Road Conditions in England – a basic guide

What is the purpose of the Road Conditions in England statistical bulletin?

Road Conditions in England (RCE) provides information about the overall state of roads in England as well as an indication of whether the condition is improving or worsening.

What roads does it provide information about?

Information is provided about all types of public roads in England, including roads owned and maintained by the local highways authority (also called local roads) and those owned and maintained by the Highways Agency (also called trunk roads).

The Highways Condition Index only gives the condition of classified roads (A, B and C class roads). This is because SCANNER vehicles cannot fit down many unclassified roads. Most residential areas are on unclassified roads so will not be counted towards the HCI scores.

How do you measure road condition?

There are a number of ways of measuring road condition, depending on which aspect of the road is of interest.

Most of the information in RCE is about the surface condition of the road – e.g. how many cracks and holes there are, whether the surface is breaking up, etc. Surface condition surveys can be carried out either manually, by a surveyor visually inspecting the road, or automatically, using vans with mounted lasers to measure different aspects of the road.

Apart from unclassified roads, all the information on the surface condition in RCE comes from automated surveys. The machines that carry out the surveys on the local roads are called SCANNER (Surface Condition Assessment for the National NEtwork of Roads) and the machines which survey trunk roads are called TRACS (TRaffic-speed Condition Survey).

Other techniques are used to assess the condition of the sub-surface of the road or the 'skiddiness' of the road.

SCANNER, TRACS and the other techniques are discussed in more detail in the technical note[1].

[1] Available at: http://assets.dft.gov.uk/statistics/series/road-conditions/roadconditionstechnote.pdf

What is the main way road condition is shown in the publication?

The Department has developed a score called the Highways Condition Index (HCI). This uses SCANNER information to assess what proportion of the road network may be in poor condition and in need of repair. It is indexed to the England average for 2006/07 at a score of 100.

What is an index?

An index is a way of grouping a set of variables together to create one combined figure. It then allows people to easily compare changes over time or places.

What do Highway Condition Index (HCI) scores actually mean?

An HCI score of 100 is equal to the England average in 2006/07. Any place which scores above this in any year has roads that are in better condition than the 2006/07 average. Any place which scores below this in any year has roads that are in worse condition than the 2006/07 average.

For instance, if the England HCI rises from 100 in one year to 105 in the following year, there has been a 5 percentage point improvement in the average road condition across the whole country. If a single local authority scored 100 in the first year, its roads are in a similar condition to the rest of the country. If it then fell to 98 it would have undergone a 2 percentage point decrease over the year.

Do changes in HCI scores mean that specific things have happened to the road?

No. The HCI is calculated using a number of parameters which SCANNER vehicles measure whilst surveying the road. It is possible for changes in one of more parameters to have similar affects on the HCI. All we can be sure is that if the HCI has fallen then one or more of the parameters recorded by SCANNER will be showing that the road is in a worse condition than it was in the previous year. Similarly, if the HCI has risen then the parameters will show that the road has improved.

Therefore it is not possible to know what specifically has made the road better / worse between years.

What parameters are used to calculate HCI?

The following parameters are used to calculate HCI:

- Rut depth (i.e. the depth of the ruts running along the length of the road caused by where the wheels of vehicles drive)
- 'Bumpiness' along the road surface (called *longitudinal profile*)
- Texture of the road surface
- Cracking of the road surface

More complete descriptions of photographs of roads showing some of these defects can be found in Section 3.3 of the technical note[2].

RCE mentions the Road Condition Indicator (RCI). What is this?

The Road Condition Indicator (RCI) is used to asses the condition of individual sections of road. It is calculated using the outputs from the parameters mentioned above. A complete description and worked example of RCI is provided in Section 3.5 of the technical note.

An RCI score can range between 0 and 315. Any stretches of road scoring below 40 are declared to be in good, or 'green', condition. Any stretches scoring higher than 40 but less than 100 will not be in perfect condition but would still offer a good driving surface (called 'amber' condition). Anything scoring over 100 are likely to be in poor condition and will probably need maintenance within in the next year or so (called 'red' condition).

Highways engineers in local authorities use RCI scores to identify which bits of roads need repairing.

How does HCI relate to RCI?

An RCI score is calculated for each 10 metre section of road surveyed.

The HCI is used as a way of aggregating all the RCI scores for each 10 metre section up to produce a single figure. This is done by taking the percentage of the network that is in 'green' condition (i.e. with an RCI score below 40) and converting this to an index.

Example:

If 35 per cent of all the surveyed roads in 2006/07 had an RCI score of less than 40, then this would be used as the benchmark for future years. This benchmark would produce the HCI score of 100.

If, in 2007/08, 40 per cent of all the surveyed roads had an RCI score of less than 40, the HCI score would rise to 114. This is because the amount of road in 'green' condition has increased by 14 per cent.

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[2] Available at: http://assets.dft.gov.uk/statistics/series/road-conditions/roadconditionstechnote.pdf

If in the following year, 2008/09 only 17.5 per cent of the surveyed roads had a RCI score of less than 40, the HCI score would fall to 50. This is because the amount of road in 'green' condition has decreased by 50 per cent from the 2006/07 average. This also represents a 65 per cent fall from the 2007/08 average.

How many potholes are in the roads?

SCANNER surveys cannot identify potholes as a specific defect. However, they do not ignore potholes completely. All potholes will show up as defects under the measured parameters so will contribute to the condition of the road.

As the Highways Condition Index falls it would be safe to assume that there are more potholes in the road, although it is impossible to say exactly how many more potholes there are in one year in comparison with another. Similarly it is not possible to tell how much larger the potholes are in different years.

The HCI suggests that roads are getting better yet there are more potholes on my street now than there used to be. How can this be?

The HCI gives an indication at what is happening on average, throughout the country. It is possible for the national HCI to increase but your own local authority's roads to get worse. You will be able to tell this by looking at how your local authority is performing in the LA-level table.

Even if your local authority has got better overall this does not necessarily mean that every road is improving. It is possible and even likely that some roads will have got worse even in an authority which is improving overall.