

Reliability of journeys on Highways Agency roads: England, January to March 2014



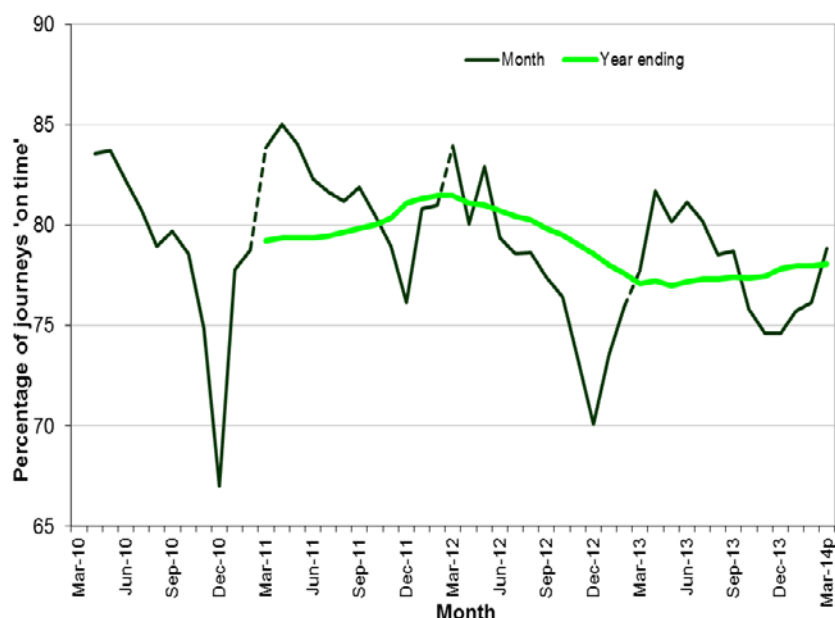
Department
for Transport

Main findings: Reliability of journeys broadly stable over last 12 months

78.1% of journeys on the Highways Agency's network were 'on time' in the year ending March 2014, a slight increase on the year ending December 2013.

- Since the year ending March 2013 reliability levels have been broadly stable. There have been small increases in reliability in December 2013 and January 2014.
- This recent stability of reliability levels may relate to a combination of improved weather conditions, particularly less rain, and increases in traffic on motorways and rural 'A' roads, relative to the previous year.

Percentage of journeys on Highways Agency roads that are 'on time': monthly and annual averages from 2010/11 (Table [CGN0104](#))



What does 'on time' mean?

A 'journey' represents travel between adjacent junctions on the Highways Agency's network.

A 'journey' is 'on time' if it is completed within a set reference time, based on historic data on that particular section of road.

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About this release

This statistical release presents information about the reliability of journeys on motorways and 'A' roads managed by the Highways Agency, known as the [strategic road network](#). The reliability of journeys on the Highways Agency's roads is measured by the percentage of 'journeys' that are 'on time', comparing journey times with historical data for individual sections of road, using data from in-vehicle Global Positioning Systems (GPS). This reliability measure is one of a number of indicators in the Department's [2012-2015 Business Plan](#).

Further information:

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Introduction

The Highways Agency's motorway and 'A' road network accounts for around 2% of all the roads in England, but carries around a third of all traffic.

The reliability of journeys on the Highways Agency's roads is a measure of how predictable journeys are on the network. For the statistics in this release, reliability is measured by the percentage of 'journeys' that are 'on time', where:

- A 'journey' represents travel between adjacent major junctions on the network.
- An 'on time journey' is defined as one which is completed within a set reference time, based on historic data on that particular section of road.

The data are based on journey times which are estimated using in-vehicle Global Positioning Systems (GPS) and traffic flows estimated using automatic traffic counters.

For further information, a useful introduction to the Department's road congestion and reliability statistics, including the different measures, how they are published and the ways in which they are used is available here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51125/An_introduction_into_the_Department_for_Transport_s_congestion_statistics.pdf

Latest statistics: Reliability broadly stable over last 12 months

78.1% of journeys on the Highways Agency managed network between April 2013 and March 2014 were 'on time'. This is a slight increase (0.3 percentage points) on the year ending December 2013.

