7. Annex tables

Table 7.1: R&I activities carried out by different occupations

Percentages refer to the proportion of respondents in each occupation who said that they carry out this activity in their job role. The table is presented in order of the proportion of people in each occupation reporting that they spend the majority of their time on Frascati-defined R&D activities, from the occupations with the highest proportion to the lowest.

	Basic research	Applied research	Experimental development	Market research	Acquisition and adaptation of technology new to your organisation	R&D or innovation management	% undertaking mainly Frascati R&D	% undertaking mainly non-Frascati R&I
Social and humanities scientist	73%	88%	32%	11%	11%	26%	**89%**	**10%**
Statistician	59%	95%	64%	21%	29%	32%	**88%**	**10%**
Biological scientist or biochemist	77%	83%	56%	15%	19%	30%	**86%**	**13%**
Higher education teaching or research professional	74%	85%	45%	12%	15%	31%	**86%**	**12%**
Physical scientist	79%	81%	57%	19%	22%	35%	**85%**	**13%**
Chemical scientist	61%	94%	72%	28%	23%	42%	**84%**	**16%**
Other researcher	61%	88%	58%	27%	26%	42%	**84%**	**14%**

	Basic research	Applied research	Experimental development	Market research	Acquisition and adaptation of technology new to your organisation	R&D or innovation management	% undertaking mainly Frascati R&D	% undertaking mainly non-Frascati R&I
Other natural and social science professional	67%	84%	55%	26%	19%	33%	**83%**	**16%**
Health professional	44%	90%	55%	21%	25%	37%	**81%**	**18%**
Civil engineer	50%	90%	72%	33%	31%	57%	**80%**	**20%**
Total	**57%**	**80%**	**59%**	**34%**	**29%**	**46%**	**72%**	**25%**
Programmer or software development professional	51%	85%	79%	42%	47%	52%	**72%**	**24%**
Mechanical engineer	47%	86%	81%	50%	40%	59%	**70%**	**26%**
Production and process engineer	50%	88%	90%	54%	42%	64%	**70%**	**25%**
Design and development engineer	44%	86%	89%	58%	43%	66%	**69%**	**27%**
Environment professional	52%	86%	67%	46%	37%	54%	**69%**	**29%**
Artistic, literary or media professional	61%	83%	75%	45%	39%	49%	**69%**	**28%**
Other type of engineering professional	49%	86%	81%	39%	34%	57%	**67%**	**25%**

	Basic research	Applied research	Experimental development	Market research	Acquisition and adaptation of technology new to your organisation	R&D or innovation management	% undertaking mainly Frascati R&D	% undertaking mainly non-Frascati R&I
Electrical engineer	43%	86%	87%	59%	55%	68%	**66%**	**31%**
Electronics engineer	44%	85%	87%	52%	45%	64%	**66%**	**31%**
Research and development manager	44%	88%	81%	54%	48%	75%	**57%**	**41%**
Information Technology (IT) director	54%	80%	79%	62%	62%	65%	**56%**	**38%**
Business and related research professional	46%	77%	69%	72%	44%	73%	**51%**	**47%**
CEO or senior manager	37%	77%	78%	70%	47%	76%	**50%**	**47%**
Management consultant or business analyst	38%	75%	71%	70%	54%	72%	**42%**	**54%**

Base: all participants

Table 7.2a: Occupation by industry sector (weighted)

Percentages refer to the proportion of respondents in each occupation who reported that they worked in a given industry. Respondents could select multiple options, so rows sum to more than 100%. Figures are for private-sector respondents only, and only for industries selected by more than 30 respondents.

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Miscellaneous business activities technical testing and analysis	Pharmaceuticals	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages tobacco products	Consumer electronics and communication equipment	Telecommunications	Precision instruments and optical products photographic equipment	Motor vehicles and parts	Electricity, gas and water supply, Waste management	Consultancy	Environment / sustainability	Agriculture, hunting and forestry, Fishing	Shipbuilding	Other manufactured goods	Education
Total	**36%**	**30%**	**21%**	**20%**	**12%**	**11%**	**11%**	**10%**	**10%**	**9%**	**9%**	**8%**	**7%**	**7%**	**7%**	**6%**	**5%**	**3%**	**2%**	**2%**	**2%**	**2%**	**2%**
Programmer or software development professional	83%	35%	61%	15%	7%	10%	4%	10%	7%	5%	10%	3%	13%	12%	5%	5%	1%	2%	1%	*	1%	1%	*
Chemical scientist	14%	32%	6%	24%	14%	10%	35%	4%	7%	65%	5%	14%	5%	6%	6%	8%	10%	2%	3%	4%	1%	1%	2%
Biological scientist or biochemist	15%	38%	7%	41%	3%	12%	47%	2%	2%	15%	2%	17%	2%	3%	9%	0%	3%	3%	4%	11%	0%	0%	2%
Physical scientist	31%	58%	18%	23%	22%	12%	10%	24%	9%	14%	22%	8%	17%	21%	19%	11%	7%	1%	2%	2%	3%	3%	1%
Social and humanities scientist	30%	59%	18%	25%	2%	16%	0%	7%	9%	2%	6%	8%	7%	6%	0%	0%	5%	8%	5%	0%	1%	0%	11%
Other natural and social science professional	17%	51%	21%	31%	7%	13%	14%	1%	9%	7%	3%	29%	10%	7%	11%	0%	10%	7%	13%	8%	1%	0%	2%

