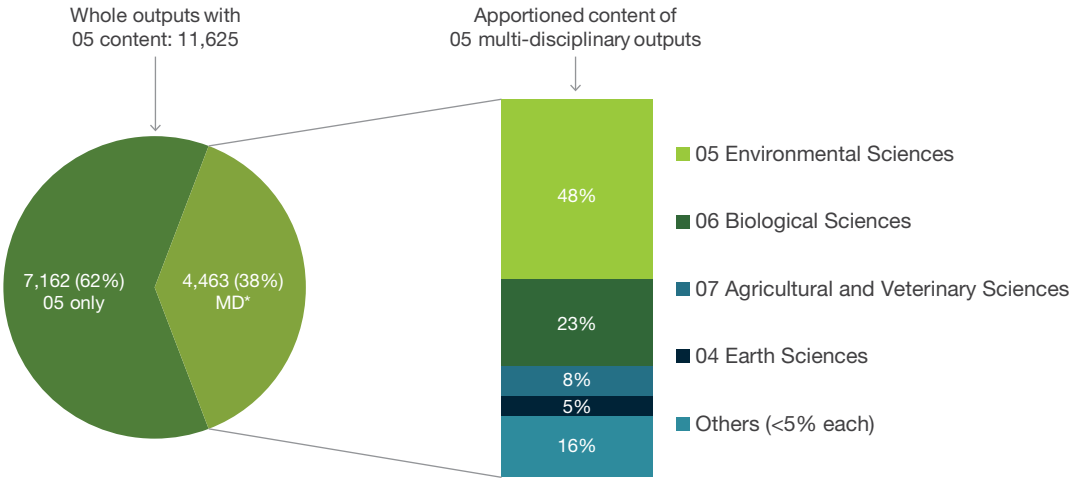


04 EARTH SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE

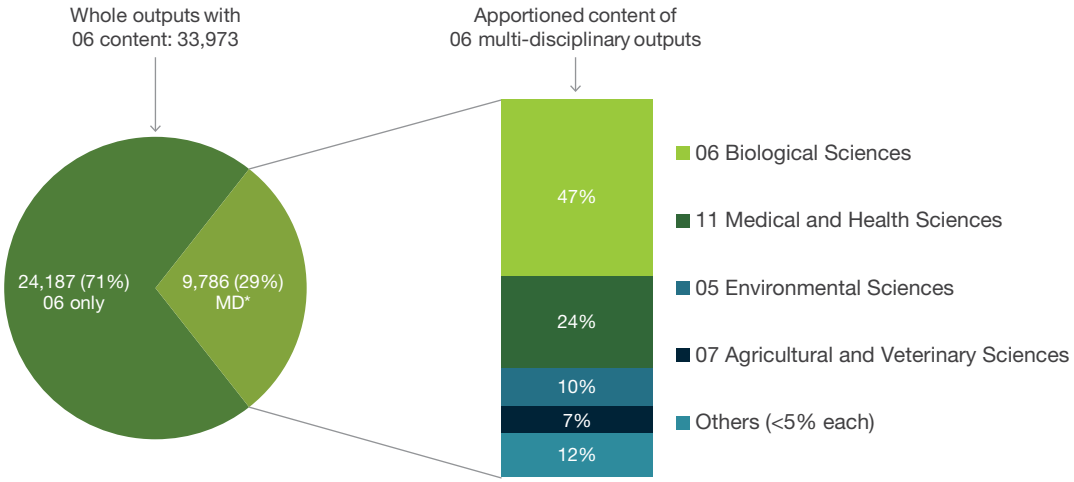


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

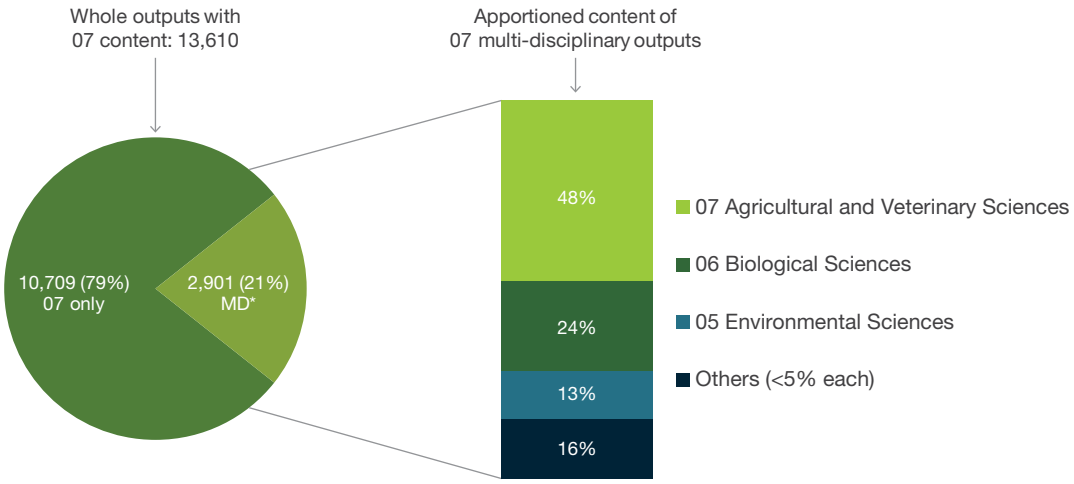
05 ENVIRONMENTAL SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE



06 BIOLOGICAL SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE

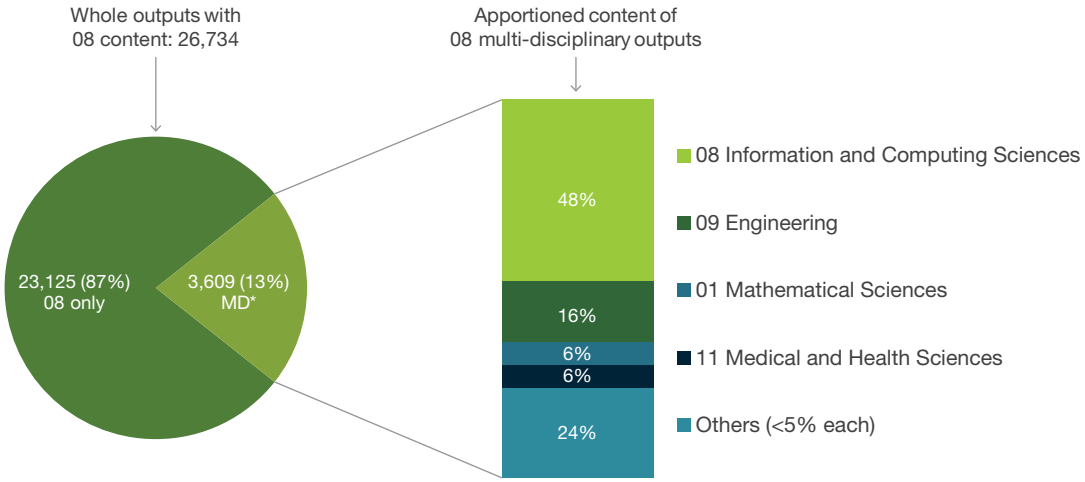


07 AGRICULTURAL AND VETERINARY SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE

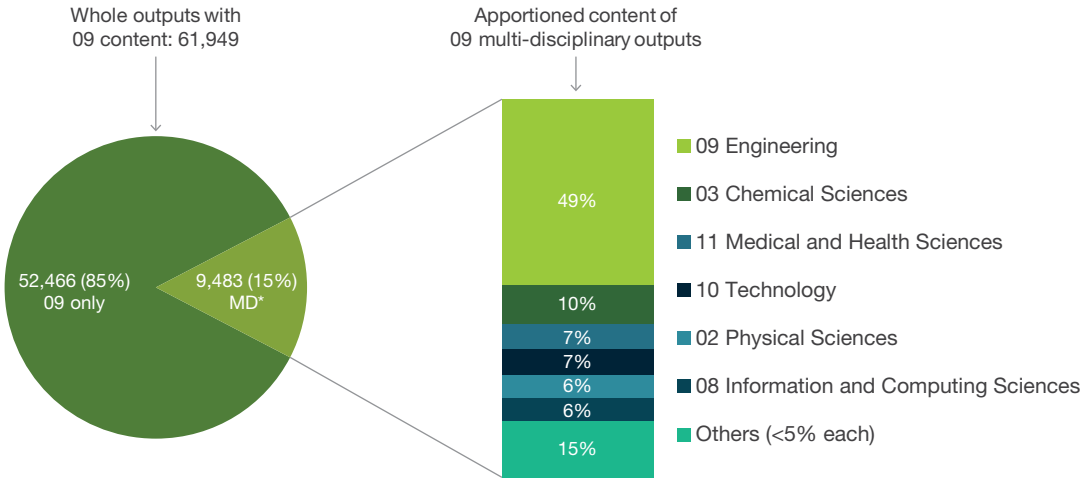


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

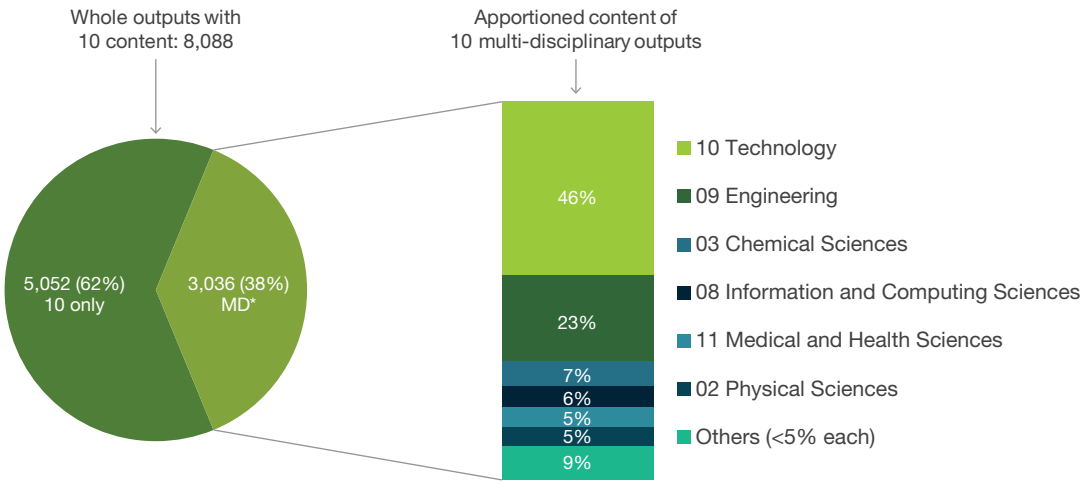
08 INFORMATION AND COMPUTING SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE



09 ENGINEERING — MULTI–DISCIPLINARY CONTENT PROFILE

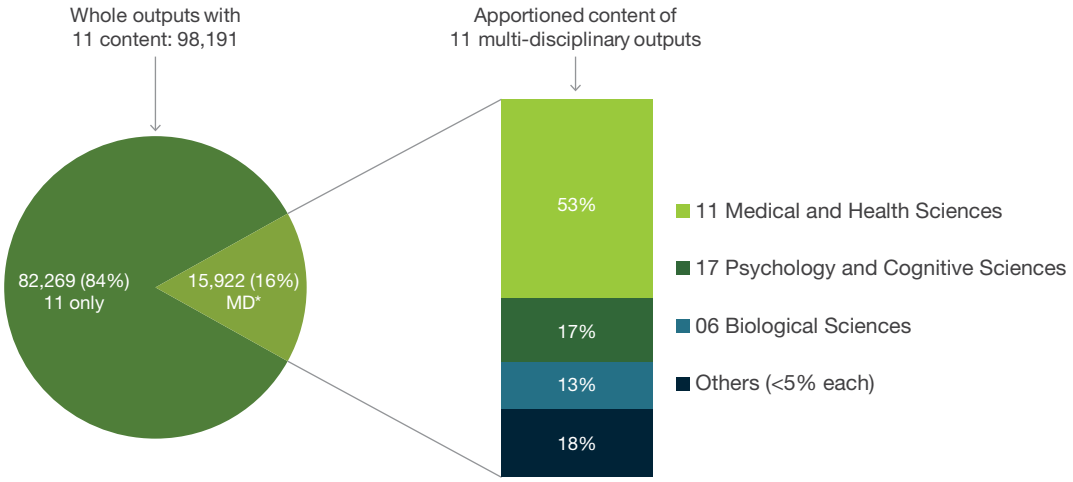


10 TECHNOLOGY — MULTI–DISCIPLINARY CONTENT PROFILE

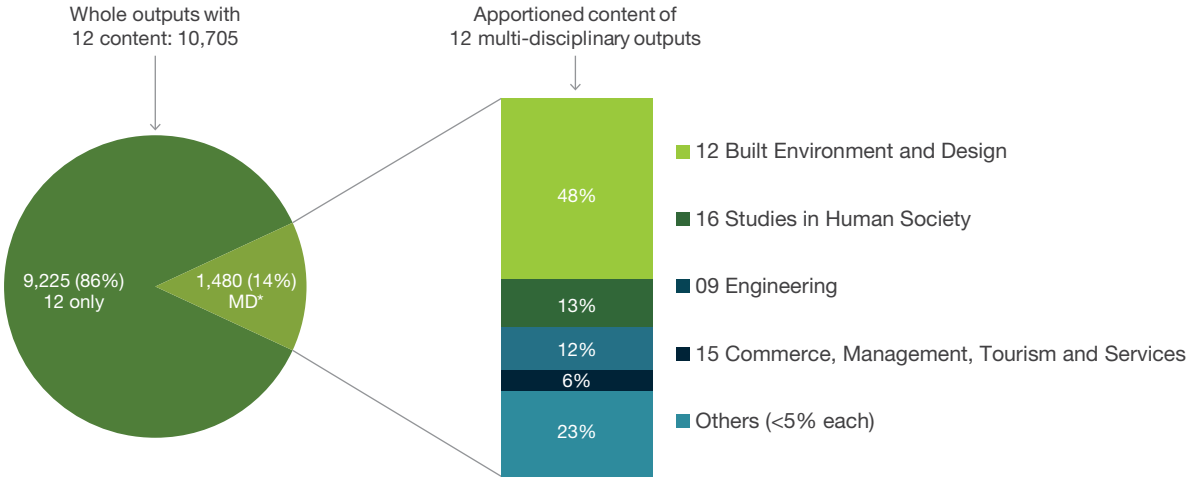


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

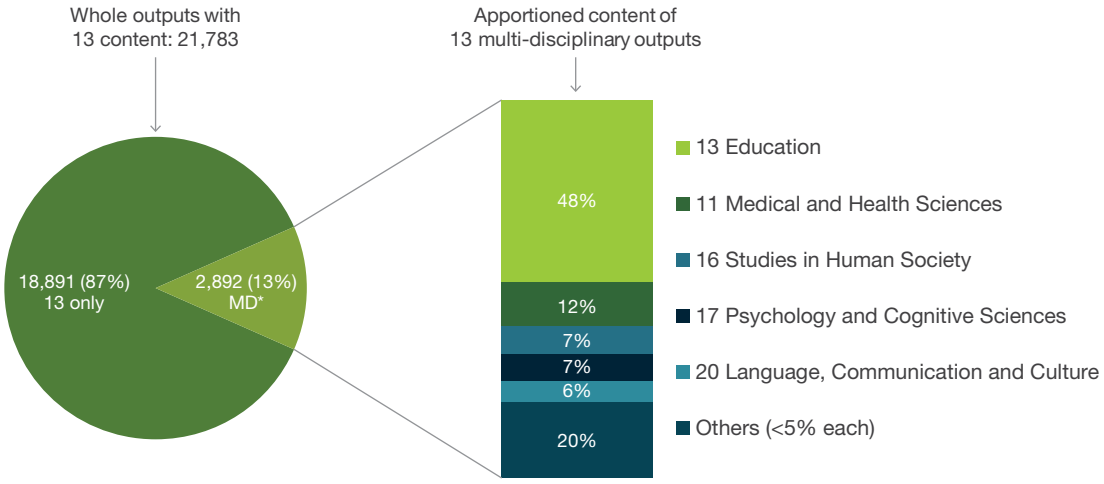
11 MEDICAL AND HEALTH SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE



