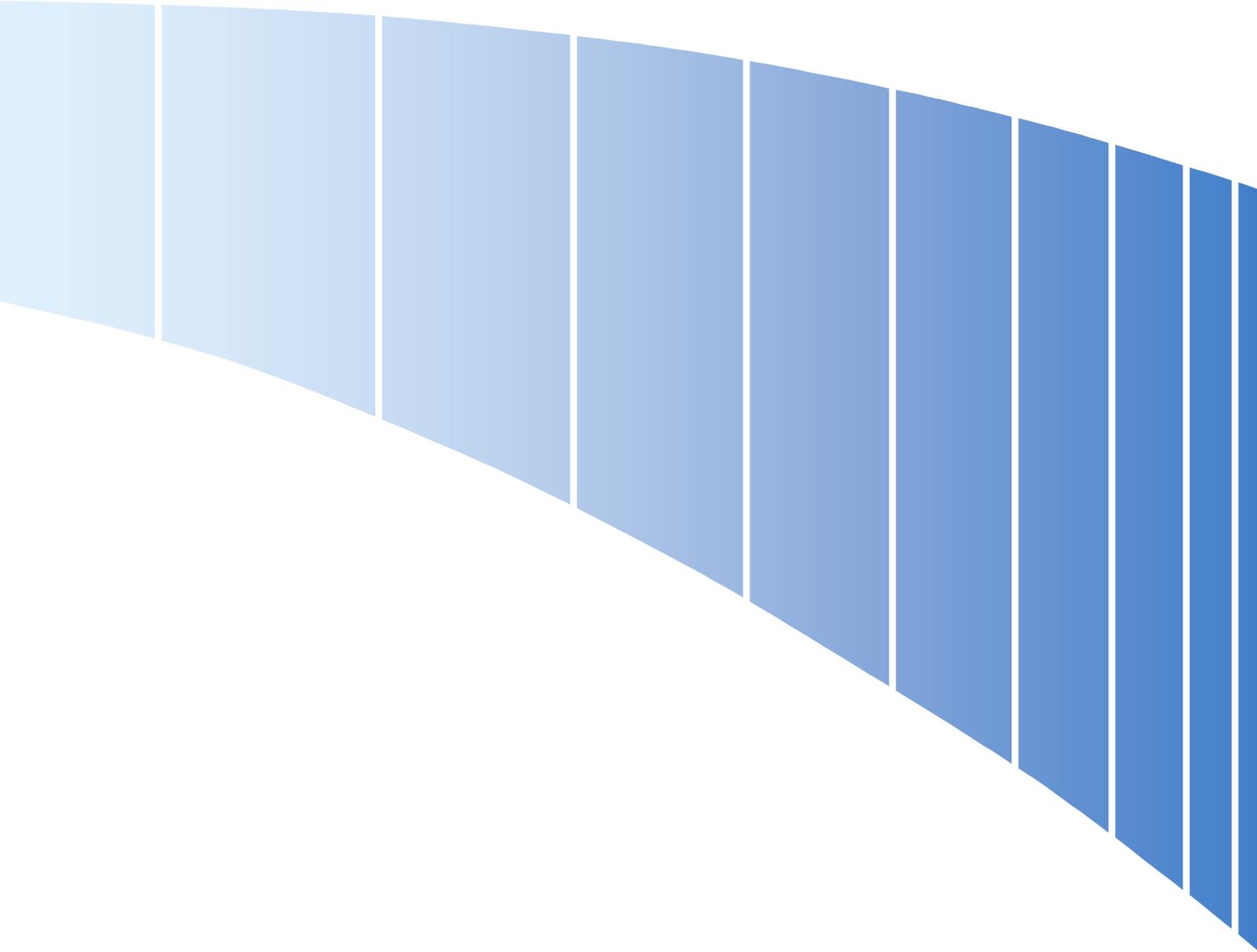


# 2010-11 reference costs publication



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<b>Document Purpose</b>	For Information
<b>Gateway Reference</b>	16788
<b>Title</b>	Reference costs 2010-11 publication
<b>Author</b>	Payment by Results team
<b>Publication Date</b>	17 November 2011
<b>Target Audience</b>	PCT CEs, NHS Trust CEs, SHA CEs, Care Trust CEs, Foundation Trust CEs, Medical Directors, Directors of Nursing, Directors of Finance, GPs, Anyone interested in the costs of NHS services
<b>Circulation List</b>	
<b>Description</b>	This document accompanies the national schedules of reference costs, the reference costs index, and source data, and describes how nearly 400 NHS organisations spent £53 billion delivering healthcare to patients in 2010-11.
<b>Cross Ref</b>	2010-11 reference costs guidance
<b>Superseded Docs</b>	N/A
<b>Action Required</b>	None
<b>Timing</b>	<b>N/A</b>
<b>Contact Details</b>	<a href="http://www.dh.gov.uk/health/contact-dh/">http://www.dh.gov.uk/health/contact-dh/</a>
<b>For Recipient's Use</b>	

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## Introduction

1. This document supports the publication of 2010-11 reference costs, which give the most detailed picture available about how nearly 400 NHS organisations spent £53 billion delivering healthcare to patients in 2010-11.
2. The information is presented in three ways:
  - (a) [national schedules of reference costs](#). These show the national average unit costs derived from the unit costs of NHS providers
  - (b) [reference cost index](#). A measure of the relative efficiency of NHS providers
  - (c) [database](#) of source data. This allows a more detailed analysis of organisation level costs.

## Background

3. All organisations need to understand where and how resources are used. The NHS has always accounted for its expenditure in terms of staffing, goods, services and so on. Reference costs originated from a desire to compare unit costs of healthcare down to the level of treatments and procedures. By unit costs, we simply mean the expenditure incurred in providing one unit of a service. For example, one tonsillectomy, heart transplant, outpatient attendance, antenatal visit, and so on. We have collected and published reference costs year since 1997-98 from all NHS providers of health services to NHS patients in England<sup>1</sup>.
4. Meaningful unit costs cannot be derived simply by dividing total expenditure by the number of patients. Reference costs use casemix adjusted measures where they are available, in which the care provided to a patient (case) is classified according to its complexity (mix). The casemix measure for acute care in England is Healthcare Resource Groups (HRGs)<sup>2</sup>. HRGs are maintained by the Casemix Service at the NHS Information Centre. They are defined by clinicians and reflect clinical practice in the UK, providing standard groupings of similar treatments that use similar resources. The latest version, HRG4, has been used in reference costs since 2006-07. Outpatient attendances are classified according to their treatment function code (TFC), and other services use different currencies.
5. The collection of reference costs is supported each year by detailed guidance and the NHS Costing Manual, designed to eliminate variation caused by different costing methodologies. Reference costs are submitted on a full absorption basis, which simply means that all the running costs of providing these services are included within the return. Each reported unit cost therefore includes:
  - (a) direct costs – which can be easily identified with a particular activity (eg consultants and nurses)
  - (b) indirect costs – which cannot be directly attributed to an activity but can usually be shared among a number of activities (eg laundry and lighting)
  - (c) overheads – which relate to the overall running of the organisation (eg finance and human resources).

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<sup>1</sup> <http://www.dh.gov.uk/nhscosting>

<sup>2</sup> <http://www.ic.nhs.uk/casemix>

6. NHS providers undertake a reconciliation of the reference cost financial statements with their final accounts, to ensure that they have reported all relevant costs.

