

**Knowledge Exchange and the Social Sciences: A Report to ESRC from
the Centre for Business Research**

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May 2016



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CAMBRIDGE**

Acknowledgements:

This study was commissioned by the ESRC. The analysis draws on a survey commissioned through the National Centre for Universities and Business (NCUB) and funded by the Arts and Humanities Research Council, the Department for Business, Innovation & Skills, the Economic and Social Research Council, the Engineering and Physical Sciences Research Council, the Higher Education Funding Council for England, the Medical Research Council, and the Natural Environment Research Council. This survey covered all disciplines in all universities in the UK with an achieved sample of over 18,000 responses.

The original project team consisted of Prof. Alan Hughes (Principle Investigator (PI) Imperial College Business School, London, Michael Kitson (PI), Cornelia Lawson (Research Fellow and Analytical and Editorial Work Lead), Anna Bullock (Database Manager) and Robert Hughes (Database Associate) all at the Centre for Business Research (CBR) University of Cambridge and Prof. Ammon Salter (PI) at the University of Bath. Isobel Milner provided valuable survey management support in the initial stages of the project and Robert Hughes oversaw the core task of hand collecting a total of over 140,000 email addresses of the academics constituting the sample frame.

A full report on the original survey is contained in *Lawson, C., Hughes, A., Salter, A., and Kitson, M. with Bullock, A. and Hughes, R. B. (2016) 'Knowledge Exchange in UK Universities: Results from a Panel of Academics 2005 - 2015', NCUB, London.*

The current authors wish to acknowledge the financial support for this report from ESRC and the consortium that funded the survey. They also wish to thank Melanie Knetsch of ESRC and Alan Hughes of Imperial College Business School for constructive comments on an earlier version of this report.

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Citation Reference:

Bullock, A. and Hughes, R. (2016) 'Knowledge exchange and the social sciences: A report to ESRC from the Centre for Business Research', University of Cambridge, Cambridge.

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Executive Summary

This report was produced in response to a request from ESRC for an analysis of the knowledge exchange and external interactions of social science academics in the UK disaggregated by discipline within the social sciences.

The report covers the activities of social science academics in the three years 2012-2015. The sample analysed consists of 5,659 social science academics who responded to a recent UK survey of all academics in all disciplines in all higher education institutions (Hughes et al. 2016).

The analysis in this report is based on a disaggregation of these social science respondents into 11 Research Excellence Framework (REF) Units of Assessment. The 11 disciplinary areas covered by these Units of Assessment are: Economics and Econometrics; Business and Management Studies; Law; Politics and International Studies; Social Work and Social Policy; Sociology; Anthropology and Development Studies; Education; Sports and Exercise Sciences, Leisure and Tourism; Geography, Environmental Studies and Archaeology; and Architecture, Built Environment and Planning. A comparison of the results is made with the results of a survey carried out in 2008/9 which covered the years 2005 to 2008 (Hughes and Kitson 2012). This uses a more aggregated grouping of these 11 areas into four broader social science categories which were analysed in the first survey.

The knowledge exchange activities analysed include those which may be described as narrowly commercial (patenting, licensing, spin outs and business consultancy). The analysis also includes a full range of 27 people-based, problem-solving and community-based knowledge exchange activities.

People-based activities include: attending conferences; participating in networks; giving invited lectures; sitting on advisory boards; student placements; employee training; standard-setting forums; curriculum development; and enterprise education.

Problem-solving activities include: providing informal advice; joint publications with external organisations; joint research with external organisations; consultancy services; contract research; membership of research consortia; hosting external personnel; secondment to external organisations; prototyping and testing; and setting up new physical facilities.

Community-based activities include participation in: lectures for the community; school projects; social enterprise activity; performing arts and related cultural activities; museums and art galleries; heritage and tourism activities; public exhibitions; and community-based sports.

In each case the disaggregated results for the 11 disciplines are presented alongside results for the social sciences as a whole and for all academics in all disciplines excluding the social sciences.

In addition to comparisons across social science disciplines the report provides breakdowns of activity by the academic position/seniority, gender, age and the research motivation of academics in the social sciences. It also includes a comparison across the 11 social science disciplines in the extent to which knowledge exchange activities are carried out within or outside of the region in which each individual academic's university is located.

The analysis of up to 27 knowledge exchange interactions, and four commercialisation activities, across 11 separate disciplines and across age, gender, seniority, and motivational fields yields a very large number of results which are not easily reduced to a short set of executive summary bullet point conclusions. Here we provide a succinct summary of key findings at a more aggregated level, reporting key differences with non-social science disciplines alongside a selection of findings comparing different social science disciplines.

Key Findings

Research Motivation

- Three quarters of social science academics stated that they were primarily motivated to carry out user-inspired basic research or purely applied research and around one quarter regarded themselves as motivated to do pure basic research.
- Social science academics are less likely overall to be primarily motivated to engage in basic research than academics in other disciplines.
- The disciplines of 'Politics and international studies' and 'Anthropology and development studies' had the highest proportions of academics undertaking basic research, at 39% and 38% respectively. The disciplines of 'Architecture, built environment and planning' and 'Social work and social policy' had the fewest academics primarily motivated to undertake basic research, at 9% and 7% respectively.
- 'Business and management studies' had the highest proportion of academics engaged in user-inspired basic research (34%). 'Sport and exercise sciences, leisure and tourism' and 'Social work and social policy' saw fewer than a quarter of academics report undertaking user-inspired basic research, at 22% and 17% respectively.
- The proportion of academics undertaking applied research was greatest within 'Social work and social policy' at almost three quarters (72%). In contrast, under a quarter (24%) of academics in 'Politics and international studies' reported undertaking applied research.
- 'Economics and econometrics' and 'Sociology' display the most even distribution of their academics across the three primary motivational types.
- Holders of emeritus or honorary positions and tenure track professors, readers, senior lecturers and lecturers were relatively more likely to indicate their motivation as being the pursuit of basic research than the three more junior categories of research fellow/associate, research/teaching assistant, and teaching fellow/associate.
- Analysis by gender shows that men are relatively more likely to describe their motivation as the pursuit of basic research whilst women are more likely to cite user inspired and applied research as their main motivation.

Research Relevance

- Overall, in comparison with academics in all other disciplines those in the social sciences were more likely to both believe their research to be relevant to the non-commercial sector and to have had it applied by a non-commercial organisation.
- Within the social sciences as a whole, professors are more likely than average to report that their work is in a general area of commercial interest to business and/or industry.
- Social science academics as a whole were less likely than non-social science academics to identify their research as being in a general area of commercial interest to business and/or

industry and also to have had their research applied in a commercial context.

- The perception of relevance to the non-commercial sector was high across all social science disciplines with 'Sociology' academics most likely to report this (86%) and 'Business and management studies' academics the least likely (60%).
- 'Social work and social policy' academics were most likely to report that their research had been applied in a non-commercial context (67%) followed by 'Geography, Environmental Studies, and Archaeology' (55%).
- Academics in the field of 'Business and management studies' were least likely to view their research as having relevance for a non-commercial organisation (60%) and to have had it applied by a non-commercial organisation (39%).
- The proportion of academics reporting that their research was in a general area of commercial interest to business and/or industry was highest in 'Business and management studies' (65%) and 'Architecture, built environment and planning' (54%).
- Academics in 'Business and management studies', 'Architecture, built environment and planning' and 'Sport and exercise sciences, leisure and tourism', were most likely to report that their research had been applied in a commercial context with proportions ranging from 20% to 30%.
- Within the social sciences as a whole only 9% of academics reported their research as being of no relevance for external organisations. 'Anthropology and development studies' and 'Politics and international studies' were most likely to report this being the case, but still at low rates of 13% and 12% respectively.

Knowledge Exchange Activities and External Engagements: Commercialisation

- Commercialisation activities (licensing (<5%), patenting, and spin-out formation (each <4%)), were amongst the least common forms of external knowledge exchange activity for social scientists when taken alongside the much more diverse and more frequently reported people-based, problem-solving, and community-based interactions.
- Consultancy formation is the most frequent social science commercialisation form. It was most frequent in 'Sport and exercise sciences, leisure and tourism' (13%), 'Anthropology and development studies' (13%) and 'Business and management studies' (13%). It was least frequent (<6%) in 'Sociology' and in 'Social work, and social policy' and 'Law'.
- Focusing on these 4 indicators of knowledge exchange will significantly underestimate the engagement activities of social scientists who are much more frequently involved in a wide range of other people-based, problem-solving, and community based engagement activities.

Knowledge Exchange Activities and External Engagements: People-based, problem-solving and community-based engagement

- People-based, problem solving, and community based activities by social scientists are much more frequent than commercialisation modes of engagement.
- Within these three groups of activities social scientists are less likely to report problem-solving activities and more likely to report people-based and community-based activities than non-social scientists.
- Social scientists tend to rate problem-solving activities as very important more frequently than they do people-based or community-based modes of engagement.
- Attending conferences was the most frequently identified mode of engagement within social sciences as a whole, by 83% of academics, but it was not among the most highly valued modes

of engagement.

- Within the people-based group participating in networks (30%), giving invited lectures organised by external organisations (28%), participating in standard setting forums (27%), and sitting on the advisory boards of external organisations (24%) were all more likely to be ranked as very important by academics engaged in them than was attending conferences.
- Community-based modes of engagement were less likely to be engaged in as a knowledge exchange activity by social scientists than either people-based or problem-solving activities but were rated as very important by a substantial proportion (20%) of social scientists engaged in them.
- The analysis of each of the 29 separately identified people-based, problem-solving and community-based engagement mechanisms cross classified by the eleven social science disciplines reveals a complex pattern both in terms of the frequency of engagement and the importance attached to each form. This is reported and summarized in the main text.

External Engagement and Research Motivation

- A cross classification of engagement type by research motivation shows that academics motivated to pursue basic research are substantially more likely to engage in problem-solving interactions than people-based interactions.
- The frequency with which academics motivated by the pursuit of applied research engage in problem-solving activities is very similar to their engagement through people-based interactions.
- In relation to community-based interactions the proportion of researchers motivated by the pursuit of basic research is roughly similar across all types of interaction.
- The frequency of academics who are involved in social enterprises is highest amongst applied researchers. The lowest frequency of involvement in that group is in relation to activities involving museums and art galleries. Even so the proportion is over two fifths, at 44%.
- The counterpart to this pattern of applied and basic research motivated academics is that the frequency of involvement of the user- inspired researchers is lowest in social enterprises and highest in museums and art galleries.

Engagement Partners

- Social science academics as a whole were more likely than non-social science academics to engage with charitable and public sector organisations and less likely to engage with private sector organisations.
- Academics in the social science disciplines, are, on average, most likely to engage with charitable and public sector organisations (49%) and least likely to engage with private sector organisations (30%).
- There is considerable variation in voluntary sector engagement across social science disciplines. It is twice as frequent in 'Social work and social policy' (73%) as it is in 'Economics and econometrics' (29%) which displays the lowest frequency.
- Engagement with the public sector is most frequent in the 'Social work and social policy' (66%), and lowest in 'Sport and exercise sciences, leisure and tourism' (34%).
- 'Business and management studies' has the highest proportion of academics reporting private sector engagement (48%), and 'Politics and international studies' the lowest (17%).

External Engagement: Regional Analysis

- People-based activities are more frequently reported outside the home university region than inside. There is little variation in the extent of outside region activity across the disciplines.
- The most outside intensive disciplines are 'Anthropology and development studies' (90%) and 'Geography, environmental studies and archaeology' (88%).
- The most frequent within region people-based activities are reported by social science academics in 'Social work and social policy' (81%), 'Sport and exercise sciences, leisure and tourism' (78%) and in 'Education' (77%).
- The discipline least likely to have academics reporting activities within their region is 'Economics and econometrics' (47%)
- In problem-solving activities there is a general tendency for activities outside the region to be more frequent than inside the region of the home institution of the academics involved.
- The pattern across disciplines is similar for problem-solving to that shown involving people-based activities.
- In all cases except 'Anthropology and development studies' where the balance is almost equal community-based activities are more frequently located within the region than outside it.
- 'Economics and econometrics' shows the least frequency of community-based activities both inside and outside the region, at 29% and 19% respectively.
- The highest frequencies of within region community-based activities are found in 'Sport and exercise sciences, leisure and tourism' (68%), 'Geography, environmental studies and archaeology' (65%) and 'Architecture, built environment and planning' (62%).
- The balance of within region and outside region community-based activities is almost equal in the case of 'Anthropology and development studies'.

External Engagement: Changes over time

- There is a general pattern of small reductions in the frequency of each mode of knowledge exchange and engagement by social scientists between 2008 and 2015. This change is similar to other non-social science disciplines and reflects changing economic and funding circumstances between the surveys of 2009 and 2015.
- The importance attached to motivation for external engagement shows considerable stability over time. The most striking change is the increase in importance attached by academics to furthering their own institution's outreach mission.
- An increase was identified in the percentage of academics reporting that external organisations had given new insights into their work or had led to new contacts in their field or had strengthened their reputation in the field.

Introduction

This report was produced in response to a request from ESRC for an analysis of the knowledge exchange and external interactions of social science academics in the UK disaggregated by discipline within the social sciences.

The report covers the activities of social science academics in the three years 2012-2015. The sample analysed consists of 5,659 social science academics who responded to a recent UK survey of all academics in all disciplines in all higher education institutions (Hughes et al. 2016). This survey was carried out at the Centre for Business Research at Cambridge in collaboration with the University of Bath and Imperial College Business School, London.

The analysis in this report is based on a disaggregation of these social science respondents into 11 Research Excellence Framework Units of Assessment. The 11 disciplinary areas (referred to as 'disciplines') covered by these Units of Assessment are: 'Economics and econometrics'; 'Business and management studies'; 'Law'; 'Politics and international studies'; 'Social work and social policy'; 'Sociology'; 'Anthropology and development studies'; 'Education'; 'Sport and exercise sciences, leisure and tourism'; 'Geography, environmental studies and archaeology'; and 'Architecture, built environment and planning'.

The analysis in the report begins with an overview of the personal characteristics of the sample of academics in the social sciences who responded to the survey and the extent to which the sample is representative of the social science academic community.

The report then proceeds to provide for each of the eleven disciplinary areas a quantitative assessment of the academic research orientation of respondents in terms of basic, user-inspired and applied research.

This is followed by an analysis of the knowledge exchange activities reported by the academics in the sample. These activities include those which may be described as narrowly commercial (patenting, licensing, spin outs and business consultancy) as well as a full range of 27 people-based, problem-solving and community-based knowledge exchange activities. People-based activities include: attending conferences; participating in networks; giving invited lectures; sitting on advisory boards; student placements; employee training; standard-setting forums; curriculum development; and enterprise education. Problem-solving activities include: providing informal advice; joint publications with external organisations; joint research with external organisations; consultancy services; contract research; membership of research consortia; hosting external personnel; secondment to external organisations; prototyping and testing; and setting up new physical facilities. Community-based activities include participation in: lectures for the community; school projects; social enterprise activity; performing arts and related cultural activities; museums and art galleries; heritage and tourism activities; public exhibitions; and community-based sports. In each case the disaggregated results for the 11 disciplines are presented alongside results for the social sciences as a whole and for all academics in all disciplines excluding the social sciences. The report also provides, for the social sciences as a whole, and for each of the 11 disciplinary categories a cross classification of external activities by research orientation, by gender, by age and by seniority.

This cross-classification aggregates knowledge exchange activities into four broad groups (narrowly commercial; people-based; problem-solving and community-based knowledge exchange)¹. The report then provides an analysis of the kinds of partners with whom social science academics engage. This is broken down into the private sector, the public sector and the voluntary sector. This is followed by an analysis of the extent to which knowledge exchange activities and interactions with external organisations occur inside or outside the region in which each academic's higher education institution is located.

The next section looks at knowledge exchange activities cross classified by the seniority of the positions held by academics as well as by the age, gender, and their research motivation.

The report concludes with a comparison between the survey results discussed above and those of a previous survey conducted in 2008/9 which covered activities in the three years 2005 to 2008 (Hughes and Kitson 2012). The disaggregation in this analysis is more limited since the earlier survey used broader disciplinary groupings. The comparison therefore covers four broad areas. These are: 'Architecture, building, planning'; 'Law, social sciences, economics'; 'Business, financial studies'; and 'Education'.

¹ A detailed disaggregation by each of the 11 disciplines for each of the 27 activities is provided in the Appendix to the report

Section 1: The Sample

The sample of social scientists whose survey responses are analysed in this report is drawn from a wider sample of academics which was surveyed in 2015 (Hughes et al. 2016). The survey covered all academics in all disciplines in all UK universities. The total number of academics in the sampling frame was 140,312. The overall response rate for the full survey was 13.9% with 18,177 academics completing the full web-based online survey. Of the total number of academics responding 5,659 classified themselves as falling within one of the 11 REF social science Unit of Assessment-based disciplinary groups used in the survey.

A detailed response bias analysis for the full survey showed that the overall proportion of social scientists in the full sample matched the proportion of social scientists in the academic population as a whole in the Higher Education Statistical Agency (HESA) data. The survey data for all disciplines including the social sciences tends to include slightly more senior academics and older academics but there is no difference in terms of the representation of academics by gender (Hughes et al. 2016).

There are no disaggregated HESA data with which we can compare the characteristics of the survey respondents in our 11 units of assessment groupings. It is however possible to make comparison of the spread of our disciplinary responses with the spread of academics classified to our units of assessment for the purposes of the Research Excellence Framework (REF) exercise carried out in 2014 and reported by the Higher Education Funding Council for England in the report on REF 2014. In interpreting this comparison it is important to note that the numbers of academics submitted to REF 2014 is significantly less than the population as a whole. The sample of social scientists responding to the survey is therefore much greater relative to the REF 2014 population than to the population of academics as a whole.

Exhibit 1.1 below shows the number of academics who responded to the survey split by the 11 social science disciplinary groupings used in REF 2014. It shows that the sample analysed in this report has a broadly similar structure to the distribution of respondents across the same groupings in REF 2014. The comparison shows that the survey sample over-represents 'Sociology' and 'Education' as well as 'Economics and econometrics'. The survey sample also under-represents 'Social work and social policy', 'Politics and international studies', and 'Geography, environmental studies and archaeology'. Since our purpose in this report is to compare knowledge exchange activities across the different disciplinary groups these differences in distribution are of less importance than the total number of observations with which the report can work.

As Exhibit 1.1 shows, the survey sample produced significant numbers of responses in each of the 11 disciplinary groups. The question which then arises is whether the type of academic varies across disciplines in terms of seniority age and gender, each of which may influence involvement in knowledge exchange activity and hence the biases in comparisons across our disciplinary groupings.

Exhibit 1.1: Academic Survey 2015 – REF social science groupings

Social Science Disciplines	REF Population		Survey Sample		Difference in % Distribution
	N	%	N	%	
Architecture, Built Environment and Planning	1113	7.19	379	6.7	-0.49
Geography, Environmental Studies and Archaeology	1787	11.54	492	8.69	-2.84
Economics and Econometrics	798	5.15	420	7.42	2.27
Business and Management Studies	3602	23.26	1333	23.56	0.3
Law	1644	10.61	564	9.97	-0.65
Politics and International Studies	1320	8.52	371	6.56	-1.97
Social Work and Social Policy	1408	9.09	360	6.36	-2.73
Sociology	764	4.93	412	7.28	2.35
Anthropology and Development Studies	603	3.89	172	3.04	-0.85
Education	1605	10.36	855	15.11	4.75
Sport and Exercise Sciences, Leisure and Tourism	844	5.45	301	5.32	-0.13
Total	15488	100	5659	100	0

The distribution of the social science sample respondents by seniority, gender, and age is shown in Exhibit 1.2. In terms of seniority there is an over-representation of professors in ‘Economics and econometrics’, ‘Law’ and to a lesser extent ‘Social work and social policy’ and ‘Anthropology and development studies’ relative to the average for all social sciences. This is counterbalanced by those disciplines having a somewhat lower representation in the reader and senior lecturer group than the average. This pattern is broadly reflected in the distribution by age. There are also some variations by gender. In this case ‘Architecture, built environment and planning’, ‘Economics and econometrics’, ‘Business and management studies’, ‘Politics and international studies’, and ‘Sport and exercise sciences leisure and tourism’ all have a higher male proportion than average.

Exhibit 1.2: Distribution of Social Science Discipline Samples by Seniority, Gender and Age

	Architecture, Built Environment and Planning	Geography, Environmental Studies and Archaeology	Economics and Econometrics	Business and Management Studies	Law	Politics and International Studies	Social Work and Social Policy	Sociology	Anthropology and Development Studies	Education	Sport and Exercise Sciences, Leisure and Tourism	Overall
Position												
Professor	16.6	19.3	26.9	19.1	27.0	22.1	23.9	15.3	23.8	11.5	10.0	19.0
Reader, Senior Lecturer	40.1	28.3	23.3	40.9	33.3	25.1	29.7	35.0	22.1	42.3	52.8	35.8
Lecturer	21.1	22.6	24.5	27.3	26.8	27.2	26.4	21.8	15.1	29.7	25.6	25.7
Research Fellow / Associate	12.7	24.2	14.5	4.6	4.1	16.2	13.1	20.6	26.2	6.1	5.3	10.9
Research / Teaching Assistant	2.4	1.6	4.0	1.4	3.0	4.0	1.4	1.7	3.5	1.8	1.7	2.2
Teaching Fellow / Associate	2.4	1.0	1.2	2.2	2.5	2.4	2.8	1.5	0.6	4.1	0.7	2.2
Emeritus / Honorary (retired)	4.7	3.0	5.5	4.7	3.4	3.0	2.8	4.1	8.7	4.6	4.0	4.3
Gender												
Male	65.7	59.8	72.1	62.3	53.0	63.6	41.4	44.7	47.1	36.5	65.1	55.4
Female	34.3	40.2	27.9	37.7	47.0	36.4	58.6	55.3	52.9	63.5	34.9	44.6
Age												
Under 30	1.9	2.7	4.3	2.5	4.3	7.3	1.1	2.7	2.3	2.0	8.4	3.3
30-49	48.7	64.5	61.6	46.9	54.0	63.0	42.0	58.4	53.8	39.2	61.3	51.8
50 and over	49.5	32.9	34.1	50.6	41.7	29.7	56.9	38.9	43.9	58.8	30.3	45.0
Total (%)	6.7	8.7	7.4	23.6	10.0	6.6	6.4	7.3	3.0	15.1	5.3	100
Total (N)	379	492	420	1333	564	371	360	412	172	855	301	5659

In general a preponderance of senior and older academics is associated with a greater involvement in knowledge exchange activities; similarly male academics are more likely to be involved in knowledge exchange activities than female academics (Hughes et al. 2016). The comparisons

presented in this report are essentially univariate comparisons which take one activity variable at a time and compare it across groups of academics. The fact that there are variations across disciplines in the balances by position, age, and gender may be associated with variations in the nature and the extent of interactions with external organisations. An analysis of these effects taken one at a time is presented in the section below on variations in knowledge exchange activities cross classified by position, age, gender, and research motivation. This report is not designed to provide a detailed multivariate analysis taking account of all these effects together on the cross disciplinary pattern of knowledge exchange which our analysis reveals. However, these factors must be borne in mind when interpreting variations in knowledge exchange activities across disciplines.

Section 2: Academic Activities and Research Motivation

This section provides an overview of the teaching, research, administrative and knowledge exchange activities of social scientists and of the motivations for their research.

Exhibit 2.1 shows the proportion of academics engaging in a range of academic activities, and compares those from the social science disciplines as a whole with academics from all other discipline areas. The proportions of academics reporting engagement across all four areas is very similar.

In the following two exhibits, firstly; Exhibit 2.1 shows the percentage of academics engaging in each of four activities and distinguishes between social and non-social scientists and secondly; Exhibit 2.2 shows the proportions of their time that they allocate to each activity. Overall, in comparison with academics from other discipline areas, Exhibit 2.1 shows that a slightly higher proportion of social science academics identified engaging in: teaching (93% compared with 87% for other academics as a whole); knowledge exchange activities (74% compared with 70% for other academics as a whole); administration (95% compared with 91% for other academics as a whole). Academics in the social sciences as a whole are slightly less likely to engage in research activities with fewer identifying undertaking research activity when compared to academics in other discipline areas (94% compared with 95% for other academics as a whole).

Exhibit 2.1: Activities of Academics – Areas of Engagement (% of respondents)

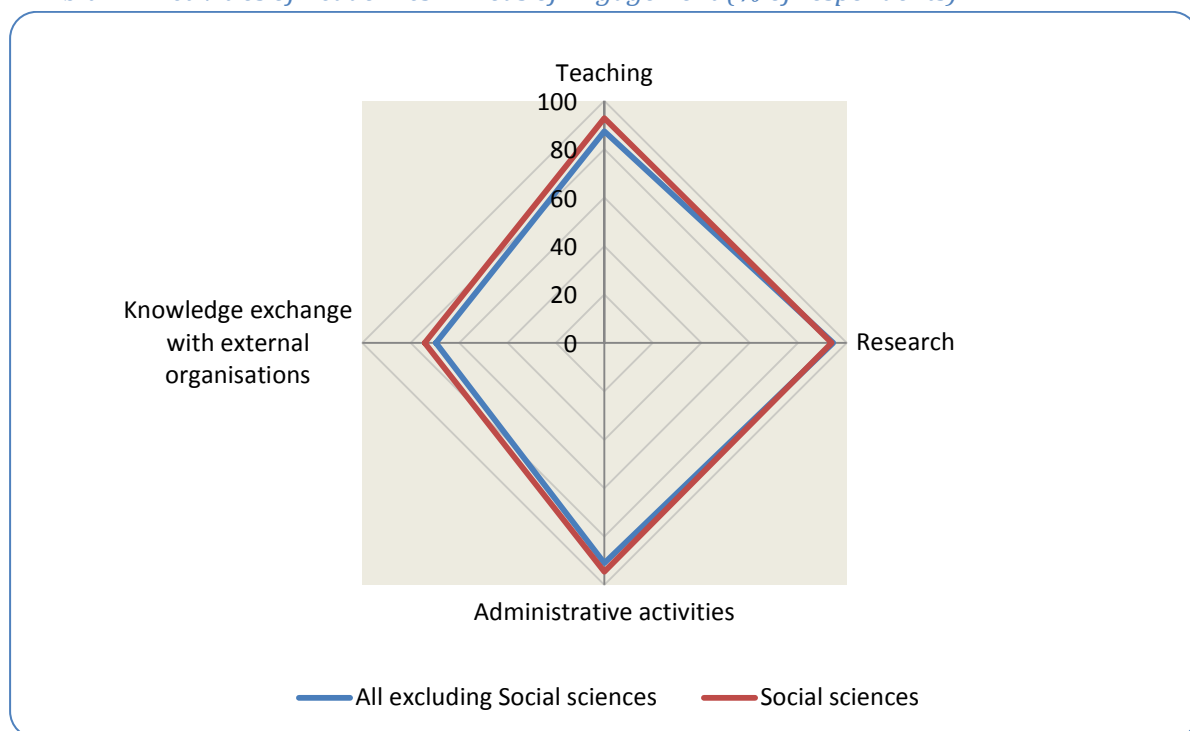
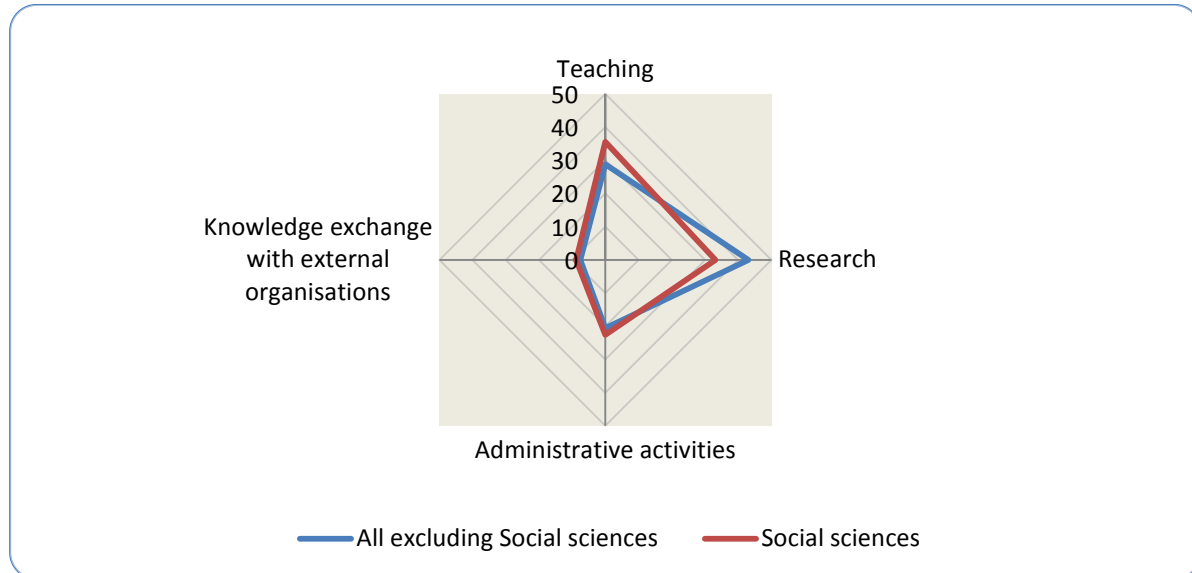


Exhibit 2.2 shows that social science academics spend a higher proportion of their time engaging in teaching (36% compared with 29% for other academics as a whole); other differences are much smaller with knowledge exchange activities (9% compared with 8% for other academics as a whole); and administration (23% compared with 21% for other academics as a whole). Social

science academics spend a lower proportion of their time, on average, engaging in research activity in comparison to academics in other discipline areas (33% compared with 43% for other academics as a whole)²

Exhibit 2.2: Activities of Academics – Time Allocation (% of respondents)

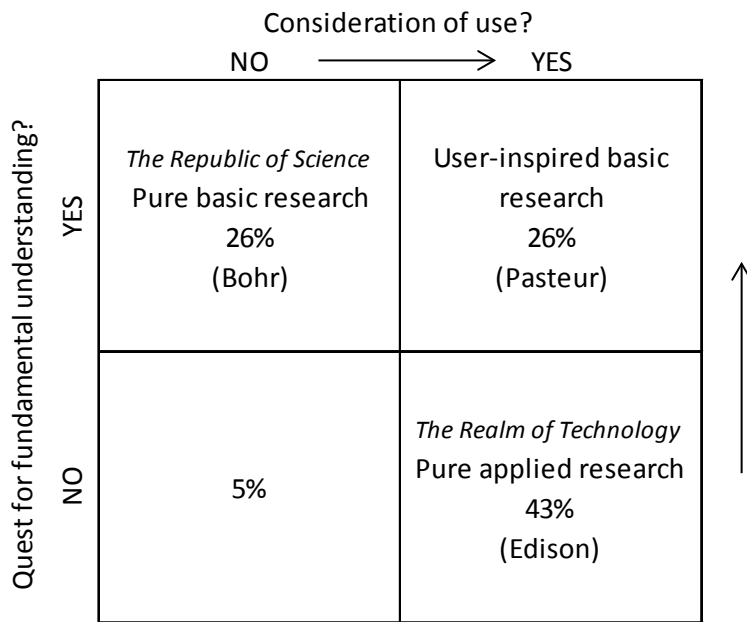


The analysis of the motivation for the research activities of respondents in the 2015 survey is based on the framework of analysis developed by Stokes (1997) and definitions based on the Frascati Manual (OECD, 2003). Stokes distinguished research which is not motivated by considerations of use at all and is solely concerned with the pursuit of fundamental understanding (represented by the Bohr quadrant) from research concerned solely with considerations of use (represented by the Edison quadrant). The quadrant he identified that combines both considerations of use and fundamental understanding he termed Pasteur’s quadrant. In this quadrant there is an important reflexive interaction between motivation for application and motivation to pursue fundamental understanding.

The results of the academic survey 2015 for all academics including the social sciences are presented in Exhibit 2.3. The exhibit shows that, overall: 26% of academics consider their research motivation as primarily basic; 26% as primarily user-inspired basic; and 43% as primarily pure applied. A very small proportion (5%) state that their research motivation could not be captured by these categories; it is striking that around three quarters of academics placed themselves into the user-inspired or pure-applied quadrants.

² Differences in the broad pattern across disciplines are presented in Appendix tables A3 and A4.

Exhibit 2.3: Stokes' Quadrant: All disciplines including social sciences



As shown in Exhibit 2.4 academics from the social sciences as a whole are most likely to describe their primary research motivations as applied (46%). The pattern of motivational type is very similar when compared, on average, with all other disciplines. In comparison with other discipline areas social science academics are slightly more likely to describe their research as motivated by pure application (46% compared with other academics 42%) or as user-inspired (29% compared with other academics 25%). Social science academics are less likely overall to be primarily motivated to engage in basic research than academics in other disciplines (21% compared with other academics 29%).

Exhibit 2.4: Academic Research Motivation (% of respondents)

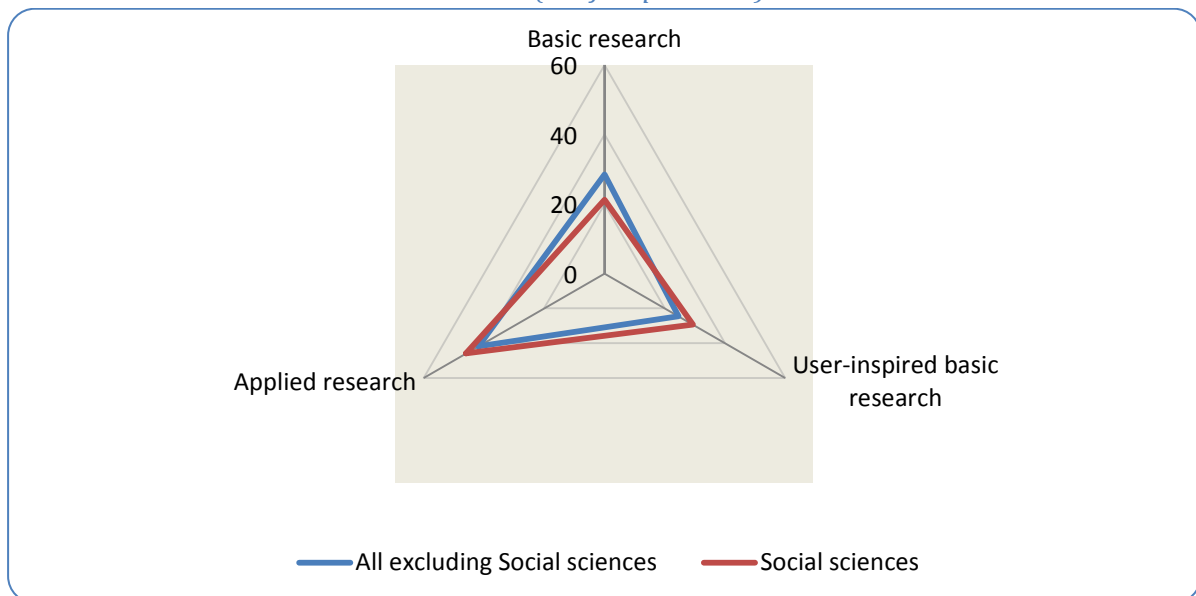
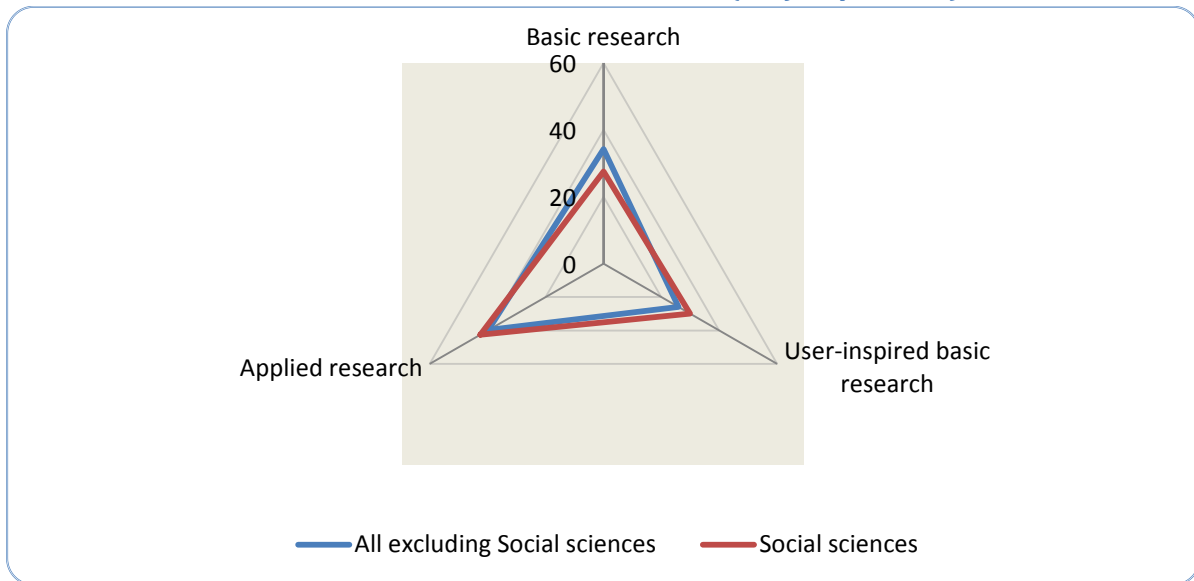


Exhibit 2.5 lets us see the average time academics reported spending engaging in each motivational type of research. The pattern of time allocation by motivational type is very similar when compared, on average, with all other disciplines. In comparison with other discipline areas social science academics devoted a higher proportion of time to research which is motivated by pure applied objectives (43% compared with other academics 40%) or user-inspired objectives (30% compared with other academics 26%). Social science academics devoted less time, on average, to engaging in basic research motivated by the pursuit of fundamental understanding than academics in other disciplines (28% compared with other academics 34%).

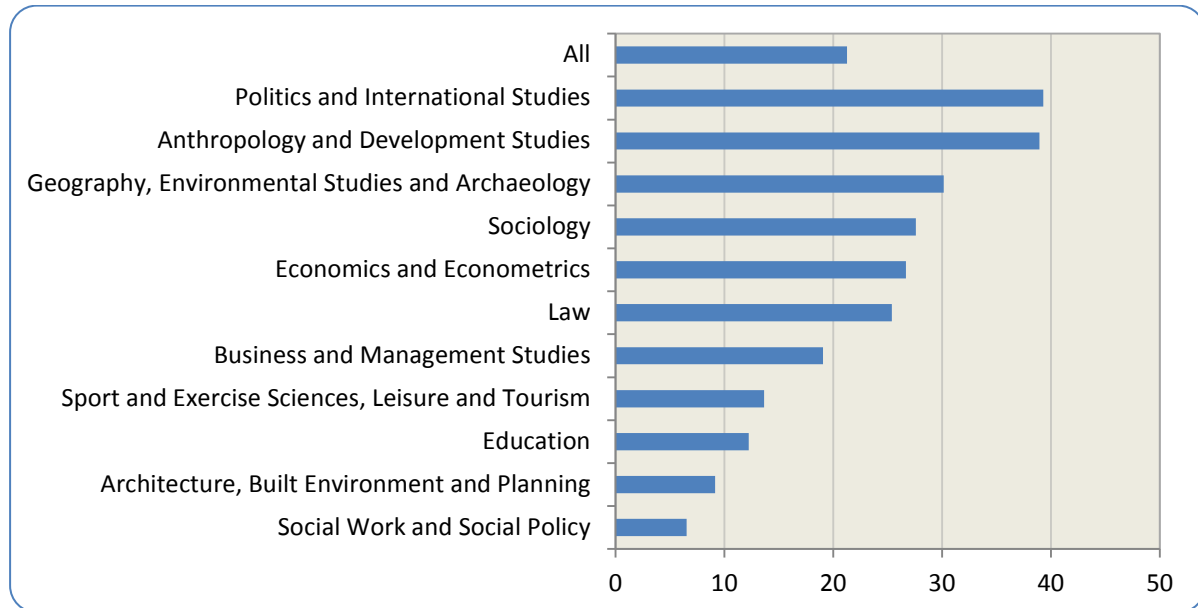
Exhibit 2.5: Academic Research – Research Time Allocation (% of respondents)



The following three tables show the proportion of social science academics within the 11 disciplinary groupings (referred to as ‘disciplines’) that described the primary motivation for their research as: basic, user-inspired, or applied.