12 BUILT ENVIRONMENT AND DESIGN — MULTI–DISCIPLINARY CONTENT PROFILE

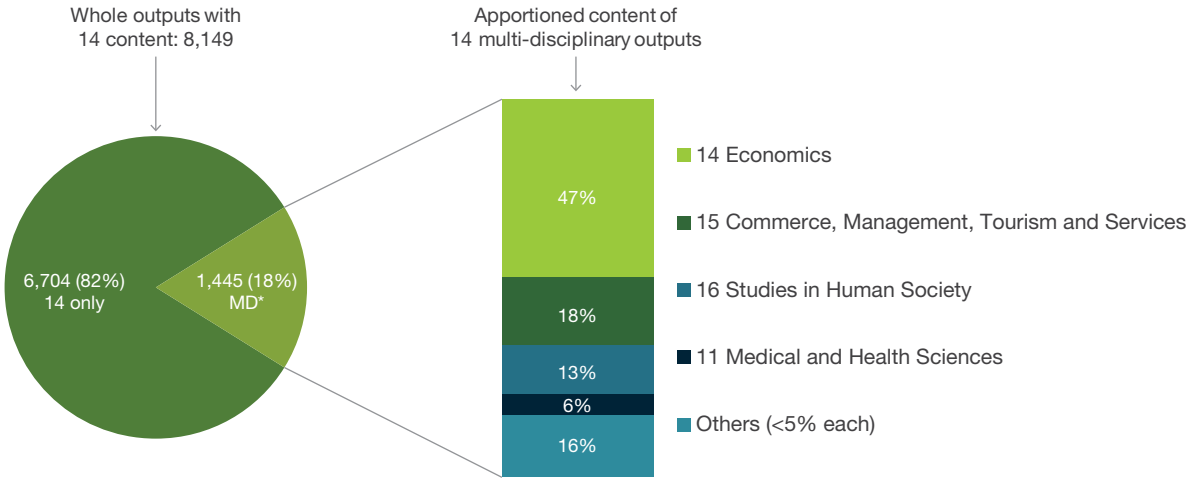


13 EDUCATION — MULTI–DISCIPLINARY CONTENT PROFILE

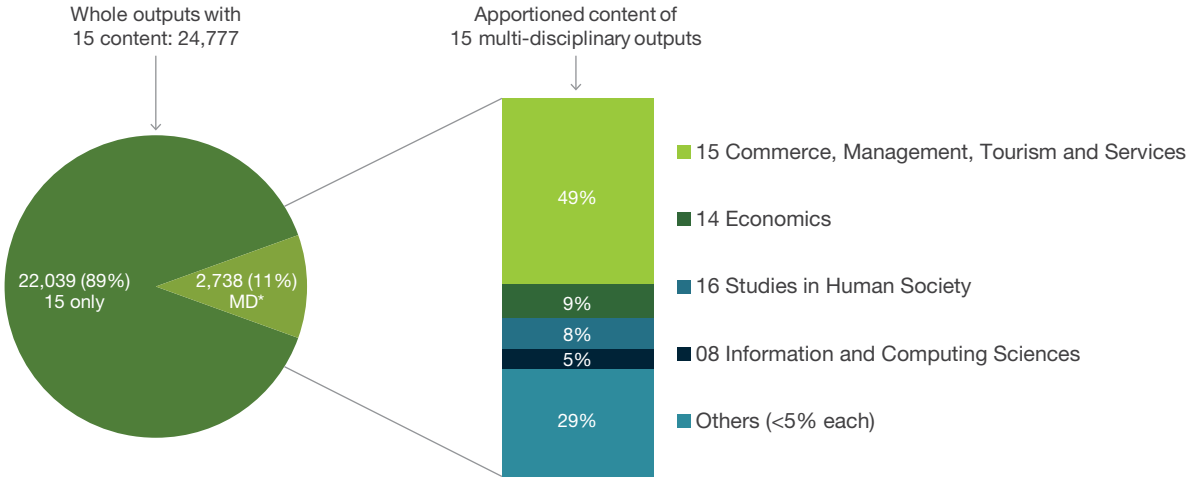


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

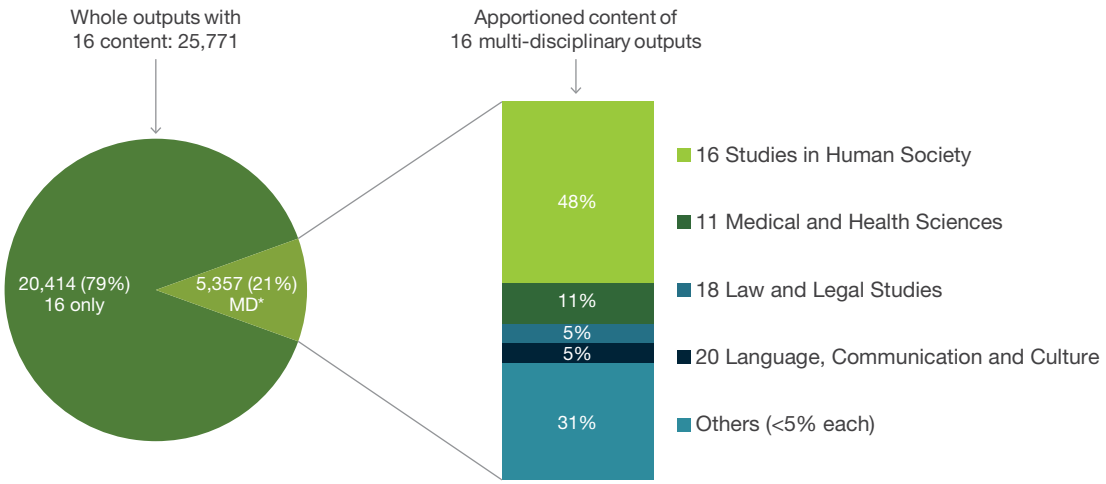
14 ECONOMICS — MULTI–DISCIPLINARY CONTENT PROFILE



15 COMMERCE, MANAGEMENT, TOURISM AND SERVICES — MULTI–DISCIPLINARY CONTENT PROFILE

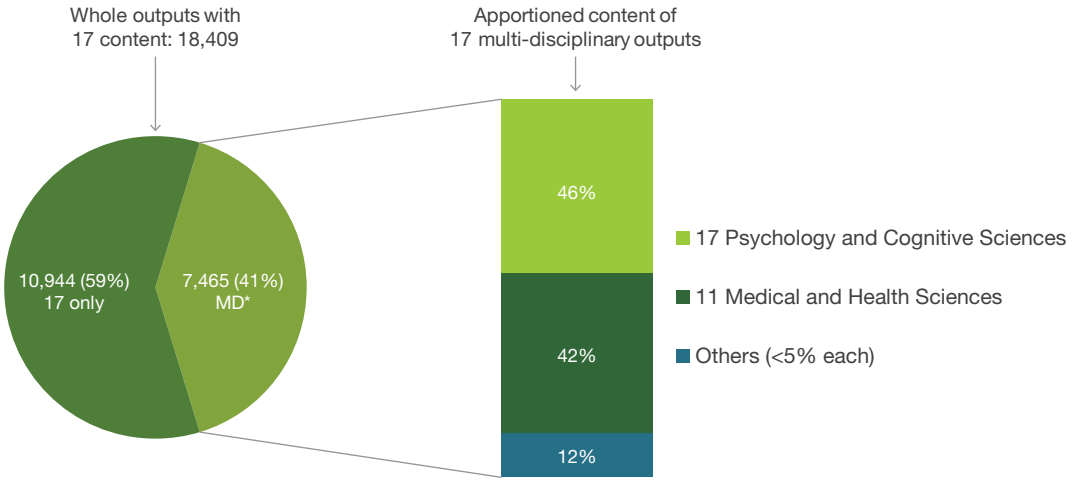


16 STUDIES IN HUMAN SOCIETY — MULTI–DISCIPLINARY CONTENT PROFILE

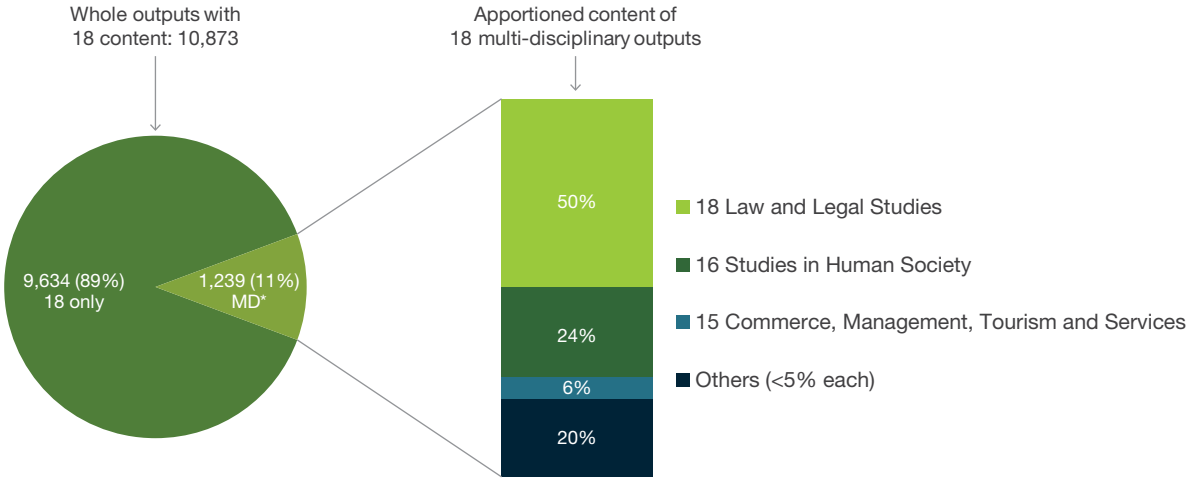


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

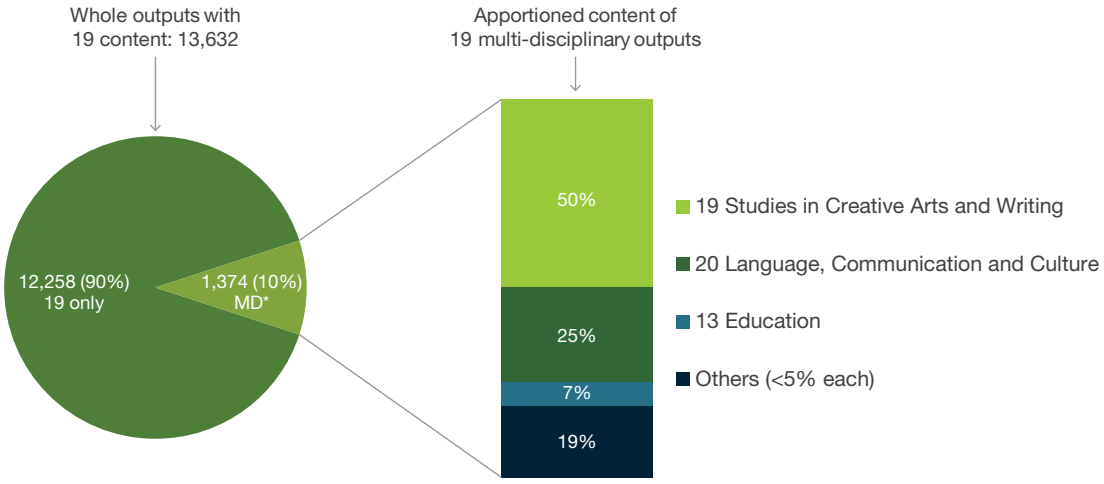
17 PSYCHOLOGY AND COGNITIVE SCIENCES — MULTI–DISCIPLINARY CONTENT PROFILE



18 LAW AND LEGAL STUDIES — MULTI–DISCIPLINARY CONTENT PROFILE

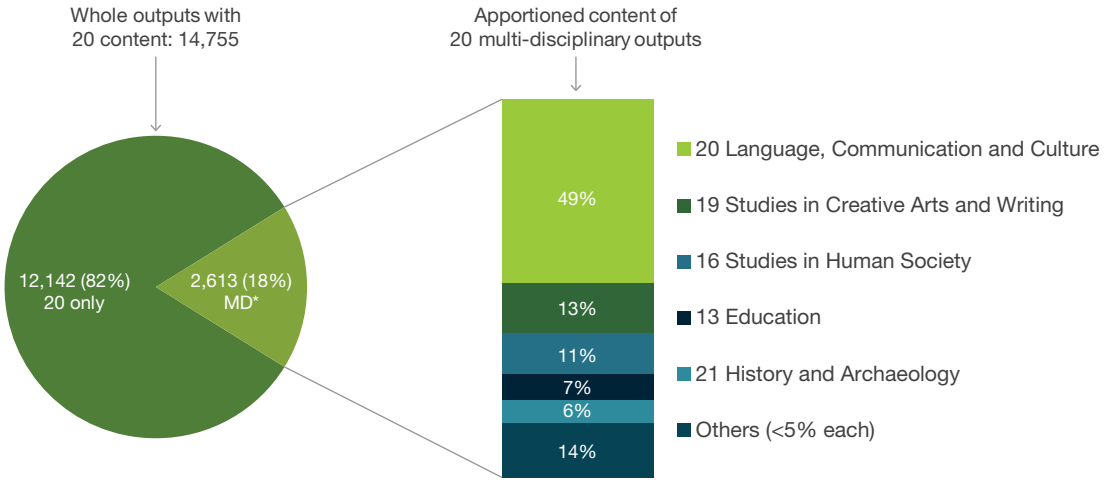


19 STUDIES IN CREATIVE ARTS AND WRITING — MULTI–DISCIPLINARY CONTENT PROFILE

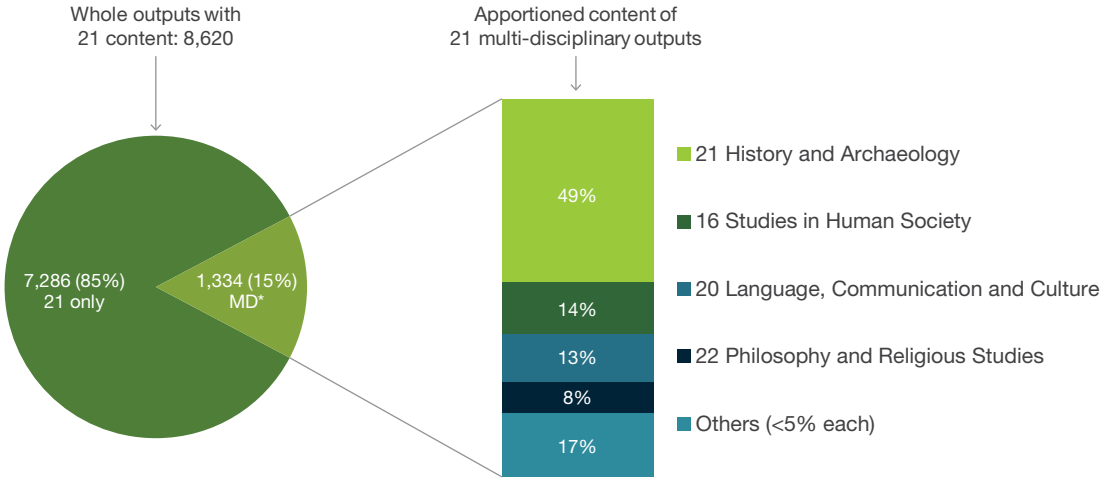


** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

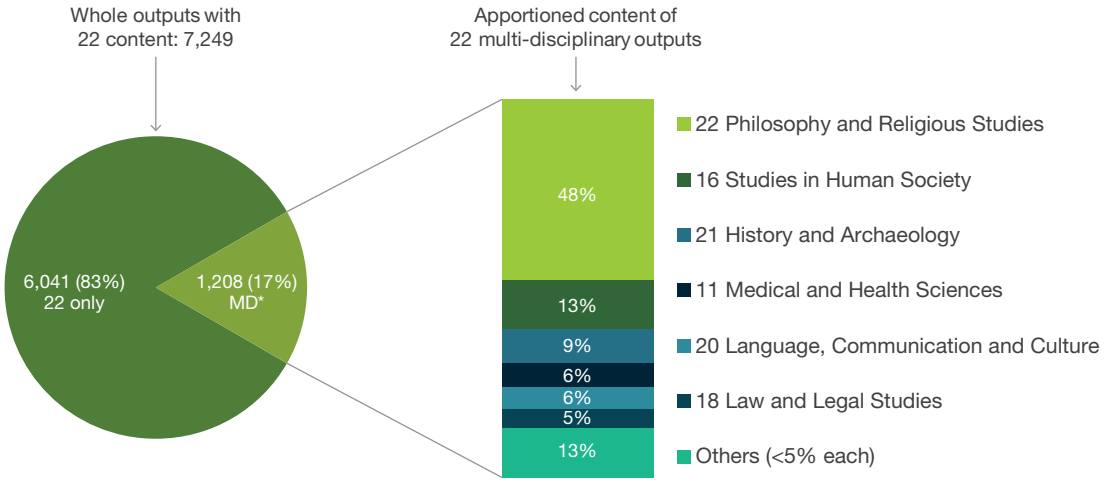
20 LANGUAGE, COMMUNICATION AND CULTURE — MULTI–DISCIPLINARY CONTENT PROFILE



21 HISTORY AND ARCHAEOLOGY — MULTI–DISCIPLINARY CONTENT PROFILE



22 PHILOSOPHY AND RELIGIOUS STUDIES — MULTI–DISCIPLINARY CONTENT PROFILE



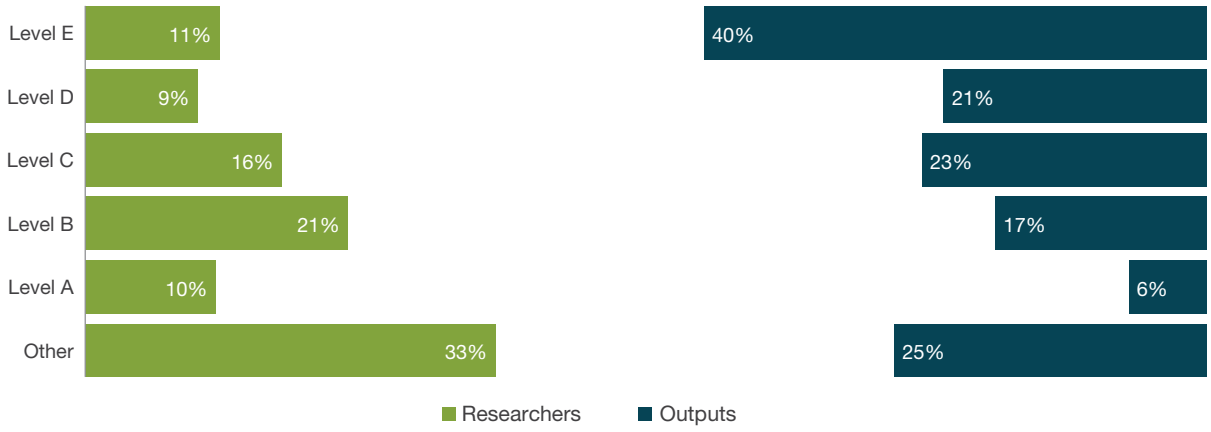
** MD: Multi–disciplinary, defined as any output that is apportioned to codes from two or more two–digit FoR groups.*