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Miscellaneous business activities technical testing and analysis	Pharmaceuticals	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages tobacco products	Consumer electronics and communication equipment	Telecommunications	Precision instruments and optical products photographic equipment	Motor vehicles and parts	Electricity, gas and water supply, Waste management	Consultancy	Environment / sustainability	Agriculture, hunting and forestry, Fishing	Shipbuilding	Other manufactured goods	Education
Civil engineer	21%	26%	21%	0%	24%	9%	3%	0%	65%	3%	0%	3%	0%	3%	6%	0%	9%	3%	3%	3%	3%	3%	1%
Mechanical engineer	22%	31%	10%	8%	39%	13%	5%	24%	14%	12%	17%	8%	10%	6%	14%	30%	8%	5%	3%	2%	2%	6%	*
Electrical engineer	39%	31%	22%	8%	36%	20%	8%	22%	13%	13%	63%	12%	21%	20%	12%	25%	12%	2%	0%	0%	4%	2%	0%
Electronics engineer	43%	33%	25%	15%	18%	12%	6%	18%	6%	6%	37%	6%	31%	27%	13%	14%	10%	2%	2%	0%	1%	2%	1%
Design and development engineer	33%	38%	21%	16%	26%	11%	7%	18%	14%	8%	19%	8%	16%	13%	11%	15%	8%	2%	1%	1%	3%	3%	*
Production and process engineer	30%	35%	17%	20%	37%	13%	17%	20%	13%	26%	19%	12%	14%	7%	15%	21%	13%	2%	3%	1%	2%	3%	0%
Other type of engineering professional	24%	34%	22%	13%	25%	13%	1%	28%	16%	15%	16%	1%	13%	13%	20%	11%	9%	6%	2%	1%	9%	0%	1%
Environment professional	19%	45%	15%	8%	20%	16%	4%	8%	23%	16%	9%	18%	5%	1%	7%	7%	18%	12%	20%	4%	1%	1%	4%
Higher education teaching or research professional	41%	55%	27%	29%	14%	14%	12%	14%	9%	4%	8%	7%	7%	8%	9%	7%	2%	2%	4%	1%	2%	1%	9%
Statistician	59%	47%	57%	23%	14%	13%	11%	22%	0%	8%	10%	0%	16%	16%	10%	7%	3%	0%	0%	0%	3%	0%	4%

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Miscellaneous business activities technical testing and analysis	Pharmaceuticals	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages tobacco products	Consumer electronics and communication equipment	Telecommunications	Precision instruments and optical products photographic equipment	Motor vehicles and parts	Electricity, gas and water supply, Waste management	Consultancy	Environment / sustainability	Agriculture, hunting and forestry, Fishing	Shipbuilding	Other manufactured goods	Education
Research and development manager	36%	45%	19%	20%	21%	13%	14%	15%	9%	14%	14%	9%	9%	9%	13%	10%	7%	2%	3%	2%	3%	2%	1%
Management consultant or business analyst	45%	41%	32%	23%	11%	20%	13%	10%	9%	7%	7%	11%	8%	7%	6%	6%	6%	9%	2%	*	3%	*	3%
CEO or senior manager	42%	29%	23%	22%	11%	11%	11%	11%	8%	7%	10%	6%	8%	9%	7%	6%	5%	2%	3%	2%	2%	2%	1%
Business and related research professional	40%	44%	26%	24%	15%	22%	15%	12%	12%	12%	14%	13%	10%	8%	10%	5%	9%	6%	3%	0%	4%	1%	1%
Information Technology (IT) director	77%	38%	72%	15%	6%	17%	4%	10%	8%	2%	10%	5%	15%	20%	5%	5%	2%	3%	1%	1%	1%	0%	0%
Artistic, literary or media professional	47%	32%	29%	12%	4%	24%	2%	7%	8%	3%	5%	3%	12%	8%	5%	5%	0%	2%	5%	0%	3%	3%	6%
Health professional	20%	31%	7%	89%	0%	9%	40%	0%	0%	0%	3%	6%	3%	0%	6%	0%	0%	0%	1%	0%	0%	0%	4%
Other researcher	44%	58%	24%	31%	5%	21%	10%	9%	11%	6%	10%	2%	8%	6%	8%	4%	2%	4%	4%	1%	1%	2%	2%

*Base: 1,862 private-sector respondents. A * indicates a percentage between 0% and 0.5%.*

Table 7.2b: Occupation by industry sector (unweighted)

Percentages refer to the proportion of respondents in each occupation who reported that they worked in a given industry. Respondents could select multiple options, so rows sum to more than 100%. Figures are for private-sector respondents only, and only for industries selected by more than 30 respondents.