## Uses of reference costs

7. The Department in partnership with the Audit Commission conducted a review of the uses and quality of reference costs in 2010<sup>3</sup>. The review found a wide audience for the data and we hope that this guide will further promote their use.
8. The most high profile use of reference costs is to underpin the calculation of the Payment by Results national tariff. Payment by Results is the payment system in England under which NHS commissioners pay healthcare providers a national tariff for each patient seen or treated, taking into account the complexity of the patient's healthcare needs. We refer readers who would like a fuller understanding to our publication, *A simple guide to Payment by Results*<sup>4</sup>.
9. These 2010-11 reference costs will inform the 2013-14 tariff, although there are a number of reasons why national average unit costs may not be closely reflected in tariff prices, not least that most reference costs are collected by finished consultant episode (FCE) whereas the tariff is based on a spell of care. A spell is the period from admission to discharge within a single provider and may comprise of more than one FCE.
10. Reference costs support the Department's commitment to improving data transparency and making a vast wealth of relevant information available to the public, as set out in its business plan for 2011 to 2015<sup>5</sup>, and inform several input indicators in the business plan quarterly data summary<sup>6</sup>.
11. NHS organisations use the data for reporting to executive teams, benchmarking, contract negotiations and local pricing of non-tariff areas.
12. Reference costs are also used to:
  - (a) hold the Department and its Ministers to account for the use of NHS resources
  - (b) help assess whether NHS trusts are ready to become NHS foundation trusts
  - (c) support elements of national programme budgeting<sup>7</sup>, an alternative method of assessing NHS expenditure across broader categories of illness such as cancer, cardiovascular diseases and mental health
  - (d) support Office for National Statistics (ONS) estimates of NHS productivity
  - (e) inform the design of HRGs
  - (f) inform academic research.

## Quality of reference costs

13. In response to the 2010 review, the Department published an action plan setting out what it planned to do to improve the quality of reference costs.

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<sup>3</sup> [http://www.dh.gov.uk/en/Managingyourorganisation/NHScostingmanual/DH\\_104762](http://www.dh.gov.uk/en/Managingyourorganisation/NHScostingmanual/DH_104762)

<sup>4</sup> <http://www.dh.gov.uk/en/Managingyourorganisation/NHSFinancialReforms/index.htm>

<sup>5</sup> [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_128494](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_128494)

<sup>6</sup> [http://www.dh.gov.uk/en/Aboutus/HowDHworks/Transparency/DH\\_128480](http://www.dh.gov.uk/en/Aboutus/HowDHworks/Transparency/DH_128480)

<sup>7</sup> <http://www.dh.gov.uk/programmebudgeting>

14. We were able to take a number of actions in time for these 2010-11 reference costs, including:
- (a) bringing forward the publication of the collection guidance to December 2010, and reviewing its content in a number of key areas, allowing more time for local collation and review of data
  - (b) reviewing the collection timetable and supporting organisations to submit their data once, which has been on the whole successful and allowed early publication. A very small number of organisations asked to resubmit data having identified errors in their returns, subsequent to the validation process and after the collection had closed. Due to the emphasis on organisations adopting a 'right first time' approach, and the implications resubmitting would have had on the publication timetable, these resubmissions were denied. The organisations with issues identified are listed in the attached [Annex A](#)
  - (c) providing local validation tools to help organisations get their reference cost returns right first time
  - (d) promoting the Audit Commission's National Benchmark<sup>8</sup>, which has a number of reference costs tools with the analysis used to support audits of reference costs returns
  - (e) publishing a PLICS and reference cost best practice guide.
15. By publishing these data earlier than any previous year, we hope to support effective analysis and use by the NHS locally.
16. Having undertaken pilot audits of 2008-09 reference costs at 16 organisations, the Audit Commission followed this with a full review of the 2009-10 reference costs at all 167 acute NHS and foundation trusts, publishing their findings in *Improving coding, costing and commissioning, annual report on the Payment by Results data assurance programme 2010-11*<sup>9</sup> in September 2011. They plan to audit these 2010-11 reference costs during their 2011-12 Payment by Results data assurance programme.
17. Many organisations have implemented patient level and information and costing systems (PLICS). These systems help organisations understand exactly how costs are built at the most basic and accurate level, that of the patient, and therefore inform decision making to improve both the quality and effectiveness of services. The Department continues to encourage their use in the NHS, both for their local benefits and to improve the quality of reference costs.
18. Alongside the 2010-11 reference costs collection, we ran a voluntary survey of all NHS providers about their implementation and use of PLICS. We found that 128 organisations have implemented, or are in the process of implementing, PLICS. Of the 81 who have implemented PLICS, 71 used PLICS data to underpin some of their 2010-11 reference costs return.
19. To help PLICS organisations produce reference costs we published a PLICS and reference cost best practice guide in April 2011. Over 50 PLICS organisations reported using this. Many organisations also reported using the Clinical Costing Standards. These standards provide recommended best practice for the production

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<sup>8</sup> <http://www.audit-commission.gov.uk/health/audit/paymentbyresults/benchmarkandportal/Pages/default.aspx>

<sup>9</sup> <http://www.audit-commission.gov.uk/health/audit/paymentbyresults/reportsandstudies/pages/default.aspx>

of patient level costs and build on the costing principles in the NHS Costing Manual. Originally developed and published by the Department in 2009, they were recently revised by the Healthcare Financial Management Association (HFMA). This reflects a shared belief by the Department and HFMA that the finance profession should have the lead role in setting standards and promoting the highest quality in costing.

20. The full results of the 2011 PLICS survey are published alongside these reference costs<sup>10</sup>.

## Headlines

21. The following represent some notable findings from the data collected for 2010-11 (with 2009-10 figures in brackets):
- 2010-11 reference costs cover £53 billion of NHS expenditure, an increase of £1.7 billion (3%) over the £51 billion in 2009-10
  - This represents about 50% of all NHS expenditure
  - Detailed costs are provided for over 1,500 treatments or procedures covering over 15 million episodes within admitted patient care alone
  - Costs were collected from 392 NHS providers
  - The average cost of a day case is £670 (£675)
  - The average cost of an elective inpatient stay excluding excess bed days is £3,095 (£2,845)
  - The average cost of a non-elective inpatient stay excluding excess bed days is £1,400 (£1,360)
  - The average cost of an excess bed day is £260 (£255)
  - The average cost of an outpatient attendance is £100 (£100)
  - The average cost of an A&E attendance is £100 (£95)
22. [Annex B](#) provides some further summary statistics from 1997-98 to 2010-11.

## National schedules of reference costs

23. The national schedules of reference costs show the national average unit cost for each service for which costs were collected in 2010-11 reference costs. It covers services provided in hospitals, in the community, and in a range of other settings. Thus, services included range from a visit by a district nurse to the provision of high-level secure placements for mental health patients, and from ultrasound scans to renal dialysis and transplant surgery.
24. The schedules show:
- (a) activity, ie the number of appointments, attendances, bed days, clients, episodes, tests or treatments appropriate to the service
  - (b) the national average (mean) unit cost, ie total cost divided by total activity
  - (c) the lower and upper quartile unit costs (note that it is sometimes possible for the national average mean unit cost to be less than or more than the lower and upper quartiles)
  - (d) the number of data submissions.

