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Measuring and driving research performance using an output-based funding model

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ABOUT UCD

Ireland's **largest** university

- 34,000 students
- 1,300 academic staff
- 700 research staff
- 1,800 support staff
- 5,000 overseas students
- 8,000 international students in Dublin
- 9,000 graduate students
- 1,500 PhD students

Some **numbers**

WHAT IS AN OUTPUT-BASED RESEARCH SUPPORT SCHEME ?

Introduction

- Research activity is critical to University College Dublin's reputation as a leading international university

- Many of the day-to-day costs of research activity are not covered by research grants

- In recognition of this, UCD has developed the ***Output-Based Research Support Scheme (OBRSS)*** to disburse research support funds to faculty based on their research outputs, as captured in UCD's Research Management System

UCD Strategy

- Objective 1: Strategy 2020
  - *"increase the quality, quantity and impact of our research, scholarship and innovation to levels equal to or exceeding those of a comparator group of top 100 universities"*

Context

- International

  – Several countries have used output-based funding models, e.g. Norway, Denmark & Finland

- UCD

  – Resource Allocation Model discontinued in Nov 2014

  – Need a method of financial resource allocation that is aligned to the UCD strategy

What is the Output based research support scheme?

- Uses publication and PhD supervision records, to disburse research funding to academic staff

- Points are allocated to different types of publications and supervision

  – Publications – last 3 years e.g. 2013 - 2015

  – PhD Supervision – current academic year

- Research awards are distributed based on points

Principles of the scheme

- **Fair** Faculty should be actively involved in its creation and define its methodology

- **Transparent** Metrics and data used in the model should be based on accessible and reproducible data

- **Easy to understand & implement** to ensure that everyone in the university can play a part in performance improvement

- **Underpinned by the strategic objectives** the model should reinforce the objectives of the Strategy 2015-2020 by rewarding progress towards those objectives

- **Rewards excellence** the model should be designed so as to encourage excellence

Points scoring
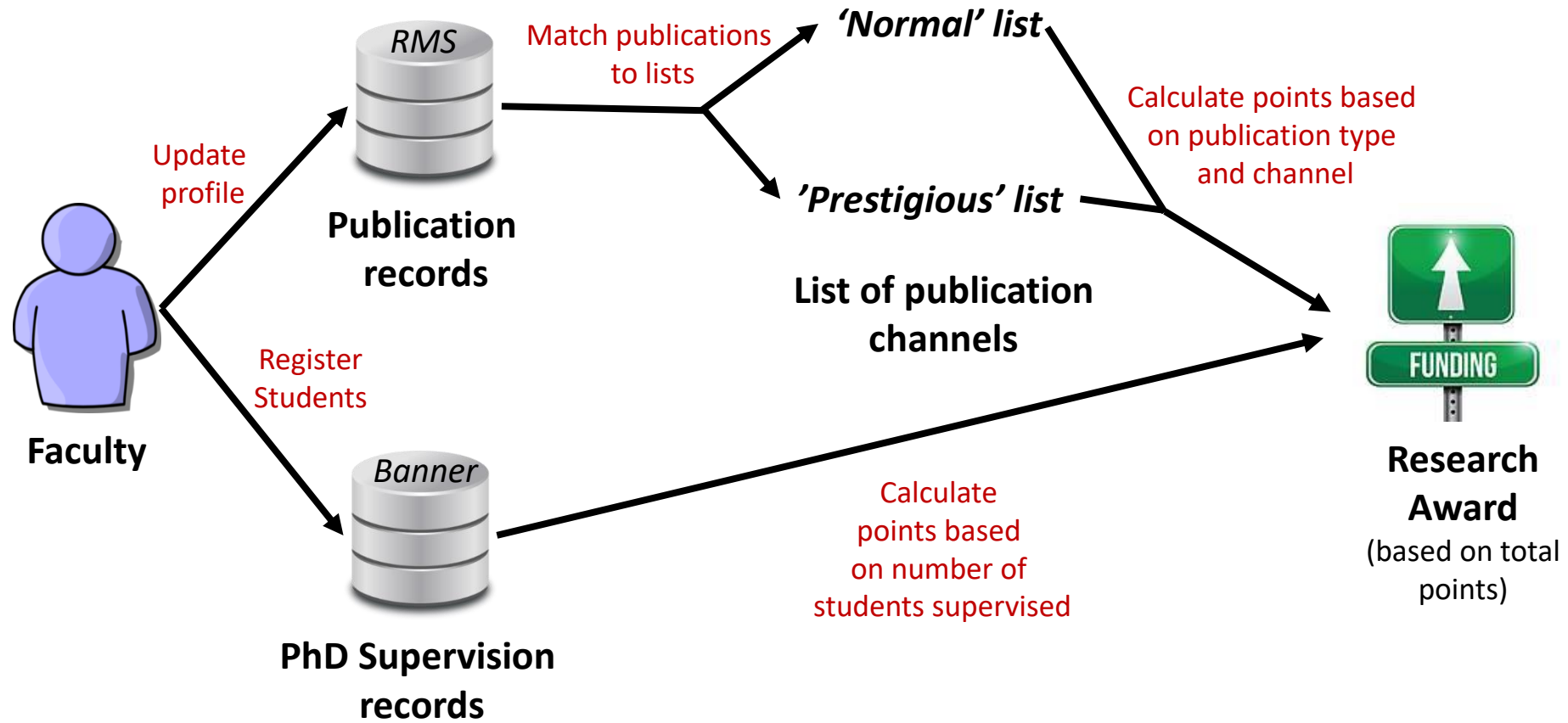
Points for publication & supervision

