



Department
for Transport

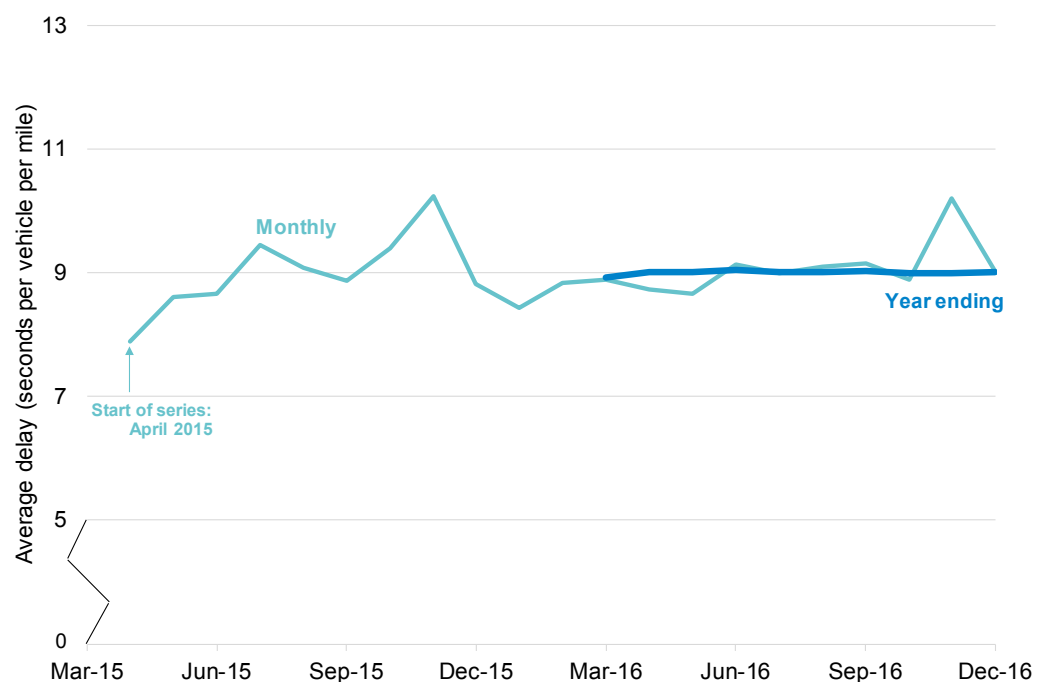
Travel time measures for the Strategic Road Network, England: 2016

Average delay on the Strategic Road Network similar to previous quarter.

Average delay on the Strategic Road Network (SRN; motorways and 'A' roads managed by Highways England) has been stable since the start of this annual series in the year ending March 2016.



Figure 1: Average delay compared to free flow on the Strategic Road Network (Table [CGN0402](#))



Introduction



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

The travel times used to calculate the measures in this release are estimated using in-vehicle Global Positioning Systems (GPS) observations from a sample of fleet cars.

In this publication



Average delay	p2
Average speed	p2
Reliability	p3
Background	p5

Key statistics

On the Strategic Road Network (SRN) in 2016:

- ▶ The **average delay** is estimated to be **9.0 seconds per vehicle per mile compared to free flow**. This is similar to (down 0.2% on) the previous quarter (the year ending September 2016).
- ▶ The **average speed** was **59.3mph**. This is similar to (up 0.1% on) the previous quarter.
- ▶ The **reliability of travel times** is measured using the Planning Time Index. This presents **69% of additional time needed compared to free flow**, on average, on individual road sections to ensure on time arrival. This is unchanged from the previous quarter.



Introduction to average delay



Delay (or 'time lost') is calculated by subtracting derived 'free flow' travel times from observed travel times for individual road sections.

Average delay across the SRN is calculated by aggregating delay estimates from individual road sections and weighting observations by associated traffic flows so that it is representative of traffic volumes on the roads.

Free Flow



Free flow travel times, which apply to both the average delay and reliability measures, are currently set equivalent to the speed limit, for each individual road section.

DfT's congestion statistics



For further information, a concise [introduction to the Department's road congestion and reliability statistics](#) is available.