Contribution by Employment Level

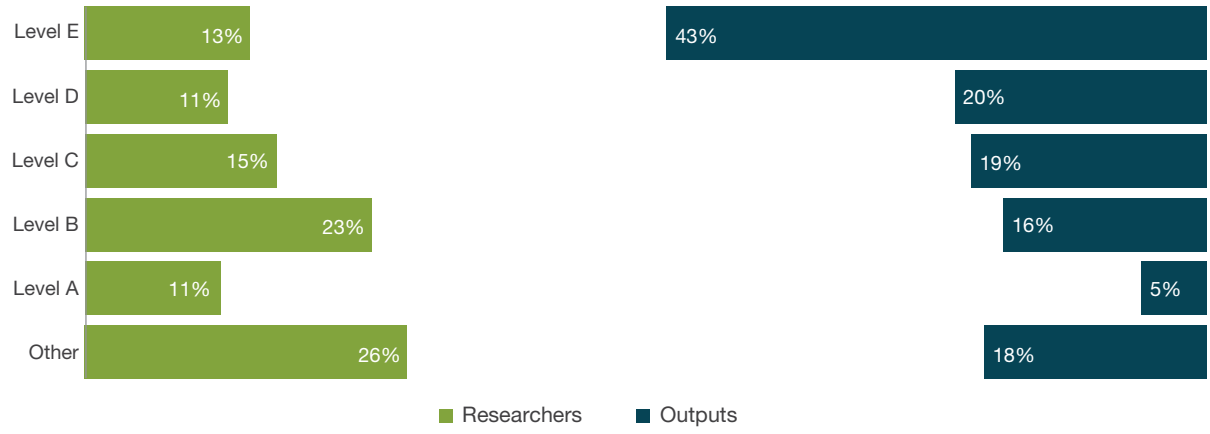
The following charts show how researchers at each employment level contribute as authors to output volume. There is a chart for the ERA 2015 data collection overall, and one for each two–digit FoR. The left hand side of each chart shows the distribution of eligible researchers across the academic levels A to E and the 'Other' employment level. Researcher numbers are measured on a headcount basis (that is, no apportioning for part–time hours). Employment status is not considered here. For example, an eligible researcher identified by their institution as Level E is counted equally whether they are an FTE employee ('Employed'), a 'Casual' employee, or an 'Other Appointment' (for example visting or exchange). *Note: due to rounding percentages may not sum to 100 per cent.*

The right hand side shows the proportion of outputs where one or more eligible authors are at the corresponding academic level. An output is counted at a particular level if one or more of its ERA–eligible institution authors is at that level (authors who are not eligible ERA researchers are not considered here). For example, the second chart — for FoR 01 Mathematical Sciences — shows that Level C staff made up 15 per cent of all eligible 01 researchers and contributed as authors on 19 per cent of submitted 01 outputs. This means 19 per cent of all 01 outputs had one or more Level C authors. *Note: since outputs may be counted more than once where there are multiple authors with different employment levels on each output, percentages will sum to >100 per cent.*

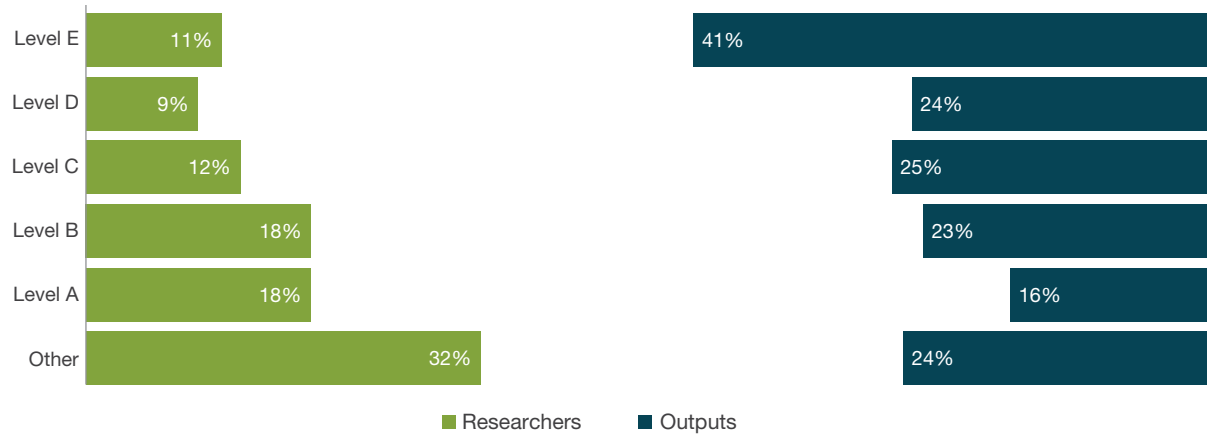
ALL FORS — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



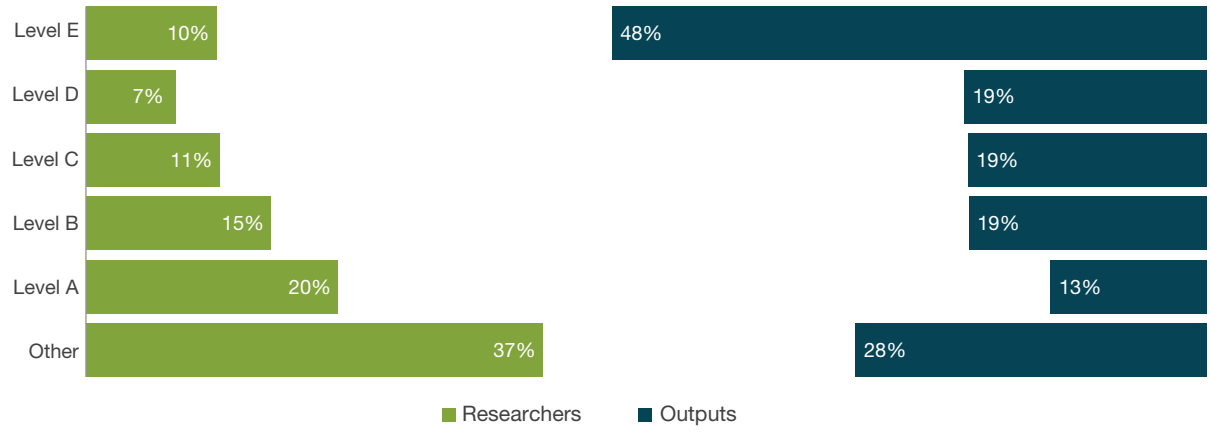
01 MATHEMATICAL SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



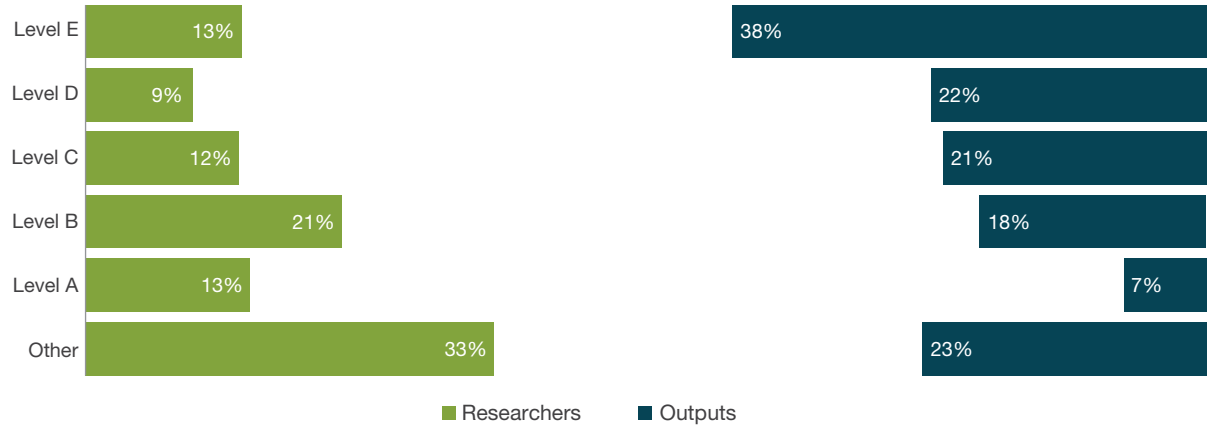
02 PHYSICAL SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



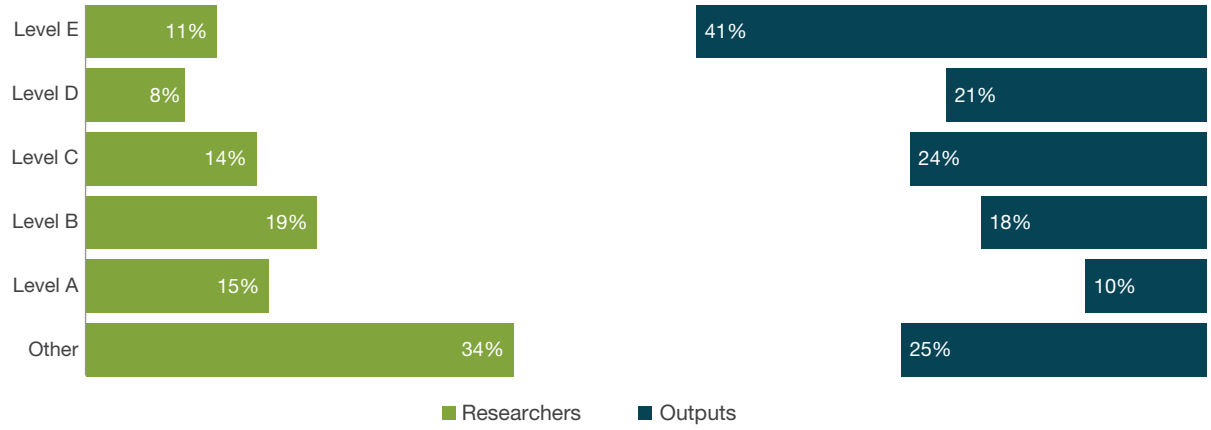
03 CHEMICAL SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



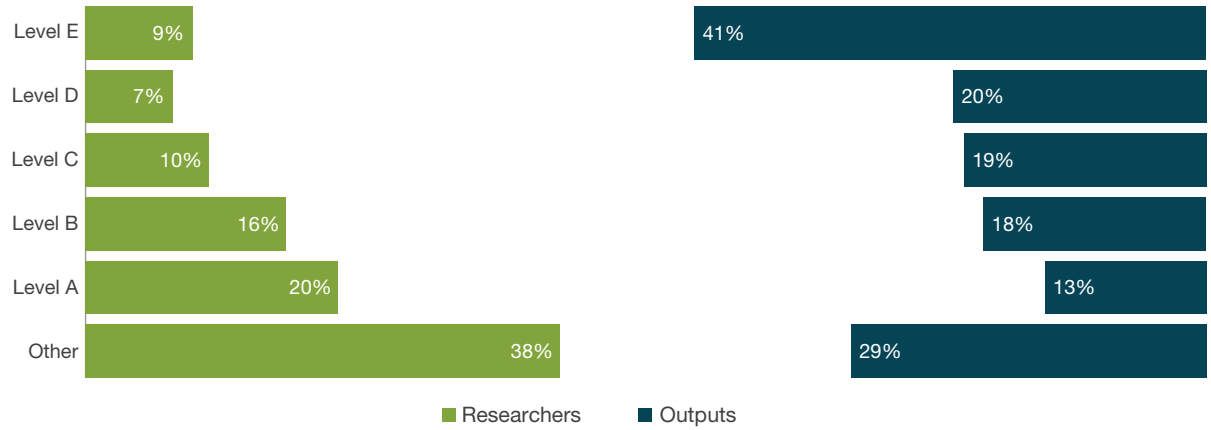
04 EARTH SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



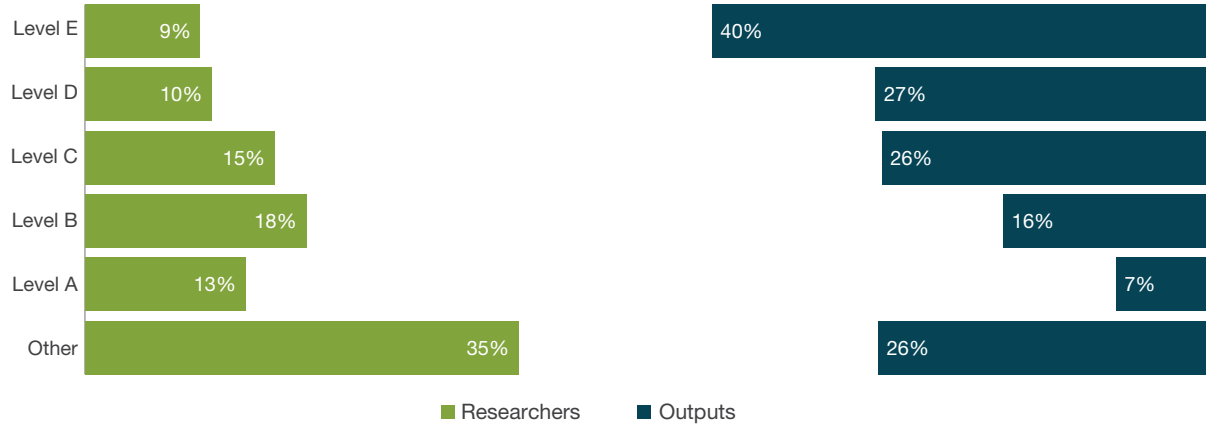
05 ENVIRONMENTAL SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



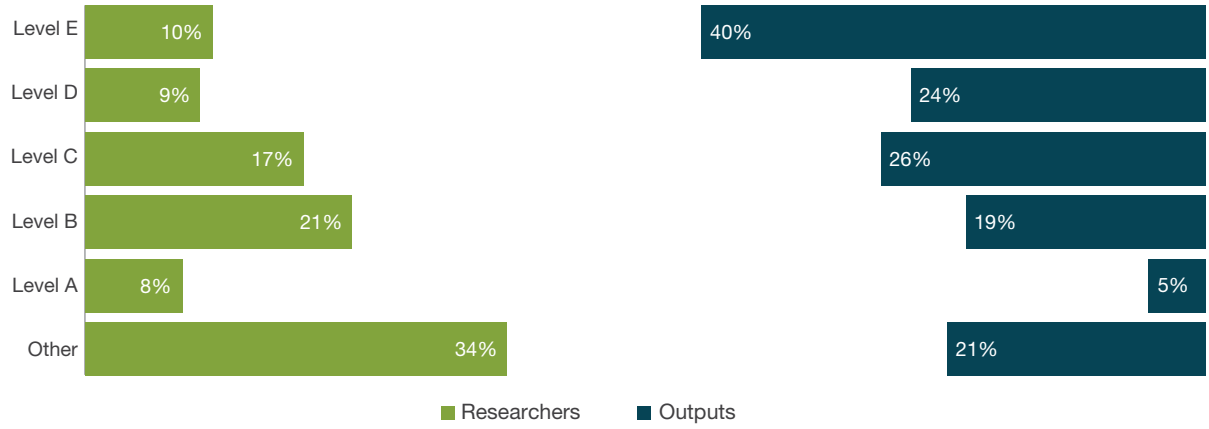
06 BIOLOGICAL SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



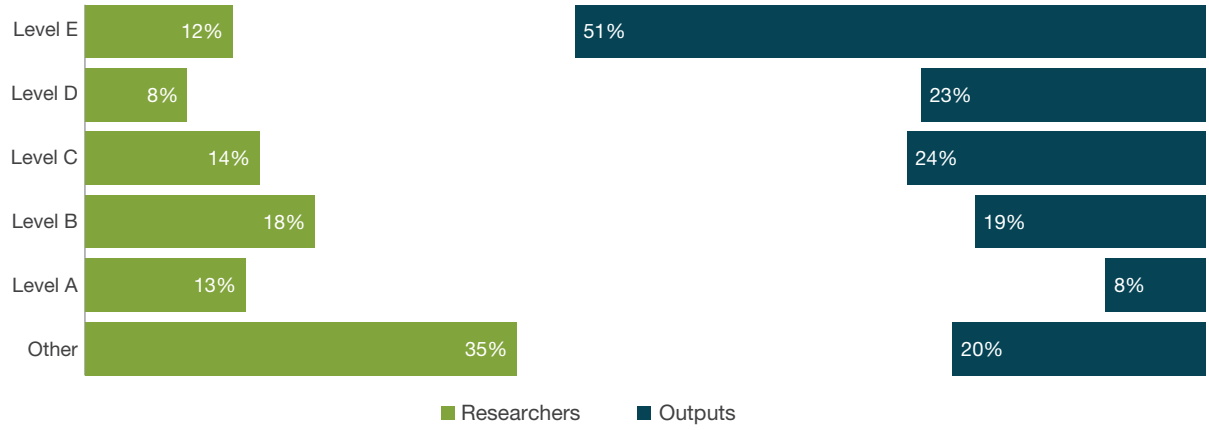
07 AGRICULTURAL AND VETERINARY SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



