



National Audit Office

MEASURING UP

HOW GOOD ARE THE GOVERNMENT'S
DATA SYSTEMS FOR MONITORING PERFORMANCE
AGAINST PUBLIC SERVICE AGREEMENTS?

JUNE 2010

Comprehensive Spending Review 2007 covering the period 2008-2011

**Review of the data systems for Public Service
Agreement 13 led by the Department for
Education:**

'Improve children and young people's safety'

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Summary

Introduction

1. This report summarises the results of our examination of the data systems used by the Government in 2009 to monitor and report on progress against Public Service Agreement (PSA) 13 “Improve children and young people’s safety”.

The PSA and the departments

2. PSAs are at the centre of the Government’s performance measurement system. They are usually three-year agreements, set during the spending review process and negotiated between departments and the Treasury. They set the objectives for the priority areas of the Government’s work.
3. This PSA is led by the Department for Education – formerly the Department for Children, Schools and Families – (the Department), with data provided by a range of sources. Each PSA has a Senior Responsible Officer who is responsible for maintaining a sound system of control across departmental boundaries that supports the achievement of the PSA. The underlying data systems are an important element in this framework of control.
4. The most recent public statement provided by the Department of progress against this PSA was in its 2009 Autumn Performance Report in December 2009.

The purpose and scope of this review

5. The Government invited the Comptroller and Auditor General to validate the data systems used by Government to monitor and report its performance. During the period October to December 2009, the National Audit Office carried out an examination of the data systems for all the indicators used to report performance against this PSA. This involved a detailed review of the processes and controls governing:
 - The match between the indicators selected to measure performance and the PSA: the indicators should address all key elements of performance referred to in the PSA.
 - The match between indicators and their data systems: the data system should produce data that allows the Department to accurately measure the relevant element of performance.
 - For each indicator, the selection, collection, processing and analysis of data: control procedures should mitigate all known significant risks to data reliability. In addition, system processes and controls should be adequately documented to support consistent application over time.
 - The reporting of results: outturn data should be presented fairly for all key aspects of performance referred to in the target. Any significant limitations should be disclosed and the implications for interpreting progress explained.

6. Our conclusions are summarised in the form of traffic lights (Figure 1). The ratings are based on the extent to which departments have:
- put in place and operated internal controls over the data systems that are effective and proportionate to the risks involved; and
 - explained clearly any limitations in the quality of its data systems to Parliament and the public.
7. The remaining sections of this report provide an overview of the results of our assessment, followed by a brief description of the findings and conclusions for each individual data system. Our assessment does not provide a conclusion on the accuracy of the outturn figures included in the Department’s public performance statements. This is because the existence of sound data systems reduces but does not eliminate the possibility of error in reported data.

Figure 1: Key to traffic light ratings

Rating	Meaning ...
GREEN (Fit for purpose)	The data system is fit for the purpose of measuring and reporting performance against the indicator.
GREEN (Disclosure)	The data system is appropriate for the indicator and the Department has explained fully the implications of limitations that cannot be cost-effectively controlled.
AMBER (Systems)	Broadly appropriate, but needs strengthening to ensure that remaining risks are adequately controlled.
AMBER (Disclosure)	Broadly appropriate, but includes limitations that cannot be cost-effectively controlled; the Department should explain the implications of these.
RED (Systems)	The data system does not permit reliable measurement and reporting of performance against the indicator.
RED (Not established)	The Department has not yet put in place a system to measure performance against the indicator.

Overview

8. The aim of this PSA is to improve children and young people’s safety. This PSA is supported by four indicators. There is a named officer within the Department responsible for each of these indicators who is supported by a lead analyst. Performance against the indicators is monitored quarterly within the Department as part of its internal PSA performance reporting. The four indicators underpinning this PSA represent issues that are being addressed to improve the safety of children and young people. Progress against them will illustrate the extent to which the policies

and governance structures in place have resulted in change for children and young people's safety.

9. Figure 2 summarises our assessment of the data systems:

Figure 2: Summary of assessments for indicator data systems

No	Indicator	Rating
1	Percentage of children who have experienced bullying.	AMBER (Systems)
2	Percentage of children referred to children's social care who received an initial assessment within seven working days.	AMBER (Systems)
3	Hospital admissions caused by unintentional and deliberate injuries to children and young people.	GREEN (Fit for purpose)
4	Deaths of 0-17 year olds due to external causes.	AMBER (Systems)

10. The Department has worked to integrate the above four indicators within this PSA into its operational and performance management activities, for instance by integrating them into its business plan and performance reports.

