



Benchmarking Highways England

2019 Progress Report

25 February 2020

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Executive Summary

Benchmarking Highways England's performance and efficiency is an important part of our role. It informs our monitoring of Highways England's delivery, increasing transparency around the company's performance, and our advice on future Road Investment Strategies. This has been particularly important over the last year as we provided advice to government on the developing plans for the second road period.

This is our fourth benchmarking report and we are gaining greater insights at a regional level from four years of performance and spending data. Regional differences in performance and maintenance spending on the strategic road network generally narrowed in 2018-19, with regional performance largely mirroring the national picture.

User satisfaction improved in the North West with the completion of major improvement projects. However, satisfaction in the South East declined, largely driven by dissatisfaction with the upkeep of the network following the harsh 2017-18 winter. Highways England is taking a more customer-centric approach to engaging road users. We expect this to translate into an improved understanding of what influences user satisfaction, especially with the transition to the improved Strategic Road User Survey in road period 2.

Highways England continued to meet its national target for (road surface) pavement condition. While regional differences are small, the road surface in the East and Midlands continues to be in a poorer condition than other regions. This is likely related to the amount of concrete road surface in those regions – an issue which Highways England should begin to address in road period 2.

Highways England has reduced its average (real) maintenance and renewal spending per lane mile, and the variations between the regions, to the level seen in 2016-17. This reversed the spike of higher spending and the widening of regional differences seen in 2017-18. It is difficult to draw conclusions on efficiency from such simple metrics, however, we expect that Highways England will collect more detailed data that can yield more efficiency insights, as it completes the roll out of its Asset Delivery model.

Building on previous work, we commissioned a feasibility study to consider the scope for comparing pavement condition across road authorities. The study concluded that it is not possible to directly compare condition without modification of the metrics used. We will consider how best to take this work forward as one of our priority areas for benchmarking in road period 2.

Our other priorities, building on our work to date, are to further embed and broaden the scope of our regional and internal benchmarking, and to make sure we make best use of existing networks when looking to benchmark Highways England against road authorities or organisations.

Why we benchmark

1. As we enter our fourth year of publication, we continue to improve transparency around Highways England's performance and management across the strategic road network (SRN). As part of our role to monitor how Highways England carries out its functions, we benchmark the company's performance and efficiency internally and against comparable organisations in other countries or sectors. We are in the process of developing our strategy for the next road period, we discuss this in the final section of this report. Benchmarking is important for many reasons:
 - it forms part of the evidence for our review of Highways England's plans for the second road period;
 - can identify areas for improvement where Highways England can take action to deliver better outcomes for the SRN road users; and
 - it improves transparency of performance variation across regions of the SRN.

Introduction

2. This fourth benchmarking progress report draws from four years of consecutive time-series data. This improves our understanding of regional performance through a combination of data analysis, pattern recognition and collaborative work with Highways England. We expect the value of our report to increase over time to produce richer insights.
3. We continue to explore opportunities to benchmark Highways England's processes and performance by working collaboratively with the company and making data driven recommendations for improvements. Building on previous work, we commissioned a study to examine the feasibility of directly comparing pavement (road surface) condition between Highways England and comparators.
4. In 2019 we reviewed Highways England's plans for the second road period. This included applying the insight from our benchmarking and reviewing where Highways England used benchmarking evidence to support its plans. We expect some changes to the performance specification for the second road period, and for regional performance reporting to be more firmly established. We will continue to work with Highways England to develop our regional reporting and benchmarking for road period 2.

Regional comparisons

Regional performance against key performance indicators

5. In this section, we discuss how Highways England performed against a subset of its key performance indicators (KPIs) and examine how this varied across its regions in 2018-19. Figure 1 shows the five KPIs included in this analysis.