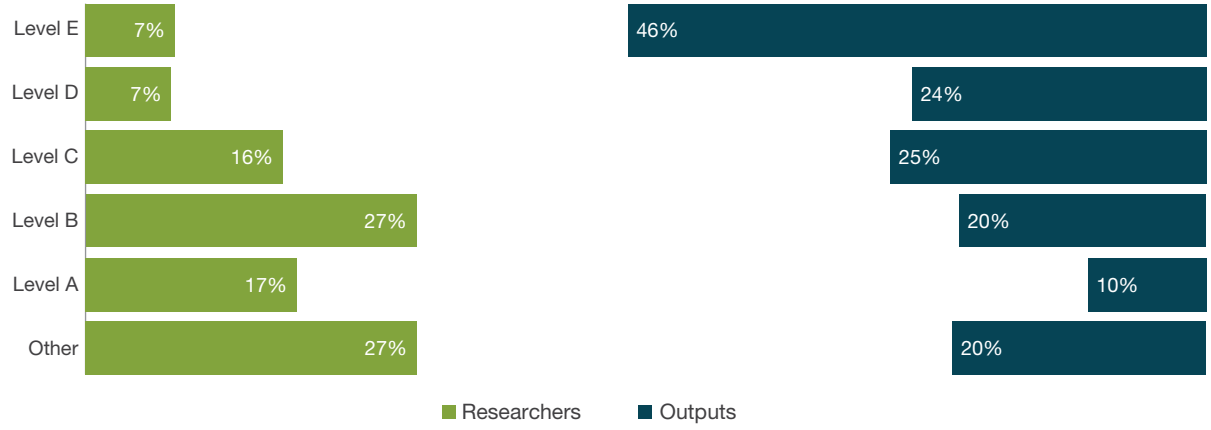
08 INFORMATION AND COMPUTING SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



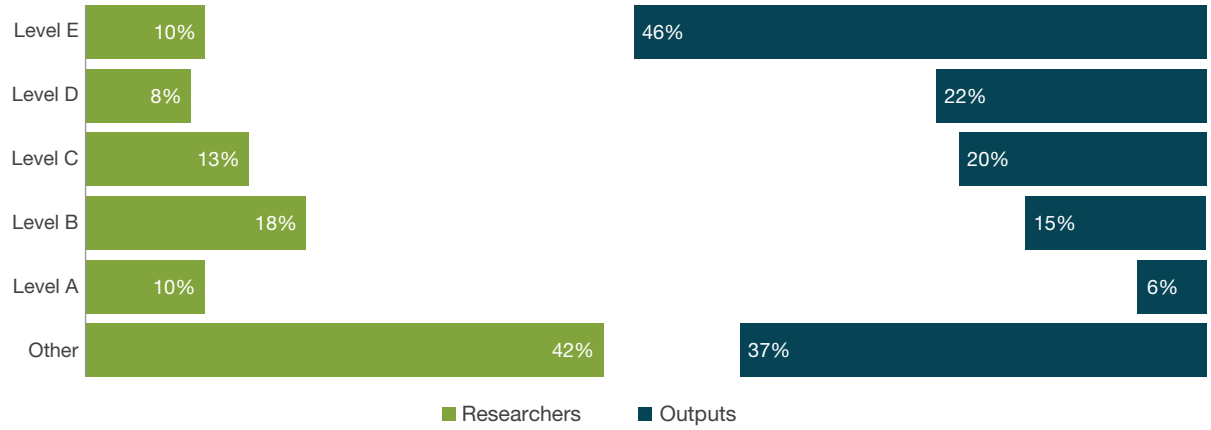
09 ENGINEERING — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



10 TECHNOLOGY — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL

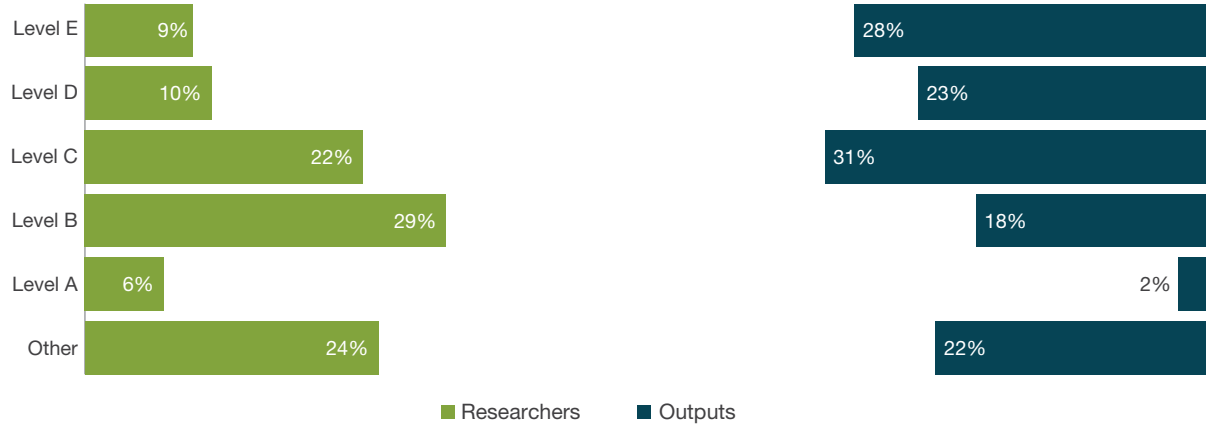


11 MEDICAL AND HEALTH SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL

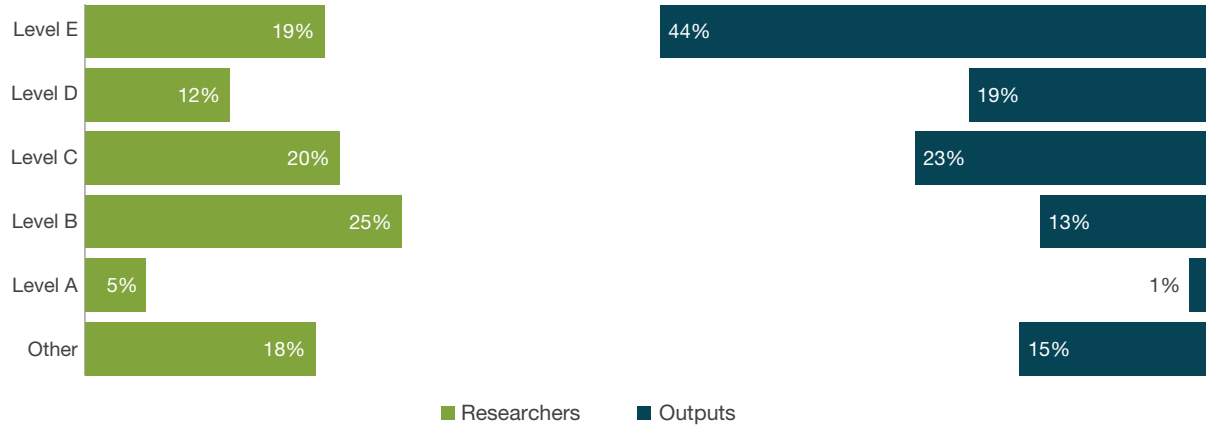


12 BUILT ENVIRONMENT AND DESIGN — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL

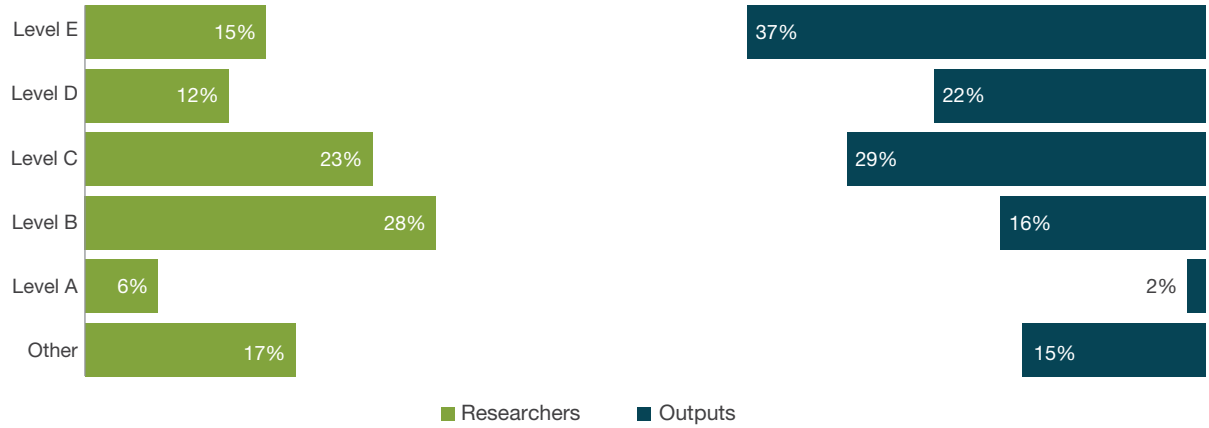
13 EDUCATION — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



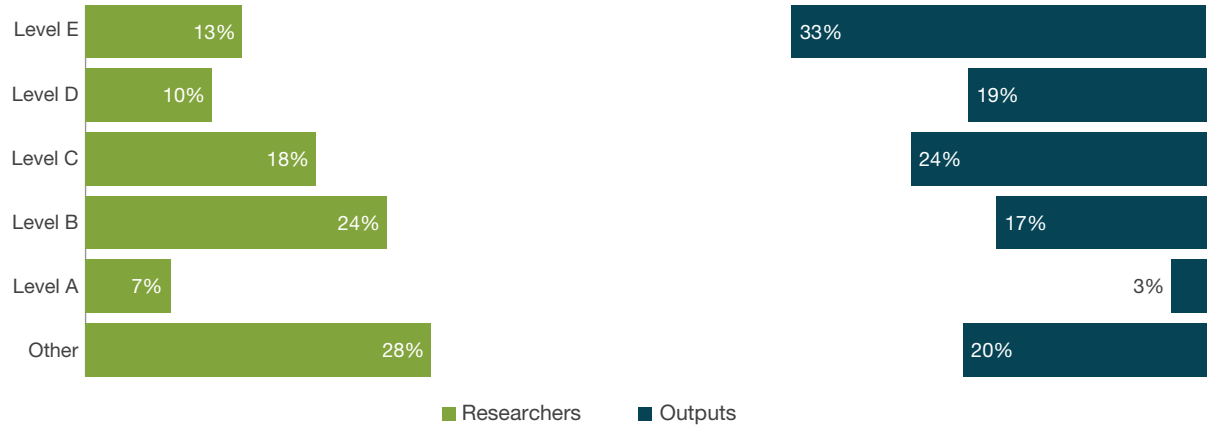
14 ECONOMICS —DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



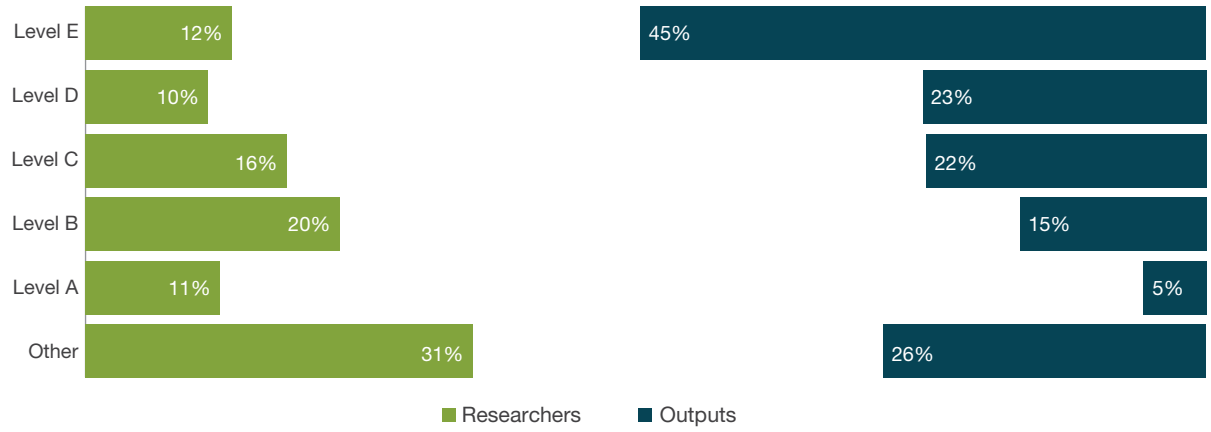
15 COMMERCE, MANAGEMENT, TOURISM AND SERVICES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



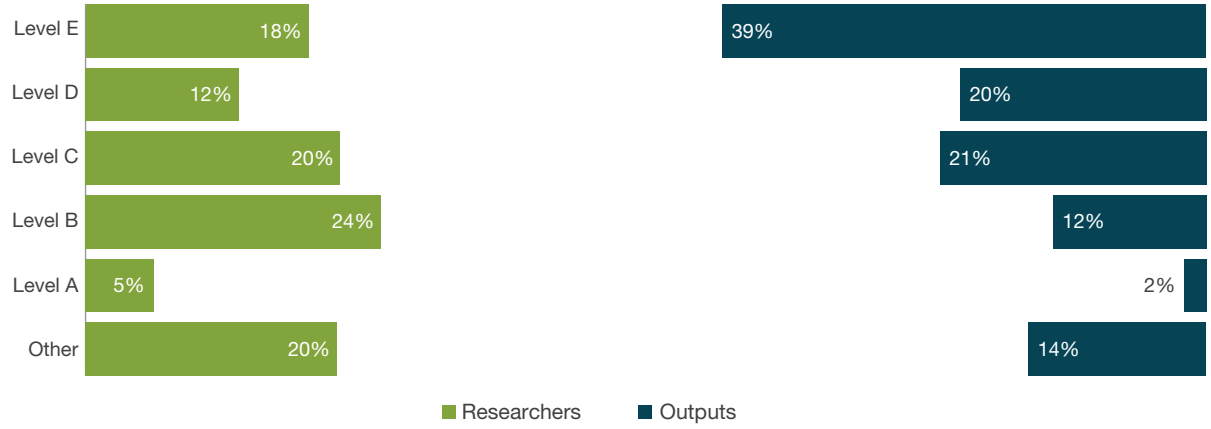
16 STUDIES IN HUMAN SOCIETY — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



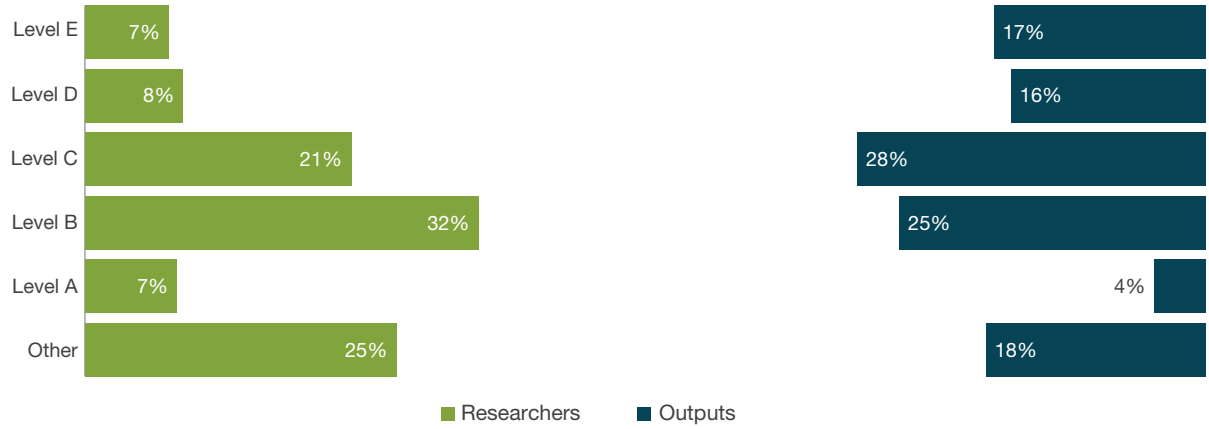
17 PSYCHOLOGY AND COGNITIVE SCIENCES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



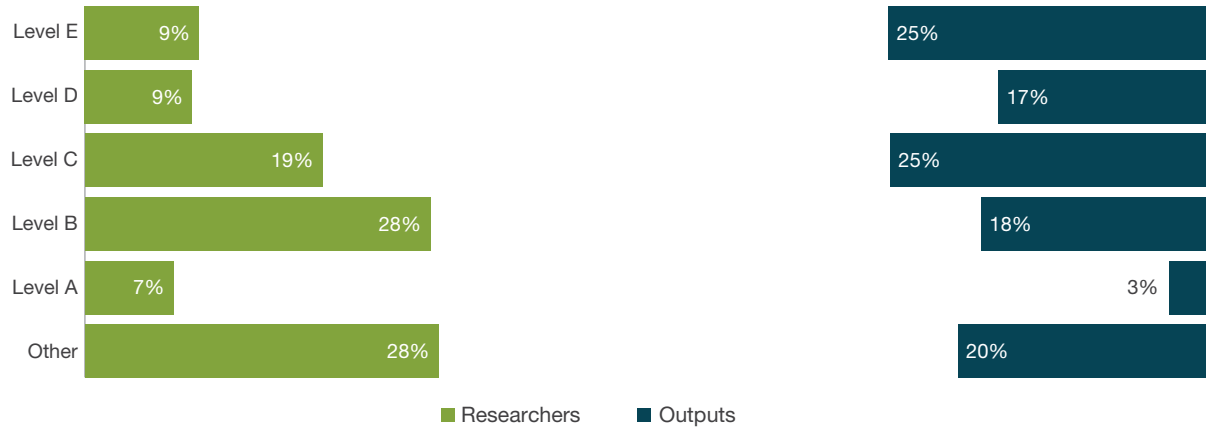
18 LAW — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



