A Review of the Cost of Postgraduate Taught Provision

Report to the Higher Education Funding Council for England by KPMG

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Contents

1 Executive Summary

1.1 Introduction

Postgraduate education is facing increased focus from parliament, the government, the higher education (HE) sector, and the public. In particular this is because the first cohort of undergraduate students to be subject to the new student fee regime will be graduating in 2014/15 and many will be looking to continue onto postgraduate education from autumn 2015, having incurred tuition fees of up to £27,000 for a three-year degree course. This study, focusing on the cost of teaching postgraduate students, is one of a number of Higher Education Funding Council for England (HEFCE)-commissioned studies to understand more fully the postgraduate provision in English higher education institutions (HEIs), in order to inform future policy decisions.

1.2 Methodology

This study has sought to establish the cost of teaching postgraduate students, in absolute terms, relative to the Subject-FACTS[1], and relative to the cost of teaching undergraduate students as calculated by the study.

The intention for the study was to engage with 30 to 40 HEIs, sufficient to achieve at least 30% coverage of the sector, based on student numbers. The initial scoping work established that there were not sufficient numbers of HEIs collecting the required data, particularly on the split of staff time between postgraduate and undergraduate teaching, to achieve this coverage. This scoping work established a group of 26 HEIs that were keen to participate and able to provide the data. Subsequent discussions with this group led to nine of the 26 deciding that they either did not collect the data in the right form or did not have the resources available to provide the data to the study. The remaining 17 participants collected and submitted their data using the defined methodology. In addition the study has included the cost and student FTE (full-time equivalent) data already provided to HEFCE in the Transparent Approach to Costing for Teaching (TRAC(T)) returns from five postgraduate (PG)-only institutions.

Based on the 2012/13 student number data submitted by the participants, these 22 HEIs deliver postgraduate courses to 17,140 student FTEs (22% of the reported postgraduate taught (PGT) student FTE population in England). Although this is below the intended scope of the study at the outset and there are some concerns in some areas over the representativeness of the study sample, it is still a significant proportion of the PGT provision, and the analysis indicates that the results from the study are generally representative of the PGT sector as a whole.

[1] Subject-FACTS: the measure produced by English HEIs in their annual submission of a TRAC(T) return to HEFCE, i.e. the Subject-Related Full Average Cost of Teaching a HEFCE-fundable Student in a HESA academic cost centre. This includes the costs of undergraduate and postgraduate taught provision and is used to inform HEFCE's teaching funding methodology.

The study has defined the 'cost' of postgraduate teaching as the subject-related cost of teaching HEFCE-fundable PGT provision. Although there are other definitions of cost used by the sector, the participants in the study agreed that this was the most appropriate measure given that the study's objective is to inform HEFCE's future funding of postgraduate teaching. All the cost data used in the study relate to the 2012/13 academic year.

The study definition of a 'student FTE' is a HEFCE-fundable student FTE – consistent with the definition of cost as detailed above.

A key element of the study was to validate the submitted data, confirming they were accurately based on HEIs' cost and cost driver data, and were consistent across all the submitting HEIs. This validation work consisted of:

- The HEIs reviewing and validating their own data prior to submission.
- A desk-top review of each HEI data submission, which considered the internal consistency of the data submitted, but also their consistency with the other participants, and their consistency with data already submitted by the institution on costs, in the TRAC(T) submission, and student numbers in the HESA student record.
- A discussion with each of the institutions to consider the methods and cost drivers used to allocate the costs, and to explore the factors behind the costs that in absolute or comparative terms were particularly high or low.
- A more detailed review of the submissions of a range of institutions focusing on those submissions where we considered additional validation assurance was needed. This focused on data submissions with outliers in absolute or comparative costs and covered a range of HEIs.

The validation work only focused on the 17 HEIs that submitted data directly to the study. It has not focused on the data from the five PG-only institutions whose previously available data have been incorporated, and the study has relied upon the validation work carried out as part of these separate data submissions to confirm the accuracy of these data.

1.3 Key findings and conclusions

The study has collected, validated and analysed cost data from the 22 HEIs and has calculated that, based on this sample of HEIs, the cost of teaching a HEFCE-fundable postgraduate FTE student is £11,315 (Section 4.2.1). The cost of teaching a HEFCE-fundable undergraduate FTE student for the same HEIs is £7,694. Therefore, according to the data in this study, the cost of teaching postgraduate students is 1.47 times (47%) higher than undergraduate teaching (Section 4.2.2).

However there are two Higher Education Statistical Agency (HESA) academic cost centres, 101 (Clinical medicine) and 133 (Business & management studies), which impact disproportionately on the overall cost of teaching a postgraduate student. This is because they are high cost both in absolute terms (they are the two cost centres with the highest total cost in the study, representing 29% of the total PGT cost) and relative terms (68%

and 90% respectively higher than undergraduate). Excluding the data from these two cost centres results in the cost of postgraduate teaching being 1.39 times (39%) more than the cost of undergraduate teaching (Section 4.2.5).

Comparing the cost of PGT provision calculated in this study to the HEFCE sector Subject-FACTS for 2012/13 the data show that the cost per PGT student FTE is 1.47 times (47%) more than the overall sector Subject-FACTS (£7,692). However, excluding cost centres 101 and 133 resulted in the PGT cost reducing to 1.36 times more than the respective sector Subject-FACTS (Sections 4.2.2 and 4.2.5).

The study investigated the cost across the HESA academic cost centres. This established that, generally, the cost of postgraduate teaching was higher than undergraduate teaching. The exceptions to this general finding, where postgraduate teaching cost less than undergraduate, are often in cost centres with a relatively small number of HEIs contributing data. The cost of PGT provision at HESA academic cost centre level ranged from £6,423 for Nursing & allied health professions (cost centre 103) to £21,143 for Clinical Medicine (cost centre 101). Based on cost centres with at least five participating HEIs in the study, and based on the 17 participating HEIs that provide both postgraduate and undergraduate provision, the range of the relative cost of postgraduate teaching spans from 1.94 times (94%) more than undergraduate teaching for Health & community studies (cost centre 105) to slightly (1%) less for Nursing & allied health professions (cost centre 103) (Section 4.2.4).

The most frequent occurrence across all cost centres for all HEIs in the study was that the cost of postgraduate teaching was around 1.2 times more than undergraduate teaching, with 41 submissions in cost centres demonstrating this result (Section 4.2.6).

The study analysis shows that the mapping of HESA academic cost centres to HEFCE price groups may not be as appropriate when looking at postgraduate level provision only compared to undergraduate provision. The analysis established that there was a significant narrowing of the gap between the price groups at PGT compared to undergraduate (UG). However, the analysis did re-emphasise the significant impact of cost centre 133 (Business & management studies). The cost of PGT for price group D was more than for price groups C1 and C2 including this cost centre, but was less than these price groups without this cost centre (Section 4.3).

Based on the study sample, the most significant factor impacting on the cost of postgraduate teaching, both in absolute and relative terms, is the number of students in a cost centre (Section 4.4.1). It should however be noted that the study only includes HEFCE-fundable student FTEs, and excludes the overseas students and those funded from other sources. Cost centres with fewer than five student FTEs are higher cost than those with more than five student FTEs, and the cost decreases significantly as the number of students increases. Overall the cost per student for cost centres with fewer than five student FTEs is 25% higher (£14,206) than the overall average cost of £11,315 (Section 4.4.2). This indicates that there are significant economies of scale for teaching postgraduate provision, and this is also apparent at an institution level, where the analysis indicates that the postgraduate cost per student FTE is significantly higher at institutions

with fewer than 250 postgraduate student FTEs compared to those with more than 250 postgraduate student FTEs (Section 4.5).

Based on the HEI submitted data and study analysis, the cost of staff teaching and the support costs are the most significant elements of the cost of postgraduate teaching (Section 4.6.1). The cost of staff teaching has been allocated to postgraduate and undergraduate teaching using HEIs' data on the staff time spent on each area, and this indicates that the staff cost of postgraduate teaching is more than twice the staff cost at undergraduate level. This reflects a range of factors which, according to anecdotal evidence from the institutions in the study, include the generally smaller course sizes with a greater occurrence of long courses in postgraduate education, and hence the staff teaching cost being allocated over a smaller number of student FTEs, but also that the provision of postgraduate education is more specialised and nuanced than at undergraduate level, and often requires delivery by more experienced and expensive teaching staff.

The study included the TRAC(T) data submitted to HEFCE by five HEIs that specialise in postgraduate provision and do not provide any undergraduate provision. The analysis shows that the cost of delivering postgraduate teaching at these specialist postgraduate institutions is lower than at institutions providing both postgraduate and undergraduate courses (Section 4.5). However, because the specialist institutions' data are based on their TRAC(T) submissions, funding provided through separate funding streams (that is, outside the core teaching funding) are excluded. Three of the five HEIs specialising in PGT provision receive 'institution-specific' funding, and hence compared to the non-specialist institutions this may result in the reported cost being understated.

A frequent comment made by participating HEIs was that the cost of delivering PGT to overseas students is not materially different from delivering the programme to home, HEFCE-fundable students. However, where a course includes large numbers of overseas students in addition to the HEFCE-fundable students then this generates additional economies of scale. This is an extension of the 'volume' factor in Section 4.6.1. Appendix 10 sets out, for the 22 participant HEIs, the number of overseas PGT student FTEs compared to the HEFCE-fundable student FTEs for each HESA academic cost centre. This confirms that overall there are over 6,298 more overseas PGT student FTEs in the 22 participant HEIs than there are HEFCE-fundable student FTEs. This provides some basic evidential support for the anecdotal comments from participants.

The study participants reflected their view that in general terms the cost of delivering 'laboratory' intensive PGT courses is generally higher than classroom based subjects (Section 4.6.4).

Based on the work carried out in the study, HEIs' understanding of their costs of PGT provision is growing, but most HEIs do not currently know the cost of their PGT provision through applying a consistent methodology to accurately allocate costs (Section 4.7.1).

Respondents to our survey of senior finance staff were of the view that the future funding of PGT should be informed by the cost of PGT, as well as government policy and the

demand for PGT (Section 4.7.4). The experience of study participants is that the time required to capture the data for this study was more than they had expected. In their view using TRAC(T) to capture the cost of PGT provision will involve a significant amount of resources for HEIs to establish systems to capture the data, and validate and report the results. The resource requirements will be most significant in the first year of data collection (Section 4.7.3).

1.4 Recommendations

1. The study has established a methodology to disaggregate the costs of PGT from the cost of UG provision at the HESA academic cost centre level. HEIs interested in developing an understanding of their costs of delivering PGT provision could use the study methodology. In determining the cost of PGT provision, HEIs might want to consider balancing the need to inform their own internal decision making with HEFCE's focus on the cost of a HEFCE-fundable PGT student to inform future PGT funding.

2. If HEIs wish to calculate and understand their PGT cost then they should consider routinely collecting data on the split of academic staff time between PGT and UG as part of their Time Allocation Survey (TAS) or Workload Planning Model (WLM) approaches.

3. The participating institutions all currently collected a split of staff time between PGT and UG, but even with those processes already in place, participants acknowledged the significant time required to collect the cost and cost driver data, and to calculate the cost of PGT provision. The participants considered that the resource required is more intensive in the first year of collection, with an expected reduction in required resources in subsequent years. In collecting their cost data HEIs should consider the resources required to collect the data and validate its accuracy. If HEFCE determine to collect PGT data routinely from HEIs, the significant resources required by HEIs should be factored in to the HEFCE requirements and timescales.

4. Based on the view of the study participants the cost of postgraduate provision should be taken into account, alongside considerations relating to government postgraduate policy and the factors relating to demand for postgraduate courses, in considering the future funding for postgraduate teaching.

2 Introduction and Background

2.1 Postgraduate provision

In autumn 2012 the student tuition fee regime changed for undergraduate students in England, allowing universities to charge students up to £9,000 per year for undergraduate tuition. Consequently the funding for undergraduate teaching changed to reflect the fact that universities would receive a greater proportion of income direct from students. The first cohort of students who are subject to the revised fee regime will graduate in the summer of 2015, and for those continuing to postgraduate education, this will commence in autumn 2015.

As a result postgraduate education has come under increasing scrutiny from a range of sources, including parliament, the government, the higher education (HE) sector, and the public. In response to this increased focus on postgraduate (PG) provision, the Higher Education Funding Council for England (HEFCE) has commissioned several studies relating to PG provision across the sector to inform the ongoing debate on how to continue to deliver successful PG provision.

This report relates to one such study, on the cost of PG provision, in absolute and relative terms, and it focuses on the cost of postgraduate taught (PGT) provision in English higher education institutions (HEIs).

2.2 Aims and objectives of this study

The objective of this study is to provide a greater understanding of the absolute cost of HEFCE-fundable PGT provision, and the cost relative to:

- The cost of HEFCE-fundable undergraduate (UG) provision.
- The HEFCE-fundable Subject-FACTS[2], which are used to inform the funding of PGT provision.

This is the second study commissioned from KPMG in this area. The first study was commissioned in 2012 with the aim of establishing a methodology for disaggregating the costs of PGT from the total costs of teaching across the HEIs, and to engage with HEI participants to provide evidenced research into the cost of PGT provision.

This first study concluded in 2013 and the final report indicated that while HEIs were increasingly focusing on the cost of PGT provision, based on the 2011/12 financial data, there were insufficient HEIs collecting data to be able to disaggregate their costs between PGT and UG provision.

[2] Subject-FACTS: the measure produced by English HEIs in their annual submission of a TRAC(T) return to HEFCE, i.e. the Subject-Related Full Average Cost of Teaching a HEFCE-fundable Student in a HESA academic cost centre. This includes the costs of undergraduate and postgraduate taught provision and is used to inform HEFCE's teaching funding methodology.

Subsequently HEFCE commissioned this second study, the aims of which are similar to those of the first study, building on the first study to engage with a larger group of HEIs, and using the methodology established to collect, validate, and analyse data relating to the cost of PGT and UG provision for the 2012/13 academic year.

This report focuses solely on the costs of taught postgraduate provision and does not incorporate the cost of postgraduate research (PGR) provision, and it does not consider the impact of PGR on the costs of delivering PGT programmes. Furthermore, as the report is intended to inform future HEFCE funding for postgraduate provision, it is focused on HEFCE-fundable provision rather than provision funded through other funding streams.

2.3 Structure of this report

This report contains the following sections:

- *Scope and methodology* – sets out the approach adopted for the study, the options considered and the agreed methodology, including the data validation undertaken.
- *Analysis and findings* – presents the findings from the data analysis.
- *Appendices* – present detailed analysis and supplementary information.

3 Scope and Methodology

3.1 Scope

The study focused on PGT provision in HEIs in England funded by HEFCE.

