

Early Career Researchers & OR Courses Survey Results

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The purpose of the survey

To understand where the ECR community is based and the demographics of the ECR community.

- This enables the ORS to give the ECR community better, more specific support.

To learn where OR is being taught and what level it is being taught at.

- This enables us to create a useful resource for interested students. The ease of accessing the information may increase the likelihood of them studying OR.

Definitions

Early Career Researchers: Final year PhD students and Post Docs to academics with under five years' experience.

Courses: any degree (undergraduate, integrated or postgraduate level) with at least 40% OR content.

- This was selected to remain consistent with the threshold for courses eligible for the Undergraduate Award/Masters Scholarship.

The definition of OR was left to the judgement of the respondent.

Methodology

Carol McLaughlin and Eve Hardy drafted an online questionnaire with a focus on academic year 2019/20. The survey was planned for March but was delayed until late May due to COVID-19.

CM & EH then shared a link to the questionnaire via email with a list of contacts. Contacts were sent three email reminders in June and July 2020. We were unable to follow up via telephone due to the prevalence of home working.

A similar survey (addressed to institutions, 14 responses) was carried out in 2019, the contact list for this survey was updated and built upon.

59 contacts at 45 HE Institutions were approached, we received a response from 30 HEIs. Institutions were prioritised where CM/EH knew of OR being taught or researched.

Questions Asked

Please provide as much data as you can.

Please use estimates if you do not have access to exact figures. An estimate of the OR landscape is still helpful to us in providing support to relevant initiatives.

2. Which institution are you based at?

3. What is your faculty/department/school?

4. Please provide the number of OR personnel in the following categories:

	PhD Students	PDRAs	Lecturers
Total	<input type="text"/>	<input type="text"/>	<input type="text"/>
Male	<input type="text"/>	<input type="text"/>	<input type="text"/>
Female	<input type="text"/>	<input type="text"/>	<input type="text"/>
Gender Non Specified	<input type="text"/>	<input type="text"/>	<input type="text"/>
Under 30 years old	<input type="text"/>	<input type="text"/>	<input type="text"/>
30-39 years old	<input type="text"/>	<input type="text"/>	<input type="text"/>
40-49 years old	<input type="text"/>	<input type="text"/>	<input type="text"/>
50-59 years old	<input type="text"/>	<input type="text"/>	<input type="text"/>
Over 60 years old	<input type="text"/>	<input type="text"/>	<input type="text"/>
Born in the UK	<input type="text"/>	<input type="text"/>	<input type="text"/>
Born in the EU	<input type="text"/>	<input type="text"/>	<input type="text"/>
Born in the Rest of the World	<input type="text"/>	<input type="text"/>	<input type="text"/>

5. How many PhD students graduated in OR/management sciences in the academic year 2018-19?

For the purposes of this survey, please consider any degree with at least 40% OR content as being relevant.

Please list all relevant degree variants, e.g. BSc Mathematics, BSc Mathematics with Placement Year, MMath Mathematics etc.

6. Please provide a list of degrees offered by your Institution with at least 40% OR content. Include undergraduate/bachelors degrees, integrated masters degrees and postgraduate/masters degrees.

7. Please provide web links to information about the degrees you listed above.

Question 1 related to GDPR and so has not been included here.

Headline Results

ECR results from 30 universities:

181 PhD students

72 PDRAs

184 Lecturers*

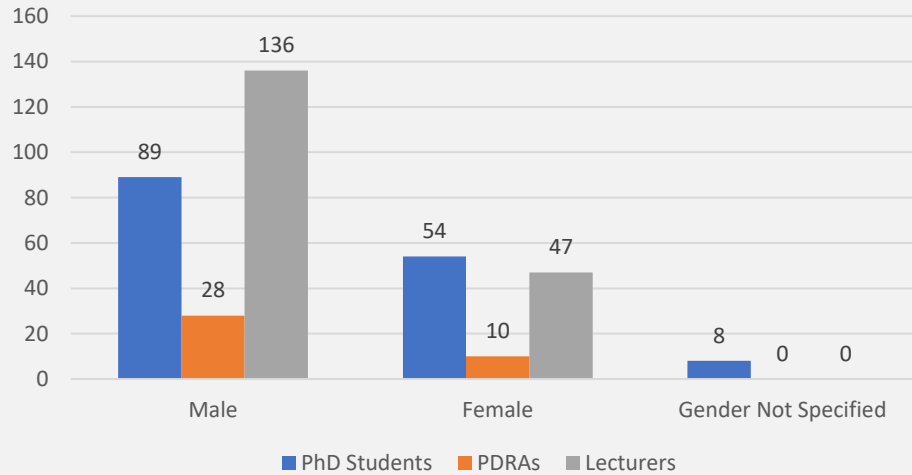
*this may not be purely ECRs. See demographics later.