Publication types	Points Level 1 'normal' (per publication)	Points Level 2 'prestigious' (per publication)
Books	5	8
Journals Article	1	3
Book Chapters	1	3
Conference Publication	0.5	2
Edited Book	1	3
Other Publication	0.5	2
Published Report	1	3

Supervision types	Points for PhD Supervision (per student)
PhD Supervision	2

Assigning publication levels

- All academic staff are automatically entered into the OBRSS scheme.

- The channel list is divided into 2 levels: 'normal' & 'prestigious'

  – Level 1 (normal) comprises 92% of the source titles

  – Level 2 (prestigious) comprises 8%.

- There are 53,000 journal titles and 2,500 publishers on the channel list

Ranking journals

- The ranking of the journal, conference and book series publication channels is based on an average of six independent ranking schemes.

  – The 2017 OBRSS ranking

  – Danish BFI 2017-18 Level

  – Finnish 2018 Level

  – Norwegian 2018 Level

  – Recommended Level based on 2018 Source Normalised Impact Factor (SNIP) (A SNIP between 0 and 1.5 indicates level 1 'Normal'; greater than or equal to 1.5 indicates a level 2 'Prestigious')

  – Recommended Level based on 2018 CiteScore (A CiteScore between 0 and 1.5 indicates level 1 'Normal'; greater than or equal to 1.5 indicates a level 2 'Prestigious')

Ranking Publishers

- The ranking of the publisher list is based on the average of the following five ranking schemes:-

  – The 2017 OBRSS Ranking

  – Danish BFI 2017-18 Level

  – Finnish 2018 Level

  – Norwegian Level 2018

  – Dutch Ceres Codes (A - Highest; E - Lowest)

Additional parameters

- UCD author factor

  - multiply by 0.7 if there are two UCD academic staff on the paper;

  - multiply by 0.6 if there are three UCD academic staff on the paper;

  - multiply by 0.5 if there are four or more UCD academic staff on the paper

- When total number of authors on a paper exceeds 100, multiply the result by 0.1