Figure 1: Key performance indicators and targets



User satisfaction

Highways England must achieve a score of 90% by march 2020



Pavement condition

95% of pavement requiring no further investigation for possible maintenance



Average delay

Highways England must work to minimise average delay



Incidence clearance

At least 85% of incidents must be cleared within one hour



Network availability

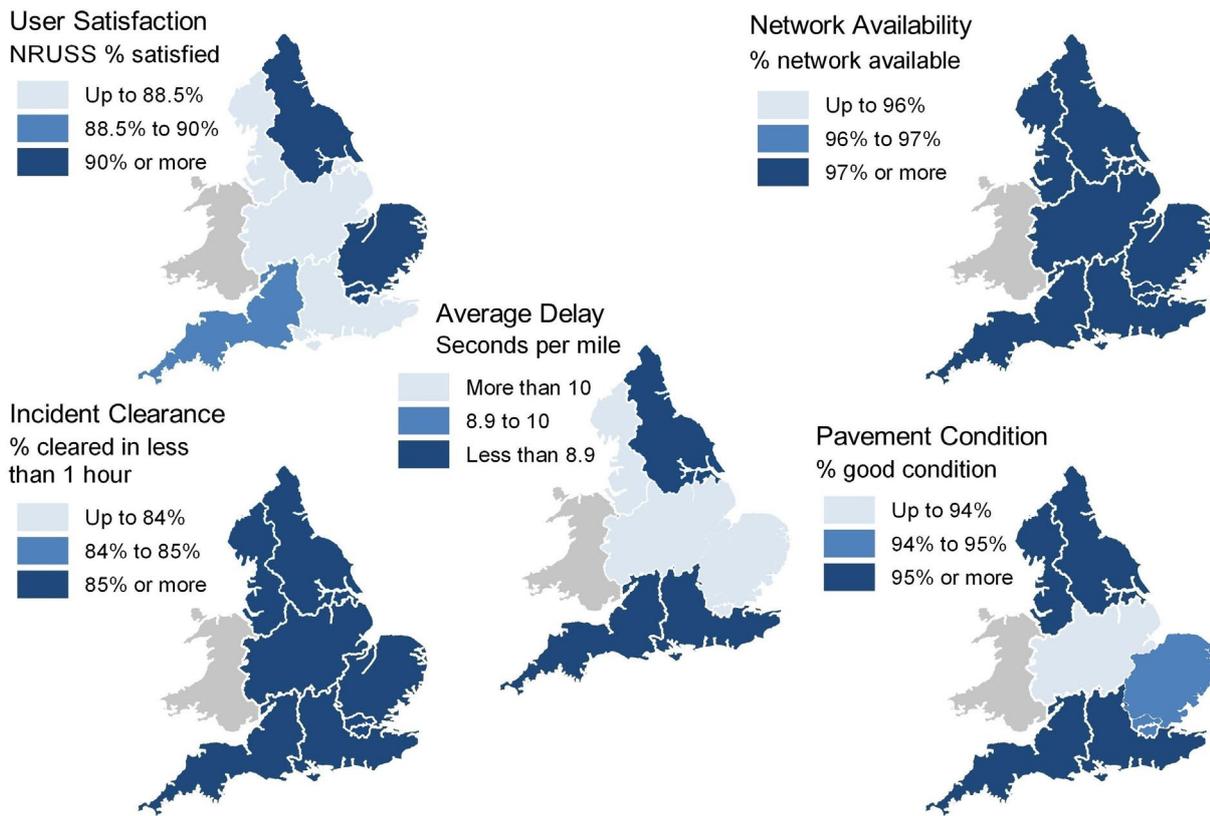
97% lane availability in any one rolling year

6. The maps in Figure 2 display how performance against these five KPIs varied in 2018-19. The colour-coding is based on Highways England's national targets – there are no regional targets specified in the Road Investment Strategy (RIS). There are inherent differences between regions and Highways England's performance is targeted at a national level, so it is expected that there might be some variation in Highways England's delivery against its national targets

7. Similar to our last report, all regions exceeded the national target for network availability and incidence clearance. Pavement conditions are stable but the East and Midlands regions remain below target. However, there are subtle and remarkable differences in the other KPIs across regions:

- average delay, where there has been consistent regional variation; and
- user satisfaction, where regional scores remain unpredictable.

Figure 2: Highways England regional KPI performance, 2018-19¹

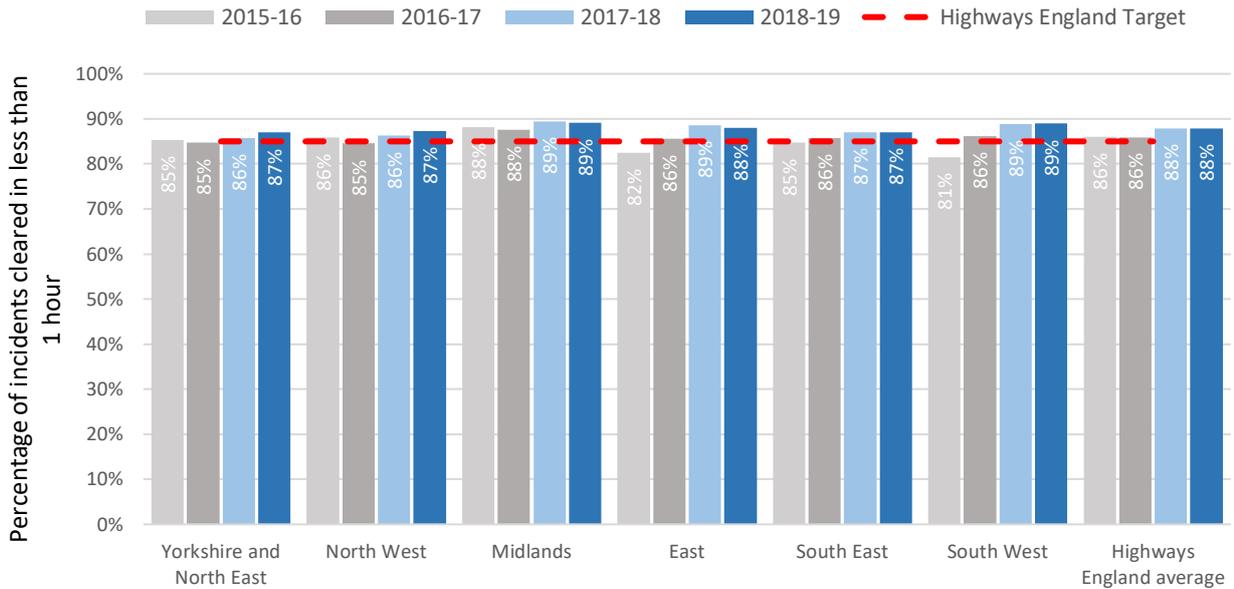


Network availability and incident clearance

8. Every region exceeded the national target to keep at least 97% of the network available for traffic in the first four years of the road period. Similarly, Figure 3 shows that incidence clearance has seen better performance over the last two years, an improvement from the early years of the first road period. The percentage of incidents cleared in less than an hour has been above the national target of 85% since 2017-18. Network availability and incidence clearance remain the only KPIs that have been above the national target in all regions.