Faculty breakdown:

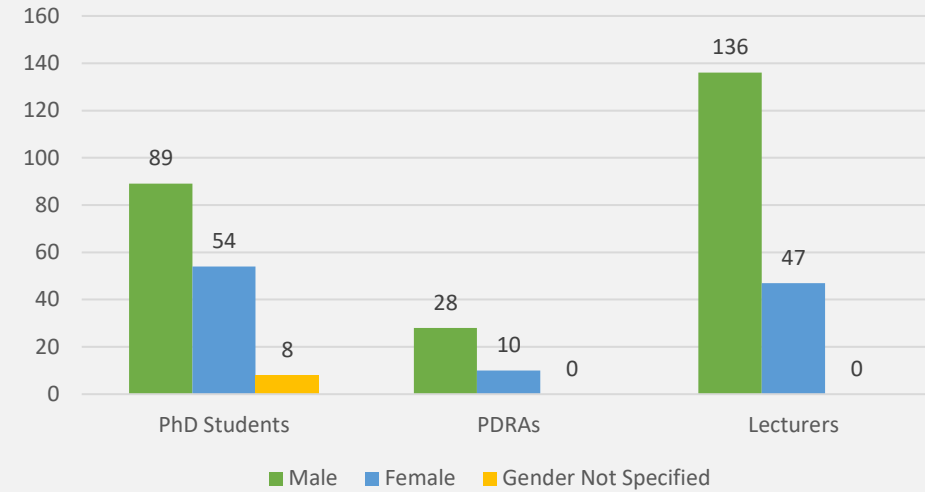
- 18 Business/Management schools
- 9 Maths schools
- 3 Computing schools
- 1 Defence & Security
- 1 Health Economics & Decision Science
- 1 Engineering faculty

Headline Results. Lecturer data (grey) may include non-ECRs.