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Pharmaceuticals	Miscellaneous business activities; technical testing and	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages; tobacco products	Consumer electronics and communication equipment	Precision instruments and optical products; photographic	Telecommunications	Motor vehicles and parts	Electricity, gas and water supply; waste management	Education	Consultancy	Environment / sustainability	Agriculture, hunting and forestry; fishing	Shipbuilding	Other manufactured goods
Total	**35%**	**31%**	**21%**	**20%**	**11%**	**11%**	**11%**	**10%**	**9%**	**9%**	**9%**	**7%**	**7%**	**7%**	**7%**	**6%**	**5%**	**3%**	**3%**	**2%**	**2%**	**2%**	**2%**
Programmer or software development professional	82%	36%	61%	16%	8%	4%	11%	10%	7%	5%	10%	4%	13%	5%	12%	5%	2%	1%	2%	1%	*	2%	1%
Chemical scientist	14%	30%	6%	25%	13%	37%	10%	5%	6%	63%	4%	14%	4%	6%	5%	8%	10%	2%	2%	3%	3%	1%	1%
Biological scientist or biochemist	15%	36%	8%	43%	3%	47%	11%	3%	1%	14%	2%	17%	2%	9%	3%	0%	3%	3%	3%	3%	11%	0%	0%
Physical scientist	29%	58%	16%	22%	21%	10%	11%	24%	10%	13%	21%	7%	16%	21%	20%	11%	7%	4%	1%	2%	1%	4%	2%
Social and humanities scientist	30%	61%	17%	20%	4%	0%	14%	7%	9%	1%	6%	6%	9%	0%	6%	0%	4%	16%	7%	4%	0%	3%	0%
Other natural and social science professional	18%	54%	15%	23%	5%	10%	13%	3%	10%	5%	3%	23%	8%	10%	5%	0%	13%	5%	5%	13%	8%	3%	0%
Civil engineer	20%	29%	20%	0%	23%	3%	9%	0%	63%	3%	0%	3%	0%	6%	3%	0%	9%	3%	3%	3%	3%	3%	3%
Mechanical engineer	23%	32%	10%	9%	39%	5%	13%	24%	14%	11%	17%	8%	11%	14%	7%	29%	8%	1%	5%	2%	2%	2%	5%

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Pharmaceuticals	Miscellaneous business activities; technical testing and	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages; tobacco products	Consumer electronics and communication equipment	Precision instruments and optical products; photographic	Telecommunications	Motor vehicles and parts	Electricity, gas and water supply; waste management	Education	Consultancy	Environment / sustainability	Agriculture, hunting and forestry; fishing	Shipbuilding	Other manufactured goods
Electrical engineer	39%	33%	22%	9%	38%	8%	19%	20%	13%	13%	64%	11%	22%	13%	20%	23%	11%	0%	2%	0%	0%	5%	2%
Electronics engineer	41%	34%	25%	17%	19%	5%	11%	18%	6%	6%	37%	6%	32%	13%	27%	13%	9%	3%	1%	1%	0%	1%	1%
Design and development engineer	32%	39%	21%	17%	28%	7%	11%	18%	14%	8%	20%	8%	16%	11%	13%	15%	7%	*	2%	1%	1%	3%	3%
Production and process engineer	29%	36%	17%	20%	37%	17%	12%	19%	12%	25%	19%	11%	13%	17%	8%	20%	12%	0%	2%	3%	1%	2%	3%
Other type of engineering professional	25%	37%	22%	14%	24%	1%	11%	28%	15%	15%	14%	1%	11%	19%	11%	10%	8%	3%	6%	3%	1%	8%	0%
Environment professional	19%	48%	14%	8%	20%	3%	14%	10%	22%	14%	9%	16%	4%	8%	1%	7%	16%	8%	12%	20%	4%	1%	1%
Higher education teaching or research professional	35%	51%	23%	27%	13%	12%	11%	15%	9%	4%	8%	6%	6%	12%	7%	6%	3%	16%	3%	3%	2%	3%	1%
Statistician	59%	50%	53%	21%	15%	12%	12%	24%	0%	9%	9%	0%	15%	9%	15%	6%	3%	6%	0%	0%	0%	3%	0%
Research and development manager	35%	46%	19%	20%	21%	13%	13%	15%	9%	14%	14%	9%	9%	14%	9%	10%	7%	2%	2%	3%	2%	3%	1%
Management consultant or business analyst	44%	42%	32%	24%	11%	13%	21%	11%	9%	7%	8%	11%	8%	6%	8%	7%	6%	4%	9%	2%	*	3%	*
CEO or senior manager	41%	30%	23%	23%	12%	11%	11%	11%	8%	7%	10%	6%	9%	7%	9%	6%	5%	2%	2%	3%	2%	2%	2%
Business and related research professional	38%	44%	25%	26%	15%	14%	23%	12%	12%	12%	13%	12%	9%	11%	9%	6%	9%	2%	7%	3%	0%	4%	1%

