

# Methodology note: the risk assessment process for good and outstanding maintained schools and academies

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This methodology note sets out the risk assessment process that Ofsted uses for primary and secondary maintained schools and academies that are judged to be good and outstanding.

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## Introduction

We use risk assessment to ensure that our approach to inspection is proportionate and to focus our efforts where they can have the greatest impact. We also use risk assessment to identify good and exempt outstanding schools for which we have concerns about their performance. It is important to note that the risk assessment process is not used in any way to pre-judge inspection outcomes, and inspectors do not have access to the risk assessments when inspecting schools.

For a number of years, we have used statistical models to ensure proportionate inspection. Our new methodology has not changed this and we believe it will improve our capacity to identify concerns about performance.

This is a note on the methodology applied using 2017 published data. The methodology will be applied to school inspections from the summer term of the 2018 academic year. This note will be updated annually.

## The risk assessment process

Risk assessment has two stages:

- stage 1 involves an assessment of each school based on analysis of published data
- stage 2 involves a more in-depth 'desk-based' review of a wider range of available information. At this stage Senior HMIs review potential inspections to ensure the most appropriate inspection type (if any) is carried out.

### Stage 1: Analysis of published historic data

#### Machine learning

Our methodology is new this year. Rather than using pre-determined thresholds on performance data as in previous years, we are using a methodology known as 'supervised machine learning'. Supervised machine learning is a way of getting computers to make decisions that have not been explicitly programmed. A common application is classifying items into two or more groups.

In a typical application, there will be a large dataset called 'training data' for which we already know which groups the items belong to. This is used to train the machine learning algorithm to distinguish between unknown items. For example, a spam filter can be trained by giving it lots of emails that users have marked as spam and lots of non-spam emails and the algorithm works out what the differences are.

#### Machine learning applied to inspections

Known inspection outcomes over the 2016/17 academic year were retrospectively predicted using a machine learning algorithm. The training dataset consisted of inspection outcomes and a wide range of other data that was available when the inspections took place, specifically:

- progress and attainment data from DfE
- school workforce census data
- Parent View responses.

The machine learning algorithm combined the data to make an optimum fit to the known inspection outcomes. The outcomes were coded as 'Good or better' or 'Less than good'.

One drawback to machine learning can be that the predictions vary slightly according to the training dataset used. To help overcome this, we fitted a large number of models to slightly different training sets. In this way, we effectively produced a probability of a forthcoming inspection being less than good. This is our 'raw risk score', which takes a value between 0 and 1.

It's important to remember that:

- this algorithm is only used as stage 1 of the risk assessment process and Senior Her Majesty's Inspector (SHMI) reviews follow on from this
- in no way do the algorithm results impact on inspection judgements.

### **Additional risk information**

Additional information is incorporated into the risk assessment process, but is not included in the machine learning algorithm. This data is typically available some weeks after the main modelling and is used to 'fine tune' risk assessments.

The information, based on historic data, is:

- being below the floor standards
- being below the 16–18 minimum standards.

### **Inclusion criteria for stage 1 of the risk assessment**

Schools with cohorts of fewer than 11 pupils at the relevant key stage are not included in stage 1 of the risk assessment.

### **Stage 2: Desk-based review**

SHMI within each region review the information provided by stage 1 of the risk assessment process. They also review risk by considering:

- the outcomes of any inspections, such as survey inspections, that we have carried out since the last routine inspection

- qualifying complaints<sup>1</sup> about the school referred to us by parents
- statutory warning notices
- any other significant concerns that are brought to our attention.

## Timing of inspections

For further information on the use of risk assessment and the timing of inspections, please refer to the school inspection handbook:

[www.gov.uk/government/publications/school-inspection-handbook-from-september-2015](http://www.gov.uk/government/publications/school-inspection-handbook-from-september-2015).

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<sup>1</sup> Ofsted has specific powers (under sections 11A–C of the Education Act 2005) to investigate certain complaints about schools, known as qualifying complaints.



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