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<sup>10</sup> <http://www.dh.gov.uk/nhscosting>

25. A separate schedule has been provided for each type of provider:
- (a) Schedule 1 - NHS trusts and NHS foundation trusts own data (i.e. the cost to the organisation where it provides the service itself)
  - (b) Schedule 2 - primary care trusts (PCTs) own data
  - (c) Schedule 3 - personal medical services plus (PMS+) sites own data. PMS+ is a type of contract where GP practices provide defined secondary care services in addition to primary medical services
  - (d) Schedule 4 - NHS trusts, NHS foundation trusts and PCTs combined own data. This is our preferred schedule when providing the total cost to the NHS of a given service
  - (e) Schedule 5 - non-NHS providers. This shows the cost to the NHS where PCTs, NHS trusts or NHS foundation trusts sub-contract services to the independent sector, or where PCTs directly commission services from the independent sector. It is in effect the price paid by the NHS for the service, and not the cost to independent sector organisations of providing the service.
26. Each schedule shows the national average cost calculated from the unit costs of all organisations of that type. The costs included in the schedule reflect the actual costs and unavoidable cost differences across the country, which are reflected in the market forces factor (MFF) index, have not been removed.
27. Within each schedule, and where the service has been provided by organisations of that type, information is shown separately for:
- (a) **elective inpatients** – where the patient’s admission to hospital is planned and requires staying in hospital for longer than a day
  - (b) **non-elective inpatients** – where the patient’s admission is not planned, including emergency admissions and admissions for maternity, births, and non-emergency patient transfers, and requires staying in hospital for more than one day
  - (c) **day cases** – where the patient has a planned admission and discharge on the same day
  - (d) **outpatient attendances** – at clinics in hospital, community health centres or general practices, split by whether or not the attendance was (i) under the clinical direction of a consultant, (ii) face to face (iii) first or follow up, and (iv) single or multi-professional
  - (e) **outpatient procedures** – HRG4 allows the separate reporting of certain procedures in outpatients
  - (f) **accident and emergency (A&E) services** - split by 24 hour, non-24 hour, minor injury unit and walk-in centre, and by whether or not the attendance led to an admission
  - (g) **audiological services** – services for people with hearing difficulties, split by fitting, repair or neonatal screening
  - (h) **regular day and night admissions** – patients admitted electively during the day or night, as part of a planned series of regular admissions for an on-going regime of broadly similar treatment and who are discharged the same day or next morning
  - (i) **day care facilities** - provided for the clinical treatment, assessment and maintenance of function of patients, in particular, though not exclusively, those who are elderly, mentally ill or have learning difficulties. They do not have hospital beds and function separately from any ward

- (j) **coronary care units** – reported on bed day basis
- (k) **hospital at home and early discharge schemes** (COPD, fractured neck of femur and other) - these schemes allow the early discharge of patients from hospital in order for them to continue receiving healthcare in their homes.
- (l) **cystic fibrosis** – collected separately in line with the specialised service national definition set for cystic fibrosis
- (m) **unbundled HRGs** for a number of services:
  - (i) **critical care (adult, neonatal, paediatric, and outreach)** – costs associated with critical care services are high and only relate to a limited number of patients. Including these costs as an overhead on treatments and procedures would significantly distort costs and lead to wide variations. They are therefore reported separately. The HRG4 design is based on the number of organs supported in a critical care period
  - (ii) **chemotherapy** – drug costs for cancer patients, split between procurement (regimen) and delivery, with other costs included in the relevant admitted patient or outpatient setting
  - (iii) **high cost drugs**
  - (iv) **diagnostic imaging** - including MRI and other scans (plain film x-rays are not reported separately due to their high volume and low cost)
  - (v) **radiotherapy** – treatment costs for cancer patients
  - (vi) **rehabilitation** – covering a wide range of rehabilitation taking place under a specialist rehabilitation consultant or within a discrete rehabilitation unit
  - (vii) **specialist palliative care** – care provided under the a specialist palliative care medical consultant either in a palliative care unit or in a designated palliative care programme
  - (viii) **renal dialysis** – covering both haemodialysis and peritoneal dialysis
- (n) **community nursing services** – a range of district nursing and health visitor services covering routine and specialist services outside hospitals and often in patients' homes, local health centres, etc.
- (o) **other community services** – treatments and services provided by staff in local areas in the wider community (including hospital bases if necessary) such as midwifery, podiatry, speech therapy etc.
- (p) **mental health services** – reported by mental health NHS and foundation trusts only
- (q) **paramedic services** – provided by NHS ambulance service providers
- (r) **hospital travel cost scheme** – provides financial assistance to NHS patients who do not have a medical need for patient transport services, but who require assistance in meeting the cost of travel to and from their care.

28. This list reflects the range of services and locations in which the NHS operates. By splitting the costs, it is possible to build up the total costs of treatment across the patient pathway, eg diagnostic tests requested by GP, an outpatient attendance following referral, inpatient stay (including critical care) or day case, outpatient attendances following discharge and district nurse visits.

29. The elective and non-elective inpatient schedules exclude the costs of bed days that fall outside nationally set lengths of stay, known as trim points. This assists in giving a like for like comparison of activity and costs. The trim points used for 2010-11 reference costs are calculated on an FCE basis from 2009-10 hospital episode statistics (HES) and published by the NHS Information Centre<sup>11</sup>. The calculation is as

<sup>11</sup> <http://www.ic.nhs.uk/services/the-casemix-service/using-this-service/reference/downloads/costing/hrg4-2010-11-reference-costs-grouper-documentation>

follows: trim point = upper quartile + (1.5 \* inter quartile range). There is one trim point for both elective and non-elective long stay. We have separately identified the costs beyond these trim points, as submitted by NHS organisations, as excess bed days in the schedules.

30. Within each schedule, we have multiplied unit costs and activity reported by the NHS to estimate:
  - (a) the total cost of each activity (by HRG etc) across all settings
  - (b) the total cost of all activity in each setting (inpatients, day case, outpatients etc).
31. In line with previous years, we have excluded UZ01Z (data invalid for grouping), and WD (mental health) HRGs reported by non-mental health providers from the schedules.
32. Reference costs are not always directly comparable between years because of annual changes to:
  - (a) the scope of the collection
  - (b) the collection guidance
  - (c) the currencies for which costs are reported, The *HRG4 2010-11 Reference Costs Grouper Roots*<sup>12</sup> document describes changes to HRGs from 2006-07 (when the latest version HRG4 was introduced) to 2010-11.

## Reference cost index

33. Whereas the schedule provides detailed information on the average costs for each treatment or procedure, the reference cost index (RCI) provides an at a glance comparison of costs at the aggregate level for each NHS provider.
34. The RCI shows the actual cost of an organisation's casemix compared with the same casemix delivered at national average cost. An organisation with costs equal to the national average will score 100, with higher cost organisations scoring above 100 and lower cost organisations scoring below 100. For example, a score of 110 means that the costs are 10% above the average whilst a score of 90 shows costs are 10% below the average. The RCI is therefore a measure of relative efficiency.
35. Each organisation's RCI is calculated by dividing its actual costs (unit costs \* activity) by the expected costs (national average mean unit cost \* activity). Note that national average unit costs for elective inpatients and day cases are combined for this calculation. The RCI is based on the average for the provider type, rather than for all NHS organisations. This allows for meaningful comparison by similar organisations. For example, an RCI of 100 for a PCT shows that its costs are equal to the national average for PCTs, and not an average across all types of organisation.
36. RCIs are grouped separately for each provider type:
  - (a) NHS trusts and NHS foundation trusts
  - (b) PCTs

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<sup>12</sup> <http://www.ic.nhs.uk/services/the-casemix-service/using-this-service/reference/downloads/costing/hrg4-2010-11-reference-costs-grouper-documentation>

- (c) PMS+ sites.
37. Within each provider type, the RCI is presented in two different ways:
- (a) the non-MFF adjusted RCI based on reported actual costs
  - (b) the MFF adjusted RCI, which is the preferred index because it gives a fairer comparison of costs once unavoidable cost differences are removed.
38. Organisations in some parts of the country have higher costs because labour, land and buildings cost more in these areas. The purpose of the MFF is to compensate for the unavoidable cost differences of providing healthcare in different parts of the country.
39. We adjust the RCI by dividing each organisation's index by its latest MFF, published in the Department's *Exposition book 2011-12*<sup>13</sup>. These MFFs are scaled to ensure that the total national value of reference costs (the quantum) remains constant. This does not effect the relative differences between the index values of different organisations. The purpose and derivation of the MFF, and its use to adjust RCIs, is described in *Payment by Results and the market forces factor 2011-12*<sup>14</sup>
40. Organisations located in areas with higher than average unavoidable costs have an MFF greater than 1, so their RCI will decrease. Those in lower than average cost areas will have an MFF of less than 1, so their RCI will increase. For example:
- (a) the RCI for Royal Cornwall Hospitals NHS Trust increases from 87 to 94 (MFF of 0.92)
  - (b) the RCI for University College London Hospitals NHS Foundation Trust decreases from 137 to 114 (MFF of 1.20).
41. Organisation wide RCIs are presented both including and excluding excess bed days, with the former normally preferred when comparing relative efficiency.
42. As well as organisation wide scores, RCIs are also published broken down by the following services:
- (a) elective inpatient and day case
  - (b) non-elective inpatient
  - (c) excess bed days
  - (d) critical care
  - (e) outpatient services
  - (f) other acute services
  - (g) community services
  - (h) mental health
  - (i) transport
  - (j) paramedic services
  - (k) A&E
  - (l) unbundled.

