# Guest Editorial

## National Schedule of Reference Costs data: Community Care Services

*Adriana Castelli*[1]

### Introduction

Much emphasis is devoted to measuring the performance of the NHS as a whole and its different providers. Reference Cost data provide a useful source of information about the activity offered in the NHS as a whole and in its various organisations. They include information on costs incurred by NHS and non-NHS providers in providing treatment to NHS patients.

After explaining what Reference Costs are and their potential use to policy makers, providers, commissioners, and other interested parties, we proceed to explore how activity and average unit costs have changed over time in one particular healthcare sector: community care services.

### Reference Costs explained

The National Schedule of Reference Costs were first introduced in England in 1997 (White Paper *The New NHS*, 1997), with the aim of finding new ways of measuring performance and efficiency of the 'new' NHS. The requirement set in the White Paper was for "NHS [Hospital] Trusts to publish and benchmark their own costs on the same basis, [thus giving] Health Authorities, Primary Care Groups[2] and the NHS Executive a strong lever with which to tackle inefficiency" (Department of Health (DH), 1997).

In the year of its inception, Reference Costs were collected only by NHS Trusts for surgical elective inpatient, day cases and emergency inpatient. Coverage has since increased to include all of NHS activities and average unit costs performed in NHS Trusts, as well as

1 Centre for Health Economics, University of York.

2 Primary Care Groups have since been transformed into Primary Care Trusts in 2002. There are currently 152 Primary Care Trusts in England. http://www.nhs.uk/aboutnhs/HowtheNHSworks/Pages/NHSstructure.aspx, accessed on 31/05/2008

activities and their average unit costs performed in other settings, such as Primary Care Trusts (PCTs), Personal Medical Services[3] (PMS) and more recently non-NHS providers.

A summary by broad groups of activities of NHS services that were covered in the National Schedule of Reference Costs in 2006/07[4] by type of provider is given in Table 1. Not all types of activity within each broad group are offered across all types of provider. PCTs are reporting the greatest volumes of activity, especially with regard to community care services. Personal Medical Services and non NHS providers account for smaller volumes of healthcare services.

**Table 1 Healthcare activity covered in the National Schedule of Reference Costs, 2006/07**

| Groups of activity | NHS Trusts | PCTS | PMS | non NHS |
|---|---|---|---|---|
| 1. Elective inpatients, non-elective inpatients, day cases, ward attenders, regular day/night attenders and attenders at day care facilities | ✓ | ✓ | ✓ | ✓ |
| 2. Outpatient Services | ✓ | ✓ | ✓ | ✓ |
| 3. Accident and Emergency medicine (including Minor Injury Services, Casualty Units, Walk In Centres | ✓ | ✓ | | ✓ |
| 4. Specialist Services | ✓ | ✓ | | ✓ |
| 5. Community Outreach Specialist Nursing, other Community Nursing, Health Visitor & Community Medical Services, Therapy Services | ✓ | ✓ | ✓ | ✓ |
| 6. Services separately identified | ✓ | ✓ | ✓ | ✓ |
| 7. Services accessed directly | ✓ | ✓ | ✓ | ✓ |
| 8. Audiology Services | ✓ | ✓ | ✓ | ✓ |
| 9. Paramedic services provided by NHS Ambulance Service | ✓ | | | |
| 10. Mental Health Services (relate to providers of Specialist Mental Health Services only) | ✓ | ✓ | ✓ | ✓ |

Source: National Schedule of Reference Costs – 2006/07, author's own elaboration.