Average delay on the SRN

National overview of average delay

In 2016, the **average delay on the SRN** is estimated to be **9.0 seconds per vehicle per mile (spvpm)** compared to free flow. This is **similar to (down 0.2% on)** the year ending September 2016, the previous quarter in this series.

Presentation note for average delay

Average delay is presented across all 24 hours of the day, on a seconds per vehicle per mile basis. Average delay is commonly used as a measure of relative congestion as it takes account of different free flow speeds (associated with different speed limits) allowing road sections to be compared more easily.

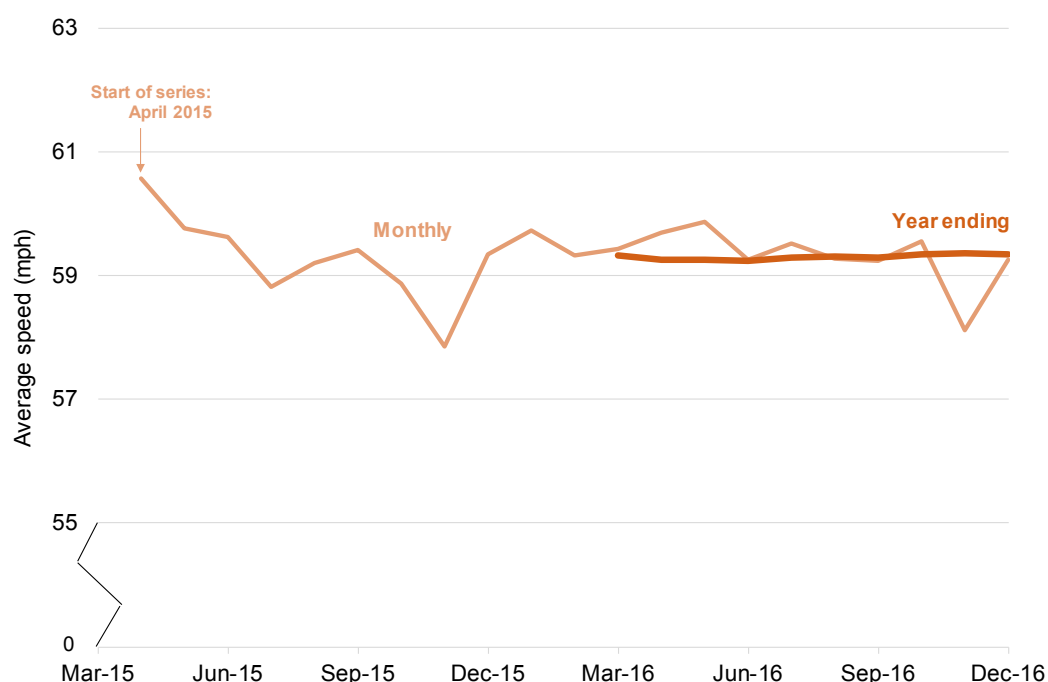
It is important to note that road users often do not expect to encounter free flow conditions (particularly during peak times) and consciously build in additional time for their journey based on their own experience. As a result, drivers may perceive delay relative to their expected (or average) journey time rather than free flow conditions.

Average speed on the SRN

National overview of average speed

In 2016, the **average speed on the SRN** was **59.3mph**. This is **similar to (up 0.1% on)** the year ending September 2016.

Figure 2: Average speed on the Strategic Road Network (Table [CGN0401](#))



Technical note



The average delay and average speed figures presented in this release are calculated across all 24 hours of the day and across the entire Strategic Road Network.

The reliability figures presented in this release are calculated across daytime hours (6am to 8pm) - where network demand is at its highest - and across the entire Strategic Road Network.

As such, it would not be appropriate to use these averages to represent 'typical' speeds, delays or reliability levels for any individual road section, time of day or vehicle class.

Reliability Example

As an illustrative case, consider an individual road section with a PTI of 60%, for a given month. If the travel time for this section in free flow conditions is 10 minutes, 95% of users leaving 16 minutes to traverse that road section (during that month) would have arrived on time. Equivalently, users leaving 16 minutes to traverse the same road section, would have been on time 19 times out of 20 in the month.

