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The real cost of teaching medical students in general practice: a national study

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Abstract

Background
Current funding arrangements for undergraduate medical student placements in general practice are widely regarded as outdated, inequitable and in need of urgent review.

Aim
To undertake a detailed costing exercise to inform the setting of a national English tariff for undergraduate medical student placements in general practice.

Design and setting
Cost collection survey in 49 teaching practices across all regions of England

Method
Following development of a cost collection tool and an initial pilot study, a cost collection template was circulated to 50 selected teaching practices across all 25 medical schools in England. Detailed guidance on completion was provided for practices. Data was analysed by the Department of Health and Social Care.

Results
The average cost per half-day student placement in general practice was £111($146) with small differences between students in different years of study. Based on 10 sessions per student per week this equates to around £1,100 ($1,460) per student placement week.

Conclusion
The costs of undergraduate placements in general practice are considerably greater than currently available funding, and broadly comparable to current (2018) secondary care funding. The actual cost of placing a medical student full time in

general practice for a 37-week academic year is £40,700 ($53,640) compared to the average current payment rate of only £22,000 ($28,990) per year.

Key words
Cost; general practice; undergraduate education, primary care, workforce

How this fits in
A standard national tariff for the funding of medical student placements in secondary care was introduced in England in April 2013, based on detailed costing data from teaching hospitals. In spite of original intentions there is currently no national tariff for undergraduate student placements in primary care, nor any data on the real costs of teaching in general practice. Payments to teaching practices are locally agreed, vary widely and are consistently lower than those made to secondary care placement providers. This study, for the first time, provides evidence as to the real cost of teaching undergraduate medical students in general practice with the aim of informing a realistic and fair primary care education tariff.

Introduction

The funding of medical student placements in general practice in England is currently agreed locally between Health Education England (HEE) and individual medical schools. HEE is the body with responsibility for managing undergraduate (preregistration) education and postgraduate (post registration) training for all health professionals in England. Undergraduate medical education funding is based on an historical NHS payment system originally known as SIFT (Service Increment for Teaching)[1]. This system is widely regarded as outdated, inequitable and in need of urgent review [2,3].

SIFT was first introduced in 1976 in order to: *'cover the additional service costs incurred by the NHS in providing facilities for the clinical teaching of medical students'* [1]. Initially, SIFT was paid only to teaching hospitals and was not available to the small number of GPs who then taught medical students. The Winyard Report published in 1995 made SIFT available to general practices for the first time, initially at £12.50 ($16.50) per half-day session [4,5]. No further national guidance on funding of GP teaching has been issued since Winyard. The 2012 consultation paper,

"Liberating the NHS: Developing the Healthcare Workforce", set out the Government's commitment to a new system based on "tariffs" for education and training as the foundation of "a transparent funding regime that provides genuine incentives within the health sector" [6].

In 2013, following an impact assessment[7] and a detailed cost collection in secondary care, HEE introduced the new tariff-based system for education and training. SIFT was replaced by a national tariff paid to teaching hospitals in proportion to the number of students taught each year. The undergraduate tariff was initially set at £34.6K ($45.6K) per full-time student per year, adjusted for each hospital by the NHS Market Forces Factor (MFF). The MFF being an estimate of unavoidable cost differences between health care providers based on their location which can increase the total tariff by as much as 25% [8].

The 2013 HEE costing exercise did not include teaching in general practice, and the tariff system subsequently introduced does not apply to primary care. Student placements in general practice in England therefore continue to be funded based on historical SIFT and variable local arrangements, at a rate on average of two thirds of the new secondary care tariff [8]. Recognising the need to address this disparity, a reference group was set up in 2013 by the Department of Health and Social Care (DHSC) to take forward the development of primary care tariffs. The Primary Care Education Working Group (PCEWG) included representatives from HEE, the Society of Academic Primary Care (SAPC), Royal College of General Practitioners (RCGP), Medical Schools Council (MSC), British Medical Association (BMA) and Committee of General Practice Education Directors (COGPED).

There has been one previous attempt to estimate the cost of teaching in general practice which was based on an audit of overall placement spend by 15 medical schools,but did not examine actual costs at individual practice level [9]. The aim of the present study, commissioned by the PCEWG, was to develop a practice level costing methodology and to undertake a national costing exercise in order to establish the real cost of teaching undergraduate medical students in general practice. It is intended that the results should inform the development of a new tariff for undergraduate primary care education in England.