11. The Department has a Data Services Group, chaired by its Head of Profession for Statistics. This Group acts as a central point within the Department for the review of the data systems underpinning the majority of the Department's PSAs.

12. The Head of Profession for Statistics has day to day responsibility for data quality issues, with direct access and accountability to the Department's Accounting Officer as required.

13. The Department's Director Generals are responsible for data quality in their respective areas of activity and take a proactive role in promoting high quality performance information, for example through the review of indicator definitions and involvement in the design of data systems. Furthermore, the Department's relevant members of staff receive training within this area appropriate to their roles, with regular reviews of their training needs.

14. The Department has formal mechanisms for identifying and assessing areas of risk and reporting these to its Management Board. The Department's risk management processes include consideration of issues related to its PSAs.

15. The Department undertakes internal monitoring and analysis in respect of its performance against its PSAs and the underlying indicators which support them, including the preparation of detailed reports which set out (per indicator): current performance, significant risks to performance and further action to be taken in order to mitigate the risks identified and to further achieve the Department's objectives.

The Department reports performance against its PSAs to its Management Board on a monthly basis.

16. Full performance is reported externally twice a year in the Department's Autumn Performance Report and the Departmental Annual Report.

17. Our main conclusions on the Department's overall arrangements with respect to the PSA and the indicators that it encompasses are as follows:

- The Department is currently in the process of developing a Data Quality Strategy. This document will be used to codify its overall approach to data quality, the roles and responsibilities of officers involved in data collection, data analysis and reporting. This document will then be used as the basis for ensuring data quality is embedded throughout the Department.
- Quality control processes are undertaken either by individual Data Owners (officers responsible for data compilation), who complete these checks on their respective indicator, or through the Data Services Group. However the Department does not have a standardised quality control methodology which can guide and inform Data Owners on the processes which they must follow to ensure that data are of the required quality prior to it being used for the calculation of indicators. For example some Data Owners undertake reconciliation checks to ensure data which is transferred across IT systems is consistent; however this process may not be undertaken by another Data Owner for a data system which has a similar IT element.
- Performance against the Department's PSAs reported within the published Autumn Performance Report 2008 contained performance reporting errors. These errors were identified after publication and corrected in subsequent versions. These were primarily due to performance data not being cleared for publication by the Data Owner. We were informed by Data Owners that they were not aware that the data which they were producing would be featured within the Autumn Performance Report. A revised process has been implemented for the publication of performance data for the 2009 Autumn Performance Report to ensure that data reported is accurate and has been authorised for publication by the Data Owner.
- The Department has agreed measurement annexes for all of its PSA indicators, setting out the definition of the indicator and the data sources to be used. The current National Indicator Set was introduced following the Government's Comprehensive Spending Review 2007. In the majority of cases in respect of indicators defined through the National Indicator Set, a target which measures performance has not been set. However we noted that in some cases, internal targets have been set and performance reported to the Department's Board.

- The Department does not in all cases have detailed written procedure notes in place explaining how each indicator is to be calculated and how any outliers or missing data are to be addressed. While the Department's current procedures are in most cases robust, the fact that they are not all recorded formally may make it difficult for the Department to ensure the comparability of data over time, particularly if responsibility for the calculation of performance against a given indicator is passed to a different member of staff. Where this finding has implications for individual indicators, we explore it in the next section of this report. We recommend that for each indicator the Department develops formal procedure notes setting out how the indicator is to be calculated and reported, so that this can be undertaken consistently over time and by different members of staff.
- The Department's Data Services Group has a remit to ensure robust processes are in place over the Department's data collection processes. However we noted that in some instances there are data streams which are used to compile indicators which are not reviewed by the Data Services Group. This occurs in some cases where data is provided directly to a Data Owner by another government body or an external contractor. This means that data which is used to compile indicators has not undergone an independent review to ensure it is of the required quality to support the indicator calculation. The Data Services Group are not fully aware of all the data systems within the Department which are used to compile indicators supporting its DSOs.

Assessment of indicator set

18. In undertaking the validation we reviewed the documentation associated with the PSA and considered whether the indicators selected to measure progress are consistent with the scope of this PSA. The aim of the PSA is to 'improve children and young people's safety'. While the four indicators underpinning the PSA are providing some of the data to assess performance against the PSA target, other data sources could be used to provide a fuller coverage of the range of issues which could be impacting on the effective delivery of this PSA such as crime statistics from the Ministry of Justice.