Within the PGT field the study included all postgraduate courses that HEIs report to the Higher Education Statistics Agency (HESA). These included:

- PG Certificate
- PG Diploma
- Taught masters.

The study excluded postgraduate research students supported through HEFCE's research funding method, integrated masters (e.g. four-year undergraduate programmes such as the MEng), and regulated postgraduate programmes such as the PGCE.

3.2 Summary of approach

The approach adopted was to liaise closely with HEFCE to establish the key requirements for the study, and to engage with HEIs during 2013 to establish the interest in participating in the study.

The key elements to the approach included:

- A request to HEIs to participate in the study and submit the cost information. The key requirement was that they were able to disaggregate PGT cost from the total combined PGT and UG cost. Particularly this required HEIs to be able to allocate staff teaching time between the time spent on UG and that spent on PGT.
- Engage with the participants, to:
  - identify the complexities to the approach;
  - consider how material the components of the methodology would be;
  - agree the appropriate and consistent methodology to capture the costs.
- Produce a data collection template for the participants to capture their costs consistently.
- Assist the HEIs as they collected the data.
- Validate the data once submitted, to confirm that it complied with the methodology and was consistent across the participants.

Having obtained and validated the data the study then analysed the data to enable key findings to be reached and conclusions to be drawn.

3.3 Participating HEIs

To identify the HEIs that would be willing and able to participate in the study, our focus was on those institutions that were known or thought to already collect the required data. The aim of the study was to have sufficient numbers of HEIs participate to achieve 30% coverage of the sector based on the 2012/13 postgraduate student FTEs.

However it was clear from this first stage of engagement there were many HEIs that do not collect information to be able to determine the cost of postgraduate and undergraduate teaching. The most significant issue for most of the HEIs contacted at the first stage related to the lack of information on the split of staff time between postgraduate and undergraduate provision. Of the HEIs that do collect relevant postgraduate and undergraduate information, a further significant number of HEIs expressed an interest in the study, but were unable to devote the resource requirements to participate at this stage. Many of the participants unable to participate for this year were in the process of establishing systems to collect the data in 2013/14 or future years, and were clearly keen to develop their understanding of their costs of postgraduate provision. Based on this work, in our view, there will be an increasing number of HEIs that are collecting data at a PGT level to understand their absolute and relative PGT costs in future years.

The initial engagement established a group of 26 HEIs that were willing and able to participate. Subsequent detailed discussions on the methodology, and the likely resource and information requirements, led to four HEIs being unable to continue to participate.

During the data collection phase of the study, a further four HEIs were not able to collect the information to complete the exercise, or were not content with the robustness of their cost information and did not submit data.

This left 18 HEIs that did submit data, although during the data validation phase, one further HEI's submitted data were removed due to applying an inconsistent approach to their disaggregation. To supplement these 17 remaining HEIs, following consultation with HEFCE we included the TRAC(T) data for five PG-only institutions as a robust and reasonable measure of the cost of teaching PG students at those HEIs. Appendix 1 details the participant HEIs, which includes all 26 HEIs that were involved in the initial considerations for the study.

3.4 Coverage based on student FTEs

Based on the 22 HEIs whose data are included, the study includes cost data relating to the delivery of postgraduate courses to 17,140 student FTEs or 22% of the PGT student FTE population in England. As shown in Appendix 1, the range of HEIs included in the study reflects the diversity in the sector, with a range of Russell Group universities, pre-1992 and post-1992 institutions, specialist institutions and PG-only institutions.

The coverage based on student FTE data has been analysed across the HESA academic cost centres in Appendix 2. The cost centres are a standard structure of 'subject-related' areas which allow meaningful comparisons between types of data at a more granular level than the total HEI level.

The analysis in Appendix 2 shows that in most cost centres there is at least 20% coverage based on the student FTEs, in some cost centres there is more than 50% coverage, and in all cost centres there is at least 11% coverage. However, there are nine cost centres with fewer than five participating HEIs – cost centres 106, 107, 108, 109, 110, 125, 127, 134 and 136. In these cost centres the results need to be interpreted carefully, as the relatively small number of participating HEIs may produce results that are not fully representative of those cost centres as a whole.

Despite the large number of HEIs unable to participate in the study, this demonstrates that the data included in the study is of sufficient quantity, and is representative across the sector.

3.5 Methodology

The aim of the study was to collect the disaggregated PGT and UG costs which are included in HEIs' annual Transparent Approach to Costing (TRAC) and TRAC(T) returns. TRAC is the standard method for costing in HE in the UK and institutions use this methodology to determine their cost of teaching, research and other activities. TRAC(T) is the standard methodology for costing the teaching element, and is used to determine the cost of teaching a HEFCE-fundable student across the HESA academic cost centres.

There are several measures of costs within TRAC which could be applied to this study. Having discussed this with HEFCE and the participant HEIs it was agreed that the most appropriate cost to use, given that the aim of this study is to inform the future funding policy, would be the subject-related cost of HEFCE-fundable provision. This definition of cost was consistent with the TRAC(T) return, and enabled HEIs to focus on disaggregating their TRAC(T) data into those costs applicable to PGT and UG.

In order to provide meaningful comparisons to the current funding arrangements the study compared the study results with the TRAC(T) Subject-FACTS data. Subject-FACTS are the measure of cost produced by HEIs in their TRAC(T) return submitted to HEFCE. Subject-FACTS is the Subject-related Full Average Cost of Teaching a HEFCE-fundable FTE Student in a HESA academic cost centre. This includes the costs of both undergraduate and postgraduate taught provision and is used to inform HEFCE's teaching funding methodology.

The study commenced with a series of workshops with the participant HEIs. These enabled discussion and agreement on the most appropriate definition of 'cost' to use, the methodology to adopt, the main contributors to the cost of PGT, and the likely cost drivers to use to disaggregate the costs. The outcomes from these workshops informed the methodology adopted. A further workshop was held towards the end of the data collection period to enable HEIs to discuss issues with their data collection and agree on appropriate solutions, ensuring that the data collected were consistent and comparable.

To assist HEIs collecting the data in a consistent and comparable format we produced a data collection template for the participating HEIs to complete, along with detailed guidance notes. The template captured:

- The student FTE data for PGT courses split across HESA academic cost centres.
- UG student FTEs in those cost centres with PGT provision,
- The cost of delivering PGT and UG at a HEFCE-fundable student level split across the HESA academic cost centres.

The template also facilitated some basic validation checks covering for example the student numbers used, and comparisons of the data submitted to the TRAC(T) Subject-FACTS. The template also calculated high-level values of the cost of PGT in absolute terms and relative to the cost of UG provision. Institutions were asked to review and consider the results of their data, and consider whether these were in line with their expectations and understanding.

To assist HEIs, detailed guidance notes were produced outlining the approach to data collection, its consistency with the TRAC(T) methodology, and identifying the treatment of, for example, long courses, specialist funding, bursaries and the interplay between HEFCE-fundable students and international students.

The methodology focused on separating the cost into four categories: staff costs, direct course costs, indirect support costs, and estates costs. Each of these categories has a cost driver (or multiple cost drivers) with which to allocate the costs between PGT and UG. The validation work, as detailed in Section 3.6, included review and validation of the drivers used by institutions for each of the cost categories to ensure they were appropriate to each HEI's circumstances.

Staff costs were allocated between PGT and UG on the basis of staff time spent on each area. The split of teaching time is collected by HEIs to inform their TRAC submission using either a Time Allocation Survey (TAS) or a Workload Planning Model (WLM). Although TRAC does not require HEIs to separately identify the time spent on PGT, the participating HEIs all collected that level of detail in their TAS or WLM, and were able to allocate the staff costs accordingly.

Support costs were allocated between PGT and UG using a range of cost drivers, the most commonly used ones were student headcount, staff headcount, staff time, and detailed relevant usage figures (for example for library services).

The methodology did not prescribe the cost drivers for each support cost element, but detailed guidance notes were provided to enable HEIs to select the most appropriate driver for their circumstances. Where student numbers or FTEs were used, the methodology assumed that there would be no 'weighting' of PGT or UG student numbers on the basis that the use of support or central services resources would be largely similar across PGT and UG. The methodology did however allow the HEIs to build in weightings, for example on library services, where their evidence led them to conclude that PGT students used more of the support service than their UG counterparts.

In addition to the methodology for collecting the PGT and UG data, we carried out a survey of senior HEI finance staff across the sector, collecting their views on a range of PGT-related questions. The results of the survey are included in Section 4.7 of this report.

3.6 Data validation

A key element of the study was to ensure that the submitted data were accurately based on HEIs' cost and cost driver data, and were consistent across all the submitting HEIs.

As part of the data submission process HEIs were asked to review their data and consider whether they were in line with their understanding of their institution. A number of institutions identified and corrected their data following their own review of the output and validation work.

Following submission of the data our validation work incorporated:

- A desk-top review of each HEI data submission, which considered the internal consistency of the data within that HEI, the consistency with the data from the other participants, and the consistency with data already submitted by the institution on costs in the TRAC(T) submission, and student numbers in the HESA student number return.
- A discussion with the TRAC manager or finance staff at the institutions, which considered the methods and cost drivers used to allocate the costs, and assessed the extent to which these were appropriate and consistent with the methodology. This review also explored the factors behind the costs that in absolute or comparative terms were particularly high or low. This considered the circumstances of the institution in validating these factors, for example the extent to which their PGT provision is delivered through distance learning and the impact of the HEI's PGT students funded from sources other than HEFCE, e.g. overseas students. This review stage also followed up on differences between the submitted data and that already available through TRAC(T) and HESA student number returns, and established the reasons for the differences, and considered their validity and reasonableness.
- A more detailed on-site visit and review of the submissions of a range of institutions where we considered additional validation assurance was needed. This focused on data submissions with outliers in terms of absolute or comparative costs, but also ensured that a range of institutions was reviewed.

Examples of the range of questions asked as part of the validation phase are included in Appendix 11.

As a result of the validation work one participating HEI's data were removed from the study, as they concluded that it was not calculated according to the methodology. Several other changes were made to the data submissions at a number of institutions as a result of these investigations, which have provided assurance that the data included in the analysis section of the report are consistent with the methodology, and consistent with each HEI's own financial cost information.

In carrying out the validation exercise we identified several cost centres with less than one PGT student FTE. Consequently the calculated cost per student FTE was abnormally high, due to dividing the cost by less than one, and where this was the case the data were excluded from the study to avoid distorting the results.

In carrying out the validation work the study focused on the 17 HEIs that agreed to be part of the study and had submitted their data to us. For the five PG-only institutions whose TRAC(T) data has been included, the study relied upon the validation work inherent in HEFCE's TRAC(T) process, and no separate validation work was carried out.

3.7 Data analysis

Having obtained and validated the data we carried out a range of analyses.

Focusing on the aim of the study to establish the cost of PGT in absolute and relative terms, the analyses considered:

- The cost of PGT provision as expressed as a cost per student FTE, at a total level, and split across the HESA academic cost centres.
- The cost of PGT provision compared to the HEFCE benchmark cost per student FTE (Subject-FACTS).
- The cost of PGT provision compared to UG provision at the participant HEIs.
- The impact of a range of factors, and analysed the above costs across those factors.

Section 4 sets out the detailed analysis and related findings.

3.8 Limitations inherent in the study

The study, as set out in Section 3.5, has included collecting, validating and analysing a significant amount of data, covering 22% of the PGT student numbers. Despite this significant coverage, it is important to highlight the following limitations of the study data:

- The coverage overall of HEFCE-fundable PGT student FTEs is only 22%, meaning that data relating to 78% of the PGT student FTE population is not included.
- Nine HESA academic cost centres include fewer than five participating HEIs. The costs for these cost centres have been hidden from the cost data in Appendix 3 to preserve the data confidentiality of the participants in these cost centres.
- The lowest coverage of PGT student FTEs in a HESA academic cost centre is 11%, although this cost centre (144 Music, dance, drama and performing arts) includes 11 participants. This is a cost centre with many HEIs teaching a small number of PG students, and although there are 11 participants, the coverage of student FTEs is still relatively low.
- The study assumes that the most appropriate cost measure for the purpose of informing the future funding of PGT is the cost of a HEFCE-fundable student FTE. However, the view of participant HEI finance staff was that there is unlikely to be a material difference between that cost and the cost of teaching a PGT student funded from other sources.

4 Analysis and Findings

4.1 Overview

In analysing the data we have considered the findings against a series of questions and reported these in this section.

As defined in Section 3.2, in determining the cost of PGT and UG we have used the HEFCE-fundable cost of teaching a student as defined by, and reported in, HEFCE's TRAC(T) methodology.

4.2 Does PGT cost more to deliver than UG?

4.2.1 Analysis

To consider whether PGT costs more to deliver than UG we utilised the cost data provided by HEIs which were submitted at PGT and UG level.

To calculate the overall cost per student FTE for PGT we calculated the total cost across all the cost centres for all participating HEIs, and divided this by the total number of student FTEs. This calculation is detailed in Table 1 below, the full data for which are in Appendix 3.

The average cost per student FTE at a cost centre level was calculated by aggregating the total costs for each cost centre from all the participating HEIs, and dividing it by the aggregated student FTEs for that cost centre from all the participating HEIs. The 2012/13 Subject-FACTS for the whole sector was provided by HEFCE based on the data from the 2012/13 TRAC(T) submissions from HEIs in England. The value is calculated by dividing the 'subject-related' costs of HEFCE-fundable taught provision by the total number of HEFCE-fundable student FTEs. In addition to the sector Subject-FACTS the study has calculated the Subject-FACTS for the study participants only, using the submitted cost and student FTE data for the 22 participating HEIs.

To determine the cost of PGT compared to UG at an overall cost level and at a cost centre level, we calculated the ratio of PGT cost per student FTE to UG cost per student FTE by dividing the cost per student FTE for PGT by the cost per student FTE for UG.

Table 1 – PGT and UG cost per student FTE

Based on the study participants, the average cost per student FTE for PGT students is £11,315, and the cost for UG is £7,694. Based on the data submitted by the participants their average Subject-FACTS is £8,041. The sector mean average 2012/13 TRAC(T) Subject-FACTS[3] is almost the same as the UG cost per student FTE calculated in the study.

	Total cost (£)	Total student FTEs	Cost per student FTE
PGT	193,948,590	17,140.14	11,315
UG	1,245,522,802	161,873.12	7,694
2012/13 study sample Subject-FACTS	1,439,471,392	179,013.26	8,041
2012/13 sector Subject-FACTS	7,089,408,000	921,679.00	7,692

Source: HEI submitted cost and student FTE data, and HEFCE sector Subject-FACTS benchmark data.