During the month of January 2014, the percentage of journeys 'on time' was 75.7% (up 2.2 percentage points from January 2013). In February 2014 it was 76.1% (similar to February 2013) and 78.8% during March 2014 (up 1.1 percentage points from March 2013).



The annual reliability measure (percentage of journeys on time) consistently increased from the year ending March 2011 up to March 2012, but decreased in each of the following twelve months to March 2013. The changes in reliability over this period are believed to be predominantly due to changes in rainfall and periods of heavy snowfall relative to the previous year.

The reliability measure has been broadly stable since the year ending March 2013. This relative stability is believed to relate to a combination of lower levels of rainfall (which in itself is likely to lead to improved reliability) and increases in traffic on motorways and rural 'A' roads (which may lead to lower levels of reliability), compared to the same months in the previous year. There have been small increases in the measure in December 2013 and January 2014. Although January 2014 was a particularly wet month, the increase in reliability may be explained by a larger negative impact of short periods of heavy snowfall across England in January 2013.

Percentage of journeys ¹ on Highways Agency roads that are 'on time' ²: monthly and annual averages from 2010/11 (Reliability web table [CGN0104](#))



1. 'Journeys' are defined as travel between adjacent junctions on the network.

2. An 'on time journey' is defined as one completed within a set reference time, based on historic data on that section of road.

3. Reference times are updated for the April data each year. Further information on the impact of updating reference times can be found in section 3 of this release.

4. Data to December 2012 were revised in March 2013 as a result of the implementation of planned methodology changes

p = provisional

[The footnotes above apply to all charts presented in this release.]

The reliability statistics for March 2014 are currently provisional while final checks on the raw data sources underpinning the statistics are carried out. They will be finalised in table [CGN0104](#) in June 2014, but are unlikely to change from the provisional estimates.

Further tables give further detail of the key results presented in this statistical release and statistics on other related topics. They are available here:

<https://www.gov.uk/government/organisations/departments-for-transport-series/road-congestion-and-reliability-statistics#statistical-data-sets>

Improvements to the reliability statistics

As part of our work with the Highways Agency to continually improve the reliability statistics, we have identified a number of areas where potential methodology improvements could be made in the future.

One of these areas relates to the calculation used to estimate average speeds/journey times for individual 15 minute periods on individual road sections. Currently, an arithmetic mean average of individual vehicle speeds is used to estimate the average speed on the road section in any specified 15 minute period (e.g. one vehicle observed at 50mph, one observed at 70mph resulting in an estimated average speed of 60mph). We believe it would be better to use a harmonic average to estimate average speeds (in the example quoted the average would be 58mph using

the harmonic average) to reflect the time taken by each observed vehicle to traverse the road section. We believe that the impact of implementing this methodology improvement would be small and fairly consistent at a national level (decreasing the percentage of journeys 'on time' by around 1 percentage point). The impact on changes in reliability over time are estimated to be very small (affecting the change in the percentage of journeys 'on time' over 12 months by up to 0.2 percentage points). The impact of implementing this improvement on the reliability statistics for individual road sections is believed to be larger. Given the nature of other potential methodology improvements that could be made (e.g. another area is how individual vehicle observations are 'mapped' to the Highways Agency's network model), the small impact at a national level and the Experimental status of the statistics for individual road sections, we believe these statistics continue to have value to users in their current form.