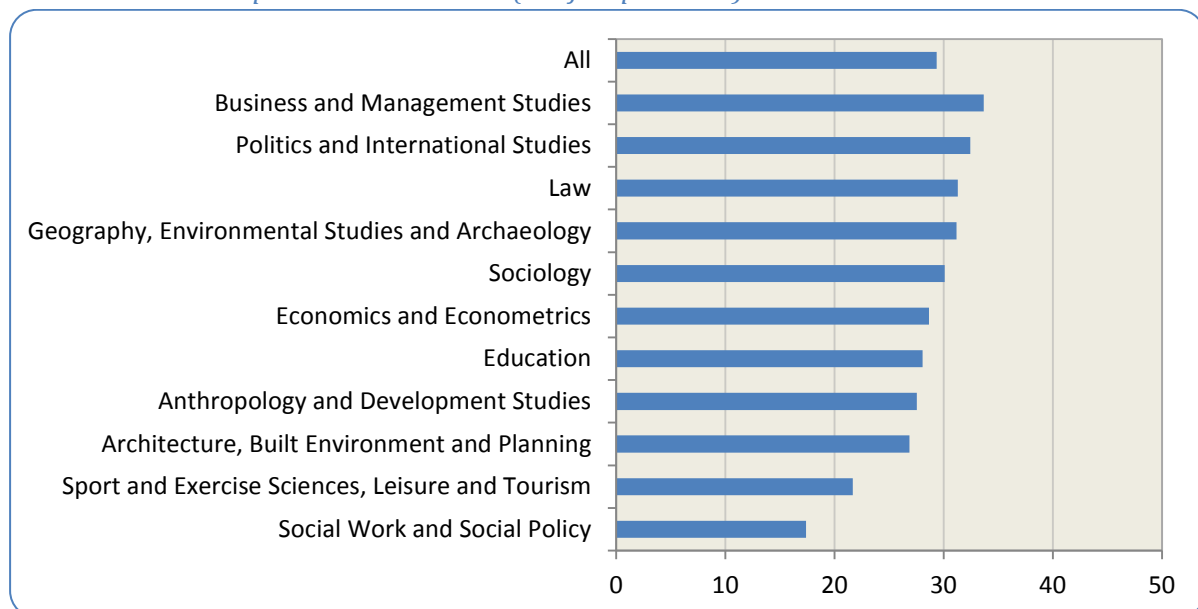
Exhibit 2.6 reveals that slightly more than a fifth (21%) of all social science academics engaged in basic research. The disciplines of ‘Politics and international studies’ and ‘Anthropology and development studies’ had the highest proportions of academics undertaking basic research, at 39% and 38% respectively. The disciplines of ‘Architecture, built environment and planning’ and ‘Social work and social policy’ had the fewest academics primarily motivated to undertake basic research, at 9% and 7% respectively.

Exhibit 2.6: Basic Research (% of respondents)



In Exhibit 2.7 we can see that 29% of all social science academics were primarily motivated to carry out user-inspired basic research. 'Business and management studies' had the highest proportion of academics engaged in user-inspired basic research (34%). 'Sport and exercise sciences, leisure and tourism' and 'Social work and social policy' saw fewer than a quarter of academics report undertaking user-inspired basic research, at 22% and 17% respectively. The remaining disciplines showed a more even spread ranging between 27% and 32%.

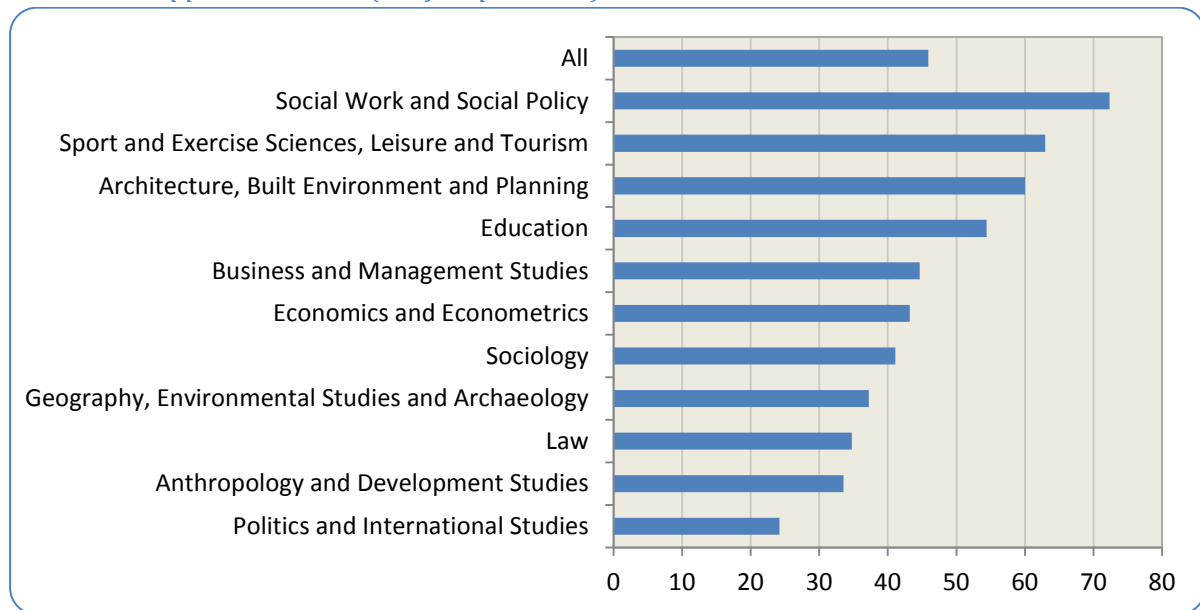
Exhibit 2.7: User-inspired Basic Research (% of respondents)



Almost half (46%) of social science academics reported that their primary motivation was to undertake applied research. When analysed within disciplines the proportion of academics undertaking applied research was greatest within 'Social work and social policy' at almost three quarters (72%). In contrast, under a quarter (24%) of academics in 'Politics and international studies' reported undertaking applied research. When Exhibit 2.6 to Exhibit 2.8 are considered 'Economics

and econometrics' and 'Sociology' display the most even distribution of their academics across the three primary motivational types.

Exhibit 2.8: Applied Research (% of respondents)



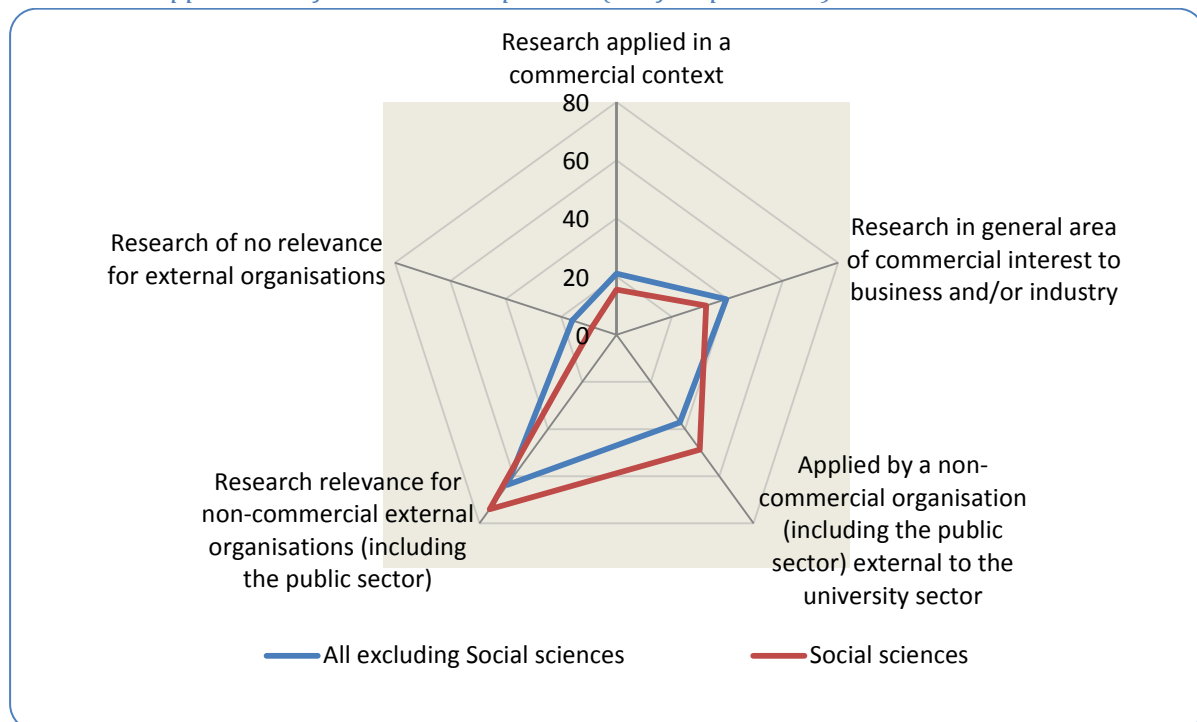
Section 3: Applications of Research

Respondents from our Survey of Academics 2015 who were undertaking research were asked to indicate whether: it had been applied in a commercial context; was in a general area of commercial interest to business and/or industry; had relevance for non-commercial external organisations, including the public sector; or whether, in their view, it had no relevance for external organisations.

In Exhibit 3.1 we can see that few academics believed their research to have no relevance outside of the university sector. The majority (almost three quarters, 74%) of social science academics reported their research being most relevant to the non-commercial sector, including the public sector, whilst around a third (32%) stated their research was in a general area of commercial interest to business and/or industry.

Overall, in comparison with academics in all other disciplines those in the social sciences were more likely to both believe their research to be relevant to the non-commercial sector and to have had it applied by a non-commercial organisation. Social science academics as a whole were less likely than non-social science academics to identify their research as being in a general area of commercial interest to business and/or industry and also to have had their research applied in a commercial context.

Exhibit 3.1: Application of Research Comparison (% of respondents)



The following five exhibits (Exhibit 3.2 to Exhibit 3.6) reveal the perceived relevance and reported application of research undertaken by academics as ranked by proportion within each of the 11 disciplines within the social sciences.

As reported above, almost three quarters (74%) of social science academics believed their research has relevance to the non-commercial sector. This perception of relevance to the non-commercial

sector was high across all social science disciplines with ‘Sociology’ academics most likely to report this (86%) and ‘Business and management studies’ academics the least likely (60%).

Exhibit 3.2: Perceived relevance to non-commercial external organisations - including the public sector (% of respondents)

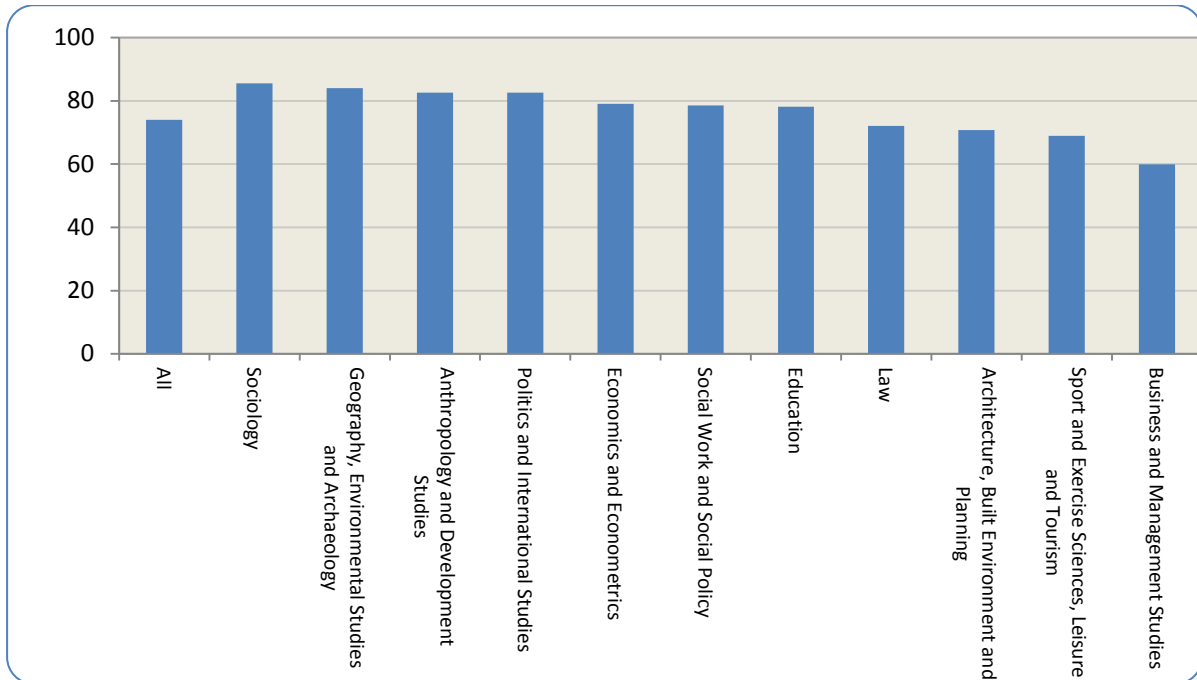
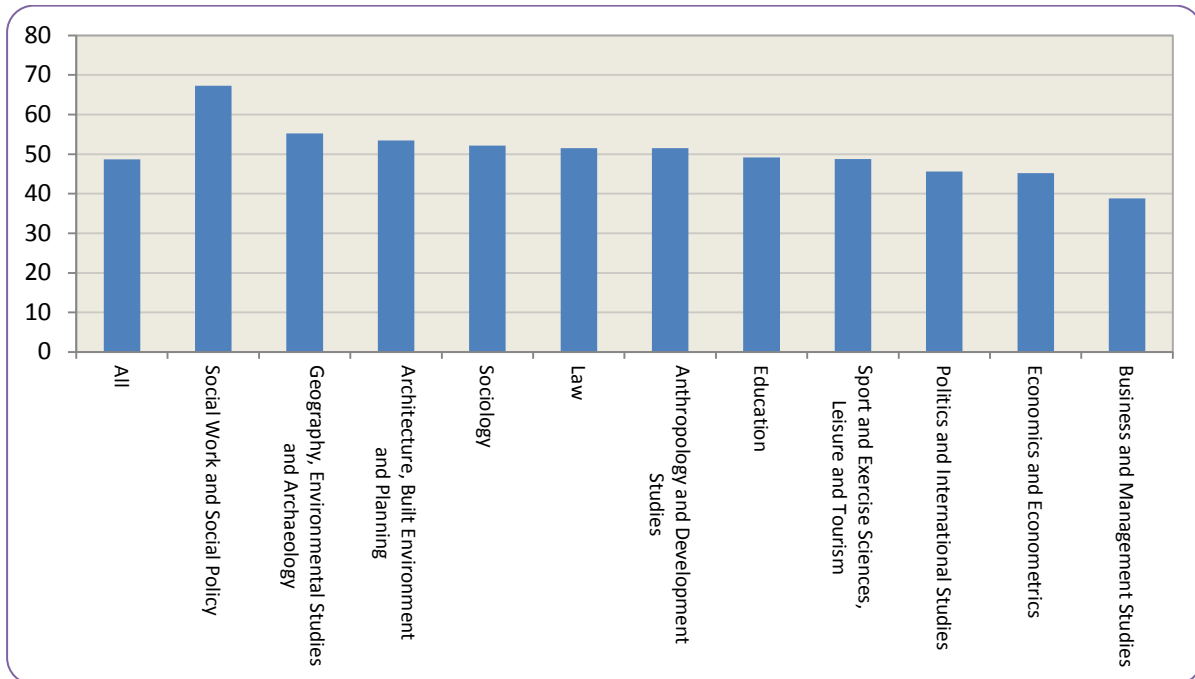


Exhibit 3.3 shows that as a whole, almost half (49%) of social science academics stated their research had been applied by a non-commercial organisation external to the university sector. ‘Social work and social policy’ academics were most likely to report this, with two thirds (67%) recording application by a non-commercial organisation. ‘Geography, Environmental Studies, and Archaeology’ was second at 55%.

In contrast, academics in the field of ‘Business and management studies’ were least likely both to view their research as having relevance for a non-commercial organisation (60%) and to have it applied by a non-commercial organisation (39%).

Exhibit 3.3: Applied by a non-commercial organisation (% of respondents)



The data in Exhibit 3.4 reveal that a much higher proportion of academics within ‘Business and management studies’ (65%) and ‘Architecture, built environment and planning’ (54%) perceived their research to have been in a general area of commercial interest to business and/or industry than any of the other disciplines.

Exhibit 3.4: Perceived to be in a general area of commercial interest to business and/or industry (% of respondents)

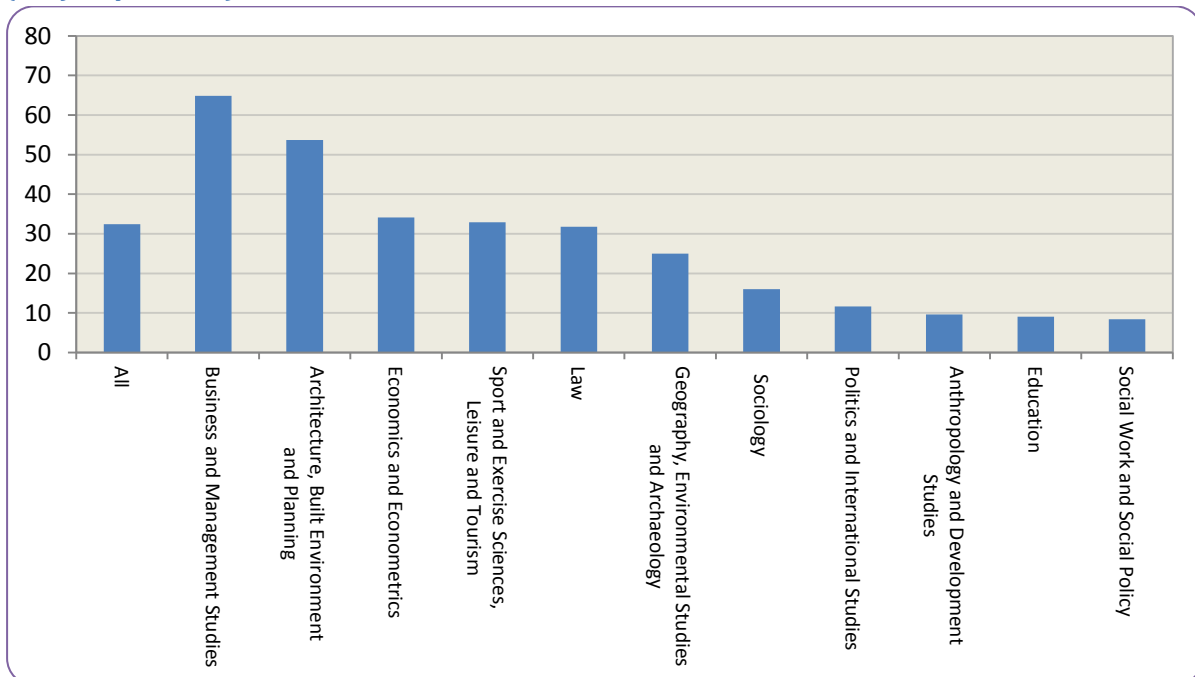
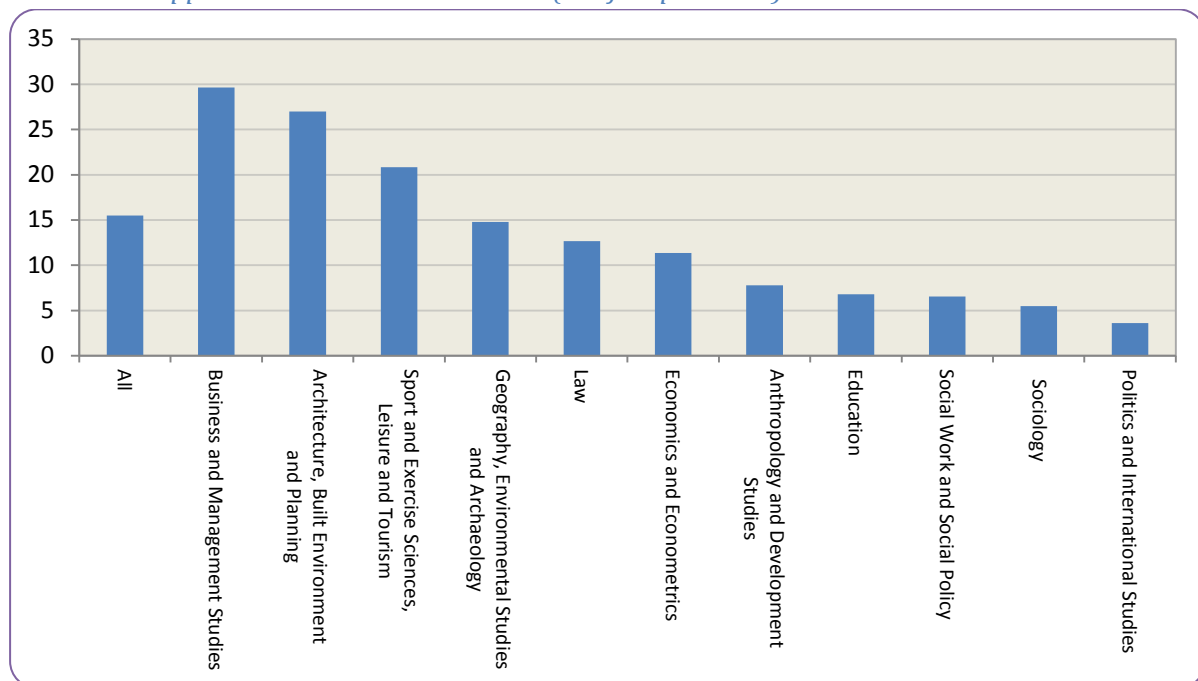


Exhibit 3.5 shows that only three disciplines: ‘Business and management studies’, ‘Architecture, built environment and planning’ and ‘Sport and exercise sciences, leisure and tourism’, had more than a fifth of their academics report applying their research in a commercial context.

‘Business and management studies’ had the highest proportion of academics stating that their research was applied in a commercial context, at slightly under a third (30%).

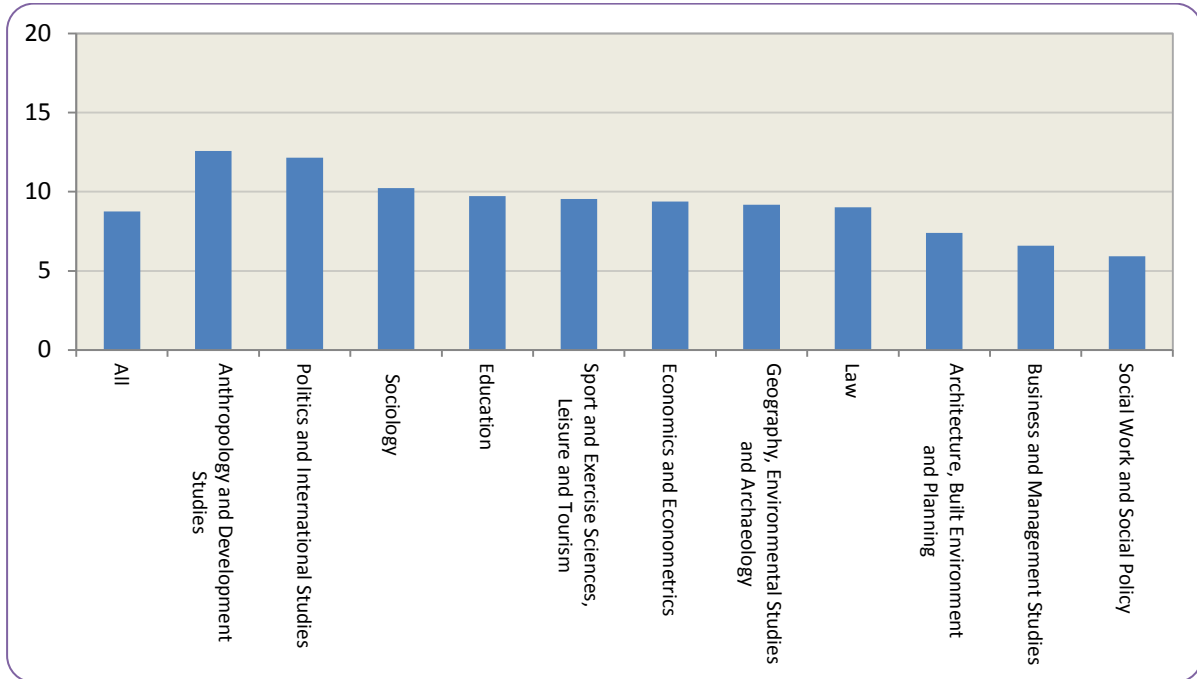
At the other end of the scale the five disciplines of: ‘Anthropology and development studies’, ‘Education’, ‘Social work and social policy’, ‘Sociology’, and ‘Politics and international studies’ each contained fewer than ten percent of academics who had applied their research output in a commercial context.

Exhibit 3.5: Applied in a commercial context (% of respondents)



Within the social sciences as a whole only 9% of academics reported their research being of no relevance for external organisations. As shown in Exhibit 3.6 academics in ‘Anthropology and development studies’ and ‘Politics and international studies’ were most likely to report this being the case, at 13% and 12% respectively.

Exhibit 3.6: Perceived to be of no relevance for external organisations (% of respondents)



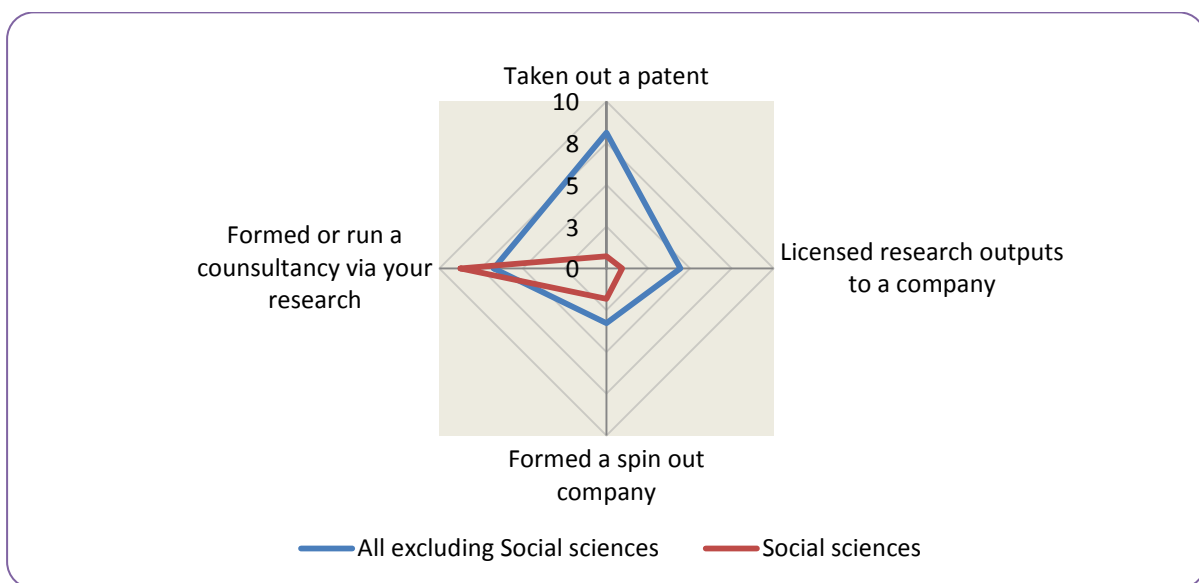
The most striking difference which emerges from this analysis is the relative emphasis on private sector relevance and engagement by social science academics in 'Business and management studies', and 'Architecture, built environment and planning' contrasted with the greater non-commercial sector orientation of 'Sociology', 'Geography and environmental studies and archaeology' and 'Social work and social policy'. 'Architecture, built environment and planning' has the most evenly spread pattern of engagements across the commercial and non-commercial categories.

Section 4: Commercialisation of Research

The survey defined commercialisation activity as consisting of patenting; licensing; formation of a spin-out company; and the formation of a consultancy. This 'narrow' definition is used in this section. In Section 5, which follows, the report examines a much wider range of knowledge exchange activities which may form pathways to application and impact beyond the narrow definition used in this section.

Exhibit 4.1 shows the pattern of commercialisation activity for social science academics in relation to the other academic disciplines as a whole. Commercialisation of social science research output was relatively highly skewed towards consultancy activity. Patenting, licensing and company spin outs are much less frequently reported by social scientists than by non-social scientists. Focusing on these measures will seriously underestimate social science engagement with the private, public, and third sectors which is more fully captured by the range of people-based, problem-solving, and community-based activities discussed in the next section of this report.

Exhibit 4.1: Direct Commercialisation Activities; social scientists and non-social scientists (% of respondents)



The following four exhibits reveal the pattern of engagement in these activities across the social science disciplines. Exhibit 4.2 shows the percentage of respondents who engaged in patenting their research. As we can see the level of engagement was extremely low (generally less than 3%) across all disciplines. Academics in 'Sport and exercise sciences, leisure and tourism' were most active at slightly over 3%.

Exhibit 4.2: Taken out a patent (% of respondents)

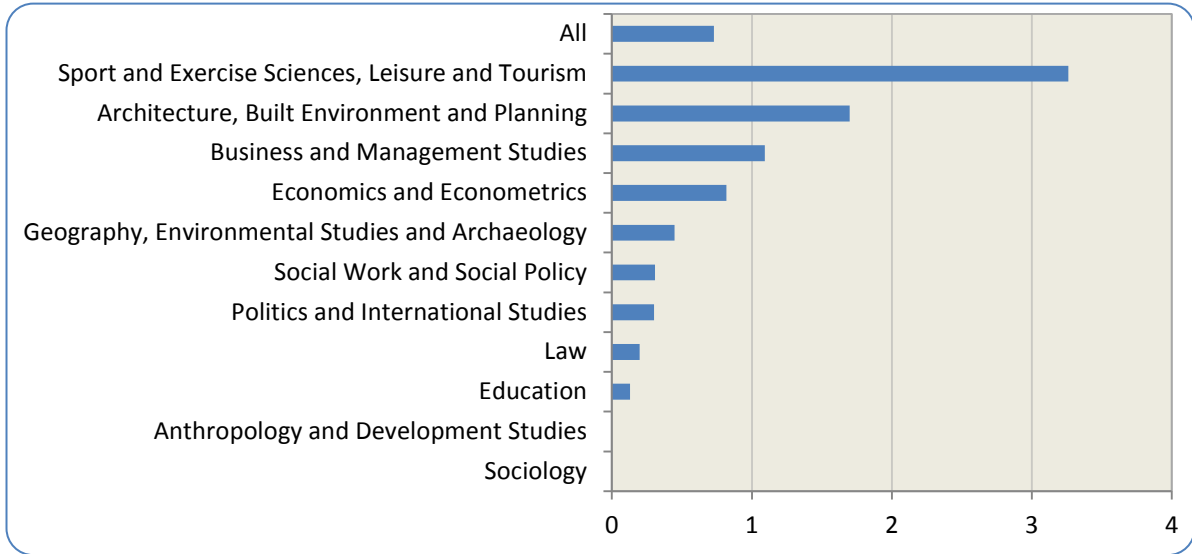
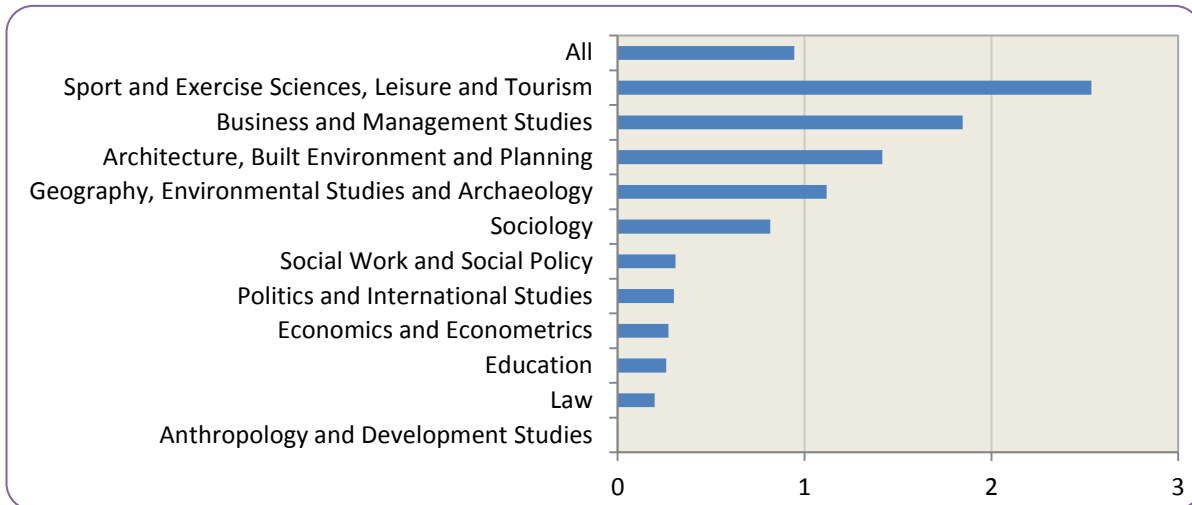


Exhibit 4.3 describes a similar pattern of engagement in licencing research output as seen with patenting. A very small proportion of social science academics within each discipline engaged in this activity, at less than 1% overall. Academics in ‘Sport and exercise sciences, leisure and tourism’ were most likely to licence their research output.

Exhibit 4.3: Licensed research outputs to a company (% of respondents)



We can see in Exhibit 4.4 that academics in ‘Architecture, built environment and planning’ were most likely to report commercialising their research output via spin-out company formation, with slightly over 5% reporting this type of engagement.

Exhibit 4.4: Formed a spin out company (% of respondents)

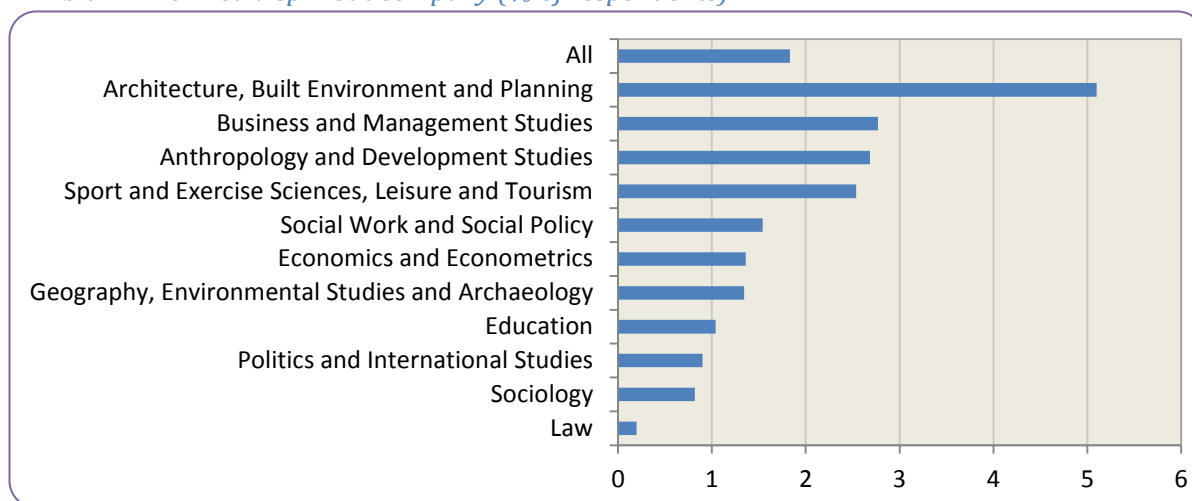
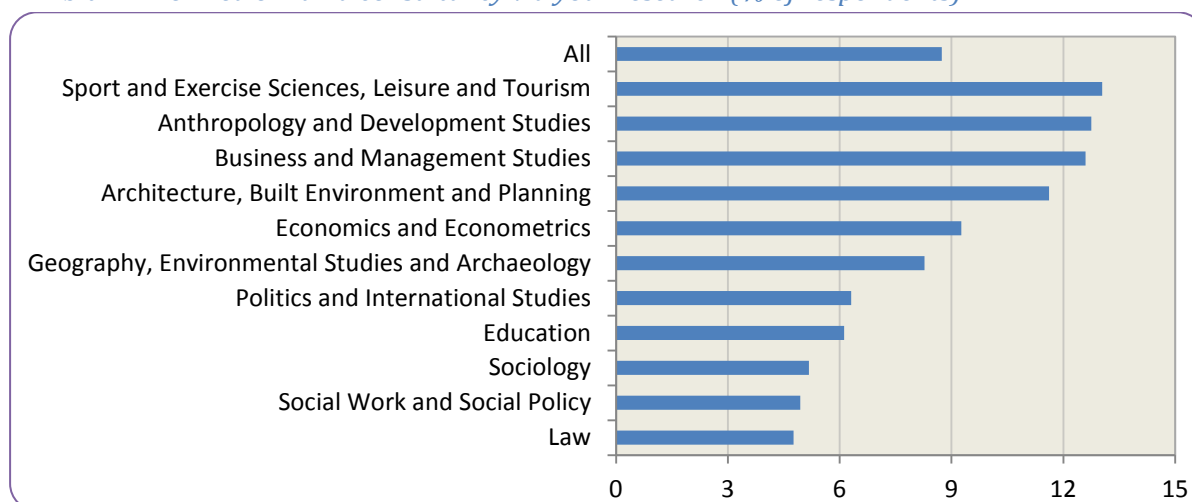


Exhibit 4.5 reports variations in consultancy formation. This is most frequent in ‘Sport and exercise sciences, leisure and tourism’, closely followed by ‘Anthropology and development studies’ and ‘Business and management studies’ (12-13%). It was least frequent in ‘Sociology’ and in ‘Social work, and social policy’ and ‘Law’ (<6%).

Exhibit 4.5: Formed or run a consultancy via your research (% of respondents)



The evidence in this section shows that of the four commercialisation activities analysed social science academics used consultancy formation as the main route through which to commercialise their research output directly. The highest proportions of academics engaging in this mode of commercialisation, with each of the following disciplines reporting higher than average engagement, was seen in ‘Sport and exercise sciences, leisure and tourism’ (13%), ‘Anthropology and development studies’ (13%), ‘Business and management studies’ (13%), ‘Architecture, built environment and planning’ (12%), and ‘Economics and econometrics’ (9%).

The evidence reveals that academics in 'Law', 'Education', and 'Sociology' were consistently among the least likely to report engagement in any form of direct commercialisation of their research output.