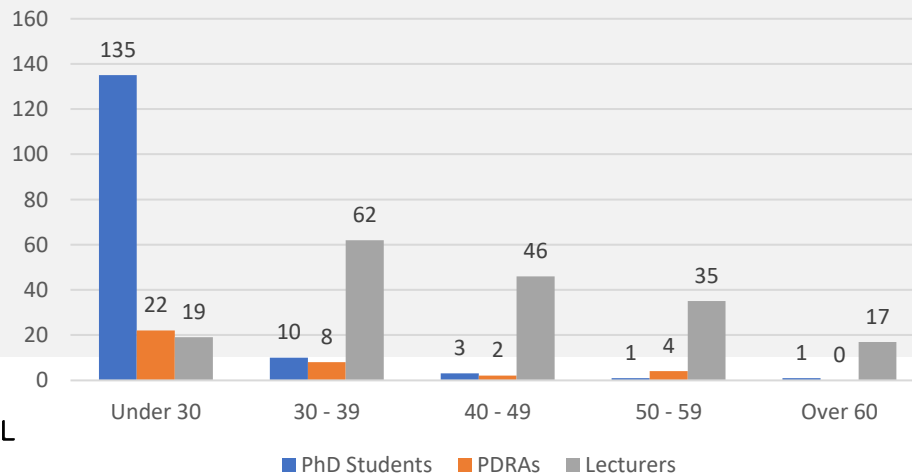
Gender breakdown of whole ECR community



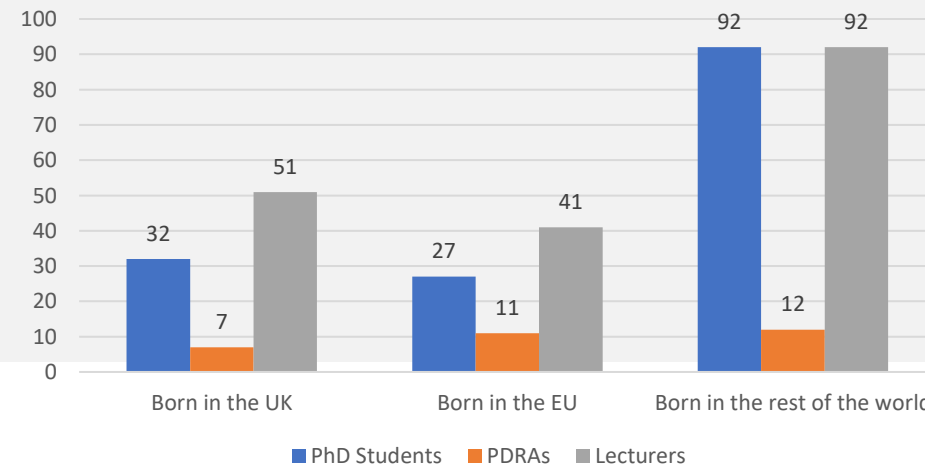
Gender breakdown of whole ECR community



Age breakdown of whole ECR community

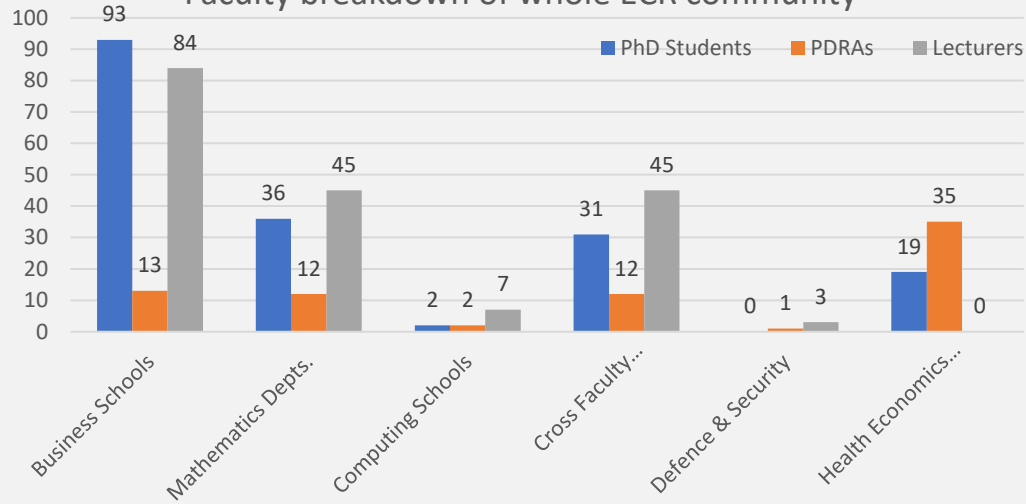


Nationality breakdown of whole ECR community



Headline Results

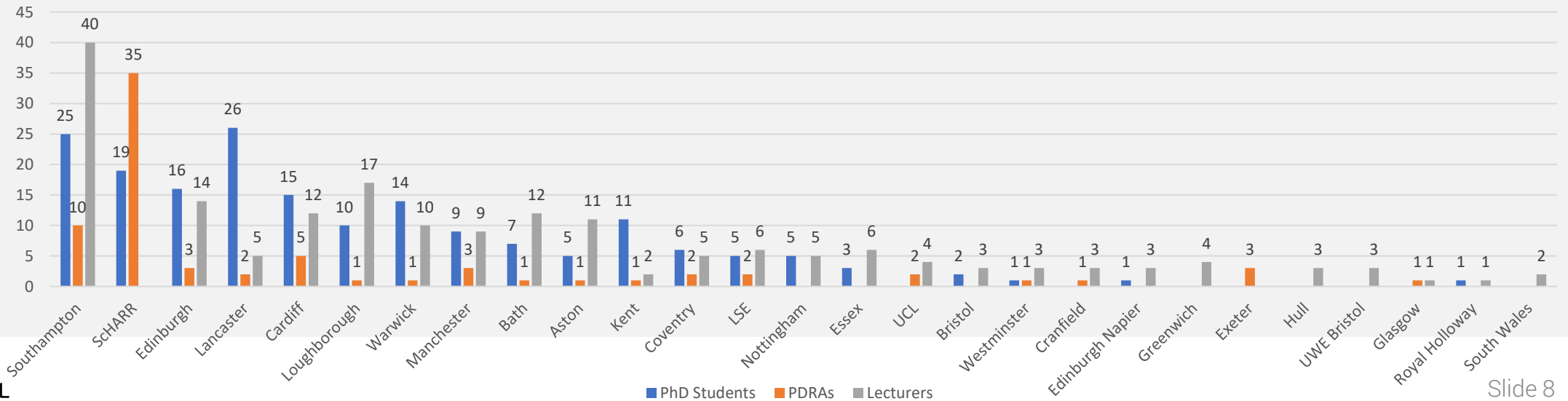
Faculty breakdown of whole ECR community