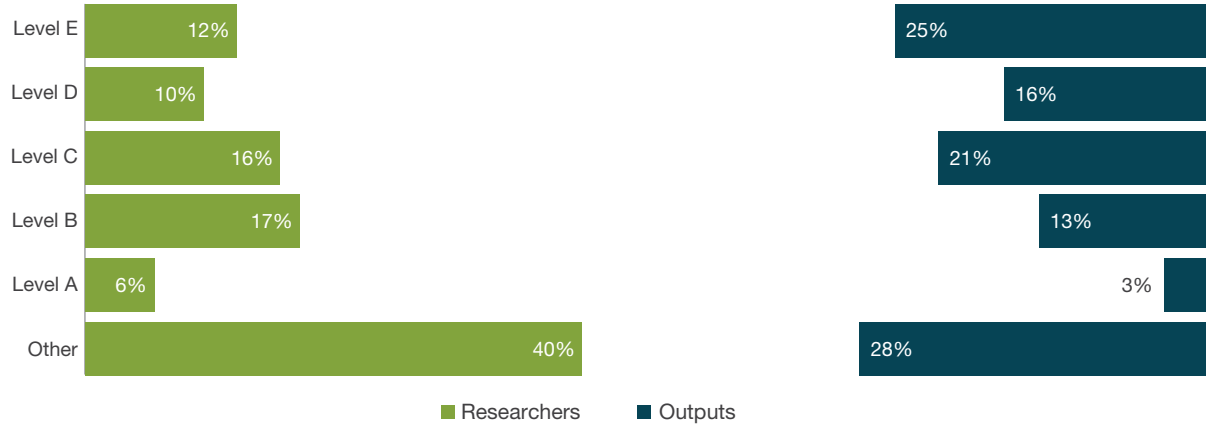
19 STUDIES IN CREATIVE ARTS AND WRITING — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



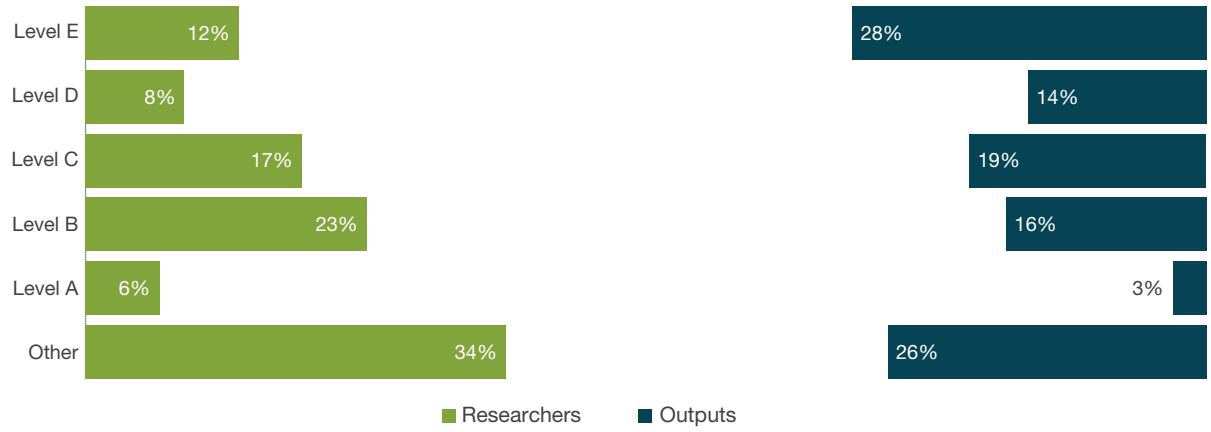
20 LANGUAGE, COMMUNICATION AND CULTURE — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



21 HISTORY AND ARCHAEOLOGY — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL



22 PHILOSOPHY AND RELIGIOUS STUDIES — DISTRIBUTION OF RESEARCHERS AND OUTPUTS BY EMPLOYMENT LEVEL

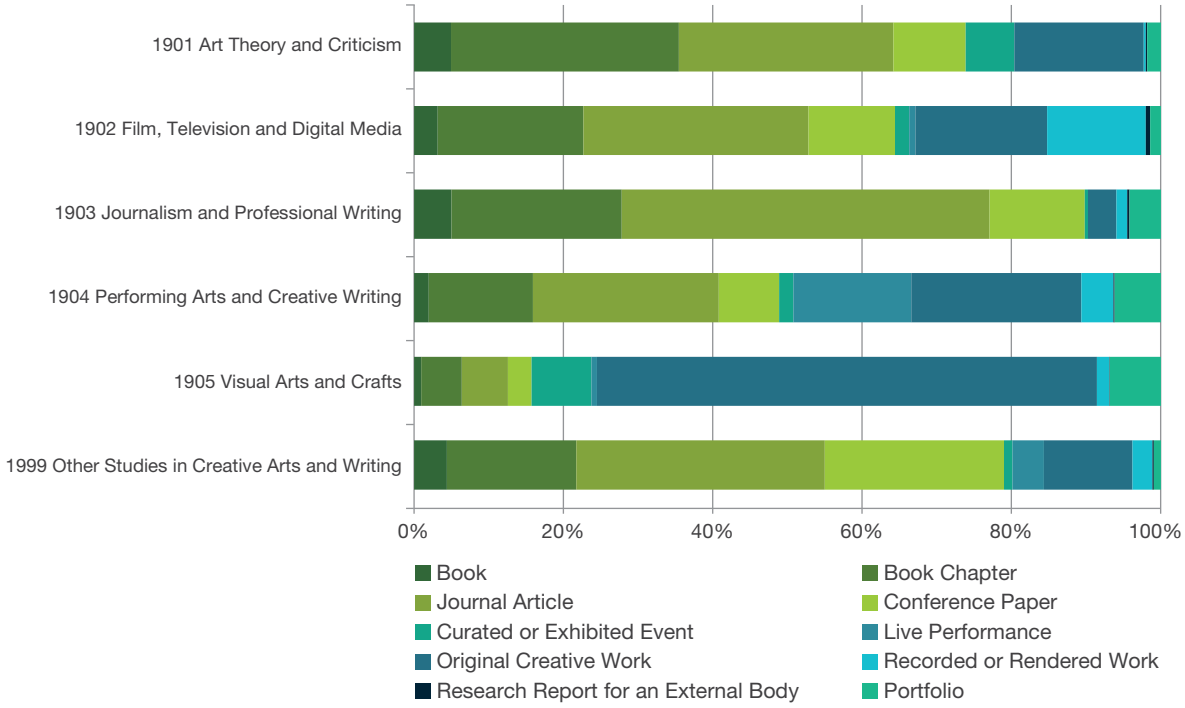


Non–Traditional Research Outputs

Non–traditional research outputs provide an important insight into applied research, and creative and practitioner–based research in the Humanities, Creative Arts and Social Sciences. The provision within the ERA framework for portfolios allows for related works that demonstrate coherent research content to be submitted and reviewed as a single output. This is particularly important in the case of applied, creative and practitioner–based research, where a body of work needs to be viewed as a whole so that the full significance of the research involved can be considered. Over 5,000 original creative works, 913 live performances, 727 recorded or rendered works, 753 curated or exhibited events, 791 portfolios and 2,453 research reports for an external body were submitted to ERA 2015. Studies in Creative Arts and Writing (19) submitted the highest number of non–traditional research outputs for assessment. See **Section 4** for a more detailed breakdown.

Studies in Creative Arts and Writing

In 19 Studies in Creative Arts and Writing disciplines, original creative works represent the greatest proportion (61 per cent) of all non–traditional research outputs. Of all the four–digit FoR codes in this discipline, 1905 Visual Arts and Crafts submitted 2,244 original creative works, comprising 67 per cent of the total research output. See **Section 4** for a more detailed breakdown.



Employment Function

The function of an eligible researcher describes the general type of work which they have formally agreed with the institution to undertake. For ERA purposes, the function of an eligible researcher can be described only as 'Research Only', 'Teaching and Research', or 'Other Function':

- **Research Only**—this function involves undertaking only research work or providing technical or professional research assistance, or the management and leadership of research staff and of staff who support research staff. There may be limited other work (e.g. participation in the development of postgraduate courses and supervision of postgraduate students). This definition is to be interpreted as having the same content as the HESDC definition of 'A Research Only function'.
- **Teaching and Research**—in addition to the activities undertaken in the Research Only function, this function also involves undertaking teaching and associated activities (including lecturing, group or individual tutoring, preparation of teaching materials, supervision of students, marking, and preparation for the foregoing activities), or the management and leadership of teaching staff and research staff and persons who support such staff. This definition is to be interpreted as having the same content as the HESDC definition of 'A Teaching and Research Function'.
- **Other Function**—functions other than 'Research Only' or 'Teaching and Research'. A researcher whose function is 'Teaching Only' who has produced one or more submitted research outputs should be classified as 'Other Function'. This definition is to be interpreted as having the same content as the combined HESDC definitions of 'A Teaching Only Function' and 'An Other Function'[3].

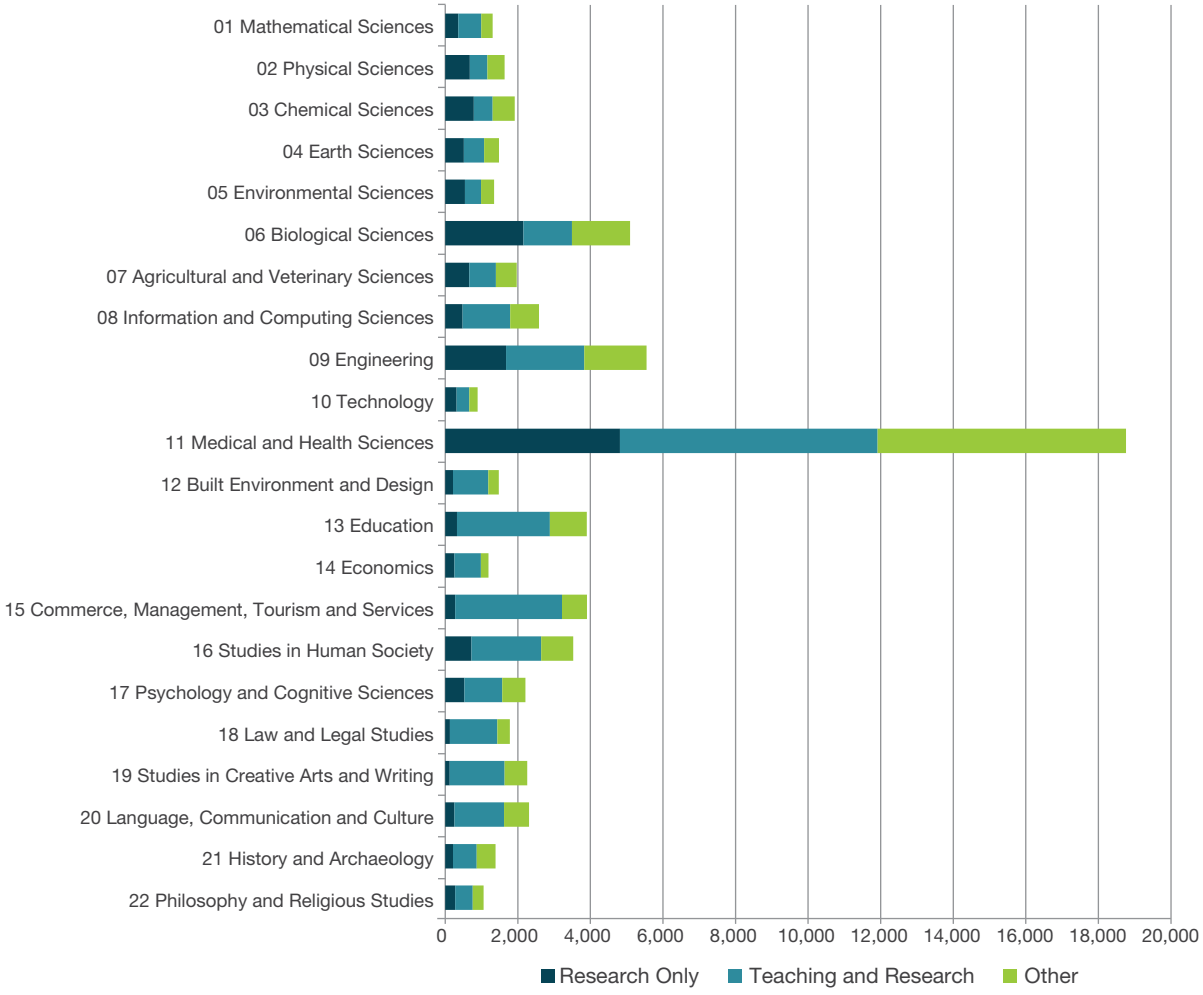
In the case of a staff member holding multiple functions within an institution, the institution has chosen the most applicable function to submit.

The first chart shows the apportioned headcount for two–digit FoRs of all staff submitted to ERA 2015 by institutions and includes the employed, employed casual and other employment types.

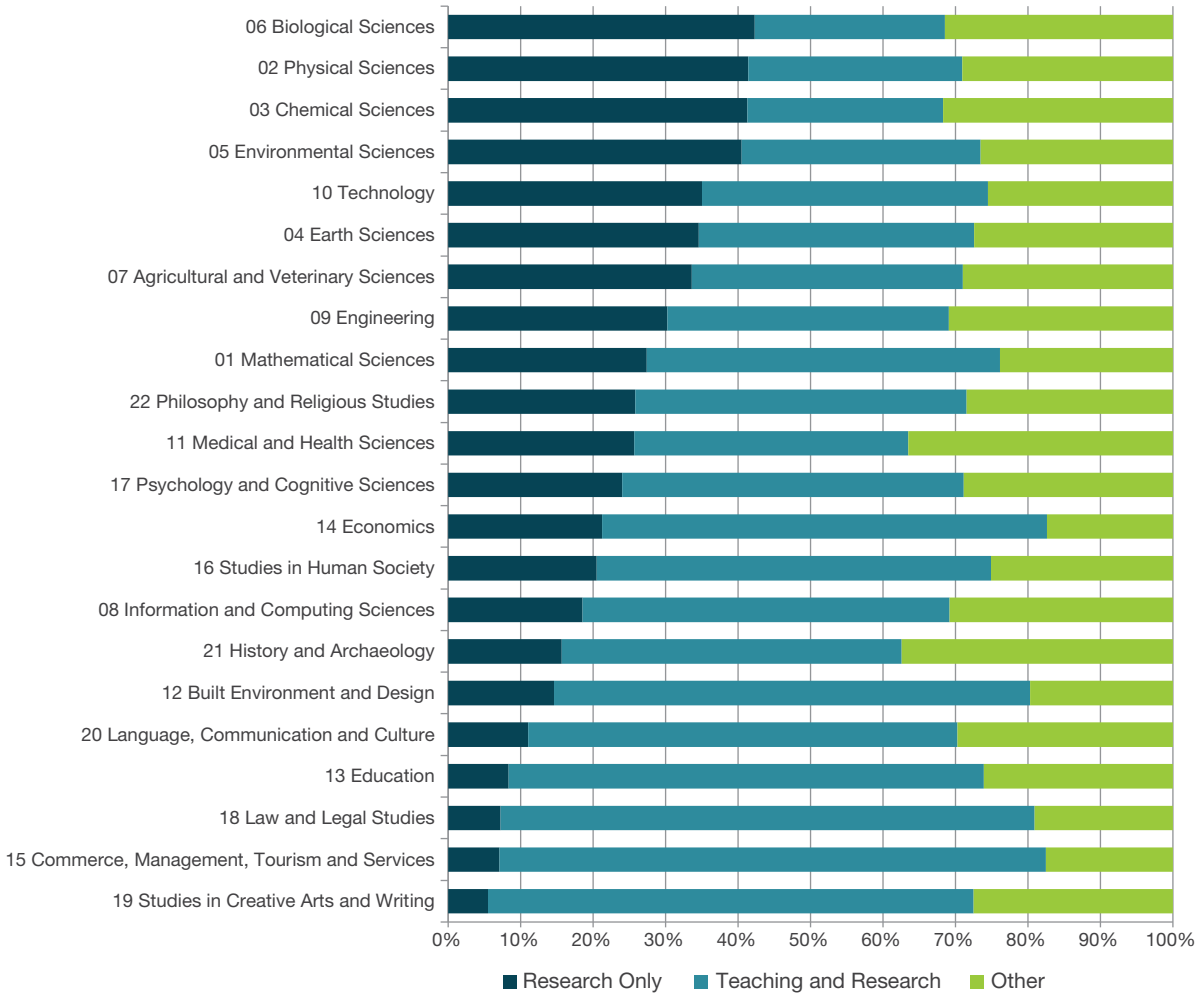
The second chart shows the percentage distribution for two–digit apportioned headcount of all staff by employment function. It is ordered by 'Research Only' employment function. The two–digit FoR codes with the highest proportion of Research Only staff are 06 Biological Sciences (42 per cent), 02 Physical Sciences (41 per cent) and 03 Chemical Sciences (41 per cent).