Section 5: Engagement Activity by Discipline

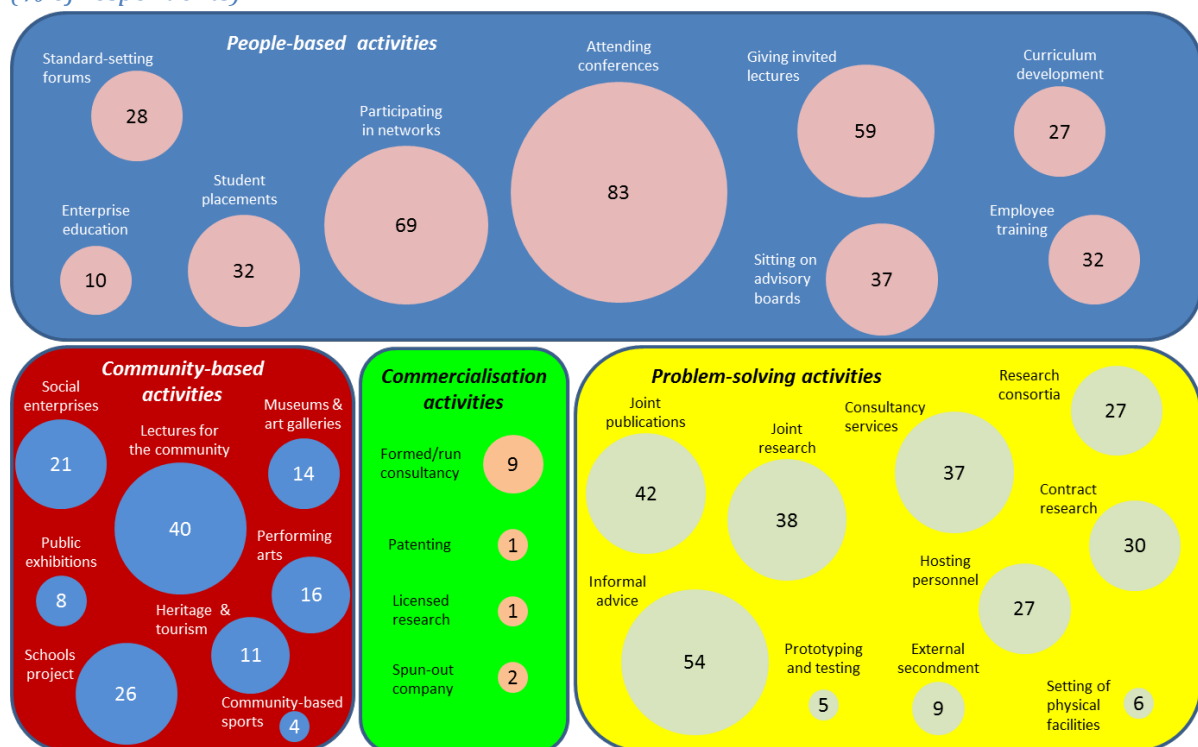
When the knowledge exchange process is broadened beyond the narrow definition of commercialisation used in Section 4 then a richer and more varied range of modes of engagement and interaction are apparent. In addition to the 4 commercialisation modes we have identified an additional 27 interaction modes. These modes of engagement can be grouped into three broad activity categories: people-based, problem-solving, and community-based.

Exhibit 5.1 presents the percentages of respondents from the social sciences reporting engagement in each mode of knowledge exchange interaction; the larger the bubble, the higher the percentage of respondents reporting that interaction. Exhibit 5.2 provides a comparison with non-social science disciplines.

It is clearly apparent from Exhibit 5.1 that commercialisation activities were amongst the least common forms of external knowledge exchange activity when taken alongside the much more diverse and more frequently reported people-based, problem-solving, and community-based interactions.

Within social sciences as a whole the most frequently cited activities involving external organisations which are engaged in by academics are attending conferences (83%), participating in networks (69%), giving invited lectures (59%), providing informal advice (54%), producing joint publications (42%), and providing community lectures(40%).

*Exhibit 5.1: Modes of Knowledge Exchange engagement within the social sciences
(% of respondents)*



To complement the data gathered on levels of engagement in each of the engagement activities shown in Exhibit 5.1 it is useful to know the importance placed by academics on each as a pathway to impact of their research on external organisations.

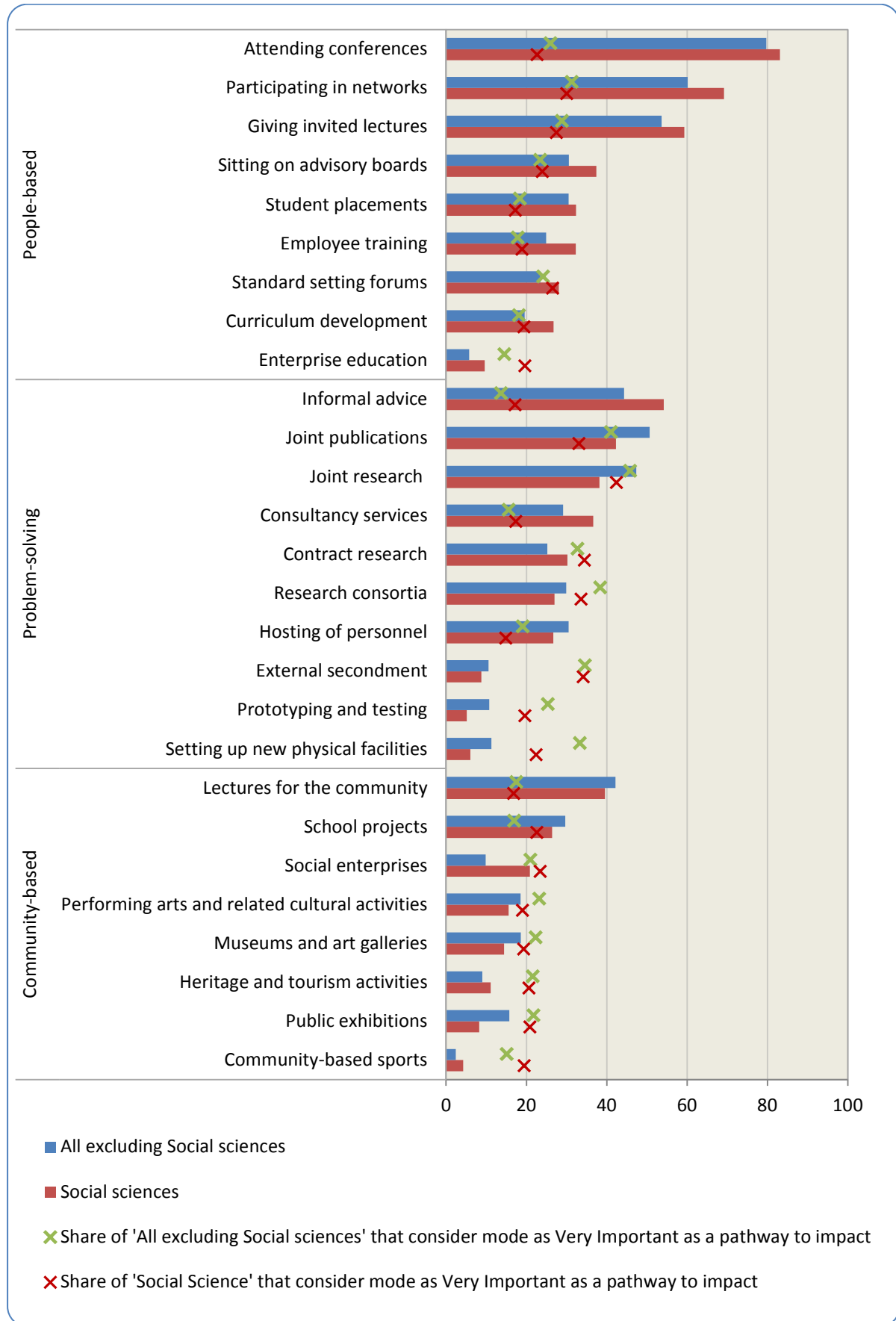
Respondents engaged in these activities were asked to indicate how important each activity was as a pathway to impact on a 5-point Likert scale – where 5 is ‘very important’ and 1 is ‘unimportant’. While an academic will probably think that any activity they are engaged in is important to them it is informative to be able to identify which they value as very important. It is important to note that an activity which has a low frequency may nonetheless have a substantial proportion of those doing it reporting that it is very important. Thus in some cases the proportion of those who carry out an activity who regard it as very important may be higher than the proportion of all academics doing that activity.

Exhibit 5.2 shows both the frequency and importance attached to each mode of knowledge exchange interaction activity in the social sciences compared to all disciplines excluding social sciences. In general, social scientists are less likely to report problem-solving activities and more likely to report people-based and community-based activities. The pattern of importance is much more similar between social and non-social sciences with the exceptions of prototyping and setting up physical facilities which are of more relevance in particular for the natural sciences and engineering.

Whilst attending conferences was the most frequently identified mode of engagement within social sciences as a whole, by 83% of academics, it was not among the most valued modes of engagement. Within the people-based engagement grouping: participating in networks (30%), giving invited lectures organised by external organisations (28%), participating in standard setting forums (27%), and sitting on the advisory boards of external organisations (24%) were all more likely to be ranked as of very important by academics engaged in them.

We can also see that community-based modes of engagement were, (whilst less likely to be engaged in as a knowledge exchange activity by social scientists compared to people-based and problem-solving activities), rated as very important by a substantial proportion of social scientists engaged in them. Approximately a fifth of social science academics engaged in each community-based activity also identified it as being very important to their research as a pathway to external impact. Social scientists and non-social scientists tend to rate problem-solving activities as very important more frequently than they do in the case of either people-based or community-based modes of engagement

Exhibit 5.2: Non-commercial Modes of Engagement (% of respondents)



The following 27 exhibits (Exhibit 5.3 to Exhibit 5.29) address each non-commercial mode of engagement in knowledge exchange activity presented in turn as ranked by overall average engagement across disciplines. Each shows the proportion of social science academics as a whole and within each discipline that engaged in a certain activity (represented as blue bars) and the percentage that identified that activity as being very important to them as a pathway to impact of their research (represented by red spots).

Exhibit 5.3 to Exhibit 5.11 present data for people-based knowledge exchange activities, Exhibit 5.12 to Exhibit 5.21 present data for problem-solving activities. Exhibit 5.22 to Exhibit 5.29 present data on community-based activities.

Exhibit 5.3 shows that 83% of academics within all social science disciplines stated they had attended conferences in the past three years as a pathway to impact. The proportion was greatest within ‘Social work and Social policy’, at 92%. Attending conferences was by far the most frequently used engagement activity amongst all social science academics over the period 2012-2015. Across disciplines the highest proportions of academics reporting that this was a very important engagement activity for them were seen in ‘Business and management Studies’ (26%), ‘Law’ (26%), and ‘Sport and exercise sciences, leisure and tourism’ (25%), respectively.

Exhibit 5.3: People-based activities by Discipline – Attending Conferences (% of respondents)

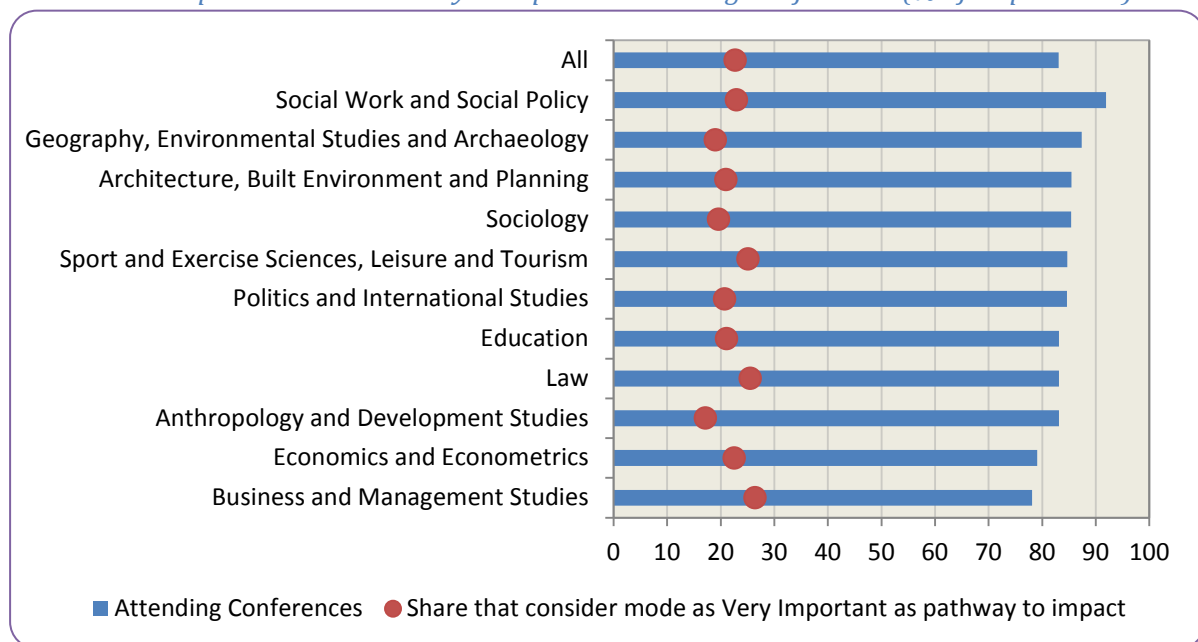


Exhibit 5.4 shows that on average 69% of social science academics participated in networks involving organisations external to the university sector. Across the social sciences as a whole 30% considered that participating in networks was very important as a pathway to impact of their research. Across disciplines ‘Social work and social policy’ (83%), and ‘Architecture, built environment and planning’ (80%) had the highest proportions of academics report engaging in this activity. Those in ‘Architecture, built environment and planning’ were also most likely to view this as a very important pathway to impact. Academics in ‘Law’ whilst not being the least likely to participate in networks

were the least likely to identify it as being very important to them, with only slightly over a quarter (26%) doing so.

Exhibit 5.4: People-based activities by Discipline – Participating in Networks (% of respondents)

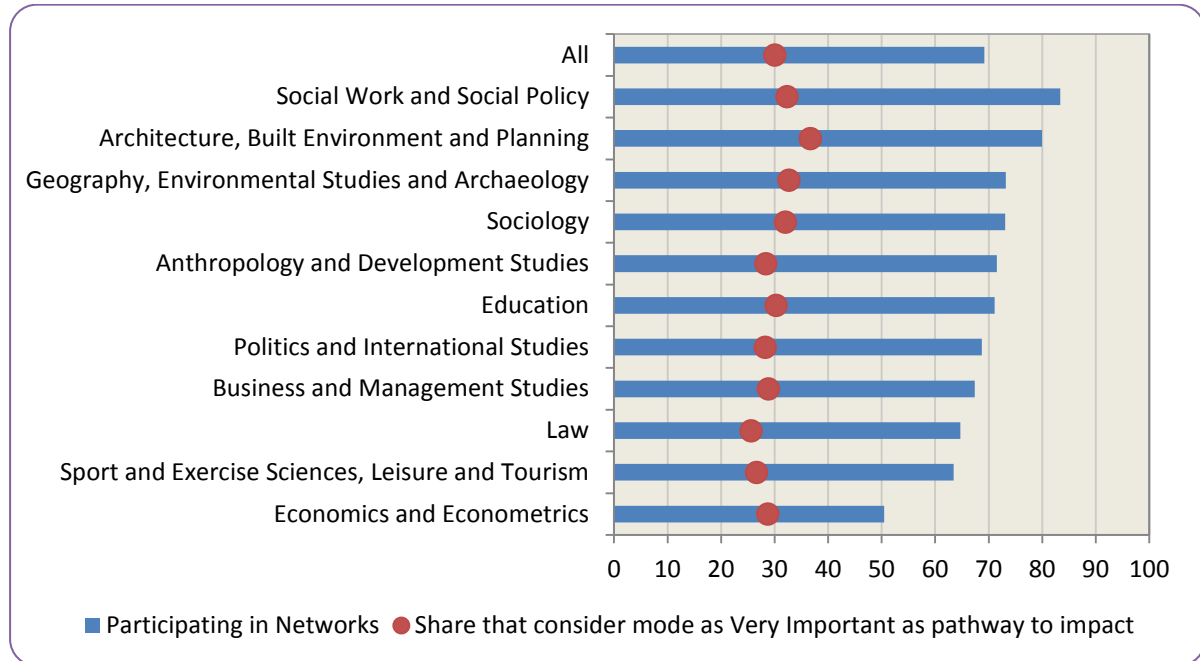
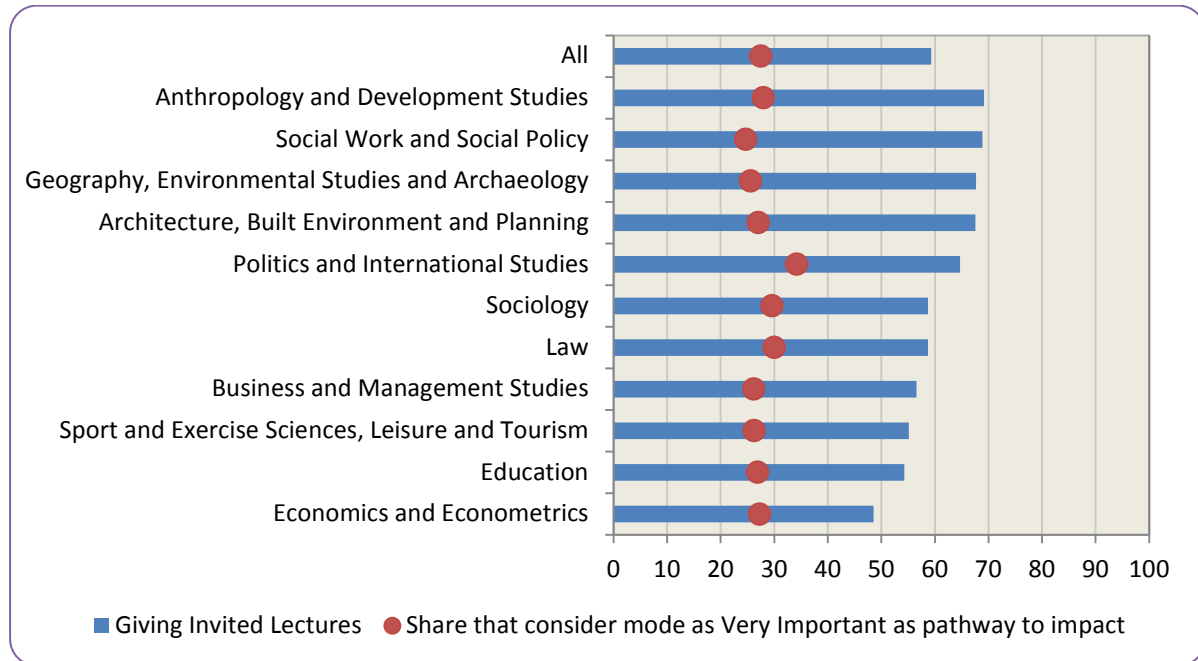


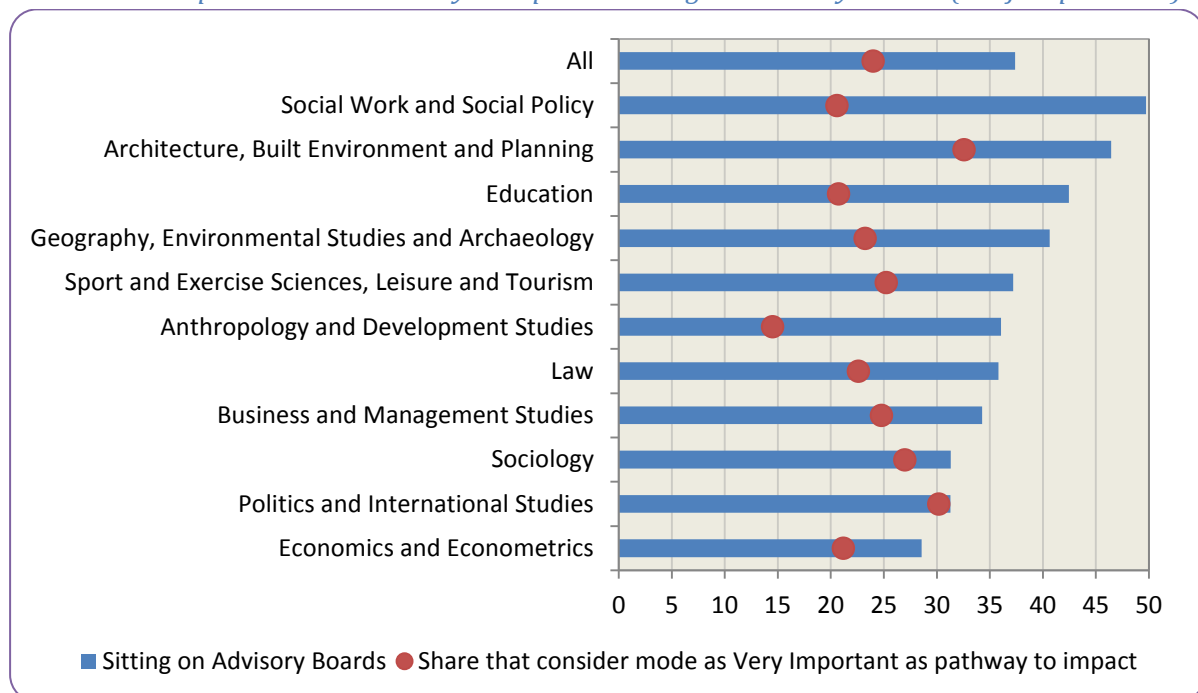
Exhibit 5.5 shows that giving invited lectures to external organisations is a popular method of engagement within the social sciences as a whole, with 59% reporting doing so. ‘Anthropology and developmental studies’ academics were most likely (69%) to engage in this activity whilst ‘Economics and econometrics’ academics were the least likely, with slightly under half doing so (49%). The discipline of ‘Politics and international studies’ had the highest proportion of academics rate providing invited lectures as being very important to them as a pathway to impact of their research with external organisations.

Exhibit 5.5: People-based activities by Discipline – Giving Invited Lectures (% of respondents)



The data presented in Exhibit 5.6 reveal that the importance attributed to sitting on advisory boards of external organisations varies across disciplines. Across disciplines we can see that academics in ‘Social work and social policy’ (50%) and ‘Architecture, built environment and planning’ (46%) were most likely to report engaging in this activity. Almost a third (32%) of ‘Architecture, built environment and planning’ academics that engaged in this mode of knowledge exchange identified it as being very important to them. In contrast, only 15% of ‘Anthropology and development studies’ academics valued it as highly.

Exhibit 5.6: People-based activities by Discipline – Sitting on Advisory Boards (% of respondents)



In Exhibit 5.7 we can see approximately a third (32%) of social science academics reported utilising in-course student projects or placements with external organisations, including Knowledge Transfer Partnerships. When analysed across disciplines it is revealed that academics in ‘Sport and exercise sciences, leisure and tourism’ (47%) were most likely to report engagement. However, it is academics in ‘Architecture, built environment and planning’ and ‘Social work and social policy’ who were most likely to report it as a very important method of engagement, at 24% and 23% respectively.

Exhibit 5.7: People-based activities by Discipline – Student Placements (% of respondents)

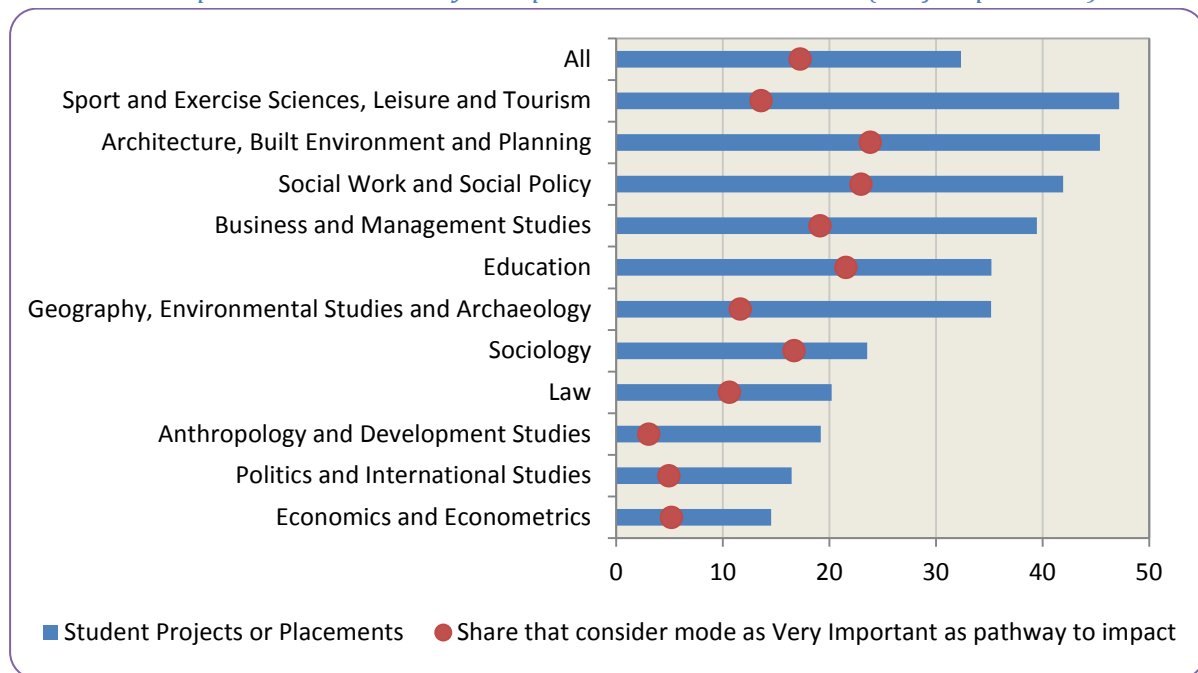
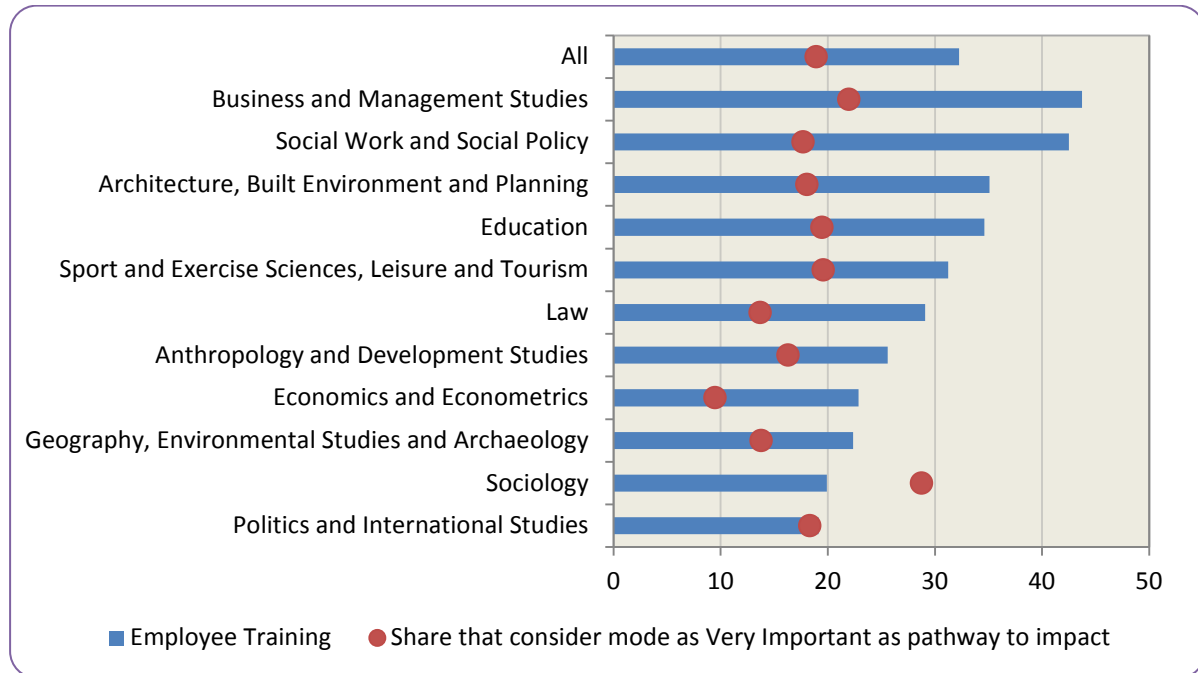


Exhibit 5.8 shows approximately a third (32%) of social science academics reported undertaking the training of company employees through teaching or personnel exchange as a mode of knowledge transfer. When analysed across disciplines academics in ‘Business and management studies’ (44%) and ‘Social work and social policy’ (43%) are most likely to report engaging in this activity. Academics in ‘Sociology’ were amongst the least likely to engage in this activity (20%) along with those in ‘Politics and international studies’ (19%). However, ‘Sociology’ had the highest share of academics identify the mode as very important to them as a pathway to impact, at 29%.

Exhibit 5.8: People-based activities by Discipline – Employee Training (% of respondents)



As shown in Exhibit 5.9 over a quarter (28%) of academics within the social sciences as a whole reported participating in standard setting forums as part of their engagement activity with organisations external to the university sector.

Disciplinary analysis shows that ‘Social work and social policy’ (39%) and ‘Architecture, built environment and planning’ (37%) had the highest proportions of academics report engagement in this activity. In terms of the importance placed on participation in standard setting forums ‘Sociology’ (35%), ‘Economics and econometrics’ (30%), ‘Politics and International Studies’ (29%), and ‘Architecture, built environment and planning’ (29%) are revealed to have the highest proportions of academics report the engagement mode as a very important pathway to impact for their research.

Exhibit 5.9: People-based activities by Discipline – Standard Setting Forums (% of respondents)

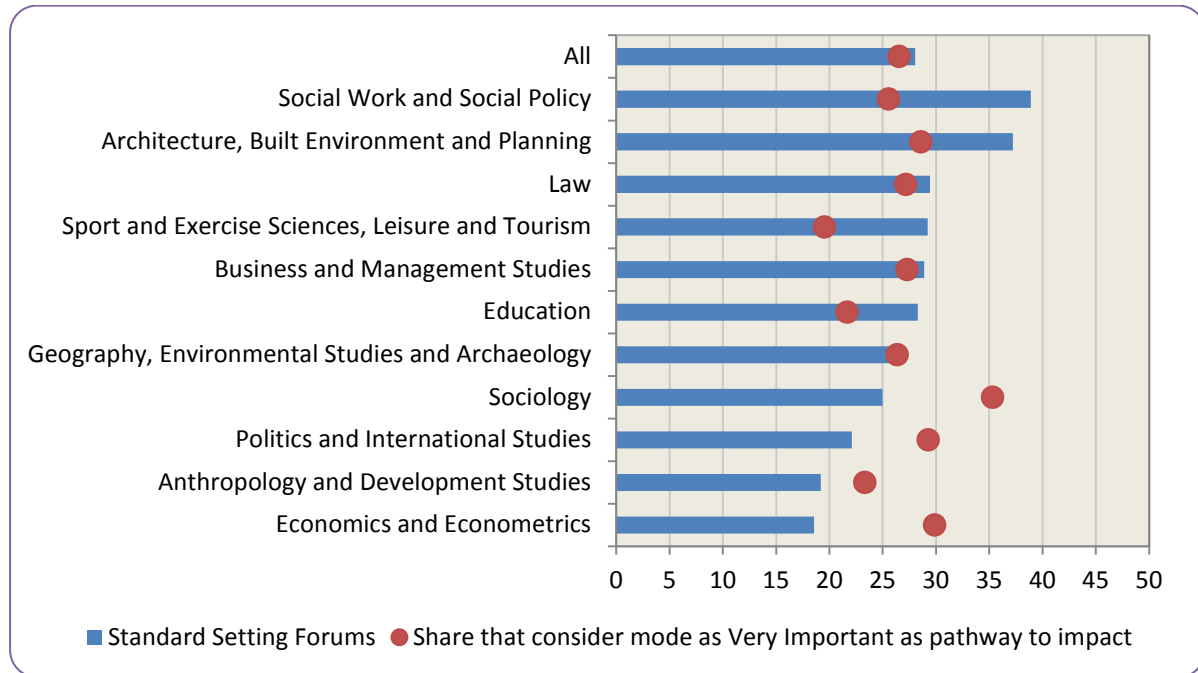
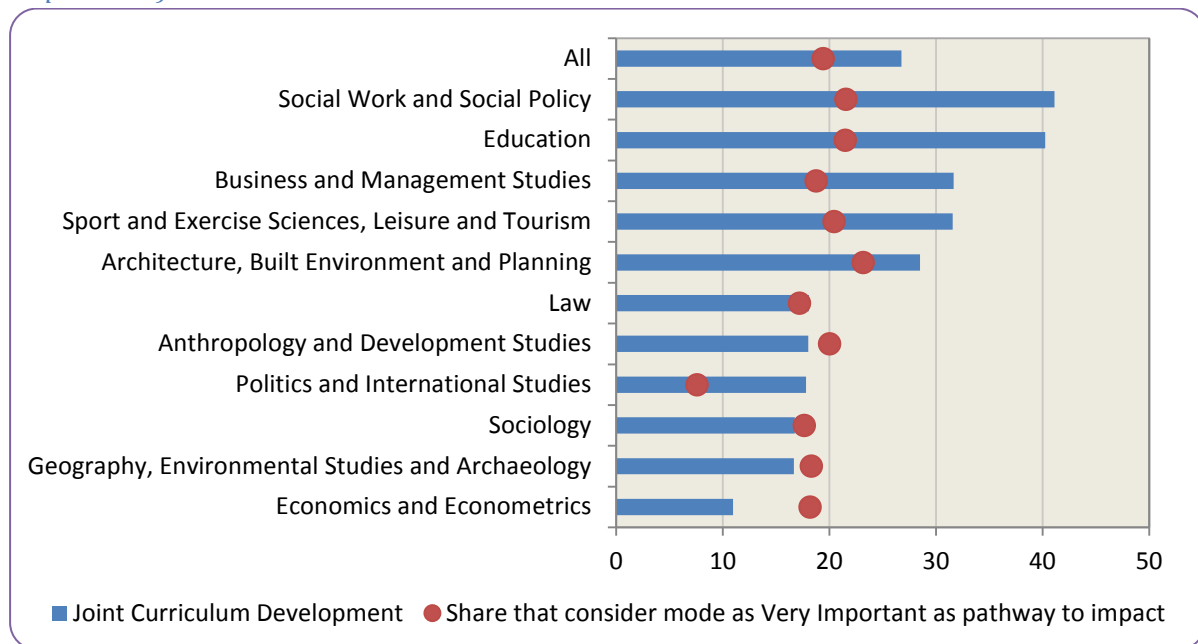


Exhibit 5.10 shows overall, 27% of social science academics engage in joint curriculum development with external organisations. The disciplines of ‘Social work and social policy’ (41%) and ‘Education’ (40%) had the highest proportion of academics report engagement in joint curriculum development with external organisations. Academics in ‘Architecture, built environment, and planning’ were the most likely to identify it as being a very important pathway to impact for their research, at 23%.

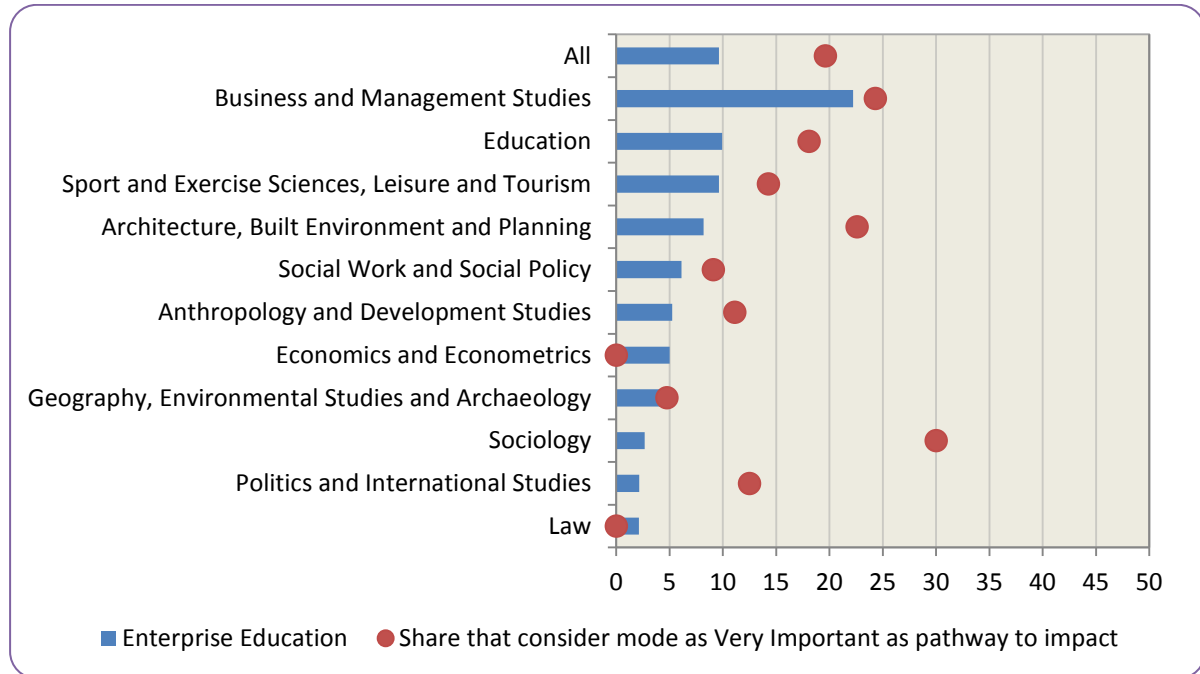
Exhibit 5.10: People-based activities by Discipline – Joint Curriculum Development (% of respondents)



Overall, fewer social science academics (10%) identified engaging in enterprise education than any other knowledge exchange activity. Across disciplines the highest proportion of academics reporting

taking part in enterprise engagement activity was seen in ‘Business and management studies’ at 22%, over twice the percentage as seen in any other discipline with almost a quarter (24%) of these academics identifying it as a very important pathway to impact for their research.

Exhibit 5.11: People-based activities by Discipline – Enterprise Education (% of respondents)



The following ten exhibits (Exhibit 5.12 to Exhibit 5.21) present data for knowledge exchange activities identified as problem-solving activities.

Exhibit 5.12 reveals over half (54%) of all social science academics reported providing informal advice to external organisations within the period 2012-2015, with the level of engagement being fairly consistent across disciplines. Disciplinary analysis shows the proportion of academics reporting this as a knowledge exchange activity was highest in ‘Social work and social policy’ (64%) and ‘Architecture, built environment and planning’ (64%) and lowest in ‘Economics and econometrics’ at 38%. Providing informal advice saw consistently low levels of academics across disciplines reporting it as a very important pathway to research impact.