Method

Data collection and sampling

Following consultation with a range of stakeholders and extensive discussion at the PCEWG, a detailed cost collection tool was developed in Microsoft Excel by DHSC statisticians. Questions focused on the following components of practice borne costs:

- Tutorials: the cost of teaching when no patient care is being provided
- Observation: the productivity loss caused by teaching while patient care is being provided calculated from the difference in the number of consultations offered while teaching and not teaching students.
- Administration: the costs of managing teaching in the practice
- Other: overheads and staff training

Practices also provided data on practice list size, staff complement, teaching experience and the respondents' confidence in their data. Costs were itemised on a per half day session basis and number of students taught. To understand whether any variation in costs between practices may relate to the amount of teaching we compared costs by the number of sessions delivered.

The tool was piloted in three teaching practices and revised in the light of feedback. Based on the pilot exercise it was estimated that one clinician and one manager would need a full day of protected time to collect the relevant data and complete the submission template. Heads of GP teaching at all 25 English medical schools were asked to identify two local teaching practices that met an agreed set of inclusion criteria described below, and to support their local practices undertaking data collection by paying them £500 on receipt of a completed template. All 25 schools agreed to this arrangement.

Practice Inclusion Criteria

A pragmatic approach was taken to recruiting practices, focussing particularly on those who demonstrated historical engagement and commitment to local undergraduate teaching programmes. The sample size of 50 practices was based on recruitment of two practices by every English medical school. This provided a good geographic spread geography (all English regions), a range of settings

(rural/urban/inner-city) and ensured practices taking part had experience of actively teaching undergraduates within the previous two years.

The template and a detailed guide to completion (included as appendices) were circulated to all medical school GP teaching leads at the beginning of January 2017, with a deadline for completion of the end of February 2017.

Data checking and analysis

The Workforce Information and Analysis team at the Department of Health and Social Care reviewed the cost metrics, total activity and activity distribution to "sense-check" each return. If anomalies were found, they were referred to the practice for further explanation. Results have not been harmonised using the Market Forces Factor (MFF). MFF is an estimate of the unavoidable cost differences between different providers in different parts of the country. For example, providers in London and the South East might have higher costs of Labour and Land when compared to those in the North East of England. The MFF is used to ensure fairness in allocations and tariff.. The analysis was descriptive with the cost per student session as primary unit of analysis to differentiate between single student placements and placements of a group of students simultaneously. We calculated means for each year of study and across all study years, and 95% confidence limits weighted for the number of sessions each practice provided.

All data that was returned has been included in the analysis. Whilst we acknowledge that there are outlier values in the data we have confidence in the overall quality of the data returned – the summary values were broadly in line with our expectations and practices were receptive to feedback from the study team.

Ethics

Research ethics approval was not required as no person specific data were included.

Results

Forty-nine practices, including at least one from each of the 25 medical schools in England, submitted data. Three schools made a single return but two completed

three returns. We thus obtained data from 49 practices against our target of 50, ie 98% of the intended sample size.

Practices

Practice list size ranged from 2,750 to 45,000 (median 10,292). This compares to the 2018 average UK GP practice list size of 8,279 [10]. 39 (80%) practices were 'confident' or 'very confident' about the accuracy of their cost estimates.

Summary statistics

11,061 sessions of placement activity were reported in the data collection representing a total cost to these practices of £2.175m. Years of study three to six accounted for 88% of the teaching reported and 80% of the overall cost of teaching. The number of students per session varied between 1 (all years of study) and 26 (years of study one and two). Groups tended to be larger in the study years one and two, and smaller in years of study three to six (table 1). More sessions were provided in the clinical years with year five having more than double the amount of sessions than other years. The average number of sessions delivered by each practice was also higher in the later years. In year one the average number of sessions delivered was 19 increasing to around 75 for years three and four and over 150 in year five.

Table 1 here

The costing template did not collect data at individual student level however anecdotal evidence suggests that the average number of sessions in a practice will increase through the course of a student's time in medical school. A year one or two placement may involve a short period as part of a relatively large group while a year four or five placement may involve a more intensive period within the practice.