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<sup>13</sup>

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_124949](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124949)

<sup>14</sup>

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_124356](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124356)

43. Where organisations ceased to exist in 2010-11, the successor organisation reported one reference cost return for their organisation, incorporating the activities and costs of predecessor organisations. In these circumstances, no comparable RCI data exists for 2009-10. The data reflect the organisations in existence at 31 March 2011. Any subsequent change in status (for example, NHS foundation trust approval) is not reflected in this publication. Table 1 illustrates the calculation of the RCI for one NHS provider.

**Table 1: Worked example of RCI calculation**

	A	B	C	D = (A*B)	E = (A*C)	F = (D/E*100)	G	H = (F/G)
	Activity	Cost	National average cost for provider type	Actual cost	Expected cost	RCI (not MFF adjusted)	MFF	RCI (MFF adjusted)
HRG A	10	10	15	100	150			
HRG B	20	30	20	600	400			
Total				700	550	127	0.95	134

44. We base the RCI calculation on each organisation's own data only, and exclude commissioned and contracted out activity, UZ01Z (data invalid for grouping) and WD (mental health) HRGs. The same methodology is also applied to derive the service specific RCIs, but only activity, unit costs and national average costs relevant to that service are included in the calculation.

## Database

45. We have provided the source data submitted for the 2010-11 reference costs collection in a series of comma separate variable (CSV) files. [Annex C](#) describes the files and their contents. [Annex D](#) gives instructions for downloading and importing the data into Microsoft Access.

## Using the data

46. We offer four examples to illustrate how the data can be used to analyse and investigate costs across the NHS.

### Normal delivery in an inpatient setting - calculating average costs

47. To determine the average cost for the normal delivery of a baby in an inpatient setting, the first step is to identify the relevant HRGs (Table 2).

**Table 2: Normal delivery HRGs**

HRG code	Description
NZ11A	Normal delivery with complications and comorbidities (CC)
NZ11B	Normal delivery without CC
NZ11C	Normal delivery with epidural with CC
NZ11D	Normal delivery with epidural without CC
NZ11E	Normal delivery with induction with CC
NZ11F	Normal delivery with induction without CC
NZ11G	Normal delivery with post-partum surgical intervention

48. The second step is to identify a weighted average cost from the total activity and costs across the required settings (Table 3). As described above, inpatient costs are

split between those below the trim point (inlier) and those beyond the trim point (excess). When calculating a weighted average cost, the inlier and excess costs need to be summed but the excess bed day activity, which is already included in the inlier activity, must be ignored.

**Table 3: Calculating the average cost of a normal delivery**

Setting	Activity	National average unit cost (£)	Activity * unit cost (£)
	A	B	C = A * B
Elective inpatient	1,474	1,865	2,749,145
Elective inpatient excess bed day	189	452	85,497
Non-elective inpatient (long stay)	172,010	2,097	360,625,937
Non-elective inpatient (long stay) excess bed day	48,611	438	21,311,456
Non-elective inpatient (short stay)	234,296	1,027	240,550,640
Day cases	581	764	443,853
All inpatient settings	408,361	1,532	625,766,529

49. The national average unit cost of an inpatient normal delivery is £1,532. Note that these costs relate to the delivery episode itself, and no costs are incurred in health terms for a healthy baby. If the baby requires health care in its own right, then this becomes a separate episode with its own costs. These costs also do not represent the total cost to the NHS of a birth, which will also include home births and other events such as GP consultations and antenatal and postnatal outpatient attendances.

### Coeliac disease - using the code to group

50. Unlike HES, reference costs are not collected by individual diagnoses or procedures. With thousands of codes in primary classification systems used to describe information from patient codes, this would clearly be impractical.

51. However, it is possible to use the Code to Group workbook<sup>15</sup>, published by the NHS Information Centre, to understand how HRGs are derived from a given set of ICD-10 codes for diagnoses and OPCS-4 codes for procedures. Such an approach for estimating the costs of a particular diagnosis or procedure would need to be undertaken with caution. The precise grouping to HRGs depends on other ICD-10 and OPCS-4 codes and patient characteristics (e.g. age, length of stay, complications and comorbidities) present in the episode of care, and the resulting costs will be affected by other diagnoses and procedures in the HRG. For example, the costs associated with coeliac disease (ICD-10 code K900) are included in one of the HRGs for small intestinal disorders (excluding inflammatory bowel disease) with an HRG root code of FZ33, and splits dependent on length of stay and complications or comorbidities. Once the required HRGs have been identified, the method described in example one can be followed to obtain the average cost for this and clinically similar disorders.

### Cholecystectomy - comparing costs over time

52. To examine the difference between the day case and elective inpatient costs of performing a cholecystectomy (gall bladder removal) between 2005-06 and 2010-11,

<sup>15</sup> <http://www.ic.nhs.uk/services/the-casemix-service/using-this-service/reference/downloads/costing/hrg4-2010-11-reference-costs-grouper-documentation>

the first step is again to identify the relevant HRGs. However, a complicating factor when comparing reference costs between years, especially over an extended period, is that they have been collected on different versions of HRGs (see Annex B). Table 4 shows the relevant HRGs under HRGv3.5 for 2005-06, Table 5 shows the relevant HRGs under HRG4 for 2006-07 to 2008-09 and Table 6 shows the relevant HRGs under HRG4 from 2009-10<sup>16</sup>.

**Table 4: Cholecystectomy HRGs under HRGv3.5 in 2005-06 reference costs**

HRG	Description
G13	Cholecystectomy >69 or with CC
G14	Cholecystectomy <70 without CC

**Table 5: Cholecystectomy HRGs under HRG4 in 2006-07 to 2008-09 reference costs**

HRG	Description
GA10A	Cholecystectomy with CC
GA10B	Cholecystectomy without CC

**Table 6: Cholecystectomy HRGs under HRG4 in 2009-10 and 2010-11 reference costs**

HRG	Description
GA10C	Open cholecystectomy without CC
GA10D	Laparoscopic cholecystectomy with length of stay 1 day or more without CC
GA10E	Laparoscopic cholecystectomy with length of stay 0 days without CC
GA10F	Open or laparoscopic cholecystectomy with CC