Exhibit 5.12: Problem-solving activities by Discipline – Providing Informal Advice (% of respondents)

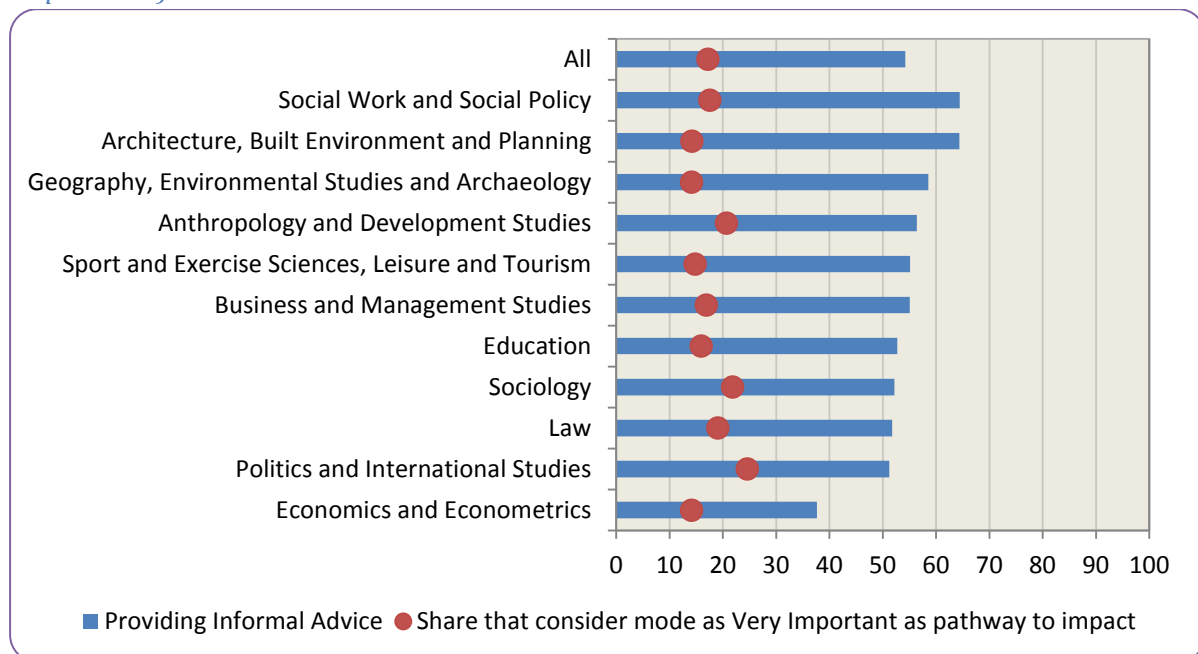


Exhibit 5.13 presents the data for engagement through production of joint publications with external organisations. Overall, 42% of social science academics reported engaging in this activity with a third of those doing so regarding it as being a very important pathway to research impact. Over half of academics within the disciplines of ‘Geography, environmental studies and archaeology’ (54%) and ‘Architecture, built environment and planning’ (53%) were involved in producing joint publications. ‘Sociology’ and ‘Law’ saw the lowest proportion of academics engaging in this activity, at 36% and 33% respectively. Across all disciplines a consistently high proportion of academics rated it as a very important pathway to research impact.

Exhibit 5.13: Problem-solving Activities by Discipline – Joint Publications (% of respondents)

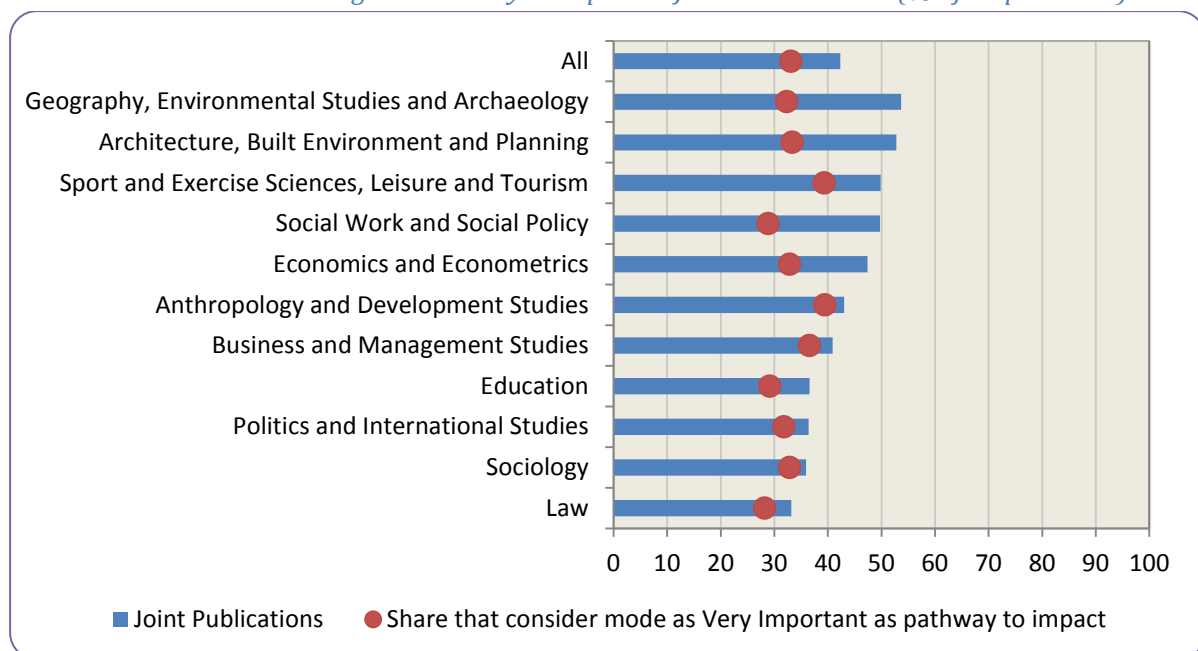


Exhibit 5.14 shows us that well over a third (38%) of academics undertook joint research projects with organisations external to the university sector. Academics in ‘Geography, environmental studies and archaeology’ were most likely to report involvement in this mode of engagement, at 53%, with those in ‘Law’ being the least likely to report it (26%). Joint research was consistently identified as being very important as a pathway to impact by a high proportion of social science academics. The data also shows that over half (53%) academics in ‘Sport and exercise sciences, leisure and tourism’ rated it as very important pathway to impact for their research.

Exhibit 5.14: Problem-solving Activities by Discipline – Joint Research (% of respondents)

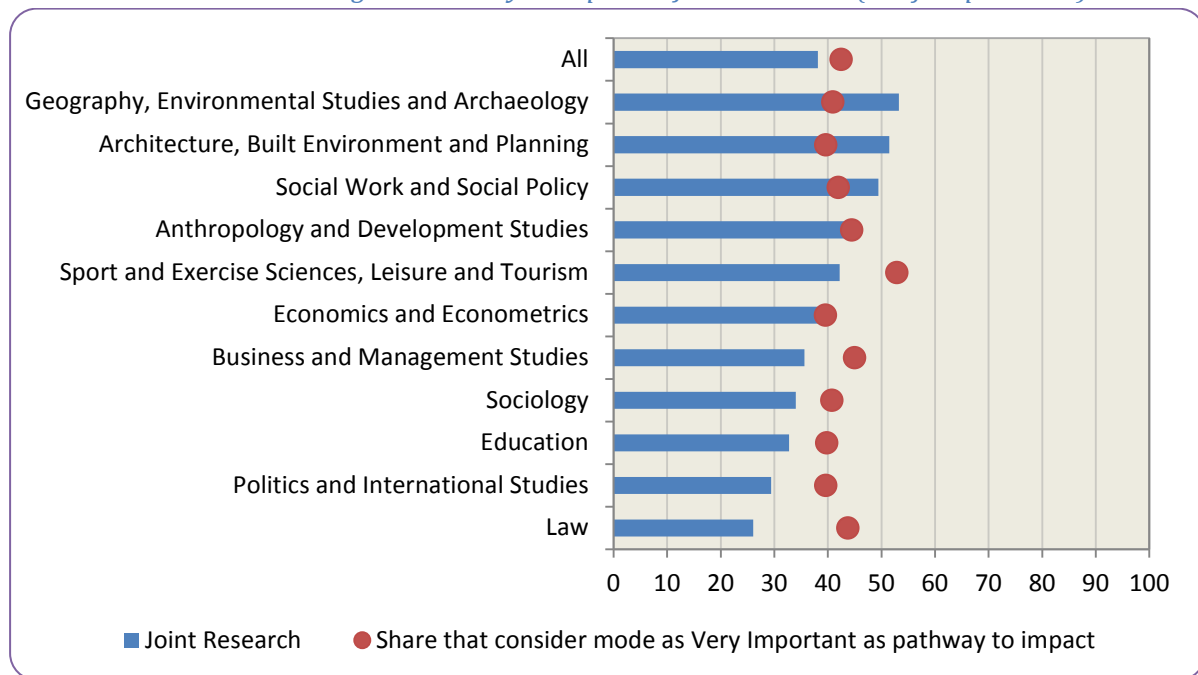


Exhibit 5.15 reveals that 37% of all social science academics reported providing consultancy services to external organisations. Academics in ‘Architecture, built environment and planning’ were most likely to report this mode of engagement, at 46% with academics in ‘Politics and international studies’, ‘Law’, and ‘Sociology’ being most likely to identify it as a very important pathway to impact.

Exhibit 5.15: Problem-solving Activities by Discipline – Consultancy Services (% of respondents)

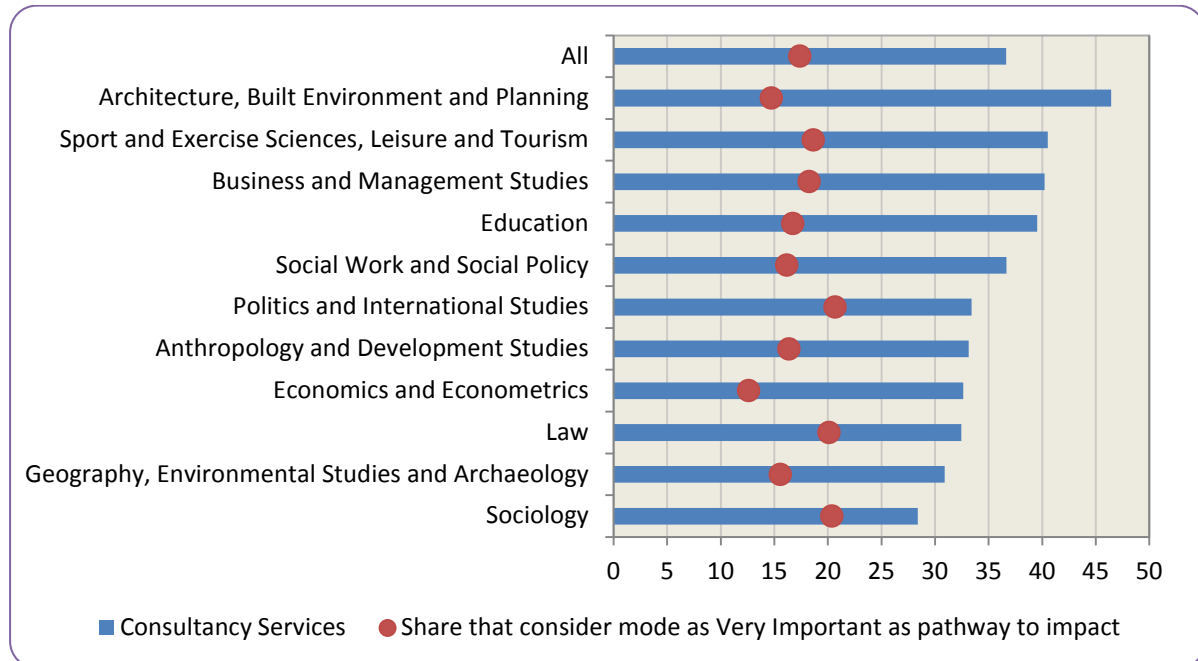
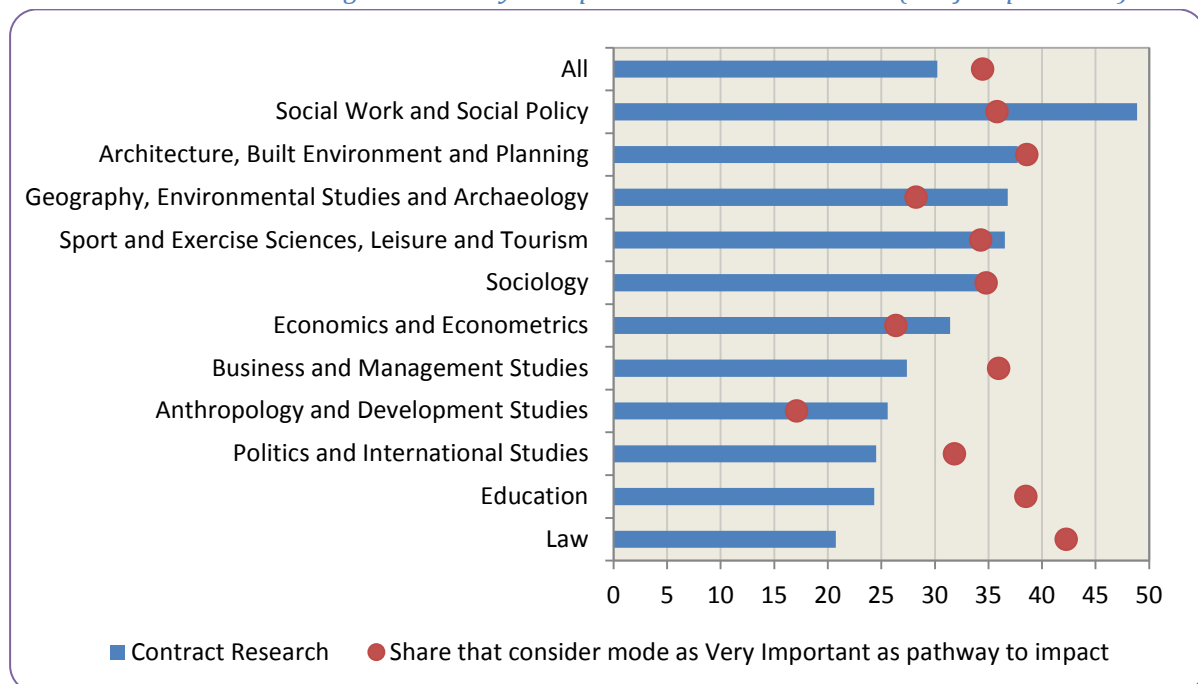


Exhibit 5.16 shows contract research was reported as an engagement activity by 30% of all social science respondents. When analysed by discipline we see that 'Education' and 'Law' saw the lowest proportions of academics report this mode, at 24% and 21% respectively, with the academics who did so being most likely to identify this as a very important path to impact, at 39% and 42% respectively. In contrast 'Anthropology and developmental studies' saw one of the lowest percentages of academics report engaging in contract research (26%) with these academics being least likely to identify this as a very important pathway when compared across disciplines.

Exhibit 5.16 Problem-solving Activities by Discipline – Contract Research (% of respondents)



We can see in Exhibit 5.17 that across all social sciences over a quarter (27%) of academics report participation in research consortia with external organisations. The data reveal the three disciplines with the highest proportion of academics reporting engagement being ‘Architecture, built environment and planning’ (42%), ‘Sport and exercise sciences, leisure and tourism’ (40%), and ‘Business and management studies’ (40%). Academics in ‘Sport and exercise sciences, leisure and tourism’ were also more likely (37%), when compared to the discipline average (34%) to identify this activity as being a very important pathway to impact.

Exhibit 5.17: Problem-solving Activities by Discipline – Research Consortia (% of respondents)

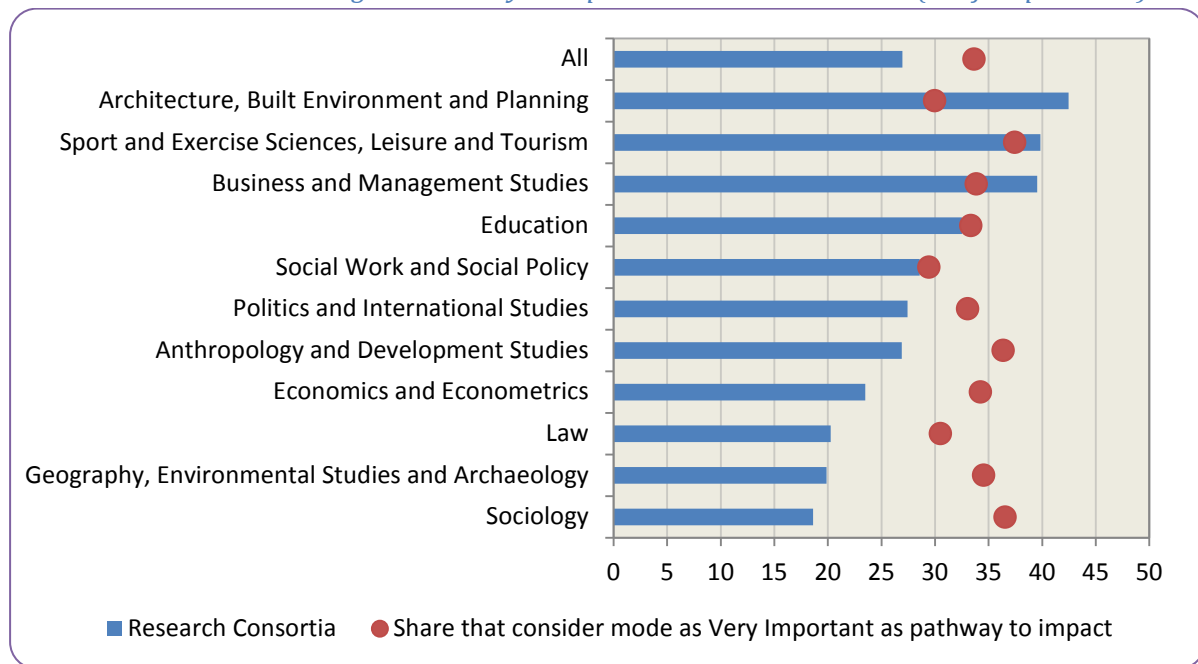


Exhibit 5.18 shows over a quarter (27%) of social science academics being involved with the hosting personnel from external organisations on a short- or long-term basis as a mode of knowledge exchange. Whilst ‘Social work and social policy’ (34%) saw the highest proportion of academics report engagement this way it was ‘Sociology’ that had the highest proportion of academics (23%) rank hosting personnel as being a very important path to impact.

Exhibit 5.18: Problem-solving Activities by Discipline – Hosting Personnel (% of respondents)

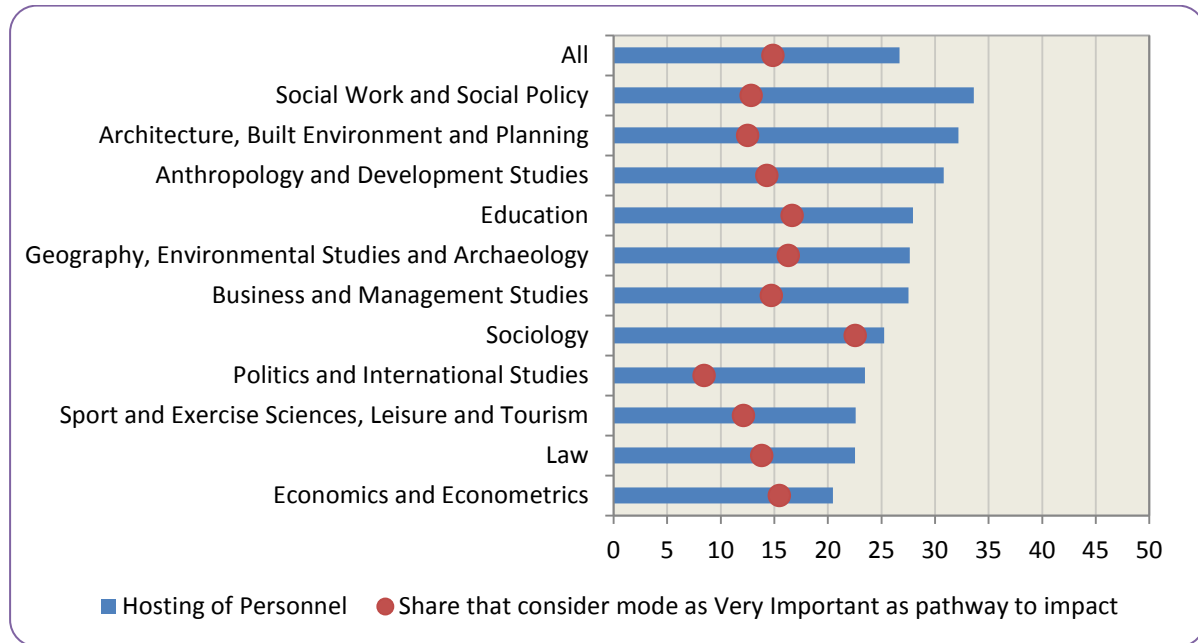


Exhibit 5.19 reveals an interesting pattern of engagement and perceived importance. Whilst overall and within disciplines the levels of engagement in undertaking external secondments to an external organisation was very low, on average only 9% across disciplines, the proportions of those academics who believed it to be a very important pathway to impact was high across the majority of disciplines.

Exhibit 5.19: Problem-solving Activities by Discipline – External Secondment (% of respondents)

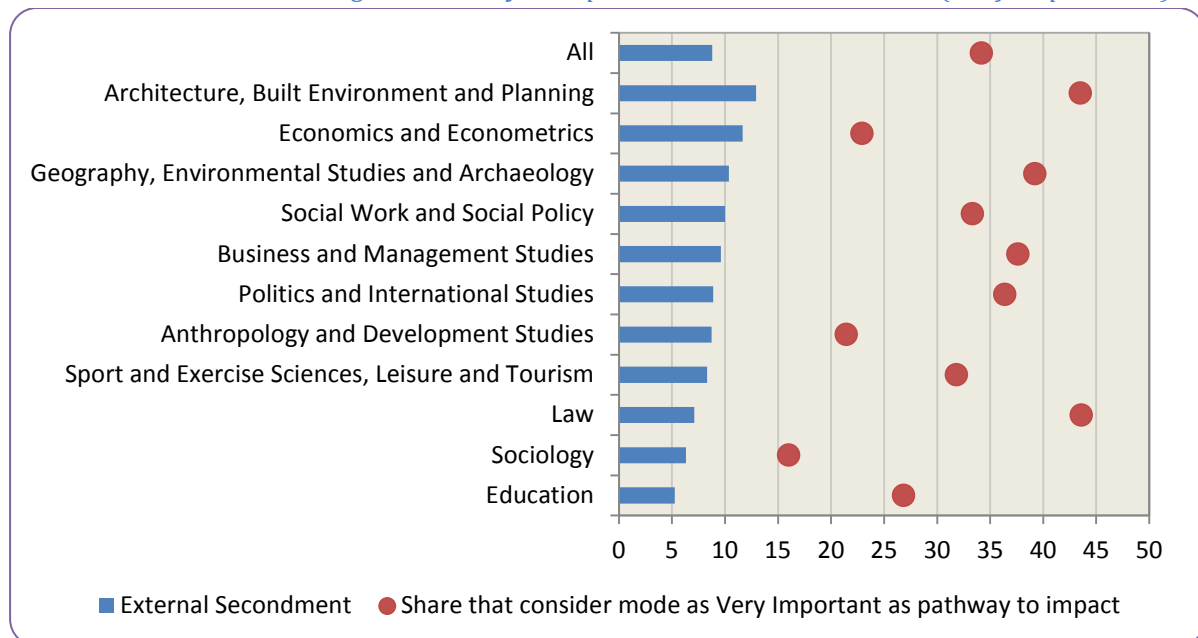


Exhibit 5.20 shows that on average across disciplines only 5% of academics undertook prototyping or testing activities for external organisations. The levels of engagement were very low within each discipline; however, perception of this as a very important pathway to impact was as high as 27% within ‘Sociology’ and 25% within ‘Geography, environmental studies and archaeology’.

Exhibit 5.20: Problem-solving Activities by Discipline – Prototype Testing (% of respondents)

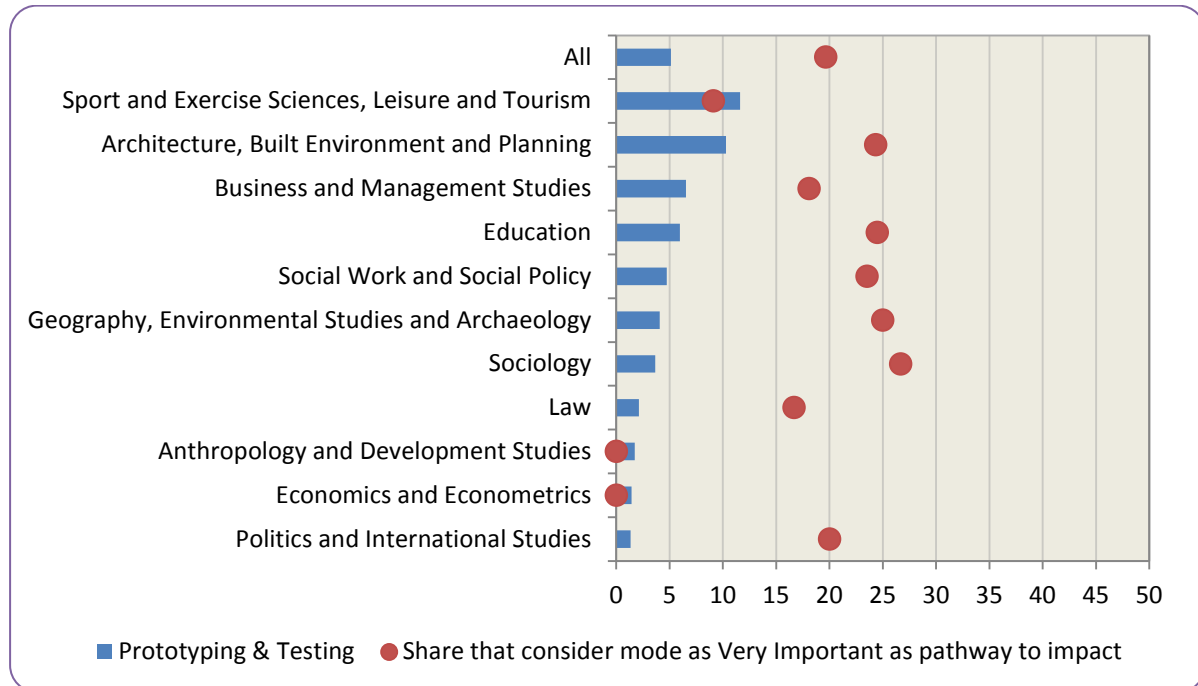
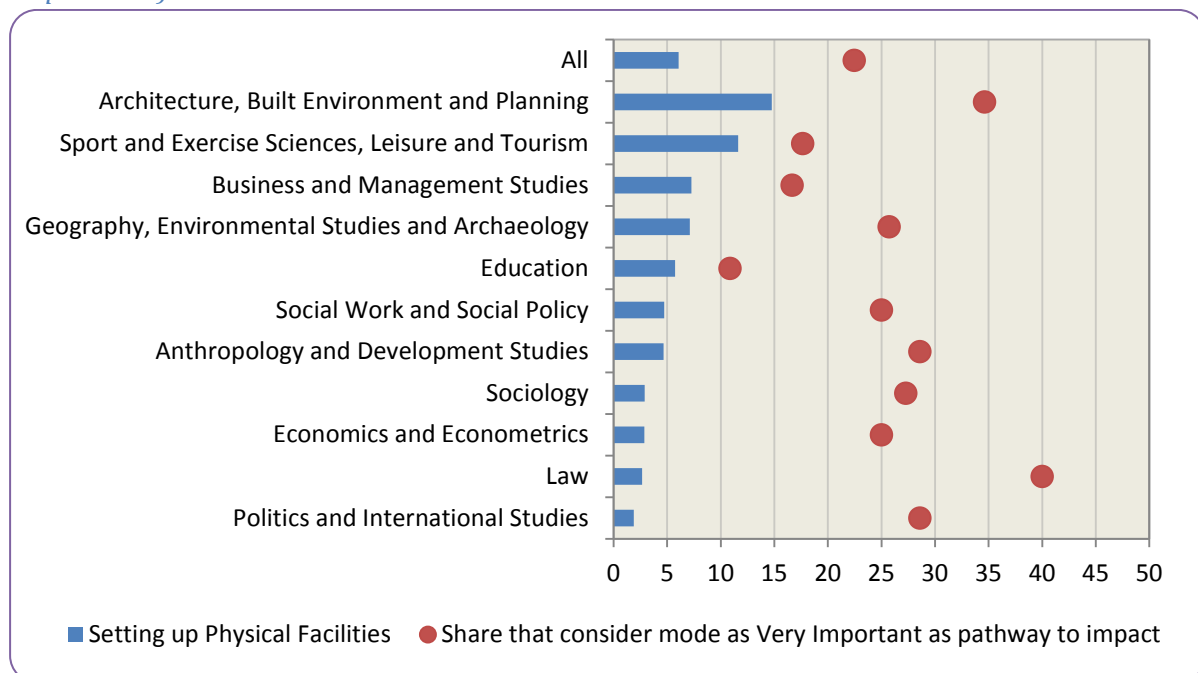


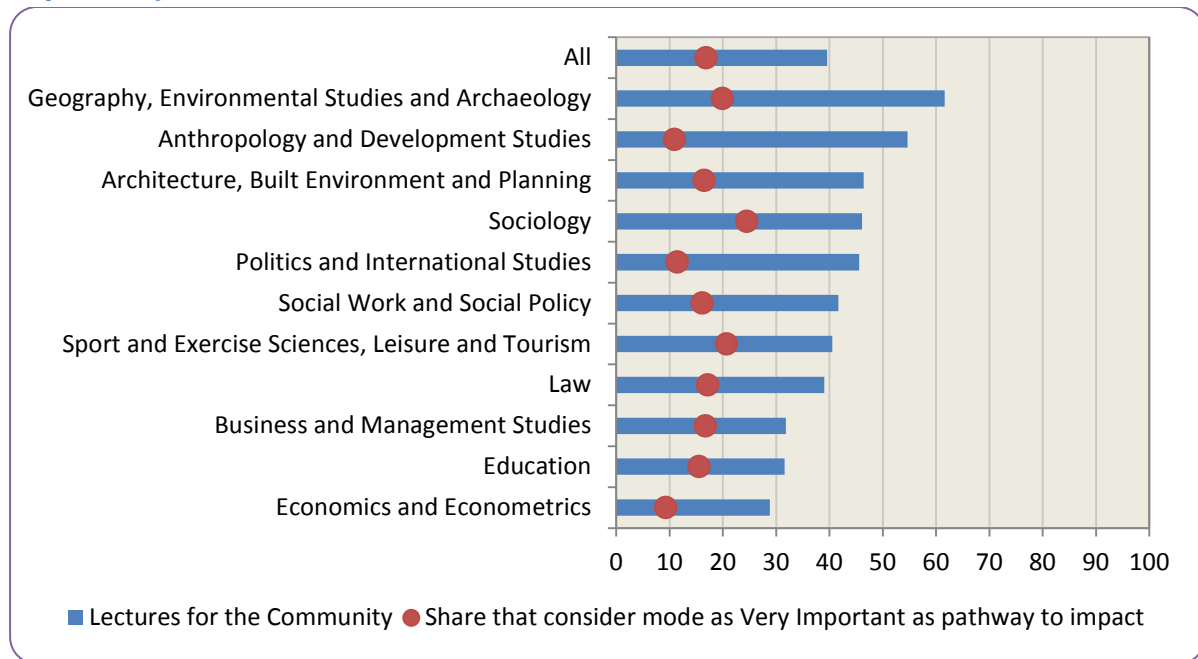
Exhibit 5.21 reveals the average level of reported engagement in setting up physical facilities with funding from external organisations was only 9%. However, ‘Architecture, built environment and planning’ saw 15% of academics identify this as a method of engagement. The disciplines of ‘Law’ (40%) and ‘Architecture, built environment and planning’ (35%) had the highest proportions of academics regard this as a very important pathway to impact. Eight of the eleven disciplines saw over a quarter of academics engaged in setting up physical facilities report this as a very important activity.

Exhibit 5.21: Problem-solving Activities by Discipline – Setting up Physical Facilities (% of respondents)



As identified earlier the most highly reported community-based knowledge exchange activity was the provision of lectures for the community. Exhibit 5.22 reveals ‘Geography, environmental studies and archaeology’ (62%) and ‘Anthropology and developmental studies’ (55%) as the disciplines with the highest proportions of academics reporting engagement via this route. A quarter (25%) of ‘Sociology’ academics who had undertaken community lecturing believed it was a very important pathway for them to have their research impact on organisations external to the university sector.

Exhibit 5.22: Community-based activities by Discipline – Lectures for the Community (% of respondents)



Overall, 26% of social science academics reported involvement with school projects. As we can see from Exhibit 5.23 the discipline with the highest proportion of academic engagement was ‘Education’ with over half (54%) of academics reporting undertaking this activity. Involvement in school projects was identified as being a very important pathway to research impact by over a third (34%) of these academics.

Exhibit 5.23: Community-based activities by Discipline – School Projects (% of respondents)

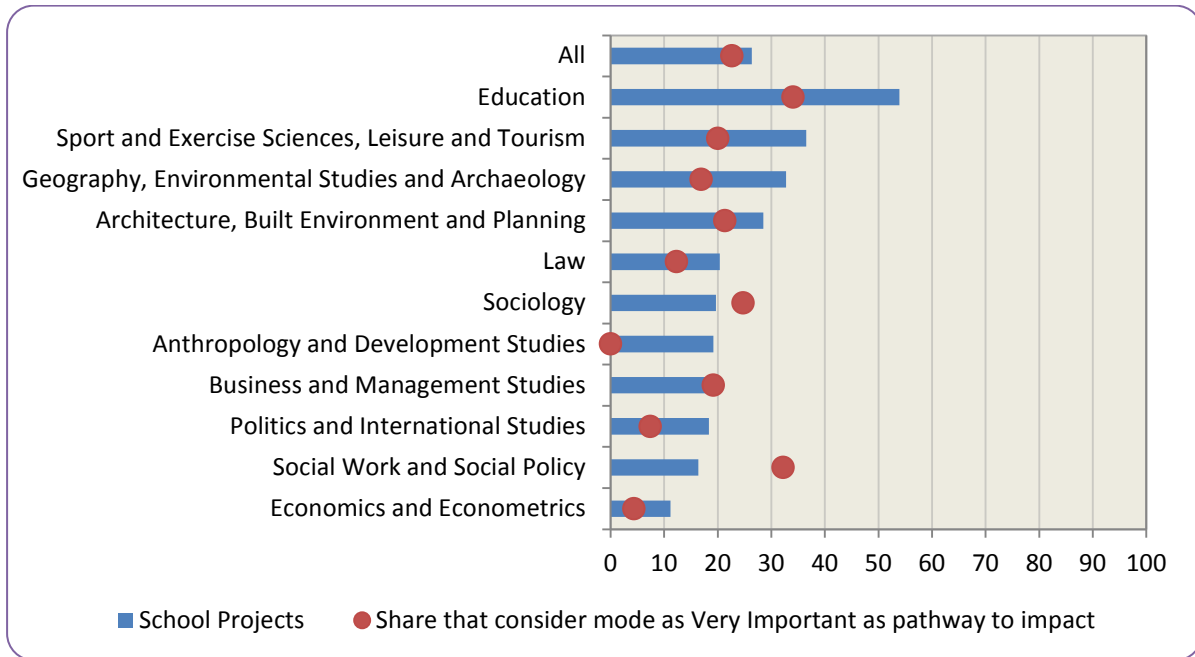
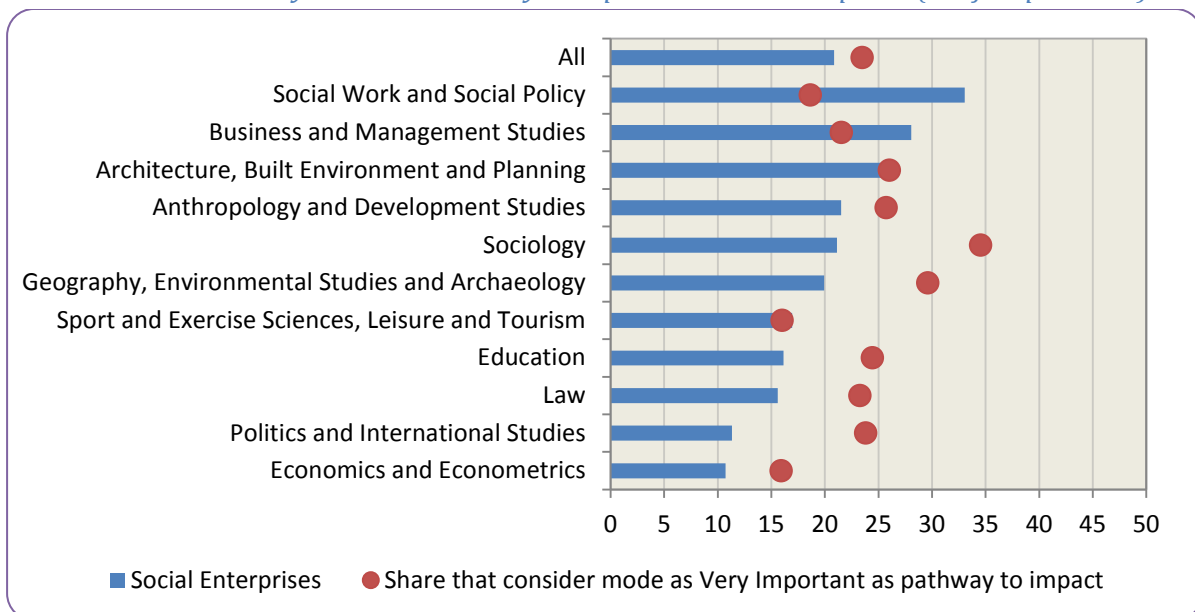


Exhibit 5.24 shows there was a discipline average of 21% reporting involvement in social enterprise activities. Academics in ‘Social work and social policy’ were most likely to report engagement in social enterprises, with 33% doing so. Academics in ‘Sociology’ (35%) and ‘Geography, environmental studies and archaeology’ (30%) were most likely to regard it as a very important pathway for impact.

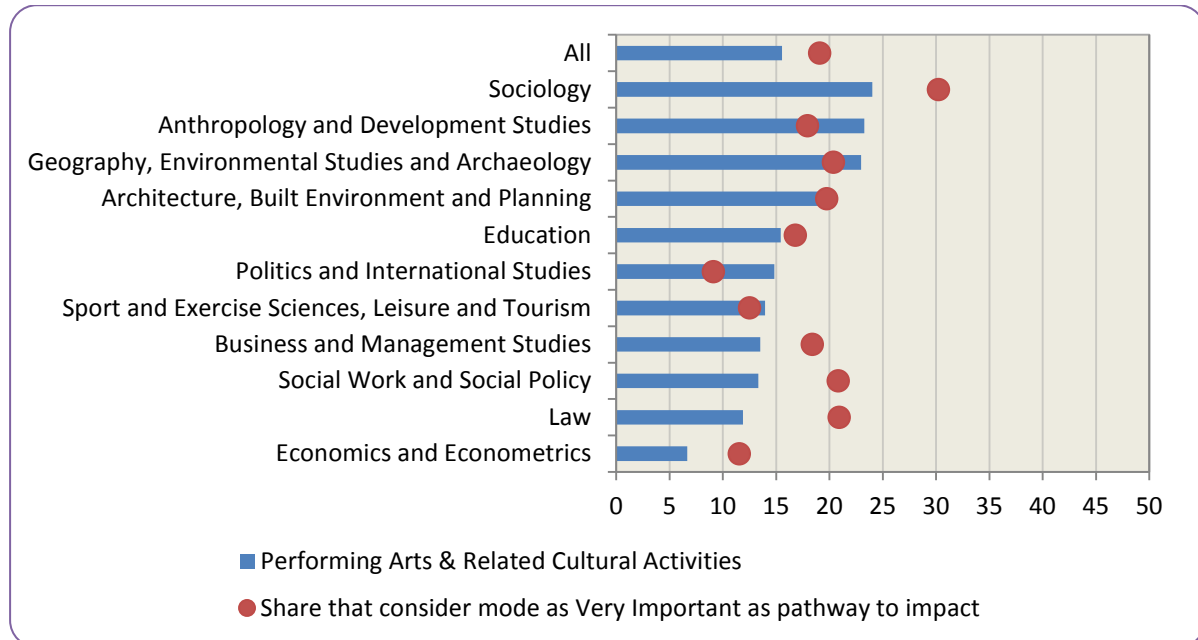
Exhibit 5.24: Community-based activities by Discipline – Social Enterprises (% of respondents)



Performing arts and related cultural activities were undertaken by 16% of social science academics within the period 2012-2015. Of these, almost a fifth (19%) identified these activities as being very important to them as a pathway toward research impact. ‘Sociology’ (24%), ‘Anthropology and

developmental studies' (23%), and 'Geography, environmental studies and archaeology' (23%) were the disciplines with the highest reported levels of participation in these activities.