Cost per Session of student teaching

Table 2 shows the total activity and costs submitted split by the year of study. Median costs range from £89 in year of study one to £104 for years of study two and four. The mean cost per student placement was £111 (95% CI £100 to £121) or, for a 10-session week, £1,110.

Table 2 here

The cost per session at practice level ranged from £39.60 and £250.40 with a median of £90.80 (Figure 1). We did not find any evidence that larger practices had lower costs than smaller practices, nor that London practices had higher costs than those in other regions.

Fig 1 here

Variation in cost per year of study

There was variation in cost per student session between practices across all years of study with high and low outliers. For example, in year of study year four the cost ranged from £3 to £330 per student session (figure 2), though we suspect the extreme outlying figures may not be entirely reliable. Most teaching was delivered in years three, four and five (year six is excluded due to small numbers). Figure 2 shows less variation in costs incurred by practices with a trend to lower costs for practices that delivered greater volumes of teaching. For example, in year four the difference between the upper and lower quartiles (middle 50% of the data) is around £55 for practices delivering more than 75 sessions, chosen as being around the mean number of sessions delivered by practices during the clinical years, and £80 for those delivering fewer than 75 sessions. We are however not able to say if this is a real effect of economies of scale.

Fig 2 here

Cost Components

Figure 3 shows how the relative contribution of different cost components varies by year of study. For first and second year placements a higher proportion of costs is for tutorials and administration of placements whereas in later years of study the majority of costs are due to lost productivity for clinicians supervising students.

Fig 3 here

Discussion

Summary

This study has provided the first detailed estimate of the costs of undergraduate education in general practice based on a sample of teaching practices representing all medical schools in England. Data from 11,061 teaching sessions involving a total cost to these 49 practices of £2.18m were identified. A mean cost to practices of £111 (95%CI 100-121) per student session of education provided was derived. There was substantial variation in costs between practices that could not be explained by practice size, location or volume of teaching provided by the practice. There was little variation in cost of provision of placements by students' year of study and no evidence of costs varying by geography.

Strengths and limitations

The strengths of this study are firstly that the methodology was agreed by a broad group of stakeholders representing those who pay for clinical education (DHSC and HEE), medical schools (MSC), academic general practice (SAPC, COGPED, RCGP) and the medical trades union (BMA). The methodology was analogous to that used previously to cost medical undergraduate teaching in secondary care. Data management and analysis was carried out by the Workforce Information and Analysis team at the Department of Health and Social Care who were independent of general practice. Data management included a rigorous data quality review. While not designed to be a completely representative sample of all practices who provide teaching, we obtained data from at least one practice for every medical school in

England and from at least two for 22 of the 25 schools thus obtaining data from 94% of the initial sample. We obtained data from every English region and from a range of practices serving inner city, suburban and rural practices. The data were collected using a carefully designed and piloted template and with detailed guidance for completion and practices' confidence in the accuracy of their cost estimates was higher than that of teaching hospitals for the 2013 secondary care collection (personal communication, Workforce Information and Analysis team).

In terms of limitations, we acknowledge that there will have been differences in interpretation of some costing questions by practices that will have accounted for some of the variation. Also, significant known costs of teaching in general practice that are borne by students and by medical schools were not included. For example, the median distance between an English medical school and a teaching practice is 27km which results in significant travel and accommodation costs not included here[11]. Neither are the substantial costs to medical schools of developing, managing and quality assuring general practice programmes included here[12].

Nonetheless the overall results of this study provide for the first-time strong evidence that the costs of providing undergraduate placements in general practice are considerably in excess of currently available funding and broadly comparable to current funding for placements in secondary care. Based on these results the realistic cost of placing a medical student full time in general practice for one academic year is in the region of £40,700. This is in stark comparison with a current average payment rate for primary care £22,000 per year (HEE figures for 2015-16), and also the fact that the secondary care tariff when introduced in 2013 was set at £34,600 plus a Market Forces Factor of as much as 25% in some areas.

Comparison with existing literature

There has been only one previous attempt to estimate the cost of teaching in general practice[9]. This previous study was based on an audit of overall placement spend by 15 medical schools and did not examine actual costs at individual practice level. Despite using a different costing methodology it produced a similar cost estimate to the present study.