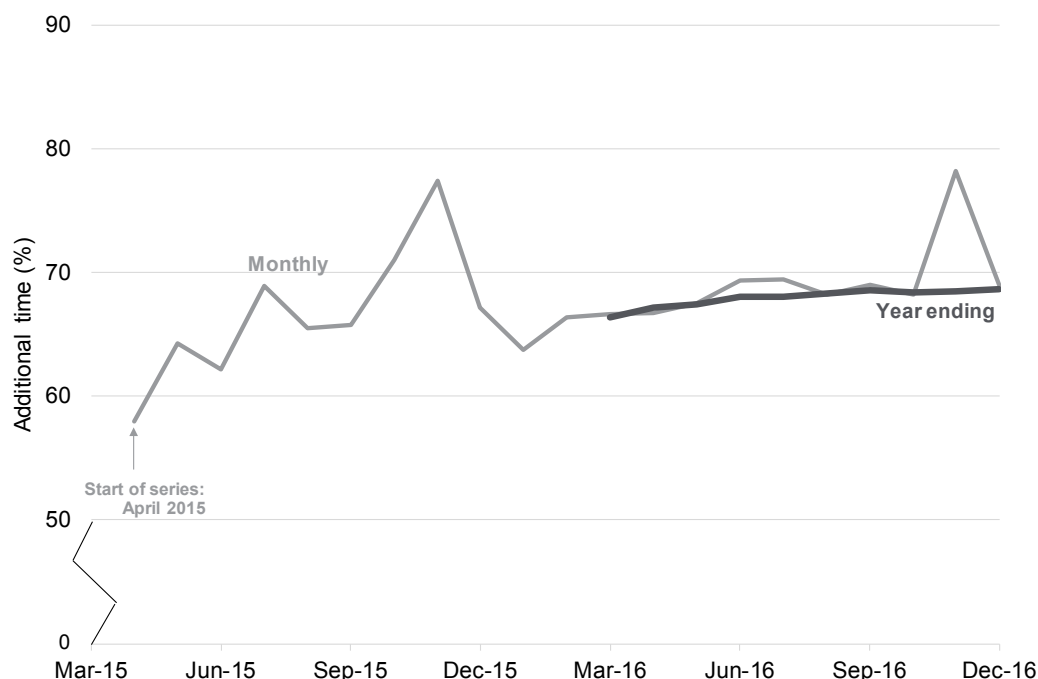
This measure reflects the average speed of cars on the SRN across the full 24 hours of the day. The measure weights speed observations from a sample of vehicles by associated traffic flows so that it is representative of traffic volumes on the roads in different locations and at different times of day (similarly to the average delay measure).

Reliability on the SRN

National overview of reliability

In 2016, 69% of additional time needed to be left compared to free flow, on average, on individual road sections of the SRN to ensure on time arrival. This is **unchanged from** the year ending September 2016.

Figure 3: Additional time needed compared to free flow to ensure on time arrival on the Strategic Road Network (Table [CGN0403](#))



Reliability on the SRN as a whole is calculated by averaging the Planning Time Index (PTI) across individual road sections, weighting by daytime (6am to 8pm) traffic flows for each section. The PTI does not represent the reliability of start to end journeys, across several road sections.

It should be emphasised that the PTI compares observed travel times with free flow times, rather than with expected travel times. Therefore, if a user rarely experiences free flowing conditions on an individual road section during the daytime, 60% additional time compared to free flow on that road section, for example, may reflect a typical travel time to them.

Background information



Road Investment Strategy

The '[Road Investment Strategy](#)' (RIS) sets out a long-term programme for England's Strategic Road Network, and the stable funding platform needed to plan ahead effectively. As part of the RIS, the Performance Specification sets out what Government wants from Highways England over the course of the first Road Period 2015/16 to 2019/20.

The Performance Specification includes a number of performance measures, supported by performance indicators. The three travel time measures presented in this release are all performance indicators identified in the Performance Specification, or in the case of Average speed, identified and developed by Highways England. Each measure is defined in Highways England's [Operational Metrics Manual](#).