	Software development	Research and development services	Computer programming and information service activities	Healthcare	Machinery and equipment	Pharmaceuticals	Miscellaneous business activities; technical testing and	Aerospace	Construction	Chemicals and chemical products	Electrical equipment	Food products and beverages; tobacco products	Consumer electronics and communication equipment	Precision instruments and optical products; photographic	Telecommunications	Motor vehicles and parts	Electricity, gas and water supply; waste management	Education	Consultancy	Environment / sustainability	Agriculture, hunting and forestry; fishing	Shipbuilding	Other manufactured goods
Information Technology (IT) director	78%	40%	72%	15%	7%	4%	18%	9%	9%	2%	11%	5%	16%	5%	20%	5%	2%	0%	4%	1%	1%	2%	0%
Artistic, literary or media professional	44%	35%	29%	10%	4%	1%	24%	7%	7%	3%	4%	3%	12%	4%	7%	4%	0%	10%	3%	6%	0%	3%	3%
Health professional	17%	30%	6%	87%	0%	40%	6%	0%	0%	0%	2%	4%	2%	4%	0%	0%	0%	4%	0%	2%	0%	0%	0%
Other researcher	42%	61%	23%	28%	8%	9%	19%	9%	11%	5%	9%	2%	9%	6%	5%	3%	3%	5%	3%	5%	2%	2%	2%

*Base: 1,862 private-sector respondents. A * indicates a percentage between 0% and 0.5%.*

Table 7.3a: Occupation by organisation size (weighted)

Percentages refer to the proportion of respondents in each occupation who reported that they worked in an organisation of a given size.

Number of people working at entire organisation	1 to 9 (micro)	10 to 49 (small)	50 to 249 (medium)	250 to 499	500 or more
Total	**27%**	**28%**	**16%**	**4%**	**24%**
Programmer or software development professional	38%	20%	8%	3%	29%
Chemical scientist	27%	26%	12%	1%	33%
Biological scientist or biochemist	25%	21%	12%	8%	33%
Physical scientist	29%	21%	10%	2%	34%
Social and humanities scientist	12%	21%	20%	6%	27%
Other natural and social science professional	19%	19%	9%	12%	39%
Civil engineer	13%	19%	13%	0%	56%
Mechanical engineer	32%	21%	22%	1%	23%
Electrical engineer	46%	19%	14%	0%	21%
Electronics engineer	46%	25%	8%	2%	17%
Design and development engineer	45%	20%	16%	2%	16%

Number of people working at entire organisation	1 to 9 (micro)	10 to 49 (small)	50 to 249 (medium)	250 to 499	500 or more
Production and process engineer	31%	14%	26%	0%	27%
Other type of engineering professional	39%	26%	10%	3%	20%
Environment professional	39%	19%	9%	4%	21%
Higher education teaching or research professional	21%	10%	7%	2%	54%
Statistician	13%	13%	23%	3%	48%
Research and development manager	24%	27%	18%	5%	24%
Management consultant or business analyst	35%	26%	17%	2%	16%
CEO or senior manager	37%	37%	13%	1%	11%
Business and related research professional	24%	21%	16%	2%	31%
Information Technology (IT) director	38%	32%	11%	0%	15%
Artistic, literary or media professional	45%	19%	5%	1%	29%
Health professional	46%	2%	6%	2%	42%
Other researcher	16%	18%	19%	5%	38%

Base: 1,195 participants who worked in the private or third sector and were employees of an organisation or institution

Table 7.3b: Occupation by organisation size (unweighted)

Percentages refer to the proportion of respondents in each occupation who reported that they worked in an organisation of a given size.

Number of people working at entire organisation	1 to 9 (micro)	10 to 49 (small)	50 to 249 (medium)	250 to 499	500 or more
Total	**22%**	**24%**	**15%**	**7%**	**30%**
Programmer or software development professional	33%	18%	10%	5%	33%
Chemical scientist	22%	20%	12%	4%	41%
Biological scientist or biochemist	16%	16%	12%	14%	40%
Physical scientist	19%	15%	9%	9%	44%
Social and humanities scientist	12%	17%	19%	9%	32%
Other natural and social science professional	10%	12%	14%	26%	36%
Civil engineer	11%	17%	11%	0%	61%
Mechanical engineer	28%	18%	20%	1%	30%
Electrical engineer	43%	17%	13%	0%	26%
Electronics engineer	41%	24%	7%	2%	24%
Design and development engineer	42%	19%	16%	2%	20%

