



Department
for Education

Measuring the cost of provision using Transparent Approach to Costing data

May 2019

Introduction

This ad hoc statistical note sets out data and evidence provided to the external panel undertaking the Post-18 Review of Education and Funding into the variation and trends of the cost of undergraduate teaching by subject.

Transparent Approach to Costing data

The Transparent Approach to Costing (TRAC) is a cost accounting methodology which has been developed to enable higher education institutions, policy makers and funding bodies to understand better the costs of teaching, research and other activities and the resources required to carry them out. In this way, TRAC aims to improve transparency and accountability in the use of public funds to the higher education sector and ensure that these are allocated in a way which is efficient, effective and financially sustainable.¹

TRAC takes as its starting point historic expenditure information which institutions publish in their audited financial statements. These will include, for example, direct salary and non-pay costs of its teaching and research staff, expenditure on local departmental administrative support, spending on student support services and central corporate functions, as well as the general maintenance and repair of campus facilities and the wider estate.

TRAC then adds a 'sustainability cost adjustment'² to calculate the 'full economic cost' of their activities. This is known as the Margin for Sustainability and Investment (MSI) and is designed to account for the fact that the real cost of sustainable higher education is higher than the historical expenditure stated in most institutions' published financial statements. It represents the level of cash generation an institution requires for sustainability based on its own financial strategy and investment needs, including the investment associated with ensuring the capital infrastructure supports high quality sustainable provision.

TRAC for Teaching (TRAC(T)) and Subject-FACTS

TRAC for Teaching (TRAC (T)) is the framework – based on the TRAC cost accounting methodology – used to calculate the cost of teaching activities. Under TRAC(T), institutions in receipt of direct grant funding from the Office for Students (OfS) (formerly the Higher Education Funding Council for England) are required to provide further information and analysis of the costs of teaching eligible home and EU students.

¹ The full TRAC guidance can be found at: <https://www.trac.ac.uk/wp-content/uploads/2018/11/TRAC-Guidance-version-2.3.1-Final-WEB.pdf.pdf>

² More information can be found at: https://www.officeforstudents.org.uk/media/ec760132-0109-406c-86ca-9f02578c213c/fssg-report-on-the-msi-august_2018.pdf

TRAC(T) calculates the average cost per year of teaching a home/EU student in each subject area. This is formally known as Subject-FACTS, which is defined as the Full Average subject-related cost of Teaching an OfS fundable FTE Student in a HESA academic cost centre.³

The calculation of Subject FACTS begins by taking the historic expenditure published in institutions' financial statements, applying the MSI adjustment to arrive at full economic cost, and then deducting the following:

- Costs relating to non-teaching activities (e.g. research);
- Costs relating to non-publicly funded teaching (e.g. overseas students);
- Costs relating to non-OfS/Funding Council fundable provision (i.e. those funded by the Department of Health or the National College for Teaching and Leadership);
- Costs that are incurred on specific non-subject related activities (e.g. bursaries, hardship payments and scholarships which OfS fundable students may receive to help cover their living costs)⁴; and
- Costs that are funded by non-subject specific teaching grant 'targeted allocations' (e.g. additional grant support for widening participation, specialist institutions or those based in London)⁵

Cost drivers (e.g. staff time and space usage) are then applied to allocate these costs to specific academic departments and ultimately subjects. These costs are then divided by the number of full-time equivalent students in each cost centre to arrive at the corresponding Subject FACTS figure.

Analysis of TRAC(T) data

As TRAC(T) was designed to inform HEFCE/OfS's main subject-based funding allocation, teaching costs that were met through other non-subject specific HEFCE/OfS allocations (such as allocations that provided additional support for students from disadvantaged backgrounds and allocations for some specialist institutions and those in London) were stripped out of the costs reported in TRAC(T) returns. Also excluded were the costs to institutions that were met from their income for teaching of providing bursaries and hardship funds to students – these costs reduce the funding available to institutions to provide teaching.

³ Since 2012/13 there have been 45 HESA cost codes grouped under 10 broad headings. More information can be found at: <https://www.hesa.ac.uk/support/documentation/cost-centres/2012-13-onwards>

⁴ This deduction is necessary in order to avoid any duplication of funding

⁵ This deduction is also necessary to avoid any duplication of funding. For more information on the different types of targeted allocation including rationale and funding see OfS (2019) *Guide to Funding 2019-20* https://www.officeforstudents.org.uk/media/784a1671-6e18-45e5-8fa8-8a676f2c9530/ofs2019_18.pdf

