

# Road Condition Statistics

## Notes and definitions



## Road Condition Statistics: notes and definitions

This note provides definitions used for road condition statistics. It also includes useful information on the source of the data



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### 1. Source

The statistics come from a variety of sources:

SCANNER surveys: these are automated surveys carried out using SCANNER vehicles. Local authorities commission them to assess the surface condition of their 'A', 'B' and 'C' road network.

TRACS surveys: these are automated surveys carried out using the HARIS vehicles. They are carried out to assess the surface condition of the Highways Agency trunk 'A' and motorway network in England.

Coarse / Detailed Visual Inspections (CVI / DVI): these are manual visual inspections used to assess road surface condition. They are used on local authorities' unclassified road network but some authorities also use them on their classified network.

The statistics on unclassified roads are collected by the Association of Directors of Environment, Economy, Planning and Transport (ADEPT, formerly the County Surveyors' Society). While their outputs are not currently National Statistics, the data provide useful context for users and so are included here for completeness. DfT's Head of Profession for Statistics is content that the data are of sufficient quality to meet users' needs.

Skidding resistance survey: used by local authorities and the Highways Agency to assess levels of 'skiddiness' of the road surface.

### FURTHER INFORMATION

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More details on each of the survey methods are provided in the [Technical Note](#)<sup>1</sup>.

## 2. Definitions

### Road Condition Indicator (RCI)

SCANNER surveys measure a number of parameters at 10-metre spacing along the road. The outputs from the measured parameters can be combined together to produce a single figure giving an indication of the surface condition at that specific location. See Sections 3.3 - 3.4 in the Technical Note for details on the parameters measured and how they are used, and Section 3.5 for how the parameters are used to calculate an RCI value.

RCI outputs are scored between 0 and 315. Scores between 0 and 40 indicate that the observed road section is in good condition. This category is referred to as 'green' or 'good'. Scores over 40 but below 100 indicate that the location is showing some deterioration and should be investigated to see if the road needs treatment. This category is referred to as 'amber'. Any road sections scoring 100 or higher are likely to show considerable deterioration and may need maintenance within the next 12 months. This category is referred to as 'red' or 'poor'.

### Highways Condition Index

To make it easy to compare road conditions in local authorities with each other or with the England average, DfT has developed a Highways Condition Index.

The HCI uses the proportion of 'green' (i.e. with RCI scores below 40) road in England in 2006/07 as a base, calling this 100. All other years and locations are compared with the 2006/07 average. Anywhere scoring more than 100 will have a higher proportion of the surveyed road in good condition than the England average (in 2006/07); anywhere scoring below 100 will have a lower proportion in good condition.

A more detailed note explaining how the HCI has been calculated and should be interpreted is available at <http://assets.dft.gov.uk/statistics/series/road-conditions/roadconditionstechnote.pdf>

### Road network and classification

A full set of definitions and descriptions about the road network is available at <http://assets.dft.gov.uk/statistics/series/road-conditions/roadconditionstechnote.pdf>

## 3. Specific issues

### Potholes

A SCANNER vehicle does not record a pothole as being specifically that. Instead, it would note

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<sup>1</sup> <http://assets.dft.gov.uk/statistics/series/road-conditions/roadconditionstechnote.pdf>

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that there is surface damage and deterioration in the area according to the parameters it measures.

Therefore, although the statistics are unable to provide information about the number and size of potholes, any road section which has potholes is likely to get a high RCI score. Similarly, any road section with a high RCI score is likely to have a wide range of deterioration, possibly including potholes.

### Winter damage

SCANNER surveys are carried out on a financial year cycle, with each local authority aiming to survey set proportions of their road network between April and March each year. Local authorities will seek to survey at least 50 per cent of their 'A' network in each direction every year and 50 per cent of their 'B' and 'C' network in one direction every year.

As SCANNER surveys are mounted on vans and use lasers to scan the road surface, surveys cannot take place when snow, ice or standing water is on the road. This means that a significant proportion of the surveys take place between May and October each year.

The result of the survey timing is that damage from severe winter weather, as happened, for instance, in the winters of 2009/10 and 2010/11, may not be picked up until the following year. In addition, any severe damage might be repaired before the surveys start, so it is possible that such severe damage is never recorded by SCANNER vehicles.

## 4. Statistical conventions

**Units:** Figures are shown in italics when they represent percentages, indices or ratios

**Rounding of figures:** In tables where figures have been rounded to the nearest final digit, there may be an apparent discrepancy between the sum of the constituent items and the total shown.

**Conversion factors:**

1 kilometre = 0.6214 mile

1 billion = 1,000 million

**Symbols:**

.. = not available

. = not applicable

- = negligible (less than half the final digit shown)

0 = nil

\* = sample size too small for reliable estimates

ow = of which

| or \_ = break in the series

P = provisional data

R = revised

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## 5. Glossary of technical terms

More detailed explanations of some of the terms can be found in the Technical Note.

