



Reliability of journeys on Highways Agency's motorway and 'A' road network, England: January 2013



Key findings	1
National overview of reliability	2
Improvements to the reliability statistics	3
Strengths and weaknesses of the data	4
Background notes	5
Request for feedback	6

This statistical release presents provisional aggregate level information about the reliability of journeys on motorways and 'A' roads managed by the Highways Agency, known as the [strategic road network](#), in the year ending January 2013.

These strategically important roads account for around two per cent of all roads in England, but carry around a third of all traffic.

The reliability of journeys on the Highways Agency's roads is measured by the percentage of 'journeys' that are 'on time', where:

- A 'journey' represents travel between adjacent 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 estimated using in-vehicle Global Positioning Systems (GPS) and flows estimated using automatic traffic counters.

This reliability measure is one of a number of indicators in the Department's [2012-2015 Business Plan](#).

We have implemented some methodology changes this month to improve the quality of these statistics. As expected, the changes have resulted in a **shift in the estimated level of journey time reliability and revisions to the historical national series**. Further information on the methodology changes is provided in Section 2 of this release.

FURTHER INFORMATION

Media Enquiries:
020 7944 3066

Responsible Statistician:
Jay Symonds
020 7944 6579
congestion.stats@dft.gsi.gov.uk

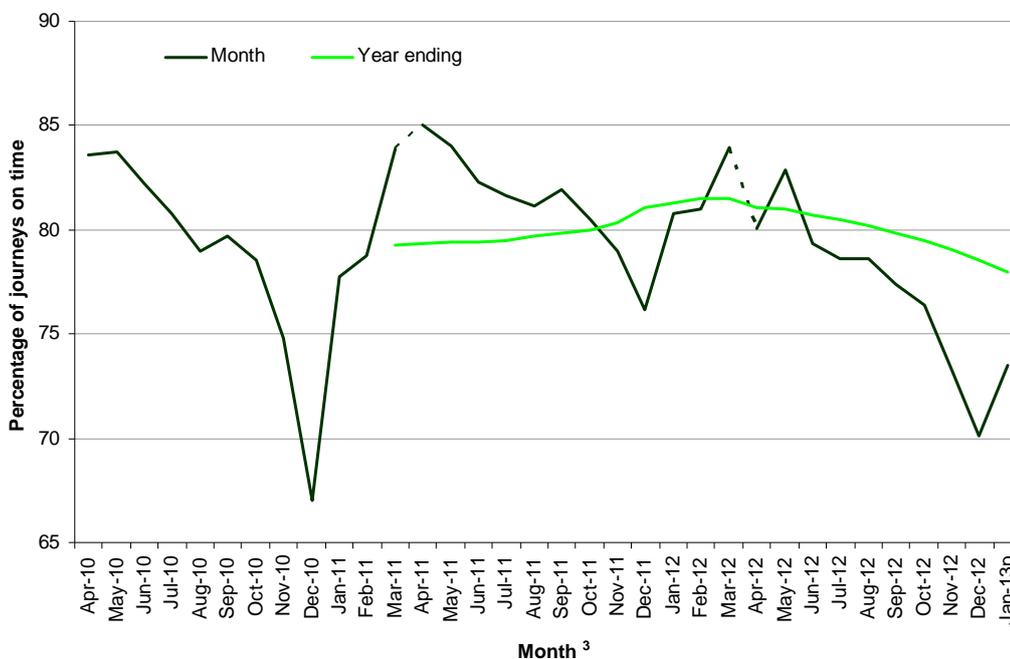
The key findings from this statistical release include:

- In the year ending January 2013, provisional data show that 78.0 per cent of journeys on the Highways Agency managed network were 'on time'. This is 0.6 percentage points lower than the previous year, ending December 2012.
- Provisional data show that 73.5 per cent of journeys on the Highways Agency network during January 2013 were 'on time', down 7.3 percentage points from January 2012.

1. National overview of reliability

- Provisional data show that 78.0 per cent of journeys made on Highways Agency managed roads between February 2012 and January 2013 were 'on time'. This is 0.6 percentage points lower than the previous rolling year, ending in December 2012.
- During January 2013, provisional data show that 73.5 per cent of journeys on Highways Agency's motorway and 'A' road network were 'on time'. This is 7.3 percentage points lower than the equivalent figure for January 2012.
- The annual reliability measure consistently increased up to March 2012, but has fallen in the last ten months, and is at its lowest point since the measure was introduced in 2010/11. 2012 was the second wettest year since records began with substantial rainfall during the final three quarters of the year. Significant amounts of rainfall compared to 2011 will have led to slower speeds on the network, slower journeys and thus a fall in reliability. The falls in reliability between November 2012 and January 2013 were particularly pronounced (5.7, 6.1 and 7.3 percentage points lower respectively than the same months the previous year). For December, this was predominantly due to heavy rainfall, and for January a period of significant snowfall across much of the country caused considerable disruption on the roads.
- Please note that the **historic series presented below has been revised** as a result of the methodology changes implemented this month.

Percentage of journeys¹ on Highways Agency motorways and 'A' roads deemed 'on time'²: April 2010 to January 2013^P (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, drawn from 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.
 p = provisional

-
- Because of these revisions to the historic series, figures published in previous months are not directly comparable with the estimates presented in this release, although both sets of figures exhibit very similar trends over time. Further information on the methodology change, including its impact is provided in Section 2 of this release, below.

2. Improvements to the reliability statistics

Journey times for the reliability measure were previously estimated using a range of different data sources. Because each of the data sources estimated journey times in a different way (e.g. using different samples of vehicles) the source used affected the estimates of journey time reliability. As a result, performance could not be reliably compared between sections of the network monitored through different sources. In addition, where the sources used to monitor a section of the network changed over time, it was not possible to reliably compare estimates of journey time reliability before and after the change. To address these issues of comparability, the Department undertook a package of work with the Highways Agency.