Costing of NHS activity is a complicated exercise, and it requires a methodology that takes into account of a) the type of patients treated and b) the nature of treatment administered to patients. To this end NHS providers collect and record data based on Healthcare Resource Groups[5] (HRGs). HRGs are designed as grouping of treatments with similar clinical characteristics and similar resource use (Department of Health, 2008). HRGs are determined from both procedural (OPCS-4.4)[6] and diagnostic (ICD-10)[7] codes, that are intended to capture every detail of a clinical event by simple alpha-numeric symbols. They

3 PMS is a locally-agreed alternative to General Medical Service (GMS) for providers of general practice. Legislation has allowed for PMS since 1997 (with the entry into force of the Primary Care Act) but it is only in recent years that the number of practices choosing PMS has grown rapidly. Now almost half of general practices have PMS agreements". *http://www.bma.org.uk/ap.nsf/content/pmsagreements0904* (last accessed 1st July 2008).

4 2006/07 is the latest year of available Reference Costs at the time of writing.

5 Since their first introduction in 1992, HRGs have been subject to a number of revisions. The latest version - HRG4 -was introduced in 2006/07. It was developed, among other things, to reflect changes in clinical practice and costs, and to include new clinical areas. An HRG is, firstly, assigned to a patient record on the basis of the OPCS-4.4 procedure codes. In case more than one procedure is listed, it will assign an HRG code on the basis of a procedure hierarchy, which favours the dominant (highest cost) procedure. In the event that no procedure is indicated in the patient record, or the procedure is invalid, the diagnosis codes (ICD-10) will determine the HRG that is to be assigned to the patient record. In this case, the primary diagnosis drives the HRG.

6 OPCS stands for Office of Population Census and Surveys and it is the standard classification system used in England to record healthcare procedures and interventions. The current version is 4.4 and it has been used to inform the latest version of the HRG grouping system.

7 ICD stands for International Classification of Disease and Related Health problems, which is in its version 10. It represents an internationally designed classification of disease developed and managed by WHO.

are applicable to the Admitted Patient Care Minimum Dataset and cover inpatients (both elective and emergencies) and day cases. All other healthcare activity is reported by either a specialty or service code system.

Reference Costs[8] provide data on volumes of activity, average unit costs, lowest and highest costs and interquartile ranges for costs for each type of healthcare activity. These can be used to compare the cost of providing treatment by type of service and by type of NHS provider.

The data are also summarised into a Reference Cost Index (RCI) which is calculated for each provider and provides some indication of NHS organisations[9] relative efficiency. The RCI shows the average cost of a healthcare organisation's total activity, which is compared to the same activity delivered at the national average cost. Complexity of care may vary across NHS providers, and this is taken into account by comparing each treatment to its national average. An RCI score of 100 means that an organisation has the same costs as the national average; departures from that score are indication of an organisation's relative efficiency/inefficiency. An RCI score below (above) 100 denotes relative efficiency (inefficiency). RCI can be also adjusted to take into account of external market factors that affect costs for staff, land and/or buildings locally.

## Community Care Services

Activity and cost data for Community Care Services were first included in the Reference Costs in 1999/2000 relating mainly to activity for Physiotherapy, Occupational and Speech Therapy administered by NHS Trusts. Since then, coverage of activity has increased, with activity categories being added, removed and redefined over time. For example, recently activity data for physiotherapy, occupational and speech therapy is reported under 'Community Services' and 'Direct Access Services'. Activity and cost data administered by non-NHS providers were first included in 2003/04. Table 2 gives an indication of the number of activity categories reported in each year by type of provider.

The total number of community care services within each activity category has increased over time, especially from 2003/04 onwards. NHS Trusts and PCTs offer a large and similar variety of community care services, with NHS Trusts offering more diverse activities than PCTs.

8 Further, the Department of Health (DH) uses Reference cost data to calculate the Payment by Results Tariff (Department of Health, 2006a), in its Programme Budgeting exercise and for the Schedule 5 of the Department's Resource Accounts (Department of Health 2004a, 2004b, 2005, 2006b and 2007).

