Supplementary Information

1. Tasks in job specifications

The tasks required of a university based research scientist are based on detailed specifications from 10 job adverts. A non-exhaustive search protocol was used, but one that effectively offers random and objective selection with respect to the information sought; specifically, the adverts used are the first 10 hits from a device located in the UK for the search 'job description university lecturer' on the Google search engine on 16th May 2018. Only job specifications for advertised posts taken directly from university sites were used (i.e. not agencies or career advice sites). Taking the hits in descending order, 18 were required to find 10 appropriate results.

Metadata for the results is given below. All accessed on 16th May 2018. All are relevant to the Lecturer (L) or Senior Lecturer (SL) level (i.e. 5-10 years of experience), although some also span to Reader (R).

- UCL. Computer Science - L/SL/R. *http://www0.cs.ucl.ac.uk/vacancies/lcsml/jd.htm*
- Birmingham City University. Generic - SL. *https://jobs.bcu.ac.uk/Upload/vacancies/files/1894/Senior%20Lecturer.pdf*
- University of Sussex. Generic - SL. *www.sussex.ac.uk/humanresources/documents/senior-lecturer*
- University of Chester. Human Resource Management - L. *http://www.chester.ac.uk/sites/files/chester/hrms13161lecturerhrm.pdf*
- Falmouth University. Generic - SL. *https://www.falmouth.ac.uk/sites/default/.../job_description_-_senior_lecturer_0.pdf*
- University of Cambridge. Generic - L. http://www.econ.cam.ac.uk/vacancies/UL-Role-Profile.pdf
- University of Lincoln. Human Resource Management - L. *https://jobs.lincoln.ac.uk/Upload/vacancies/files/459/HRM%20Lecturer%20april%202013%20v2%20.pdf*
- University of Bath. Engineering - SL. *https://www.bath.ac.uk/jobs/Upload/vacancies/files/9175/CT4552%20Senior%20Lecturer%20Job%20Description%20and%20Person%20Specification_electronic.pdf*
- University of Birmingham. Urban Planning and Resilience - L/SL. *http://www.aesop-planning.eu/uploads/jobs/2010-10-birmingham.pdf*
- University of Hull. Maths - L. *https://jobs.hull.ac.uk/Upload/vacancies/files/512/FS0062_Band8_LecturerinMaths.pdf*

4 are generic, 6 are not environment science although themes are common. This is no surprise given the UCU national framework.

2. Appraisal criteria

Aspirations or aims, rather than detail of tasks, of a university relating to its scientists are distilled into appraisal criteria. Fundamentally, these are very closely related to promotion criteria. So, these two sets of information are treated the same.

A non-exhaustive search protocol was used, but one that effectively offers random and objective selection with respect to the information sought; specifically, all 190 hits from a device located in the UK for the search 'university academic appraisal criteria' on the Google search engine on 1st May 2018

UK Institutions

- University of Birmingham. '2015 – 2016 Guide to Promotion – Academic Staff'. *https://intranet.birmingham.ac.uk/hr/documents/public/promotion/1Guide-to-promotion---Final-2013-14.pdf* (and links therein)
- University of Bristol. *http://www.bristol.ac.uk/hr/policies/promotion/procedure.html#a31*, with contextual information at *http://www.bristol.ac.uk/hr/grading/academic/role-profiles/*.

- University of Dundee. Role profile for SL in 'level_4_teaching_research.pdf' from *https://www.dundee.ac.uk/hr/policiesprocedures/hera/profiles/academicresearchprofiles/* with brief context about promotion in 'Appendix 1 Promotions Criteria.docx' from *https://www.dundee.ac.uk/hr/policiesprocedures/aracadres/*
- Herriot-Watt University. 'https://www.hw.ac.uk/services/docs/CriteriaAcadStaff-final.pdf'
- Lancaster University. 'APC_17_18.pdf' from *http://www.lancaster.ac.uk/hr/total-reward/promotions.html*
- The University of Manchester. 'https://documents.manchester.ac.uk/display.aspx?DocID=473'
- Queen Mary, University of London. ' Academic-Promotion-Guidance-Notes-2018---post-changes-(WS,-RL,-SH,-NP)--05.01.18.docx' at *http://www.hr.qmul.ac.uk/procedures/promotion/acadpromotion/index.html*
- Queen's University Belfast. pdf file at link 'Academic Profiles - Senior Lecturer' at *https://www.qub.ac.uk/directorates/HumanResources/MoreDetails/CareerDevelopment/AcademicPromotions/AcademicPromotionsScheme/CriteriaandeligibilityforPromotion/*
- University of Salford. 'https://www.salford.ac.uk/__data/assets/pdf_file/0011/877106/Academic-Roles-Manual-v1-8-2016.pdf'
- University of Worcester. 'http://www.worc.ac.uk/personnel/documents/5._Reward_2017_-_Detailed_criteria_for_Academics_SL_and_L(1).pdf', with context at *http://www.worc.ac.uk/personnel/877.htm* and *http://www.worcester.ac.uk/personnel/documents/Review_and_Reward_2016_-_Academic_Guidance_for_Application.pdf*

3. Data for word clouds

Pre-process to homogenize words with similar stems e.g. publish / publication
Also, combine words with similar meaning i.e. publication / output; original words on right.
- publication = output, contribution
- funding = grant, income (in 'Research')
- original = new (in 'Research')
- evidence = demonstrate
- introduce = develop
- HEA-fellowship = professional recognition
- industry = 'beyond academia'

Research

external funding publication international status excellent research publication publication publication research funding and research contracts dissemination beyond conferences sustained publication of high quality research secured external funding research reputation and income extensive success publication develop sustained funding dissemination nationally international creation opportunities collaborate work prepare research proposals act as principal investigator develop of research strategies presentations at conferences develop of original knowledge identify research funding secure funding proposals dissemination results peer-review regular publication of original research obtain research funding continue success high quality research publication success supervision invited conferences contributions independent evidence impact reputation publication generate significant external funding international high quality publication evidence research funding obtained citation rate high quality publication record of peer-review research research funding generation

Teaching & Learning

student satisfaction student recruitment HEA-fellowship educational innovation supervision student develop design modules programmes high quality teaching innovation plan develop new units enhance quality teaching mentor new staff design develop and deliver programmes of study creation interest understanding enthusiasm supervision assessment design teaching materials deliver teaching assessment student support sustained record of teaching contribution to programmes management leadership

develop and deliver HEA-fellowship scholarship HEA-fellowship excellent standard teaching performance evidence of teaching innovation appropriate teaching methods mentor leadership

Administration /Leadership

leadership REF innovation engagement in business professional committee working parties direct benefit to university securing external recognition representation on university body external body external reputation management programmes budgets external liaising supporting staff deliver specific leadership roles supervision postgraduate research student contribute to professional develop leadership and develop internal networks foster collaborate provide academic leadership leadership role advise support collaborate with colleagues management projects module leadership involvement faculty managment staff a major executive task leadership ensure effectiveness planning internal and external networks evidence of administrative roles sustained organization management

Enterprise & Knowledge Transfer

evidence impact develop links industry commercial government NGOs income generation consultancy public understanding effective activities to achieve engagement impact industry provide expert advice leadership and develop external networks external recognised authority apply knowledge maintaining external links with business enterprise innovation knowledge creation commercial exploitation transfer research to industry evidence of tangible success in knowledge transfer exchange academic enterprise knowledge creation and transfer external funded research successful postgraduate supervision national and international enterprise bodies