¹ Contains Ordnance Survey data © Crown copyright and database right 2016. These numbers exclude DBFO sections

Figure 3: Regional incident clearance performance, 2015-16-2018-19²

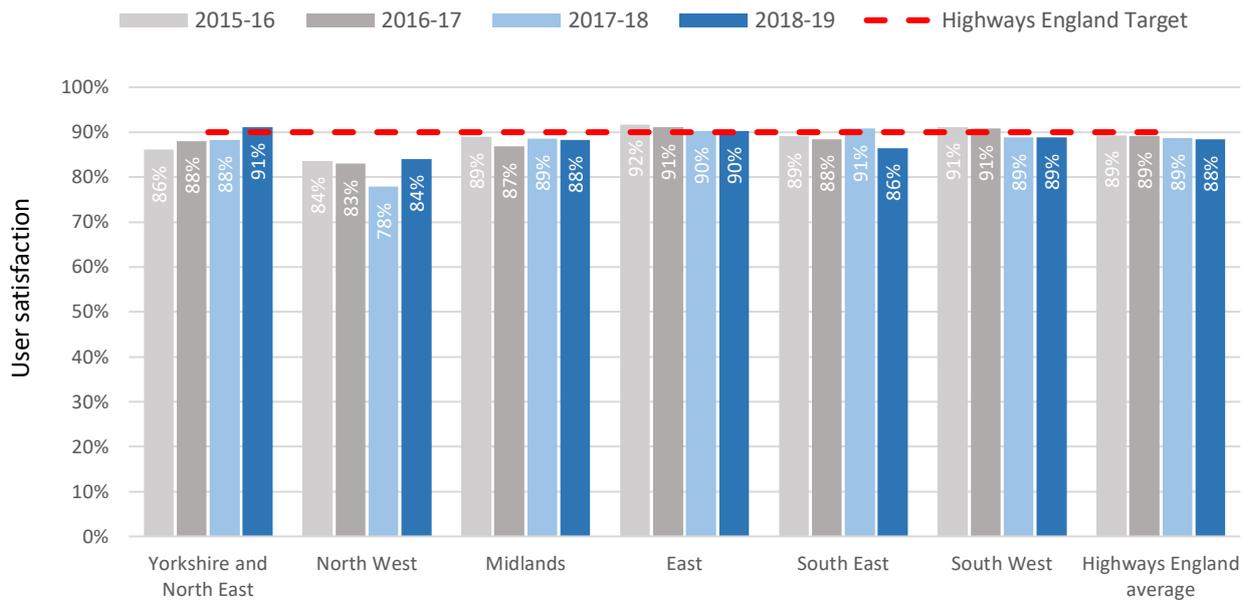


User satisfaction

- User satisfaction has improved from last year across four regions. This included the East region, where user satisfaction has been above the national target of 90% since the start of the first road period. The North West continues to lag behind other regions with a score of 84%. This is, however, the highest satisfaction score recorded in the region in the last four years, a leap from the 78% score reported in 2017-18. By contrast, in the South East the user satisfaction score was 86%, the lowest for the region since 2015-16.

² These numbers exclude DBFO sections

Figure 4: Regional user satisfaction, 2015-16 to 2018-19



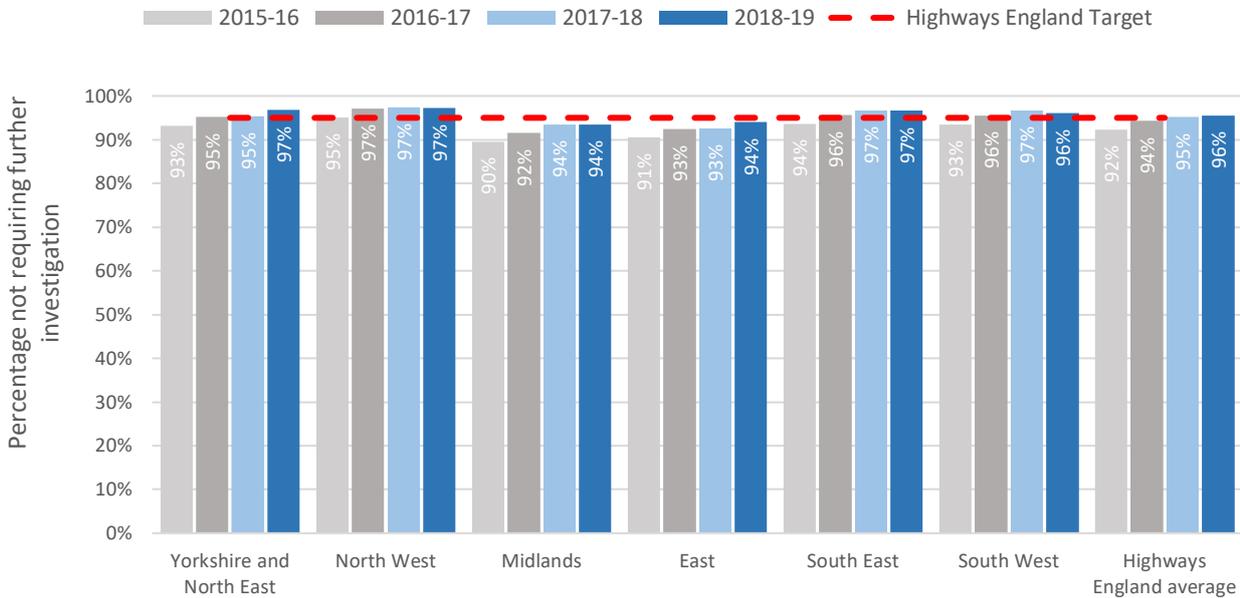
- It is difficult to identify the cause and effect of satisfaction from the National Road Users' Satisfaction Survey (NRUSS) due to several factors including sample size. The overall satisfaction score in 2018-19 for NRUSS (the aggregate score of all the five drivers) was 88%. Similarly, the journey time satisfaction score in 2018-19 was 88%. In 2019-20, Transport Focus will continue with dual-running of the Strategic Road User Survey (SRUS). While SRUS is not comparable with NRUSS, it provides more robust data, and will become the main measure of user satisfaction from 2020-21. We will continue to monitor both surveys for insights.