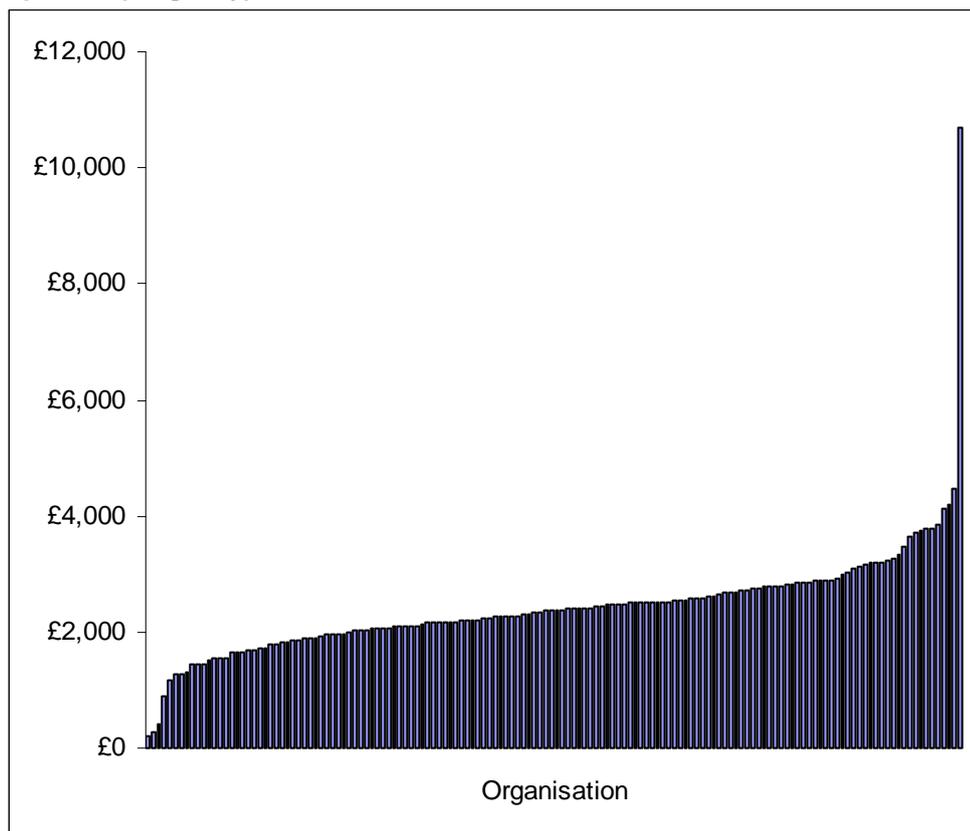
53. Once the required HRGs for each year have been identified, the method described in example one can be followed to obtain the required average cost.

### **Normal delivery - comparing costs between organisations**

54. Table 3 showed the national average unit cost for the normal delivery HRGs across all organisations. We can undertake a more detailed organisation level analysis using the source data provided on our website. Figure 1 shows the organisation level data for normal delivery with CC (NZ11A) for non-elective inpatient (long stay). Even though the national average unit cost is £2,292, the organisational level data shows a large range across organisations.

<sup>16</sup> The HRGs were redesigned for the introduction of a best practice tariff for cholecystectomy in 2010-11, which illustrates that the primary purpose of HRGs is to support the payment system.

**Figure 1: Inlier unit costs for normal delivery with complications and comorbidities, non-elective inpatient (long stay), NHS trusts and NHS foundation trusts, 2010-11**



## Queries

55. The volume of information in reference costs is vast. We hope this guide assists readers in finding and using relevant information.
56. If you have a query, please see if the information that you are seeking is already available using the resources (eg schedules, database, code to group workbooks) described in this guide. If you request information that is already available, then we will simply refer you to the published source.
57. If you are unable to find the information you require using these resources we can be contacted at [pbrcomms@dh.gsi.gov.uk](mailto:pbrcomms@dh.gsi.gov.uk).

## Annex A: Organisations requesting to resubmit after end of the collection process

Organisation	Details
Aintree University Hospitals NHS Foundation Trust	Included £10m of costs that should have been excluded
Camden and Islington NHS Foundation Trust	Understated improve access to psychological therapies activity
South London Healthcare Trust	Transposed unit costs and activity for chemotherapy
St George's Healthcare NHS Trust	Overstated adult critical care activity and therefore understated unit costs
Swindon PCT	Phlebotomy activity miscoded to other acute instead of community
West London Mental Health NHS Trust	Excluded contracted out activity

## Annex B: Reference costs key figures

£ billion	2006-07	2007-08	2008-09	2009-10	2010-11
<b>Analysis by setting</b>					
Elective Inpatient	4.4	4.7	5.1	5.3	5.4
Non-Elective Inpatient	10.3	10.7	11.8	12.6	13.3
Day Case	2.5	2.8	3.1	3.4	3.4
Outpatient Attendance	5.7	6.2	6.8	7.4	7.7
Outpatient Procedure	0.3	0.3	0.5	0.7	0.9
Accident and Emergency	1.4	1.5	1.6	1.8	1.9
Other Non-Acute	16.8	17.6	18.6	20.0	20.3
Total across all settings	41.3	43.9	47.6	51.2	53.0
<b>Analysis by schedule</b>					
Schedule 1 – NHS Trust Reference Cost Schedules	36.2	37.4	41.5	44.7	47.3
Schedule 2 – Primary Care Trust Reference Cost Schedules	4.4	4.7	5.2	5.5	4.5
Schedule 3 – PMS+ Sites Reference Cost Schedules	0.0	0.0	0.0	0.0	0.0
Schedule 4 – NHS Trust and PCT Combined Reference Cost Schedules	40.6	42.2	46.7	50.3	51.8
Schedule 5 – Non NHS Providers Reference Cost Schedules	0.5	0.5	0.6	0.7	0.9
<b>Analysis by HRG chapter</b>					
Chapter A – Nervous system	1.1	1.1	1.1	1.3	1.3
Chapter B – Eyes and periorbita	0.4	0.5	0.5	0.5	0.5
Chapter C – Mouth, head, neck and ears	0.7	0.7	0.8	0.8	0.9
Chapter D – Respiratory system	1.1	1.1	1.4	1.5	1.6
Chapter E – Cardiac surgery and primary cardiac conditions	1.7	1.8	1.9	2.0	2.0
Chapter F – Digestive system	2.1	2.3	2.5	2.7	2.7
Chapter G – Hepatobiliary and pancreatic system	0.5	0.5	0.5	0.6	0.6
Chapter H – Musculoskeletal system	3.1	3.4	3.7	3.8	3.9
Chapter J – Skin, breast and burns	0.8	0.8	0.9	0.9	0.9
Chapter K – Endocrine and metabolic system	0.2	0.2	0.2	0.2	0.2
Chapter L – Urinary tract and male reproductive system	1.2	1.2	1.4	1.5	1.5
Chapter M – Female reproductive system and assisted reproduction	0.6	0.6	0.6	0.7	0.7
Chapter N – Obstetrics	1.3	1.4	1.5	1.7	1.8
Chapter P – Diseases of childhood and neonates	0.8	0.8	0.9	0.9	1.0
Chapter Q – Vascular system	0.5	0.5	0.5	0.6	0.5
Chapter R – Radiology and Nuclear Medicine	-	-	-	-	0.2
Chapter S – Haematology, chemotherapy, radiotherapy and specialist palliative care	0.4	0.4	0.5	0.5	0.5
Chapter U – Undefined groups	0.1	0.1	0.1	0.1	0.1
Chapter V – Multiple trauma, emergency medicine and rehabilitation	0.2	0.1	0.2	0.2	0.2
Chapter W – Immunology, infectious diseases and other contacts with health services	0.5	0.6	0.7	0.8	0.9
Own data	40.8	43.2	46.9	50.5	52.1
Commissioned	0.3	0.3	0.3	0.4	0.6
Contracted out	0.2	0.2	0.3	0.3	0.3

### Notes:

Chapter breakdown covers elective inpatient, non-elective inpatient and day case only.

UZ01Z, WD HRGs and non-elective inpatient (short stay) excess bed days are not included in the schedules.

## Annex C: Source data

The source data is provided in six CSV files, listed below.

CSV file name	Contents
1 Data	All organisation level data. Mean, actual cost, expected cost and mapping pot
2 Organisation description	Data provider code and name, SHA code and name, organisation type and MFF value
3 Department description	Department code and name
4 Service description	Service code and name
5 Currency description	Currency code and name
6 Units	Shows unit of data

The following tables describe the contents of each CSV file

### 1 Data

Field name <sup>1</sup>	Description
Org code	Organisation code
Org type	Trust, PCT or PMS+
Supplier type	Type of data (own, commissioned or contracted out)
Department code	Department code (e.g. EI)
Service code	Service code (e.g. 100)
Currency code	Currency code (e.g. AA01Z)
Unit Cost	Average cost of providing the activity
Activity	See units table for details
Bed days	Number of inlier bed days
Mean <sup>2</sup>	The national average unit cost by org type
Actual_cost	Organisation's activity multiplied by organisation's unit cost
Expected_cost	Organisation's activity multiplied by the mean
Mapping pot <sup>3</sup>	Maps all activity to one of 13 groups. Up to 7 character code – e.g. '01_EI'. '01' refers to pot 1, EI is a description of the pot – Elective Inpatient.