Implications for research and/or practice

The need to increase recruitment of medical graduates to general practice is a matter of national concern and promoting general practice as a positive career choice for graduating students is an NHS priority[2]. The RCGP 2018 report, "*Destination GP"*, highlighted the critical role of GP teachers and high-quality clinical placements in developing the future GP workforce[13]. Alberti et al in 2017 demonstrated a significant association between the quantity of authentic clinical general practice teaching at each medical school and the percentage of its graduates who entered GP training after their foundation programme[14]. Whilst most general practitioners do recognise the importance of medical students gaining experience in primary care, their willingness and ability to offer placements is already being squeezed by increasing service demands, staff shortages and large increases in postgraduate teaching[15]. If the current under-resourcing of undergraduate placements in general practice is allowed to continue, it seems to us inevitable that there will be further attrition in placement capacity, with serious consequences for NHS workforce. Further mixed-methods research is required to explore this important issue and to describe the willingness and capacity of primary care teams to deliver a high-quality educational experience for both the GPs and secondary care doctors of tomorrow.

Funding

Each medical school in England agree to support local costs of up to £500 per practice to two practices to provide backfill time for one clinician and one manager to collect relevant data and complete the costing template.

Ethical Approval

Not required as confirmed using NHS/MRC decision making tool http://www.hra-decisiontools.org.uk/ethics/

Provenance

Freely submitted; externally peer reviewed

Competing interests

The authors are employed by universities which deliver community based medical education and did not receive any funding to conduct this study.

Acknowledgements

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Contributorship

The survey on which this paper is based was commissioned by the DHSC/HEE Primary Care Education Working Group to fulfil its remit and the decision to publish negotiated by JR, JC and RKM who are members of the Working Group. All authors were involved in all phases of the study from design to approval of the final version of the paper. Input short of authorship by members of the Primary Care Education Working Group and the Workforce Information and Analysis Team is acknowledged above.

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Table 1

Study Year	Practices	Sessions	Median Sessions	Mean Session
1	30	582	14	19.4
2	27	794	13	31
3	29	2,304	44	76.3
4	31	2,218	52	73.4
5	31	5,077	130	150.3
6	3	86	26	28.7

Table 1. Average number of sessions split by practice and year.

Table 2

Year of study	Practices (n)	Sessions (n)	Students taught (n)		Cost of student teaching (£)				
			per session (max, median, min)	Total	Total	Cost per session.			
						Min,	Median	Max.	Mean (95% CI)
1	30	582	1 ,4, 26	427	227,359	7	89	311	108(86-130)
2	27	794	1,4,26	256	201,561	7	104	274	114(93-138)
3	29	2,304	1,3,10	227	518,237	37	99	180	97(87-107)
4	31	2,218	1,2,10	342	528,569	3	104	331	113(91-135)
5	31	5,077	1,1,6	193	686,106	30	100	326	121(99-142)
6	3	86	1,1,4	6	12,995	45	98	145	96
Total	151*	11,061		1,451	2,174,827				111(100-121)