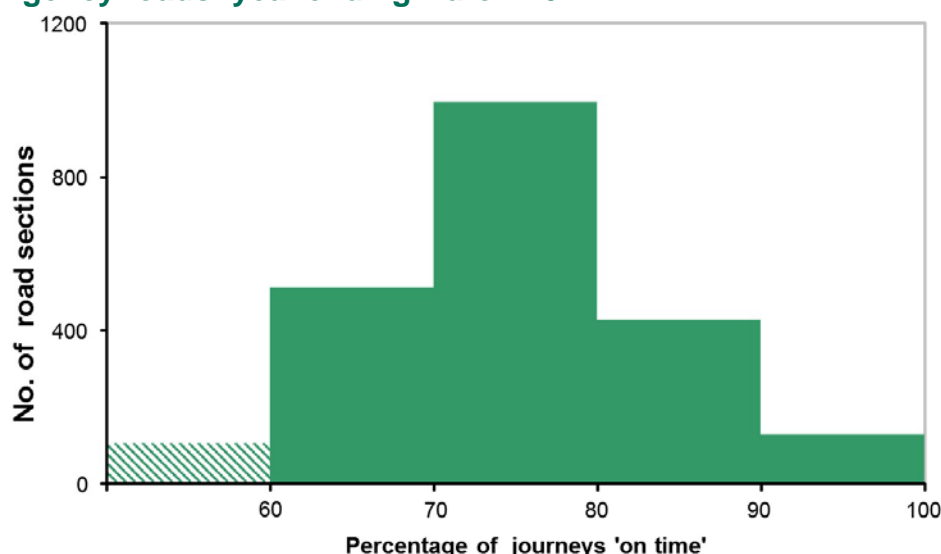
Following feedback from stakeholders we are also considering the development of new measures. However, we will continue to explore this and other methodology improvements and to evaluate the robustness of the reliability statistics, particularly the Experimental statistics for individual road sections. We will provide an update of this work in August, setting out any recommended changes to the current reliability statistics and underlying methodology at this point.

Experimental Statistics: Reliability statistics for individual road sections

This section contains reliability statistics for individual road sections on the Highways Agency's network. These statistics are currently 'badged' as 'Experimental' and are undergoing evaluation.

Based on the relatively small changes observed on a quarterly basis, and limited feedback received on these Experimental statistics to date, we propose to update the analyses below for each calendar year going forward (e.g. presenting analysis for 2014 in the February 2015 release). For similar reasons, we also propose updating and publishing the underlying data for these analyses, Table [CGN0106](#), on a quarterly basis (rather than each month). We would welcome any feedback on these proposals or suggestions on how best to present these statistics and supporting analyses in the future. Please get in touch using the contact details provided on the cover page of this release.

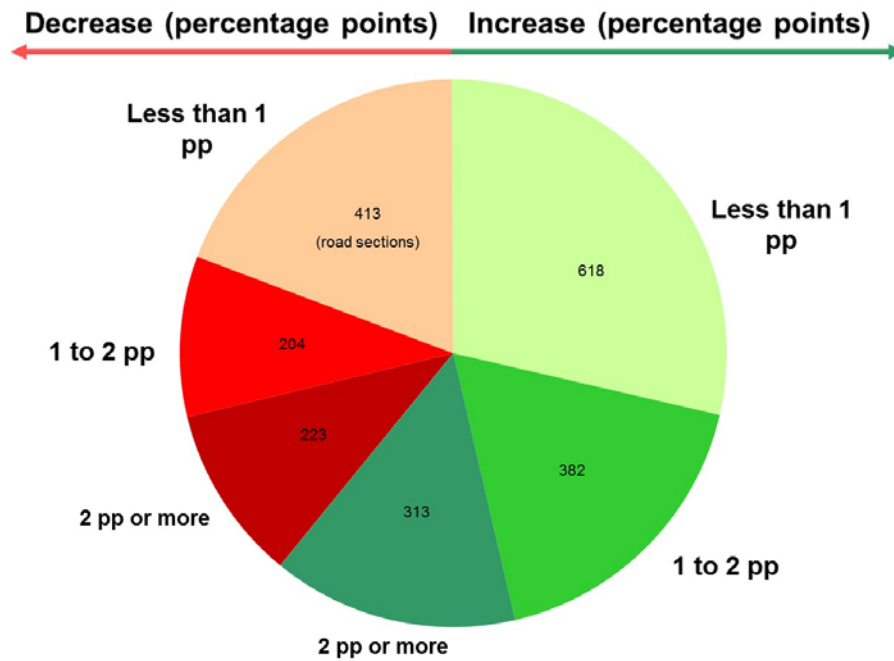
Experimental Statistics: Percentage of journeys 'on time' for each road section on Highways Agency roads: year ending March 2014^p



The 'hashed' area of the chart represents the number of road sections where the percentage of journeys 'on time' was less than 60%. Road sections with insufficient data have been excluded.

