Reliability Statistics

Statistical Release

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FURTHER INFORMATION

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Reliability of journeys on Highways Agency's motorway and 'A' road network, England: December 2012

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 December 2012.

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 a combination of sources, including Automatic Number Plate Recognition (ANPR) cameras, in-vehicle Global Positioning Systems (GPS) and inductive loops built into the road surface.

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

The key findings from this statistical release include:

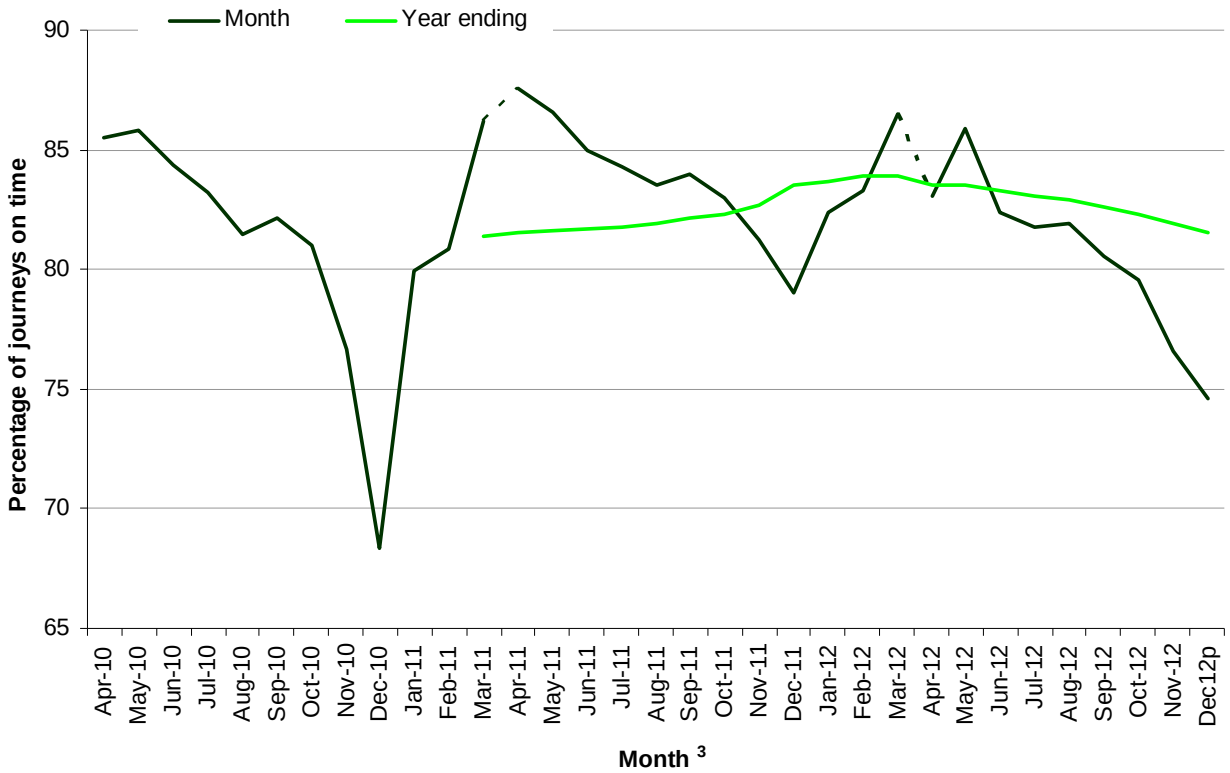
- In the year ending December 2012, provisional data show that 81.6 per cent of journeys on the Highways Agency managed network were 'on time'. This is 0.3 percentage points lower than the previous year, ending November 2012.
- Provisional data show that 74.6 per cent of journeys on the Highways Agency network during December 2012 were 'on time', down 4.5 percentage points from December 2011.