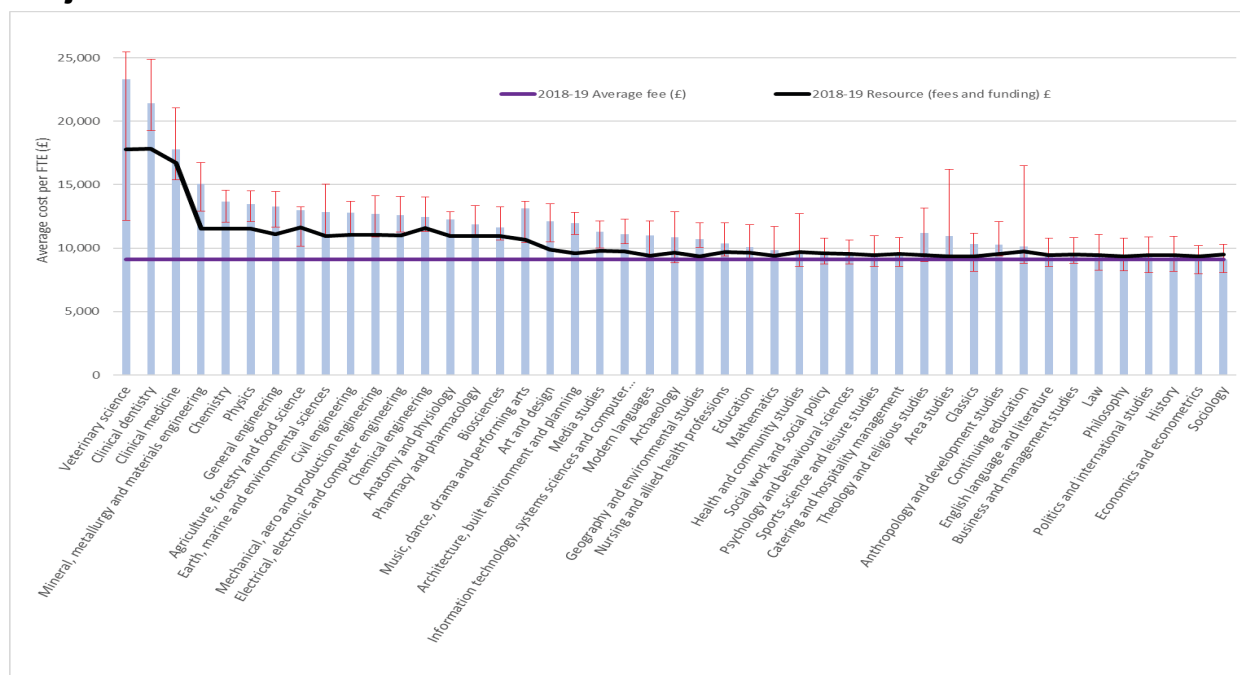
To reach a fuller approximation of the costs of teaching different subjects and consider whether those costs are adequately met through tuition fees and institutional grants, it is therefore necessary to add back in these aforementioned non-subject specific teaching costs, assigning them as far as possible to the cost centres that best reflect where/how those costs arise. These adjusted TRAC (T) data have been used in Figure 1 below.

The average cost of teaching a fundable FTE home/EU student in a particular subject in a given year will reflect the decisions which providers have made regarding the content and delivery of teaching provision in that year, (including any one-off costs) as well as the size of the student cohort, measured in terms of the number of continuing FTE students. As such, the costs of provision calculated on the basis of data returns in one academic year may not be representative of future years.

Figure 1 below compares the average total costs of teaching an FTE student in different subjects (denoted by their HESA cost code), as represented by the blue shaded columns with the red lines depicting the interquartile range. The costs include Subject FACTS, plus those non-subject specific teaching costs (bursaries and other teaching grants). These cost estimates are based on 2015-16 data returns for higher education institutions in England and Northern Ireland, but updated to 2018-19 prices to account for inflation⁶. The underlying data can be found at Annex A.

⁶ Costs have been updated using RPIx as it is the measure of inflation that will maintain the value of regulated tuition fee limits in real terms. RPIx for financial years (April to March) has been converted to academic years (August to July) using a T : S apportionment (that is we assume two thirds of the RPIx deflator for the financial year that spans August to March of the academic year and one of the RPIx for the following financial year that spans April to July. RPIx figures are taken from the OBR, (March 2018) <http://obr.uk/download/march-2018-economic-and-fiscal-outlook-supplementary-economy-tables/>

Figure 1: Estimated average full teaching cost for an OfS funded FTE student in a subject area for 2018/19



Source: Total teaching costs, per student, by subject areas - OfS TRAC(T) data, plus those non-subject specific costs of teaching (targeted allocations, and bursaries to support students on taught activity). Note: Cost data is 2015-16 updated using the RPIX measure of inflation to 2018-19 prices.