- International collaboration is rewarded by multiplying publication points for a publication with authors from different countries by 1.25
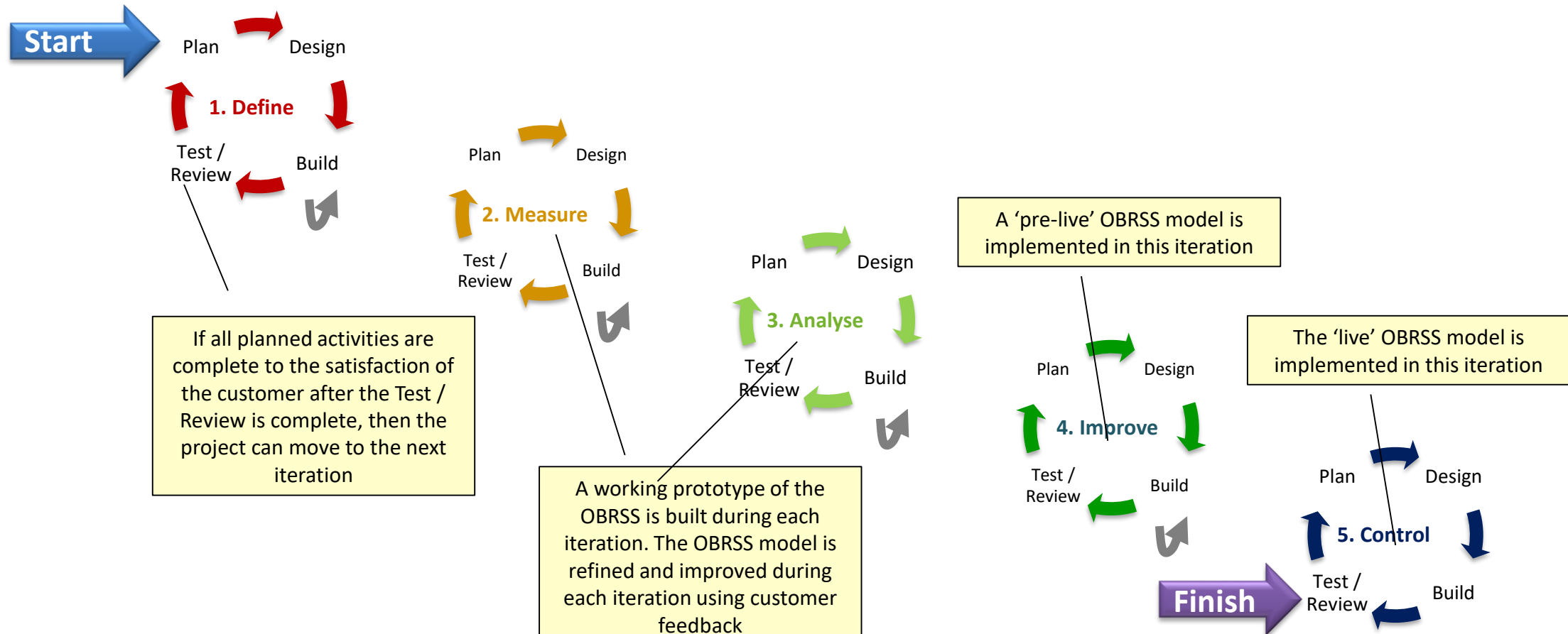
How are points calculated?

- *Publication output-points = B x C x F x N*

  - *where B = Points allocated based on the type of publication and whether it is in a 'normal' or 'prestigious' channel*

  - *C = collaboration factor (multiply by 1.25 if there are any international authors on the paper)*

  - *F = UCD author factor (multiply by 0.7 if there are two UCD academic staff on the paper; multiply by 0.6 if there are three UCD academic staff on the paper; multiply by 0.5 if there are four or more UCD academic staff on the paper)*

  - *N = if the total number of authors on a paper exceeds 100, multiply the result by 0.1*

HOW WAS IT IMPLEMENTED?