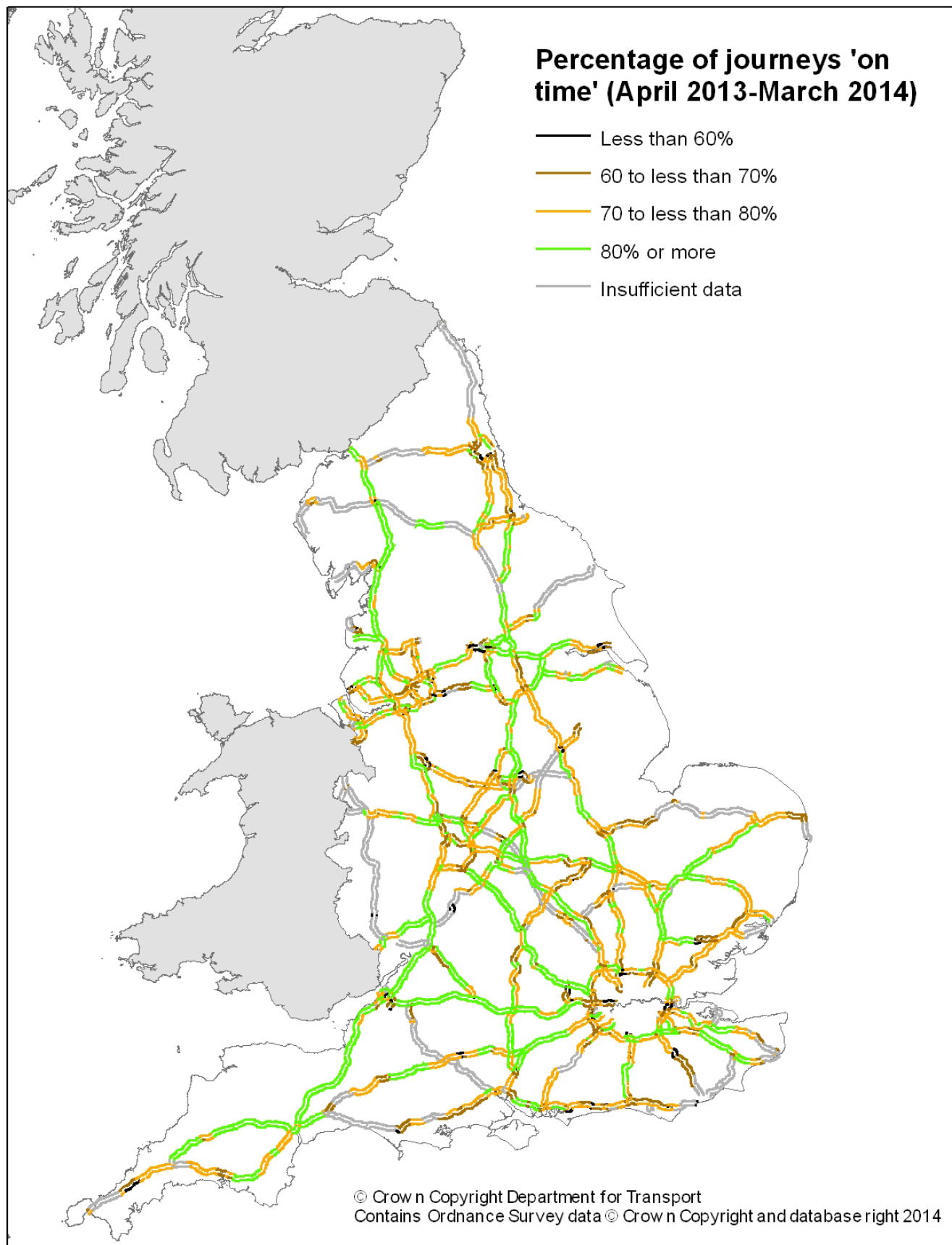
p = provisional

Experimental Statistics: Percentage point change in journeys ‘on time’ for each road section on Highways Agency roads: from year ending December 2013 to year ending March 2014^p