*Practices contributed to on average, teaching in 3 years of study

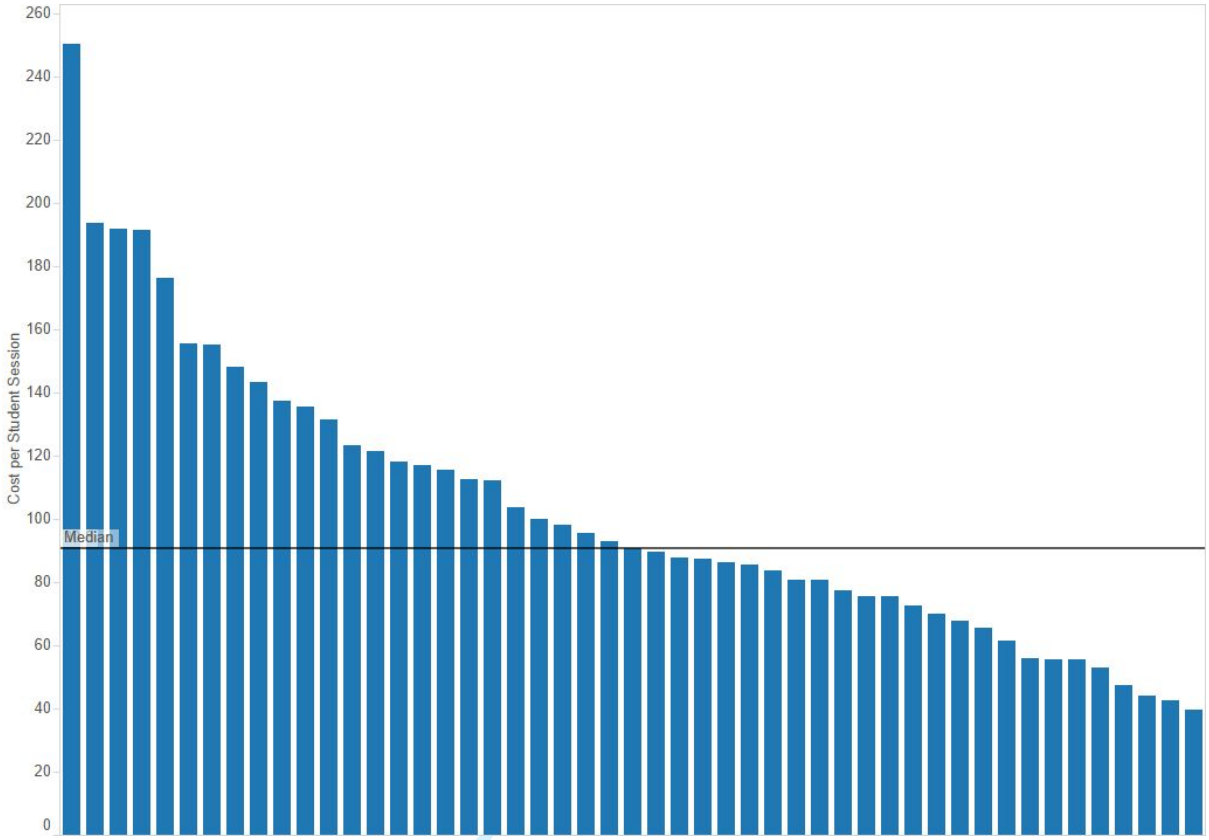

Figure 1 - Aggregate cost (£) per student session per practice

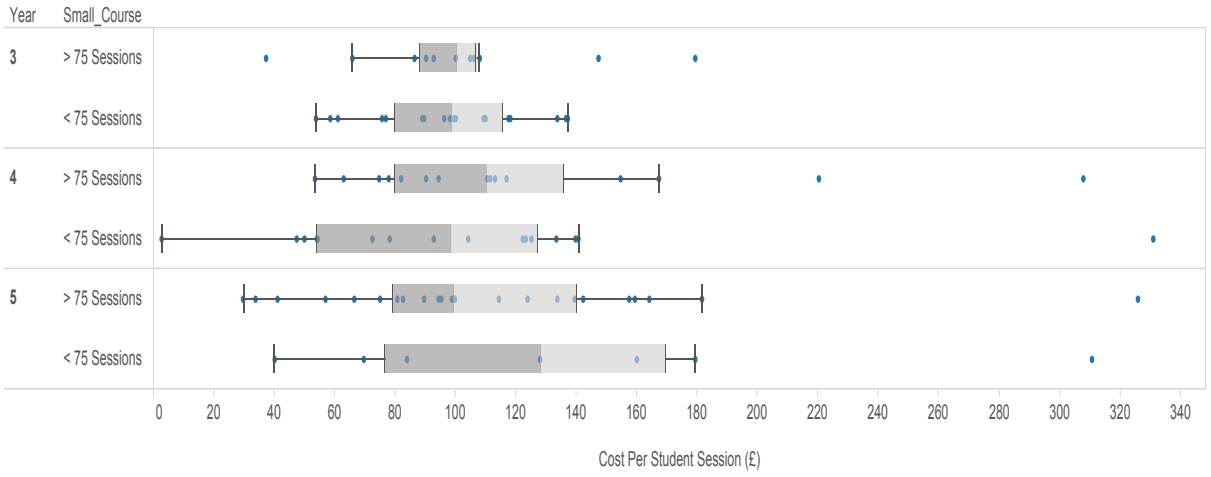

Figure 2 - Cost distribution by amount of teaching

