

## Highways Agency Specification 2013-14 – Technical Note

Field	Notes
<b>Short Title</b>	Reliability of Journeys on Highways Agency's Motorway and A Road Network.
<b>Performance Specification Reference</b>	Output 5 – PS 4.4
<b>Requirement / Output Details</b>	For the year ending March 2015, the network operator should aim to maintain the annual national reliability level, as measured by the on time reliability measure, to that reported for the year ending March 2013. The figures used to assess performance will be those reported once re-baselining has taken place.
<b>Technical Definition</b>	The reliability of journeys on Highways Agency's motorway and A road network is measured by the percentage of 'journeys' that are 'on time'. For this measure, 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, drawn from historic data on that particular section of road.
<b>Rationale</b>	The Performance Specification states that the network operator should ensure that journey times on the strategic road network are reliable.
<b>Formula</b>	<p>The measure is calculated as follows:</p> <ol style="list-style-type: none"> <li>1. Observed 'journey' times are calculated for each road link (stretch of road between major junctions) in both carriageway directions for each 15 minute period.</li> <li>2. Pre-determined reference times are set for each of approximately 2,500 links, each 15 minute period of the day and for each of 13 day types (e.g. first working day of week). Reference times are based on historical averages specific to the link, time period and day type. Where sufficient data is not available, the reference times are based on averages for the link for any time of day and any day type or on free-flow speeds. A fixed tolerance of three seconds per mile is added to historical average journey times to derive references.</li> <li>3. The observed 'journey' times are compared to the pre-determined references. Where observed times are equal to or less than the reference times, these 'journeys' are deemed to be 'on time'.</li> <li>4. Where links are affected by roadworks, the observed 'journey' times are compared to alternative reference values, based on the temporary speed limit in place on that link.</li> </ol>

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	<p>5. Performance for individual links and 15 minute time periods is aggregated based on respective traffic levels (flow x link length). This ensures those with higher numbers of vehicles travelling on them and/ or longer links have a larger contribution to the overall statistics.</p> <p>The following worked example shows how 'on time' performance is calculated for specific links/time periods and how link level performance is aggregated.</p> <p><u>Calculation of performance for M25 Junction 15 to 16 (clockwise) on Wednesday 15th September 2010, 08:45 to 09:00</u></p> <table><tr><td>Reference time <i>(based on historical average for the link on normal working Wednesdays between 08:45 and 09:00 plus a tolerance of three seconds per mile)</i></td><td>333 seconds</td></tr><tr><td>Observed time <i>(for the link on 15/9/2010 between 08:45 and 09:00)</i></td><td>300 seconds</td></tr><tr><td>'Journey' time status</td><td>'On time'</td></tr></table> <p><u>Calculation of performance for M40 Junction 1a to 2 (westbound) on Wednesday 15<sup>th</sup> September 2010, 08:45 to 09:00</u></p> <table><tr><td>Reference time <i>(based on historical average for the link on normal working Wednesdays between 08:45 and 09:00 plus a tolerance of three seconds per mile)</i></td><td>267 seconds</td></tr><tr><td>Observed time <i>(for the link on 15/9/2010 between 08:45 and 09:00)</i></td><td>270 seconds</td></tr><tr><td>'Journey' time status</td><td>Not 'on time'</td></tr></table> <p><u>Calculation of <b>combined</b> performance for M25 Junction 15 to 16 and M40 Junction 1a to 2 on Wednesday 15th September 2010, 08:45 to 09:00</u></p> <table><tr><td></td><td>M25 J15-16</td><td>M40 J1a-2</td></tr><tr><td>Link length</td><td>5 miles</td><td>5 miles</td></tr></table>	Reference time <i>(based on historical average for the link on normal working Wednesdays between 08:45 and 09:00 plus a tolerance of three seconds per mile)</i>	333 seconds	Observed time <i>(for the link on 15/9/2010 between 08:45 and 09:00)</i>	300 seconds	'Journey' time status	'On time'	Reference time <i>(based on historical average for the link on normal working Wednesdays between 08:45 and 09:00 plus a tolerance of three seconds per mile)</i>	267 seconds	Observed time <i>(for the link on 15/9/2010 between 08:45 and 09:00)</i>	270 seconds	'Journey' time status	Not 'on time'		M25 J15-16	M40 J1a-2	Link length	5 miles	5 miles
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	Flow along link (for date/time period)	1,500 vehicles	1,000 vehicles
	Vehicle miles travelled on link (flow x link length)	7,500 vehicle miles	5,000 vehicle miles
	'On time' performance for link	100%	0%
	Total vehicle miles 'on time' for links	7,500 vehicle miles	
	Total vehicle miles for links	12,500 vehicle miles	
	Combined 'on time' performance for links (total vehicle miles 'on time' / total vehicle miles)	60%	
	Multiple links and time periods are aggregated in a similar way to calculate overall performance across the network in any given period. A more detailed description of the methodology is available here: <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229969/methodology-for-calculation-of-reliability-on-ha-network.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229969/methodology-for-calculation-of-reliability-on-ha-network.pdf</a>		
Start Date	June 2011. <u>Notes</u> <div><div>1.</div><div>After first publication in June 2011, the statistics were withdrawn shortly afterwards while further quality checks were carried out on the raw datasets underpinning the measure. Publication re-commenced in November 2011.</div><div>2.</div><div>Following the implementation of methodology changes in the March 2013 publication (data to January 2013) the historic national series was revised at this point.</div></div>		
Performance	Changes in 'on time' levels are reported monthly by DfT.  The measure will aim to maintain the annual national reliability level, as measured by the on time reliability measure.		
Behavioural Impact	This is not a congestion-based indicator and hence there may be a focus on routes that are unreliable rather than routes that are congested and require capacity enhancement.		