Pavement condition

- Pavement (road surface) condition has steadily improved throughout RP1. Since our 2015-16 report, we have seen improvements in all regions. This highlights the changes Highways England have made over the first four years of the road period. It is important to note that Highways England has a national target, not regional targets, for pavement condition. The regions continue to be above the national target over the last three years except for the East and Midlands regions. We reported last year that the East and Midlands regions were below the national target, and this remains the case. But the East has since improved to 94%, and condition in both regions was only one percentage point below the national target in 2018-19.
- As noted above, we might expect this sort of regional variation when Highways England has a national target. Nevertheless, a better understanding of the variation across regions, and what causes it, would enhance our monitoring of Highways

England. For example, one possible cause could be the extent of concrete road surfaces in these regions, an issue which Highways England is likely to begin to address in road period 2.

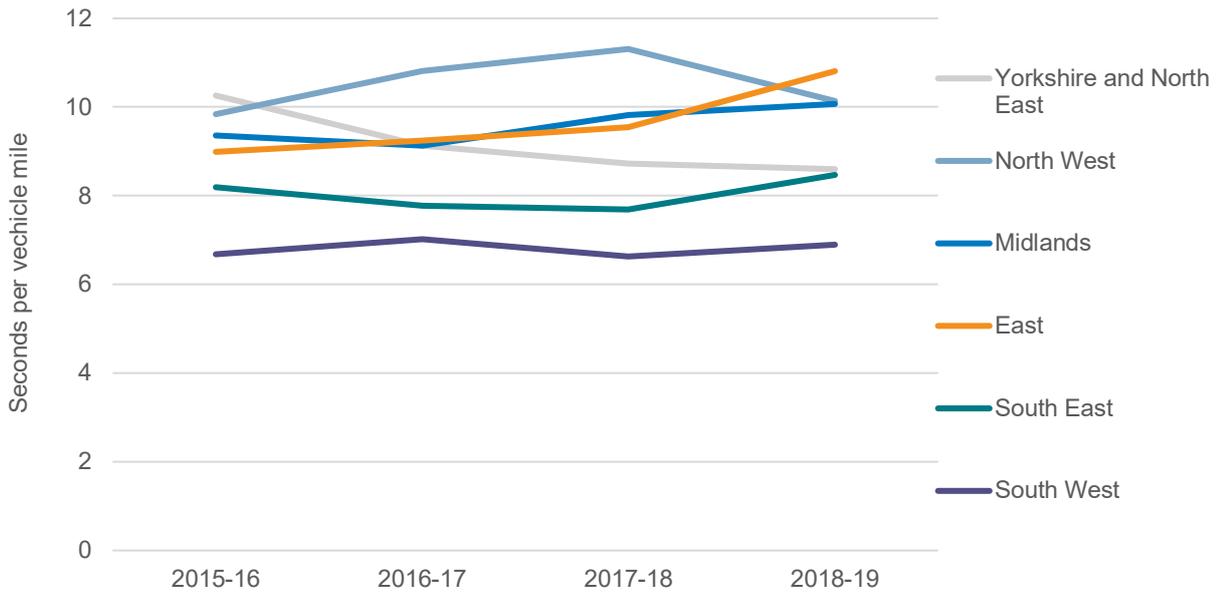
Figure 5: Regional pavement condition, 2015-16 to 2018-19



Average delay

13. Highways England does not have a national target for average delay, it must simply work to minimise delay. A range of factors including traffic levels, roadworks, incidents (and incident clearance), and the make-up of the network are likely to affect this KPI. Taken together, this makes regional performance difficult to assess.
14. Nationally, average delay has increased year-on-year. Average delay levels in the North West reduced significantly in 2018-19 compared to the previous two years. This could be due to the completion of the M60 junction 8 to M62 junction 20 major scheme in the region which would have reduced the level of roadworks and increased lane capacity. However, delay is increasing in all the other regions except for Yorkshire and North East region when compared to last year.

Figure 6: Regional average delay, 2015-16 to 2018-19³



15. We expect that there are connections between the different elements of Highways England's performance specification such as higher delays leading to lower user satisfaction. However, based on the four years of data, there is not evidence of a strong correlation between the five measures. We will continue to monitor regional variation and possible linkages between KPIs for relevant insights, although the precise make-up of the metrics might change in the second road period.