Following the completion of this work, we have implemented a number of methodology changes this month to address these comparability issues, improving the quality of the reliability measure. The main change is that journey times are now estimated using in-vehicle GPS data only. Other, more minor, changes include improvements to imputation methods and the accuracy of roadworks information used to derive these statistics. More detail on the methodology now used to produce the reliability statistics is provided in updated technical guidance at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51127/Methodology_for_calculation_of_reliability_on_Highways_Agency_s_motorway_and_A_road_network.pdf

As anticipated, these methodology changes led to a 'shift' in national journey time reliability estimates. The revised estimates are now typically two to three percentage points lower than they were previously. This is primarily due to moving to using the GPS data source only. Whilst the GPS data source has excellent geographical coverage, journey time estimates are generally based on lower sample sizes, increasing the variability of journey time estimates leading to a small decrease in reliability performance at a national level. In addition, a higher proportion of journey time estimates (where sufficient vehicles are observed) will relate to busier times and locations than they did previously. These busier times and locations are likely to have lower reliability levels, leading to a small decrease in reliability performance at a national level.

Given the methodology change, we have published adjustments to the historic national series so that users have a reliability time series on a consistent basis back to April 2010. As expected, the revised national monthly series exhibits a very similar trend to the series previously presented.

Further information on the methodology changes made, including a chart comparing the revised national monthly series with the previous series can be found in the *Reliability methodology changes* Q&A document at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/140067/methodology-changes-qa-march-2013.pdf

We continue to be confident that the statistics in this release are robust and provide a true reflection of how journey reliability has changed at a national level.

It is anticipated that the recent methodology changes will enable robust comparisons of the performance on different sections of network and on individual road sections over time. Further quality assurance work will be undertaken over the coming months to assess the suitability of the sub-national data as official statistics. Journey time reliability data for individual road sections is currently published by the Highways Agency through the data.gov.uk webpage.

3. 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 always of, or around, a similar value, 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.

The statistics used to monitor journey time reliability on Highways Agency's motorway and 'A' road network are compiled from data from in-vehicle GPS and 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 is imputed. Imputation is based on corresponding day-time and night-time averages for that section of road in that month where there is sufficient data or national day-time and night-time averages for that month where there is insufficient data on individual road sections.

16.0 per cent of the data used to estimate journey time reliability in January 2013 required imputation using either national or individual road section averages. This compares to 17.2 per cent of data requiring imputation in January 2012. A monthly breakdown of the amount of data requiring imputation is available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51128/ha-data-quality.xls

Imputation levels are now higher following the implementation of the new methodology explained in Section 2. This is because we are now using the GPS source to estimate journey times and we no longer use journey time estimates based on a single vehicle observation. However, imputed estimates will now be of a higher quality because of changes to imputation methods. Imputed estimates will now be primarily based on performance at a link level for individual months. National level estimates will continue to be used to impute for missing values on road sections with very little observed data.

Following a minor network update in the January 2013 dataset to reflect physical changes to the strategic road network, a small number of junction to junction links are no longer included in the reliability measure calculation. Many have been replaced by other links (e.g. where that road section has changed) and in addition a small number of links have also been added. The impact of these network changes is believed to affect monthly reliability figures by up to +/- 0.1 percentage points and has increased imputation levels by around 1 percentage point (as performance for new links will be imputed until corresponding references are available).

Reference journey times are updated on an annual basis, at the start of each financial year, in order to reflect the latest conditions experienced on each part of the network. Differences observed when comparing months in different financial years will partly reflect a change (up to around +/- 1 percentage point for comparisons between individual months in consecutive financial years) relating to the updated references used.

The reliability statistics for January 2013 are currently provisional while final checks on the raw data sources underpinning the statistics are carried out. The statistics will be finalised in April 2013, but are unlikely to change from the provisional estimates.

4. Background notes

1. The web 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/department-for-transport/series/road-congestion-and-reliability-statistics#statistical-data-sets>

2. 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/51127/Methodology_for_calculation_of_reliability_on_Highways_Agency_s_motorway_and_A_road_network.pdf

3. A useful introduction into the Department's congestion and reliability statistics, providing more detail as to what the different statistics measure, 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

4. 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>

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

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

The assessment of compliance with the Code of Practice for Official Statistics and subsequent letter confirming the designation of these statistics as National Statistics can be found here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51139/Assessment_of_compliance_with_the_Code_of_Practice_for_Official_Statistics_-_Statistics_on_Road_Reliability_and_Congestion.pdf

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51140/Letter_of_confirmation_as_National_Statistics.pdf

6. 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/51141/Pre-release_access_list -
_Reliability_of_journeys_on_Highways_Agency_s_motorway_and_A_road_network.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/51141/Pre-release_access_list_-_Reliability_of_journeys_on_Highways_Agency_s_motorway_and_A_road_network.pdf)

7. The next release of these statistics will be published on 11 April 2013. It will contain provisional information about the reliability of journeys on the Highways Agency's motorway and 'A' road network in the year ending February 2013 and the final figures for January 2013.

8. As outlined last month, we will be changing the frequency of this statistical release from monthly to quarterly after the publication of the April 2013 statistics (in June). We will continue to publish all of the reliability statistics in this release on a monthly basis in table CGN0104.

9. Documents relating to the methodology change introduced in this release can be access via the following link:

<https://www.gov.uk/transport-statistics-notes-and-guidance-road-congestion-and-reliability>

5. 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.