Single Departmental Plan

In February 2016, the Department for Transport (DfT) published its [Single Departmental Plan](#). This document sets out DfT's main priorities and commitments from 2015 to 2020. The main objectives identified by the Department for the period include Boosting Economic Growth and Opportunity; Building a One-Nation Britain; Improving journeys; and Safe, Secure and sustainable transport.

Average delay on the Strategic Road Network is one of the performance indicators for the "Improving Journeys" objective.

Methodology and technical detail

1. Users should exercise some caution when interpreting the statistics in this release, particularly when looking over short periods of time. Travel times (and the measures in this release) are likely to be affected by a range of factors such as traffic levels, weather, roadworks, or speed limit changes.
2. An '[Analysis of Travel Times on the SRN](#)' was published in July 2015 to introduce the travel time measures to users and to seek feedback. Statistics in this release are not directly comparable with those published in the analysis, however, due to changes in the way the underlying data are captured and processed.
3. The underlying datasets used to produce the analysis in this paper are similar to those used for the '[On Time' Reliability Measure \(OTRM\)](#)', the previous (reliability) statistics that DfT published for the SRN. The travel times are estimated using Global Positioning Systems (GPS) data and traffic flows are estimated using Highways England automatic traffic counters. These flows are calculated in a different way to those used to produce the [Road Traffic Statistics](#) that DfT publish.

Performance Indicators for the first Road Period (April 2015-March 2020)

As set out in the Performance Specification, Encouraging Economic Growth and Supporting the Smooth Flow of Traffic are two of the eight key areas of performance that the Department for Transport has asked Highways England to focus on during the first Road Period.

Average delay is the Key Performance Indicator for Encouraging Economic Growth.

Average speed and reliability are two of the Performance Indicators for Supporting the Smooth Flow of Traffic.

Request for feedback



We are 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 front page of this release.

National Statistics



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

Details of ministers and officials who receive pre-release access to these statistics up to 24 hours before release can be found [here](#).

Next update

The next release in this series is expected to be published in May 2017. This will contain monthly, and annual (year ending) figures, for the period April 2016 to March 2017. This will include new figures for the period January to March 2017.

4. All measures in this release use travel times from up to 50,000 car observations. Using cars only reduces the risk that observed changes in any of the travel time measures are due to changes in the vehicle mix of the sample. All measures are weighted by associated expected traffic flows to ensure that they represent traffic volumes on the roads in different locations and at different times of day.

5. All measures use real, observed travel time data with a good temporal match where available. For the Average speed and Average delay measures, where no data of this quality are available for a particular section of road and time period, travel times are imputed using corresponding monthly day-time and night-time averages for individual road sections. Where there is insufficient data for individual road sections, national day-time and night-time averages, for each road type ('A' road single carriageway, 'A' road dual carriageway and motorway) are used for these measures. For the reliability measure, national daytime (6am-8pm) averages, by road type, are used to impute individual road sections with fewer than 100 car observations, during the daytime, in the month. Imputation figures, across the SRN as a whole, can be found [here](#).

6. The average speed and average delay measures published from April 2015 show higher imputation levels than those recorded for the previous OTRM measure. This is due to a combination of factors, including the use of cars only, the change in geographical representation of the SRN, and a reduction in the sample size of cars from August 2015.

7. For the Average delay and Reliability measures, free flow travel times are currently set to the speed limits for individual road sections. This is different to the way free flow speeds are calculated in the [free flow vehicle speeds](#) on roads in Great Britain that DfT also publishes. That series focusses more on the speeds at which drivers choose to travel, and their compliance with speed limits.

8. Attitudes on road congestion can be found in the British Social Attitudes Survey, which is available at: [British Social Attitudes Survey: 2015](#).

9. In addition to these Travel Time measure statistics, the Department also publishes [Journey Time statistics](#). These provide estimates of journey times to key local services (food stores, health care, education, town centres & employment centres); and to key strategic locations (e.g. transport hubs like major airports).

Department for Transport (DfT) statistics Twitter feed



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