Exhibit 5.25: Community-based activities by Discipline – Performing Arts & Related Cultural Activities (% of respondents)



In Exhibit 5.26 we can see that across disciplines 'Geography, environmental studies and archaeology' saw the highest proportion of academics report involvement with museums and art galleries, at 36%. Whilst the percentages of academics within disciplines was quite low in reporting this type of engagement those who did remained quite likely to identify it as a very important pathway to impact. This is especially noticeable in 'Business and management studies', 'Social work and social policy' and 'Law'.

Exhibit 5.26: Community-based activities by Discipline – Museum & Art Galleries (% of respondents)

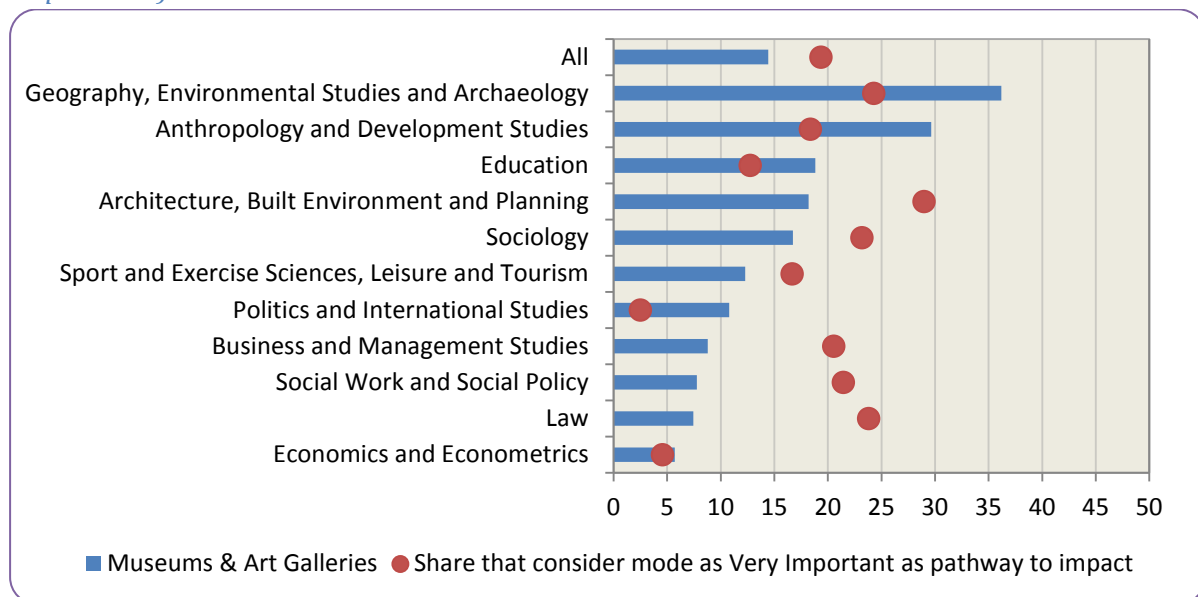
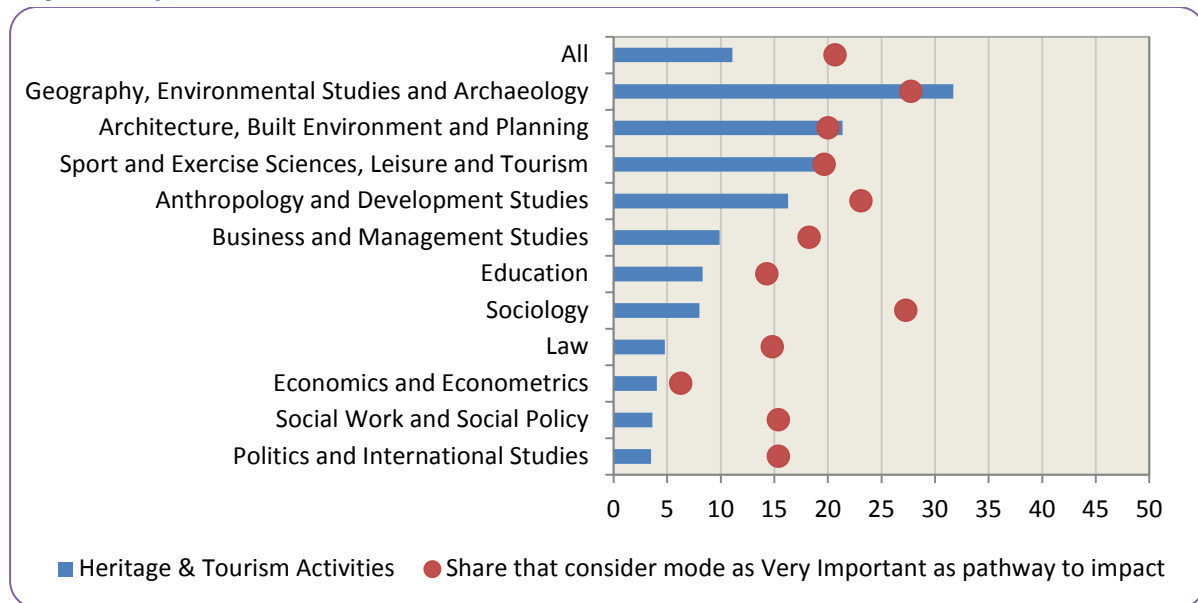


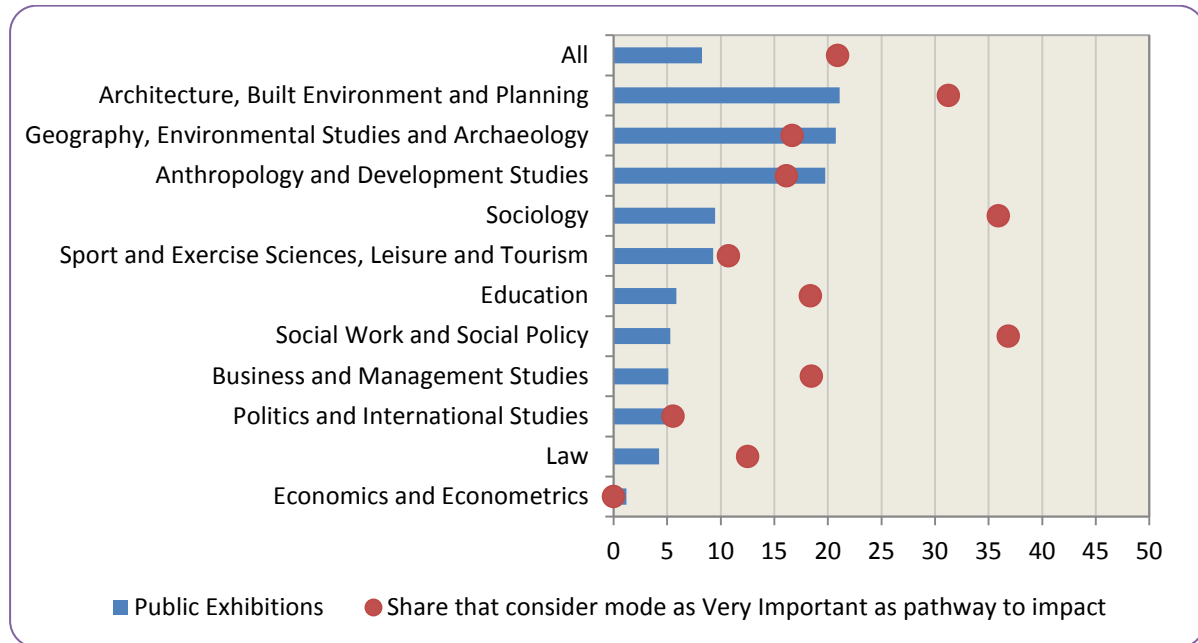
Exhibit 5.27 shows involvement in heritage and tourism activities is not evenly distributed across disciplines. ‘Geography, environmental studies and archaeology’ had the highest percentage of academics report participating in these activities, at 32%. They were also the most likely academics to report it as a very important pathway to impact. Over a quarter (27%) of academics within ‘Sociology’ who participated in heritage and tourism knowledge exchange activities identified it as a very important research impact pathway.

Exhibit 5.27: Community-based activities by Discipline – Heritage & Tourism Activities (% of respondents)



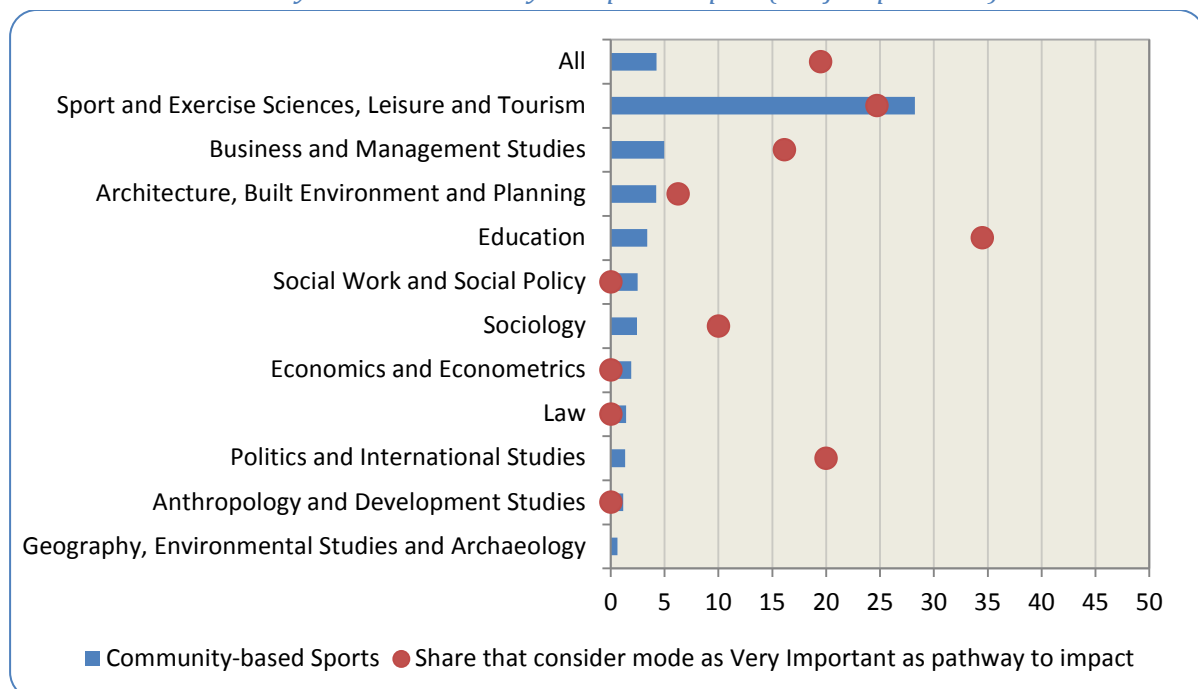
Overall within the social sciences only 8% of academics reported being involved with public exhibitions as a mode of knowledge exchange engagement. However, Exhibit 5.28 reveals this figure rises to a fifth within the disciplines of ‘Architecture, built environment and planning’ (21%), ‘Geography, environmental studies and archaeology’ (21%), and ‘Anthropology and development studies’ (20%). Over a third of academics within ‘Social work and social policy’ (37%) and ‘Sociology’ (36%), respectively, who have provided public exhibitions identified them as a very important pathway for impact of their research with external organisations.

Exhibit 5.28: Community-based activities by Discipline – Public Exhibitions (% of respondents)



Overall, community-based sports engagement was low in the social sciences. Exhibit 5.29 shows, as would be expected, that ‘Sport and exercise sciences, leisure and tourism’ academics were vastly more likely than other academics across disciplines to report involvement in community-based sports activities, at 28%. A quarter of these academics in this discipline also rated these activities as being very important to them as a pathway to impact.

Exhibit 5.29: Community-based activities by Discipline – Sport (% of respondents)



In the next three exhibits an analysis is provided which shows for each type of activity within the people-based, problem-solving, and community-based groups of activities the extent to which the academics participating in those activities are motivated in their research by the pursuit of

fundamental understanding (basic research), applications of their research (applied research) and by the pursuit of research motivated by considerations of use (user-inspired research).

In Exhibit 5.30 the bar opposite enterprise education shows that over 60% of the academics who reported this activity were motivated by applied research and less than 10% were motivated by the pursuit of basic research. The final bar in the exhibit shows that 50% of those attending conferences were motivated to pursue applied research whilst around 20% were motivated to pursue basic research. The proportion of academics who described their research activity as user-inspired is remarkably constant across each type of people-based interaction. It is around 30% in each case.

Exhibit 5.30: People-based Interactions by Research Orientation

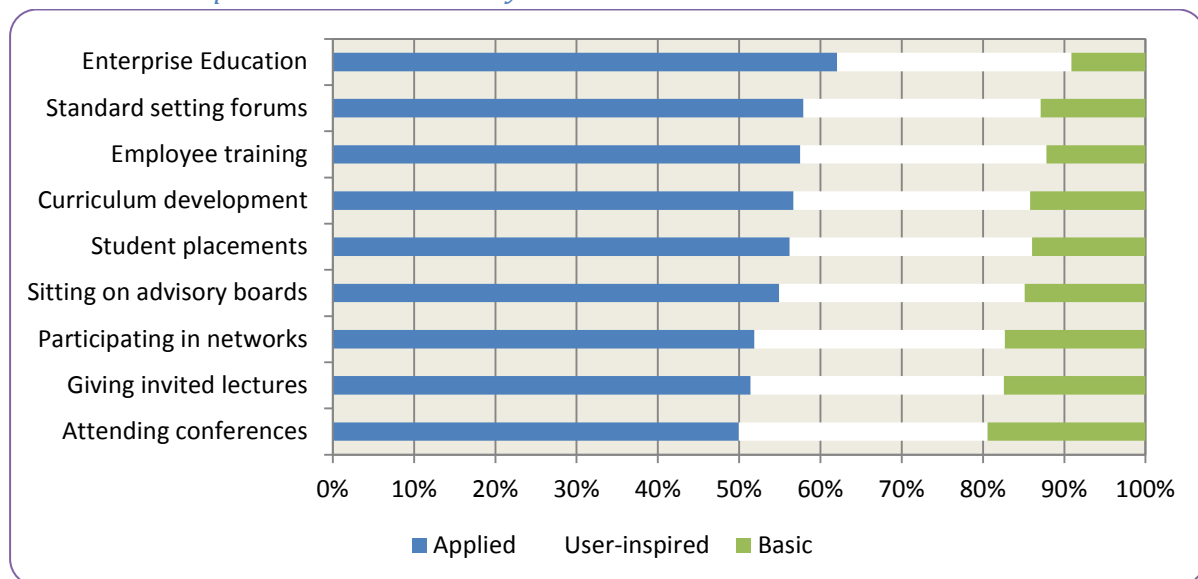


Exhibit 5.31 repeats the analysis for problem-solving interactions. The most striking difference in comparison with Exhibit 5.30 is that academics motivated to pursue basic research are substantially more likely to engage in problem-solving interactions than is the case with people-based interactions. The frequency with which academics motivated by the pursuit of applied research engage in problem-solving activities is very similar to the pattern shown with people-based interactions. The result is that the involvement of user-inspired researchers is lower in each of the types of problem-solving interactions shown in the exhibit.

Exhibit 5.31: Problem-solving Interactions by Research Orientation

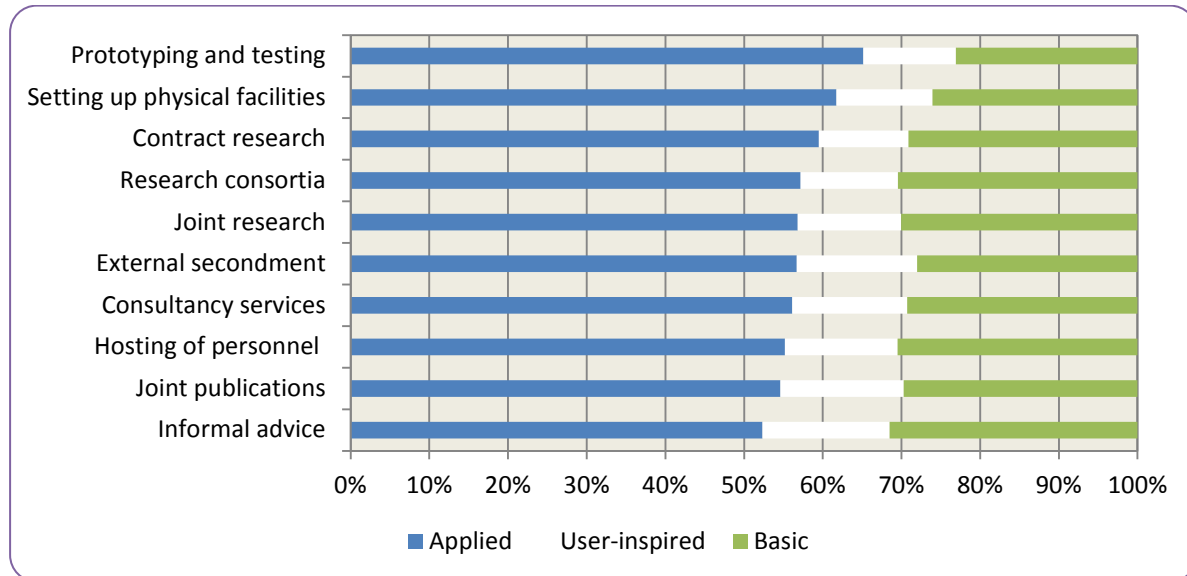
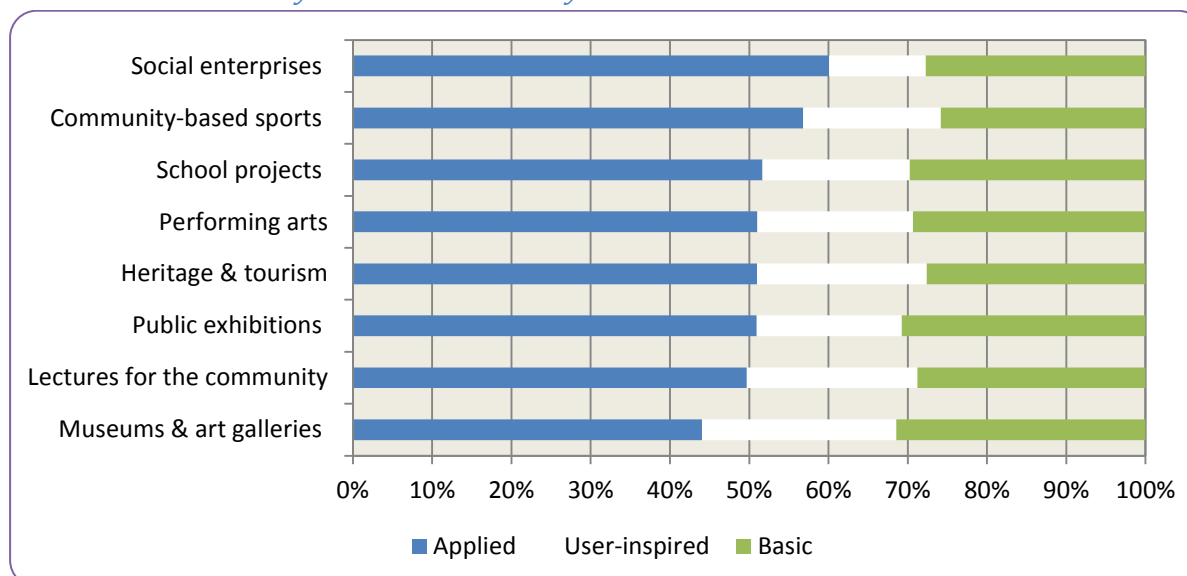


Exhibit 5.32 looks at the pattern in relation to community-based interactions. In this category of interaction the exhibit shows that the proportion of researchers motivated by the pursuit of basic research is roughly similar across all types of interaction and is similar in magnitude to the proportion involved in problem-solving interactions. Social enterprise interactions has the highest degree of involvement of applied researchers. The lowest frequency of involvement of applied researchers is in relation to activities involving museums and art galleries. Even so the proportion is over two fifths, at 44%. The counterpart to this pattern of applied and basic research motivated academics is that the frequency of involvement of the user-inspired researchers is lowest in social enterprises and highest in museums and art galleries.

Exhibit 5.32: Community-based Interactions by Research Orientation



Taken together, these exhibits show that in each category of interaction academics motivated by applications per se are the most frequent participants. Those motivated to carry out user-inspired basic research are *relatively* more prevalent in people-based interactions whilst those that are

primarily motivated to carry out basic research are *relatively* more prevalent in problem-solving and community-based interactions.

Section 6: Engagement Partners

In this section of the report the pattern of engagement activity is analysed in terms of whether the partner in the engagement was in the voluntary sector, the public sector, or the private sector. The section also looks at whether the pattern of interaction with the private sector is linked to patenting activity and licensing activity. The section begins with a comparison of social sciences compared to all disciplines excluding social sciences. Disaggregated analysis by the 11 social science disciplines is then presented. For completeness activities in each discipline are compared to all social sciences taken as a whole.

Exhibit 6.1 compares academics in social sciences with all academics excluding the social sciences. It shows that academics in the social science disciplines, on average, are most likely to engage with charitable and public sector organisations (49%) and are least likely to engage with private sector organisations (30%). It also shows that this frequency of interactions with public and charitable sectors is higher for social scientists than other academics.

Exhibit 6.1: Engagement partners by Sector (% of respondents)

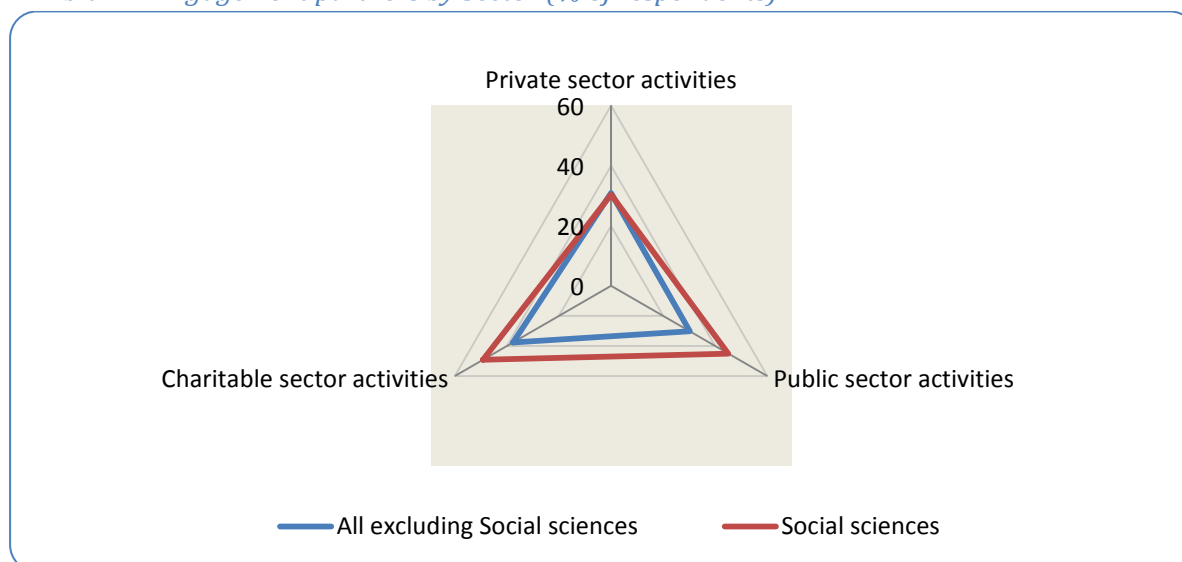


Exhibit 6.2 shows the pattern of voluntary sector engagement across the 11 social science disciplines. It also shows the extent of engagement for all 11 groups taken together. There is considerable variation in voluntary sector engagement across the disciplines. Such engagement is twice as frequent in 'Social work and social policy' (73%) as it is in 'Economics and econometrics' (29%) which displays the lowest frequency of such engagement. The exhibit shows six other disciplines with above-average levels of engagement with the voluntary sector ('Anthropology and development studies' (65%), 'Sociology' (61%) and 'Geography, environmental studies and archaeology' (54%), 'Education' (53%), 'Architecture, built environment and planning' (51%), and 'Sport and exercise sciences, leisure and tourism' (50%). 'Politics and international studies' (47%), 'Law' (44%), and 'Business and management studies' (41%) followed by 'Economics and econometrics' (23%) have below average engagement with the voluntary sector.

Exhibit 6.2: Voluntary Sector Engagement by Discipline (% of respondents)

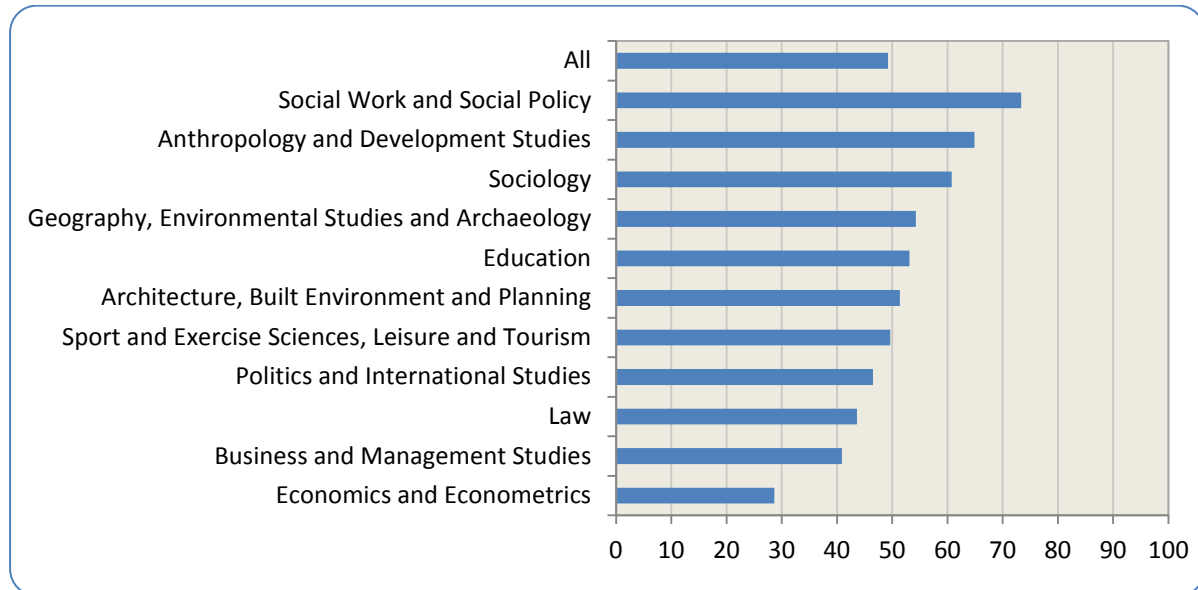


Exhibit 6.3 shows that engagement with the public sector is most prominent in the ‘Social work and social policy’ discipline at (66%). This proportion is noticeably higher than the average for public sector engagement as a whole. Academics in ‘Sport and exercise sciences, leisure and tourism’ were least likely to report these activities, with just over a third (34%) doing so.

Exhibit 6.3: Public Sector Engagement by Discipline (% of respondents)



Exhibit 6.4 reveals that the ‘Business and management studies’ has the highest proportion of academics reporting private sector engagement, at 48%. In contrast, ‘Politics and international studies’ saw the lowest level of engagement, at 17%.

Exhibit 6.4: Private Sector Engagement by Discipline (% of respondents)



Exhibit 6.5 provides evidence on the relationship between patenting and licensing and whether or not academics report having a private sector interaction (e.g. through one of the many other routes of engagement activity discussed in section 5 of this report.). Academics could in principle patent the research themselves without private sector partnership interactions. Equally they could license to a public or voluntary sector organisation. The exhibit shows that academics that patent or license are much more likely to have reported a private sector engagement than those that haven't.

Exhibit 6.5: Private Sector Engagement by Patenting and Licensing

		All social science respondents, who have interactions					
		Private Sector Interactions					
		Yes		No			
		N	%	N	%		
Patenting	Yes	24	1.6	9	0.4		
	No	1503	98.4	2009	99.6		
Licensing	Yes	26	1.7	12	0.6		
	No	1501	98.3	2006	99.4		

Section 7: Regional Analysis

This section looks at variations in the extent to which people-based, problem-solving, and community-based activities with external organisations are carried out within the region in which the university of an academic is based rather than outside that region.

Exhibit 7.1 shows that people-based activities are more frequently reported outside the home university region than inside of it and that there is little variation in the extent of outside region activity across the disciplines. The most outside intensive disciplines are ‘Anthropology and development studies’ (90%) and ‘Geography, environmental studies and archaeology’ (88%). The disciplines which are least likely to have academics reporting activities within their region are ‘Economics and econometrics’ (47%), ‘Politics and international studies’ (55%) and ‘Anthropology and development studies’ (52%). The most frequent within region people-based activities are reported by social science academics in ‘Social work and social policy’ (81%), ‘Sport and exercise sciences, leisure and tourism’ (78%) and in ‘Education’ (77%). In these three cases there is also a very similar frequency of activities inside and outside the region.

Exhibit 7.1: People-based activities within and outside the Region (% of respondents)

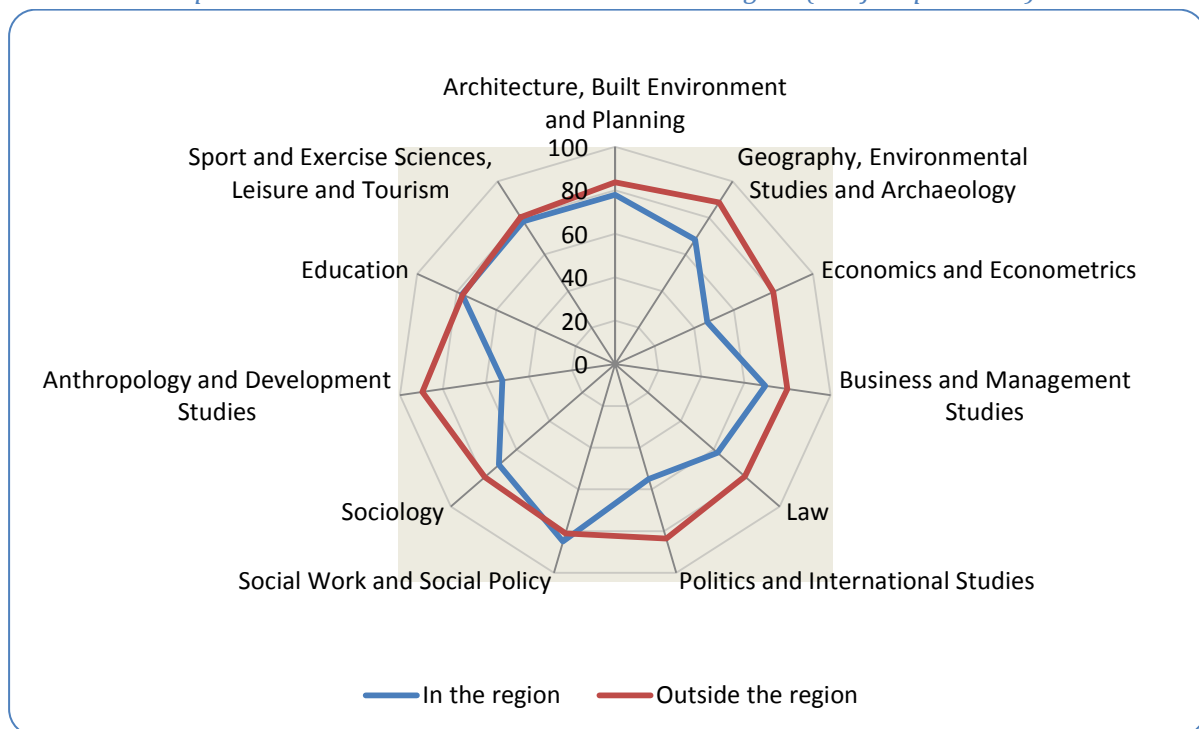


Exhibit 7.2 repeats the analysis for problem-solving activities. Once again there is a general tendency for activities outside the region to be more frequent than inside the region of the home institution of the academics involved. The pattern across disciplines is similar to that shown above involving people-based activities. The most frequent involvement by academics outside the region is to be found in ‘Geography, environmental studies and archaeology’ (75%) and ‘Anthropology and development studies’ (72%). The highest frequencies inside the region is once again in ‘Social work and social policy’ (66%), ‘Education’ (60%) and in ‘Sport and exercise sciences, leisure and tourism’

(61%). In these three disciplines there is an almost equal balance between activities inside and outside the region.

Exhibit 7.2: Problem-solving activities within and outside the Region (% of respondents)

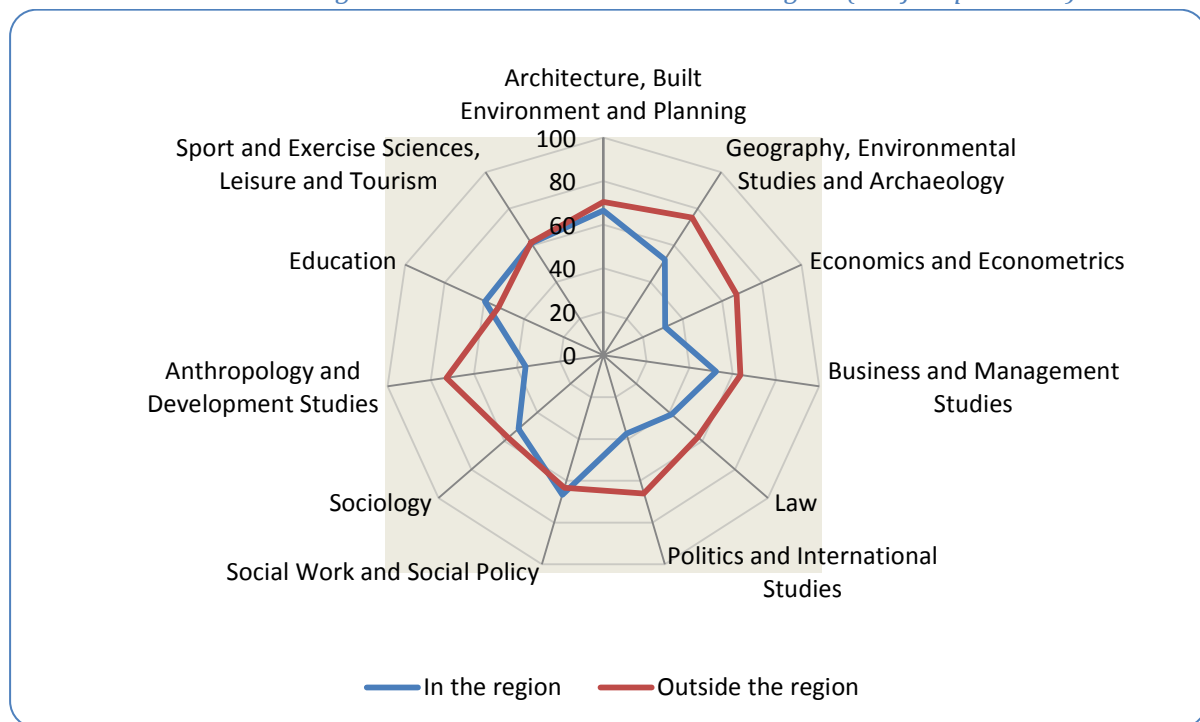
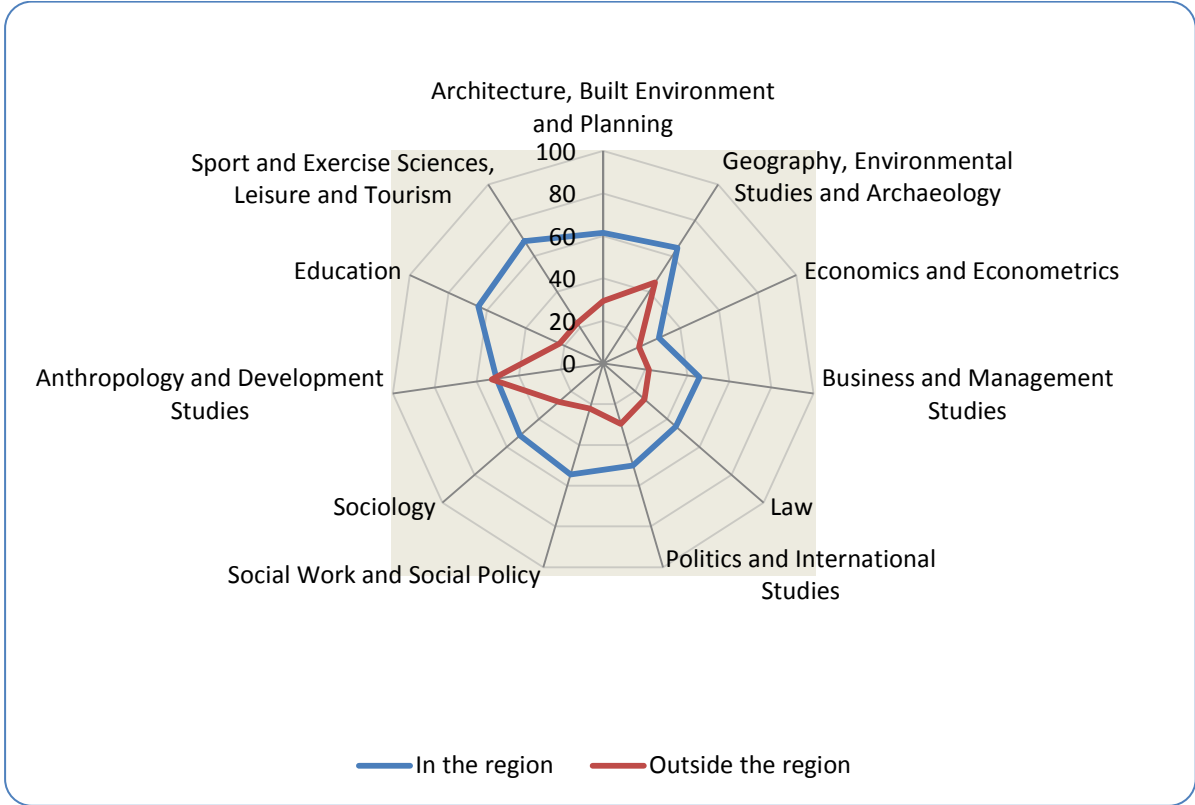


Exhibit 7.3 presents data on community-based activities. As might be expected the pattern of internal and external frequency of activities is the reverse of the people-based and problem-solving pattern. In all cases except for 'Anthropology and development studies' where the balance is almost equal community-based activities are more frequently located within the region than outside it. 'Economics and econometrics' shows the least frequency of community-based activities both inside and outside the region, at 29% and 19% respectively. The highest frequencies of within region community-based activities are found in 'Sport and exercise sciences, leisure and tourism' (68%), 'Geography, environmental studies and archaeology' (65%) and 'Architecture, built environment and planning' (62%). The balance of within region and outside region community-based activities is almost equal in the case of 'Anthropology and development studies'.