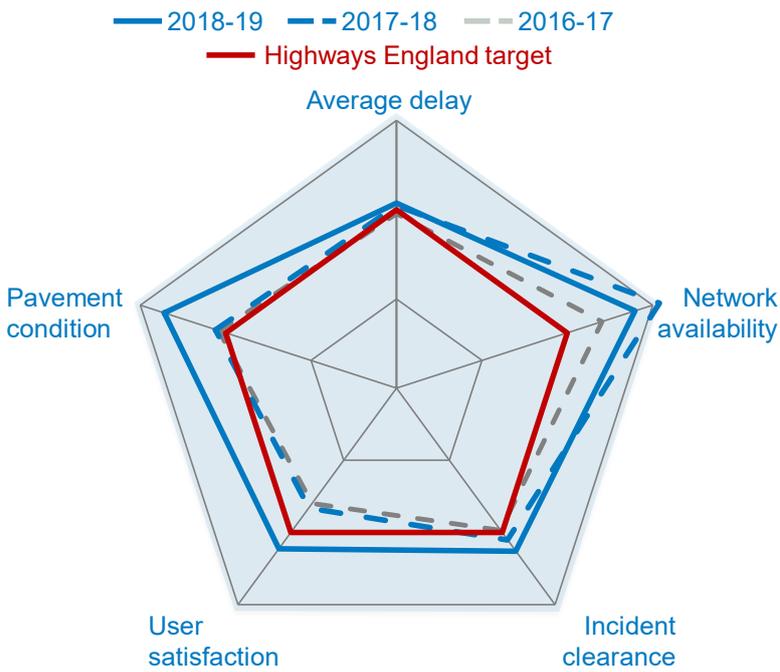
³ These numbers exclude DBFO sections

Regional dashboards

16. This section displays a set of regional dashboards that combine performance, spending and contextual data from the last three years of the road period⁴. The dashboards show:
- performance, made up of the five KPIs - radar charts have been adjusted so that a larger shape represents 'good' performance for each of the KPIs;
 - regional statistics include the gross value added (GVA) per head, regional population, network structure and length in lane miles;
 - road length as a percentage breakdown by motorway, single and dual carriageways of the total route miles in the region;
 - spending, covering maintenance and renewal spend per lane mile; and
 - traffic volumes, shown as the traffic density (average annual daily traffic flows for motorways, dual carriageways and single carriageways) and the percentage of heavy goods vehicle (HGV) traffic.
17. Maintenance spending levels and possible implications for efficiency are discussed further in the next section. Annex A provides more detail on data sources; how we present the data in the performance 'radar charts'; and how we have treated parts of the network managed under Design, Build, Finance and Operate (DBFO) contracts.

⁴ The 'radar charts' on each dashboard show regional performance relative to Highways England's overall target. Performance has been normalised to the target level and is shown with the red line. If the blue line is outside the red target, then performance exceeded the target for that KPI in that region in that year. The exception is average delay, which has no target. For this KPI the red line represents average delay across the SRN as a whole in 2015-16, with regional performance presented relative to the national average.

Performance relative to Highways England's target (or average for the delay KPI), 2018-19



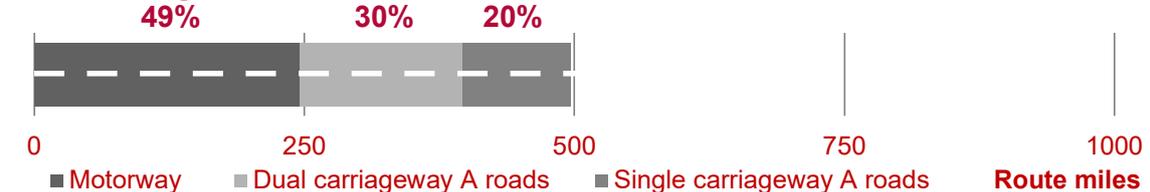
Yorkshire & North East



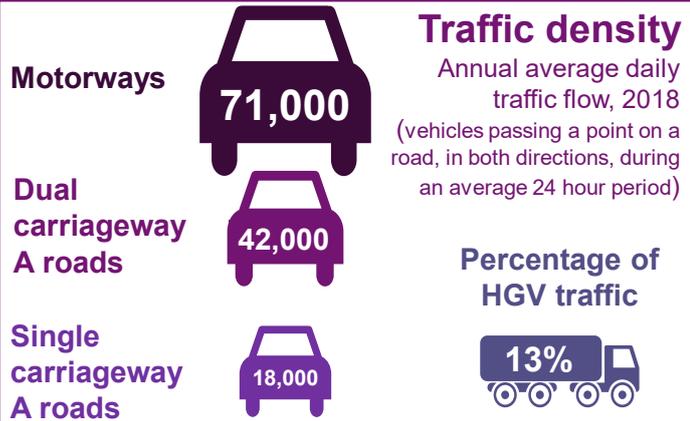
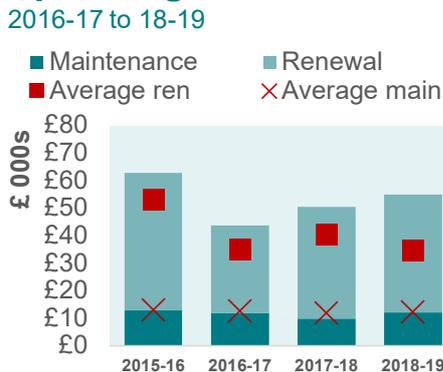
Regional stats



Road length

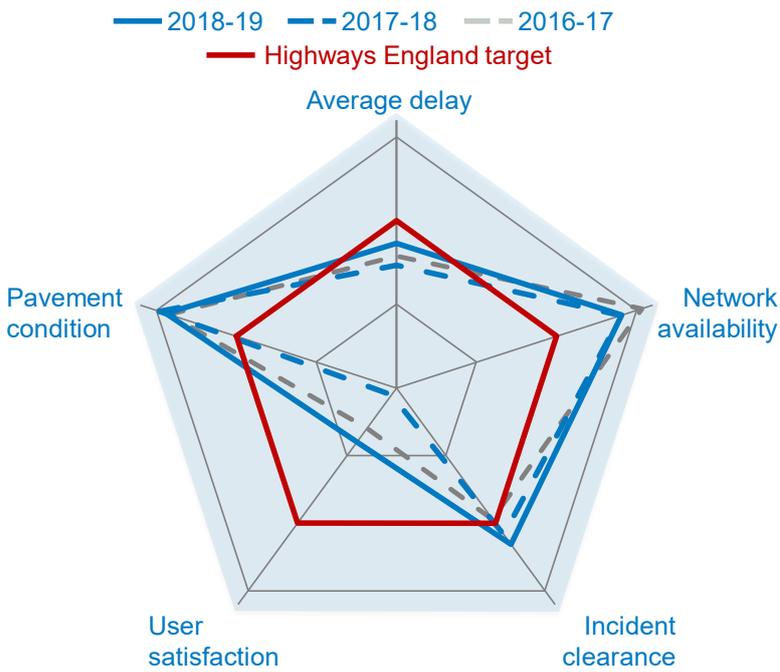
 measured in route miles, 2018-19


Spending

 per lane mile, 2016-17 to 18-19


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Performance relative to Highways England's target (or average for the delay KPI), 2018-19