Figure 1 shows clearly the wide-variation in the average cost of teaching a FTE student in different subjects and between different institutions with medicine and many science and engineering related subjects tending to have higher average costs per FTE student than subjects related to the arts, humanities and the social sciences.

Differences in the costs of provision across subjects and between institutions reflect the distinctive and diverse characteristics of providers and teaching provision in the higher education sector. Key reasons for the variation in costs of provision in the TRAC(T) data include, but not limited to, the following:

- *Course variety* – there is a wide variety of courses based on content, teaching methods and duration (with a wide range of costs) included within each subject area. For example, Veterinary Science, includes both expensive clinical courses, as well as less costly non-clinical courses;
- *Resource requirements* – some subjects may require more specialist, and thus expensive teaching and learning facilities and equipment (e.g. laboratory or studio), comprise a fieldwork element, or involve more specialised and intensive teaching (sometimes in smaller groups);
- *Business models* – the relative size of institutions’ key activities and their respective cost drivers determines to what extent indirect costs are apportioned to academic departments or the institution’s central activities (e.g. HR);
- *Location of institution* – some costs of provision, such as salary and estate costs, are known to vary across regions with institutions in London (especially Inner

London) and the South East experiencing comparatively higher costs⁷;

- *Size of institution* – institutions with a larger student population are likely to have greater opportunity to exploit economies of scale whereby the wider, and fixed costs of teaching provision (e.g. libraries, IT systems and central and corporate functions) can be spread across more students leading to lower unit costs;
- *Efficiency* - some institutions may be able to offer courses at lower costs because they have identified and implemented more efficient ways of delivering the course with reduced resources while still maintaining quality standards (e.g. streamlining processes or making better use of space and information technology); and
- *Sustainability cost adjustments* – institutions will vary in terms of the amount of surplus income over costs that they need to generate to operate sustainably, invest in their activities (be it capital, human resources or innovation) and operate at a standard that reflects the norm required to be competitive in the sector;

Resource and costing of provision at the subject level

At the sector level, publicly funded teaching operates with a small deficit⁸. However, there are significant variations at the subject level and between institutions. The black line in Figure 1 above denotes, for each subject, an estimation of the average amount of resource (i.e. funding) per student. This comprises a broad estimation of average fee available to the university after fee waivers (£9,112) plus a quantum of teaching grant from the Office for Students (OfS) allocated to different subjects where the tuition fee alone isn't sufficient to fully cover the cost of provision or to support vulnerable features of higher education in accordance with key policy initiatives⁹.

As Figure 1 shows, the extent to which funding matches subject costs varies. Typically, for the most expensive subjects, there is a shortfall, mostly notably in clinical dentistry and medicine and many science and engineering related subjects. In contrast, for some of the subjects with a lower full teaching cost there is a slight surplus. Moreover, the proportion of courses in deficit varies across subjects with higher cost subjects and many

⁷ Deloitte (2017) *Regional variation in costs and benefits for higher education providers in England*. Report prepared for HEFCE https://dera.ioe.ac.uk/30753/1/2017_regional.pdf

⁸ In 2017/18, full economic cost slightly exceeded income meaning that publicly funded teaching showed a small deficit that year. Office for Students (2018) *Annual TRAC 2017-18: Sector summary and analysis by TRAC peer group* <https://www.officeforstudents.org.uk/publications/annual-trac-2017-18/>

⁹ The quantum of teaching grants include 'High-cost subject funding' and 'Targeted allocations'. High-cost subject funding supports the extra cost of particular subjects it is currently set at £10,000 per student for clinical subjects, at £1,500 for laboratory science subjects, and at £250 for subjects including archaeology, IT and media studies, and design and creative arts. In 2018-19, a scaling factor of 1.01 is applied to these rates to ensure that total allocations equal the budget. Targeted Allocations support important or vulnerable features of higher education in accordance with key policy initiative (e.g. student retention). For this analysis, Targeted allocations are assigned to subjects mostly on a pro-rata basis, unless there is a clear link between the funding element and subject. OfS (2018) *Guide to Funding 2018-19*: https://www.officeforstudents.org.uk/media/1448/ofs2018_21.pdf.

intermediate cost subjects having a higher proportion of loss-making courses than lower cost subjects.

In reality, the gap between the average cost of provision and funding per FTE student is likely to be greater than shown in Figure 1. This is because the average fee per FTE figure used here (which is taken from the former Office for Fair Access (OFFA) data and relates to HEIs for 2018-19¹⁰) will to some extent overstate the average fee received for undergraduate students¹¹. As a result, both the purple and black line are likely to be lower than as depicted meaning that the proportion of courses which are underfunded may be greater than Figure 1 suggests.