Exhibit 7.3: Community-based activities within and outside the Region (% of respondents)



Section 8: Knowledge Exchange Activities: Age, Gender, and Research Motivation Variations

In this section an analysis is provided of patterns of research application; commercialisation; 27 broader engagement activities; and activities with the public, private, and charitable sectors cross classified by seniority of academic position; age; gender, and research motivation.

Exhibit 8.1 shows data relating to research orientation cross classified by the seniority/position of the members of the academic sample as well as by gender and age. The analysis shows in the left-hand half of the table the percentage of respondents reporting each type of motivation as their primary motivation. The right-hand panel shows the average amount of time spent on each type of research. For example, of the 1,063 professors in the sample 22.6% reported basic research as their main motivation and on average professors spent 28.2% of their time as a group on basic research. This pattern compares with 21.3% of the sample as a whole reporting basic research as their main motivation with an average for the sample as a whole all of 27.6% for their share of time spent on basic research.

The table shows that holders of emeritus or honorary positions and tenure track professors, readers, senior lecturers, and lecturers were relatively more likely to indicate their motivation as being the pursuit of basic research than the three more junior categories of research fellow/associate, research/teaching assistant, and teaching fellow/associate.

The same pattern is revealed in terms of the average share of time spent on basic research. The pattern of motivation across user inspired basic research and applied research is more complex and does not vary in a simple fashion across the groups, nor does the average time spent on them. User inspired basic motivations are highest in the professorial and lecturing groups as is the average share of time spent on this activity. Research fellows/associates are the most likely to report applied research and also spend the highest average share of time on this activity.

The analysis by gender shows that males are relatively more likely to describe their motivation as the pursuit of basic research whilst females are more likely to cite user inspired and applied research as their main motivation. The same pattern as reflected in the average share of time spent on these activities.

The bottom right-hand panel of the table shows that academics spend a significant proportion of the time carrying out research which they consider to be motivated by considerations other than their primary motivation. Thus, if we look at the first column the data shows that academics citing basic research as their main motivation (first column 'Average share of time') spend around 20% of their time on user-inspired basic research and over 8% on applied research.

Exhibit 8.1: Research Orientation by Seniority, Gender, and Age

		Share of respondents (%)				Total (N)	Average share of time (%)			
		Basic research	User-inspired basic	Applied research	None applies		Basic research	User-inspired basic	Applied research	Total (N)
All		21.3	29.4	45.9	3.4	5262	27.6	29.9	42.5	5047
Position	Professor	22.6	32.5	43.3	1.7	1063	28.2	31.9	39.9	1039
	Reader, Senior Lecturer	21.8	27.5	46.5	4.2	1868	27.9	28.7	43.2	1778
	Lecturer	22.7	32.0	41.2	4.0	1312	29.5	32.1	38.4	1249
	Research Fellow / Associate	12.6	27.8	57.8	1.8	612	20.6	27.8	51.7	595
	Research / Teaching Assistant	18.1	27.6	48.3	6.0	116	24.6	29.6	45.8	109
	Teaching Fellow / Associate	17.3	21.3	50.7	10.7	75	26.5	23.1	50.4	67
	Emeritus / Honorary (retired)	28.7	22.2	46.3	2.8	216	31.8	25.7	42.5	210
	Gender	Male	24.3	28.1	44.1	3.5	2950	30.0	29.3	40.6
	Female	17.4	30.9	48.3	3.3	2312	24.5	30.6	44.9	2216
Age	Under 30	22.9	27.4	48.6	1.1	179	30.4	28.2	41.4	177
	30-49	23.0	31.3	43.4	2.2	2763	29.8	30.0	40.0	2679
	50 and over	19.0	27.1	48.9	5.0	2281	24.4	29.8	45.8	2157
Research Orientation	Basic research						79.5	11.8	8.3	1112
	User-inspired basic research						19.8	63.0	17.2	1530
	Applied research						8.4	17.2	74.4	2404

Exhibit 8.2 cross classifies information about applications of research in terms of seniority/position, gender, age, and also by the principal motivation for research (research orientation). The table shows that professors are more likely than average to report that their work is in a general area of commercial interest to business and/or industry. The same is true in terms of research being applied in a commercial context and for research being applied by a non-commercial organisation (including the public sector) external to the University sector. They are the least likely relatively to the average for all academics alongside research fellows and associates to report their research has no relevance for external organisations. Research fellows/associates are also the most likely to report the relevance of their research for non-commercial external organisations (including the public sector). Males are more likely to report applications in each area except relevance for non-commercial external organisations.

Age does not appear to be related to research being in the general area of commercial interest to business and/or industry but in general those under 30 are less likely to report relevant applications than those over 30 years of age.

The pattern of application by the research orientation of the academic shows as might be expected that user inspired basic research motivation and applied research motivation are relatively more frequently associated with each of the types of research application shown in the table. It is important to note nonetheless that 23% of those whose motivation is to pursue basic research consider that their work is in the general area of commercial interest to business and/or industry and 67% believe that it has relevance for non-commercial external organisations (including the public sector). In addition 8.5% report that their work has been applied in a commercial context and 28.9% report that their work has been applied by a non-commercial organisation (including the public sector).

The final column shows that, with the exception of teaching fellows and those primarily motivated to do basic research, very low proportions of academics report that their work is of no relevance to external organisations. Even in these cases 84% and 80% believe that their research has relevance.

Exhibit 8.2: Perception and Application of Research (% of respondents)

		In general area of commercial interest to business and/or industry	Applied in a commercial context	Relevance for non-commercial external organisations (including the public sector)	Applied by a non-commercial organisation (including the public sector) external to the university sector	No relevance for external organisations	Total (N)
All		32.4	15.5	74.0	48.7	8.8	5242
Position	Professor	36.5	20.2	76.0	63.7	6.4	1062
	Reader, Senior Lecturer	32.6	16.5	71.4	45.8	10.1	1857
	Lecturer	30.9	11.1	72.6	39.2	10.3	1303
	Research Fellow / Associate	30.4	13.7	84.3	53.9	5.1	612
	Research /Teaching Assistant	29.3	12.9	73.3	38.8	8.6	116
	Teaching Fellow / Associate	21.3	9.3	68.0	25.3	16.0	75
	Emeritus /Honorary (retired)	31.8	18.4	69.1	55.8	7.8	217
	Gender	Male	37.9	19.4	71.5	50.1	9.2
Female		25.4	10.6	77.3	47.0	8.3	2303
Age	Under 30	31.7	15.6	66.7	38.9	9.4	180
	30-49	33.0	14.2	76.0	45.4	8.3	2746
	50 and over	31.9	17.0	72.2	53.5	9.1	2279
Research Orientation	Basic research	23.0	8.5	67.1	28.9	19.2	1111
	User-inspired basic research	37.3	15.4	78.2	48.7	6.6	1535
	Applied research	34.5	19.1	76.1	59.6	4.2	2409
Total (N)		5242	5242	5242	5242	5242	5242

Exhibit 8.3 repeats the analysis of Exhibit 8.2 for research commercialisation activities. The percentages of social science academics involved in these activities are relatively small with the exception of the formation or running of a consultancy linked to research. It is noticeable that emeritus or honorary post holders are the most likely to report having taken out a patent or form or run a consultancy. Professors, readers, and senior lecturers are the next most likely to have carried out these activities. The analysis by gender shows that males are more likely to do each of the commercialisation activities identified in the table. The pattern by age is more complex the differences across age groups are, in any case, relatively small. The analysis by research orientation reveals as might be expected that those motivated by user-inspired basic research or applied research are the most likely to carry out each of the four commercialisation activities.

Exhibit 8.3: Commercialisation of Research (% of respondents)

		Taken out a patent	Licensed research outputs to a company	Formed a spin out company	Formed or run a consultancy via your research	Total (N)
All		0.7	0.9	1.8	8.7	5079
Position	Professor	0.8	1.7	2.4	12.3	978
	Reader, Senior Lecturer	0.9	0.7	1.9	8.2	1810
	Lecturer	0.4	0.6	1.7	6.6	1298
	Research Fellow / Associate	0.5	1.3	2.0	7.9	546
	Research /Teaching Assistant	0.0	1.9	0.9	5.6	108
	Teaching Fellow / Associate	0.0	0.9	0.9	6.0	117
	Emeritus / Honorary (retired)	1.8	0.5	0.0	14.9	222
Gender	Male	1.1	1.4	2.6	11.2	2801
	Female	0.3	0.4	0.9	5.7	2278
Age	Under 30	0.0	1.3	1.3	10.8	157
	30-49	0.6	1.0	1.8	8.1	2582
	50 and over	1.0	0.8	1.9	9.4	2310
Research Orientation	Basic research	0.4	0.4	1.0	3.5	986
	User-inspired basic research	0.6	1.2	1.7	9.7	1387
	Applied research	0.9	1.2	2.2	11.7	2190

Exhibit 8.4 cross classifies engagement activities with public, private, and charitable sectors by seniority/position, gender, age, and research orientation. Professors and Emeritus/Honorary post holders are relatively more likely than other post holders to engage with private, public, and charitable organisations. Male and female academics are equally likely to have engagement activities with the public sector and females are more likely to be engaged with the charitable sector. Males are more likely to report engagement activities with the private sector. Age is positively related to engagement across all sectors.

Individuals whose research is primarily motivated by the pursuit of basic understanding are least likely to engage with all three sectors identified in the table. Those motivated by the pursuit of applied research are the most likely to engage with all three sectors. It is important to note however that levels of engagement are substantial across those motivated by basic research. Around 20% of such individuals report activities with the private sector, around 30% report activities with the public sector, and 36% report activities with charitable or third sector organisations.

Exhibit 8.4: Engagement Partners

		Activities with private sector companies		Activities with public sector organisations		Activities with charitable or voluntary organisations	
		%	N	%	N	%	N
All		30.4	5375	45.0	5350	49.2	5292
Position	Professor	34.9	1052	59.0	1045	52.6	1034
	Reader, Senior Lecturer	31.0	1945	42.4	1939	50.8	1914
	Lecturer	27.1	1345	35.5	1337	43.7	1324
	Research Fellow / Associate	29.3	591	50.7	588	49.3	578
	Research / Teaching Assistant	21.5	107	37.7	106	48.6	107
	Teaching Fellow / Associate	24.8	109	36.4	110	50.0	110
	Emeritus / Honorary (retired)	34.1	226	52.0	225	52.4	225
	Gender	Male	33.2	2982	45.0	2969	44.9
Female		26.9	2393	45.0	2381	54.5	2357
Age	Under 30	23.8	172	32.0	172	32.1	168
	30-49	29.4	2756	42.2	2739	45.7	2703
	50 and over	32.2	2415	49.0	2410	54.5	2390
Research Orientation	Basic research	19.5	1029	29.8	1024	36.1	1013
	User-inspired basic research	32.0	1486	46.5	1480	47.1	1463
	Applied research	34.8	2350	53.3	2332	56.6	2310

Section 9: Changes over Time

This section compares changes in the reported knowledge exchange activities of social science academics between two periods. The first period covers the three years prior to the academic survey of 2008/9. The second period covers the three years prior to the academic survey carried out in 2015. It is important to bear in mind that the macroeconomic and public sector funding contexts for knowledge exchange were very different in these two periods. In particular the macro-economic economic austerity policies introduced between the two surveys may have had a depressing effect on the demand for academic interactions in the public and private sectors (Hughes et al. 2016).

In the first survey only four broad groups of disciplines within social sciences as a whole were identified. The comparison in this section can therefore only be based on that level of disaggregation. In contrast to the earlier sections of this report where 11 social science disciplines were considered in this section we, therefore, focus on four aggregated groups.

The comparison is based on a matched sample of academics completing the two surveys. The matching was based on subject area, gender, age group, institution, and seniority of academic position. Taking all respondents in all disciplines it was possible to match 10,217 respondents. This matched sample is broadly representative (in terms of its pattern of disciplinary coverage, and the age, seniority, and gender of respondents) of the full samples of academics in all disciplines responding to the surveys of 2008/9 and 2015 (Hughes et al. 2016). The matched sample includes 3,164 social science academics. This section uses the responses of this sample of social science academics in making comparisons over time.

Exhibit 9.1 shows that there was a decrease both in the extent to which social science academics as a whole reported that their research was of relevance for non-commercial external organisations (including the public sector) from 83% to 77%, and in the proportion of academics reporting that their research was in the general area of commercial interest to business and/or industry (from 33% to 29%). There was no change in the proportion reporting that their research had been applied in a commercial context and an increase in those reporting that their research was of no relevance to external organisations. In both the latter cases the numbers involved are very small compared to the proportions of between 77% and 83% reporting that their research was of relevance for non-commercial organisations.

Exhibit 9.1: Relevance of research - 2008/9 and 2015 comparison (% of respondents)

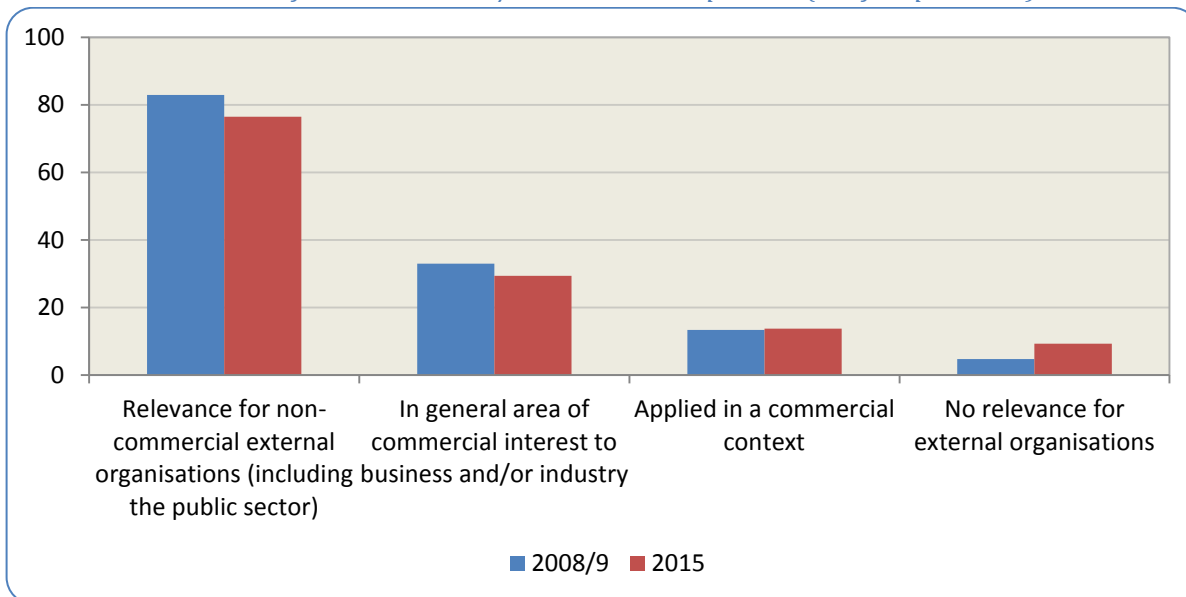


Exhibit 9.2 looks at variations in changes over time in the relevance of research for non-commercial organisations across the four broad social science disciplinary groupings. In the case of ‘Business, financial studies’ and ‘Architecture, building, planning’ the proportion reporting relevance stayed the same or increased very slightly. There was a small decrease (from 87% to 81%) for ‘Law, social sciences, economics’ and a somewhat larger decrease (from 93% to 78%) for ‘Education’. In all cases in both periods at least 60% of academics reported that their research was of relevance for non-commercial organisations.

Exhibit 9.2: Relevance for non-commercial external organisations - including the public sector (% of respondents)

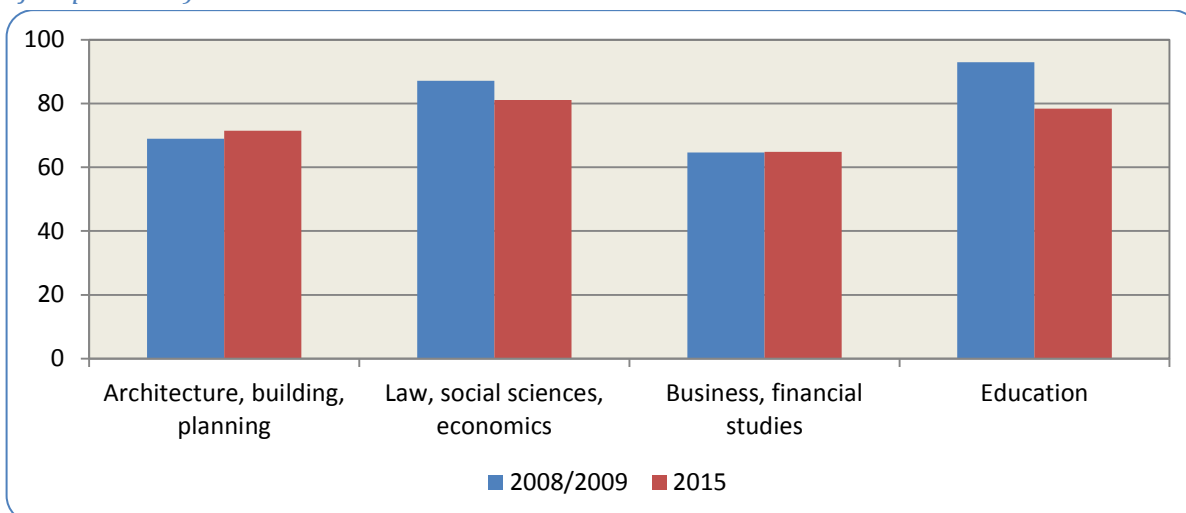


Exhibit 9.3 shows that there was virtually no change in the proportions of academics in ‘Architecture, building, planning’ and in ‘Education’ who reported that their research was in a general area of commercial interest. There was a small fall (from 25% to 21%) in the proportion reporting such relevance in the case of ‘Law, social sciences, economics’ and a larger fall (from 72% to 57%) amongst academics in ‘Business, financial studies’.

Exhibit 9.3: In general area of commercial interest to business and/or industry (% of respondents)

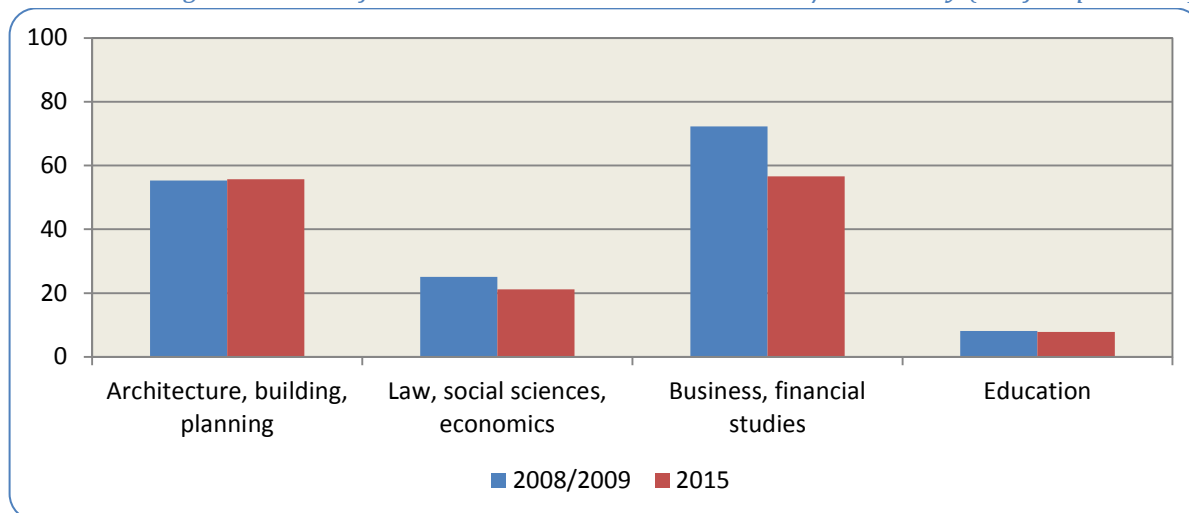


Exhibit 9.4 shows that there was no substantive change in research applied in a commercial context between the two survey periods in any of the four disciplinary groups.

Exhibit 9.4: Applied in a commercial context (% of respondents)

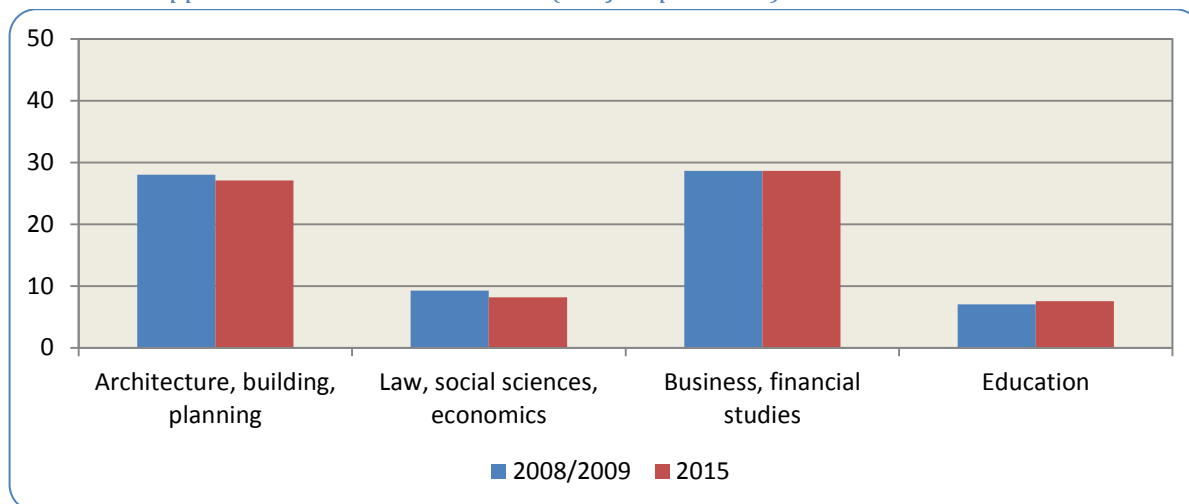
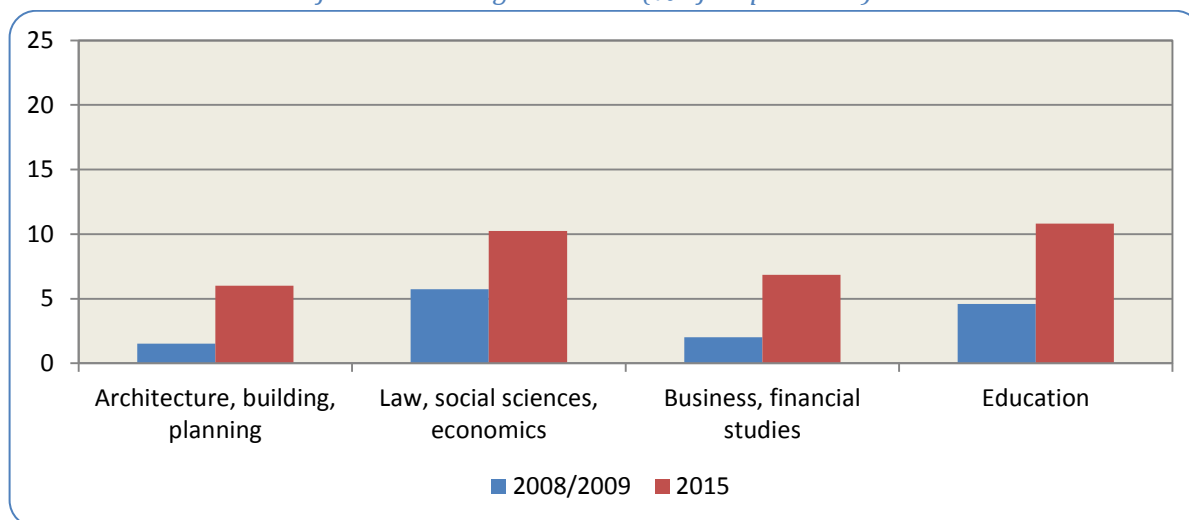


Exhibit 9.5 shows (as might be expected in the light of the results shown in Exhibit 9.2 to Exhibit 9.4) that there was an increase in each subject area in the proportions reporting that their research was of no relevance for external organisations. Even so it is important to note that the percentage reporting no relevance was low, hovering around 10% in 2015 in the case of ‘Law, social sciences, economics’.

economics' and in 'Education' (which also showed the largest increase in no relevance from 5% to 11%).

Exhibit 9.5: No relevance for external organisations (% of respondents)



Taken together Exhibit 9.2 to Exhibit 9.5 suggest small declines in the relevance of social science research to external organisations as perceived by the survey respondents. This is consistent with changes across all disciplines in the full matched sample of over 10,000 academics in the full survey. These changes may reflect the relatively poor macroeconomic and changed research funding contexts in which the 2015 survey took place compared to the survey of 2008/9³. There was, however, no change, in any of the four disciplines, in the relative importance attached to each of the four areas of relevance and application in 2015 compared to the earlier survey. This suggests stability in the relative patterns of engagement of the broad social science disciplines identified here.

Exhibit 9.6 shows there has been a decline in commercialisation in all fields apart from in patenting which in both surveys was reported by less than 1% of social science academics. The percentage of social science academics reporting licensing fell from 2% to just less than 1%, whilst the percentage forming a spin-out fell from 2.5% to 1.5%. The most common form of commercialisation activity involving social science academics is the formation or running of a consultancy linked to their research. This remained the most important in the three years prior to the 2015 survey despite the proportion of academics reporting this activity halving from 16% to 8%. These patterns are consistent with the relatively weaker commercial context which academics were operating in the second period.

³ For a full discussion of the changing macroeconomic and research funding contexts affecting overall trends in engagement between the two survey periods see Hughes et al. 2010

*Exhibit 9.6: Commercialisation in the last three years - 2008/9 and 2015 comparison
(% of respondents)*

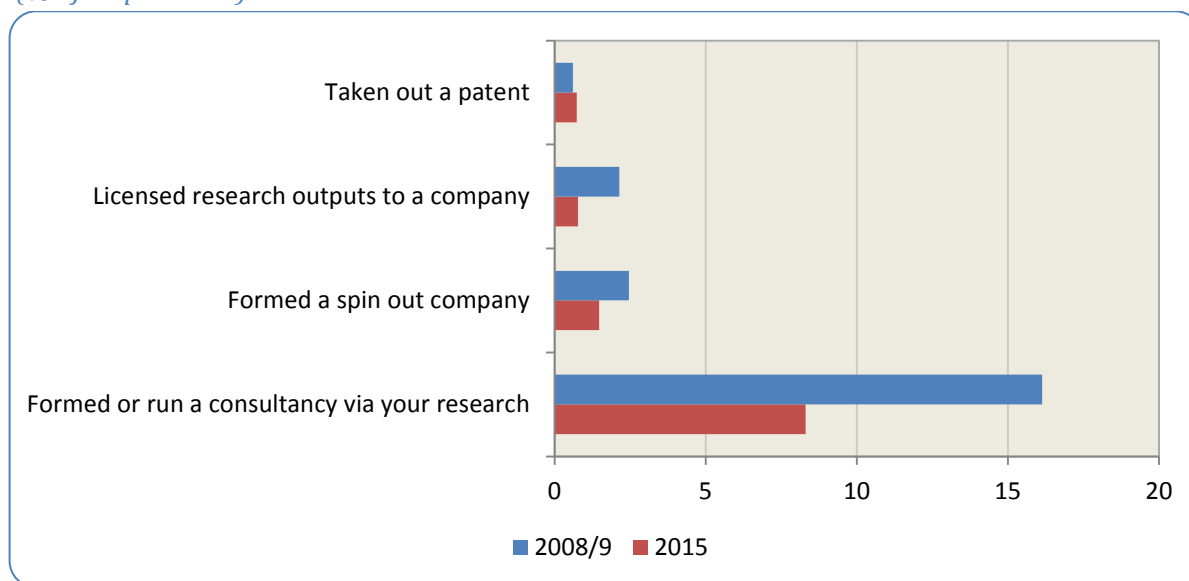


Exhibit 9.7 to Exhibit 9.10 show that the pattern of falls for the social sciences as a whole was broadly reproduced in each of the four social science disciplinary groupings used in this report. The relative patterns of involvement in these activities across the subgroup disciplines also remained broadly the same in both sample periods.

Exhibit 9.7: Commercialisation – Architecture, Building, Planning (% of respondents)

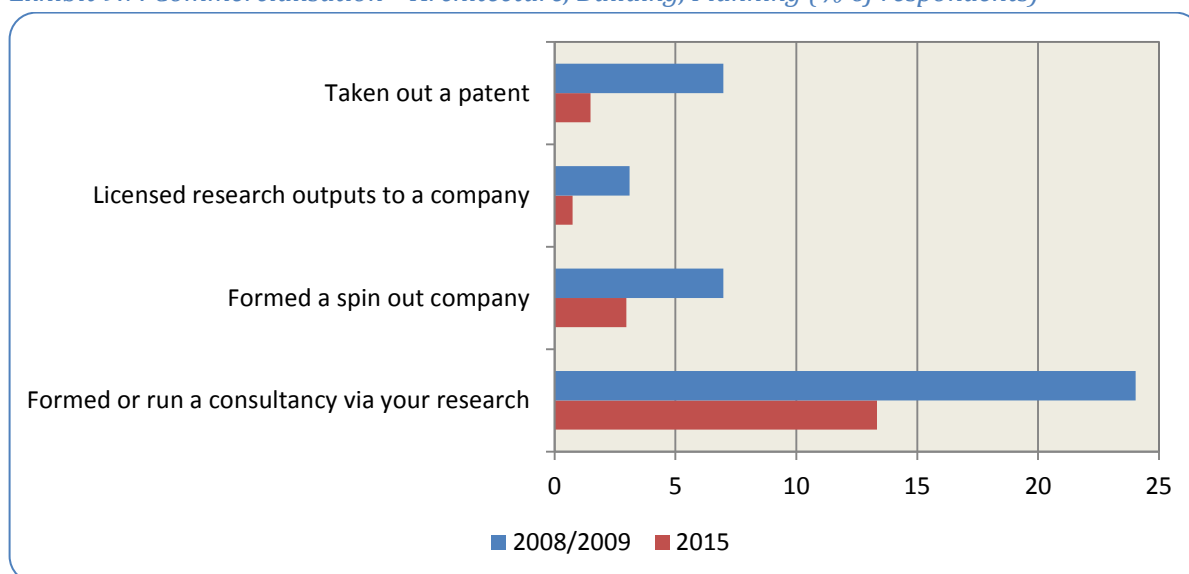


Exhibit 9.8: Commercialisation – Law, Social Sciences, Economics (% of respondents)

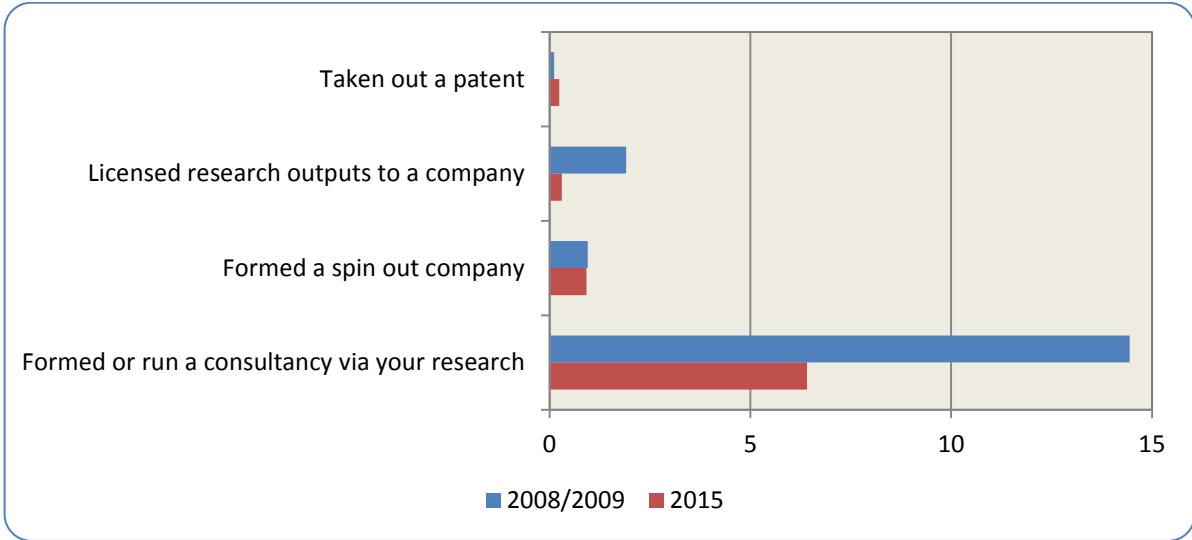


Exhibit 9.9: Commercialisation - Business, Financial Studies (% of respondents)

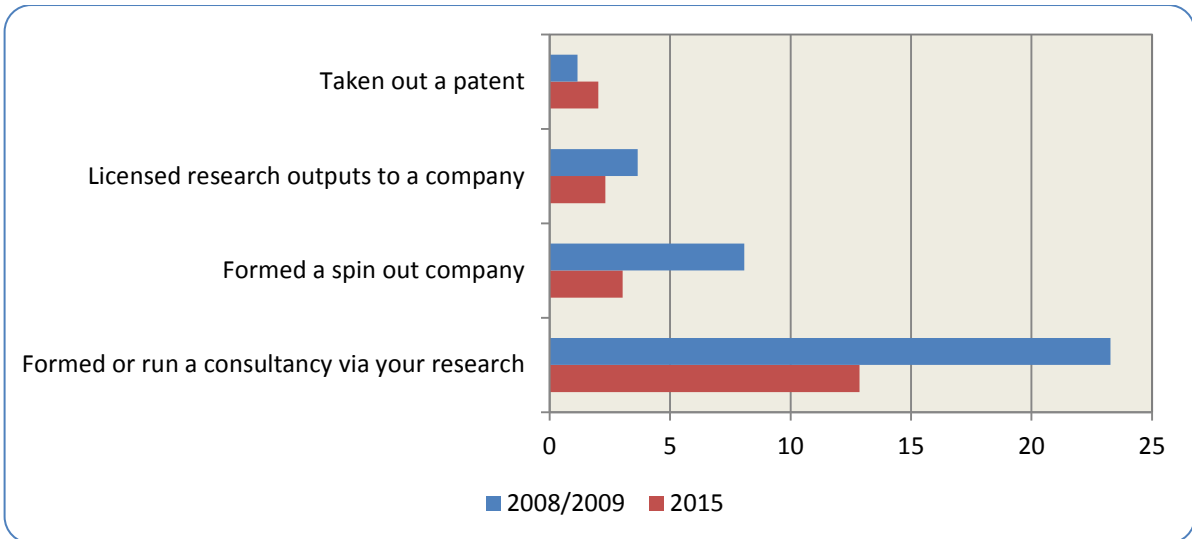


Exhibit 9.10: Commercialisation - Education (% of respondents)

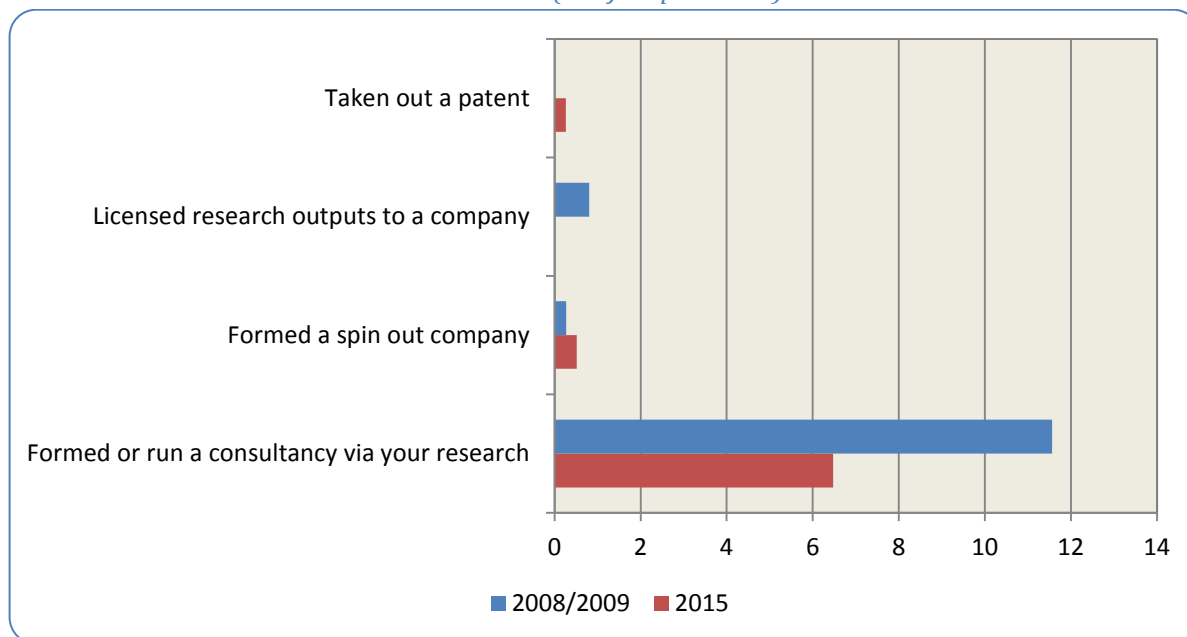


Exhibit 9.11 provides data on the number of individual modes of engagement which academics used within each of the broad groupings of the 23 different people-based, problem-solving, and community-based activities discussed earlier in this report. The exhibit shows the average number of modes of activity reported by academics in the social sciences. The exhibit shows that the mean number of different modes used has decreased marginally for both people-based (from just over to just under 4%) and for problem-solving activities (3.0% to 2.8%) whilst there was an even smaller increase within community-based activities. Exhibit 9.12 to Exhibit 9.15 show that this pattern was repeated in each of the four social science disciplines except 'Education' where there was a negligible decline in involvement in community-based activities. The changes shown in these exhibits are all, however, very small and suggest very stable patterns of engagement activities across the four social science disciplines identified here. One difference which does emerge when comparing across the disciplinary groupings is the relatively high numbers of engagement modes used by academics in 'Architecture, building, planning' and in 'Business, financial studies' in their knowledge exchange activities under the people-based heading. This relative ranking was true in both survey years and appears therefore to be a persistent relative characteristic of those disciplines.