4.2.2 What does the analysis show?

The results in Table 1 show that for the study participants:

- The cost of PGT is £11,315.
- The cost of UG is £7,694.

Therefore the cost of PGT is calculated to be 1.47 times (47%) higher than the cost of UG for the study participants.

Comparing the PGT cost to the 2012/13 HEFCE Subject-FACTS shows that:

- The Subject-FACTS for the study participants is calculated as £8,041.
- The sector Subject-FACTS, which includes all relevant HEIs' submitted TRAC(T) data, is £7,692.

Therefore the cost of PGT from the study participants is 1.41 times (41%) more than their comparable Subject-FACTS, and 1.47 times (47%) more than the sector Subject-FACTS.

4.2.3 Further analysis

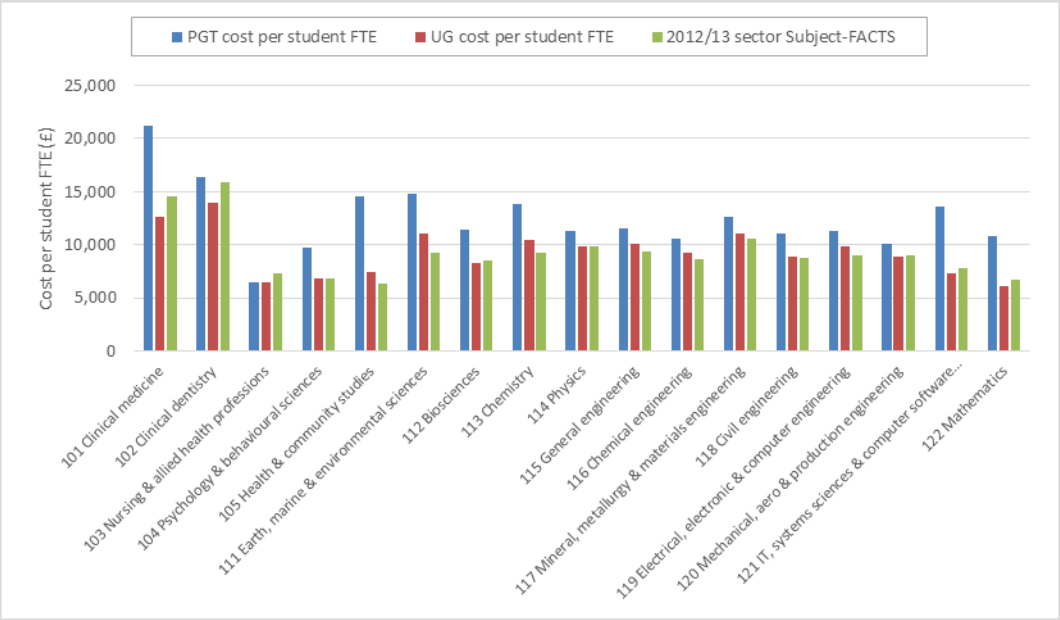
The results of the analysis of PGT costs in absolute terms, and compared to the cost of UG, are displayed in Charts 1a and 1b, and Chart 2. The data for this analysis are included in Appendix 3 and Appendix 4. Charts 1a and 1b below shows the absolute cost of PGT and UG for each cost centre, and includes the HEFCE 2012/13 mean average Subject-FACTS benchmark for each cost centre. The data for the nine HESA academic

[3] This is calculated by dividing the total subject-related costs of HEFCE-fundable provision by the total HEFCE-fundable student FTEs from HESA submissions.

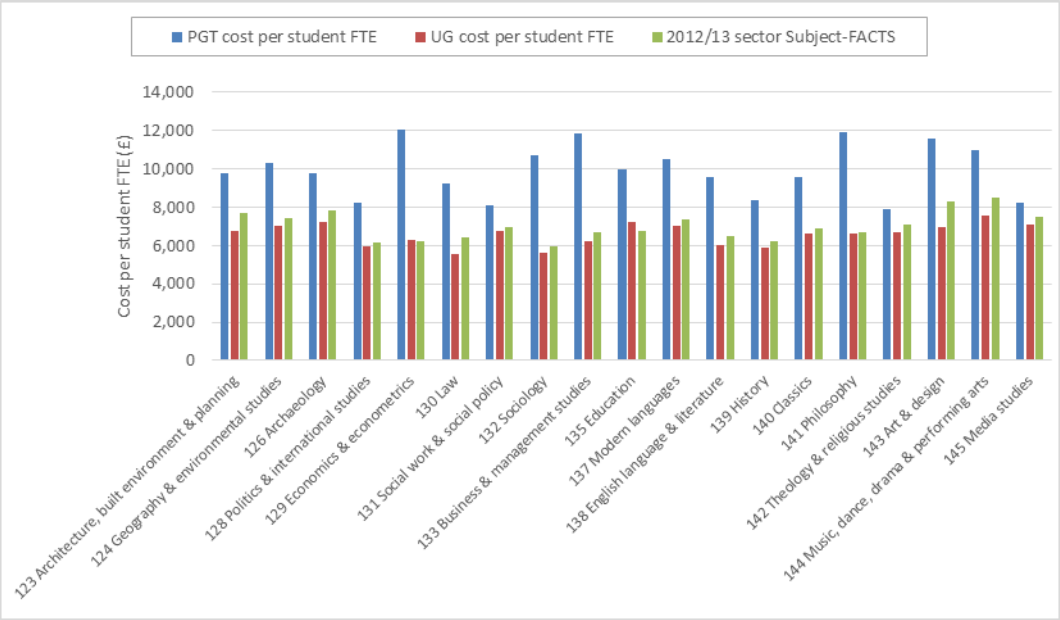
cost centres that have fewer than five participating HEIs have been excluded from these charts to preserve the data confidentiality of the participants.

Charts 1a and 1b – Cost per student FTE at a HESA academic cost centre level[4]

The cost per student FTE is higher for PGT provision than UG provision for all cost centres except one and consistently higher than the Subject-FACTS for each cost centre.



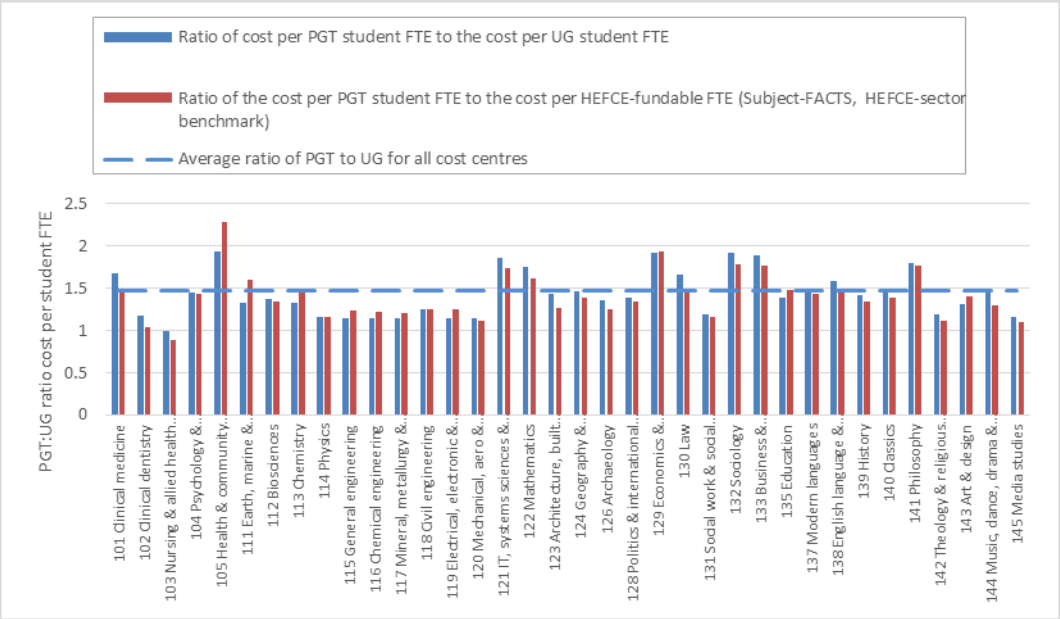
[4] Excluding the nine HESA academic cost centres with fewer than five HEI participants



Source: HEI submitted cost and student FTE data, and HEFCE sector Subject-FACTS benchmark data by cost centre

Chart 2 – PGT cost per student FTE relative to UG cost per student FTE

On average the cost per student FTE for PGT is 1.47 times higher than the cost for UG.



Source: HEI submitted cost and student FTE data, and HEFCE sector Subject-FACTS benchmark data by cost centre

4.2.4 What does this further analysis show?

Charts 1a and 1b indicate that the cost of PGT is higher than the cost of UG in all cost centres except one (103 Nursing & allied health professions), and significantly higher than UG in many cost centres.

The analysis also shows the generally close comparability between the cost of UG and the 2012/13 sector Subject-FACTS[5]. There are however a number of cost centres for which the sector Subject-FACTS are lower than both the PGT and UG cost of the study participants. This may indicate that the sample of HEIs participating in the study is not representative of the sector as a whole. To establish the extent to which this is the case, and to understand the impact of this on the analysis at a cost centre level, further analysis has been undertaken and is included in Section 4.2.7.

Chart 2 displays the relative cost of PGT compared to UG for each cost centre. In Chart 2 a value on the X axis of less than one reflects PGT cost per student FTE being lower than the UG cost, and values greater than one reflect the PGT cost being higher than the UG cost.

Chart 2 shows that there are significant variances at a cost centre level, with the PGT cost ranging from 1.94 times (94% more) to 0.99 times (1% less) than the UG cost. In all cost centres except one (103 Nursing & allied health professions), PGT provision at the participant HEIs is more than the corresponding UG provision. In this cost centre the cost of PGT is 0.99 times the cost of UG provision (1% less).

This analysis indicates that, based on the study participants, there are some cost centres for which the cost of PGT is significantly more than the cost of UG, and combined with the absolute cost of PGT in Chart 1, this indicates that these 'high cost' cost centres have a significant impact on the study results.

4.2.5 What is the impact of removing the 'high cost' cost centres?

Appendix 3 sets out the cost data for the study participants, and these show that there are two cost centres that have a significant impact on the results reported above. The Clinical medicine and Business & management studies cost centres represent 29% of the overall cost of PGT in the study sample, and PGT cost is 1.68 times (Clinical medicine) and 1.90 times (Business & management studies) the UG cost for these cost centres.

Table 2 below shows the impact on cost per student FTE if these two cost centres are excluded from the analysis.

Table 2 – PGT and UG cost per student FTE (excluding cost centres 101 and 133)

[5] Subject-FACTS include both PGT and UG HEFCE-fundable students, and based on 2012/13 data 92% of the student FTEs included in the calculation of Subject-FACTS are UG. The Subject-FACTS are clearly more heavily influenced by, and related to, the cost of UG provision than PGT provision.

Excluding Clinical medicine and Business & management studies, the average cost per student FTE for PGT students in the participating HEIs is £10,327. For UG students in the same institutions across the same cost centres, it is £7,451. Removing these cost centres from the Subject-FACTS analysis also reduces these values.

	Total cost (£)	Total student FTEs	Cost per student FTE
Including all cost centres			
PGT	193,948,590	17,140.14	11,315
UG	1,245,522,802	161,873.12	7,694
2012/13 study sample Subject-FACTS	1,439,471,392	179,013.26	8,041
2012/13 sector Subject-FACTS	7,089,408,000	921,679.00	7,692
Excluding cost centres 101 and 133			
PGT	136,944,288	13,261.23	10,327
UG	1,019,803,479	136,874.10	7,451
2012/13 study sample Subject-FACTS	1,156,747,767	150,135.33	7,705
2012/13 sector Subject-FACTS	5,973,076,000	787,303.00	7,587

Source: HEI submitted cost and student FTE data, and HEFCE Subject-FACTS benchmark data

The study therefore concludes that even without the 'higher cost' cost centres PGT is still higher cost than UG, but that the cost of PGT is now only 1.39 times (39%) more than the cost of UG.

Considering the cost of PGT compared to the Subject-FACTS:

- The cost of UG is 1.34 times the 2012/13 Subject-FACTS from the study sample (reduced from 1.41 times by excluding cost centres 101 and 133 from both elements).
- The cost of PGT is 1.36 times the 2012/13 sector Subject-FACTS (reduced from 1.47 times by excluding cost centres 101 and 133 from both elements).

This demonstrates that these two cost centres significantly affect the overall cost per student FTE for PGT and UG. More detailed analysis of cost centre 133 is detailed in Section 4.6.5.

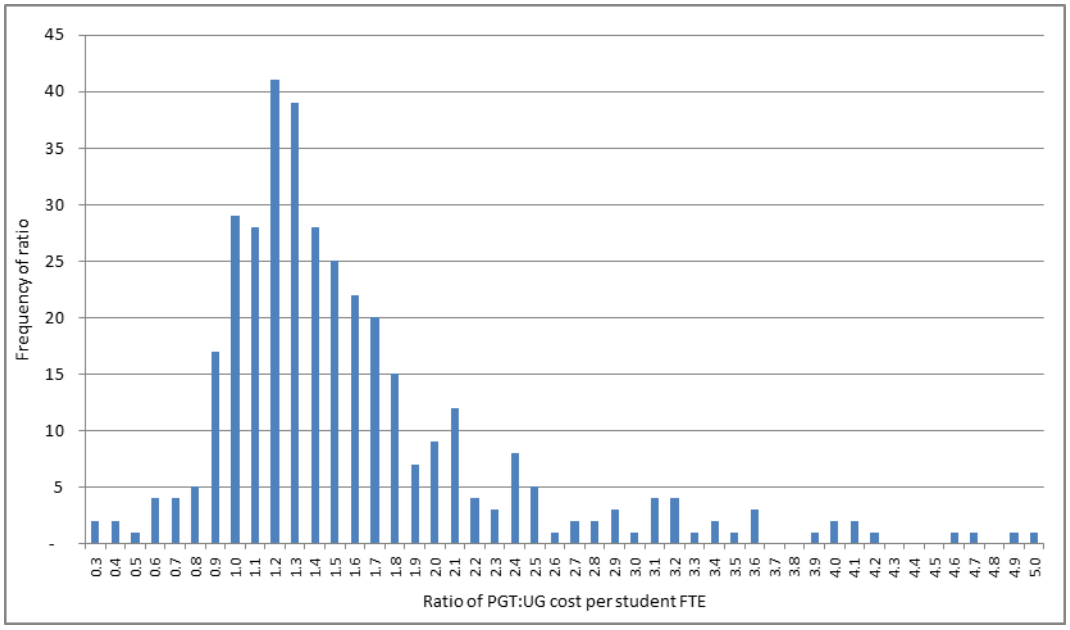
4.2.6 Analysing the frequency of how much higher PGT cost is compared to UG

In addition to the analysis above, analysing the submissions for all cost centres by all the participating HEIs enables us to plot the frequency of the ratios of PGT to UG cost per student FTE.