[3] *heimshelp.education.gov.au/sites/heimshelp/resources/glossary/pages/glossaryterm?title=Function*

TWO–DIGIT APPORTIONED HEADCOUNT OF ALL STAFF BY EMPLOYMENT FUNCTION



PERCENTAGE DISTRIBUTION TWO–DIGIT APPORTIONED HEADCOUNT OF ALL STAFF BY EMPLOYMENT FUNCTION

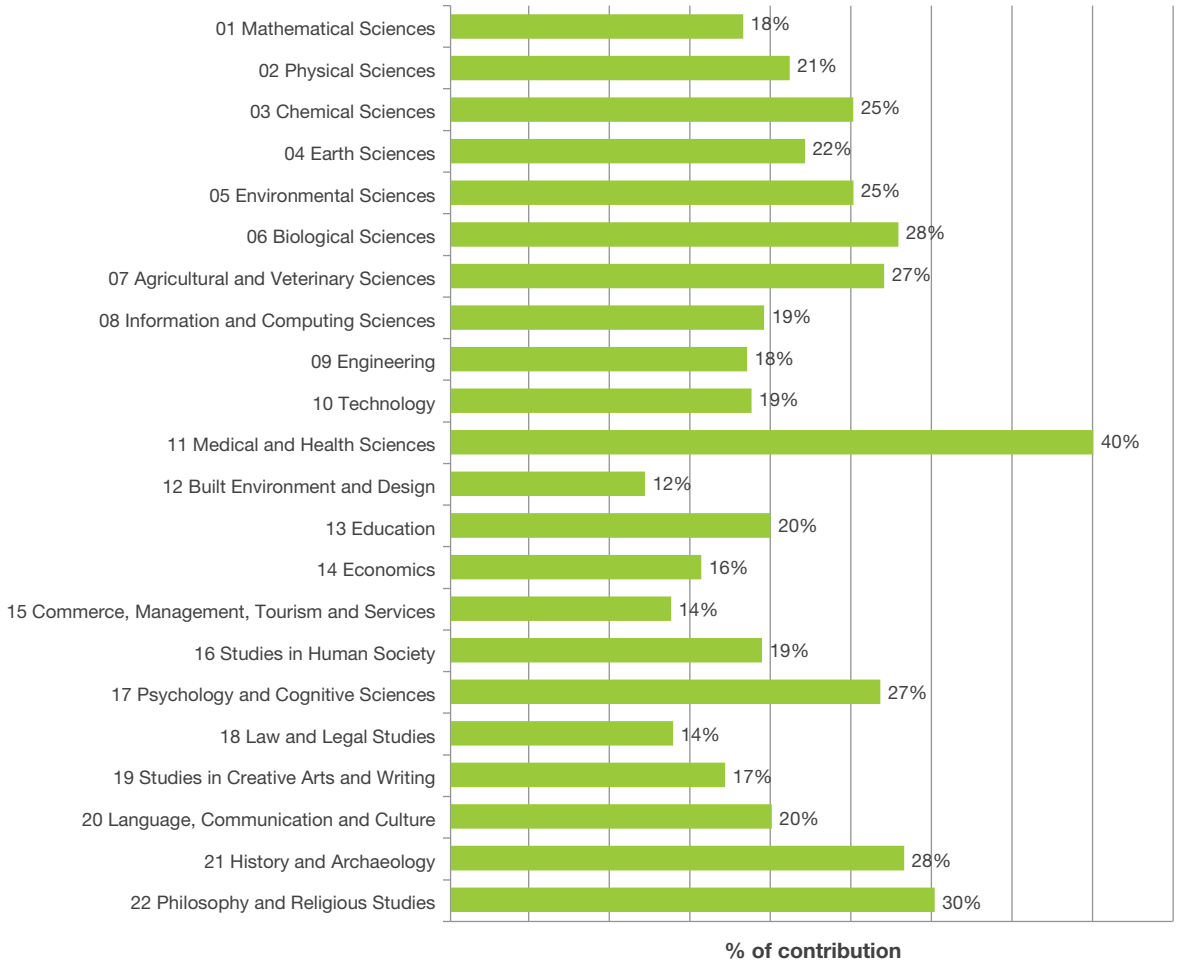


Contribution of Non–salaried Staff

Non–salaried staff include emeritus, visiting, exchange or seconded staff, unpaid visiting fellows, members of religious denominations, conjoint, clinical and adjunct staff with a demonstrated publication association with an eligible institution. These researchers make an important contribution to the Australian university research sector and broader research community, contributing as authors to 25 per cent of all outputs for ERA.

The chart shows the proportion of outputs where one or more eligible authors are non–salaried staff. This proportion is the greatest for the 11 Medical and Health Sciences, where non–salaried staff contributed as authors to 40 per cent of all outputs.

OUTPUTS CONTRIBUTED TO BY NON–SALARIED STAFF BY TWO DIGIT FOR CODE

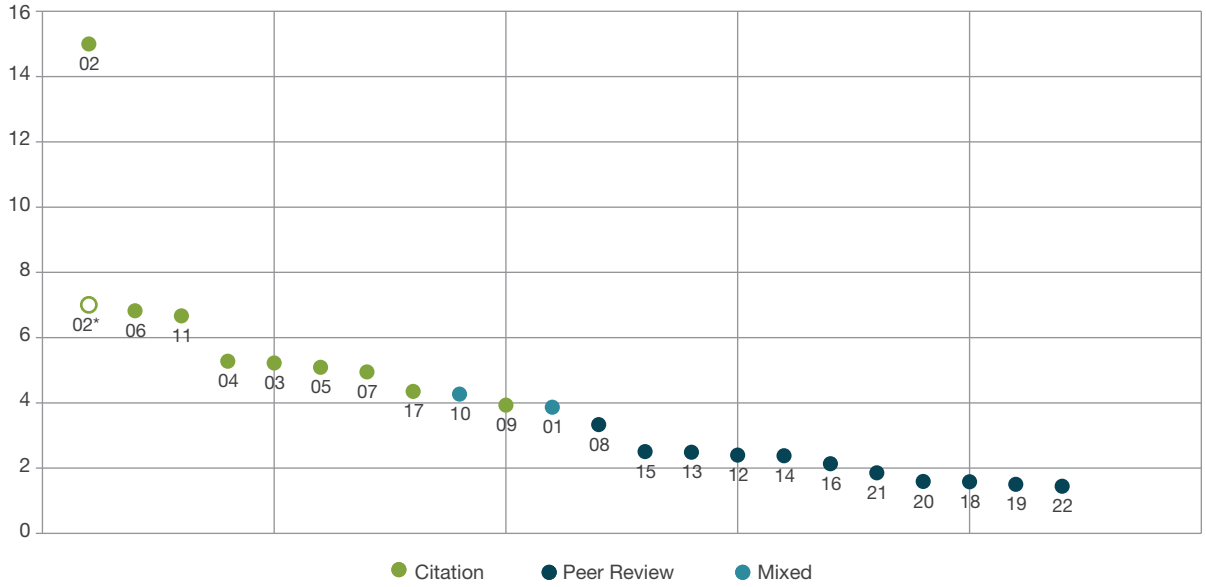


Co–authorship by ERA Authors

The average number of authors per research output submitted to ERA 2015 varied significantly between two–digit FoR codes. The 02 Physical Sciences showed the highest average number of authors on research outputs, in accordance with the common practice in some sub–disciplines of collaborating with many others on journal articles. In general, research outputs submitted to ERA citation analysis disciplines had more authors than those submitted to peer review disciplines.

There is also a relationship between research output type and the number of authors per research output. Journal articles are the most commonly co–authored research outputs. In ERA peer review disciplines, there is generally a larger proportion of books, book chapters and conference papers, which tend to have fewer authors.

AVERAGE AUTHORS/OUTPUTS BY TWO–DIGIT FOR CODE



01 Mathematical Sciences
02 Physical Sciences
03 Chemical Sciences
04 Earth Sciences
05 Environmental Sciences
06 Biological Sciences
07 Agricultural and Veterinary Sciences
08 Information and Computing Sciences
09 Engineering
10 Technology
11 Medical and Health Sciences
12 Built Environment and Design
13 Education
14 Economics
15 Commerce, Management, Tourism and Services
16 Studies in Human Society
17 Psychology and Cognitive Sciences
18 Law and Legal Studies
19 Studies in Creative Arts and Writing
20 Language, Communication and Culture
21 History and Archaeology
22 Philosophy and Religious Studies

**Presents the average authors/output for Physical Sciences (02) not including Astronomical and Space Sciences (FoR 0201). Astronomical and Space Sciences has an average authors/output of about 34 compared with the average of about seven for the other four–digit FoRs in Physical Sciences.*

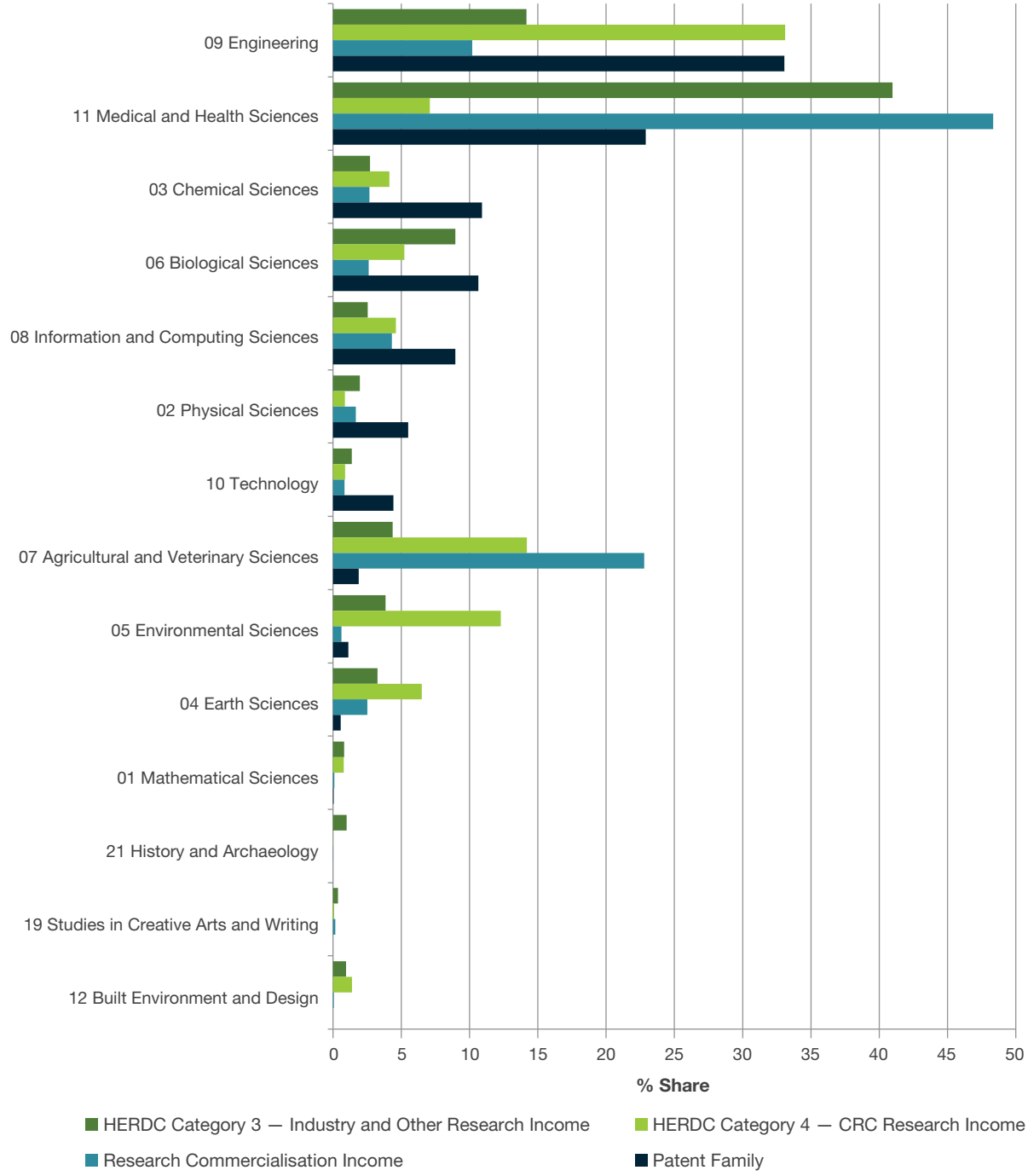
Note: Average authors per output was calculated on submitted outputs rather than deduplicated outputs.

Patents and Applied Income Sources

In Australia, 09 Engineering and 11 Medical and Health Sciences both demonstrated strength in applied research, together being responsible for more than half of the patents registered in the three–year reference period that were submitted to ERA 2015. The 11 Medical and Health Sciences attracted the greatest investment from industry and reported the most research commercialisation income, which includes income generated from patents. However, 09 Engineering attracted the greatest share of CRC income.

The first chart shows the two–digit FoR codes which have patents as an applied measure ordered by number of patents. It also shows the HERDC Category 3 and 4 income, and the Research Commercialisation for these codes. See **Section 4** for a more detailed breakdown.

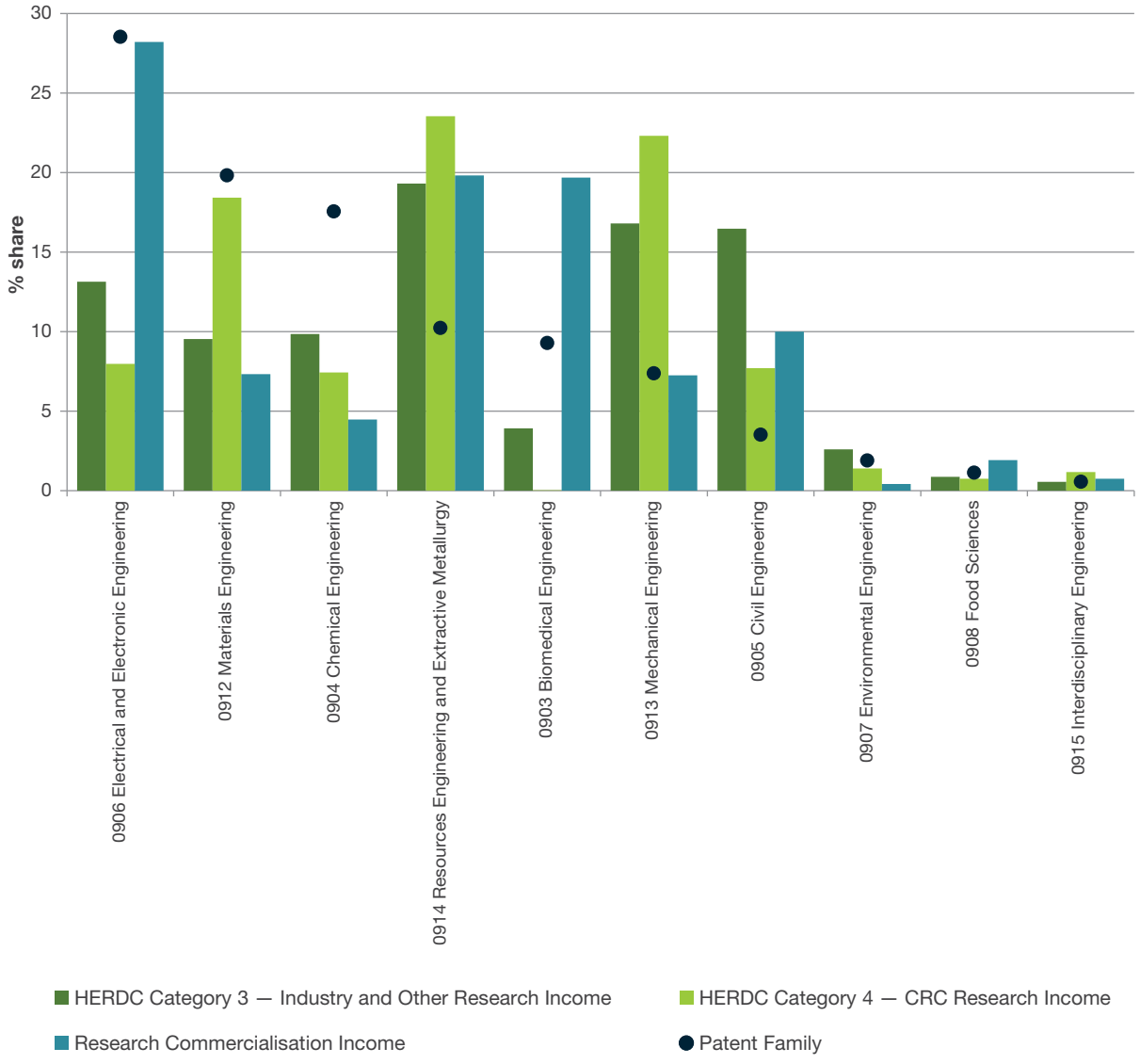
PATENTS AND APPLIED INCOME SOURCES BY FOR CODE



ENGINEERING PATENTS AND INCOME FROM APPLIED SOURCES

Electrical and Electronic Engineering (0906) was responsible for the highest share of patents (29 per cent) within engineering and also producing high levels of research commercialisation income (28 per cent) while attracting moderate levels of support from industry and other research income sources (13 per cent) and CRC research income (eight per cent).