Design

- The scheme was designed using an iterative and incremental approach that embraces principles of Agile development

- The project life-cycle was subdivided into 5 iterations:

Start

Plan → Design

1. Define

Test / Review ← Build

Plan → Design

2. Measure

Test / Review ← Build

Plan → Design

3. Analyse

Test / Review ← Build

A 'pre-live' OBRSS model is implemented in this iteration

Plan → Design

4. Improve

Test / Review ← Build

The 'live' OBRSS model is implemented in this iteration

Plan → Design

5. Control

Finish

Test / Review ← Build

If all planned activities are complete to the satisfaction of the customer after the Test / Review is complete, then the project can move to the next iteration

A working prototype of the OBRSS is built during each iteration. The OBRSS model is refined and improved during each iteration using customer feedback

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Implementation

- **First implemented in 2016, now in its 3rd year of operation**

- **Yearly Schedule**

  - **Refine publication lists:**
    - Feb – May : Review of the publication channels list by academic staff in schools

  - **Run scheme:**
    - July: Send preliminary statements
    - Oct: Send final statements

  - **Award:**
   - Nov - Dec: Award grants

EARLY INDICATORS OF PROGRESS

Initial OBRSS results

| OBRSS categories	2016 Scheme (Publications from 2013 to 2015)	2017 Scheme (Publications from 2014 to 2016)	2018 Preliminary Scheme (Publications from 2015 to 2017)	Difference between 2016 & 2018	% Difference
Prestigious Channel - Level 2	4,230	4,444	4,275	45	**1.1%**
Normal Channel - Level 1	4,267	6,323	6,212	1,945	**145.6%**
Not recognised in OBRSS publication list	4,515	3,202	3,526	-989	**78.1%**
Grand Total	13,012	13,969	14,139	1,127	**8.0%**

Objective 1 of UCD Strategy: increase the quality, quantity and impact of our research, scholarship and innovation

Volume of publications
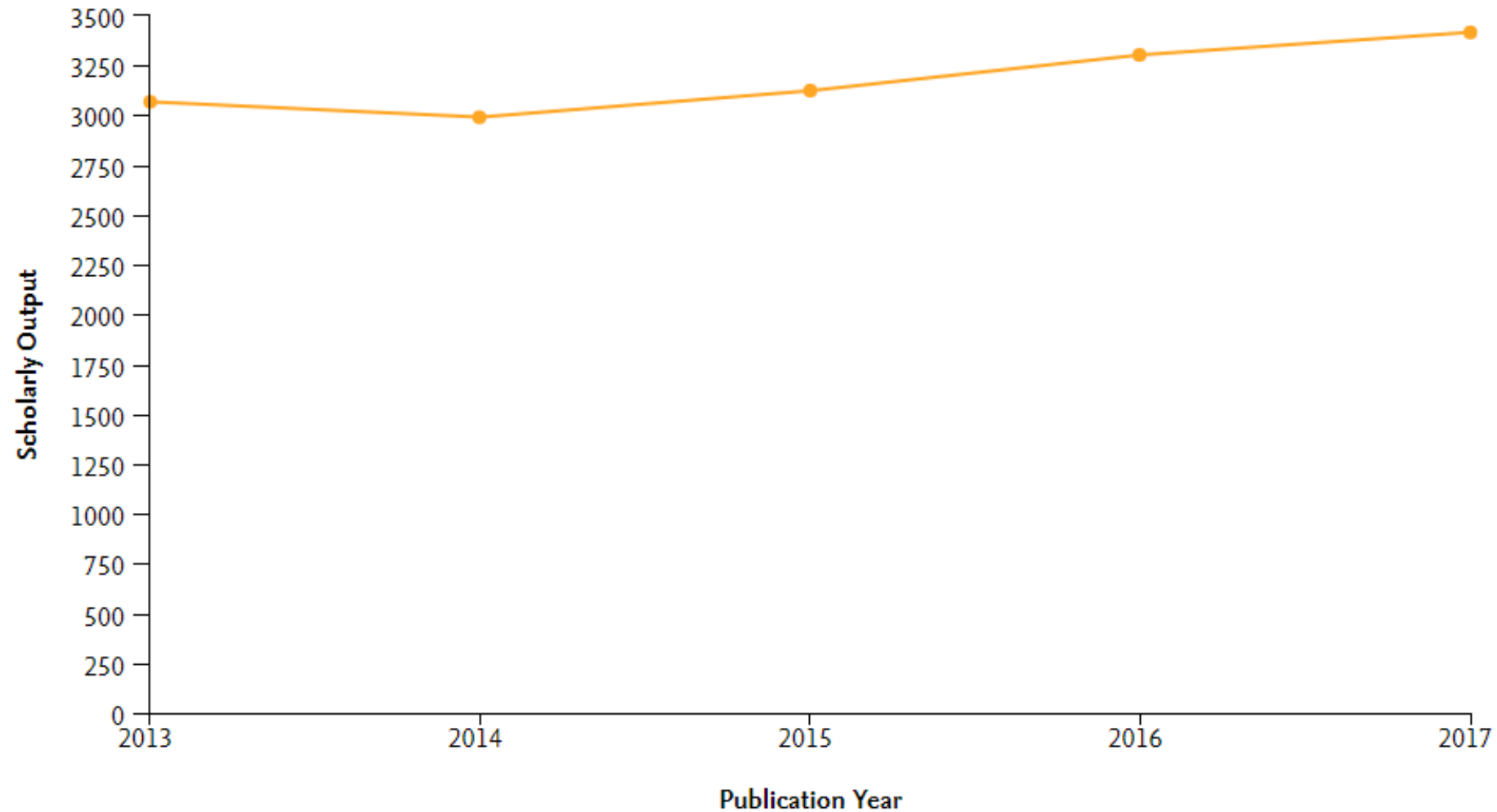
Source: Elsevier SciVal, 2013 to 2017