9 The Reference Cost Index is produced for NHS Trusts, PCTs and Personal Medical Services only.

**Table 2 Reference cost data collection by activity category, 1999/2000-2006/2007**

| Year | Type of Provider / Activity category | Community Nursing Services Data | Community /Outreach Nursing Services Data | Community Midwifery Services HRG-based Data | Community Midwifery Visit Data | Community Medical Services Vaccinations Data | Community Medical Services Data | Community Therapy Services | Direct Access Therapy Services | Community Services Other Attendances Data | Physio, Occupational and Speech Therapy | Community Services Needle Exchange Scheme | Community Rehabilitation Teams | Total by Organisation | Total by year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1999/00 | NHS Trusts | | | | | | | | | 14 | 6 | | | 20 | 20 |
| 2000/01 | NHS Trusts | 3 | 14 | | | | | | | 3 | 21 | 1 | | 42 | 104 |
| | PCTs | 3 | 8 | | | | | | | 3 | 21 | 1 | | 36 | |
| | PMS + pilots | 3 | 6 | | | | | | | 3 | 14 | | | 26 | |
| 2001/02 | NHS Trusts | 3 | 14 | 15 | 3 | | | 3 | 3 | 3 | | | | 44 | 90 |
| | PCTs | 3 | 14 | 2 | 2 | | | 3 | 3 | 3 | | | | 30 | |
| | PMS + pilots | 3 | 5 | | 1 | | | 3 | 1 | 3 | | | | 16 | |
| 2002/03 | NHS Trusts | 8 | 26 | 21 | 2 | 1 | 1 | 12 | 12 | 3 | | | | 86 | 174 |
| | PCTs | 8 | 29 | 3 | 2 | 2 | 1 | 12 | 12 | 3 | | | | 72 | |
| | PMS + pilots | 6 | 3 | | | | 1 | | 4 | 2 | | | | 16 | |
| 2003/04 | NHS Trusts | 10 | 54 | 11 | 2 | 1 | 1 | 6 | 6 | 5 | | | | 96 | 201 |
| | PCTs | 11 | 46 | 2 | 2 | 1 | 1 | 6 | 6 | 5 | | | | 80 | |
| | PMS + pilots | 9 | 3 | | | 1 | 1 | 2 | 2 | 3 | | | | 21 | |
| | non-NHS providers | | | | | | | | 4 | | | | | 4 | |
| 2004/05 | NHS Trusts | 13 | 66 | 10 | 2 | 1 | 1 | 6 | 6 | 5 | | | | 110 | 242 |
| | PCTs | 11 | 62 | 3 | 2 | 1 | 1 | 6 | | 5 | | | | 91 | |
| | PMS + pilots | 9 | 2 | | | 1 | 1 | 2 | | 3 | | | | 18 | |
| | non-NHS providers | 1 | 5 | 3 | | | 1 | 6 | 3 | 4 | | | | 23 | |
| 2005/06 | NHS Trusts | 11 | 69 | 8 | 2 | 1 | | 12 | | 5 | | | | 108 | 267 |
| | PCTs | 13 | 65 | 6 | 2 | 1 | | 12 | | 5 | | | | 104 | |
| | PMS + pilots | 10 | 5 | 1 | | | | 2 | | 3 | | | | 21 | |
| | non-NHS providers | 10 | 9 | 5 | | | | 6 | | 4 | | | | 34 | |
| 2006/07 | NHS Trusts | 13 | 67 | 10 | 2 | 1 | 4 | 12 | | 6 | | | 1 | 116 | 272 |
| | PCTs | 13 | 61 | 4 | 2 | 1 | 4 | 12 | | 8 | | | 1 | 106 | |
| | PMS + pilots | 10 | 5 | | | | 1 | 2 | | 3 | | | | 21 | |
| | non-NHS providers | 7 | 6 | 4 | | | 1 | 7 | | 4 | | | | 29 | |

Source: Reference Cost Data, 1999/00 - 2006/07, author's own elaboration

The picture changes slightly if one considers the volumes of community care service offered by type of provider. Figures 1 and 2 provide an indication on how volumes of community care activity have evolved in the time period from 1999/00 to 2006/07, respectively for NHS Trusts and PCTs, and PMS and non-NHS providers.