Number of people working at entire organisation	1 to 9 (micro)	10 to 49 (small)	50 to 249 (medium)	250 to 499	500 or more
Production and process engineer	29%	15%	24%	0%	29%
Other type of engineering professional	32%	21%	11%	3%	32%
Environment professional	27%	14%	10%	14%	29%
Higher education teaching or research professional	11%	7%	8%	4%	65%
Statistician	8%	8%	25%	13%	46%
Research and development manager	20%	25%	16%	7%	29%
Management consultant or business analyst	33%	26%	17%	3%	18%
CEO or senior manager	34%	36%	12%	2%	15%
Business and related research professional	25%	19%	16%	3%	33%
Information Technology (IT) director	36%	31%	14%	0%	17%
Artistic, literary or media professional	38%	16%	6%	3%	38%
Health professional	24%	3%	3%	3%	61%
Other researcher	10%	17%	21%	6%	42%

Base: 1,195 participants who worked in the private or third sector and were employees of an organisation or institution

Table 7.4: R&I outputs produced by different occupations

Percentages refer to the proportion of respondents in each occupation who said that their work had fed into one of these outputs during the last 12 months. Respondents could select multiple options.

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking IP	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs (please specify)
Total	**75%**	**54%**	**51%**	**48%**	**35%**	**32%**	**32%**	**31%**	**30%**	**24%**	**23%**	**21%**	**20%**	**20%**	**15%**	**12%**	**8%**	**1%**
Programmer or software development professional	64%	30%	35%	46%	23%	38%	23%	82%	45%	31%	11%	30%	30%	24%	19%	10%	8%	1%
Chemical scientist	85%	62%	49%	42%	29%	46%	34%	17%	28%	24%	16%	21%	9%	19%	16%	14%	3%	1%
Biological scientist or biochemist	91%	78%	65%	68%	35%	28%	45%	14%	15%	16%	17%	11%	9%	11%	8%	17%	3%	1%
Physical scientist	90%	79%	63%	56%	36%	29%	43%	30%	24%	19%	19%	14%	9%	16%	11%	11%	4%	1%
Social and humanities scientist	86%	88%	77%	67%	69%	6%	55%	9%	7%	5%	50%	6%	16%	4%	8%	5%	15%	1%

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking IP	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs (please specify)
Other natural and social science professional	84%	78%	69%	63%	54%	16%	49%	18%	18%	23%	39%	13%	18%	10%	14%	11%	5%	3%
Civil engineer	73%	56%	45%	47%	39%	28%	29%	20%	27%	23%	23%	24%	18%	22%	17%	-	-	2%
Mechanical engineer	66%	31%	35%	26%	23%	45%	12%	31%	54%	35%	15%	34%	19%	37%	19%	9%	5%	3%
Electrical engineer	71%	32%	34%	29%	24%	54%	19%	43%	62%	40%	15%	40%	24%	37%	24%	14%	6%	1%
Electronics engineer	68%	28%	30%	32%	19%	47%	15%	50%	54%	41%	11%	32%	18%	38%	16%	13%	2%	2%
Design and development engineer	70%	21%	28%	30%	21%	57%	14%	41%	62%	38%	10%	38%	23%	44%	24%	16%	12%	3%
Production and process engineer	70%	24%	38%	25%	22%	47%	19%	30%	57%	40%	11%	35%	25%	39%	40%	14%	7%	3%
Other type of engineering professional	72%	40%	43%	35%	28%	39%	20%	35%	47%	31%	19%	29%	17%	27%	13%	11%	7%	1%

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking IP	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs (please specify)
Environment professional	76%	52%	56%	58%	46%	35%	38%	26%	37%	32%	41%	29%	31%	27%	22%	5%	7%	2%
Higher education teaching or research professional	87%	91%	79%	59%	50%	17%	51%	22%	15%	12%	29%	9%	11%	7%	7%	9%	9%	1%
Statistician	81%	74%	57%	74%	46%	19%	45%	47%	24%	19%	37%	15%	23%	14%	14%	15%	5%	3%
Research and development manager	75%	41%	46%	43%	36%	52%	27%	41%	51%	43%	24%	30%	30%	41%	28%	20%	8%	2%
Management consultant or business analyst	56%	18%	43%	46%	24%	43%	21%	49%	47%	39%	24%	44%	48%	31%	34%	18%	9%	3%
CEO or senior manager	65%	22%	32%	37%	25%	56%	15%	48%	57%	41%	17%	44%	36%	38%	27%	16%	9%	1%
Business and related research professional	64%	30%	46%	46%	34%	48%	24%	42%	45%	48%	27%	47%	44%	30%	23%	15%	11%	3%

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking IP	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs (please specify)
Information Technology (IT) director	63%	15%	35%	47%	21%	45%	24%	78%	52%	36%	11%	45%	46%	30%	24%	14%	13%	2%
Artistic, literary or media professional	66%	40%	55%	36%	33%	36%	32%	34%	40%	19%	19%	32%	32%	28%	16%	7%	79%	1%
Health professional	74%	79%	66%	62%	43%	28%	44%	19%	16%	14%	34%	14%	25%	8%	9%	47%	4%	*
Other researcher	79%	67%	62%	62%	45%	22%	43%	31%	23%	18%	32%	13%	21%	10%	12%	14%	16%	4%

Base: 7,496 respondents who are working

Table 7.5: Occupation by skills needed

Figures refer to the average importance given to each skill by respondents in each occupation, where 1 means not at all important, 3 means moderately important and 5 means essential.