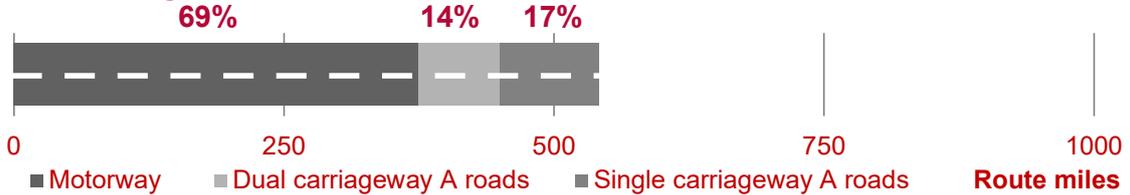
North West



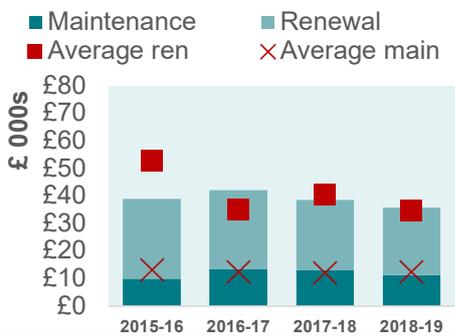
Regional stats



Road length

 measured in route miles, 2018-19


Spending

 per lane mile, 2016-17 to 18-19


Motorways

85,000

Dual carriageway A roads

32,000

Single carriageway A roads

19,000

Traffic density

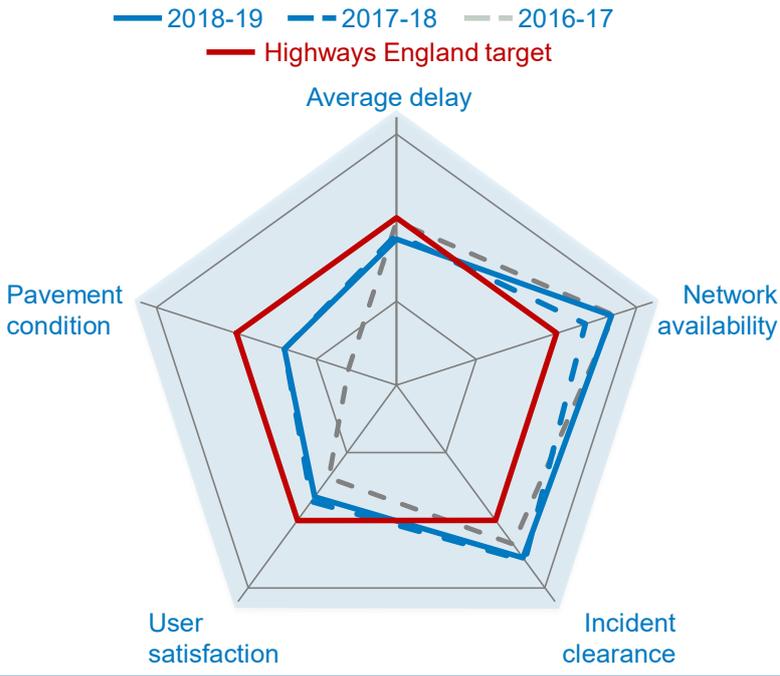
Annual average daily traffic flow, 2018
(vehicles passing a point on a road, in both directions, during an average 24 hour period)

Percentage of HGV traffic

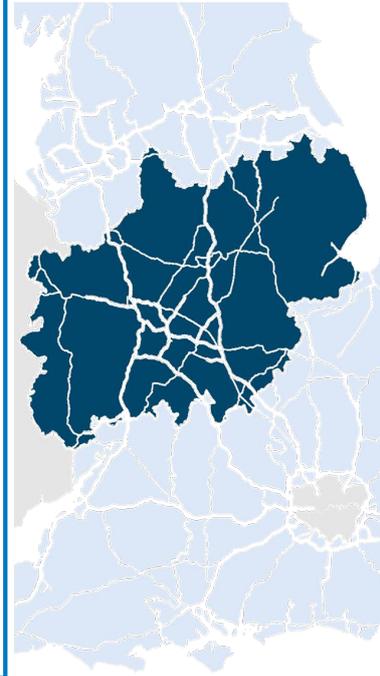
10%

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Performance relative to Highways England's target (or average for the delay KPI), 2018-19