There has been a remarkable increase in the volumes of activity reported by PCTs since 2001/02, which has coincided with a decline in NHS Trusts' volumes of activity. Much of the increase is likely to be due to improved data collection but some of the change may indicate that community care activities that were previously managed by NHS hospital trusts are now provided by PCTs. This interpretation of the shift in activity is in line with policies set out in 1997 (the 'New NHS') which aimed at gradually shifting activity from the acute hospital sector to the community and primary care settings. The number of

community care contacts in 2006/07 in PCTs is about nine times higher than those reported by NHS Trusts. In 2006/07, both NHS Trusts and PCTs register a small decrease in the total number of contacts.

**Figure 1 Community Care contacts in NHS Trusts and PCTs, Reference Costs**

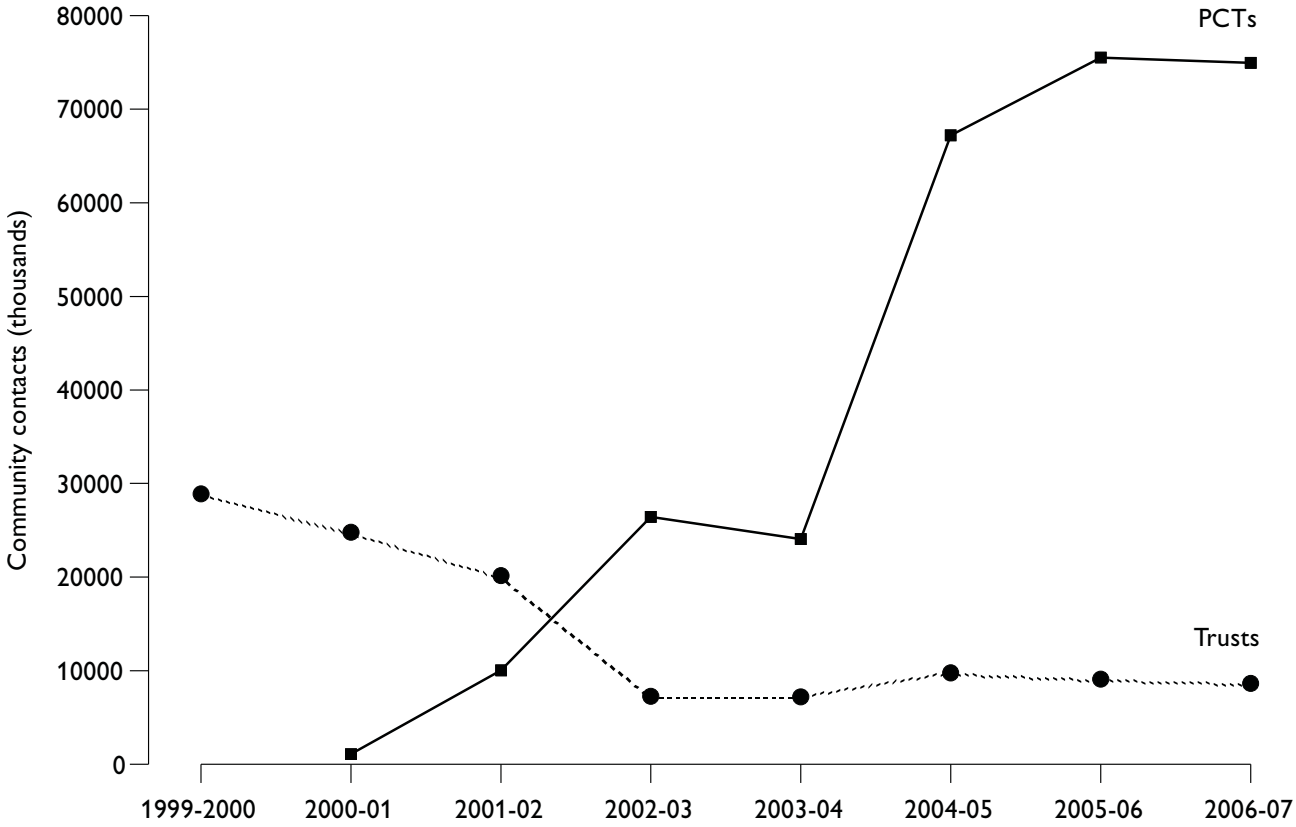



Figure 2 shows community care contacts in PMS and non-NHS providers. While volumes are lower than those reported in NHS Trusts and PCTs; community care activity in PMS has shown a steady increase since 2002/03. Activity has been volatile for non-NHS providers, where the large volumes reported in 2004/5 and 2005/6 have since fallen.

The costs of community care services vary considerably across providers and over time. We focus here on activity weighted average unit costs (hereafter, 'unit costs') incurred by each type of healthcare provider, for ease of exposition. Figure 3 shows the trend in unit costs from 1999/2000 to 2006/07. Unit costs seem to be a mirror image of trends in volume - as volume rises, unit costs appear to fall.

In 2004/05, unit costs in PCTs decreased sharply compared to all previous years. There were similar, but less pronounced, reductions in unit costs reported by other types of provider. The reductions are probably due to the considerable increase in volumes of activity recorded by these providers. After 2004/05, unit costs in the four types of provider follow different trends, with PMS still showing a decreasing trend, non-NHS and NHS Trusts seeing an increase in their unit costs and PCTs first registering a decrease followed by a small increase in unit costs in the latter year.

Figure 4 shows the deviations of activity weighted average unit cost from the national average, by provider and year. Figures of the national activity weighted average unit costs are also shown.