	Specialist knowledge including technical knowledge	Learning to use new technology, including software	Analysis	Advanced digital skills	Commercial skills	Communication and working with people	Leadership, including leading a team	Project management
Total	**4.48**	**3.72**	**4.29**	**3.22**	**3.3**	**4.68**	**4.36**	**4.3**
Programmer or software development professional	4.66	4.41	4.41	4.61	3.65	4.48	3.9	3.85
Chemical scientist	4.75	3.7	4.5	3.06	3.17	4.58	4.37	4.27
Biological scientist or biochemist	4.76	3.92	4.63	3.34	2.71	4.67	4.45	4.48
Physical scientist	4.8	3.94	4.65	3.87	2.67	4.5	4.25	4.29
Social and humanities scientist	4.54	3.38	4.63	2.79	2.21	4.74	4.28	4.45
Other natural and social science professional	4.67	3.54	4.55	3.17	2.82	4.69	4.29	4.41
Civil engineer	4.7	3.78	4.46	3.4	3.67	4.57	4.24	4.26
Mechanical engineer	4.57	3.89	4.14	3.36	4.03	4.61	4.34	4.22

	Specialist knowledge including technical knowledge	Learning to use new technology, including software	Analysis	Advanced digital skills	Commercial skills	Communication and working with people	Leadership, including leading a team	Project management
Electrical engineer	4.52	3.87	4.16	3.51	4.08	4.59	4.43	4.22
Electronics engineer	4.6	4.02	4.32	3.78	3.83	4.55	4.13	4
Design and development engineer	4.58	3.91	4.17	3.5	4.17	4.54	4.37	4.17
Production and process engineer	4.62	3.9	4.11	3.3	3.98	4.66	4.31	4.4
Other type of engineering professional	4.67	3.98	4.19	3.29	3.82	4.69	4.26	4.29
Environment professional	4.52	3.71	4.37	3.28	3.71	4.68	4.25	4.43
Higher education teaching or research professional	4.67	3.7	4.59	3.34	2.51	4.73	4.38	4.4
Statistician	4.79	4.15	4.85	4.57	2.7	4.42	4.03	4.14
Research and development manager	4.47	3.73	4.25	3.23	4.02	4.72	4.56	4.45
Management consultant or business analyst	4.23	3.66	4.14	3.13	4.41	4.73	4.34	4.38
CEO or senior manager	4.2	3.63	3.95	3.08	4.54	4.74	4.71	4.38

	Specialist knowledge including technical knowledge	Learning to use new technology, including software	Analysis	Advanced digital skills	Commercial skills	Communication and working with people	Leadership, including leading a team	Project management
Business and related research professional	4.27	3.71	4.24	3.13	4.44	4.77	4.39	4.46
Information Technology (IT) director	4.6	4.28	4.25	4.09	4.36	4.56	4.2	4.12
Artistic, literary or media professional	4.18	3.76	3.95	3.15	3.85	4.77	4.32	4.44
Health professional	4.64	3.59	4.29	2.96	3.02	4.79	4.7	4.51
Other researcher	4.6	3.81	4.54	3.45	2.98	4.68	4.16	4.23

Base: 7,496 respondents who are working

Table 7.6: Innovation outputs by R&D activity

Percentages refer to the proportion of respondents engaged in each R&D activity who said that their work had fed into one of these outputs during the last 12 months. Respondents could select multiple options.

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge exchange	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and newspapers)	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking intellectual property	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs
Total	**75%**	**54%**	**51%**	**48%**	**35%**	**32%**	**32%**	**31%**	**30%**	**24%**	**23%**	**21%**	**20%**	**20%**	**15%**	**12%**	**8%**	**1%**
Basic research	86%	70%	61%	55%	40%	25%	41%	28%	24%	20%	23%	17%	15%	15%	12%	10%	9%	1%
Applied research	79%	58%	54%	52%	39%	34%	34%	32%	32%	25%	26%	21%	21%	20%	16%	13%	8%	1%
Experimental development	75%	44%	47%	48%	33%	43%	28%	39%	43%	32%	21%	28%	26%	28%	21%	15%	9%	1%
Market research	66%	26%	37%	42%	29%	54%	21%	45%	56%	42%	21%	41%	37%	38%	27%	16%	10%	2%
Acquisition and adaptation of technology new	72%	34%	46%	49%	33%	45%	28%	49%	51%	41%	22%	34%	37%	35%	28%	16%	10%	1%