Chart 3 below sets out this analysis, which outlines that, rounded to one decimal place, the most frequent result across all the submissions, with 41 occurrences, is that the cost of PGT is 1.2 times higher (20% higher) than UG. The majority of the submissions are in the range 1.0 (the same price as UG) to 1.7 times (70%) higher.

Chart 3 – Frequency of PGT to UG cost per student FTE ratios

The most frequent ratio of PGT:UG cost per student FTE is 1.2:1, indicating that in most cost centres submitted by the participating HEIs PGT cost is 1.2 times more than UG.



Source: HEI submitted cost and student FTE data

At a simplistic level these results seem to be inconsistent with the results in Section 4.2.2, where on average the PGT cost per student FTE is 1.47 times the UG cost. However, this is a further reflection of the impact of cost centres 101 (Clinical medicine) and 133 (Business & management studies) as shown in Table 2.

4.2.7 Is the study sample reflective of the sector Subject-FACTS?

In Section 4.2.4 the report considered whether, on the basis of the analysis of the study participants' costs against the sector Subject-FACTS, the study sample was representative of the sector as a whole.

To provide further analysis of this, we have considered the Subject-FACTS of the study participants at a HESA academic cost centre level and compared these to the 2012/13 sector Subject-FACTS produced by HEFCE. This analysis is included in Appendix 5.

The analysis concludes that in 31 of the 45 cost centres, the study sample Subject-FACTS is within 10% of the sector Subject-FACTS for that cost centre. In the remaining 14 cost centres the difference between the study sample Subject-FACTS and the sector Subject-FACTS is greater than 10%, and these 14 cost centres are included in Table 3 below.

Table 3 – Significant differences between the study sample Subject-FACTS and sector Subject-FACTS

There are 14 cost centres with a difference between the sector Subject-FACTS and study sample Subject-FACTS greater than 10%. Of these, seven have fewer than five HEI study participants.

HESA cost centre	2012/13 sector Subject-FACTS	Study sample Subject-FACTS	% difference	Number of HEI participants
102 Clinical dentistry	15,877	14,070	-11.4%	5
103 Nursing and allied health professions	7,323	6,460	-11.8%	6
105 Health and community studies	6,371	9,206	44.5%	9
106 Anatomy and physiology	8,906	9,915	11.3%	3
107 Pharmacy and pharmacology	8,318	9,606	15.5%	3
108 Sports science and leisure studies	6,678	5,682	-14.9%	4
110 Agriculture, forestry and food science	8,526	9,983	17.1%	3
111 Earth, marine and environmental sciences	9,196	11,523	25.3%	7
113 Chemistry	9,298	10,555	13.5%	9
119 Electrical, electronic and computer engineering	8,997	9,989	11.0%	11
125 Area studies	7,197	8,560	18.9%	4
134 Catering and hospitality management	6,568	4,092	-37.7%	2
135 Education	6,772	7,842	15.8%	11
136 Continuing education	7,000	9,423	34.6%	4

Source: HEI submitted cost and student FTE data, and HEFCE Subject-FACTS benchmark data

The conclusion from this analysis is that study participants do reflect the sector as a whole in the majority of cost centres. In seven of the cost centres where the difference is greater than 10%, this appears to be because there are fewer than five HEIs participating in the study, and hence the small sample size would appear to be skewing the results for that cost centre. In the remaining seven cost centres, the significant variances, particularly for 105 (Health & community studies) and 111 (Earth, marine & environmental sciences) indicate that the study sample may not be reflective of the sector as a whole. Careful interpretation should be applied to the results for these cost centres as a result.

4.3 Are the higher costs reflective of HEFCE's price groups?

4.3.1 Background

To assist with the funding of teaching costs, and based on research into UG costs, the HESA academic cost centres are allocated by HEFCE to price groups reflecting the relative cost of the respective subjects. The mapping of the HESA academic cost centres onto the price groups is set out in Appendix 6. The price groups have changed between 2012/13 and 2013/14, and since this study is informing funding strategies for PGT in the future, we have analysed and reported the results across the 'new' 2013/14 price groups as set out in Appendix 6.

We analysed the submitted data across these price groups to consider whether the PGT cost increased with each higher price group, and whether the relative cost of PGT to UG was consistent through the price groups.

This analysis was made slightly more complex as some cost centres, as set out in Appendix 6, map onto more than one price group (e.g. cost centre 101 maps onto price groups A and B). Most HEI participants were not able to provide cost and student FTE

data at the specific price group level, but provided the data at the headline cost centre level, e.g. for cost centre 101 they provided cost and student FTE data in total rather than broken down between 101A and 101B. We have therefore estimated the costs for price group A.

To estimate the costs for price group A, we have used the assumption that 68% of students in cost centres 101, 102 and 109 are assigned to price group A, with 32% assigned to price group B. This percentage split between price groups A and B is consistent with the 2012/13 student FTE data in the sector Subject-FACTS. From the total costs for these three cost centres, we have deducted costs reflecting the calculated average price group B costs for the 32% of students assigned to price group B. The remaining costs are an estimate of the costs for price group A students. This calculation can be seen in detail in Appendix 7 for the PGT and UG costs.

Our analysis assumes that the split of costs and student FTEs between the price groups for these combined cost centres, is on the basis of the relative student FTEs in the 2012/13 sector Subject-FACTS. This identified that for the cost centres split between price groups A and B, 68% of the student FTEs were in price group A and 32% in price group B. While the further assumptions in cost allocation do not invalidate the analysis in Table 4, the results for price groups A and B should be qualified by the fact that the data submitted by the participants have been further apportioned to price groups using the assumptions above. For the cost centres split between price groups C2 and D following discussion with HEFCE it was agreed to report the costs for the cost centres which have provision in C2 and D as a separate category (C2/D in Table 4), since the costs from the study participants present unusual results compared to the average costs already calculated for price groups C2 and D.

4.3.2 What does the analysis show?

Table 4 below shows the analysis which is based on the price groups as detailed in Appendix 6.

Table 4 – PGT and UG cost per student FTE at a price group level

The analysis of price groups is inconclusive at PGT level, and price groups appear to be less useful to determine the funding for PGT.

Price group	Total PGT cost (£)	PGT Student FTEs	Cost per PGT student FTE (£)	Total UG cost (£)	UG Student FTEs	Cost per UG student FTE (£)	Ratio of PGT to UG cost per student FTE
A	24,362,037	965.89	25,222	155,083,919	9,971.89	15,552	1.62:1
B	44,669,421	3,918.27	11,400	377,274,037	40,461.77	9,324	1.22:1
C1	21,317,818	2,143.17	9,947	99,310,358	13,700.93	7,248	1.37:1
C2	27,149,731	2,623.66	10,348	244,172,618	37,514.41	6,509	1.59:1
C2/D *	14,297,375	1,550.35	9,222	33,407,144	4,707.37	7,097	1.3:1
D	62,152,208	5,938.80	10,465	336,274,726	55,516.75	6,057	1.73:1
Total	**193,948,590**	**17,140.14**	**11,315**	**1,245,522,802**	**161,873.12**	**7,694**	**1.47:1**
D (excl. Cost Centre 133)	30,427,676	3,255.56	9,346	249,194,797	41,544.51	5,998	1.56:1

* These are cost centres 131 and 135 which map onto C2 and D, but for which participants did not provide cost data broken down into the different price groups. Data have not been allocated between C2 and D price groups because the results look unusual compared to the average costs for C2 and D already calculated.

Source: HEI submitted cost and student FTE data

The analysis in Table 4 above, based on the participant HEIs, shows that:

- For both PGT and UG, price group A has the highest cost by a significant amount and price group B has the second highest cost.
- Price group D is the price group with the lowest UG cost, as would be expected, but for PGT this price group has a higher cost than price groups C1 and C2, predominantly due to the relative high cost of Business & management studies at PGT.
- Excluding Business & management studies from price group D reduces the cost per student FTE to lower than the other price groups for both PGT and UG.
- The ratio of PGT to UG for each of the price groups, which is a measure of how much higher cost PGT is than UG, is higher for price group D (1.73:1 or 73% higher at PGT than UG) than for any of the other price groups. Removing Business & management studies from this price group reduces this to 1.56 times (56%) higher at PGT but this is still higher than the other price groups except for A and C2.

The analysis of price groups indicates that, while they are useful for determining funding at an overall teaching level, they are less appropriate for use in determining the funding of PGT.

4.4 Does the cost per student FTE decrease as the number of student FTEs increases?

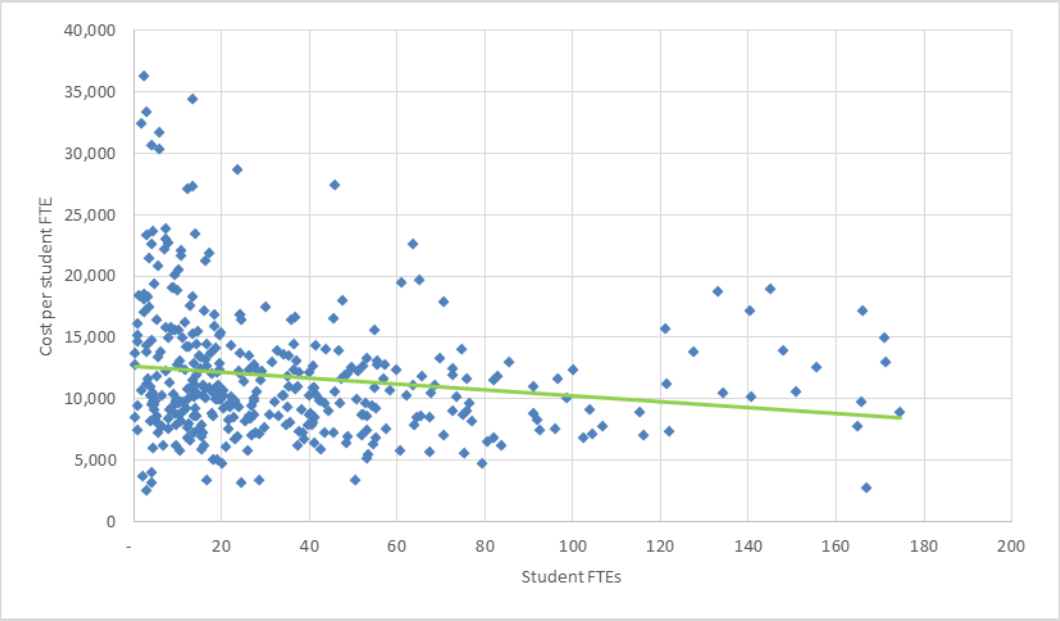
4.4.1 What does the analysis show?

The number of student FTEs has a significant bearing in calculating the cost per student FTE, and it is presumed that a significant reason for a high cost per student FTE would be the small number of student FTEs. This presumption reflects the fact that a large portion of an institution's costs are support costs, and apportioning these over a greater number of students leads to a lower cost per student.

To test this presumption we have analysed the range of PGT costs per student FTE and mapped these against the number of student FTEs in each institution's cost centres. This analysis is set out in Chart 4, where each data point reflects an institution's submission for an individual cost centre.

Chart 4 – PGT cost per student FTE vs. student FTEs

The general trend for PGT cost per student FTE plotted against student FTEs is negative, indicating that as student FTEs increase, the cost per student FTE reduces. It should be noted that to improve the clarity of the information this chart does not show cost centres with more than 200 student FTEs.



Source: HEI submitted cost and student FTE data

What Chart 4 indicates is that although there is a large variation of cost per student FTE for the cost centres with similar student FTE numbers, there is a general negative trend, indicated by the solid line. This indicates that as student FTEs increase the cost per student decreases. The linear trend line has been calculated using least squares regression, the resulting equation being $y = -24.307x + 12647$ with a correlation coefficient of -0.16 and R^2 of 0.027. It is notable that a correlation coefficient of -0.16 is a weak correlation, and this reflects the wide range of costs and student FTEs.

It is also evident from Chart 4 that there is less variation in cost per student FTE as the number of students increases, although the number of data points does reduce as the number of student FTEs increases. This is illustrated by, for example, cost centres with fewer than 20 student FTEs, where the cost per student FTE ranges from several with less than £3,000 to over £35,000, but for cost centres where student FTEs approach and exceed 80, the cost has a much narrower range, with only one cost centre with a cost per student of around £3,000, and the majority ranging from around £6,000 to £20,000.

4.4.2 Further analysis of the range of cost per student FTE

Table 5 below includes a further analysis of how the cost reduces as student FTEs increase. This analysis is based on an overall calculation of the cost per student FTE for a range of student FTE bandings. This has been calculated by aggregating the total costs for each of the cost centres at each institution with student FTEs in each banding, and dividing that total cost by the total student FTEs.

Table 5 – PGT cost per student FTE for a range of student FTE bandings

For cost centres with fewer than 10 PGT student FTEs the cost per student FTE is significantly higher than the cost with more than 10 PGT student FTEs.

Student FTEs in the cost centre	Number of data submissions	PGT Student FTEs	PGT Total Cost (£)	PGT Cost per Student FTE (£)
Fewer than 10	83	433.62	6,002,288	13,842
10 to 50	207	5,174.08	60,153,251	11,626
Greater than 50	103	11,532.44	127,793,051	11,081
Total	**393**	**17,140.14**	**193,948,590**	**11,315**

Source: HEI submitted cost and student FTE data

This analysis shows that the number of student FTEs in a cost centre is a significant factor impacting on the level of PGT costs. Table 5 demonstrates that, consistent with Chart 4, as the number of student FTEs increases, the cost per student FTE reduces.

There is a significantly higher PGT cost per student FTE for those cost centres with fewer than 10 student FTEs, with the cost being 22% higher (£2,527) than the overall cost per student FTE calculated by the study. The cost per student FTE reduces with cost centres with more than 10 student FTEs, the cost being 16% less than those cost centres with fewer than 10 student FTEs. The cost in cost centres with more than 50 student FTEs reduces further.

There are at least 80 data submissions in each of the categories in Table 5, providing a good level of robustness in the findings.

4.4.3 Further analysis of the low student FTEs

The study has carried out further analysis of the student FTEs to consider whether there are any significant patterns to the cost centres or HEIs with low student FTEs. This further analysis acknowledges that the student FTEs included in the study are only those fundable by HEFCE, and hence UK students funded through other routes and international students are excluded.

Appendix 8 shows the cost centres which had the most HEIs reporting fewer than 10 HEFCE-fundable PGT student FTEs. Appendix 9 analyses the same information from the perspective of the HEIs, identifying the number of cost centres in which they deliver PGT, and identifying those with fewer than, and more than, 10 PGT student FTEs.