**Figure 2 Community Care contacts in PMS + pilots and non-NHS providers, Reference Costs**

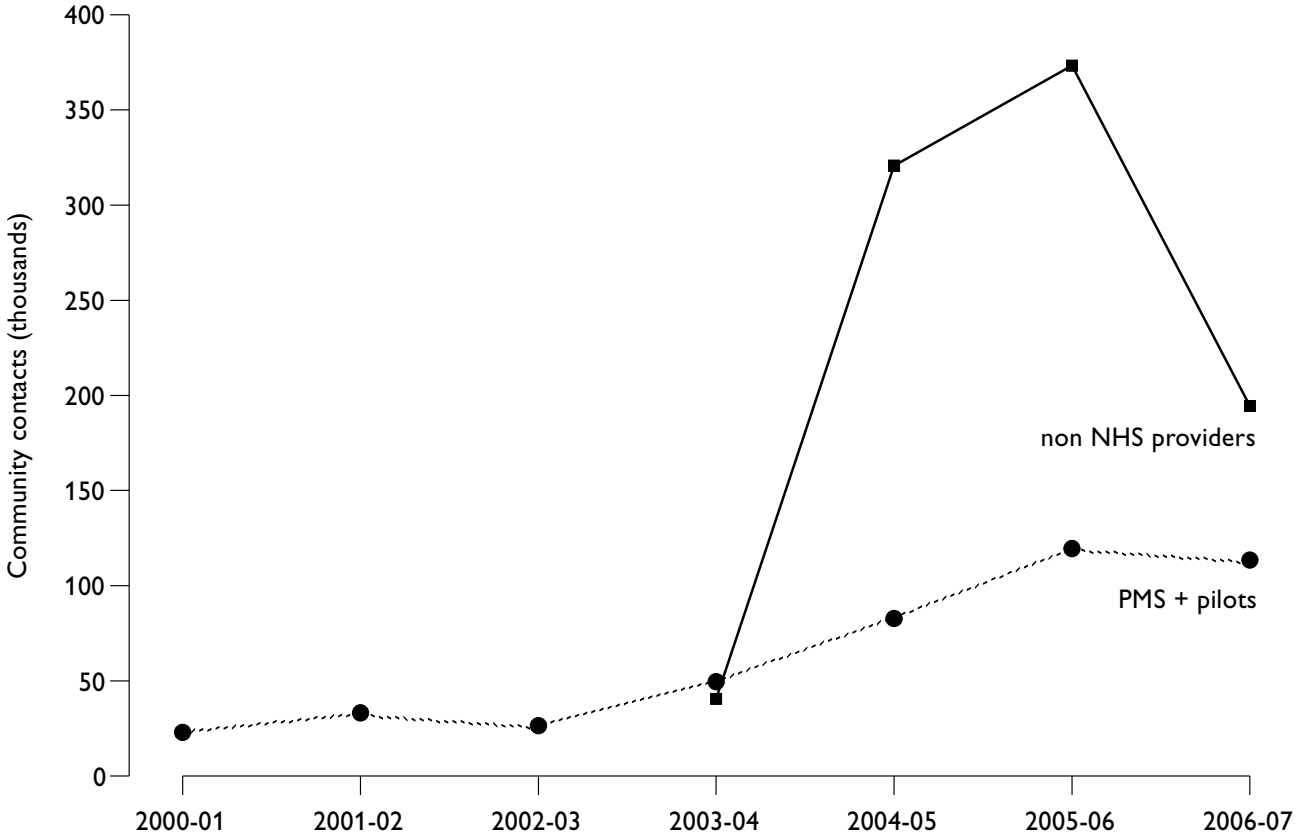



**Figure 3 Activity weighted average unit costs – trend**

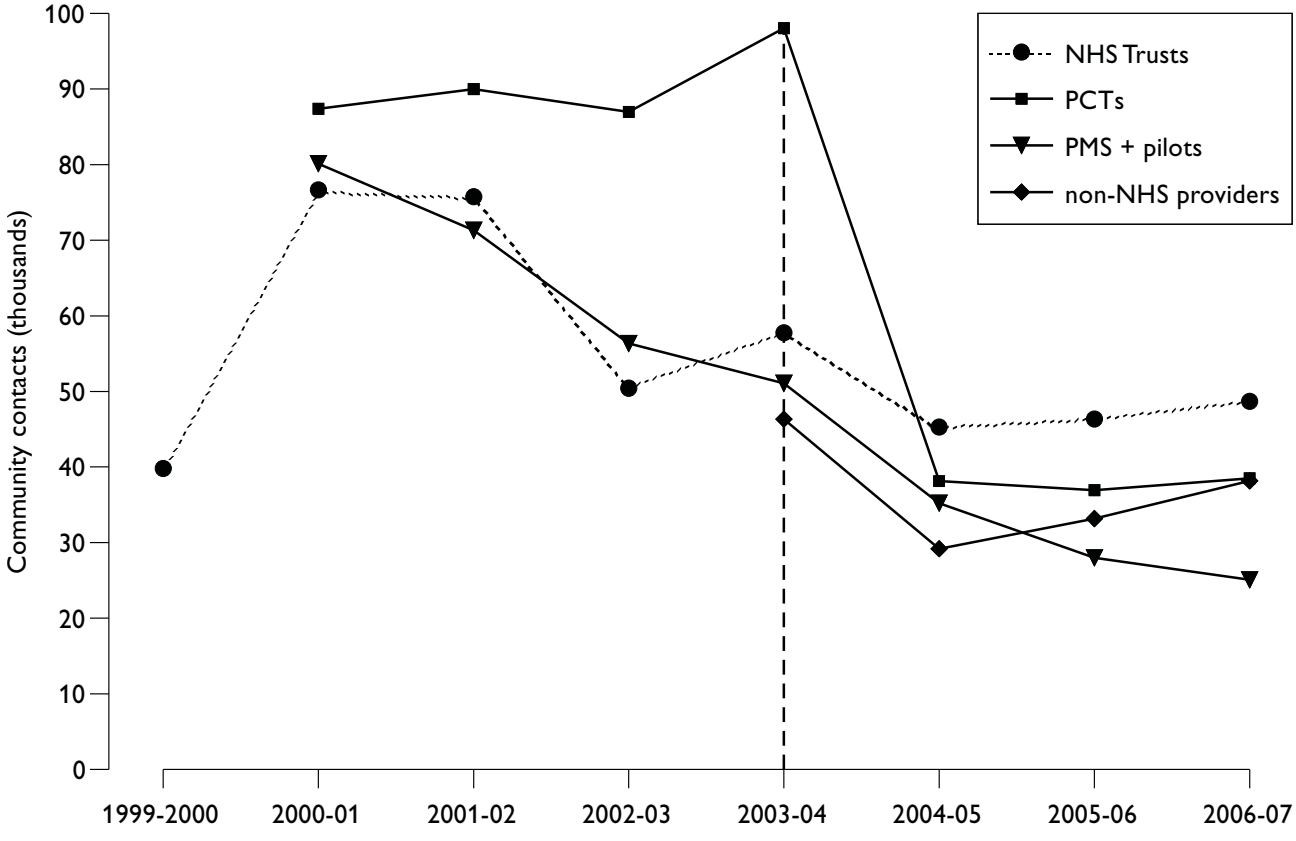
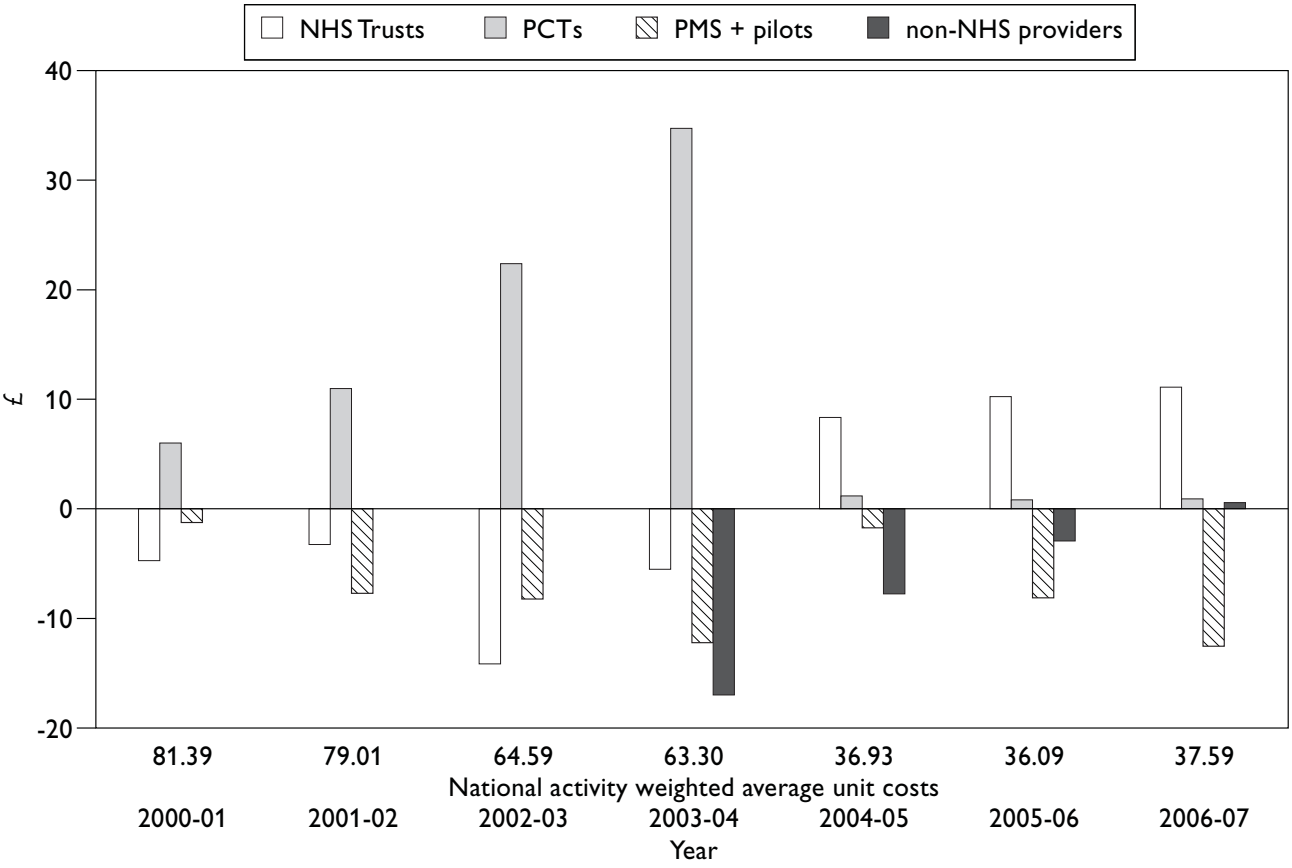