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<b>Comparability</b>	The on time reliability measure is highly complex. There are currently no internationally recognised standards to enable comparison between countries. Simpler measures, e.g. based on average speeds, could be considered.
<b>Collection Frequency</b>	Data are collected continuously via monitoring equipment, but collated and processed to produce 'on time' performance on a monthly basis. Data are published on a monthly basis. There is a risk to continuity because of the planned replacement of the Highways Agency Traffic Information System (HATRIS) network by the end of 2014.
<b>Clearance Process</b>	The measure is calculated by the Department for Transport and agreed with the Highways Agency's National Intelligence Unit. Final agreed figures are published by the Department for Transport road congestion statistician in accordance with the National Statistics protocol.
<b>Time Lag</b>	Publication of performance takes place around 5-6 weeks after the end of each month. This period allows for the collation, processing and validation of the statistics to take place. Publications are pre-announced in line with National Statistics requirements.
<b>Data Source</b>	<p>Journey times are sourced from in-vehicle Global Positioning System (GPS) data, which have been mapped to the Highways Agency Traffic Information System (HATRIS) network. Traffic flow data from Highways Agency automatic count points are also used.</p> <p>There is a risk to continuity because of the planned replacement of HATRIS by the end of 2014.</p>
<b>Type of Data</b>	<p>Aggregated data for complete network – National Statistic.</p> <p>Disaggregated data for individual sections of the network – Management Information.</p>
<b>Robustness and Data Limitations</b>	<p>Where observed journey time estimates are not available to estimate reliability, performance is imputed at a link level by month with corresponding day-time (06:00-20:00) and night-time (20:00-06:00) averages where there is sufficient data. Where sufficient data are not available, national day-time and night-time averages for that month are used to impute individual road sections and time periods.</p> <p>As a National Statistic, the measure is produced and validated by Government statisticians.</p>

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<b>Collecting Organisation</b>	Department for Transport/Highways Agency.
<b>Return Format</b>	Percentage of 'journeys' that are 'on time' on the Strategic Road Network.
<b>Geographical Coverage</b>	England.
<b>How Indicator Can be Broken Down</b>	By junction to junction road links.