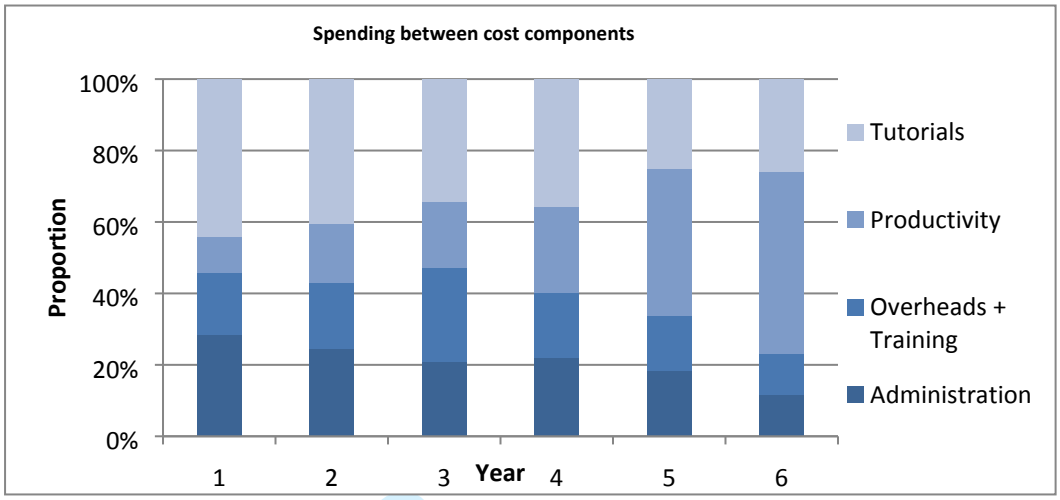

Figure 3 - Distribution between cost components

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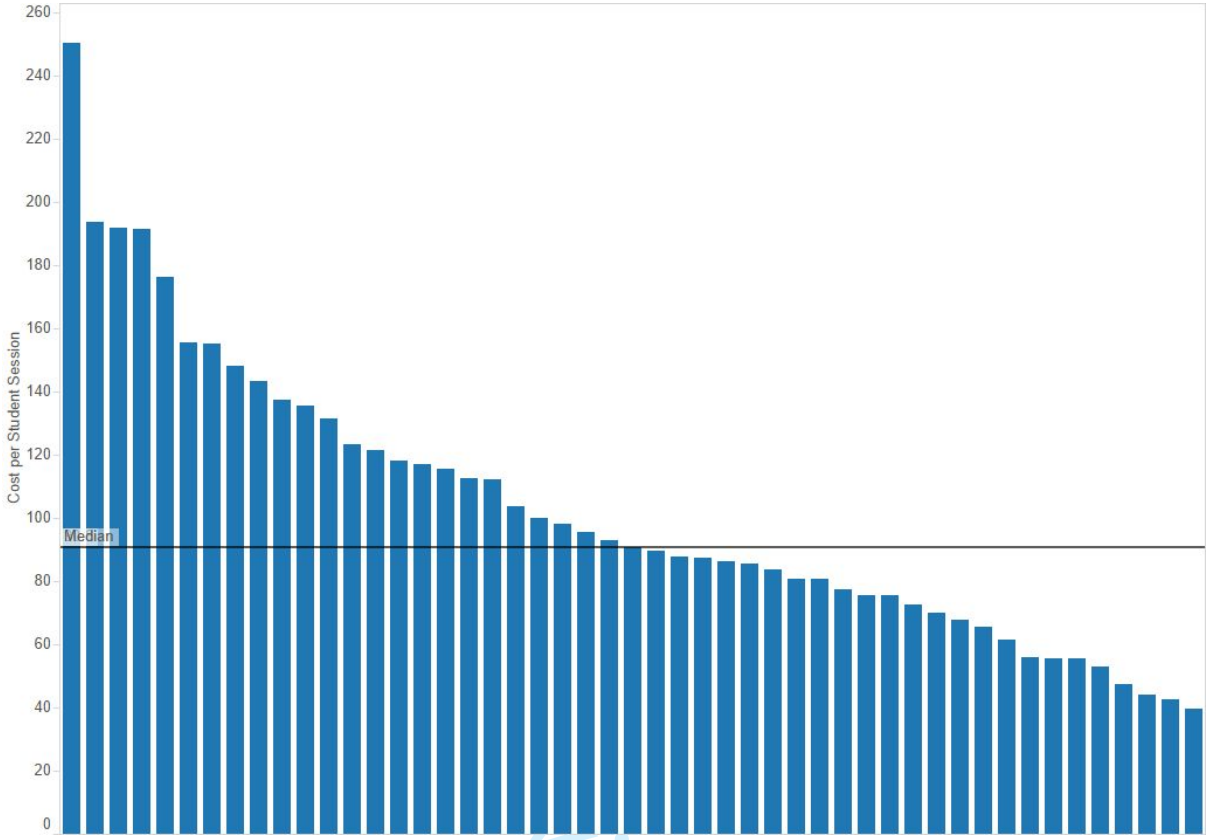
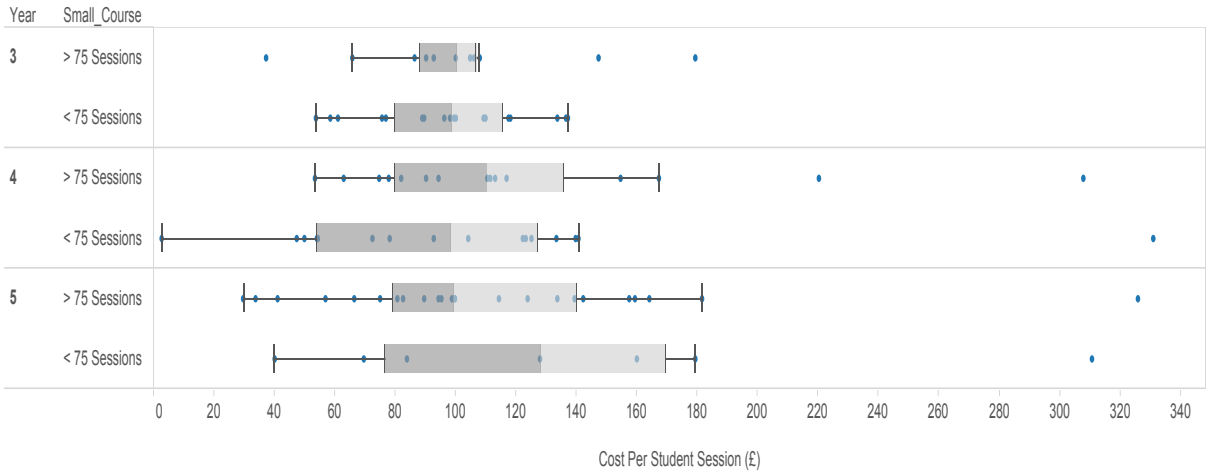