In contrast Resources Engineering and Extractive Metallurgy (0914) account for a 10 per cent share of patents however this field also reported a high proportion of the research commercialisation income (20 per cent), investment by industry and other research income sources (19 per cent) and CRC research income (24 per cent).

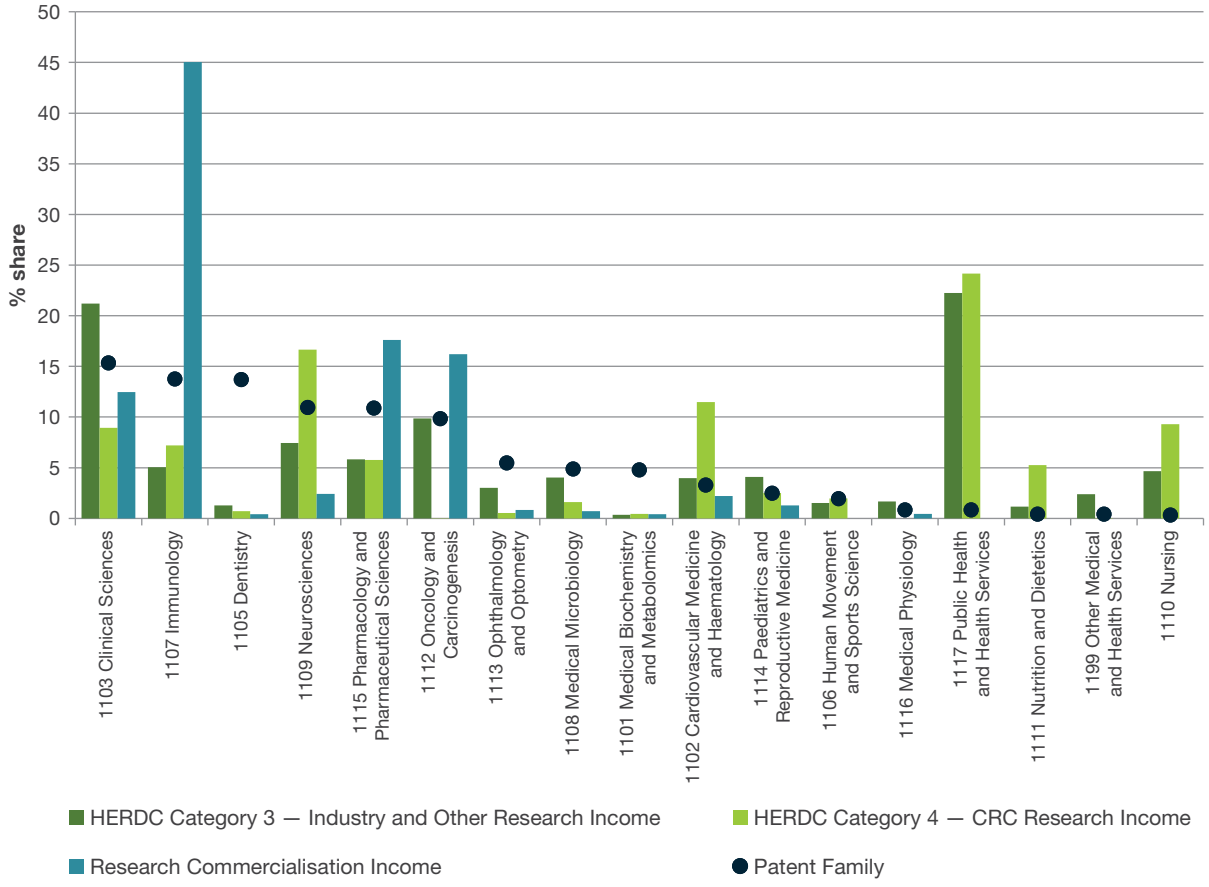


Note: Only four–digit Engineering codes with patents submitted are shown in the chart.

MEDICAL AND HEALTH SCIENCES PATENTS AND INCOME FROM APPLIED SOURCES

Clinical Sciences (1103) produced the largest share of patents (15 per cent) within the 11 Medical and Health Sciences. This discipline was responsible for a 21 per cent share of income from industry and other research income sources, a 12 per cent share of the reported research commercialisation income, and nine per cent share of CRC research income.

Immunology (1107) reported the greatest amount of research commercialisation income, comprising 45 per cent of that income type for all of the 11 Medical and Health Sciences.



Note: Four–digit Medical and Health Sciences codes that had no patents are not shown in the chart.

ADDITIONAL REPORTING ON ERA 2015

ERA is an assessment system that evaluates the quality of the research conducted at Australian universities by discipline. It identifies the research strengths of individual universities and of the sector as a whole. It also highlights disciplines where there are opportunities to develop the research capacities of Australian universities.

All eligible institutions submit comprehensive information to the ARC about their research activities, including details relating to staff, publications and other research outputs, awards, grants, income from industry and other research users, income from the commercialisation of research, and other applied measures such as patents. Submitted items can be coded to multiple fields of research, facilitating the capture of interdisciplinary activity. Committees of internationally–recognised researchers evaluate this material by discipline. Their expert judgments are informed by a range of summary indicators and quality assessments derived from the data submitted.

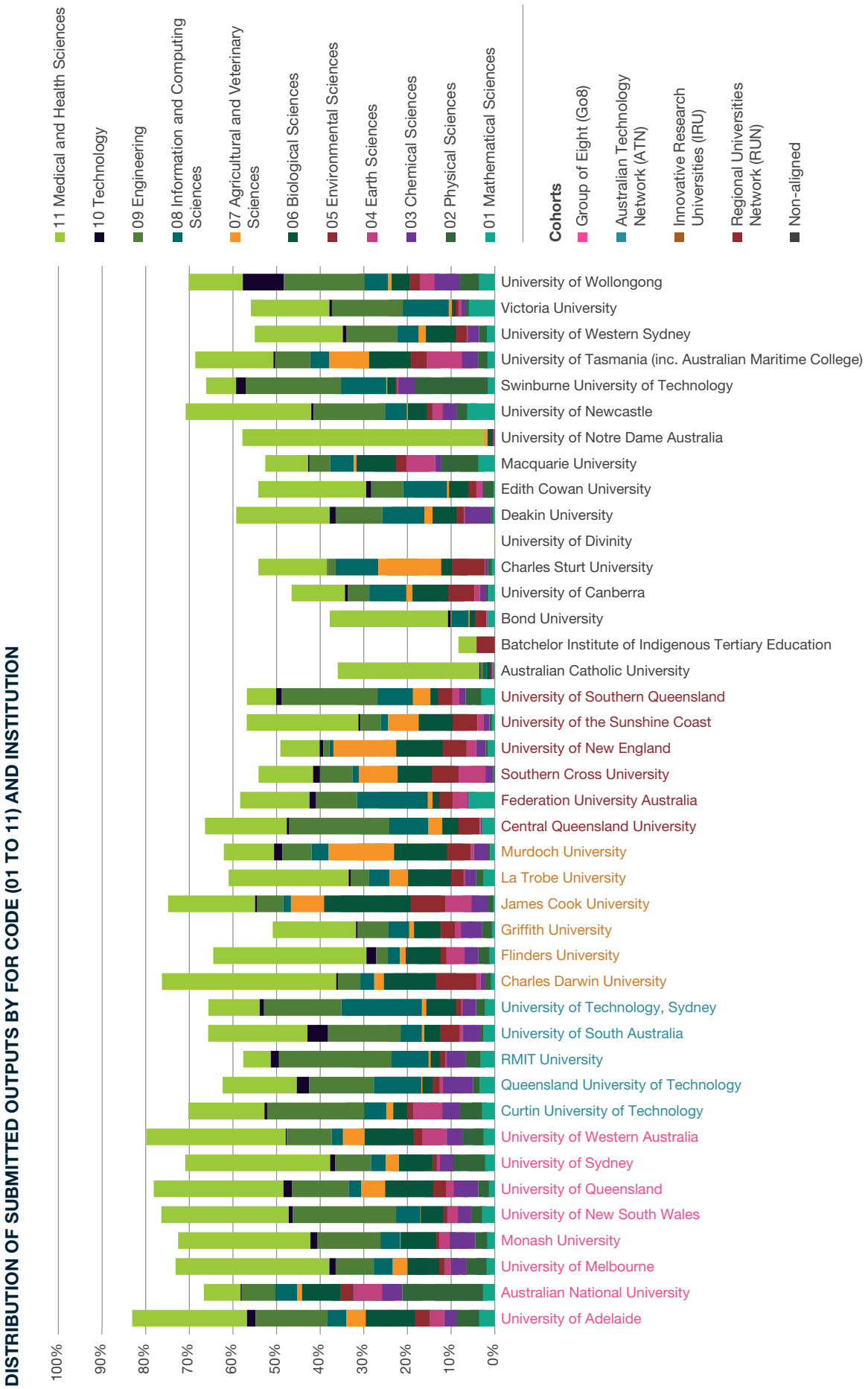
The *State of Australian University Research: Volume 1 ERA National Report* provides the first detailed look at the information submitted by Australian eligible institutions to the ERA evaluation and the ratings decisions made by Research Evaluation Committees (RECs) of internationally–recognised researchers. Subsequent volumes of this report will provide in–depth analysis of selected topics, these analysis will include such topics such as volume and activity, gender, open access and other areas of interest.

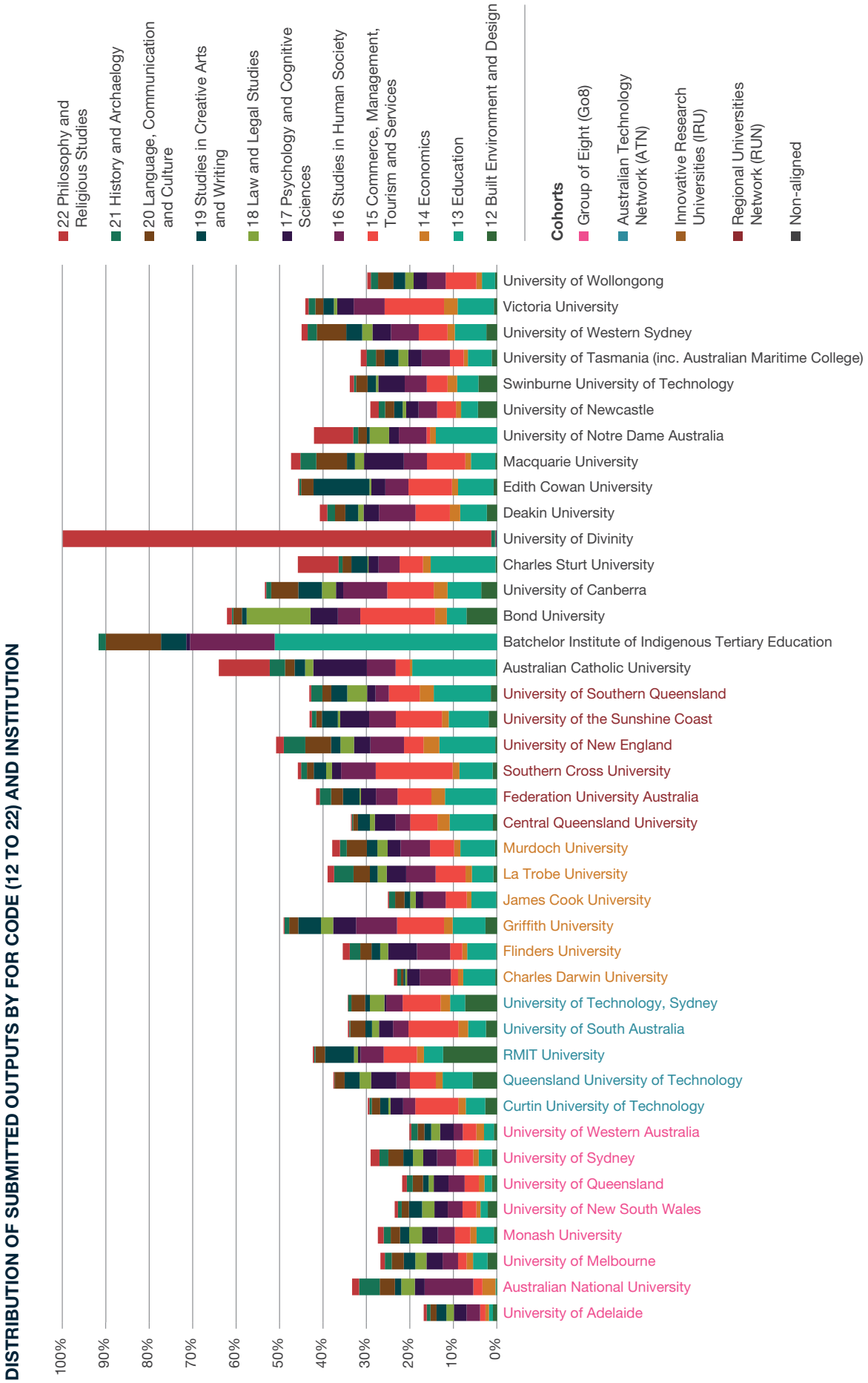
The following part of this section provides some preliminary analysis of the diversity within institutions in terms of the volume of research outputs and submitted FTE staff. In addition, there is a brief look at the gender and open access reporting that was first introduced in ERA 2015 (this information was requested for reporting information only, it was not presented to Research Evaluation Committees during evaluation).

Diversity within Institutions

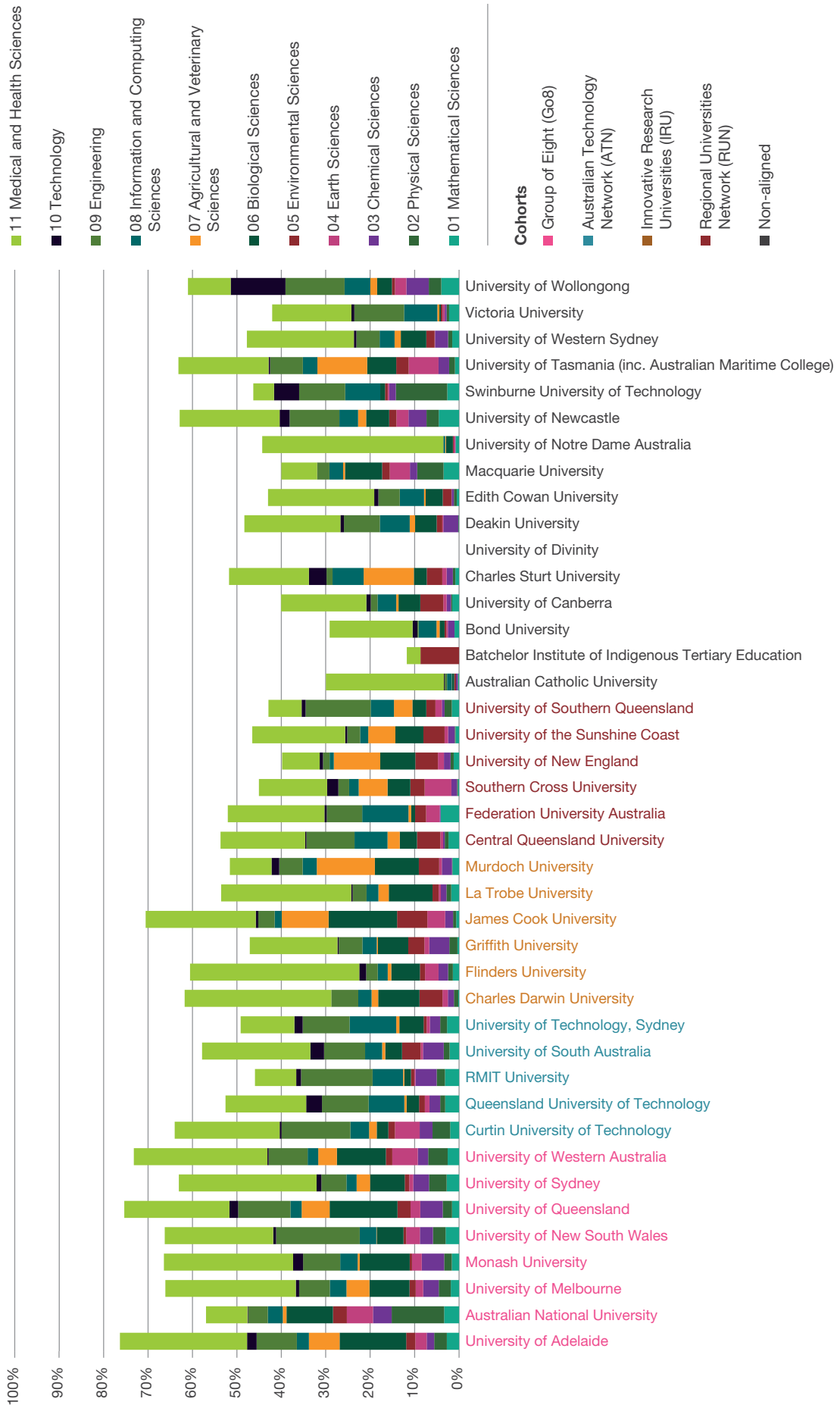
The following charts show the percentage distribution of submitted outputs and FTE staff across two–digit FoR codes by institution. The institutions are grouped by cohort (i.e. Group of Eight (Go8), Australian Technology Network (ATN), Innovative Research Universities (IRU), Regional Universities Network (RUN), and non–aligned). These charts highlight the considerable diversity in discipline focus between institutions and across cohorts—a key strength of the Australian higher education sector.