Increases in teaching cost per student

Figure 2 compares changes in the average cost of teaching a fundable FTE home/EU student in a particular year – as depicted by Subject FACTS – over the last few years. It shows that across all cost centres, Subject FACTS has risen in real terms since 2011/12 with arts and humanities related subjects experiencing greater increases than science, engineering, and medicine. The increase in average costs per student is likely to be driven by a combination of factors including, but not limited to:

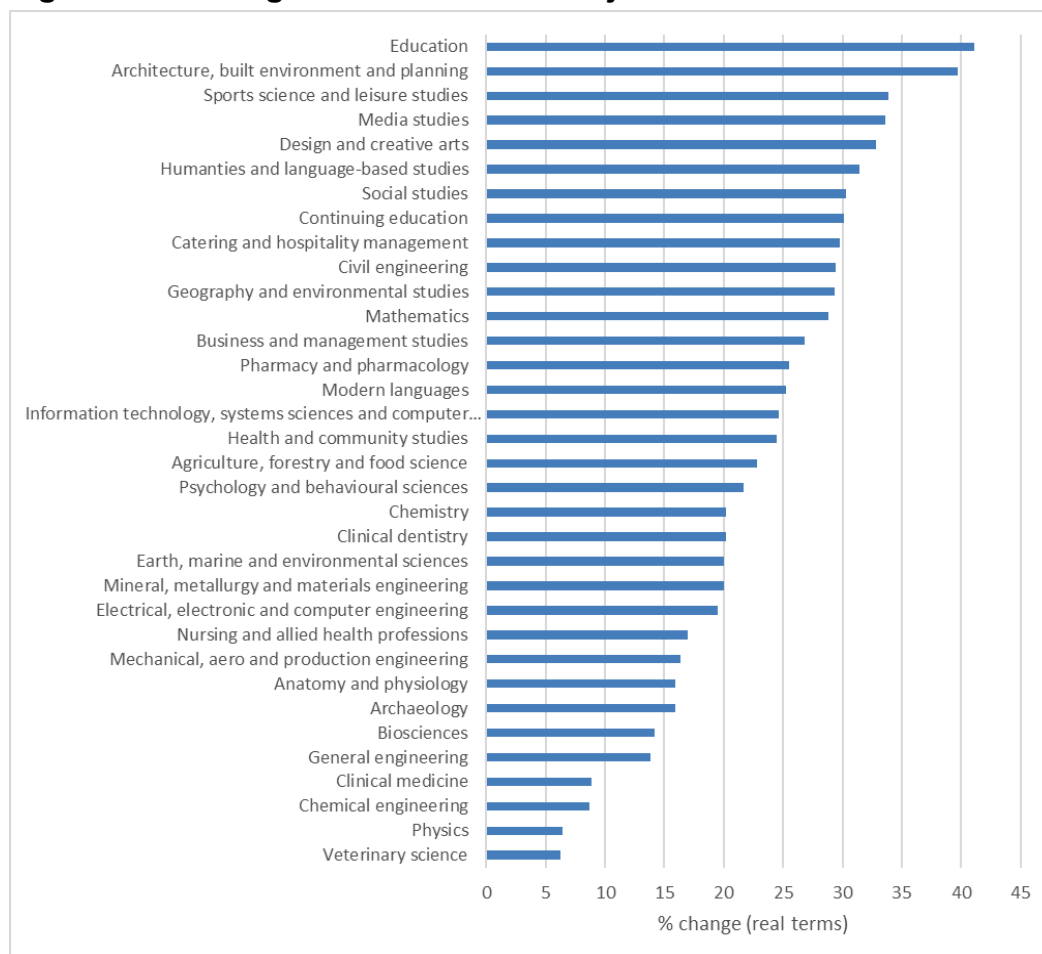
- Increased spending on teaching and related student support services in response to higher student expectations following the rise in tuition fees and meeting the cost of ongoing financial commitments and obligations (e.g. widening participation and pension liabilities); and
- Reduction in the number of fundable continuing students on some subjects which has meant the fixed, wider costs of teaching provision are spread across a smaller number of fundable students (i.e. the economies of scale are reduced).

During this period, a new HESA cost centre mapping system was introduced with new, broader, cost centre codes for some subjects. For example, Food Science was reclassified to Agriculture and Fisheries while Environment Studies was added to Geography. We can therefore not discount the possibility that these changes may have contributed, in part, to the overall change in Subject FACTS for these two cost codes.