440 ECRs:

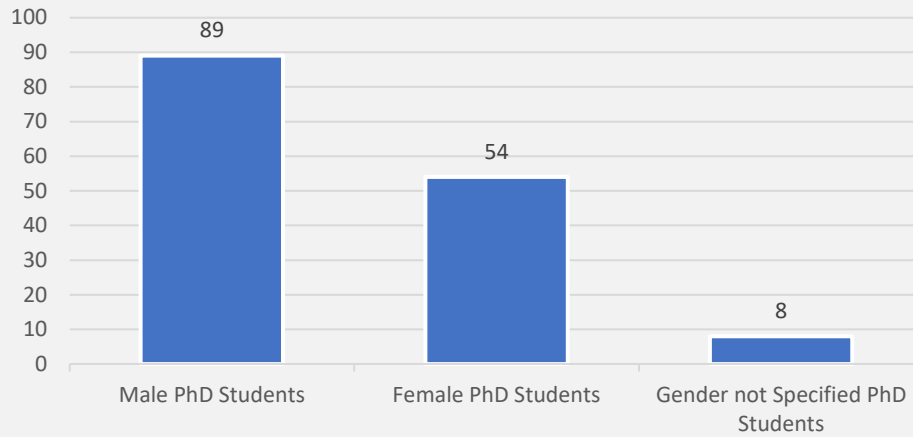
- 181 PhD students
- 75 PDRAs
- 184 Lecturers