Findings and conclusions for individual data systems

19. The following sections summarise the results of the NAO's examination of each data system.

Indicator 1: Percentage of children who have experienced bullying

Conclusion: AMBER (Systems)

20. We have concluded that the data system underlying this indicator is broadly appropriate, but there remain risks around standardisation of data collection. The Department has put improvements in place for subsequent surveys. Disclosures in the departmental annual report could be improved regarding the age range covered. The Department should also consider how it measures bullying in under 10 year olds and whether the baseline remains appropriate given changes to the survey question.

Characteristics of the data system

21. This indicator is defined under the National Indicator Set (NI 69). The data for this indicator is collected by a pupil perception and experience survey called "Tellus". The first Tellus survey was delivered to a handful of local authorities in 2006 by Ofsted before being developed as a national survey by Ofsted with support from the Department. The subsequent waves of the Tellus survey (Tellus2 and Tellus3) were delivered by Ofsted in 2007 and 2008 respectively with assistance from participating local authorities. The survey reported in the 2009 Autumn Performance Report was Tellus3.
22. Tellus is a quantitative self-completion online survey designed to gather children and young people's views on their life, school and local area. The survey is aimed at children and young people in Years 6 (age 10-11), 8 (aged 12-13) and 10 (aged 14-15). It is delivered in schools and the sample includes mainstream primary and secondary schools, academies, special schools and pupil referral units.
23. Ofsted provided the Department with data from Tellus3 so it could calculate the National Indicator performance measures which were published via a Statistical Release in January 2009.
24. In developing the national survey Ofsted and the Department sought specialist advice to develop the survey methodology and questionnaire content. This work concluded that a sample of children and young people in years 6, 8 and 10 would provide a representative view of children and young people. The questionnaire content was cognitively tested with children in years 6, 8 and 10. The specific years were chosen in order to give a large and broad enough response level so as to reduce the statistical margin of error (+/- 0.5 per cent) at the 95 per cent confidence level.

25. Ofsted was responsible for verifying that sufficient data had been collected and was also responsible for weighting responses in order to obtain the desired cross-section of responses by school type, gender and eligibility for free school meals. The data was then provided to the Department to calculate the National Indicator performance measures.
26. Bullying was assessed in the Tellus3 survey by asking children and young people one specific question. The survey defines bullying for the respondent, as: 'when people hurt or pick on you on purpose (for example by teasing or hurting you, including by mobile phone or on the internet, by taking or breaking your things, or by leaving you out)'. If a child responds to any of the designated options relating to having experienced bullying inside or outside of school within the previous 12 months then they are deemed to have experienced bullying. The results of this element of the survey are used to calculate performance against the indicator.

Findings

27. Two versions of the Tellus3 survey were developed, one for primary school children and the other for secondary school children. A standard question set was used for each questionnaire, with appropriate controls in place, such as clear instructions to respondents, standardised answers to respond to questions by respondents and restrictions on the level of assistance that can be given to respondents. This would help ensure that the data collected was robust, reliable and comparable.
28. Validation checks (for example on school year and age) were carried out on the data by Ofsted to check that all responses fell into acceptable ranges. The responses from the survey were also weighted to ensure that the data for a local authority was representative of the population of children within that area, in terms of gender and proportion of children eligible for free school meals, as a proxy measure for deprivation.
29. We noted that five local authorities chose not to participate in the Tellus3 survey and in total 148,998 children and young people from 3,113 schools in England took part in the survey. Nationally the response rate was sufficient for the departmental indicator to be calculated and the confidence level to be met.
30. Responsibility for the Tellus survey transferred from Ofsted to the Department in 2008 and the next waves of the survey, Tellus4, was delivered by the National Foundation for Educational Research (NFER) on the Department's behalf. A number of key changes were made to the design and delivery of the survey with the aim of improving the robustness of the data and confidence in its use. These changes included a dedicated website designed to support all aspects of the survey, a streamlining of the administrative and management processes and more detailed guidance to schools to help ensure consistent delivery.