<sup>1</sup> Activity P2, Activity P3, Activity P4 and flag fields have not been shown in the table.

<sup>2</sup> DC and EI are combined. The service code is not taken into account when calculating the means for DC, EI, NEI and DCRA data.

<sup>3</sup> Contracted out, Commissioned, UZ01Z, WD11Z, WD22Z and WD11Z data, are not included in the published RCI calculation. Therefore, they are allocated to the '13\_Excl' pot.

### 2 Organisation Description

Field name	Description
Org Code	Organisation code
Organisation name	Organisation name
SHA Code	SHA code of organisation
SHA Name	SHA name of organisation
Ref Cost Org Type	Type of organisation submitting data (Trust, PCT or PMS+)
MFF <sup>1</sup>	Market forces factor for the organisation, specifically used for calculating the RCIs (this differs from the MFF used for payment purposes).

<sup>1</sup>Organisations who didn't report any activity used for calculating the RCI (i.e. Own data excluding UZ01Z and WD HRG codes) have not been assigned a MFF value for Reference Costs purposes.

### 3 Department description

Field name	Description
Department code	Department code (e.g. EI)
Department name	Department name (e.g. elective inpatient)

### 4 Service description

Field name	Description
Service code	Service code (e.g. 100)
Service name	Service name (e.g. general surgery)

### 5 Currency description

Field name	Description
Currency code	Currency code (e.g. AA01Z)
Currency name	Currency name (e.g. intracranial procedures for trauma with major diagnosis)

### 6 Units

Field name	Description
Department code	Department code (e.g. EI)
Service code	Service code (e.g. 100)
Currency code	Currency code (e.g. AA01Z)
Units	E.g. FCE

## Annex D: Using the source data

### Introduction

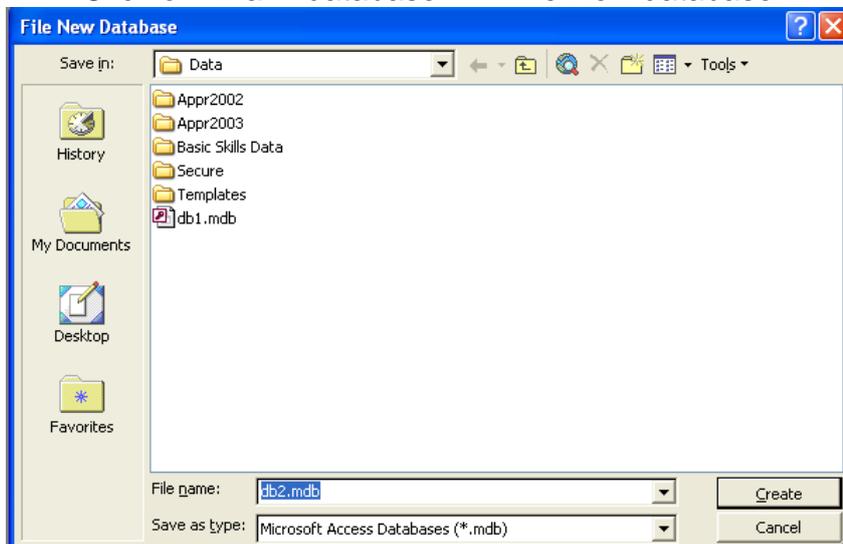
1. This guidance provides instructions for users on how to import the CSV files described in [Annex B](#) into MS Access 2002 and then use the data analysis tool. Please note that the process required for other versions of Access may differ slightly.

### Stage 1: Importing the CSV files into Microsoft Access

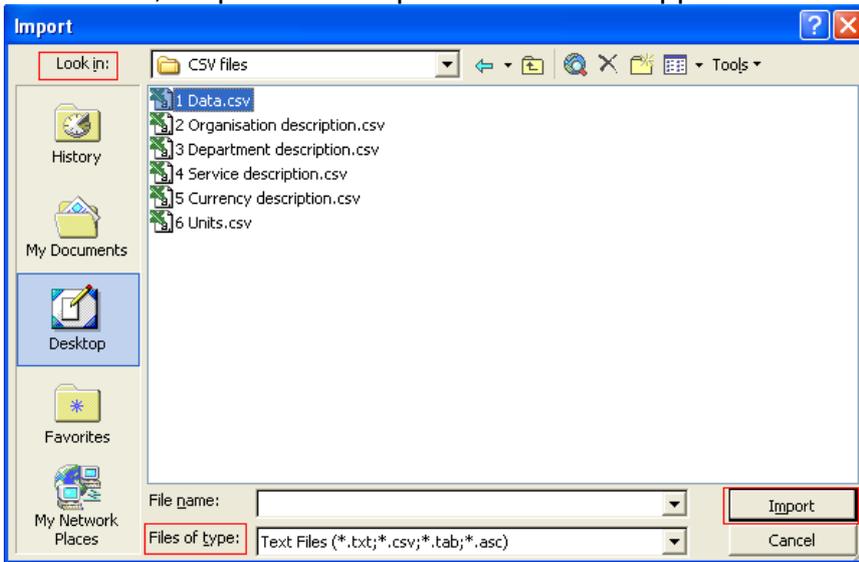
2. Download the documents from the DH website and save the CSV files somewhere easy to find (eg your desktop). Please do not open the CSV files.
3. Open up Microsoft Access. From the menu bar at the top of the screen, click: “File”, “New”. A new pane will appear on the right hand side.



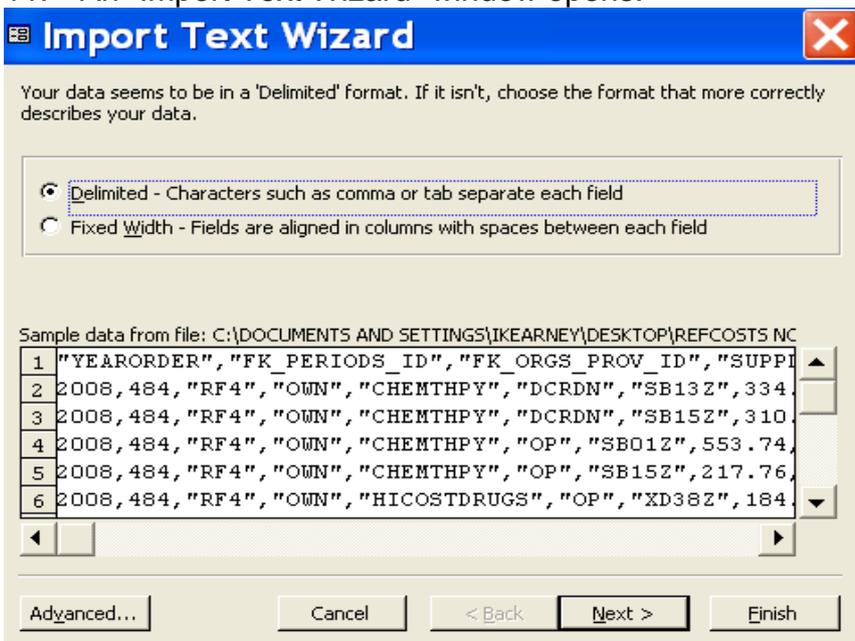
4. Click on “Blank database”. A “File New database” window will appear.