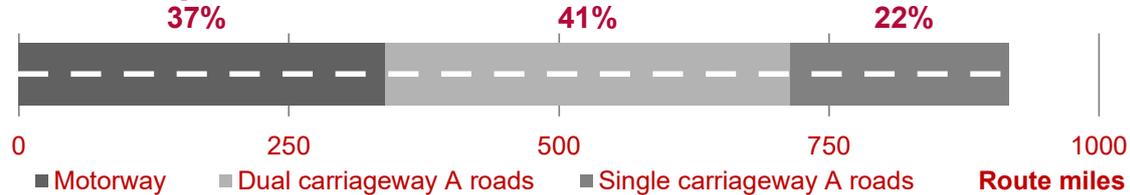
Midlands



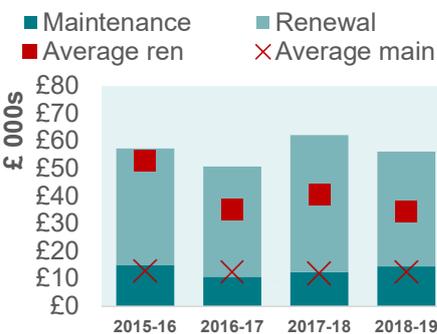
Regional stats



Road length

 measured in route miles, 2018-19


Spending

 per lane mile, 2016-17 to 18-19


Motorways



Dual carriageway A roads



Single carriageway A roads



Traffic density

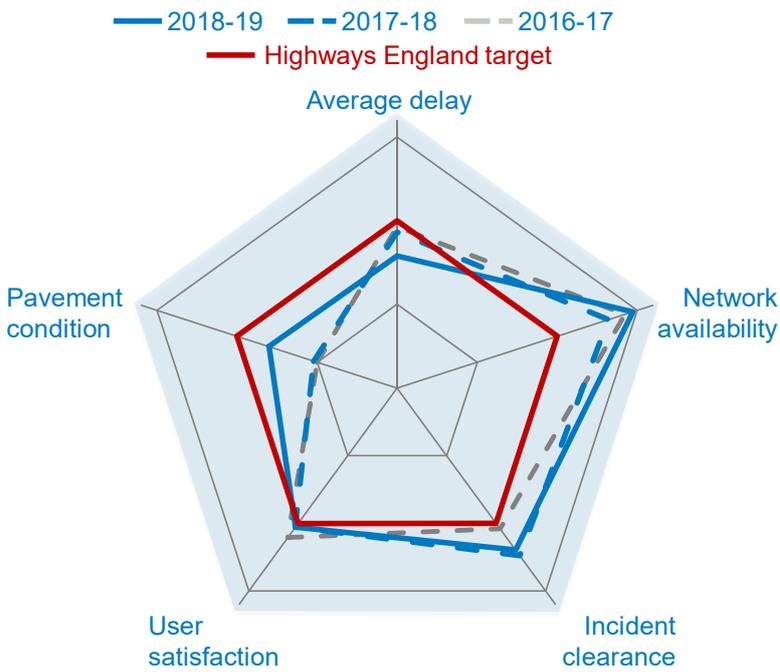
Annual average daily traffic flow, 2018 (vehicles passing a point on a road, in both directions, during an average 24 hour period)

Percentage of HGV traffic



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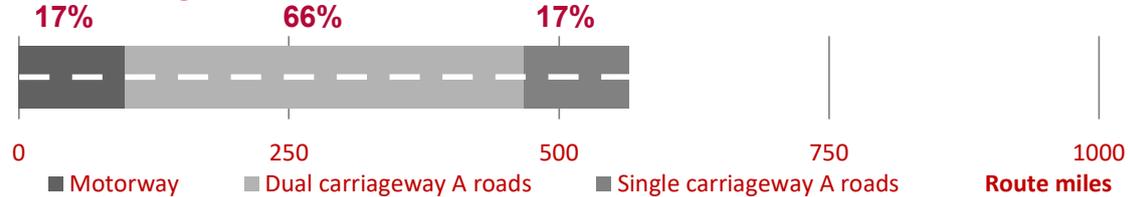
Performance relative to Highways England's target (or average for the delay KPI), 2018-19



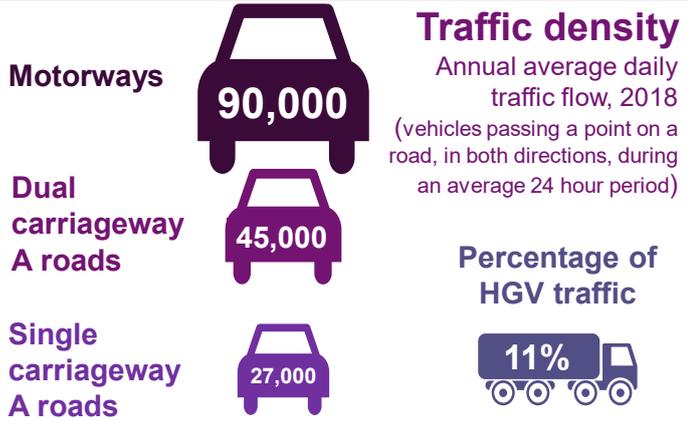
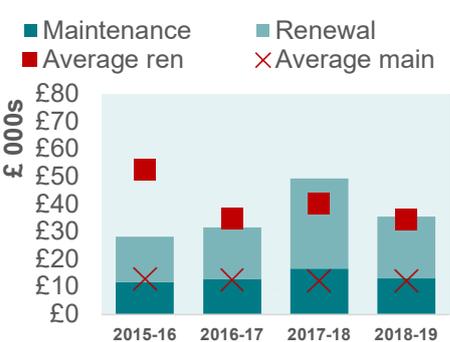
Regional stats