The analysis in Appendix 8 identifies that, in the participating HEIs, the cost centres which have a prevalence of fewer than 10 PGT student FTEs are:

- Chemistry (cost centre 113) which has seven HEIs with fewer than 10 student FTEs and only two HEIs with more than 10 student FTEs.
- Mathematics (122) which has seven HEIs with fewer than 10 student FTEs and seven with more than 10 FTEs.
- Modern languages (137) which also has seven HEIs with fewer than 10 student FTEs and seven with more than 10 FTEs.
- Physics (114), Classics (140) and Theology & religious studies (142) which all have more HEIs with fewer than 10 FTEs than they do HEIs with more than 10 FTEs, albeit with smaller numbers than the above three cost centres.

This analysis does not identify any significant pattern to the prevalence of small numbers of FTEs, and there is no significant correlation between the cost centres above and those with notably high PGT costs.

The analysis in Appendix 9 shows that there are two institutions with 11 cost centres with fewer than 10 PGT student FTEs, but that these are institutions with provision in over 30 PGT cost centres and hence the proportion of ‘small’ cost centres is not significantly high. There are no significant patterns in the analysis, and no HEIs that appear to be delivering a particularly high proportion of ‘small’ PGT cost centres.

4.5 Are the PGT costs similar at different types of institution?

To consider whether there are any significant variations in cost at different types of institutions we considered the data for:

- The TRAC peer groups.
- Different sizes of PGT provision at the HEIs.
- PG-only HEIs, and those delivering both PGT and UG.

4.5.1 TRAC peer groups

The TRAC peer groups[6] are groups that are used for the benchmarking of TRAC and TRAC(T) data. HEIs are broadly allocated to groups on the basis of similar sizes, mission groups and activity, and range from A: Russell Group with medical schools plus specialist medical schools, to G: specialist music/arts teaching institutions. Groupings B to D band universities together according to the size of their research income, and E and F are banded according to their overall size.

The analysis of costs by peer group in the study is inconclusive, primarily because 11 of the 22 HEIs in the study are in Peer Group A, with the remaining 11 spread across the other peer groups. This has resulted in small sample sizes in Peer Groups B to G. Table 6 below splits the PGT cost per student FTE between Peer Group A and the other peer groups combined.

Table 6 – PGT cost per student FTE by HEI TRAC peer group

Peer Group A is higher cost than the other peer groups, but because of a limited range of HEIs across the peer groups the data is inconclusive below Peer Group A.

TRAC Peer group	Number of HEIs	PGT Student FTE	PGT Total Cost (£)	PGT cost per student FTE (£)
A	11	10,894.78	128,407,497	11,786
B - G	11	6,245.36	65,541,094	10,494
Total	**22**	**17,140.14**	**193,948,590**	**11,315**

Source: HEI submitted cost and student FTE data

The peer group data indicate that the cost per student FTE in HEIs in Peer Group A were 12% higher than in the other peer groups. This would be expected since these HEIs report data in more of the 'higher cost' cost centres.

However, because the study sample does not include a representative split of HEIs across the peer groups, other than the conclusion that Peer Group A has a higher cost per student FTE, there are no other strong conclusions that can be drawn from this analysis.

4.5.2 Size of PGT provision at an institution

The study analysed the cost of PGT provision across institutions with different overall sizes of PGT provision. Analysing across a range of sizes, the most notable result comes from analysing the cost at HEIs with fewer than, and more than, 250 PGT student FTEs. Table 7 shows this analysis.

[6] TRAC peer groups can be located at http://www.jcpsg.ac.uk/guidance/revisions/Peergroups13.pdf

Table 7 – PGT cost per student FTE by size of PGT provision at HEIs

The data indicates that the cost at HEIs with fewer than 250 PGT student FTEs is significantly higher than the cost at those with larger numbers of PGT students.

Size of PGT at HEI	Number of HEIs	PGT Student FTE	PGT Total Cost (£)	PGT cost per student FTE (£)
Up to 250	4	455.03	6,850,000	15,054
Over 250	18	16,685.11	187,098,590	11,214
Total	**22**	**17,140.14**	**193,948,590**	**11,315**

Source: HEI submitted cost and student FTE data

The first observation is that there are only four HEIs included in the study with total PGT student FTEs of fewer than 250, and hence there is a greater risk of the results being unrepresentative of the sector as a whole. Nonetheless the interesting observation from this analysis is that the cost at HEIs with fewer than 250 PGT student FTEs was nearly £4,000 (34%) more than at those HEIs with more than 250 PGT student FTEs.

Although this indicates that there may be some significant economies of scale at an overall PGT level at an institution, it is notable that in three of the four HEIs in this category, there is PGT provision in the higher cost 'price group A' cost centres which will also be a factor.

4.5.3 Specialist institutions

Within the study we included the cost and student data for five institutions that provide only PG courses, with no UG provision. We have analysed the results for these 'specialist' institutions against the other 17 institutions who deliver both PGT and UG courses.

Table 8 – PGT cost per student FTE by type of HEI

The cost at HEIs that deliver only PG courses is slightly less than the cost at HEIs that deliver UG and PG.

Type of HEI	Number of HEIs	PGT Student FTE	PGT Total Cost (£)	PGT cost per student FTE (£)
PG only	5	2,201.34	22,553,000	10,245
UG & PG	17	14,938.80	171,395,590	11,473
Total	**22**	**17,140.14**	**193,948,590**	**11,315**

Source: HEI submitted cost and student FTE data and TRAC(T) data

Table 8 shows that the cost per student at PG only institutions is slightly (11%) less than at those institutions delivering both PG and UG courses.

Following discussion with HEFCE and our analysis of the data, it is likely that the main reason for this is related to the treatment, for TRAC(T) purposes, of the institution-

specific funding received by three out of these five HEIs. The funding the institutions receive is removed to determine the 'subject-related' cost, and this treatment may lead to an understating of the cost of PGT at these institutions compared with the cost at the HEIs providing both PGT and UG since the institution-specific funding is likely to be available to support the nature of teaching provision as well as supporting the overheads of smaller HEIs.

Further analysis at a HESA academic cost centre level indicates that, generally, the cost of the PG-only HEIs' provision is lower than the UG and PG HEIs in the 'higher cost' (price groups A and B) cost centres, and generally lower cost than the UG and PG HEIs for the 'lower cost' (price groups C1, C2 and D) cost centres.

4.6 What are the key factors influencing variations in cost?

There are many possible factors which might influence the level of cost of PGT provision, both in absolute terms and relative to the cost of UG provision. The following sections explore some of the more prominent factors with reference to the findings in this study.

4.6.1 Breaking down the elements of cost

As set out in Section 3.5 the study collected data on staff costs, direct course costs, support costs and estates costs. We have analysed these four elements of the cost of PGT provision and established the relative cost per student FTE of each of the four elements. It should be noted that not all participating institutions were able to provide their costs broken down into the four elements, so the findings in this section are based on the data for 13 HEIs, and consequently the total cost per student FTE does not equate precisely to that for the whole study sample.

Table 9 below sets out the cost per student FTE for each of the four cost elements for PGT and UG, with the ratio of PGT to UG set out in the final column.

Table 9 – Cost per student FTE for the separate cost elements

Staff costs and direct course costs are a larger proportion of total costs for PGT than for UG.

Cost element	PGT cost per student FTE (£)	UG cost per student FTE (£)	Ratio of PGT to UG cost per student FTE
Staff costs	4,177.30	2,033.25	2.05:1
Direct costs	1,862.14	1,025.77	1.82:1
Indirect support costs	4,227.68	3,401.20	1.24:1
Estates costs	1,618.07	1,455.24	1.11:1
Total	**11,885.20**	**7,915.46**	**1.50:1**

Source: HEI submitted cost and student FTE data

This analysis shows that the staff costs for teaching PGT are more than double the staff costs for teaching UG. The participating HEIs reflected the view that this reflects a range of factors including:

- The more specialised and nuanced teaching required for most PGT courses when compared with UG courses.
- PGT courses are often 'long courses' which take more teaching time to deliver than standard length undergraduate courses and for which the direct cost allocation is higher.
- PGT courses often require more experienced, and more expensive staff to deliver.
- PGT courses are frequently delivered with smaller numbers of students which increases the staff time, and consequently staff cost devoted to each student.

For the 13 HEIs which provided data, staff costs are a significant element of the overall cost: for PGT provision, staff costs make up 35% of the total cost, whereas for UG provision staff costs are 25% of the total cost.

The direct costs, which include all non-staff costs directly allocated to courses, are similarly much higher (82%) at PGT than UG. The analysis for indirect support costs and estates costs are less dramatic, with the cost for PGT being only 24% and 11% more than UG respectively, although it is notable that for both PGT and UG, the support costs are the largest element of the total cost.

4.6.2 Volume of PGT/UG delivery

In almost all the HEI cost submissions at cost centre level there were more UG student FTEs than PGT student FTEs. As demonstrated by the analyses in Chart 4 and Table 5 as the PGT student numbers increase the cost of PGT provision reduces. This is particularly notable where there are fewer than 10 PGT student FTEs as indicated in Table 5. A recurring comment from participating HEIs following their review of their data was that providing many different courses all with low student numbers has a disproportionate impact on the cost per student FTE. This is supported by another commentary theme which is that economies of scale within a course or across similar courses are factors that influence lower costs. This is a situation that might be expected, because as course sizes increase, the cost of staff time is allocated over a larger number of students, thus reducing the overall cost per student. As demonstrated in Section 4.6.1, staff costs make up 35% of the total cost, and hence the impact on overall cost of a smaller number of students, over which to allocate the staff cost, is considerable.

It is notable that in the few isolated cases where an HEI has fewer UG students than PGT students in a particular cost centre this impacts on the cost of PGT and UG, with several cases being identified where PGT cost is lower than UG cost, particularly where the UG student FTEs were very low. This situation is prevalent in cost centres 105 (Health & community studies) and 131 (Social work & social policy) where there are often more PGT student FTEs than UG student FTEs.

4.6.3 Allocation of costs

In some cases the cost structure of the HEI had influenced their allocation of costs between PGT and UG to the extent that it impacted on the overall absolute and relative cost of PGT and UG provision. This impact was due to the treatment of management and administrative costs, which in most cases were treated and allocated as indirect support

costs (and allocated primarily on the basis of student numbers). However where these had been identified and treated as a direct cost, for example the cost of PGT recruitment or marketing, these were allocated to PGT and UG on the basis of staff time, which generally led to PGT being allocated a larger proportion of the direct costs.

4.6.4 Type of PGT course and method of delivery

There is a wide range of types of PGT course, and many courses are offered part-time, many are 'long courses' and distance learning is also frequently offered.

The key impact on the cost from the different types of course is on the amount of staff time that is required. Our discussions and validation work with the participant HEIs concluded that the impact on support/central services cost allocation was generally not material for the different course types.

For staff costs, where, for example, a PGT course was a 'long course' the impact on staff time will have been reflected in the TAS or WLM results that HEIs used to allocate the costs. This will be true also for distance learning and part-time study, and consequently the impact on staff cost from the different types of course is reflected in the cost disaggregation.

However, an observation from participating HEIs, which we validated through our detailed discussions with the relevant HEIs, was that the costs of delivering distance learning PGT programmes were often higher than in courses using more face-to-face delivery methods. This was in spite of the reduced teaching contact time and consequential reduction in staff teaching time. The participants' explanation for the increased cost of distance learning was that the programmes are considerably more time-consuming to manage. The additional 'managerial' costs of these programmes often more than offset the lower cost from reduced direct contact time.

A recurring theme in our discussions with HEIs was that a significant variation in cost, in absolute and relative terms, is related to whether the course is a laboratory-based subject, which requires more intensive and more costly resource inputs, or a classroom-based course where resources are less costly. The former type of course drives higher cost, not only because the resources required are often more costly, but often there are relatively small numbers of students participating on the course. The latter are often courses that have similar resource requirements to UG courses, and in addition are often delivered to a large number of students.

Our validation work has concluded that at a general level the HEI assertions are supported by the cost data. For example, the data we have reviewed and validated have concluded that 'laboratory intensive' cost centres, such as Clinical medicine, Clinical dentistry and Chemistry have a higher cost than the classroom-based cost centres. However the study did not consider 'course costing' and consequently we have not obtained cost data at a 'course' level to be able to validate and analyse the cost of specific courses to be able to provide evidence on the precise impact of the more research intensive PGT courses on the overall costs.

4.6.5 Other factors potentially influencing the cost

As part of our, and the participating HEIs', validation work, there are a number of other factors that have been occasionally referred to as influencing a high or low cost for PGT provision.

A frequent comment made by participating HEIs was that the cost of delivering PGT to overseas students is not materially different from delivering the programme to home, HEFCE-fundable students. However, where a course includes large numbers of overseas students in addition to the HEFCE-fundable students then this generates additional economies of scale. This is an extension of the 'volume' factor in Section 4.6.1. Appendix 10 sets out, for the 22 participant HEIs, the number of overseas PGT student FTEs compared to the HEFCE-fundable student FTEs for each HESA academic cost centre. This confirms that overall there are over 6,298 more overseas PGT student FTEs in the 22 participant HEIs than there are HEFCE-fundable student FTEs. This provides some basic evidential support for the anecdotal comments from participants.

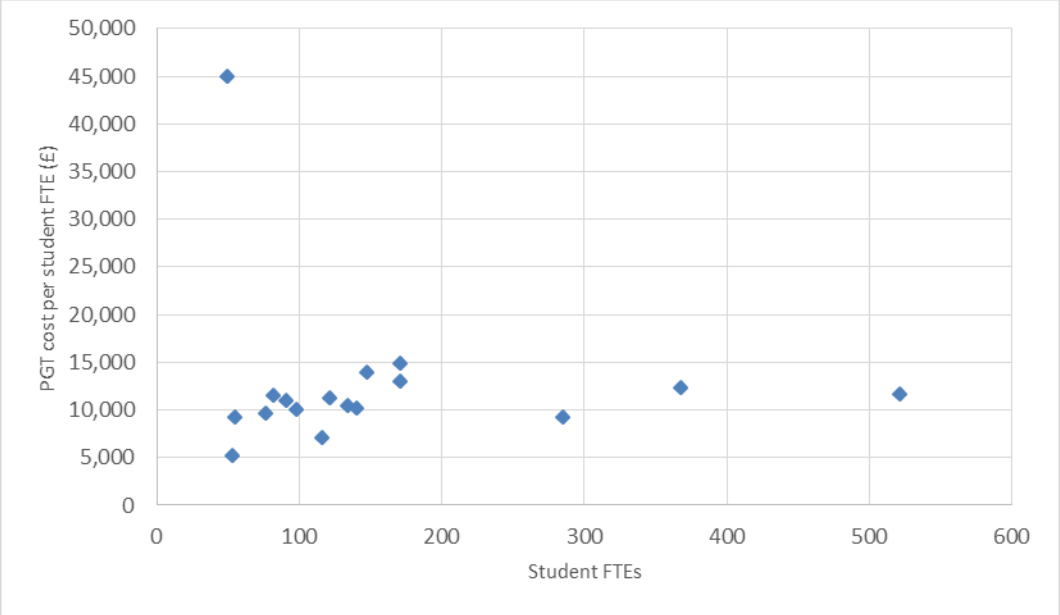
Additionally a number of participants referred to the variability in staff cost – i.e. the salary costs of the specific staff – as a factor explaining higher and lower cost. In particular where the course is delivered by, or includes, a senior member of staff with high salary costs, and this is a large part of their role – then the allocation of time and costs to that course will be high, and the corresponding cost per student will be increased. Conversely courses that are, often for institutional management reasons, delivered by lower level staff incur a lower cost.