Figure 1 - Aggregate cost (£) per student session per practice



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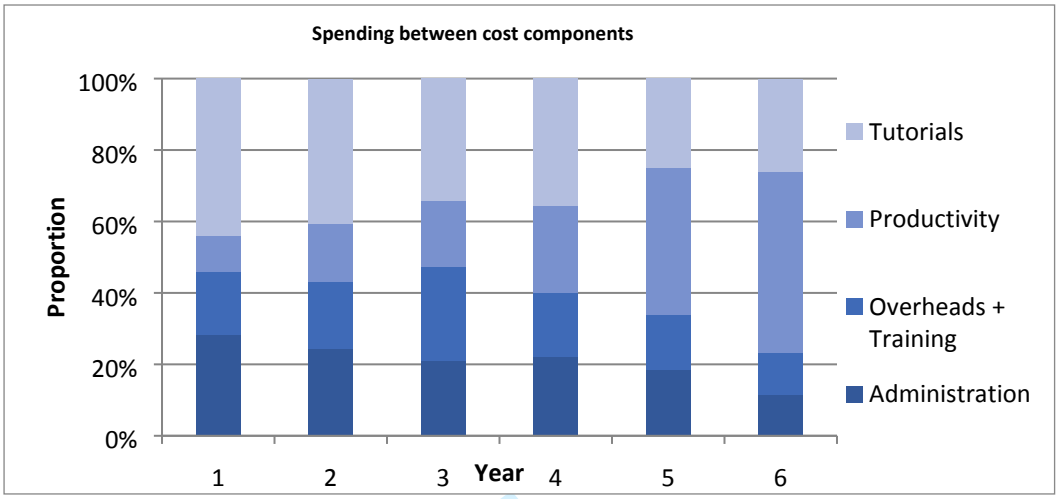

Figure 3 - Distribution between cost components