**Figure 4 Deviations from national average activity weighted unit costs, by provider, 1999/00-2006/07**




NHS Trusts show up to 2003/04 lower unit costs than the national average; after that year these steadily increase, leaving NHS Trusts with the highest activity weighted average unit costs in 2006/07. This might be indicative of a transfer of more straightforward activities to other settings, leaving NHS trusts to care for more complex and costly types of care. In 2000/01, other types of provider start reporting their provision of community care services. PMS and non-NHS providers consistently report lower unit costs than the national average, perhaps because they are treating patients of below average complexity. In contrast, PCTs report higher unit costs up to 2003/04 after which unit costs are below the national average, again suggesting that volume is driving these changes.

## Conclusions

This editorial sets out to shed some light on the Reference Cost data and their potential use in informing policy-makers on the relative costs reported by NHS organisations and non-NHS providers, by analysing changes in activity and average unit costs across providers and across years.

One important caveat needs to be drawn: comparing activity weighted average unit costs has the advantage of easing the analysis of healthcare costs across providers. However, this comes with the non trivial drawback that the averaging process tends to wash out important variations in unit costs, which may well reflect variation in casemix treated by providers, rather than relative efficiency. There is, therefore, scope for further analysis of community care service data to explore the reasons for variations in providers' units costs identified in this editorial.

## References

Department of Health (1997) *The New NHS Modern Dependable*, The Stationery Office, London.
Department of Health (1998–2008) *National Schedule of Reference Costs*, The Stationery Office, London.
Department of Health (2003) *Version 3.5 Healthcare Resource Groups Documentation Set - Introduction and Definitions Manuals*, The Stationery Office, London.
Department of Health (2004a) *Resource Accounts 2002–03, Schedule 5 – Resources by Departmental Aim and Objectives*, The Stationary Office, London.
Department of Health (2004b) *Resource Accounts 2003–04, Schedule 5 – Resources by Departmental Aim and Objectives*, The Stationary Office, London.
Department of Health (2005) *Resource Accounts 2004–05, Schedule 5 – Resources by Departmental Aim and Objectives*, The Stationary Office, London.
Department of Health (2006a) *Payment by Results – Implementation Support Guide*.
Department of Health (2006b) *Resource Accounts 2005–06, Schedule 5 – Resources by Departmental Aim and Objectives*, The Stationary Office, London.
Department of Health (2007) *Resource Accounts 2006–07, Consolidated Statement of Operating Costs By Departmental Aim and Objectives*, The Stationary Office, London.
The Information Centre (2008) *Casemix Service HRG4-HRG4 Design Concepts*, The Information Centre, Leeds.

## Acknowledgements

I thank Andrew Street and Peter C. Smith for comments on an earlier draft. This paper is drawn from a project funded by the Department of Health in England as part of a programme of policy research at the Centre for Health Economics, University of York. The views expressed are those of the author and may not reflect those of the funder.