The impact of 'market-driven expectations' on the cost of PGT courses is hard to quantify, and this study has not found any evidence that the cost centres with higher costs are as a result of an expectation from the institution or the students, that these courses should be delivered with a higher resource than is required 'ordinarily' elsewhere.

However the observations for one cost centre (133, Business & management studies) are interesting when considering the extent to which these 'market' expectations are driving higher cost. Within our study there were 17 HEIs contributing data to this cost centre – the most participants in any of the cost centres. This provides a wide range of data to analyse. Chart 5 below maps the cost per student FTE against the number of student FTEs for each of the 17 HEIs.

Chart 5 – Cost centre 133 – Business & management studies PGT cost per student FTE vs. student FTEs

One data submission has a very high cost which appears to be caused by the low numbers of PGT student FTEs. In general the cost per student is positively correlated with the number of student FTEs. This is different to the general trend for other cost centres.



Source: HEI submitted cost and student FTE data

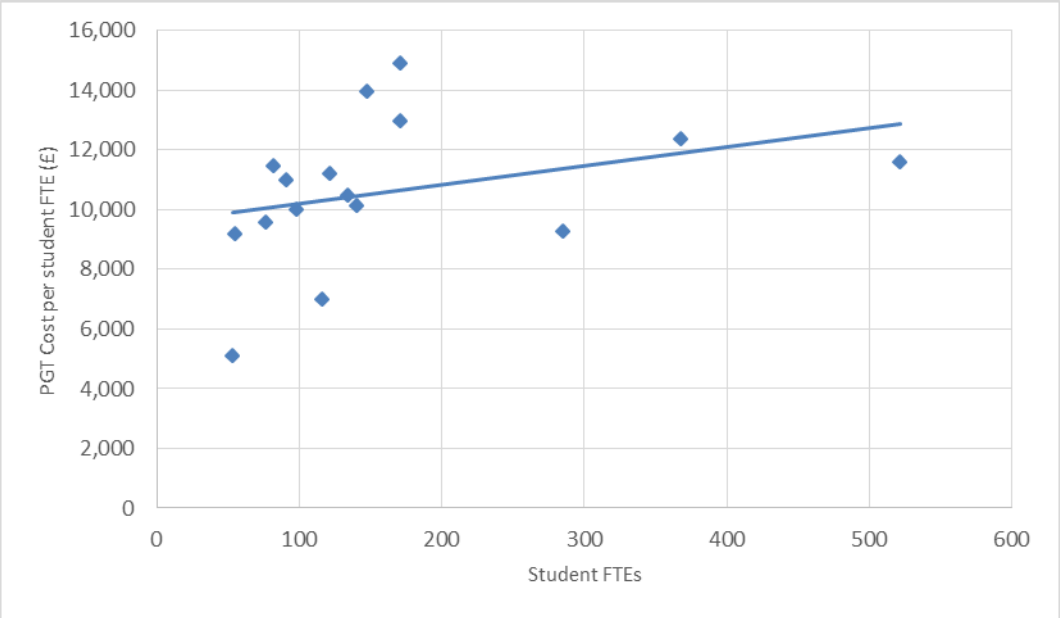
This chart shows that:

- There is one high cost HEI, for which the relatively low number of student FTEs is a factor impacting on the cost per student FTE.
- The range of FTEs is wide, from fewer than 50 to over 500.
- The cost 'range' excluding the high cost HEI is from around £5,000 to £15,000.

The key observation from this is that more student FTEs, in contrast to the study as a whole, do not seem to drive lower cost. Chart 6 below highlights this position by excluding the 'high cost' return and including a trend line. The linear trend line has been calculated using least squares regression, the resulting equation being $y = 6.2975x + 9594.8$ with a correlation coefficient of 0.32 and R^2 of 0.10. It is notable that a correlation coefficient of 0.32 is a low correlation, and this reflects the wide range of costs and student FTEs.

Chart 6 – Cost centre 133 – Business & management studies PGT cost per student FTE vs. student FTEs (excluding high cost data return)

In general the number of student FTEs does not influence lower cost for this cost centre.



Source: HEI submitted cost and student FTE data

Looking at the cluster of institutions with between 50 and 100 student FTEs, the relationship is actually the inverse of this, i.e. that more students seem to drive higher cost. Although PGT fees are not within the scope of this study, anecdotally HEIs report that the 'market expectations' associated with delivering high quality and high-fee Masters and MBA programmes is, to an extent, impacting on the cost of PGT delivery and hence cost per student FTE.

4.7 Other key questions

We have included a range of other questions in the study, and sought to answer these either through analysis of the cost data, or by our discussions with the sector. In addition we conducted a short survey of HEI senior finance staff to obtain views on PGT from non-participants.

4.7.1 How many HEIs know their PGT cost?

Based on our initial research with a range of HEIs to establish those willing and able to collect the required cost data, we established that a large number of HEIs have recently or are currently exploring ways to collect the data to calculate their costs of PGT provision. Many HEIs we spoke to were unable to contribute the information for 2012/13 data, but would be in a position to do so for 2013/14 or 2014/15 as they established systems to

collect accurate staff time splits between PGT and UG, and determined the cost drivers to allocate other costs between PGT and UG. In addition, as reflected earlier in the report, of the 26 HEIs that initially agreed to participate nine were unable to submit data and not having accurate information was a significant factor in their decision.

Our survey of senior HEI finance staff established that 64% of respondents strongly agreed or slightly agreed that they knew the cost of PGT provision at their HEI. However, the responses indicated that, although their cost awareness was based on evidence, often the 'known cost' was not based on a detailed calculation of cost using a methodology, for example utilising analysis of staff time and overhead allocation. Furthermore the 'cost', where it is based on a methodology, is often not consistent with the TRAC(T) methodology which is used to inform the teaching funding method, and these institutions would not therefore have been able to participate in this study.

None of the remaining 36% that did not know the cost of PGT currently collected the split of staff time between PGT and UG. Of those that had calculated the cost per student FTE, 60% agreed that their cost was 'around 1.6 times the cost of UG provision'[7].

Although it is clearly an area of increasing focus for HEIs, the study and related analysis indicates that the number of HEIs that have a good understanding of the cost of their PGT provision is currently relatively low. Based on our work we would expect that in 2013/14 and future years, more HEIs will be in a position to collect, calculate and report on the cost of their PGT provision.

4.7.2 What is the most appropriate measure of cost?

Throughout the study we have defined 'cost' as being consistent with the TRAC(T) methodology as the subject-related cost of teaching a HEFCE-fundable student FTE. This removes a number of elements from the 'total teaching cost' reflecting the costs of teaching overseas, non-publicly funded and non-HEFCE-fundable students, and removing costs that are not directly related to the subject. This methodology was discussed and agreed at the outset of the study, with the conclusion that this is the most appropriate measure of cost in considering the future funding for PGT from funding councils.

The view reflected both by the participating HEIs, and by the respondents to the survey was that they were most interested in understanding the cost of all their PGT provision, i.e. including the cost of teaching home/EU and overseas students. Understanding this cost helps inform the HEIs' decision-making process on the future size and shape of, and fee structure for, its PGT provision. Participating HEIs when asked made this comment, and reflected that this is what they are using internally to establish and increase their understanding of the cost of PGT provision. Although this study has not collected data for both HEFCE-fundable and total PGT cost, the anecdotal evidence from participating HEIs is that there is no material difference in the cost per student FTE in teaching a HEFCE-fundable student compared with a non-HEFCE-fundable or overseas student.

[7] At the time of the survey the partial data collected indicated that the cost of PGT was 1.6 times higher than UG and this was the information included in the survey question. Subsequent data and validation work reduced this to 1.47 times higher.

4.7.3 Can TRAC(T) be used to capture the PGT and UG costs to inform funding for teaching PG and UG?

TRAC(T) currently includes the costs of teaching PGT and UG provision. In considering how to fund PGT in the future, consistent with the views reflected in Section 4.7.2 above, the view reflected was that, while TRAC(T) could be used to collect the cost data to inform funding, collecting cost data at the higher, total cost per student, level is more appropriate and accurate for internal institution decision-making purposes.

In addition, the experience of the participating HEIs in collecting and providing the data for this study is valuable in considering the impact this will have on HEIs and the extent to which this can be achieved.

A frequent comment from participants was that the data collection, including establishing the systems to collect the data to allocate the costs to PGT and UG, was generally more time-consuming than they had expected. In reflecting on their experiences they were of the view that in a subsequent year the data collection would be more straightforward and less time-consuming, but that in the first year of collection the time required is considerable. Most if not all participants had their TRAC steering group overseeing and signing off their data submission but it is reasonable to assume that the systems for completing this, were it to be part of the annual TRAC(T) submission, would be more considerable.

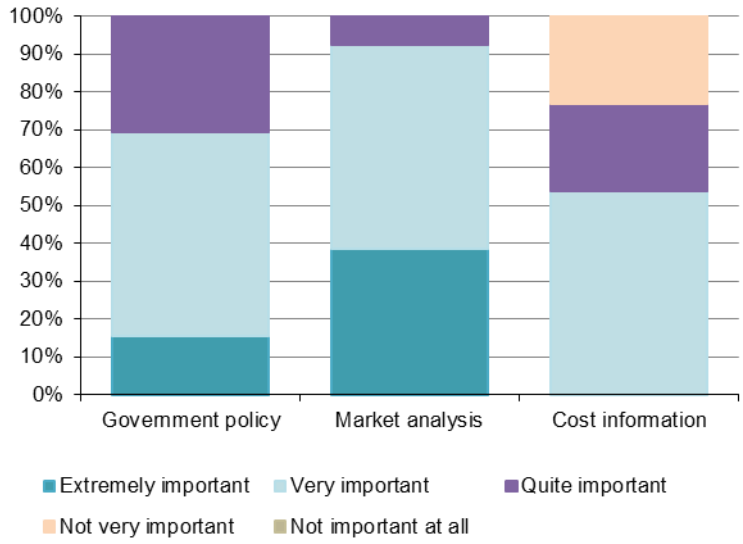
Many participants also commented that collecting PGT data in TRAC(T) would contradict the recent streamlining of TRAC(T) with the removal of the optional sections.

4.7.4 How important is costing compared to other factors in considering the funding for PGT?

Finally, our survey asked respondents to rate the importance they applied to three factors that might influence the funding of PGT in the future. The factors were: government policy; market analysis – i.e. the demand for PGT; and the cost of PGT. The results are displayed in Chart 7 below.

Chart 7 – PGT funding – the relative importance of factors

All factors are seen as being important, with market analysis being slightly the most important factor.



Source: Responses to KPMG survey

The results indicate that all three factors are seen as being important in informing PGT funding in the future. The market-driven demand for PGT is seen by most respondents as being the most important factor with over 90% of respondents rating it 'Extremely Important' or 'Very Important'. Government policy was seen as the next most significant factor, with 69% rating it 'Extremely Important' or 'Very Important'. The cost of PGT was seen as the least important, but 54% responded that it was 'Very Important' and a further 23% responded that it was 'Quite Important'.

5 Glossary

Cost driver – a factor which is used to apportion those costs which cannot be directly allocated to a department or activity category.

Direct costs – direct costs are those which would not be incurred if a particular course or courses did not take place, they include consumables and items of equipment as well as direct administrative costs relating to particular courses and departments.

Estates costs – the costs of the institution's space e.g. lecture theatres, laboratories, meeting rooms, offices and corridors.

HEI – Higher education institution, a university or college providing higher education

HE – Higher education

HEFCE – the Higher Education Funding Council for England, responsible for funding, monitoring and regulating higher education in England

HEFCE-fundable – activities that may be counted within funding calculations by the Higher Education Funding Council for England.

HEFCE price groups – HESA academic cost centres with similar teaching costs are grouped together in four (five from 2013/14) price groups from A, reflecting the highest cost courses, to D, being the lowest cost courses to deliver.

HESA – the Higher Education Statistics Agency, is the central source for collecting and disseminating statistics about UK higher education.

HESA academic cost centre – cost centres are sector-standard groups of activity, to provide more granular information on the costs, activity and staffing of an institution.

Support costs – the central costs of an institution which are not related directly to any academic course or department, but which support the institution as a whole, for example, libraries, IT, finance and student registry.

PG-only institution – an institution delivering only postgraduate courses or research

PG – postgraduate

PGT – postgraduate teaching

PGT:UG ratio – the measure of how the cost of postgraduate teaching compares to the cost of undergraduate provision – a ratio of 1:1 indicates the cost of both activities is the same.

Post-1992 HEI – institutions, formerly polytechnics, colleges of higher education or central institutions, granted university status through the Further and Higher Education Act 1992.

Pre-1992 HEI – institutions granted university status before the Further and Higher Education Act 1992 came into force.

Russell Group – an association of UK public research universities

Staff costs – the costs of staff involved in direct teaching activity, including salary and on-costs

Student FTE – a full-time equivalent student, based on a student studying full-time for a full year

Subject-related costs – these are the costs, calculated through the TRAC(T) methodology, which relate to the cost of teaching a HEFCE-fundable student, after removing the costs of teaching students from non-HEFCE sources and the costs that are not subject-related. These costs are divided by the HEFCE-fundable student FTEs to calculate the Subject-FACTS.

Subject-FACTS – the subject-related Full Average Cost of Teaching a [HEFCE-fundable FTE] Student – this measure of the cost of teaching is calculated through the TRAC(T) methodology.

Time Allocation Survey (TAS) – a survey completed by staff at an institution to determine the proportion of their time spent on various teaching, research and other activities, used to allocate staff costs to activities

TRAC – the Transparent Approach to Costing is the standard method for costing in higher education in England.