Volume in prestigious journals
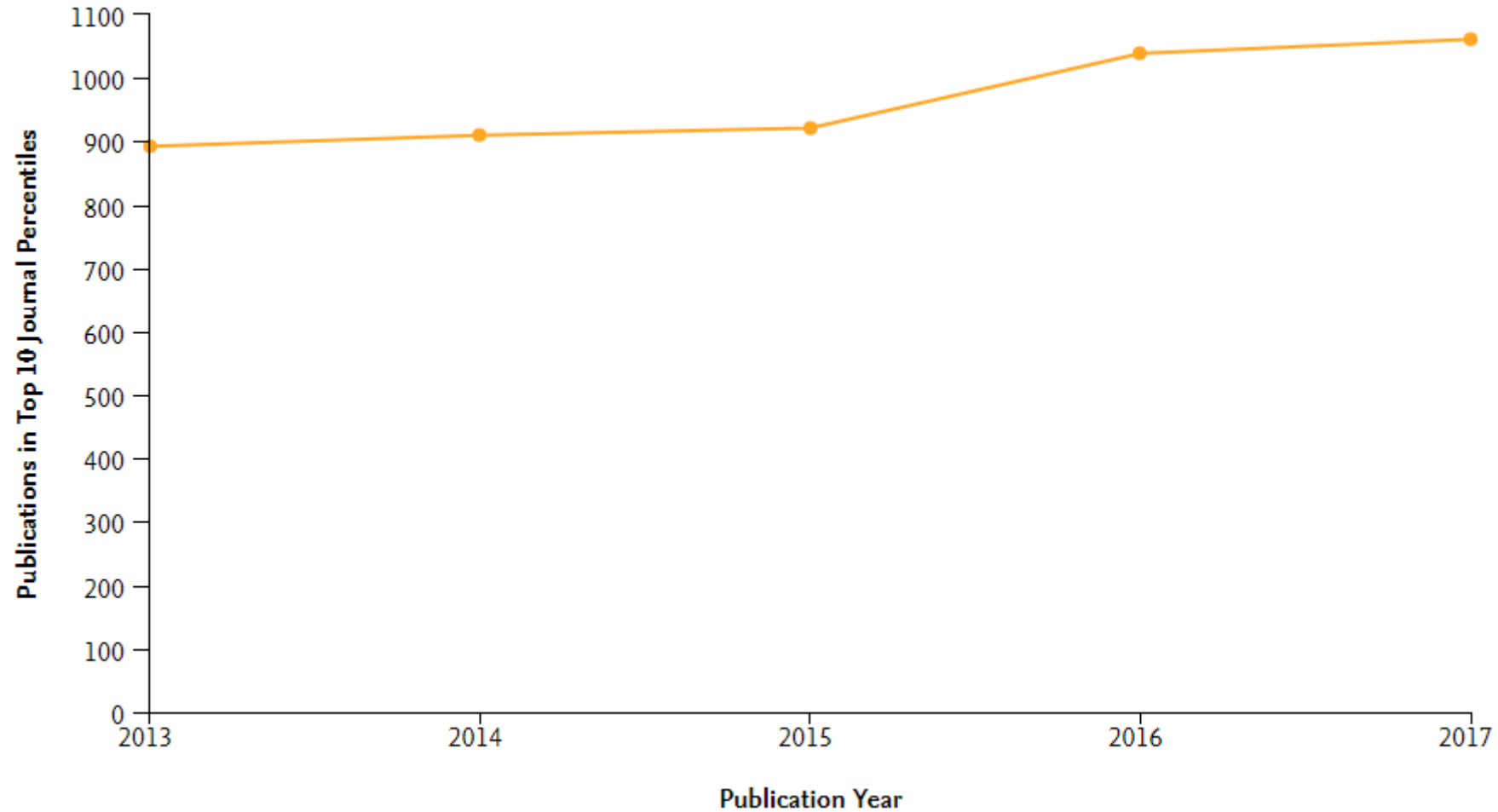
Source: Elsevier SciVal 2013 to 2017, Publications in Top 10% of Journals