ECR Community by Location

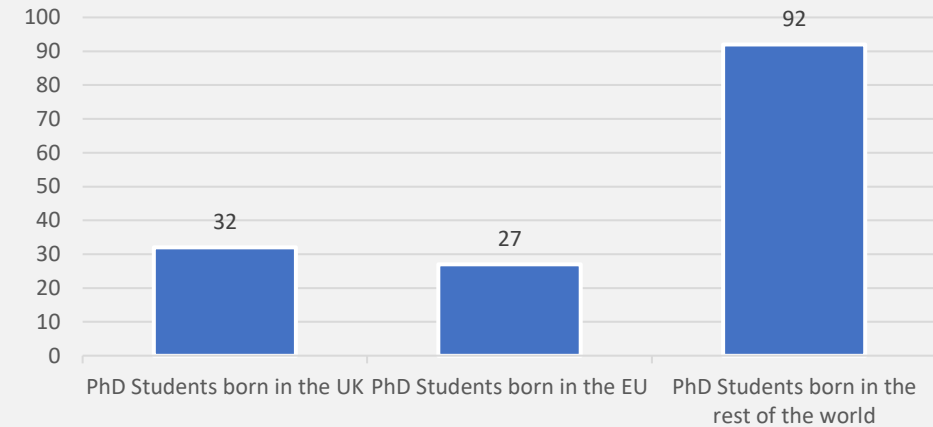


181 current PhD students at 18 universities

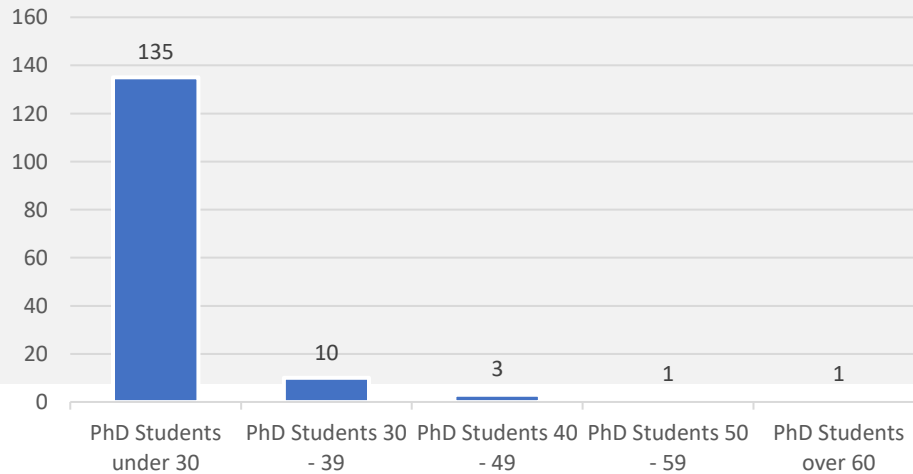
151 PhD students with gender information available