All-purpose trunk roads	Centrally owned and maintained 'A' roads.
BVPI	Best Value Performance Indicator – BVPIs showed the relative performance of English local authorities for different aspects of performance. These were introduced in 2000/01 and were last reported for 2007/08. They were replaced by the National Indicator Set which came into effect from April 2008. This in turn was replaced by the Single Data List from April 2011.
Carriageway	The paved area of the highway carrying vehicular traffic and including any hard shoulders and marginal strips.
Classified roads	Local authority owned and maintained roads with 'A', 'B' or 'C' classification. Note that in the report's tables and figures, the term 'principal roads' refers to local authority 'A' roads, and the term 'classified roads' refers to local authority 'B' and 'C' roads. Local authority 'A', 'B' and 'C' roads account for some 40 per cent of the local authority road network.
CSC	Characteristic SCRIM Coefficient. An estimate of the underlying skid resistance once the seasonal variation has been taken into account.
CVI	Coarse Visual Inspection – a method of inspecting road condition at network level developed as part of the UK Pavement Management System (see below). Fewer defect details are recorded than from a DVI (see below), but a CVI may be carried out either from a moving vehicle or as a walked survey. A CVI provides information on road condition at the local authority network level and identifies sections of road where a more detailed DVI survey may be required to more accurately determine the appropriate maintenance treatment.
DBFO	Design, build, finance and operate.
DVI	Detailed Visual Inspection – a method of inspecting road condition developed as part of the UK Pavement Management System (see below). A DVI is carried out by one or more inspectors walking along the road. The method is often used after initial problems have been noted during a CVI survey but some local authorities prefer to use walked DVI surveys, particularly where footway condition is important.
Footway	Any area alongside a road intended for use by pedestrians. (Colloquially a footway will be described either as a 'pavement' or as a footpath alongside a road.)
HAPMS	A generic term to cover the computer systems and related engineering and business processes that comprise the Highways Agency Pavement Management System.

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HCI	Highways Condition Index - The percentage of the lengths of road surveyed by SCANNER that are in a 'good' condition (with a SCANNER RCI less than 40).
Investigatory level	The level of condition at which consideration is given to the need for maintenance. At this juncture, all available evidence (e.g. accident rates) would be taken into account.
Local roads	Local authority maintained 'A', 'B', 'C' and unclassified roads. These are also known as non-trunk roads.
Mean Summer SCRIM coefficient	Mean of 3 or more SCRIM Coefficients measured for a length of road at well-spaced intervals between May and September in a year.
Motorway	A particular type of road with restricted use, carrying predominantly long-distance traffic. Most motorways are the responsibility of the Highways Agency but there are some short lengths of local authority motorways.
Non-trunk roads	Local authority maintained 'A', 'B', 'C' and unclassified roads. These are also known as local roads.
Non-principal roads	Local authority maintained 'B', 'C' and unclassified roads
Overlay	Material placed on top of the existing pavement in a layer (or layers) of regular thickness. This is a more substantial treatment than a surface dressing.
Pavement	Technical term for the surface of a road. Note this is not restricted to a footway (see definition above).
Principal roads	Local authority maintained 'A' roads. In general they carry less traffic than all-purpose trunk roads which are 'A' roads owned and maintained by central government.
RCE	Road Conditions England – refers to this bulletin.
RCI	SCANNER Road Condition Index - indicates the condition of the road where a low score represents a road in 'good' condition whilst a high score represents a road that needs further investigation or where maintenance should be considered as surveyed by SCANNER.
Reconstruction	The removal of some or all of the structural layers of a road pavement and their replacement with new material, including a new surfacing. This is a more substantial treatment than overlay.
Resurfacing	The removal and replacement of the existing surface, in order to restore the running surface and improve surface characteristics.
Rural roads	Roads that are not in settlements with a population of 10,000 or more.

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SCANNER	Surface Condition Assessment of the National Network of Roads. Vehicle-mounted automated carriageway surface condition surveys for local authority roads, developed from the TRACS surveys used on the trunk road network. Like TRACS, the specification covers the requirements for both the machinery used and the survey process.
SCRIM	Sideway-force Coefficient Routine Investigation Machine – a lorry-based machine that when driven over a pavement surface, measures the resistance to skidding of the wet pavement surface.
Single annual SCRIM survey	All of lane 1 of the network is surveyed once during the SCRIM testing season in each year. In successive years, each road length is tested in the early, middle and late parts of the season.
Site (NRMCS)	100 metres of carriageway and associated footways and verges identified by DfT (for inspection by local authorities and - up to 2002 - by trunk road agents) to provide the visual condition for analysis by DfT. The sites are selected from a random sample of all roads (except motorways) in England and Wales. NRCMS surveys have not been carried out since 2006/07.
Standard axle	A single axle with 2 wheels and carrying a load of 80kN. The life of a pavement that will carry different axle types and loads is expressed in terms of the number of standard axles the pavement will carry.
Surface dressing	A single/double/triple layer of aggregate combined with one or more layers of binder (e.g. bitumen) to form a running surface. This may be laid over the existing surface.
Thin surfacing	Thin surfacing systems are machine-laid proprietary mixes of asphalt that have the capability to regulate the surface profile of a road pavement, restoring surface texture and skid resistance. They have thicknesses up to 40 mm.
TRACS	Traffic Speed Condition Survey – a label to describe a methodology for Highways Agency’s machine-based surveys of surface condition, including cracking and rutting, of the trunk road network in England. The TRACS specification covers the requirements for both the machinery used and the survey process.
Trunk roads	Motorways and all-purpose trunk roads owned by central government and for which the Highways Agency (in England) and the Welsh Assembly Government (in Wales) have responsibility for maintenance and operation. These are strategic roads with a high proportion of long-distance traffic although some trunk roads may also have lengths, with the same number, designated as an ‘A’ principal road, where traffic is predominantly local in nature.
TTS	TRACS type surveys. Now known as SCANNER surveys.

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UKPMS	United Kingdom Pavement Management System – this is a standard logical design for software used by local highway authorities for the management of the maintenance of their road networks. The UKPMS specification is currently supported by DfT funding. A number of companies market software that meets the UKPMS requirements. Associated with UKPMS are standard survey types (CVI and DVI surveys, see above) and standard ‘rules and parameters’ to be used when processing survey data for ‘national’ purposes e.g. for Best Value Performance Indicators.
Unclassified roads	Minor roads which are not designated as classified roads and which are owned and maintained by a local highway authority. By length, some 60 per cent of the local authority network is unclassified.
Urban roads	Roads in settlements with a population of 10,000 or more.