Research Active Definition
"More than zero OBRSS points"

2017

College	Total Academic FTE	Research Active FTE	% Research Active
Arts & Humanities	129.1	110.5	85.6%
Business	100.1	76.4	76.3%
Engineering & Architecture	116.9	100.4	85.9%
Health and Agricultural Sciences	326.6	260.7	79.8%
Science	215.2	199.0	92.5%
Social Sciences and Law	202.4	188.3	93.0%
Grand Total	**1090.2**	**935.2**	**85.8%**

- **3.5% increase in % research active staff from 2016 to 2017**

2016

College	Total Academic FTE	Research Active FTE	% Research Active
Arts & Humanities	128.5	103.5	80.5%
Business	93.1	69.2	74.3%
Engineering & Architecture	113.6	91.3	80.4%
Health and Agricultural Sciences	321.4	250.5	78.0%
Science	209.0	188.8	90.3%
Social Sciences and Law	185.8	163.9	88.2%
Other	10.0	6.0	60.0%
Grand Total	**1061.3**	**873.2**	**82.3%**

Research Active Definition: If a member of academic staff has greater than zero OBRSS points they are research active. The % research active is the number of research active FTEs divided by the total FTEs in the school, college or the university. FTE stands for Full Time Equivalent.

Very positive reaction to the scheme

What a lovely surprise! Many thanks for this

Lecturer in Business

Just a note to say thanks for getting this going.
I think it is a really good idea.
It is a welcome positive communication to get!.
I will be hoping to keep my grant in reserve so that I can buy a pump when the next one breaks down completely (that is one of my extreme irritations in the lab - there is no other source of such funding)

Professor of Chemistry

Thank you for your message. I am delighted with the award.
I think it is a great initiative.
Associate Professor of Law

Thank you very much for the support. This will encourage me to improve further.

Professor of Medicine

Many thanks for confirming this award. **For what it is worth, I think this is one of the most interesting, well thought out and well managed initiatives I've encountered in over 30 years in academia**.

Trying to capture an element of quality (over quantity) remains important and this scheme seems to attempt to do that. It would be wonderful to see similar scheme adopted for teaching efforts - one that included an element of quality.

Professor of Medicine

Many thanks for this. I am extremely happy to hear that I have been awarded this grant, and I look forward to putting it to good research use.

Lecturer in English