151 PhD students with nationality information available

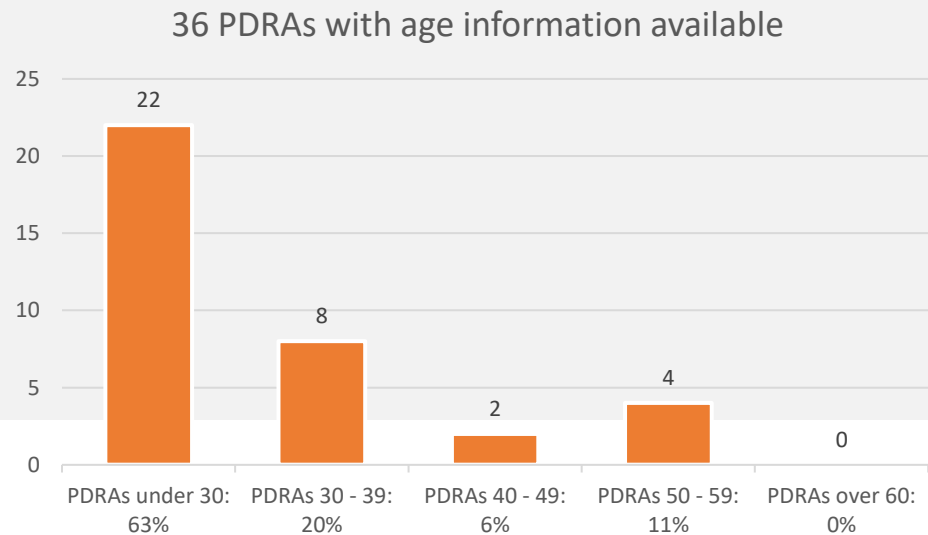
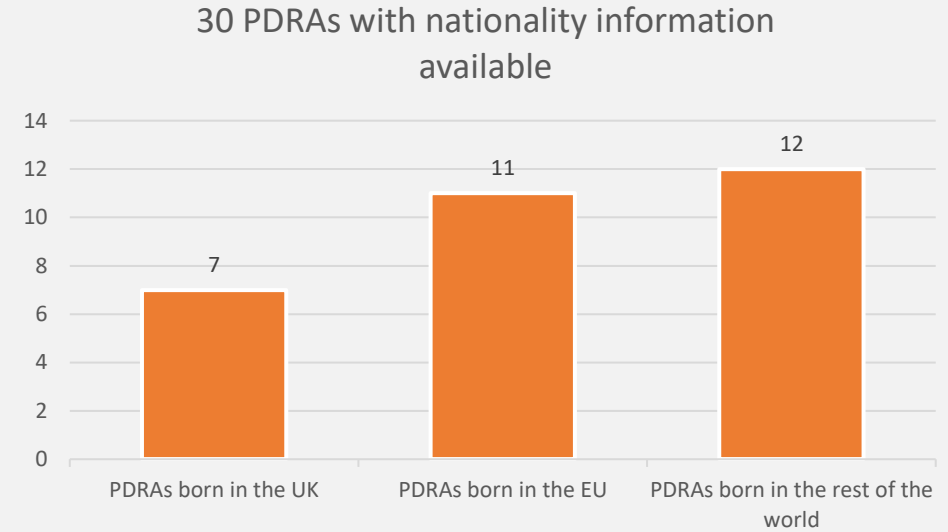
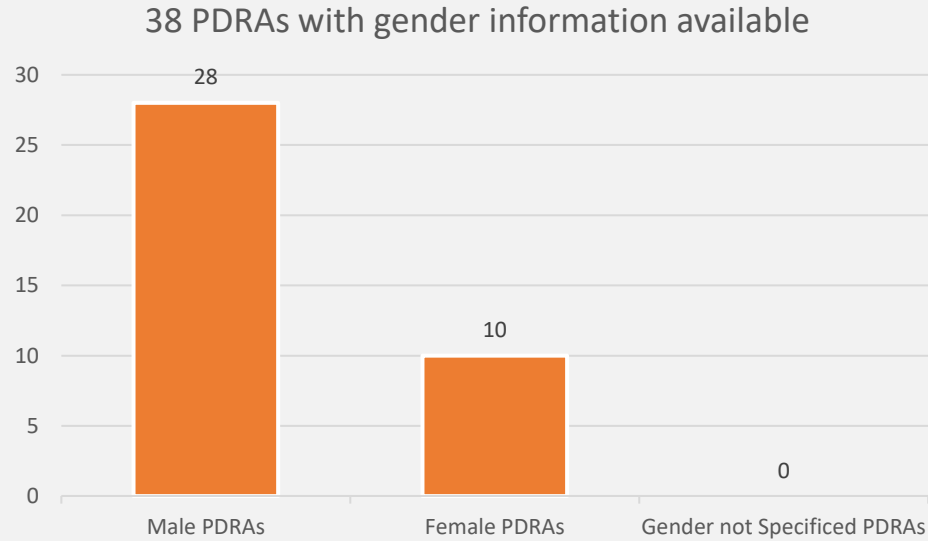