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge exchange	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and newspapers)	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking intellectual property	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs
to your organisation																		
R&D or innovation management	73%	39%	46%	46%	35%	49%	28%	41%	48%	38%	25%	33%	31%	33%	25%	17%	9%	1%
Mainly Frascati R&D	**80%**	**64%**	**56%**	**53%**	**38%**	**27%**	**36%**	**28%**	**25%**	**20%**	**22%**	**17%**	**16%**	**16%**	**12%**	**10%**	**8%**	**1%**
Mainly non-Frascati R&I	**61%**	**28%**	**42%**	**37%**	**29%**	**48%**	**23%**	**42%**	**45%**	**36%**	**24%**	**34%**	**33%**	**32%**	**25%**	**16%**	**8%**	**1%**

Base: 7,496 respondents who are working

Table 7.7: Innovation outputs by research discipline

Percentages refer to the proportion of respondents working in each discipline who said that their work had fed into one of these outputs during the last 12 months. Respondents could select multiple options.

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge exchange	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and newspapers)	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking intellectual property	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs
Total	**75%**	**54%**	**51%**	**48%**	**35%**	**32%**	**32%**	**31%**	**30%**	**24%**	**23%**	**21%**	**20%**	**20%**	**15%**	**12%**	**8%**	**1%**
Medicine, dentistry & health	88%	89%	76%	70%	45%	26%	51%	19%	14%	14%	34%	15%	15%	7%	7%	27%	7%	*
Agriculture, forestry & veterinary science	86%	82%	77%	74%	57%	27%	49%	23%	24%	24%	44%	18%	16%	13%	14%	10%	8%	2%
Biological, mathematical & physical sciences	92%	92%	75%	66%	39%	20%	52%	23%	11%	13%	23%	11%	7%	5%	4%	10%	5%	1%

	New knowledge from research or experimentation, discussed with colleagues	Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge exchange	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and newspapers)	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking intellectual property	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs
Engineering & technology	84%	77%	69%	56%	47%	33%	41%	36%	30%	26%	29%	24%	17%	14%	12%	11%	7%	1%
Architecture & planning	79%	74%	76%	59%	75%	22%	53%	28%	28%	25%	57%	26%	28%	21%	18%	7%	18%	2%
Administrative & business studies	74%	66%	71%	63%	61%	24%	46%	30%	24%	22%	53%	28%	34%	12%	24%	7%	10%	2%
Social studies	85%	91%	79%	70%	71%	8%	56%	12%	8%	9%	56%	7%	17%	6%	8%	7%	15%	1%
Humanities & language-based studies & archaeology	85%	90%	79%	54%	59%	8%	60%	13%	8%	7%	30%	7%	11%	5%	7%	5%	27%	1%

	New knowledge from research or experimentation, discussed with colleagues		Publications in academic journals	Sharing new or existing knowledge through education, training, mentoring or knowledge exchange	Data collection, datasets, databases or data models	Other types of publications (trade journals, opinion magazines, research reports and newspapers)	Intellectual property and licensing	Making information more readily available through reviewing, documenting, or archiving	Software and technical products	Prototypes of new products or processes	Commercialising research or new technology without seeking intellectual property	Influencing government policy	A new business, including start-ups and spin-outs	New or significantly improved services	Other new or significantly improved products	New or significantly improved processes for producing or supplying goods or services	Medical products or interventions	Artistic and creative products or services	Other outputs
Design, creative & performing arts	76 %	67 %	76%	51%	55%	26%	49%	30%	37%	20%	33%	29%	26%	19%	17%	9%	56%	2%
Education	85 %	83 %	82%	65%	55%	23%	49%	28%	22%	16%	36%	17%	18%	11%	12%	11%	12%	1%

Base: 5,767 respondents who are working in higher education, the public sector or the not-for-profit sector

Table 7.8: Sector mobility by occupation

Percentages refer to the proportion of respondents working in each occupation who said that they had worked in one of these sectors over the course of their career. Respondents could select multiple options.

	Private sector businesses	Higher education institutions	Further Education colleges	Public sector research organisation/s	National Health Service	Local or national government	Other public sector	Non-profit organisation, charity or community organisation/s	Any sector respondent is not currently working in
Total	**58%**	**62%**	**4%**	**17%**	**7%**	**9%**	**7%**	**14%**	**48%**
Programmer or software development professional	82%	48%	7%	20%	6%	12%	10%	15%	51%
Chemical scientist	59%	73%	3%	19%	3%	5%	4%	8%	49%
Biological scientist or biochemist	36%	85%	3%	25%	8%	5%	3%	13%	55%
Physical scientist	39%	84%	3%	29%	3%	5%	5%	7%	47%
Social and humanities scientist	25%	86%	5%	12%	6%	14%	7%	21%	46%
Other natural and social	40%	81%	3%	28%	5%	13%	7%	23%	52%