Exhibit 9.11: Non-commercial engagement activities in the last three years - 2008/9 and 2015 comparison (mean number used)

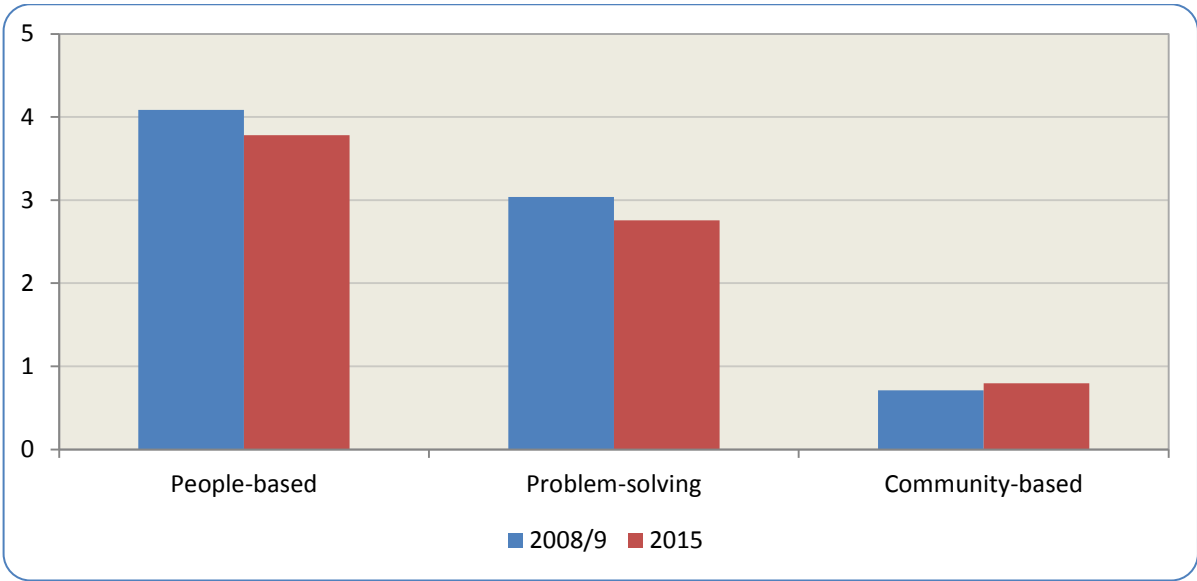


Exhibit 9.12: Non-commercial engagement activities - Architecture, Building, Planning (mean number used)

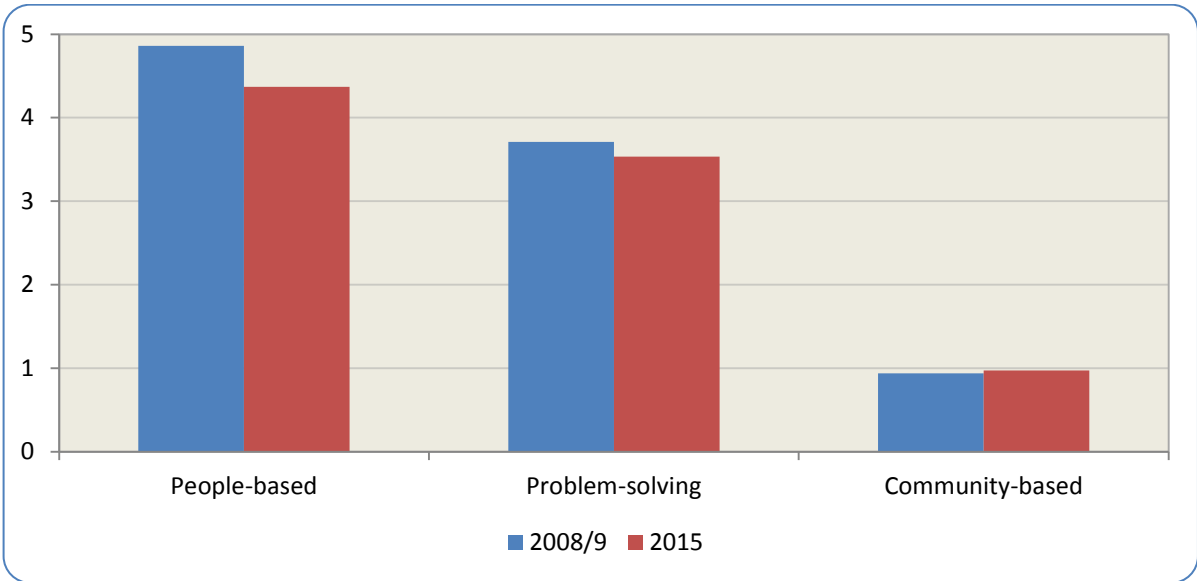


Exhibit 9.13: Non-commercial engagement activities - Law, Social Sciences, Economics
(mean number used)

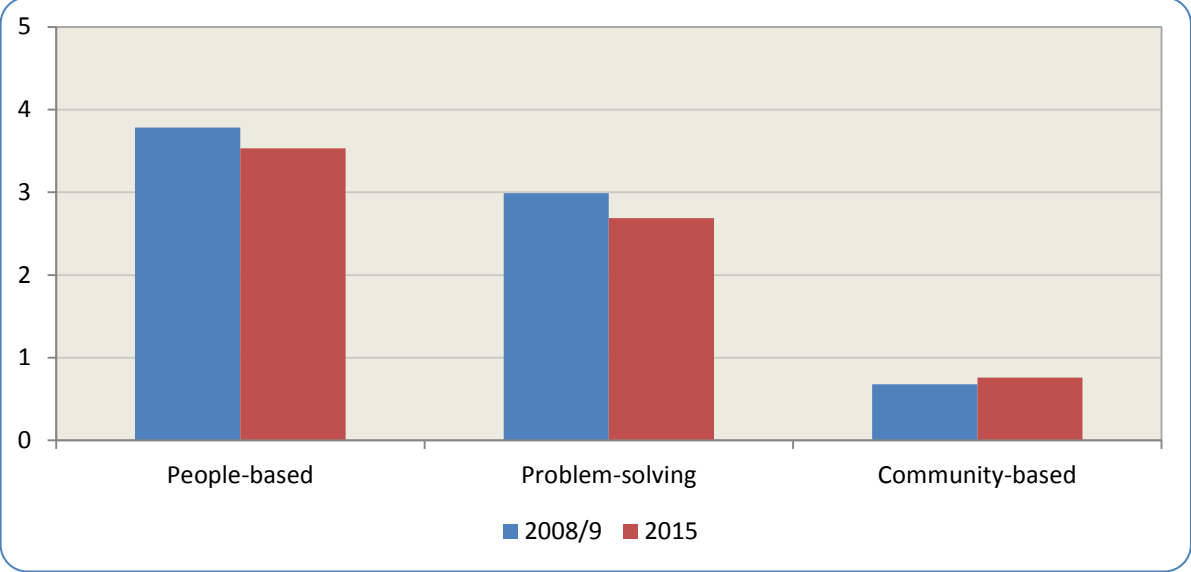
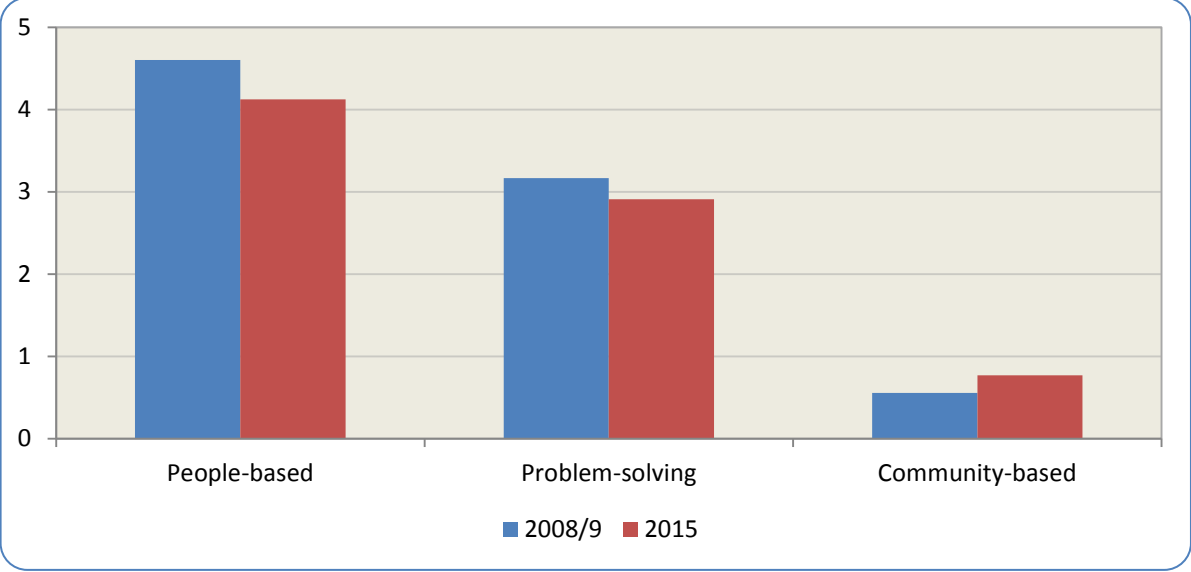


Exhibit 9.14: Non-commercial engagement activities - Business, Financial studies
(mean number used)



*Exhibit 9.15: Non-commercial engagement activities - Education
(mean number used)*

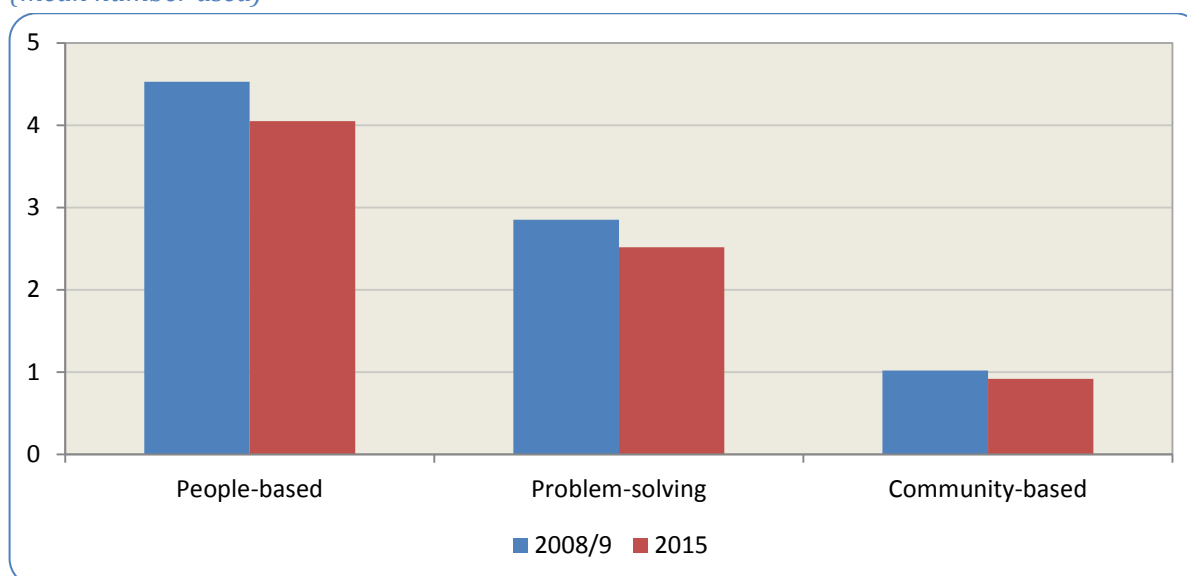


Exhibit 9.16 presents data on each of the 23 knowledge exchange activities which can be compared between the two surveys for the social sciences as a whole. The data are grouped as usual into people-based, problem-solving and community-based activities. The exhibit reports the frequency with which at least one of the group of activities within each group was undertaken by the social science academic and then the frequency with which each of the individual modes of engagement occurred.

The general pattern which emerges is that with one or two exceptions there have been small reductions in the frequency of each mode of engagement. Within the problem-solving group it is noticeable that those activities which may be more sensitive to the relatively weaker macro-economic conditions at the time of the second survey (consultancy services and contract research) show the greatest falls in the percentage of academics involved. In people-based interactions there have been declines in all interaction types apart from enterprise education which is, however, the least frequently cited people-based activity in both surveys.

Exhibit 9.16: Non-commercial engagement in the last three years - 2008/9 and 2015 comparison (% of respondents)

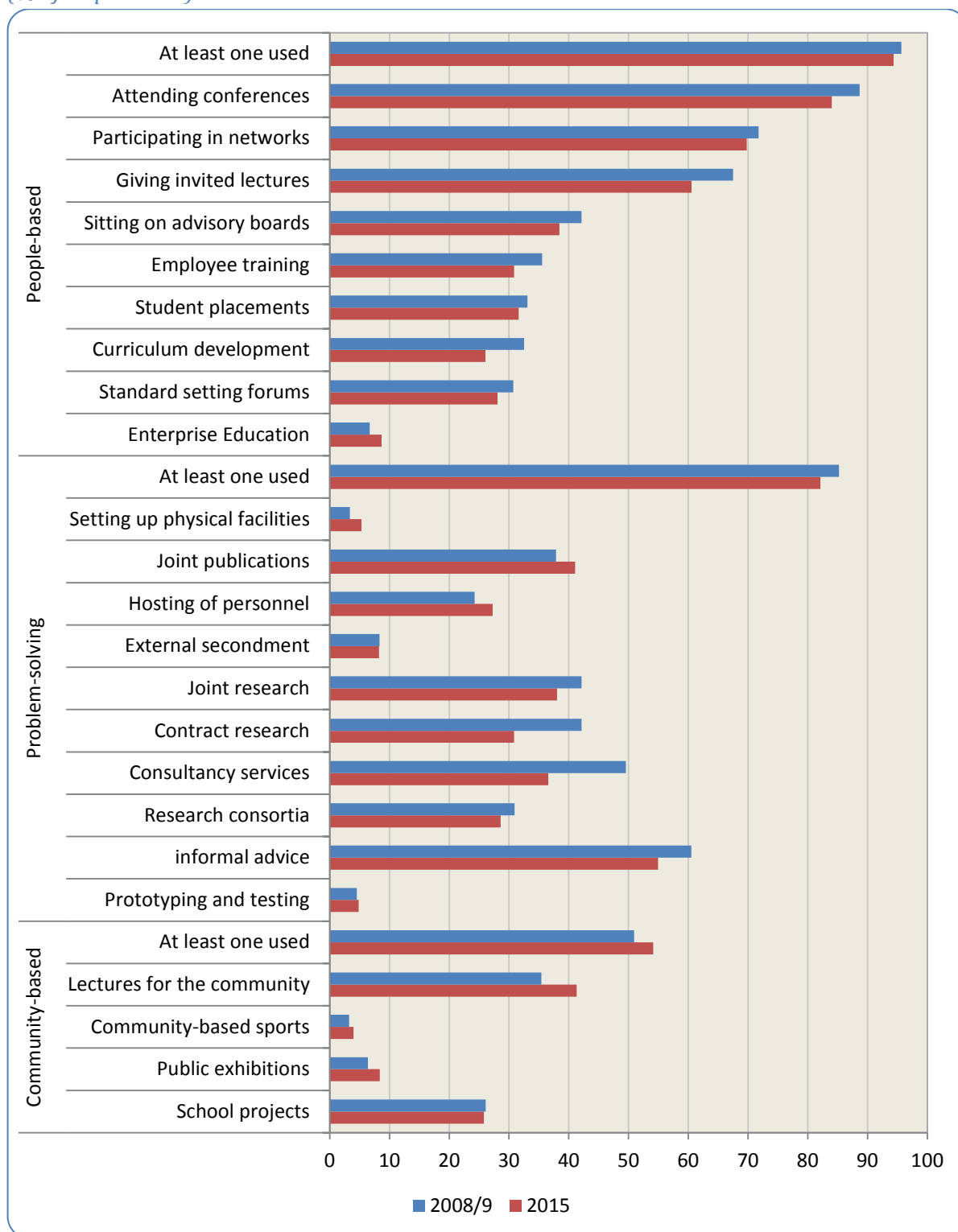
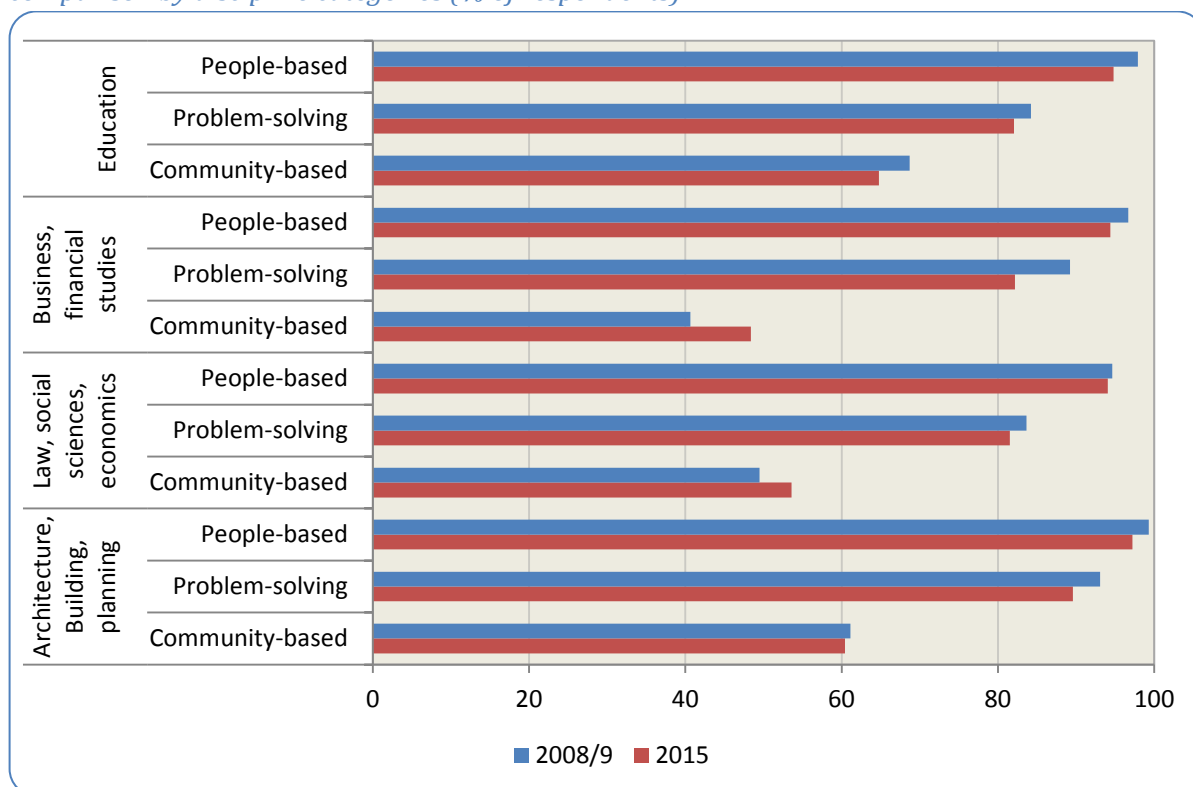


Exhibit 9.17 shows there have been reductions in all categories apart from in ‘Business, financial studies’ and ‘Law, social sciences, economics’ where, for both, there have been increases in community-based activities.

Exhibit 9.17: Non-commercial engagement activities in the last three years - 2008/9 and 2015 comparison by discipline categories (% of respondents)



In contrast to the findings for problem-solving and people-based interactions discussed above it is noticeable that there was a small increase in the majority of community-based modes of engagement. Exhibit 9.17 to Exhibit 9.20 reproduce this analysis for each of the four groups of social sciences. The broad pattern of reductions in external engagement activity holds across all four groups. There are however some notable differences. Thus in the case of ‘Architecture, building, planning’ there was an increase in joint publications under the problem-solving heading and in network participation and enterprise education under the people-based group. This group also moved against the trend by recording lower levels of community-based activities in relation to school projects and public exhibitions. The behaviour of the ‘Law, social sciences, economics’ group was essentially the same as that for all groups of social sciences combined with a persistent pattern of falls especially in the macro-economic sensitive areas of consultancy services and contract research. A similar pattern emerges for the ‘Business and management studies’ group. The ‘Education’ group follows a similar pattern to social sciences as a whole.

Exhibit 9.18: Non-commercial engagement activities - Architecture, Building, Planning (% of respondents)

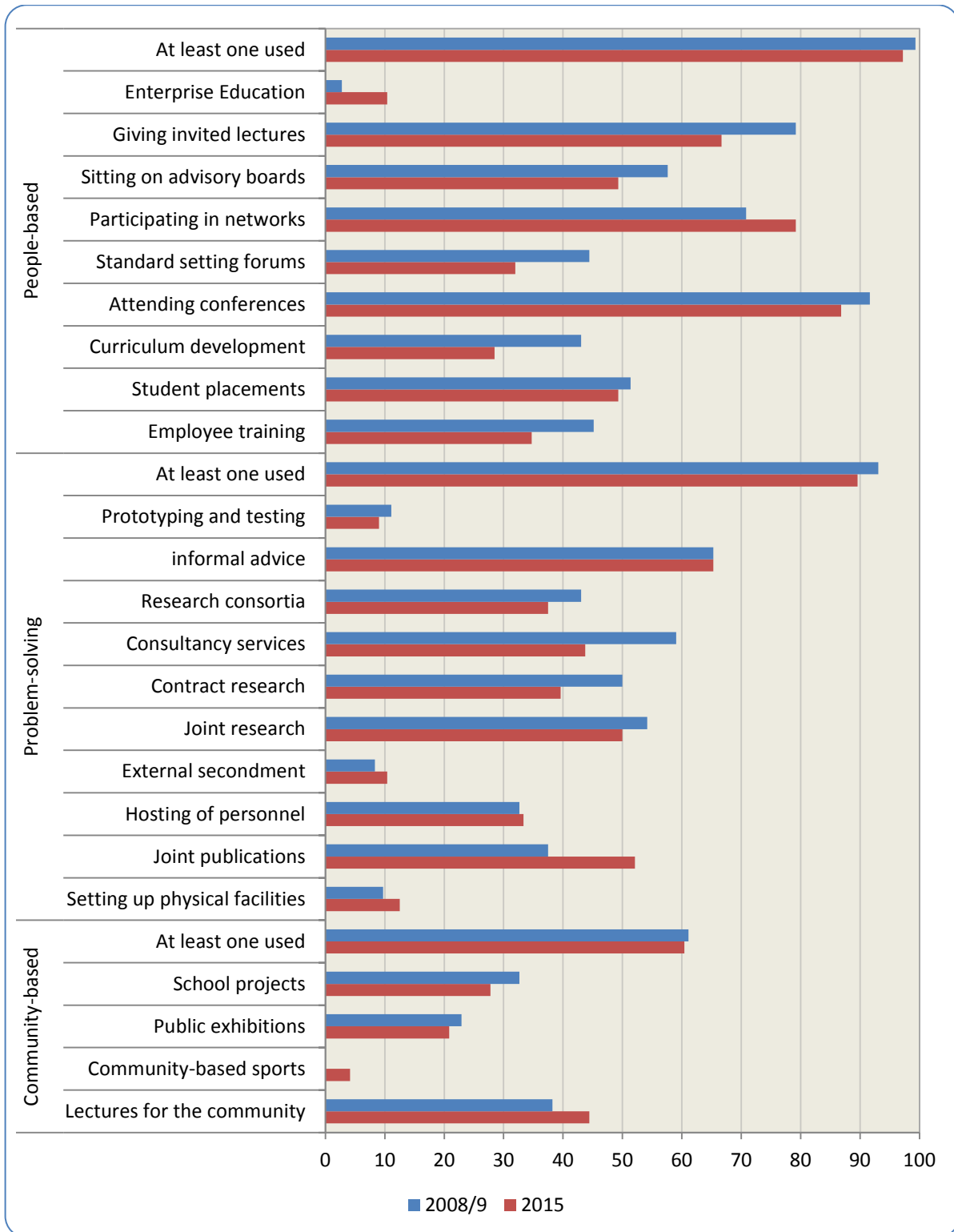


Exhibit 9.19: Non-commercial engagement activities - Law, Social Sciences, Economics (% of respondents)

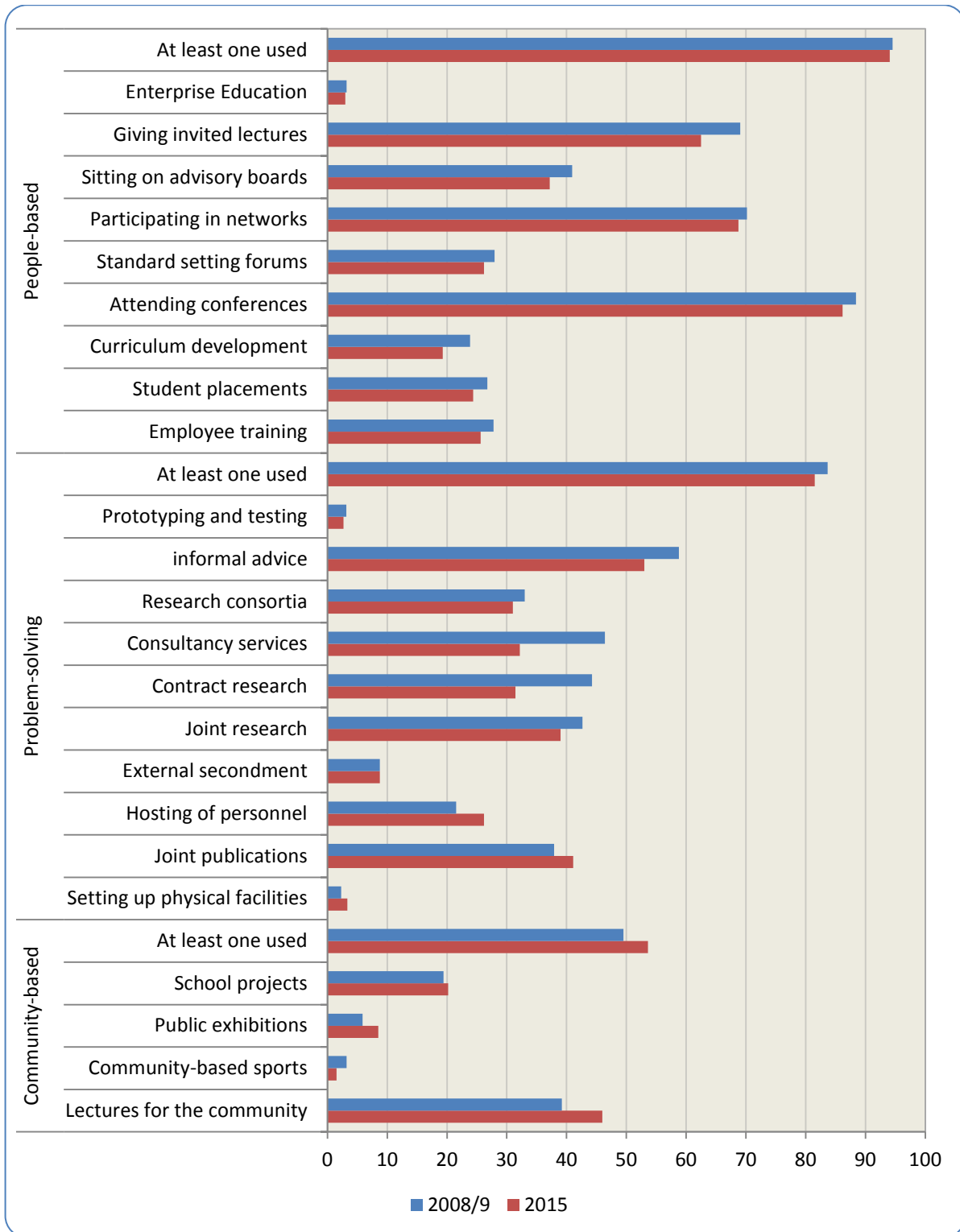


Exhibit 9.20: Non-commercial engagement activities – Business, Financial Studies (% of respondents)

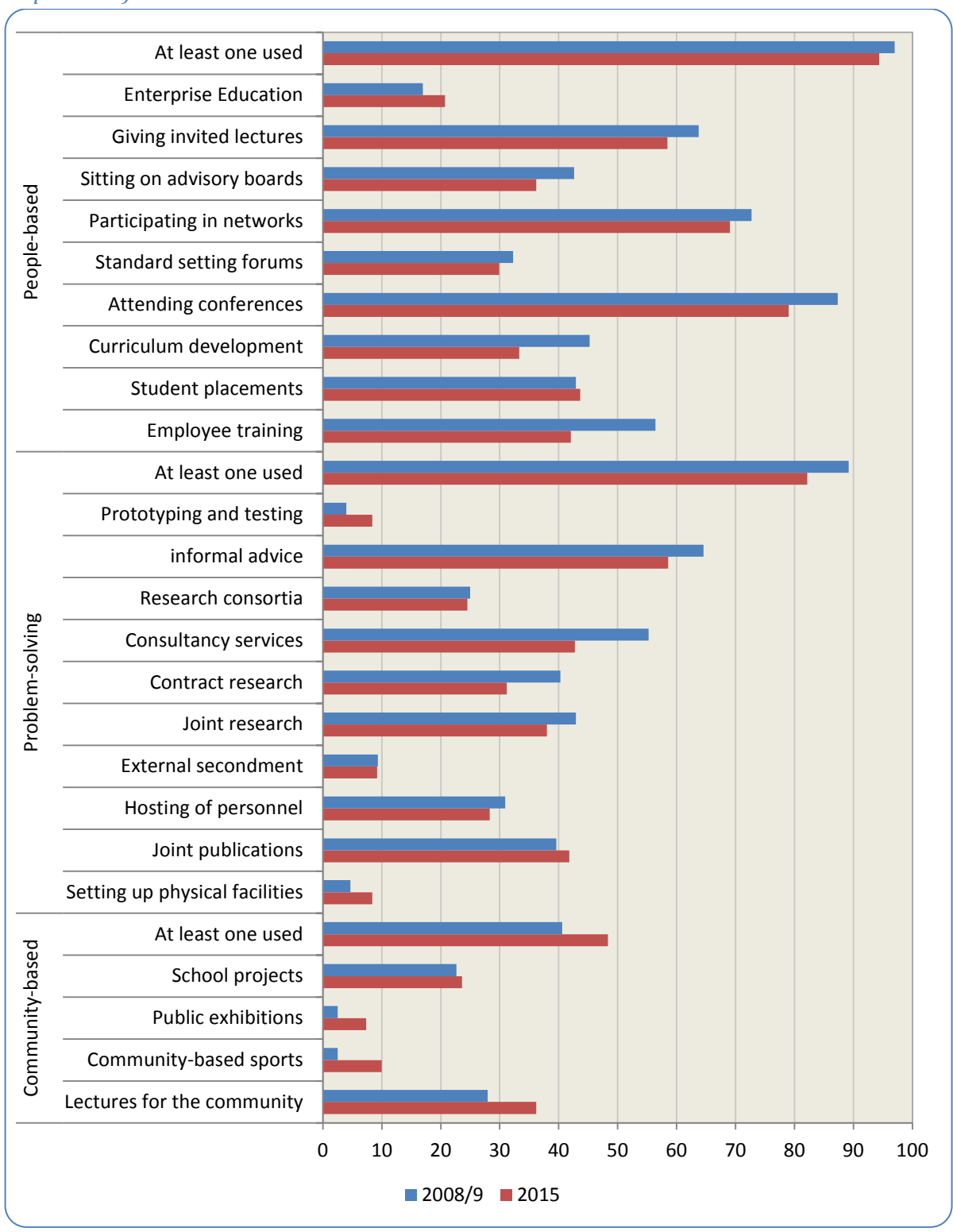
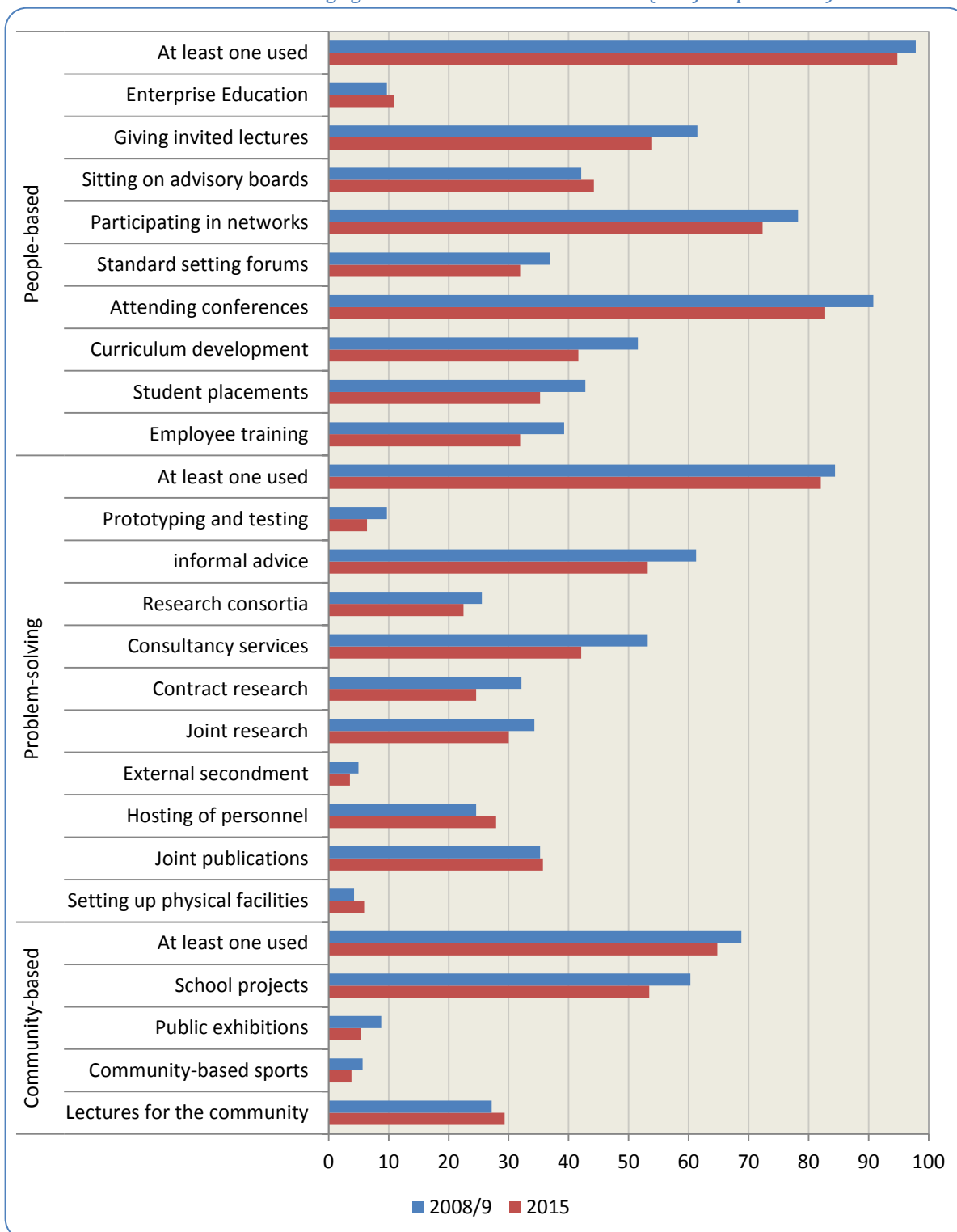


Exhibit 9.21: Non-commercial engagement activities – Education (% of respondents)



In addition to looking at the frequency of engagement activities with external organisations it is also possible to use the matched sample to compare changes over time in the motivation for such

activities. Survey respondents were asked to score on a scale of 1 to 5 the importance of each of 11 motivations for engaging in activities with external organisations.

Exhibit 9.22 shows the proportion of respondents in social sciences as a whole that consider each of these motives as important or very important (values 4 or 5 on a Likert scale of 1 to 5). The data for 2015 is represented by red bars and the data for 2008/9 is shown as blue triangles. There is considerable stability over time in the pattern of importance attached to each of the motivations. The most striking change is the increase in importance attached by academics to furthering their own institution’s outreach mission. Here the proportion citing this motivation rose from 49% to 64% between the two survey dates. Creating student projects and job placement opportunities and looking for business opportunities linked to own research have also shown increases. Motivation linked to obtaining personal income saw the largest decrease.

Exhibit 9.22: Important motivations for activities with external organisations (% of respondents)

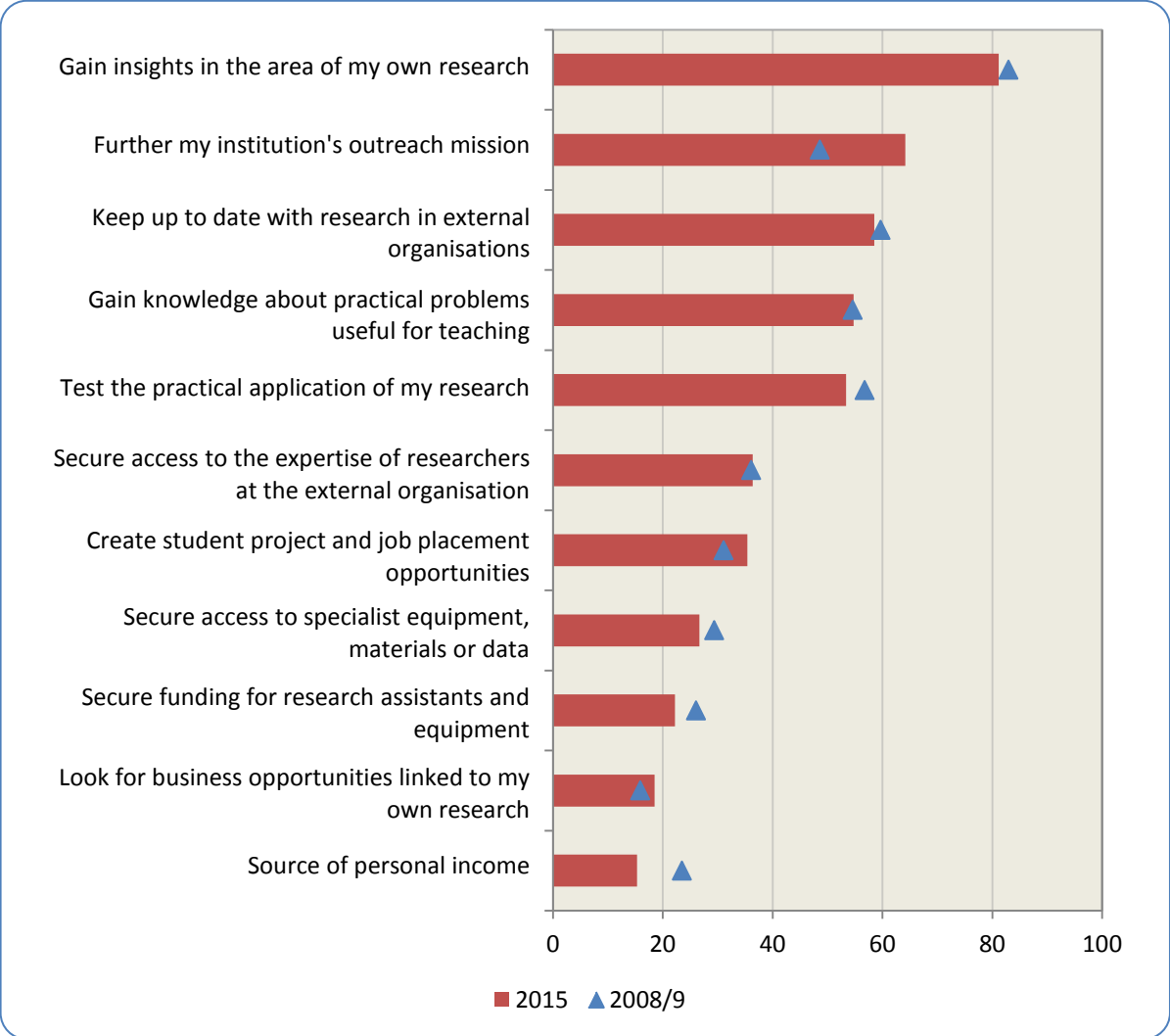


Exhibit 9.23 to Exhibit 9.26 reproduce this analysis for each of the four groups of social sciences separately. In each exhibit the motivations are ordered from the most important to the least important in a clockwise direction. In each case the most frequently cited motivation is to gain insights in the area of the academics own research. In all cases the pursuit of sources of personal income is ranked at the end. Between those two extremes there are some variations across the disciplinary groups in each year. In the case of 'Architecture, building, planning' and in 'Business, financial studies' as well as in 'Education' the second most important motivation in 2008/9 was gaining knowledge about practical problems useful for teaching. It is noticeable that this motivation was ranked much lower in the case of 'Law, social sciences, economics'. This relative pattern appears to be persistent over both survey years.