150 PhD students with age information available



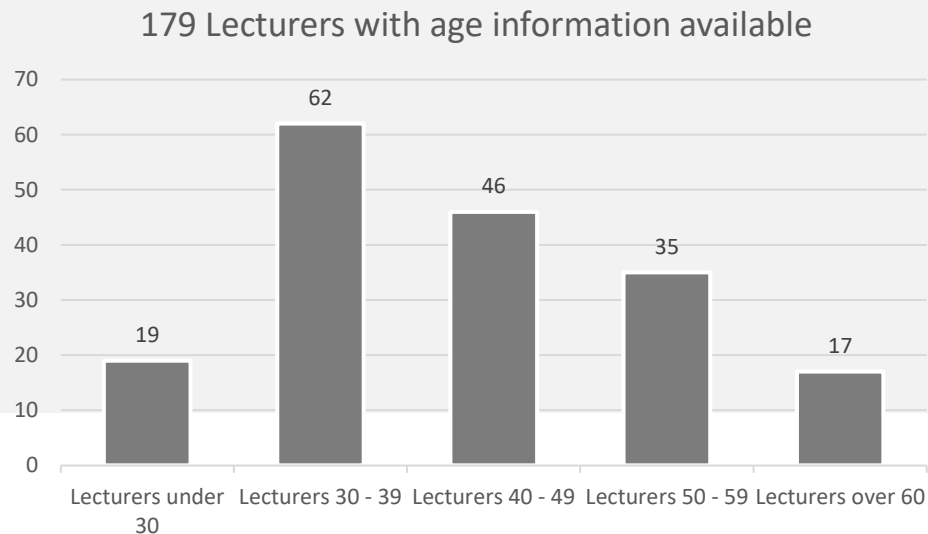
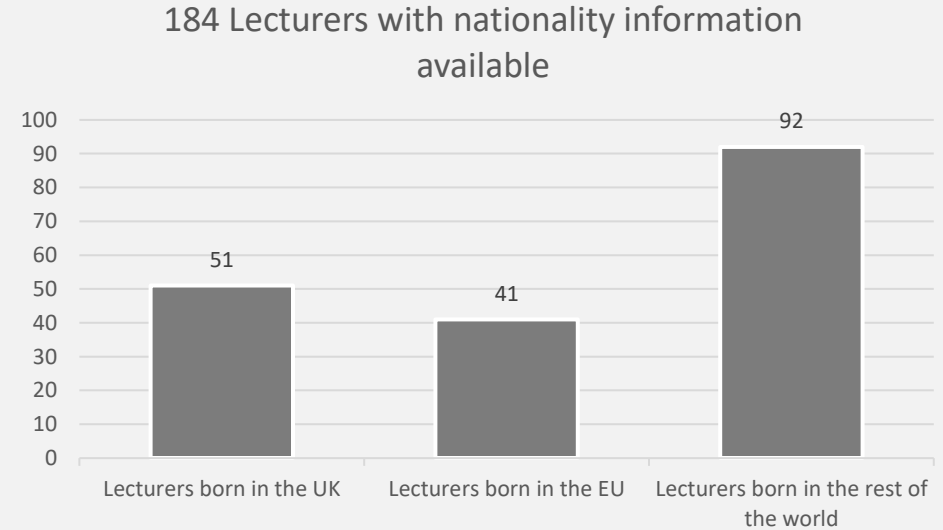
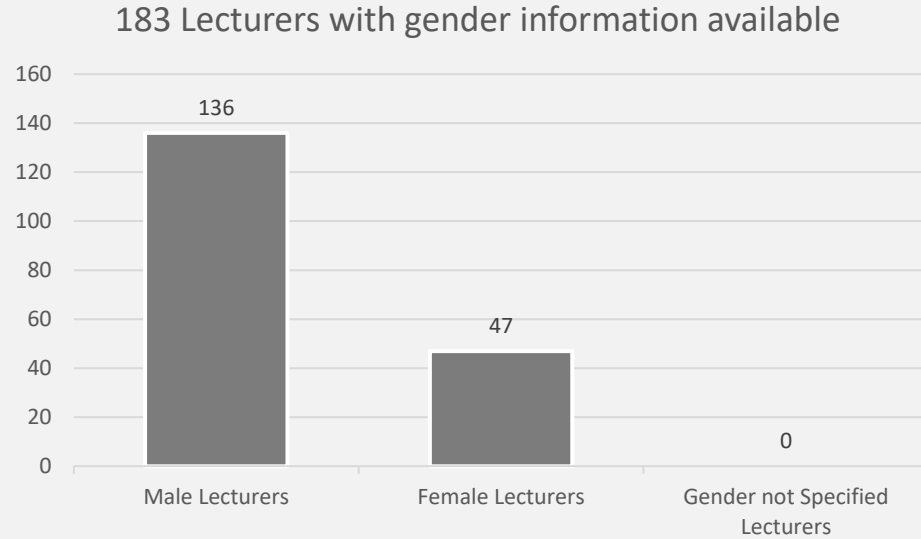
42 PhD students graduated in the 2018/19 academic year

75 current PDRAs at 17 universities



35 of the PDRAs from ScHARR (no breakdown info)

184 current lecturers at 25 universities



Age breakdown suggests that some lecturers not meeting the specified ECR definition (i.e. qualified for under five years) were included in the response.

OR degrees on offer at 19 universities

University	Degrees
University of Kent	MSc Business Analytics MSc Supply Chain Management and Logistics
University of Greenwich	BSc Statistics and Operational Research BSc Mathematics (depending on options chosen) BSc Financial Mathematics (depending on options chosen)
University of Edinburgh	Operational Research (MSc) Operational Research with Computational Optimization (MSc) Operational Research with Data Science (MSc) Operational Research with Risk (MSc)
Cardiff University	BSc Mathematics OR and Statistics MMORS MSc OR and Applied Statistics MSc OR, Applied Statistics and Financial Risk MSc Data Science and Analytics
University of Warwick	MSc Business Analytics BSc Mathematics, OR, Statistics and Economics Integrated masters Mathematics, OR, Statistics and Economics
University of Manchester	MSc Business Analytics
Loughborough University	BSc Management BSc Business Analytics MSc Business Analytics MSc Logistics and Supply Chain Management
University of Bath	MSc in Business Analytics (on campus) MSc in Business Analytics (online)
Cranfield University	MSc/PGDip/PGCert In Military Operational Research
Strathclyde University	MSc in Data Analytics MSc in Operational Research (distance learning) PG Cert in Data Analytics (online) MSc Business Analysis and Consulting