¹⁰ See Table 2 in *Access agreement 2018-19: key statistics and analysis (revised)* published by OFFA. <https://webarchive.nationalarchives.gov.uk/20180511111540/https://www.offa.org.uk/publications/analysis-data-and-progress-reports/>.

¹¹ The average fee of £9,112 published by OFFA is likely to overstate the average fee for undergraduate (UG) and postgraduate taught (PGT) students that is comparable with the population for the underlying TRAC(T) and funding data because it doesn't taken into account: a) the (lower) fees for sandwich courses and Erasmus/study years abroad; b) possible variation in average fees per FTE for other undergraduate categories such as part-time and short final years of full-time study; and c) average fees for PGT which could be plausibly lower than average fees for UG FTEs.

Figure 2: % change in real terms in Subjects FACTS 2011/12 to 2016/17



Source: OfS Subject-FACTS, (this does not include the cost of bursaries and non-subject related costs, which are funded by targeted allocations). Note: Part of the change in Subject FACTS may be attributed to the change in cost centre code definitions following the introduction of a new classification system in 2012. Design and creative arts comprises Art and design and Music, dance, drama and performing arts. Humanities and language-based studies comprises English language and literature; History; Classics; Philosophy; and Theology and religious studies. Social studies comprises Area studies; Anthropology and development studies; Politics and international studies; Economics and econometrics; Law; Social work and social policy; and Sociology.

Table 1: % change in real terms in Subjects-FACTS (2011/12 to 2016/17)

	% change Subjects FACTS (2011-12 to 2016-17)
Education	41.1
Architecture, built environment and planning	39.7
Sports science and leisure studies	33.9
Media studies	33.6
Design and creative arts	32.9

	% change Subjects FACTS (2011-12 to 2016-17)
Humanities and language-based studies	31.4
Social studies	30.3
Continuing education	30.1
Catering and hospitality management	29.8
Civil engineering	29.5
Geography and environmental studies	29.3
Mathematics	28.8
Business and management studies	26.8
Pharmacy and pharmacology	25.5
Modern languages	25.2
Information technology, systems sciences and computer software engineering	24.6
Health and community studies	24.5
Agriculture, forestry and food science	22.8
Psychology and behavioural sciences	21.7
Chemistry	20.2
Clinical dentistry	20.2
Earth, marine and environmental sciences	20.0
Mineral, metallurgy and materials engineering	20.0
Electrical, electronic and computer engineering	19.5
Nursing and allied health professions	17.0
Mechanical, aero and production engineering	16.3
Anatomy and physiology	16.0
Archaeology	15.9
Biosciences	14.1

	% change Subjects FACTS (2011-12 to 2016-17)
General engineering	13.8
Clinical medicine	8.8
Chemical engineering	8.7
Physics	6.4
Veterinary science	6.2

Source: DfE analysis of OfS Subject-FACTS data

Annex A: Estimated average full teaching cost for an OfS funded FTE student for 2018/19

	Average cost per FTE £
Veterinary science	23,282
Clinical dentistry	21,405
Clinical medicine	17,801
Mineral, metallurgy and materials engineering	15,047
Chemistry	13,650
Physics	13,465
General engineering	13,257
Music, dance, drama and performing arts	13,155
Agriculture, forestry and food science	12,974
Earth, marine and environmental sciences	12,865
Civil engineering	12,797
Mechanical, aero and production engineering	12,708
Electrical, electronic and computer engineering	12,625
Chemical engineering	12,436
Anatomy and physiology	12,276
Art and design	12,127
Architecture, built environment and planning	11,979
Pharmacy and pharmacology	11,852
Biosciences	11,651
Media studies	11,314
Theology and religious studies	11,213
IT, systems sciences and computer software engineering	11,103
Modern languages	11,020
Area studies	10,943
Archaeology	10,872
Geography and environmental studies	10,703

	Average cost per FTE £
Nursing and allied health professions	10,365
Classics	10,336
Anthropology and development studies	10,253
Continuing education	10,129
Education	10,097
Mathematics	9,852
Health and community studies	9,806
Social work and social policy	9,629
Psychology and behavioural sciences	9,613
English language and literature	9,609
Business and management studies	9,608
Sports science and leisure studies	9,570
Law	9,458
Philosophy	9,456
Catering and hospitality management	9,455
Politics and international studies	9,340
History	9,334
Economics and econometrics	9,186
Sociology	9,121

Source: Total teaching costs, per student, by subject areas - OfS TRAC(T) data, plus those non-subject specific costs of teaching (targeted allocations, and bursaries to support students on taught activity). Note: Cost data is 2015-16 updated using the RPIX measure of inflation to 2018-19 prices.



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