The most notable difference between 2008/9 and 2015 is the increase in all disciplines in motivations connected with furthering the institutions outreach mission. This is particularly so in the case of 'Architecture, building, planning' and in 'Law, social sciences, economics' and 'Education'. It is also the case in 'Business, financial studies'. It appears, therefore, that the link between engagement activity and universities outreach mission is more pervasive across the social science community as a whole and in each of the subgroups identified in this section in 2015 than it was in 2008/9.

Exhibit 9.23: Important motivations - Architecture, Building, Planning (% of respondents)

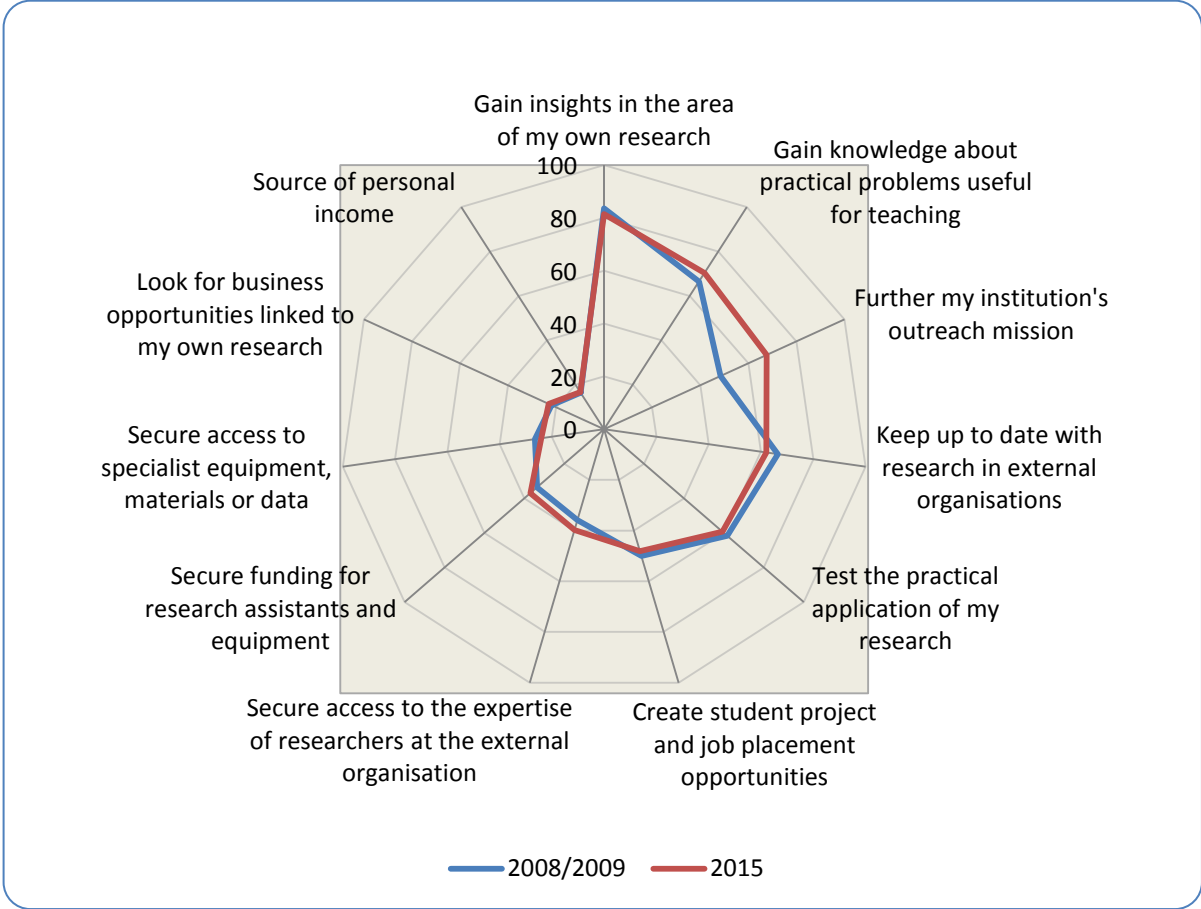


Exhibit 9.24: Important motivations - Law, Social Sciences, Economics (% of respondents)

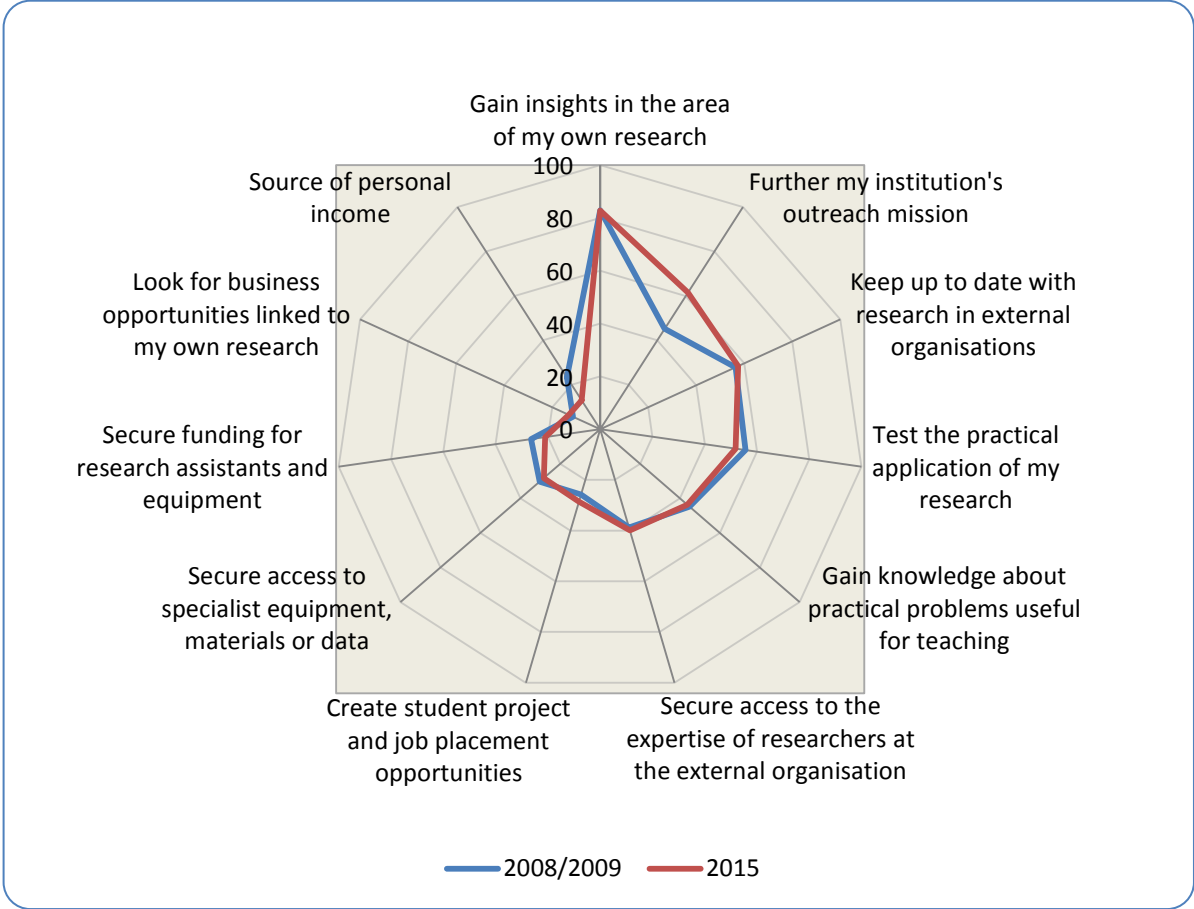


Exhibit 9.25: Important motivations - Business, Financial studies (% of respondents)

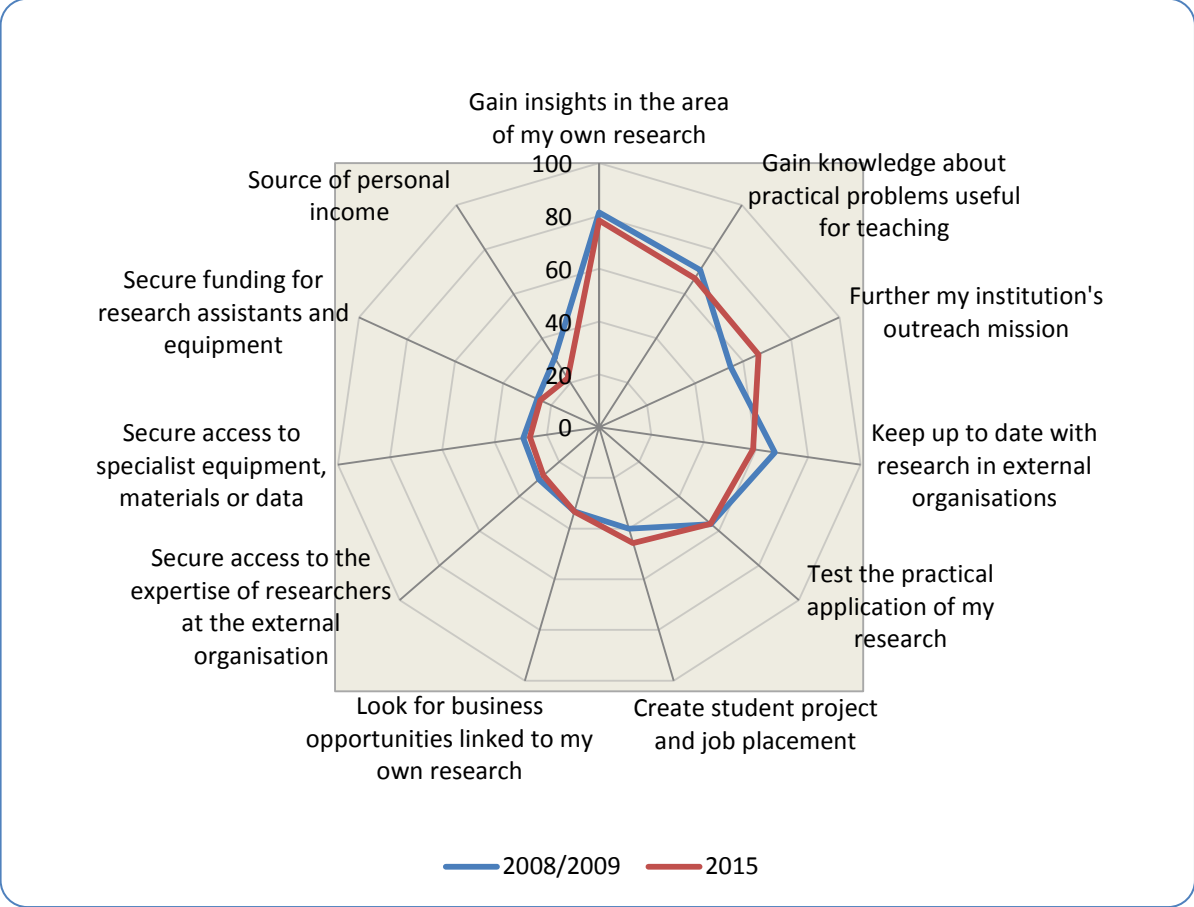
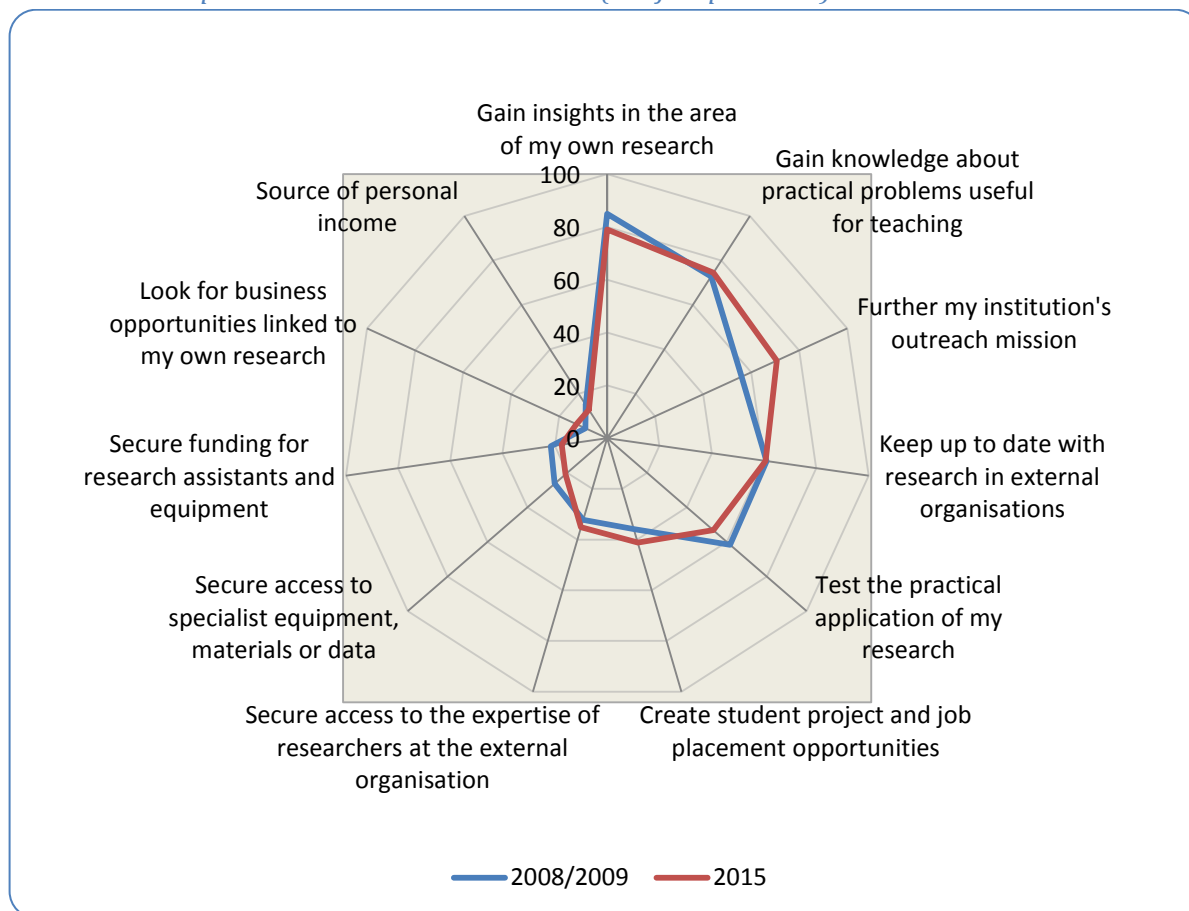


Exhibit 9.26: Important motivations - Education (% of respondents)



Having looked at motivation patterns and changes it is also possible to look at academics perceptions of the impact that external activities have on their research.

Exhibit 9.27 shows changes in the impact in research between the two survey dates for the social science disciplines as a whole. The broad pattern of the percentages of academics reporting each impact is the same in 2015 as it was in 2008/9. There was an increase in the percentage of academics reporting that external organisations had given new insights into their work or had led to new contacts in their field or had strengthened their reputation in the field. The proportion reporting that external activities had led to new research projects decreased slightly. The very small proportion of academics reporting their external activities had very little or no impact on the amount, or kind, of their research fell even further between the two survey periods.

Exhibit 9.27: Impact of external activities on research in the last three years - 2008/9 and 2015 comparison (% of respondents)

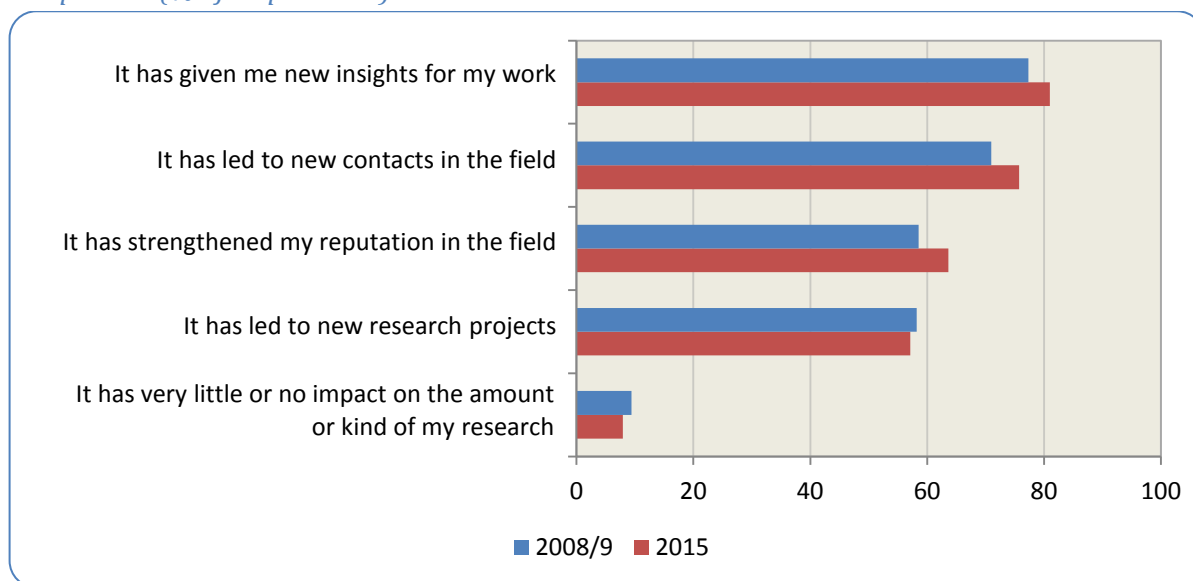


Exhibit 9.28 to Exhibit 9.31 reproduce this analysis for each of the four disciplinary groups. The general picture which emerges is of small increases in the frequency of reporting each positive impact. In the case of ‘Architecture, building, planning’ the academics were less frequently likely to report that the external relationships led to new contacts in their field or to new projects. This was the only group where the impact in relation to new contacts fell between the two survey dates. There were small falls in impacts associated with new projects in the cases of ‘Education’, and of ‘Law, social sciences, economics’. With this exception, in general the relative ranking of motivations was common across all groups and remained the same within each field.

Exhibit 9.28: Impact of external activities on research - Architecture, Building, Planning (% of respondents)

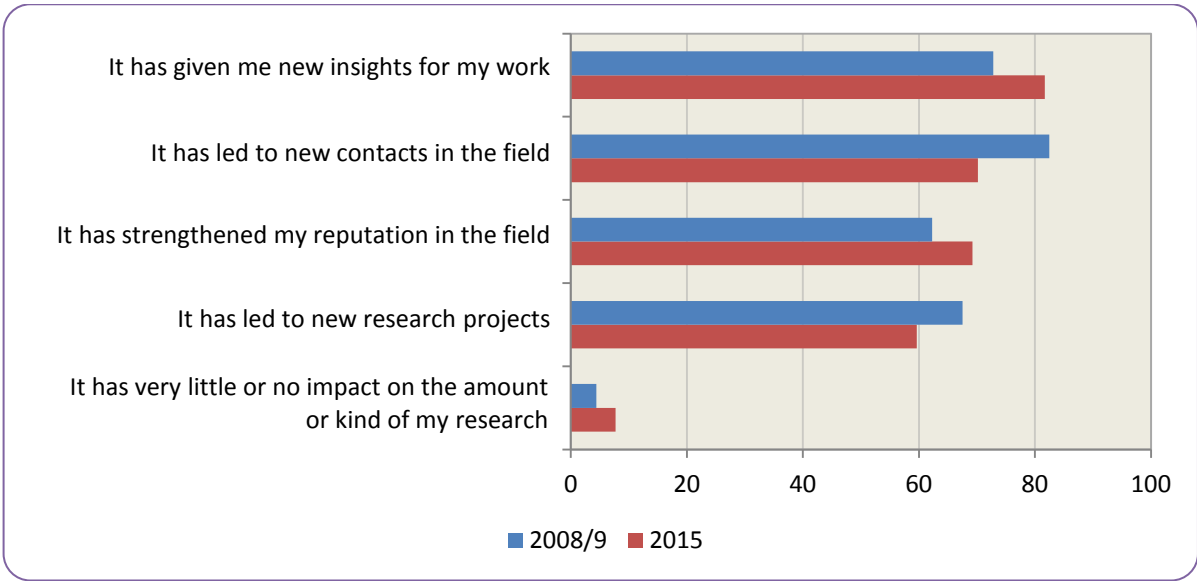


Exhibit 9.29: Impact of external activities on research - Law, Social Sciences, Economics (% of respondents)

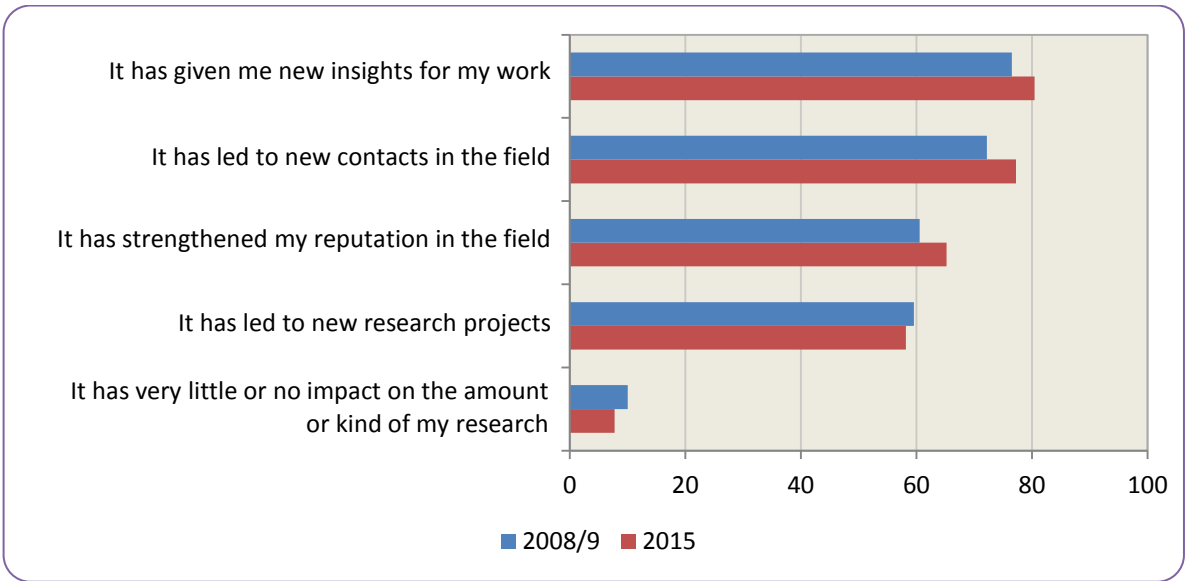


Exhibit 9.30: Impact of external activities on research - Business, Financial studies (% of respondents)

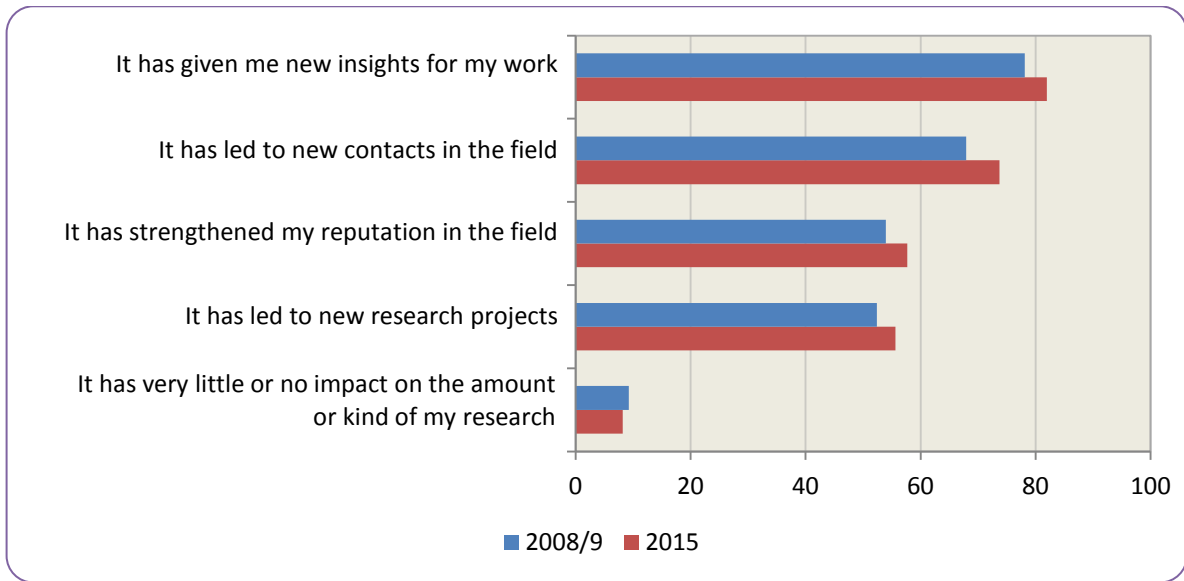
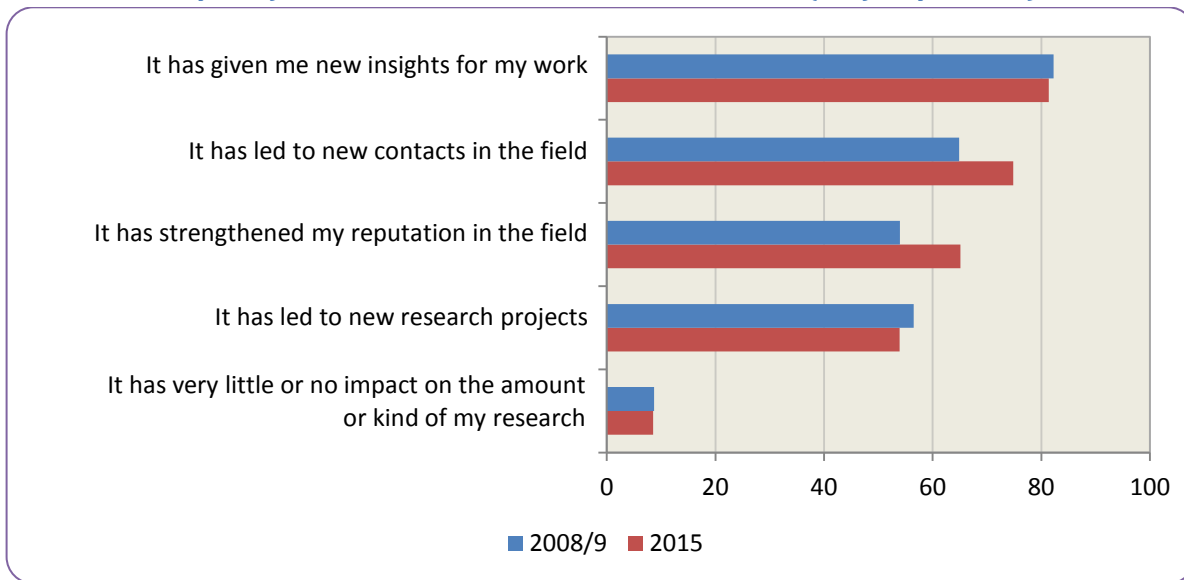


Exhibit 9.31: Impact of external activities on research - Education (% of respondents)



Appendix

Appendix Table A1 shows data relating to academic activity split into Teaching, Research, Administration, and Knowledge Exchange cross classified by social science discipline grouping. The number of respondents is reported for 'All' social science disciplines together and for each in turn. The share of respondents identifying engagement in each academic activity is also reported.

For the sample as a whole the reported engagement in teaching, research, and administrative duties is over 90%. The proportion of academics reporting engaging in knowledge exchange activities was 74.2%.

There are some differences in this broad pattern of activities across disciplines. The highest frequency of engagement in teaching is in 'Law' and in 'Business and management studies' and the lowest in 'Anthropology and development studies'. Variations in the frequency of research involvement are less marked as is frequency of participation in administrative activities.

Appendix Table A1: Share of Respondents by Discipline engaged in Teaching, Research, Administration, and Knowledge Exchange Activities

Social Science Disciplines	Share of respondents (%)				Number of Respondents
	Teaching	Research	Administrative activities	Knowledge exchange with external organisations	
Anthropology and Development Studies	84.6	98.8	92.9	74.0	169
Architecture, Built Environment and Planning	94.2	93.4	92.9	81.5	378
Business and Management Studies	96.5	91.6	95.4	71.4	1323
Economics and Econometrics	91.9	97.4	93.3	67.7	418
Education	94.3	89.5	96.2	76.9	847
Geography, Environmental Studies and Archaeology	88.4	98.2	89.4	76.4	492
Law	97.2	93.4	96.8	69.8	562
Politics and International Studies	87.9	98.1	93.8	73.0	371
Social Work and Social Policy	89.0	90.2	93.8	83.1	356
Sociology	87.0	98.5	94.9	74.1	409
Sport and Exercise Sciences, Leisure and Tourism	94.3	95.0	97.0	74.7	300
All	92.8	93.8	94.6	74.2	5626

Appendix Table A2, below, shows data for the average amount of time academics reported spending on each of the academic activities they engaged in during the three years prior to the survey. Within the social sciences as a whole, academics reported spending approximately a third of their time on both teaching (35.5%) and research (33.1%) activities. They reported on average spending 22.2% of their time on administrative duties and 8.8% of their time engaging in knowledge exchange activity.

There are differences across disciplines in the average time allocated to the four activities. The highest proportion of time spent in teaching is in Education (41.6%) and lowest in 'Anthropology and development studies' (24.3%). The latter disciplinary group also reported the highest average

proportion of time spent on research. The average amount of time spent on administrative activities was more evenly spread as is the case with knowledge exchange. These differences may be affected by differences in the age and seniority of academics across the disciplines as well as the proportions of research and teaching fellows reported in Exhibit 1.2 in the main text.

Appendix Table A2: Average time by Discipline allocated to Teaching, Research, Administration, and Knowledge Exchange Activities

Social Science Disciplines	Average share of time (%)				Number of Respondents
	Teaching	Research	Administrative activities	Knowledge exchange with external organisations	
Anthropology and Development Studies	24.3	46.7	19.8	9.2	169
Architecture, Built Environment and Planning	35.8	33.0	21.1	10.1	378
Business and Management Studies	38.4	29.3	23.1	9.2	1323
Economics and Econometrics	30.2	43.1	18.8	7.9	418
Education	41.6	23.7	25.8	8.9	847
Geography, Environmental Studies and Archaeology	29.1	42.3	20.4	8.2	492
Law	39.7	31.0	22.3	7.0	562
Politics and International Studies	30.5	38.6	22.5	8.5	371
Social Work and Social Policy	30.8	33.7	24.1	11.4	356
Sociology	30.3	40.8	21.1	7.8	409
Sport and Exercise Sciences, Leisure and Tourism	40.3	25.9	25.2	8.5	300
All	35.5	33.1	22.6	8.8	5626

Appendix Table A3 provides a cross classification of each of 27 engagement activities by each of the 11 social science disciplinary groups. Appendix Table A4 repeats the analysis in terms of the percentage of academics that consider each of the 27 engagement activities as very important as a pathway to impact.

Appendix Table A3: Non-Commercial Engagement Activity by Discipline

		% that use mode										
		Architecture, Built Environment and Planning	Geography, Environmental Studies and Archaeology	Economics and Econometrics	Business and Management Studies	Law	Politics and International Studies	Social Work and Social Policy	Sociology	Anthropology and Development Studies	Education	Sport and Exercise Sciences, Leisure and Tourism
People-based	Employee training	35.1	22.4	22.9	43.7	29.1	19.1	42.5	19.9	25.6	34.6	31.2
	Student placements	45.4	35.2	14.5	39.5	20.2	16.4	41.9	23.5	19.2	35.2	47.2
	Curriculum development	28.5	16.7	11.0	31.7	18.1	17.8	41.1	16.7	18.0	40.2	31.6
	Attending conferences	85.5	87.4	79.0	78.1	83.2	84.6	91.9	85.4	83.1	83.2	84.7
	Standard setting forums	37.2	26.2	18.6	28.9	29.4	22.1	38.9	25.0	19.2	28.3	29.2
	Participating in networks	79.9	73.2	50.5	67.4	64.7	68.7	83.3	73.1	71.5	71.1	63.5
	Sitting on advisory boards	46.4	40.7	28.6	34.3	35.8	31.3	49.7	31.3	36.0	42.5	37.2
	Giving invited lectures	67.5	67.7	48.6	56.6	58.7	64.7	68.9	58.7	69.2	54.3	55.1
Enterprise Education	8.2	4.3	5.0	22.2	2.1	2.2	6.1	2.7	5.2	9.9	9.6	
Problem-solving	Setting up physical facilities	14.8	7.1	2.9	7.3	2.7	1.9	4.7	2.9	4.7	5.7	11.6
	Joint publications	52.8	53.7	47.4	40.9	33.2	36.4	49.7	35.9	43.0	36.6	49.8
	Hosting of personnel	32.2	27.6	20.5	27.5	22.5	23.5	33.6	25.2	30.8	28.0	22.6
	External secondment	12.9	10.4	11.7	9.6	7.1	8.9	10.0	6.3	8.7	5.3	8.3
	Joint research	51.5	53.3	40.5	35.6	26.1	29.4	49.4	34.0	44.2	32.7	42.2
	Contract research	37.7	36.8	31.4	27.4	20.7	24.5	48.9	34.7	25.6	24.3	36.5
	Consultancy services	46.4	30.9	32.6	40.2	32.4	33.4	36.7	28.4	33.1	39.5	40.5
	Research consortia	39.8	42.5	26.9	23.5	18.6	28.6	32.5	27.4	39.5	19.9	20.3
Informal advice	64.4	58.5	37.6	55.1	51.8	51.2	64.4	52.2	56.4	52.7	55.1	
Prototyping and testing	10.3	4.1	1.4	6.5	2.1	1.3	4.7	3.6	1.7	6.0	11.6	
Community-based	Lectures for the community	46.4	61.6	28.8	31.8	39.0	45.6	41.7	46.1	54.7	31.6	40.5
	Performing arts	20.1	23.0	6.7	13.5	11.9	14.8	13.3	24.0	23.3	15.4	14.0
	Museums & art galleries	18.2	36.2	5.7	8.8	7.4	10.8	7.8	16.7	29.7	18.8	12.3
	Heritage & tourism	21.4	31.7	4.0	9.9	4.8	3.5	3.6	8.0	16.3	8.3	18.9
	Social enterprises	26.6	19.9	10.7	28.1	15.6	11.3	33.1	21.1	21.5	16.1	16.9
	Community-based sports	4.2	0.6	1.9	5.0	1.4	1.3	2.5	2.4	1.2	3.4	28.2
	Public exhibitions	21.1	20.7	1.2	5.1	4.3	4.9	5.3	9.5	19.8	5.8	9.3
	School projects	28.5	32.7	11.2	18.8	20.4	18.3	16.4	19.7	19.2	53.9	36.5
Total (N)	379	492	420	1333	564	371	360	412	172	855	301	

Appendix Table A4: Non-commercial Engagement Activity by Discipline - Importance

		% that consider mode as very important as pathway to impact										
		Architecture, Built Environment and Planning	Geography, Environmental Studies and Archaeology	Economics and Econometrics	Business and Management Studies	Law	Politics and International Studies	Social Work and Social Policy	Sociology	Anthropology and Development Studies	Education	Sport and Exercise Sciences, Leisure and Tourism
People-based	Employee training	18.0	13.8	9.5	22.0	13.7	18.3	17.7	28.8	16.3	19.4	19.6
	Student placements	23.8	11.6	5.2	19.1	10.6	4.9	23.0	16.7	3.0	21.5	13.6
	Curriculum development	23.1	18.3	18.2	18.8	17.2	7.6	21.5	17.6	20.0	21.5	20.4
	Attending conferences	20.9	19.0	22.5	26.4	25.5	20.7	22.9	19.6	17.1	21.1	25.1
	Standard setting forums	28.6	26.4	29.9	27.3	27.2	29.3	25.5	35.3	23.3	21.7	19.5
	Participating in networks	36.7	32.7	28.7	28.8	25.6	28.2	32.3	32.0	28.3	30.3	26.6
	Sitting on advisory boards	32.6	23.2	21.2	24.8	22.6	30.2	20.6	27.0	14.5	20.7	25.2
	Giving invited lectures	27.0	25.5	27.2	26.1	30.0	34.2	24.7	29.6	28.0	26.9	26.2
	Enterprise Education	22.6	4.8	0.0	24.3	0.0	12.5	9.1	30.0	11.1	18.1	14.3
Problem-solving	Setting up physical facilities	34.6	25.7	25.0	16.7	40.0	28.6	25.0	27.3	28.6	10.9	17.6
	Joint publications	33.3	32.3	32.8	36.5	28.2	31.8	28.8	32.9	39.4	29.1	39.3
	Hosting of personnel	12.5	16.3	15.5	14.7	13.8	8.4	12.8	22.5	14.3	16.7	12.1
	External secondment	43.5	39.2	22.9	37.6	43.6	36.4	33.3	16.0	21.4	26.8	31.8
	Joint research	39.6	40.9	39.5	44.9	43.8	39.6	42.0	40.7	44.4	39.8	52.8
	Contract research	38.6	28.2	26.4	36.0	42.2	31.8	35.8	34.8	17.1	38.5	34.3
	Consultancy services	14.7	15.5	12.6	18.2	20.1	20.7	16.2	20.4	16.4	16.7	18.6
	Research consortia	37.4	30.0	36.4	34.2	36.5	29.4	33.3	33.0	33.8	34.5	30.5
	Informal advice	14.2	14.1	14.1	16.9	19.1	24.6	17.5	21.8	20.7	15.9	14.8
Prototyping and testing	24.3	25.0	0.0	18.1	16.7	20.0	23.5	26.7	0.0	24.5	9.1	
Community-based	Lectures for the community	16.5	19.9	9.2	16.7	17.1	11.4	16.1	24.5	10.9	15.5	20.7
	Performing arts	19.7	20.4	11.5	18.4	20.9	9.1	20.8	30.2	17.9	16.8	12.5
	Museums & art galleries	29.0	24.3	4.5	20.5	23.8	2.5	21.4	23.2	18.4	12.7	16.7
	Heritage & tourism	20.0	27.7	6.3	18.3	14.8	15.4	15.4	27.3	23.1	14.3	19.6
	Social enterprises	26.0	29.6	15.9	21.5	23.3	23.8	18.6	34.5	25.7	24.4	16.0
	Community-based sports	6.3	66.7	0.0	16.1	0.0	20.0	0.0	10.0	0.0	34.5	24.7
	Public exhibitions	31.3	16.7	0.0	18.5	12.5	5.6	36.8	35.9	16.1	18.4	10.7
	School projects	21.3	16.9	4.3	19.2	12.3	7.4	32.2	24.7	0.0	34.1	20.0

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