31. The Tellus4 survey data differs from that of Tellus3 for a number of reasons. Firstly, responses were weighted by gender, year group and the Income Deprivation Affecting Children Index scores which the Department considered to be a better measure for deprivation rather than the previous measure of free school meal eligibility. In addition, to improve response rates for the Tellus4 survey, the timing was changed from the Summer term in 2008 to the Autumn term in 2009. As a result of this timing change and other improvements made, the Tellus4 survey achieved 253,755 individual responses in 3,699 schools with only one local authority choosing not to participate – an improvement of over 100,000 responses from Tellus3.
32. The Department re-weighted the Tellus3 data and recalculated the Tellus3 National Indicators to aid comparability. The National Indicator performance measures for 2009 (Tellus4) and information of the re-weighted Tellus3 data were published in a Statistical Release in February 2010.
33. The Tellus 4 survey made changes to the questions asked in relation to bullying and in the indicator calculation methodology. These changes have impacted the overall indicator figure (28.8 per cent) compared to the previous year (50.1 per cent). The Department considers that the Tellus3 survey may have overstated the level of bullying experienced in the previous 12 months since it was not clear how children who may have been bullied outside of this time frame responded. However, there are no identified plans to reset the baseline within the PSA Measurement Annex. The Department will report the results in the 2010 Departmental Annual Report and should disclose the implications for the previously reported Tellus3 survey results and the baseline.
34. There remains a risk that collection methods can vary between schools and areas, for instance children being asked to do the survey in isolation in some schools or as a group in others. If the survey was undertaken in a group situation it would affect the responses given as a child is less likely to state they may have been bullied. No specific assessment has been made by the Department of the risks to standardisation of data collection. The age range covered by the Tellus3 survey was not disclosed in the 2009 Autumn Performance Report.
35. The Department commissioned an independent evaluation of the Tellus4 survey. The evaluation was undertaken as a small scale, targeted piece of work aimed at providing an insight into the delivery of the Tellus4 survey by schools and evaluating the improvements made to Tellus4. The Research report will be published by the Department later in the year.

Indicator 2: Percentage of children referred to children's social care who received an initial assessment within seven working days

Conclusion: AMBER (Systems)

36. We have concluded that the data system underlying this indicator is broadly appropriate, but needs strengthening to ensure that data can be verified to individual child records. The Department is currently revising the data collection process from 2009-10 and this is expected to address the identified weaknesses in the current system.

Characteristics of the data system

37. This indicator is defined under the National Indicator Set (NIS 59). It measures the number of initial assessments completed in the period between 1 April and 31 March each year, within seven working days of referral, as a percentage of the number of initial assessments completed in that period. An initial assessment is defined as an assessment of any child who has been referred to social services with a request that services be provided. An initial assessment is deemed to have started at the point of referral to a social services department.

38. Initial assessments are an important indicator of how quickly services can respond when a child is thought to be at risk of serious harm. Data to support this indicator is provided by relevant local authorities on a Child Protection and Referrals (CPR3) form. The data set covers all children who have been referred to children's social care. Data is submitted by the local authority through an online gateway.

Findings

39. The Department is currently revising the data collection process for this indicator from 2009-10. This is expected to address the identified weaknesses in the system, which is that it collects aggregate data on children. Currently the Department cannot verify the data to individual child records to ensure that the return has been accurately compiled and reflects the child's current status. From 2009-10 data collection will be incorporated within the Children in Need Census and this will address this point.

40. In 2008-09 data collection was via the statutory CPR3 return completed by all local authorities. The CPR3 submission included the number of initial assessments carried out within seven days and in year, and was submitted to the Department as a total figure for each local authority via an online gateway. The relevant percentage for each local authority was also calculated within the CPR3 form.

41. In 2008-09 the Department undertook a number of validation checks on the data submitted by local authorities. These included automated checks (sense checks to prevent transposition errors) the use of a help desk, where data analysts "cleaned data" prior to the calculation of the indicator and the use of a Data Analysis Team, who contacted local authorities to resolve errors identified through the validation

process. We noted that any errors raised through this process were documented. In 2008-09 these amounted to approximately 50, which mainly involved transposition errors and formatting errors which the Department considered to be minor, all of which, we were informed, were all resolved satisfactorily.

42. The Department did not undertake any verification of the data submitted by local authorities back to source documentation. We noted that this was in part due to the aggregate nature of data submitted. Additionally the Department did not seek any assurance from local authorities on the quality of the data being submitted. However the Department confirmed that submissions from individual local authorities can only be submitted by authorised officers who are required to ensure that data submitted is valid and accurate.
43. The Department reported performance against this indicator in the 2009 Autumn Performance Report. While the data set was clearly defined the narrative did not include any description of the weaknesses identified by the Department on the use of aggregated data.
44. The Department is in the process of developing and implementing a revised data collection system for this indicator. A project plan was developed in 2008 setting out the key requirements of the system and how the new system (COLLECT) would be implemented and accessible by all local authorities by April 2010. We were informed by the Data Owner that the Department has achieved the majority of milestones associated with the development of the revised system.
45. The Department is also currently in the process of developing some of the key controls for the new system which will ensure that data is robust, valid and suitable for the calculation of the indicator. All data collections and system developments carried out in the Department follow project management guidelines; a full risk assessment is carried out and countermeasures and contingencies identified which are reviewed regularly through working groups and project boards. The Department should ensure that this process involves relevant officers within the Department for example Data Analysts and Internal Audit. This process should develop controls which ensures these risks are mitigated and do not impact on the implementation of the system within the required timescales.
46. The Department should also assess the risks to quality of the child level data received from local authorities and consider the extent to which data should be validated to source documentation periodically.