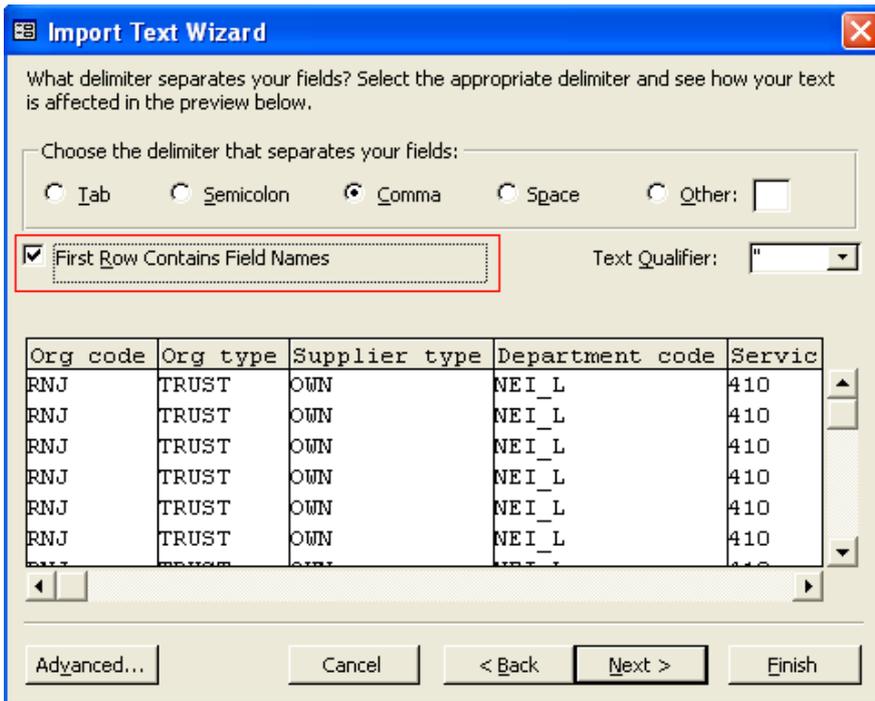
- Save the database where it is easily accessible (eg your desktop).
- Click: "Create". From the menu bar at the top of the screen, Click "File", "Get External data", "Import". An "Import" window will appear.



- Change the "Files of type" box (at the bottom of the window) to "Text Files (\*.txt;\*.csv;\*.tab;\*.asc)".
- Change 'Look in' box to the folder where you saved the CSV files.
- Select the "1 Data.csv" file from it (so that it appears with a blue background).
- Click: "Import".
- An "Import Text Wizard" window opens.

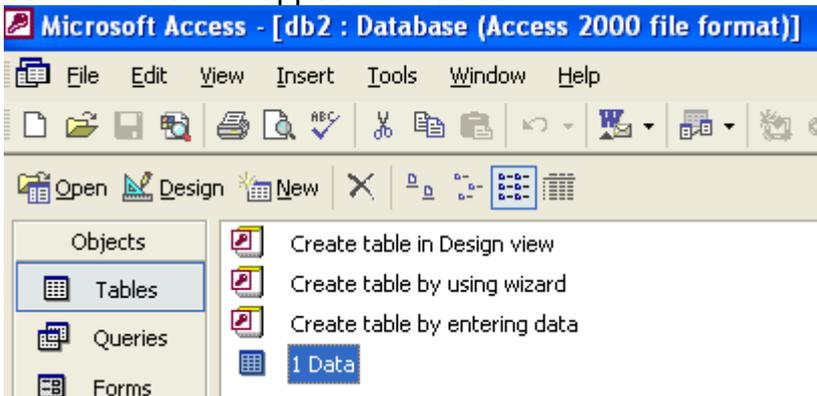


- Click: "Next".
- Tick: "First Row Contains Field Names".



14. Click: "Finish".

15. "1 Data" will appear in "Tables".

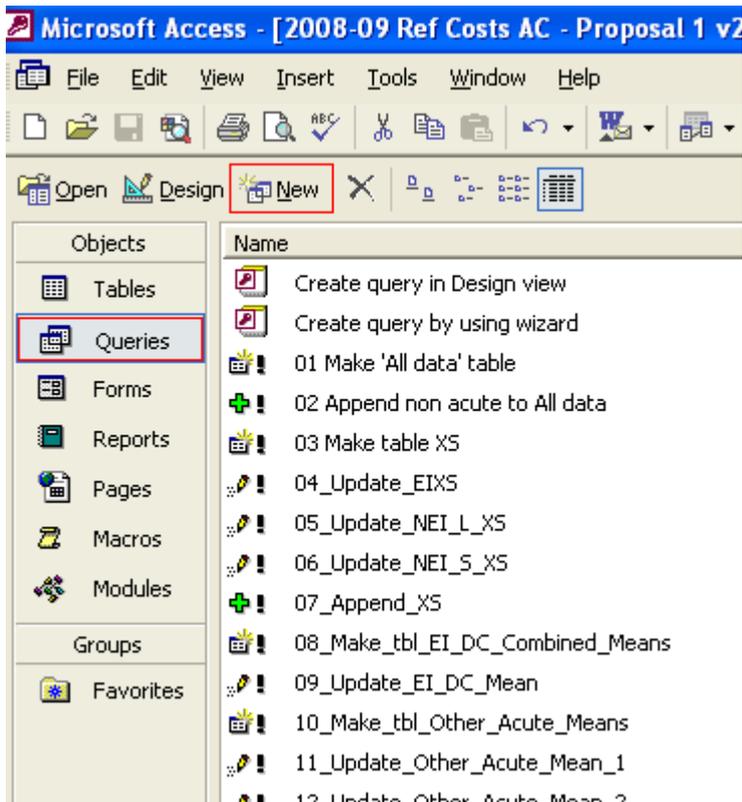


16. Repeat steps 7 to 16 above for the other five CSV files.

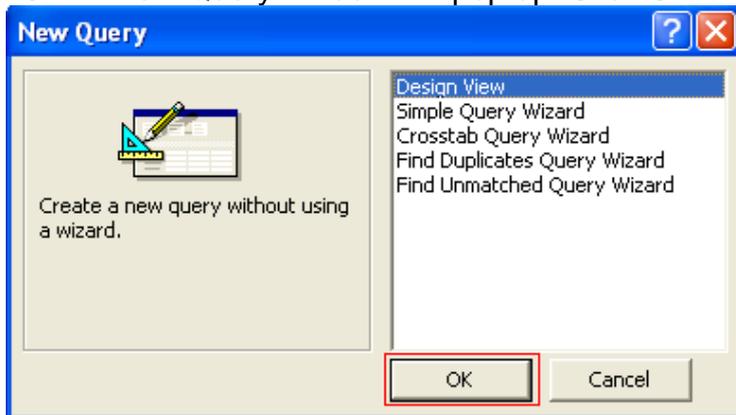
## Stage 2: Creating the standard queries for data analysis

17. This process will create standard queries which will allow organisations to compare their data against the national averages and calculate the RCIs. Users are able to create other queries, as required.

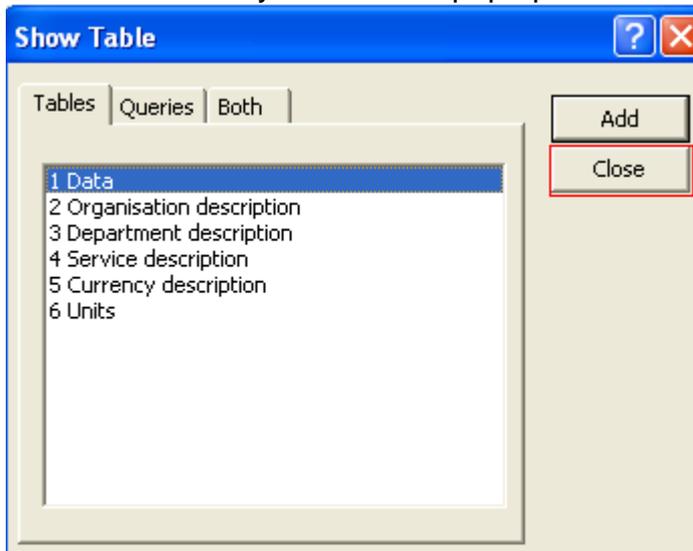
18. Go into the Queries, and then Click on New.