TRAC(T) – the Transparent Approach to Costing Teaching is the standard method for costing teaching activity in higher education in England. The methodology starts with the costs of publicly-funded teaching calculated in TRAC and uses cost drivers to remove the costs of teaching students funded from non-HEFCE sources and the costs that are not related to teaching subjects. The remaining costs are then allocated across the HESA academic cost centres to determine a university's Subject-FACTS.

TRAC peer groups – are the seven groups of HEIs displaying similar sizes, activities and missions.

UG – undergraduate

Workload Planning Model (WLM) – a method, like the Time Allocation Survey, of establishing the staff time spent on teaching, research and other activities. The WLM plans staff time for the academic year and is based on the full year rather than the TAS 'snapshot' survey.

Appendix 1 Participant HEIs

The following HEIs were involved in the study, either just through initial acceptance and involvement in developing and agreeing the methodology, or through full participation with provision of cost data. The five PG-only institutions, the TRAC(T) data from whom are included in the study, are identified by (*).

Cranfield University *
Goldsmiths College
Imperial College London
Institute of Cancer Research *
Leeds Metropolitan University
London School of Hygiene & Tropical Medicine *
Manchester Metropolitan University
Newcastle University
Oxford Brookes University
Royal College of Art *
Royal Veterinary College
University of Bath
University of Birmingham
University of Central Lancashire
University of Derby
University of Durham
University of Essex
University of Exeter
University of Kent
University of Leeds
University of Leicester
University of Liverpool
University of London *
University of Manchester
University of Salford
University of Sheffield
University of Sunderland
University of Warwick
University of the West of England

Appendix 2 Coverage of HESA academic cost centres by student FTEs

HESA Cost Centre	HEFCE-fundable PGT FTEs in the study	Total HEFCE-fundable PGT FTEs	Coverage
101 Clinical medicine	1,195.7	2,449.9	49%
102 Clinical dentistry	82.5	404.3	20%
103 Nursing and allied health professions	322.3	2,368.3	14%
104 Psychology and behavioural sciences	482.6	4,060.1	12%
105 Health and community studies	312.9	2,457.6	13%
106 Anatomy and physiology	94.5	297.4	32%
107 Pharmacy and pharmacology	72.3	577.2	13%
108 Sports science and leisure studies	126.3	888.7	14%
109 Veterinary science	142.2	148.0	96%
110 Agriculture, forestry and food science	97.4	338.9	29%
111 Earth, marine and environmental sciences	266.8	1,020.2	26%
112 Biosciences	721.4	2,216.0	33%
113 Chemistry	66.9	257.9	26%
114 Physics	142.4	294.2	48%
115 General engineering	358.5	916.2	39%
116 Chemical engineering	164.8	262.4	63%
117 Mineral, metallurgy and materials engineering	168.3	212.0	79%
118 Civil engineering	367.5	844.7	44%
119 Electrical, electronic and computer engineering	254.5	719.0	35%
120 Mechanical, aero and production engineering	688.4	1,501.1	46%
121 IT, systems sciences and computer software engineering	327.4	2,054.9	16%
122 Mathematics	244.8	763.5	32%
123 Architecture, built environment and planning	615.8	3,911.8	16%
124 Geography and environmental studies	192.7	912.3	21%
125 Area studies	21.6	208.7	10%
126 Archaeology	213.6	396.9	54%
127 Anthropology and development studies	150.1	747.8	20%
128 Politics and international studies	581.9	2,665.2	22%
129 Economics and econometrics	276.0	1,120.9	25%
130 Law	731.1	4,504.4	16%
131 Social work and social policy	611.4	3,909.3	16%
132 Sociology	219.0	1,160.3	19%
133 Business and management studies	2,683.2	11,572.9	23%
134 Catering and hospitality management	44.5	295.8	15%
135 Education	939.0	6,504.6	14%
136 Continuing education	147.1	253.3	58%
137 Modern languages	281.8	1,178.6	24%
138 English language and literature	526.1	2,248.0	23%
139 History	390.1	1,712.1	23%
140 Classics	53.0	246.5	21%
141 Philosophy	82.2	412.8	20%
142 Theology and religious studies	77.4	427.1	18%
143 Art and design	1,100.5	3,755.9	29%
144 Music, dance, drama and performing arts	239.6	2,238.9	11%
145 Media studies	262.0	2,228.3	12%
Total	**17,140.1**	**77,664.7**	**22%**

Appendix 3 Cost per student FTE at the HESA academic cost centre level [8]

HESA Cost centre	HEIs in the study	Total PGT cost (£)	PGT Student FTEs	Cost per PGT student FTE (£)	Total UG cost (£)	UG Student FTEs	Cost per UG student FTE (£)	Ratio of PGT to UG cost per student FTE
101 Clinical medicine	10	25,279,770	1,195.67	21,143	138,639,394	11,026.78	12,573	1.68:1
102 Clinical dentistry	5	1,351,454	82.53	16,376	25,464,878	1,823.43	13,965	1.17:1
103 Nursing & allied health professions	6	2,070,311	322.30	6,423	4,114,271	635.01	6,479	0.99:1
104 Psychology & behavioural sciences	14	4,718,692	482.63	9,777	41,919,388	6,193.20	6,769	1.44:1
105 Health & community studies	9	4,546,741	312.87	14,532	7,253,275	968.95	7,486	1.94:1
106 Anatomy & physiology	3							
107 Pharmacy & pharmacology	3							
108 Sports science & leisure studies	4							
109 Veterinary science	2							
110 Agriculture, forestry & food science	3							
111 Earth, marine & environmental sciences	7	3,937,787	266.82	14,758	22,882,614	2,060.69	11,104	1.33:1
112 Biosciences	15	8,262,392	721.44	11,453	96,569,080	11,618.80	8,311	1.38:1
113 Chemistry	9	928,175	66.90	13,874	33,920,313	3,234.66	10,487	1.32:1
114 Physics	7	1,614,747	142.38	11,341	33,858,436	3,446.72	9,823	1.15:1
115 General engineering	5	4,140,459	358.51	11,549	18,189,038	1,811.58	10,040	1.15:1
116 Chemical engineering	8	1,748,162	164.83	10,606	14,188,558	1,534.00	9,249	1.15:1
117 Mineral, metallurgy & materials engineering	7	2,122,929	168.27	12,616	14,739,137	1,330.49	11,078	1.14:1
118 Civil engineering	9	4,045,878	367.50	11,009	19,546,657	2,208.28	8,852	1.24:1
119 Electrical, electronic & computer engineering	11	2,862,218	254.50	11,246	24,530,995	2,487.76	9,861	1.14:1
120 Mechanical, aero & production engineering	10	6,969,767	688.42	10,124	37,003,962	4,158.41	8,899	1.14:1
121 IT, systems sciences & computer software engineering	14	4,442,508	327.42	13,568	31,459,347	4,319.86	7,282	1.86:1
122 Mathematics	14	2,641,293	244.80	10,790	46,782,087	7,603.51	6,153	1.75:1
123 Architecture, built environment & planning	7	5,991,823	615.79	9,730	26,335,897	3,895.82	6,760	1.44:1
124 Geography & environmental studies	9	1,979,360	192.71	10,271	30,902,490	4,408.45	7,010	1.47:1
125 Area studies	4							
126 Archaeology	8	2,081,713	213.55	9,748	8,081,104	1,123.69	7,192	1.36:1
127 Anthropology & development studies	4							
128 Politics & international studies	15	4,801,868	581.92	8,252	32,423,691	5,473.19	5,924	1.39:1
129 Economics & econometrics	11	3,312,768	276.02	12,002	33,677,901	5,390.66	6,247	1.92:1

[8] The values for the cost centres with fewer than five participating HEIs have not been included in the table to preserve data confidentiality. The totals do however include these values

130 Law	15	6,755,873	731.07	9,241	45,503,675	8,215.22	5,539	1.67:1
131 Social work & social policy	8	4,925,721	611.37	8,057	9,533,828	1,406.99	6,776	1.19:1
132 Sociology	10	2,342,623	218.97	10,698	18,483,902	3,312.10	5,581	1.92:1
133 Business & management studies	17	31,724,532	2,683.24	11,823	87,079,929	13,972.24	6,232	1.90:1
134 Catering & hospitality management	2							
135 Education	11	9,371,654	938.98	9,981	23,873,317	3,300.38	7,234	1.38:1
136 Continuing education	4							
137 Modern languages	14	2,953,797	281.76	10,483	63,195,757	9,000.29	7,022	1.49:1
138 English language & literature	14	5,013,349	526.09	9,529	43,701,489	7,282.04	6,001	1.59:1
139 History	15	3,255,862	390.11	8,346	39,357,529	6,710.36	5,865	1.42:1
140 Classics	8	507,482	53.00	9,576	8,406,618	1,276.89	6,584	1.45:1
141 Philosophy	7	975,758	82.23	11,866	11,518,397	1,740.27	6,619	1.79:1
142 Theology & religious studies	7	612,482	77.35	7,918	6,491,389	969.36	6,697	1.18:1
143 Art & design	9	10,014,275	1,100.54	9,099	18,065,285	2,594.77	6,962	1.31:1
144 Music, dance, drama & performing arts	11	2,624,417	239.63	10,952	28,089,331	3,732.95	7,525	1.46:1
145 Media studies	8	2,154,906	262.02	8,224	13,615,291	1,929.66	7,056	1.17:1
Total		**193,948,590**	**17,140.14**	**11,315**	**1,245,522,802**	**161,873.12**	**7,694**	**1.47:1**

Appendix 4 PGT cost per student FTE and HEFCE Subject-FACTS benchmarks 2012/13

HESA cost centre	PGT cost per student FTE	2012/13 Subject-FACTS benchmark	Ratio of PGT cost per student FTE to 2012/13 Subject-FACTS
101 Clinical medicine	21,143	14,528	1.46:1
102 Clinical dentistry	16,376	15,877	1.03:1
103 Nursing and allied health professions	6,423	7,323	0.88:1
104 Psychology and behavioural sciences	9,777	6,813	1.44:1
105 Health and community studies	14,532	6,371	2.28:1
106 Anatomy and physiology	11,703	8,906	1.31:1
107 Pharmacy and pharmacology	11,044	8,318	1.33:1
108 Sports science and leisure studies	13,324	6,678	2:1
109 Veterinary science	20,478	18,671	1.1:1
110 Agriculture, forestry and food science	9,767	8,526	1.15:1
111 Earth, marine and environmental sciences	14,758	9,196	1.6:1
112 Biosciences	11,453	8,517	1.34:1
113 Chemistry	13,874	9,298	1.49:1
114 Physics	11,341	9,851	1.15:1
115 General engineering	11,549	9,370	1.23:1
116 Chemical engineering	10,606	8,696	1.22:1
117 Mineral, metallurgy and materials engineering	12,616	10,530	1.2:1
118 Civil engineering	11,009	8,762	1.26:1
119 Electrical, electronic and computer engineering	11,246	8,997	1.25:1
120 Mechanical, aero and production engineering	10,124	9,037	1.12:1
121 Information technology, systems sciences and computer software engineering	13,568	7,786	1.74:1
122 Mathematics	10,790	6,667	1.62:1
123 Architecture, built environment and planning	9,730	7,711	1.26:1
124 Geography and environmental studies	10,271	7,411	1.39:1
125 Area studies	10,501	7,197	1.46:1
126 Archaeology	9,748	7,826	1.25:1
127 Anthropology and development studies	7,964	6,903	1.15:1
128 Politics and international studies	8,252	6,167	1.34:1
129 Economics and econometrics	12,002	6,191	1.94:1
130 Law	9,241	6,402	1.44:1
131 Social work and social policy	8,057	6,941	1.16:1
132 Sociology	10,698	5,976	1.79:1
133 Business and management studies	11,823	6,672	1.77:1
134 Catering and hospitality management	12,694	6,568	1.93:1
135 Education	9,981	6,772	1.47:1
136 Continuing education	9,703	7,000	1.39:1
137 Modern languages	10,483	7,347	1.43:1
138 English language and literature	9,529	6,457	1.48:1
139 History	8,346	6,203	1.35:1
140 Classics	9,576	6,912	1.39:1
141 Philosophy	11,866	6,690	1.77:1
142 Theology and religious studies	7,918	7,106	1.11:1
143 Art and design	9,099	8,267	1.1:1
144 Music, drama, dance and performing arts	10,952	8,468	1.29:1
145 Media studies	8,224	7,490	1.1:1
Total	**11,315**	**7,692**	**1.47:1**

Appendix 5 Comparison of sector Subject-FACTS to study sample Subject-FACTS

HESA cost centre	2012/13 sector Subject-FACTS	Study sample Subject-FACTS	% variance
101 Clinical medicine	14,528	13,411	*-7.7%*
102 Clinical dentistry	15,877	14,070	*-11.4%*
103 Nursing and allied health professions	7,323	6,460	*-11.8%*
104 Psychology and behavioural sciences	6,813	6,986	*2.5%*
105 Health and community studies	6,371	9,206	*44.5%*
106 Anatomy and physiology	8,906	9,915	*11.3%*
107 Pharmacy and pharmacology	8,318	9,606	*15.5%*
108 Sports science and leisure studies	6,678	5,682	*-14.9%*
109 Veterinary science	18,671	19,241	*3.1%*
110 Agriculture, forestry and food science	8,526	9,983	*17.1%*
111 Earth, marine and environmental sciences	9,196	11,523	*25.3%*
112 Biosciences	8,517	8,495	*-0.3%*
113 Chemistry	9,298	10,555	*13.5%*
114 Physics	9,851	9,884	*0.3%*
115 General engineering	9,370	10,290	*9.8%*
116 Chemical engineering	8,696	9,381	*7.9%*
117 Mineral, metallurgy and materials engineering	10,530	11,251	*6.8%*
118 Civil engineering	8,762	9,159	*4.5%*
119 Electrical, electronic and computer engineering	8,997	9,989	*11.0%*
120 Mechanical, aero and production engineering	9,037	9,073	*0.4%*
121 Information technology, systems sciences and computer software engineering	7,786	7,725	*-0.8%*
122 Mathematics	6,667	6,297	*-5.5%*
123 Architecture, built environment and planning	7,711	7,165	*-7.1%*
124 Geography and environmental studies	7,411	7,146	*-3.6%*
125 Area studies	7,197	8,560	*18.9%*
126 Archaeology	7,826	7,600	*-2.9%*
127 Anthropology and development studies	6,903	6,969	*1.0%*
128 Politics and international studies	6,167	6,148	*-0.3%*
129 Economics and econometrics	6,191	6,528	*5.4%*
130 Law	6,402	5,841	*-8.7%*
131 Social work and social policy	6,941	7,164	*3.2%*
132 Sociology	5,976	5,898	*-1.3%*
133 Business and management studies	6,672	7,133	*6.9%*
134 Catering and hospitality management	6,568	4,092	*-37.7%*
135 Education	6,772	7,842	*15.8%*
136 Continuing education	7,000	9,423	*34.6%*
137 Modern languages	7,347	7,127	*-3.0%*
138 English language and literature	6,457	6,239	*-3.4%*
139 History	6,203	6,001	*-3.2%*
140 Classics	6,912	6,703	*-3.0%*
141 Philosophy	6,690	6,856	*2.5%*
142 Theology and religious studies	7,106	6,787	*-4.5%*
143 Art and design	8,267	7,599	*-8.1%*
144 Music, drama, dance and performing arts	8,468	7,731	*-8.7%*
145 Media studies	7,490	7,195	*-3.9%*
Total	**7,692**	**8,041**	***4.5%***