Indicator 3: Hospital admissions caused by unintentional and deliberate injuries to children and young people

Conclusion: GREEN (Fit for purpose)

47. The data system is fit for the purpose of measuring and reporting performance against the indicator. The primary system, Hospital Episode Statistics (HES), is a data system governed by National Statistics and subject to the National Statistics Code of Practice. It is a well established and reliable data collection stream and any risks to data quality are clearly identified and controls exist to address them.

Characteristics of the data system

48. Data is drawn from the HES data which disaggregates hospital episodes by serious injury type. The injury types which will be used for this indicator are those which have been identified under international classification standards as likely to be related to accidental or self inflicted injury, assault, or complications due to medical and surgical care. The indicator is measured as a rate per 10,000 of the total population of children and young people aged under 18, obtained from the Office for National Statistics population estimates which is a National Statistic.

Findings

49. The HES data collection is classified as a National Statistic and therefore complies with the National Statistics Code of Practice which ensures the data quality processes are robust before classification. All NHS trusts collect data on patients' hospital episodes using their Patient Administration Systems (PAS). This data is uploaded by each trust on a monthly basis into the Secondary Uses Service (SUS), a data warehouse. The HES team based at the NHS Information Centre extract data from SUS on a monthly basis, with an additional extract for the full year taken after the year-end, and perform validation checks on these data extracts. These include running algorithms to detect duplicate records and reconciliations of volume of activity data between data held at trusts and data extracted from the SUS. The validated annual dataset is submitted by the HES team to the Department of Health to a specification agreed between HES and the Department of Health.

50. Information on patient episodes is coded in line with International Statistical Classification of Diseases and Related Health Problems (ICD-10) guidelines and captured on PAS. The main data risk identified relates to miscoding of patient episodes, resulting in inaccurate data being uploaded into SUS. NHS Information Centre staff reported to us that historically there have been some concerns over the quality of clinical coding, although this has improved following the introduction of *Payment by Results* and the related assurance framework. We note that *Payment by Results* has introduced an operational use for the data which increases the benefits derived locally from effective scrutiny and controls over data quality. The risk of errors in coding is also mitigated by the fact that all clinical coders receive annual training from Connecting for Health (CfH). When clinical coders are first employed

they must attend a CfH training course, with a resulting exam. If unsuccessful in this exam, the clinical coder is unable to work. The NHS Data Dictionary is the main source of guidance for clinical coders and this is maintained by CfH. As a result of the measures taken, we do not consider the risk of miscoding significant enough to affect the reported results.

51. The NHS Information Centre carries out further validation checks on receipt of the source data from NHS trusts such as ensuring only valid codes are used and to remove duplicate entries. The NHS Information Centre does not amend data but will simply change incorrect fields to 'invalid' or error'. Therefore, a small risk exists over data completeness, but the population of episodes is so great that this is not significant. Office for National Statistics population estimates are well established and are also classified as a National Statistic.

Indicator 4: Deaths of 0-17 year olds due to external causes

Conclusion: AMBER (Systems)

52. We have concluded that the data system underlying this indicator is broadly appropriate, but needs strengthening to ensure that remaining risks are adequately controlled. The Department should improve documentation of established validation checks and develop appropriate disclosures for 2010 Departmental Annual Report.

Characteristics of the data system

53. External causes of childhood deaths include accidents, self harm, assault (including neglect and abandonment), events of undetermined intent or awaiting determination of intent and complications of medical and surgical care.

54. Data is provided by the Office for National Statistics (ONS). The data set used is the ONS mortality statistics on all child deaths from birth up to age 18, over the calendar year period.

55. The data provided by the ONS is broken down by age and the Department can use this information for the calculation of the indicator without any adjustment.

56. The indicator is new, replacing 'Preventable deaths as recorded through child death review panel processes' since data collected in the first year of the review process could not be relied upon to be comparable with future years data.

Findings

57. The Department places full reliance on the ONS to ensure that data is robust and has been subject to appropriate quality control checks.

58. The supply of data to the Department is completed informally, there is no assessment of risks associated with the process by which the data is provided.

59. Departmental staff perform validity checks on the data received by comparing it to information that is reported by the ONS on its website. However these processes and procedures are not documented.

60. This indicator is new and the format and wording for the annual performance report have not yet been agreed. Consequently we are not able to form a conclusion on the reporting of the indicator.