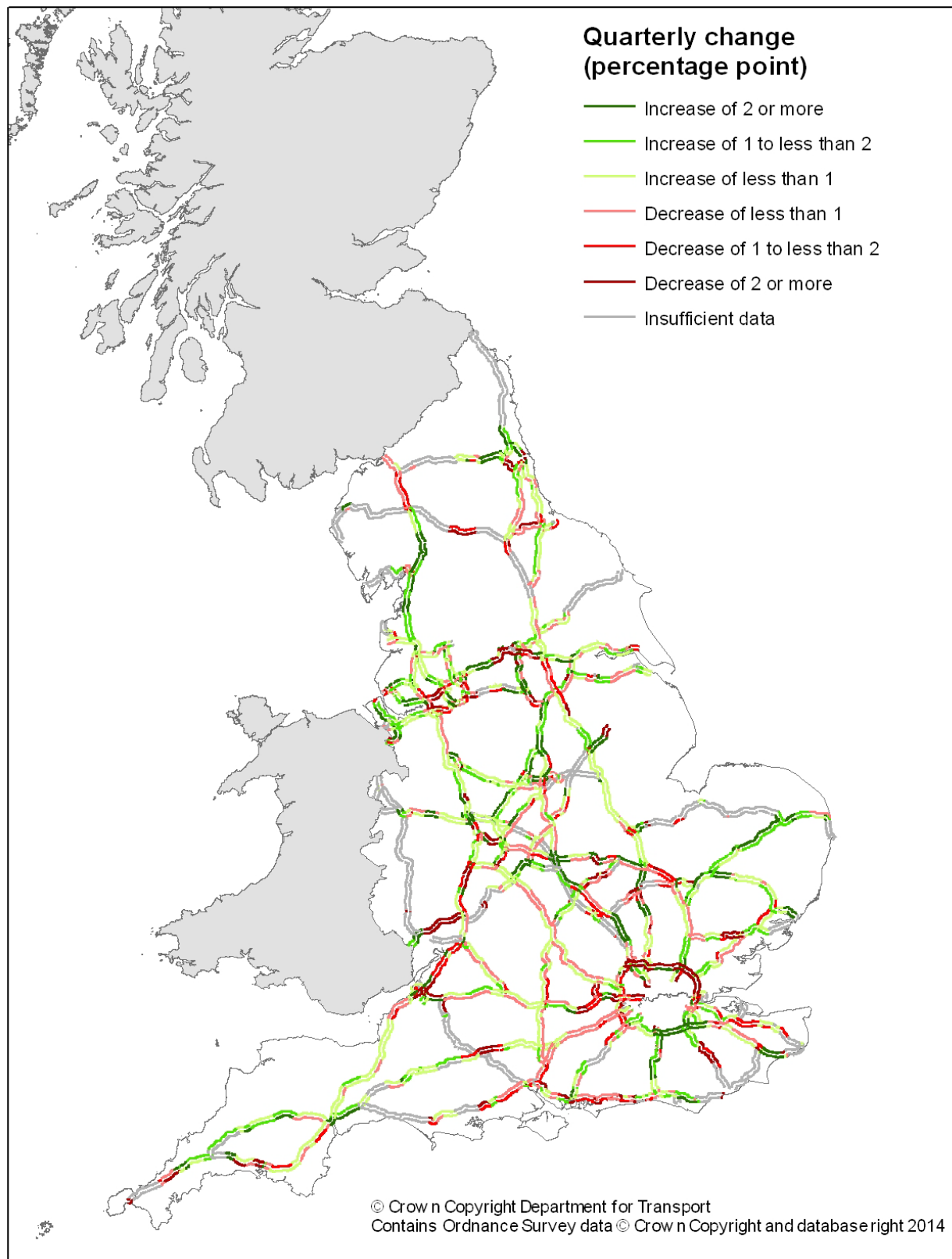
Road sections with insufficient data have been excluded.
p = provisional

Experimental Statistics: Percentage of journeys on Highways Agency roads that are 'on time': by individual road section, year ending March 2014^p



Insufficient data - Individual road sections where the level of national imputation is high or corresponding references are of poor quality.
If you require a copy of this map in different colours please contact the congestion statistics team.
p = provisional

Experimental Statistics: Percentage point change in journeys 'on time' for each road section on Highways Agency roads: from year ending December 2013 to year ending March 2014 ^p



Insufficient data - Individual road sections where the level of national imputation is high or corresponding references are of poor quality.
If you require a copy of this map in different colours please contact the congestion statistics team.
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Background information

Strengths and weaknesses of the data

As a measure that is based on comparing current journey times on the network to road users' previous experiences on similar types and times of day, these statistics are very useful in monitoring how predictable journey times on the network are. However, they do not directly measure whether congestion, in a physical sense, has improved or deteriorated over time.