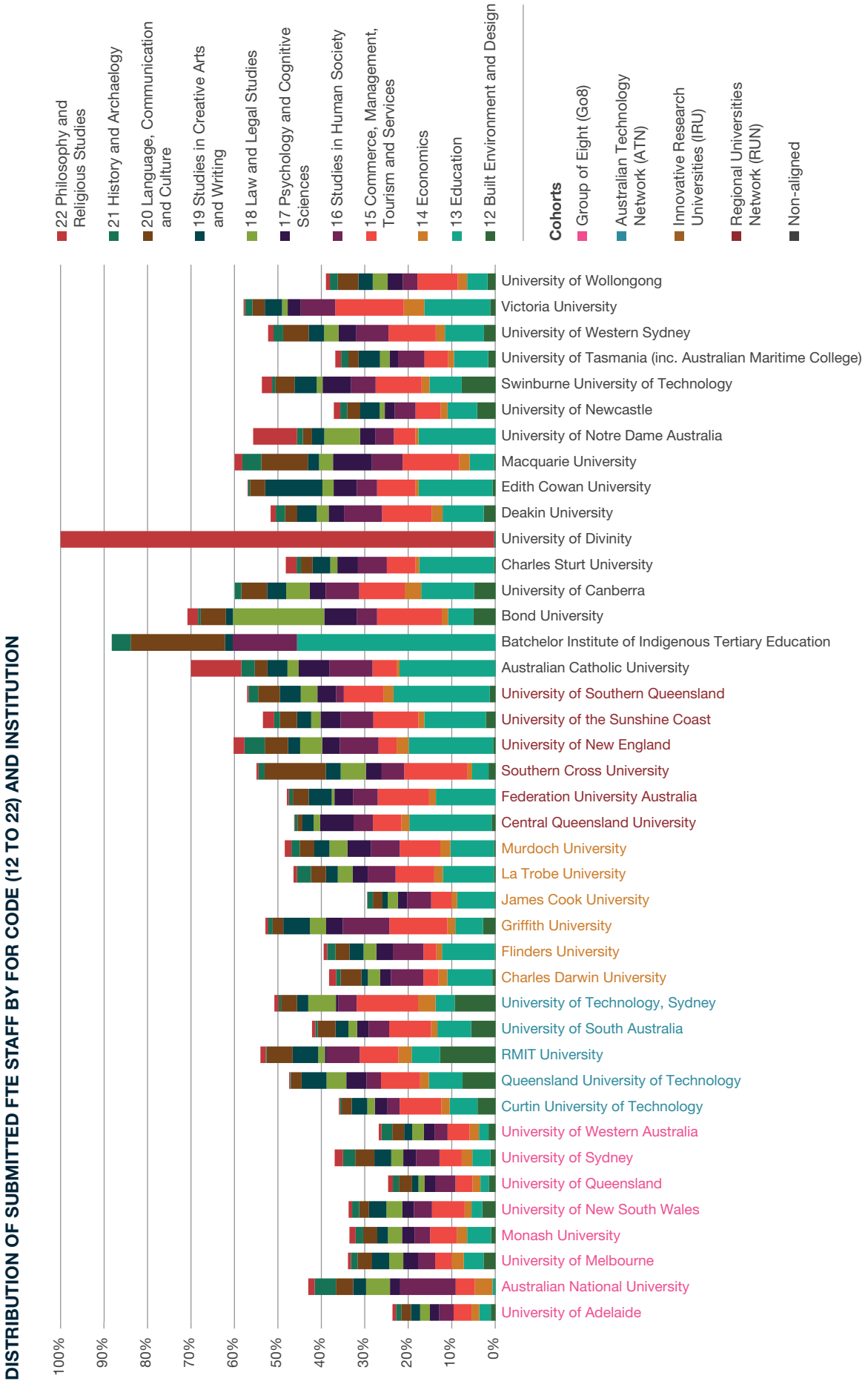
The first chart shows what percentage of outputs each institution submitted under FoR codes 01 Mathematical Sciences through to 11 Medical and Health Sciences; the second chart shows each institution's output distribution across codes 12 Built Environment and Design through to 22 Philosophy and Religious Studies. The third and fourth charts show the distribution of submitted FTE staff for each institution.


DISTRIBUTION OF SUBMITTED OUTPUTS BY FOR CODE (01 TO 11) AND INSTITUTION
11 Medical and Health Sciences
10 Technology
09 Engineering
08 Information and Computing Sciences
07 Agricultural and Veterinary Sciences
06 Biological Sciences
05 Environmental Sciences
04 Earth Sciences
03 Chemical Sciences
02 Physical Sciences
01 Mathematical Sciences
Cohorts
Group of Eight (Go8)
Australian Technology Network (ATN)
Innovative Research Universities (IRU)
Regional Universities Network (RUN)
Non-aligned
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
University of Wollongong
Victoria University
University of Western Sydney
University of Tasmania (inc. Australian Maritime College)
Swinburne University of Technology
University of Newcastle
University of Notre Dame Australia
Macquarie University
Edith Cowan University
Deakin University
University of Divinity
Charles Sturt University
University of Canberra
Bond University
Batchelor Institute of Indigenous Tertiary Education
Australian Catholic University
University of Southern Queensland
University of the Sunshine Coast
University of New England
Southern Cross University
Federation University Australia
Central Queensland University
Murdoch University
La Trobe University
James Cook University
Griffith University
Flinders University
Charles Darwin University
University of Technology, Sydney
University of South Australia
RMIT University
Queensland University of Technology
Curtin University of Technology
University of Western Australia
University of Sydney
University of Queensland
University of New South Wales
Monash University
University of Melbourne
Australian National University
University of Adelaide


DISTRIBUTION OF SUBMITTED OUTPUTS BY FOR CODE (12 TO 22) AND INSTITUTION
22 Philosophy and Religious Studies
21 History and Archaeology
20 Language, Communication and Culture
19 Studies in Creative Arts and Writing
18 Law and Legal Studies
17 Psychology and Cognitive Sciences
16 Studies in Human Society
15 Commerce, Management, Tourism and Services
14 Economics
13 Education
12 Built Environment and Design
Cohorts
Group of Eight (Go8)
Australian Technology Network (ATN)
Innovative Research Universities (IRU)
Regional Universities Network (RUN)
Non-aligned
University of Wollongong
Victoria University
University of Western Sydney
University of Tasmania (inc. Australian Maritime College)
Swinburne University of Technology
University of Newcastle
University of Notre Dame Australia
Macquarie University
Edith Cowan University
Deakin University
University of Divinity
Charles Sturt University
University of Canberra
Bond University
Batchelor Institute of Indigenous Tertiary Education
Australian Catholic University
University of Southern Queensland
University of the Sunshine Coast
University of New England
Southern Cross University
Federation University Australia
Central Queensland University
Murdoch University
La Trobe University
James Cook University
Griffith University
Flinders University
Charles Darwin University
University of Technology, Sydney
University of South Australia
RMIT University
Queensland University of Technology
Curtin University of Technology
University of Western Australia
University of Sydney
University of Queensland
University of New South Wales
Monash University
University of Melbourne
Australian National University
University of Adelaide
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

DISTRIBUTION OF SUBMITTED FTE STAFF BY FOR CODE (01 TO 11) AND INSTITUTION




DISTRIBUTION OF SUBMITTED FTE STAFF BY FOR CODE (12 TO 22) AND INSTITUTION
22 Philosophy and Religious Studies
21 History and Archaeology
20 Language, Communication and Culture
19 Studies in Creative Arts and Writing
18 Law and Legal Studies
17 Psychology and Cognitive Sciences
16 Studies in Human Society
15 Commerce, Management, Tourism and Services
14 Economics
13 Education
12 Built Environment and Design
Cohorts
Group of Eight (Go8)
Australian Technology Network (ATN)
Innovative Research Universities (IRU)
Regional Universities Network (RUN)
Non-aligned
University of Wollongong
Victoria University
University of Western Sydney
University of Tasmania (inc. Australian Maritime College)
Swinburne University of Technology
University of Newcastle
University of Notre Dame Australia
Macquarie University
Edith Cowan University
Deakin University
University of Divinity
Charles Sturt University
University of Canberra
Bond University
Batchelor Institute of Indigenous Tertiary Education
Australian Catholic University
University of Southern Queensland
University of the Sunshine Coast
University of New England
Southern Cross University
Federation University Australia
Central Queensland University
Murdoch University
La Trobe University
James Cook University
Griffith University
Flinders University
Charles Darwin University
University of Technology, Sydney
University of South Australia
RMIT University
Queensland University of Technology
Curtin University of Technology
University of Western Australia
University of Sydney
University of Queensland
University of New South Wales
Monash University
University of Melbourne
Australian National University
University of Adelaide
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Gender

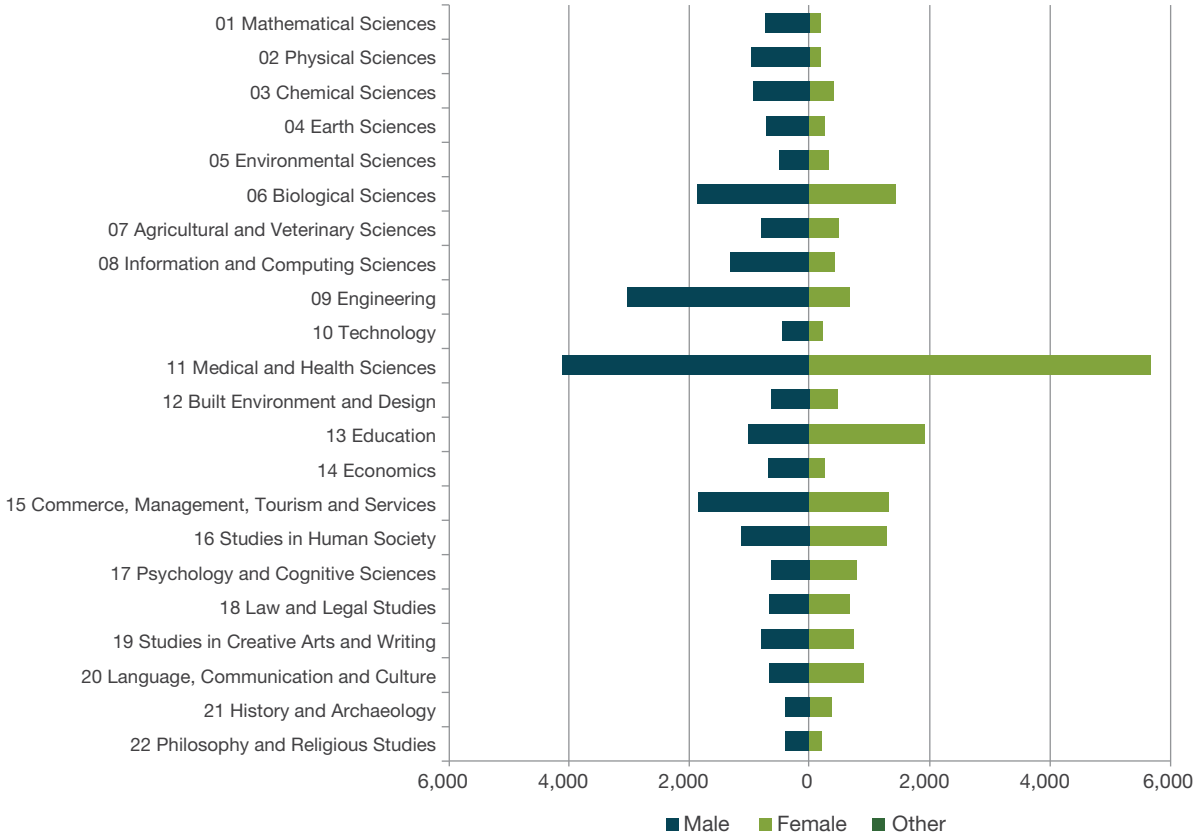
In ERA 2015, institutions were required to submit gender data for each eligible researcher. The gender of the eligible researcher was provided as either 'Male', 'Female', or 'Other'.

Gender data were collected for aggregate reporting and internal ARC analysis only, this information was not provided to peer reviewers or Research Evaluation Committees (RECs) and was not used as part of the ERA 2015 evaluation process.

The following two charts show the number of FTE staff by gender by two–digit Fields of Research, and FTE staff by gender by employment level.

NUMBER OF FTE STAFF BY GENDER BY TWO–DIGIT FOR CODE

The chart below shows the number of FTE staff working in eligible institutions by two–digit Fields of Research.



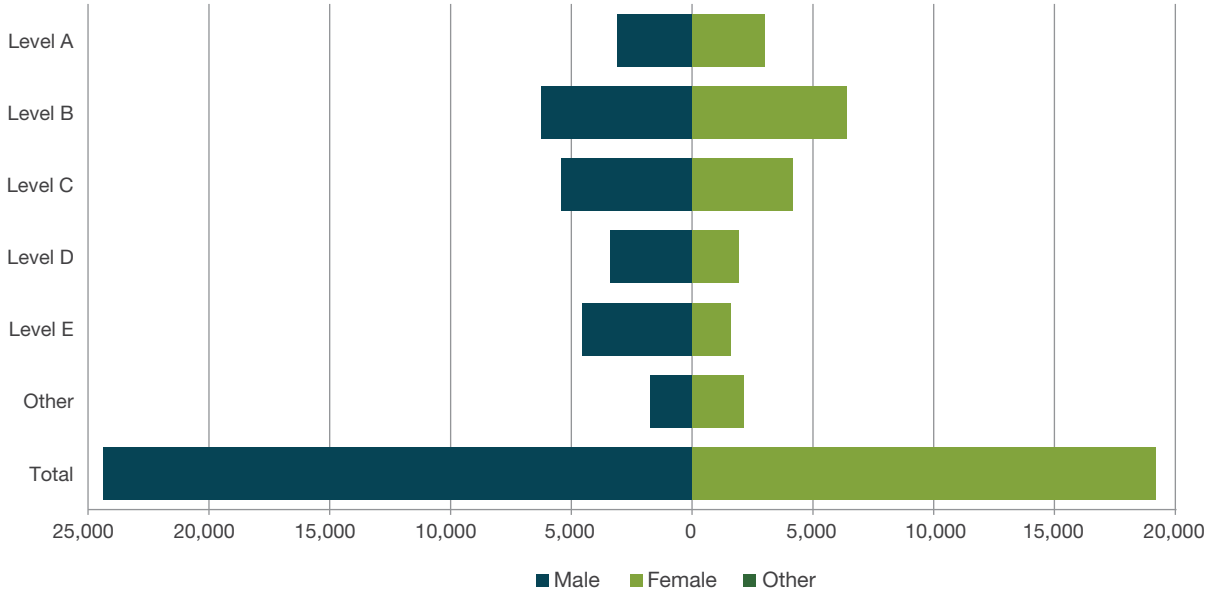
Note: Only 15.8 FTE staff were reported as 'other' by institutions, these do not appear on the chart due to the scale.

NUMBER OF FTE STAFF BY GENDER BY EMPLOYMENT LEVEL

The following chart shows the number of FTE staff by gender by academic level and includes the levels collected for ERA purposes, academic levels A–E and 'other' employment level:

- Level A — Tutor/Associate Lecturer
- Level B — Lecturer
- Level C — Senior Lecturer
- Level D — Reader/Associate Professor
- Level E — Professor
- 'Other', as an employment category, represents staff members who are employed at a eligible institution, which includes: teaching only, administrative staff and contractors to the university who are not classified as academic level A–E.

The employment level with the highest number of both males and females for FTE staff was Level B.



Note: Only 15.8 FTE staff were reported as 'other' by institutions, these do not appear on the chart due to the scale.

Open Access

As part of the ERA 2015 submission process, institutions were required to indicate whether a research output submitted to ERA had been made available in an open access repository. Eligible institutions were required to answer yes or no to this new and mandatory data requirement.

This open access data requirement will give the ARC some insight into the open access publishing trends in eligible institutions. However, open access data did not form part of the evaluation process and was not made available to peer reviewers or Research Evaluation Committees (RECs).

Since the supply of information on open access by institutions was a data requirement for ERA 2015 subsequent to the collection of the research outputs by institutions, in many cases the institutions had to retrospectively answer this question. Institutions were asked to provide as accurate information as was possible. Therefore, the information should be treated with caution and will only form a baseline for more accurate reporting in any future rounds.

Please note: the ARC Open Access Policy took effect from 1 January 2013. According to the policy, any publications arising from an ARC supported research project must be deposited into an open access institutional repository within a 12 month period from the date of publication. The ARC Open Access Policy incorporated all ARC Funding Rules and Agreements released after 1 January 2013. The policy does not apply retrospectively to pre–existing Funding Rules and Agreements.

Where depositing research outputs in an 'open access' repository is a condition of any funding which enabled the research to be undertaken, full public access to the research output(s) should exist, irrespective of the ERA submission process, as a result of the eligible researcher complying with that funding condition.

PERCENTAGE OF OPEN ACCESS RESEARCH OUTPUTS IN ERA 2015 SUBMISSIONS