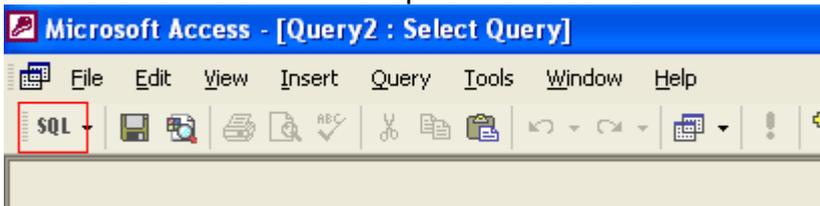
19. A New Query window will pop up. Click OK.



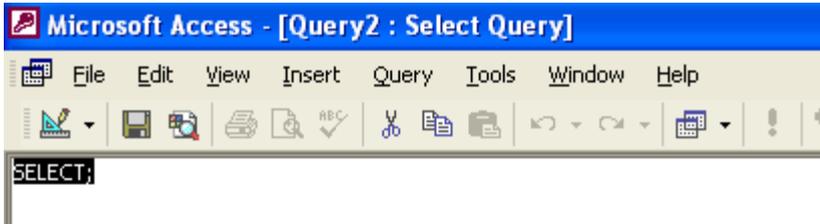
20. A New Query window will pop up. Click Close.



21. Click on 'SQL' in the top left hand corner.



22. A new window will appear.

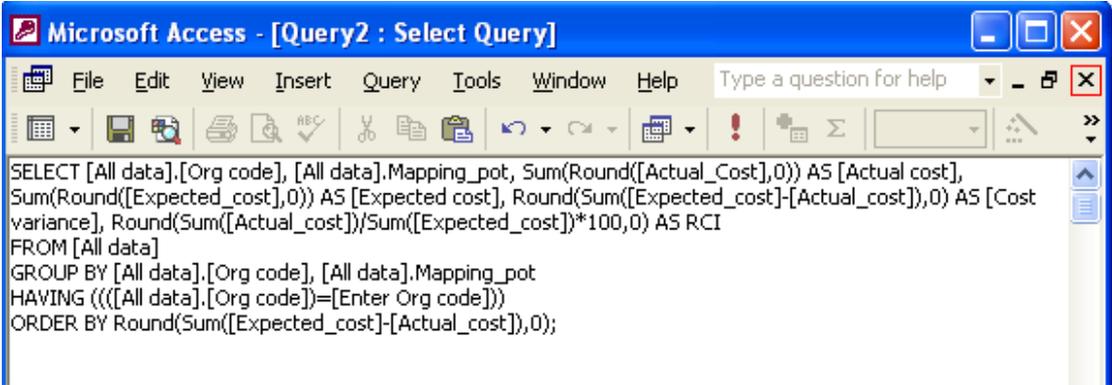


23. Paste the SQL text in the first row of the table below into the window.

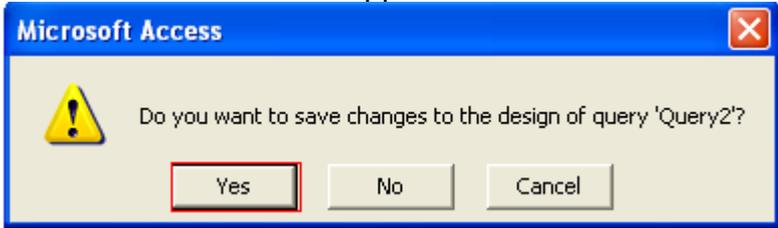
SQL Text	Query name
<pre>SELECT [1 Data].[Org code], [1 Data].Mapping_pot, Sum(Round([Actual_Cost],0)) AS [Actual cost], Sum(Round([Expected_cost],0)) AS [Expected cost], Round(Sum([Expected_cost]-[Actual_cost]),0) AS [Cost variance], Round(Sum([Actual_cost])/Sum([Expected_cost])*100,2) AS RCI FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].Mapping_pot HAVING ((([1 Data].[Org code])=[Enter Org code])) ORDER BY Round(Sum([Expected_cost]-[Actual_cost]),0);</pre>	1 By Org and RCI pot
<pre>SELECT [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code], Sum(Round([Actual_Cost],0)) AS [Actual cost], Sum(Round([Expected_cost],0)) AS [Expected cost], Round(Sum([Expected_cost]-[Actual_cost]),0) AS [Cost variance], Round(Sum([Actual_cost])/Sum([Expected_cost])*100,2) AS RCI FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code] HAVING ((([1 Data].[Org code])=[Enter Org code]) AND (([1 Data].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_PAR, 11_A&amp;E, 12_UB, 13_Excl])) ORDER BY Round(Sum([Expected_cost]-[Actual_cost]),0);</pre>	2 By Org, RCI pot, Dept
<pre>SELECT [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code], [1 Data].[Service code], Sum(Round([Actual_Cost],0)) AS [Actual cost], Sum(Round([Expected_cost],0)) AS [Expected cost], Round(Sum([Expected_cost]-[Actual_cost]),0) AS [Cost variance], Round(Sum([Actual_cost])/Sum([Expected_cost])*100,2) AS RCI FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code], [1 Data].[Service code] HAVING ((([1 Data].[Org code])=[Enter Org code]) AND (([1 Data].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_PAR, 11_A&amp;E, 12_UB, 13_Excl]) AND (([1 Data].[Department code])=[Enter Department code])) ORDER BY Round(Sum([Expected_cost]-[Actual_cost]),0);</pre>	3 By Org, RCI pot, Dept and Service
<pre>SELECT [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code], [1 Data].[Service code], [1 Data].[Currency code], Sum(Round([Actual_Cost],0)) AS [Actual cost], Sum(Round([Expected_cost],0)) AS [Expected cost], Round(Sum([Expected_cost]-[Actual_cost]),0) AS [Cost variance], Round(Sum([Actual_cost])/Sum([Expected_cost])*100,2) AS RCI FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].Mapping_pot, [1 Data].[Department code], [1 Data].[Service code], [1 Data].[Currency code]</pre>	4 By Org, RCI pot, Dept, Service and Currency

```
HAVING ((([1 Data].[Org code])=[Enter Org code]) AND (([1 Data].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_PAR, 11_A&E, 12_UB, 13_Excl]) AND (([1 Data].[Department code])=[Enter Department code]) AND (([1 Data].[Service code])=[Enter service code])) ORDER BY Round(Sum([Expected_cost]-[Actual_cost]),0);
```

24. Close the window.



25. A new window will appear. Click 'Yes'.



26. A new window will appear. Type in the name from the table above in step 23, then click 'OK'.



27. Repeat this process for the other three queries listed in step 23 above.

**Stage 3: Using the standard queries**

- 28. The standard queries are designed to allow organisations to drill into their data. Organisations may want to use this to highlight areas in which they have substantial activity and where their costs are much higher or lower than the national average.
- 29. The four standard queries all show actual cost, expected cost, cost variance (expected cost – actual cost) and RCI. The cost variance is similar to the RCI, however it takes activity into account. The queries are sorted by cost variance – ascending.
- 30. The amount of detail shown increases with each standard query. The table below shows how the detail builds up.

Query	Org code	RCI pot	Dept	Service	Currency
1 By Org and RCI pot	✓	✓			
2 By Org, RCI pot and Dept	✓	✓	✓		
3 By Org, RCI pot, Dept and Service	✓	✓	✓	✓	
4 By Org, RCI pot, Dept, Service and Currency	✓	✓	✓	✓	✓

31. The standard queries require some of the variables to be selected after running the query, eg the “1 By Org and RCI pot” query requires org code to be selected. These pre-selected fields are shaded in the table.
32. Once the query has been set up, it can be run by double clicking it. A new window(s) will appear. Enter the information required and click on OK.