We will be making some methodology changes to improve the quality of these statistics from the publication of the January 2013 statistics (in March). Further information on these changes is provided in Section 2 of this release.

1. National overview of reliability

- Provisional data show that 81.6 per cent of journeys made on Highways Agency managed roads between January and December 2012 were 'on time'. This is 0.3 percentage points lower than the previous rolling year, ending in November 2012.
- During December 2012, provisional data show that 74.6 per cent of journeys on Highways Agency's motorway and 'A' road network were 'on time'. This is 4.5 percentage points lower than the equivalent figure for December 2011.
- The annual reliability measure consistently increased up to March 2012, but has fallen in the last nine months, and is now at a similar level to that observed in mid-2011. 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 in November and December 2012 were particularly pronounced (4.7 and 4.5 percentage points lower respectively than the same months in 2011). For December this is due to heavy rainfall, but is also likely to have been affected by flooding and snow. However, the combined impact on reliability was far less severe than the heavy snowfall experienced in December 2010.

Percentage of journeys [1] on Highways Agency motorways and 'A' roads deemed 'on time' [2]: April 2010 to December 2012 [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

2. Improvements to the reliability statistics

At present, information about the reliability of journeys on individual routes, or between particular junctions on the network, are not sufficiently robust to be presented as official statistics. This is due to the range of different sources used to calculate journey times across the network.

Each data source exhibits its own bias which affects the estimates of journey time reliability and, as such, performance cannot 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 change over time, it may not be possible to reliably compare estimates of journey time reliability before and after the change.

The Department has been working with the Highways Agency to address these issues of comparability. As a result we will be making a number of methodological changes to improve the quality of the reliability measure from the publication of the January 2013 statistics (in March). The main change is that we will be moving to a single source to estimate journey times across the network. Journey times will be estimated using in-vehicle Global Positioning Systems (GPS) data only. Other, more minor, changes include improvements to imputation methods and the accuracy of roadworks information used in the calculation of these statistics. More detail on these changes will be provided in updated technical guidance.

It is likely that the revised methodology will lead to a shift in the national journey time reliability estimate and a break in the series, although trends in national reliability over time are expected to be similar to those currently presented. We will publish adjustments to the historic national series so that users will have a reliability time series on a consistent basis back to April 2010, as is available now. After implementing these changes we are confident that the statistics in this release will continue to be robust and provide a true reflection of how journey reliability has changed at a national level.

It is anticipated that the 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 various data sources, including Automatic Number Plate Recognition (ANPR) cameras, in-vehicle Global Positioning Systems (GPS) and inductive loops built into the road surface.

Only real, observed, data from each of these sources with a good geographic match to the Highways Agency network are used to calculate reliability for each section of road. Where these data are available from more than one source, the data are weighted according to the number of vehicles generating each estimate. However, where no data of this quality are available for a particular section of road or time period, reliability is imputed based on national day-time and night-time averages for that month.

5.7 per cent of the data used to calculate journey time reliability in December 2012 required imputation in this way. This compares to 6.4 per cent of data requiring imputation in December 2011. 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

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 final figure for reliability on the Highways Agency managed network during the year ending November 2012 was 81.9 per cent, unchanged from the provisional estimate published last month.

The reliability statistics for December 2012 are currently provisional while final checks on the raw data sources underpinning the statistics are carried out. The statistics will be finalised in March 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

7. The next release of these statistics will be published on 14 March 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 January 2013, after implementing the methodology changes described in Section 2 of this release. We will also publish adjustments to the historic national series so that users will have a reliability time series on a consistent basis back to April 2010, as is available now.

8. In previous publications we have proposed changing the frequency of this statistical release from monthly to quarterly after the publication of the April 2013 statistics (in June). To date, no objectives have been raised in response to this proposal and on this basis we plan to implement this change on the timescales outlined above. We will continue to publish all of the reliability statistics in this release on a monthly basis in table CGN0104.

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.