Appendix 6 HESA academic cost centres mapped onto HEFCE price groups

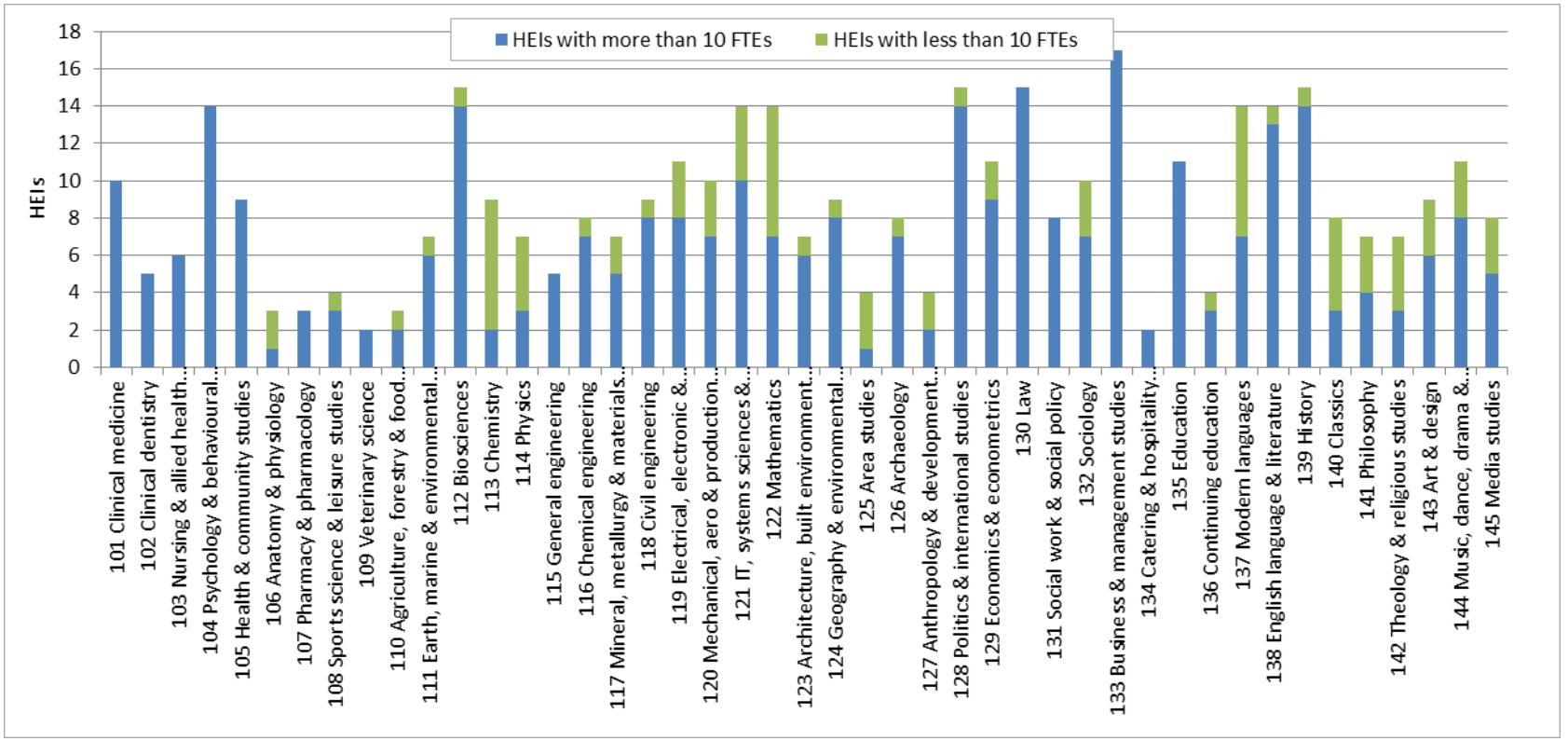
Cost centre	Description	Price group(s) for 2013/14
101	Clinical medicine	A, B
102	Clinical dentistry	A, B
103	Nursing and allied health professions	C2
104	Psychology and behavioural sciences	C2
105	Health and community studies	C2
106	Anatomy and physiology	B
107	Pharmacy and pharmacology	B
108	Sports science and leisure studies	C2
109	Veterinary science	A, B
110	Agriculture, forestry and food science	B
111	Earth, marine and environmental sciences	B
112	Biosciences	B
113	Chemistry	B
114	Physics	B
115	General engineering	B
116	Chemical engineering	B
117	Mineral, metallurgy and materials engineering	B
118	Civil engineering	B
119	Electrical, electronic and computer engineering	B
120	Mechanical, aero and production engineering	B
121	Information technology, systems sciences and computer software engineering	C1
122	Mathematics	C2
123	Architecture, built environment and planning	C2
124	Geography and environmental studies	C2
125	Area studies	D
126	Archaeology	C1
127	Anthropology and development studies	D
128	Politics and international studies	D
129	Economics and econometrics	D
130	Law	D
131	Social work and social policy	C2, D
132	Sociology	D
133	Business and management studies	D
134	Catering and hospitality management	C2
135	Education	C2, D
136	Continuing education	D
137	Modern languages	C2
138	English language and literature	D
139	History	D
140	Classics	D
141	Philosophy	D
142	Theology and religious studies	D
143	Art and design	C1
144	Music, dance, drama and performing arts	C1
145	Media studies	C1

Appendix 7 Average cost of price group A cost centres

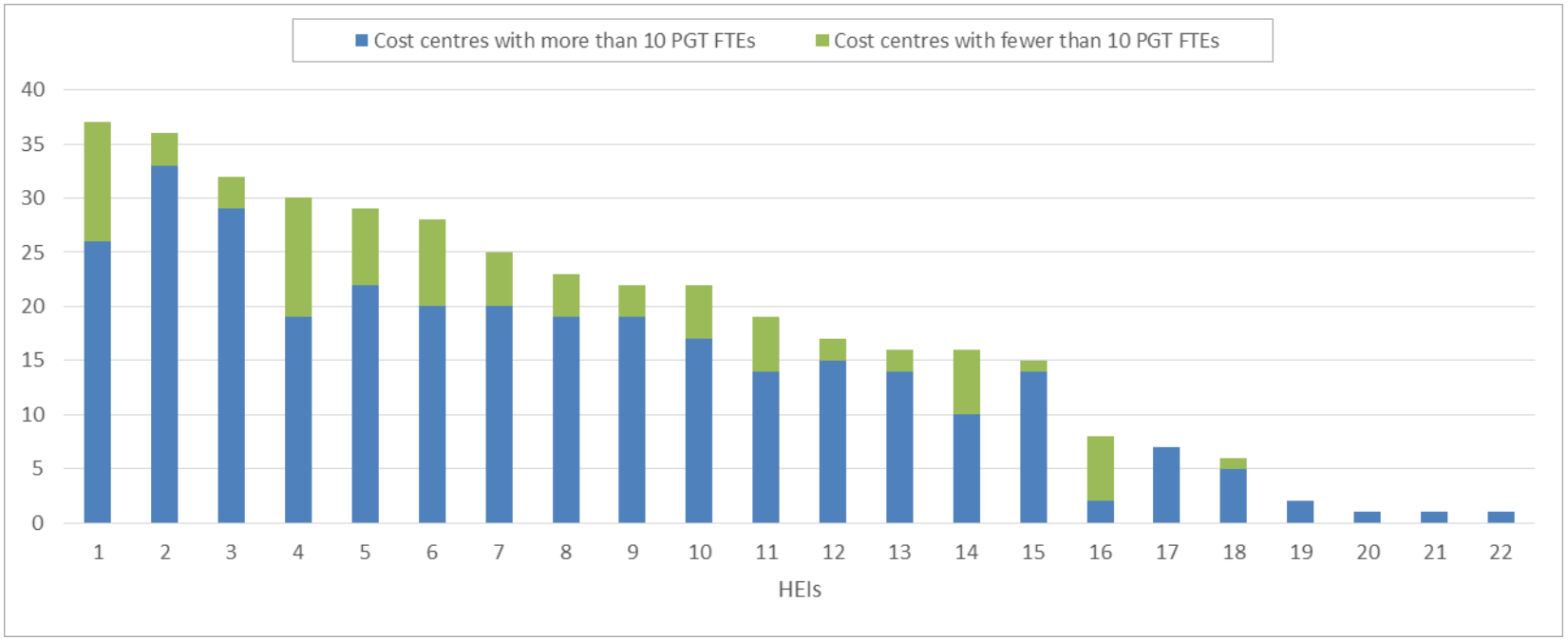
PGT calculations			
Total number of PGT students (FTEs) in cost centres 101, 102 & 109	a		1,420.42
Proportion of students in Cost Centres 101, 102 and 109 who are in price group A	b		68%
Student numbers (FTEs) in Cost Centres 101, 102 and 109 who are in price group A	c	a * b	965.89
Student numbers (FTEs) in Cost Centres 101, 102 and 109 who are in price group B	d	a - c	454.53
PGT cost per student FTE for rest of price group B (from table 4)	e		£11,400
Estimated total cost of Cost Centres 101, 102 and 109 for price group B	f	d * e	£5,181,642
Total costs in Cost Centres 101, 102 and 109	g		£29,543,679
Estimated cost of Cost Centres 101, 102 and 109 for price group A	h	g - f	£24,362,037
Estimated cost per student FTE for price group A	i	h / c	£25,222

UG calculations			
Total number of PGT students (FTEs) in cost centres 101, 102 & 109	a		14,664.54
Proportion of students in Cost Centres 101, 102 and 109 who are in price group A	b		68%
Student numbers (FTEs) in Cost Centres 101, 102 and 109 who are in price group A	c	a * b	9,971.89
Student numbers (FTEs) in Cost Centres 101, 102 and 109 who are in price group B	d	a - c	4,692.65
PGT cost per student FTE for rest of price group B (from table 4)	e		£9,324
Estimated total cost of Cost Centres 101, 102 and 109 for price group B	f	d * e	£43,754,269
Total costs in Cost Centres 101, 102 and 109	g		£198,838,188
Estimated cost of Cost Centres 101, 102 and 109 for price group A	h	g - f	£155,083,919
Estimated cost per student FTE for price group A	i	h / c	£15,552

Appendix 8 Analysis of the size of PGT cost centres at participating HEIs



Appendix 9 Analysis of the size of the PGT cost centres within participating HEIs



Appendix 10 Overseas PGT student FTEs in the participating HEIs

Cost centre	HEFCE-fundable PGT FTEs	Overseas PGT FTEs
101 Clinical medicine	1,195.67	428.7
102 Clinical dentistry	82.53	74.9
103 Nursing & allied health professions	322.30	116.6
104 Psychology & behavioural sciences	482.63	142.7
105 Health & community studies	312.87	243.5
106 Anatomy & physiology	94.47	49.6
107 Pharmacy & pharmacology	72.27	7.2
108 Sports science & leisure studies	126.27	31.0
109 Veterinary science	142.22	24.1
110 Agriculture, forestry & food science	97.42	108.0
111 Earth, marine & environmental sciences	266.82	231.8
112 Biosciences	721.44	409.6
113 Chemistry	66.90	105.0
114 Physics	142.38	54.9
115 General engineering	358.51	904.6
116 Chemical engineering	164.83	378.7
117 Mineral, metallurgy & materials engineering	168.27	326.4
118 Civil engineering	367.50	875.9
119 Electrical, electronic & computer engineering	254.50	1,007.9
120 Mechanical, aero & production engineering	688.42	906.7
121 IT, systems sciences & computer software engineering	327.42	660.8
122 Mathematics	244.80	333.7
123 Architecture, built environment & planning	615.79	520.8
124 Geography & environmental studies	192.71	80.0
125 Area studies	21.63	20.1
126 Archaeology	213.55	128.7
127 Anthropology & development studies	150.10	390.8
128 Politics & international studies	581.92	403.1
129 Economics & econometrics	276.02	1,600.0
130 Law	731.07	652.6
131 Social work & social policy	611.37	89.2
132 Sociology	218.97	103.3
133 Business & management studies	2,683.24	8,584.4
134 Catering & hospitality management	44.53	94.8
135 Education	938.98	777.4
136 Continuing education	147.07	30.5
137 Modern languages	281.76	387.1
138 English language & literature	526.09	591.1
139 History	390.11	69.1
140 Classics	53.00	12.3
141 Philosophy	82.23	28.8
142 Theology & religious studies	77.35	19.6
143 Art & design	1,100.54	430.4
144 Music, dance, drama & performing arts	239.63	171.0
145 Media studies	262.02	831.1
Total	**17,140.14**	**23,438.3**

Appendix 11 Illustrative validation questions

1. What validation work have you done on your data prior to submission?

2. Have the TRAC steering group been involved in reviewing or signing off your data submission?

3. Based on your analysis, what are the factors that are impacting on the cost centres with the high or low PGT costs, both in absolute terms and relative to the cost of UG? In particular what is the impact of long courses, distance learning and demand?

4. What methods of allocation/cost drivers have you used to allocate your costs between PGT and UG provision? Have you used TAS/WLM or another method of allocating staff time/costs?

5. Have you weighted your student numbers to allocate the costs? If so, what is the source of information that has informed that weighting?

6. Have you reconciled the data submission to your TRAC(T) submission? And what are the factors that explain any differences?

7. Have you used the HESA student numbers in your data submission or a separate analysis of student numbers?

8. What use is being made of the PGT cost data internally at the university? Is there a workstream to understand PGT costs at the university and if so, at what level is the 'cost' being considered?

9. How straightforward or time-consuming was the exercise to collect, allocate and submit the PGT data?

10. How feasible is it for HEFCE to use TRAC(T) to collect PGT cost data to inform its future funding regime?

11. What has this exercise taught you about your cost allocation processes and TRAC and TRAC(T) cost drivers? And will you be updating your drivers next year as a result?