University	Degrees
LSE	MSc Operations Research & Analytics
Aston University	BSc Business Analytics MSc Business Analytics MSc Business Analytics (online)
Lancaster University	BSc Business Analytics BSc Mathematics, Operational Research, Statistics and Economics MSc Business Analytics M.Res/PhD Management Science PhD Management Science
University of Southampton	BSc Mathematics OR, Statistics and Economics MSc OR MSc OR and Statistics MSc OR and Finance MSc Data and Decision Analytics BSc Business Analytics MSc Business Analytics and Management Science MSc Business Analytics and Finance MSc Supply Chain Management and Logistics
Essex	Business Analytics Data Science Decision Analysis Mathematics
University of Nottingham	MSc Industrial Engineering and Operations Management
University of York	BSc in Finance, OR, Management and Statistics (FORMS)
University of Exeter	BSc Business Analytics MSc Business Analytics MSc Data Science
University of Leeds	MSc Business Analytics and Decision Sciences

Commentary

Big OR research centres appear to have a wider variety of OR degrees.

Gender is fairly balanced at PhD level and skews towards more men/fewer women through PDRAs and Lecturers.

All but one of the Gender Non Specified PhD students come from one university – this could be more indicative of the respondent not knowing students' gender rather than their gender itself.

It was hard to define OR, some respondents had queries, the blur between hard and soft OR contributed to this. It made it unclear which faculties to target. More Business Schools responded than Maths Schools. It is unclear whether we missed Maths faculties or whether that suggests more soft OR is being researched.

There is a relatively high proportion of ECRs born abroad. While this isn't a negative, do we lose some of the UK OR community after PhD/PDRA level? It is unclear whether this is having an impact on the UK OR community.

Next steps

- EH to publish course data on ORS website
- Need to keep data up to date and expand reach of survey without spending a disproportionate amount of time on it
- Build on ECR knowledge via newly launched ECR network
- The data can be cross referenced and used to help broader ORS outreach and member recruitment as it illustrates key institutions to target for ORiE outreach and membership drives.

Methodological learnings

Define ECR lecturers more clearly in future. This was defined in emails but not in the survey itself. Given the age of the lecturers it appears this data includes more than ECRs.

Appendix – Universities and Faculties

University of Exeter	Business School and College of Engineering, Mathematics and Physical Science
University of Nottingham	Nottingham University Business School
University of Hull	Business School
Essex	Business School
Aston University	Aston Business School/ Operations and Information department
Lancaster University	STOR-I – Mathematics, Statistics and Management Science
Strathclyde University	Management Science
Royal Holloway, University of London	School of Business and Management, Department of Digital Innovation and Management
Loughborough University	School of Business and Economics
University of Bath	School of Management
University of Bristol	School of Management
University of Sheffield	Management School and Health Economics and Decision Science (HEDS), School of Health and Related Research (SchARR)
University of Warwick	Warwick Business School
University of Manchester	Alliance Manchester Business School
University of Kent	Business School
University of Portsmouth	Faculty of Business and Law
LSE (London School of Economics)	Mathematics
Cardiff University	School of Mathematics
University of South Wales	Faculty Computing Engineering & Science / School of Computing & Mathematics / Subject area -Mathematics
University of the West of England	Dept of Engineering Design and Mathematics
University of Greenwich	Faculty of Liberal Arts and Sciences / School of Computing and Mathematical Sciences
University of Edinburgh	Mathematics
UCL	Mathematics
Coventry University	Faculty of Engineering, Environment and Computing and Faculty of Business and Law
University of Southampton	CORMSIS: Mathematical Sciences and Southampton Business School
Cranfield University (Shrivenham)	Cranfield Defence and Security
Edinburgh Napier University	Computing
University of Glasgow	School of Computing Science
University of Westminster	School of Computer Science and Engineering
University of York	The York Management School & Department of Mathematics

Appendix – potential gaps in the data

We have reason to believe OR is being taught or researched here but didn't receive a response or couldn't identify a suitable contact.

- Brunel
- Liverpool University Management School
- University of Leicester
- University of Reading/Henley Business School