	Private sector businesses	Higher education institutions	Further Education colleges	Public sector research organisation/s	National Health Service	Local or national government	Other public sector	Non-profit organisation, charity or community organisation/s	Any sector respondent is not currently working in
science professional									
Civil engineer	69%	56%	3%	20%	1%	23%	12%	15%	52%
Mechanical engineer	84%	42%	7%	19%	4%	8%	6%	7%	39%
Electrical engineer	83%	42%	6%	21%	4%	14%	11%	13%	44%
Electronics engineer	82%	50%	4%	20%	5%	9%	7%	8%	50%
Design and development engineer	89%	42%	8%	19%	5%	12%	10%	14%	46%
Production and process engineer	85%	44%	11%	21%	7%	12%	8%	9%	41%
Other type of engineering professional	74%	49%	8%	16%	3%	6%	7%	8%	48%
Environment professional	69%	55%	6%	33%	4%	17%	10%	26%	57%

	Private sector businesses	Higher education institutions	Further Education colleges	Public sector research organisation/s	National Health Service	Local or national government	Other public sector	Non-profit organisation, charity or community organisation/s	Any sector respondent is not currently working in
Higher education teaching or research professional	31%	90%	4%	18%	8%	8%	5%	14%	46%
Statistician	47%	76%	6%	21%	6%	18%	6%	10%	54%
Research and development manager	79%	59%	6%	26%	6%	11%	7%	16%	58%
Management consultant or business analyst	90%	35%	10%	21%	10%	18%	16%	28%	54%
CEO or senior manager	90%	39%	6%	16%	7%	10%	9%	18%	48%
Business and related research professional	89%	45%	11%	23%	4%	15%	11%	27%	50%
Information Technology (IT) director	87%	36%	11%	23%	17%	27%	17%	30%	53%

	Private sector businesses	Higher education institutions	Further Education colleges	Public sector research organisation/s	National Health Service	Local or national government	Other public sector	Non-profit organisation, charity or community organisation/s	Any sector respondent is not currently working in
Artistic, literary or media professional	70%	56%	11%	19%	4%	13%	11%	39%	55%
Health professional	32%	71%	2%	15%	67%	12%	5%	18%	66%
Other researcher	51%	73%	7%	20%	10%	12%	8%	27%	55%

Base: All respondents

Table 7.9: Occupational and socio-demographic characteristics of the R&I workforce

Figures in brackets are the equivalent figures from the Labour Force Survey 2020. These have only been added for occupations that are wholly or predominantly within the R&I workforce.

Occupation	Gender		Ethnicity					Age				
	Male	Female	White	Mixed	Asian / Asian British	Black/ Black British	Other ethnic group	16 – 34	35 – 44	45 – 54	55 – 64	65+
CEO or senior manager	78%	19%	83%	3%	5%	2%	3%	6%	16%	30%	30%	15%
Higher Education teaching or research professional	62% (56%)	35% (44%)	85% (85%)	2% (2%)	5% (5%)	1% (3%)	3% (5%)	4% (18%)	25% (25%)	30% (28%)	25% (20%)	12% (9%)
Research and development manager	77% (59%)	20% (41%)	82% (82%)	2% (0%)	5% (16%)	2% (1%)	4% (1%)	6% (21%)	20% (37%)	27% (20%)	27% (17%)	16% (4%)
Biological scientist or biochemist	63% (46%)	33% (54%)	85% (88%)	2% (2%)	4% (9%)	1% (0%)	3% (1%)	7% (30%)	24% (27%)	30% (24%)	24% (13%)	10% (6%)
Programmer or software development professional	88%	7%	77%	3%	8%	3%	2%	10%	26%	26%	22%	12%
Social and humanities scientist	47% (36%)	50% (64%)	85% (88%)	3% (5%)	2% (7%)	1% (0%)	4% (0%)	7% (32%)	25% (29%)	32% (15%)	22% (11%)	11% (12%)
Physical scientist	78% (77%)	17% (23%)	86% (95%)	1% (1%)	3% (2%)	* (0%)	3% (2%)	7% (37%)	25% (25%)	25% (21%)	24% (11%)	15% (6%)
Design and development engineer	90% (87%)	7% (13%)	82% (92%)	1% (0%)	5% (7%)	2% (0%)	4% (1%)	6% (37%)	16% (24%)	23% (21%)	30% (14%)	22% (3%)
Management consultant or business analyst	79%	18%	83%	4%	6%	4%	1%	3%	17%	29%	29%	20%
Mechanical engineer	92%	5%	82%	1%	5%	2%	3%	7%	17%	22%	30%	20%

Occupation	Gender		Ethnicity					Age				
Chemical scientist	78% (57%)	17% (43%)	80% (87%)	1% (0%)	6% (13%)	1% (0%)	5% (0%)	12% (54%)	20% (19%)	22% (12%)	26% (15%)	17% (0%)
Electronics engineer	94%	1%	85%	1%	4%	1%	3%	6%	14%	18%	32%	26%

Base: all respondents in the selected occupations. Where figures do not sum to 100%, this is because of "prefer not to say" responses