For example, journeys on a particular stretch of road could be very slow moving at certain times of the day with lots of congestion evident. However, if the effects of this congestion were fairly predictable and journey times were similar day to day, these journeys would be considered reliable. Similarly, journeys on another stretch of road could be fairly fast moving on average, but equally would be considered unreliable if conditions varied wildly from day to day, with some journeys experiencing very little congestion while others were affected severely.

Methodology and technical detail

The statistics used to monitor journey time reliability on Highways Agency's motorway and 'A' road network are compiled from in-vehicle GPS data and from flows estimated using automatic traffic counters.

Real, observed, journey time data with a good temporal match are used to estimate reliability for each section of road. Where no data of this quality are available for a particular section of road or time period, reliability levels are imputed. Imputation is predominantly based on corresponding monthly day-time and night-time averages for individual sections of road. Where there is insufficient data for individual road sections, national day-time and night-time averages are used to impute reliability levels. There has been a reduction in the imputation levels from October 2013 due to the relatively large increase in the vehicle fleet used to estimate journey times to produce the reliability statistics at that point. A monthly breakdown of the amount of data requiring imputation is available at: <https://www.gov.uk/government/publications/road-traffic-speeds-and-congestion-statistics-guidance>

Reliability data for individual road sections are not published where the level of national imputation used in that estimate is greater than 20%, or where corresponding references are of very poor quality.

Next month's update of these reliability statistics including data to April 2014, will be based on an updated set of reference journey times. Reference journey times are updated annually for the start of each financial year and are predominantly based on journey time data from the previous calendar year (2013 in this case). This ensures that reliability levels are measured relative to the latest conditions experienced on each part of the network. Differences observed when comparing reliability for months in different financial years will partly reflect a change relating to the updated references used. The impact of reference changes on the national reliability measure have previously been up to around +/- 1 percentage points for these (types of) comparisons. However, the impact of the most recent reference update, used to estimate reliability from April 2013, is believed to be a greater change of around 1.6 percentage points in national performance. This will be due in part to the slightly slower reference journey times in 2012, resulting from the unusually wet weather that year.

The estimates of journey reliability for individual road sections may reflect the impact of a number of factors, including roadworks. Where the time and location of roadworks are published in advance at: <http://www.highways.gov.uk/traffic-information/traffic-information-services/scheduled->

[roadworks/](#) the estimated impact of those works will be taken into account in the reliability estimates provided.

The historic reliability data series to December 2012 was revised in the March 2013 release, as a result of planned methodology changes. Further information on these changes can be found at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/230524/methodology-changes-ga-march-2013.pdf

Full guidance on the methods used to compile the reliability statistics presented in this release can be found here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/230513/methodology-for-calculation-of-reliability-on-ha-network.pdf

National Statistics

National Statistics are produced to high professional standards set out in the Code of Practice. They undergo regular quality assurance reviews to ensure they meet customer needs:

<http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>

In July 2012, the United Kingdom Statistics Authority confirmed the designation of the national level statistics in this publication as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Details of ministers and officials who receive pre-release access to these statistics up to 24 hours before release can be found here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/230511/pre-release-list-traffic-congestion-reliability.pdf

Experimental Statistics

The statistics for individual road sections in this publication are labelled as *Experimental Statistics*. These new official statistics are labelled as *Experimental* so that users and stakeholders can be involved in their development at an early stage. The *Experimental Statistics* are being continually evaluated and it is accepted and expected that their quality improves in the light of stakeholder use and feedback – to the point that they can be formally designated as National Statistics.

Next Release

The next release of journey time reliability statistics will be published on 14 August 2014. It will contain provisional information about the reliability of journeys on the Highways Agency's motorway and 'A' road network in the year ending June 2014, as well as the final figures for April and May 2014. We will continue to update and publish our reliability statistics on a monthly basis. Provisional figures for April and May will be published on 12 June 2014 and 10 July 2014 respectively. These figures will be finalised the month following publication, but are unlikely to change from the provisional estimates.

Request for feedback

We are always keen to receive feedback from users of transport statistics. If you have any comments about how the statistics in this release are presented or analysed, please contact us using the details listed on the first page of this release.