Road length measured in route miles, 2018-19

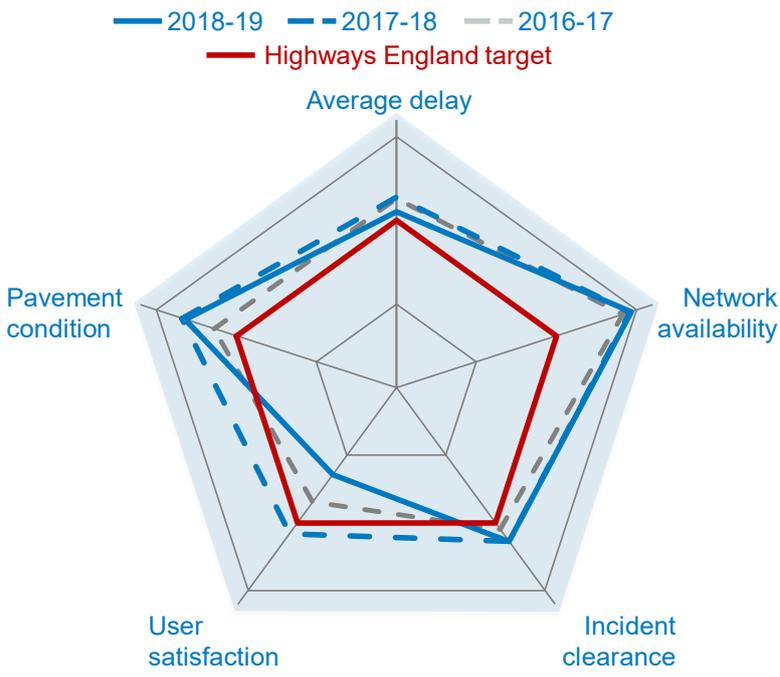


Spending per lane mile, 2015-16 to 18-19

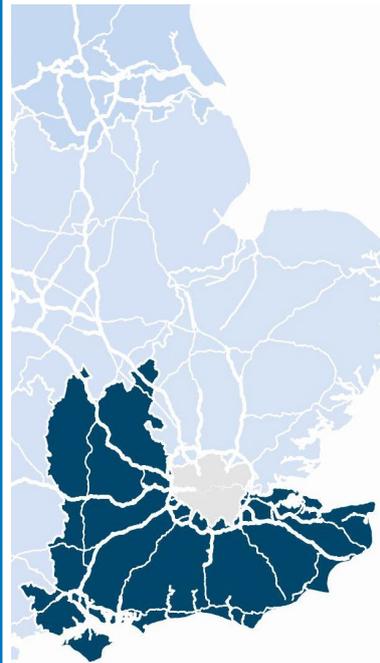


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Performance relative to Highways England's target (or average for the delay KPI), 2018-19



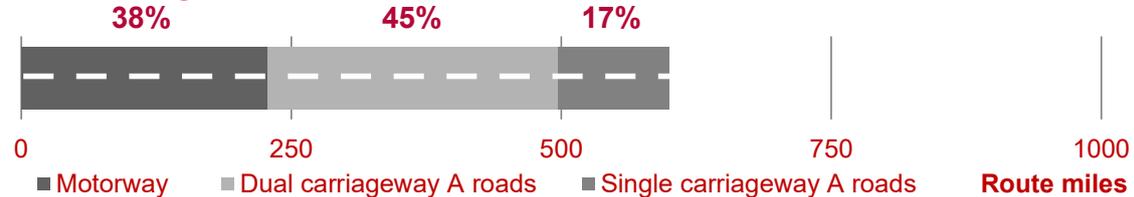
South East



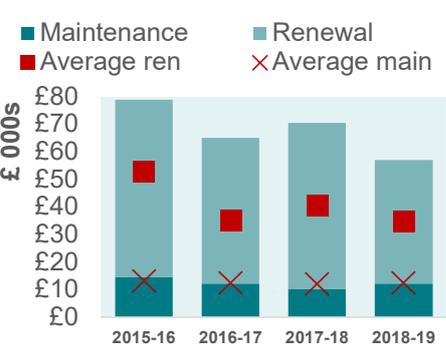
Regional stats



Road length measured in route miles, 2018-19



Spending per lane mile, 2016-17 to 18-19



Motorways



Dual carriageway A roads



Single carriageway A roads



Traffic density

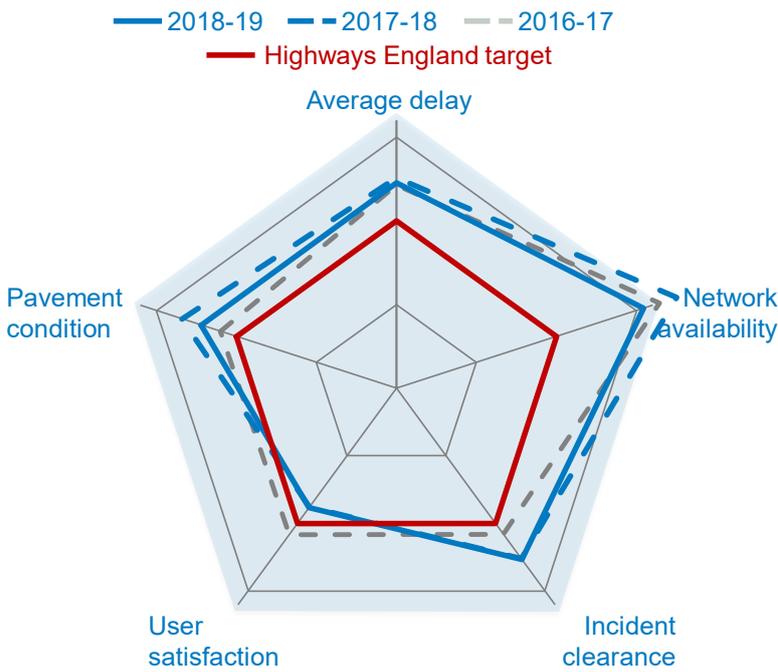
Annual average daily traffic flow, 2018 (vehicles passing a point on a road, in both directions, during an average 24 hour period)

Percentage of HGV traffic



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Performance relative to Highways England's target (or average for the delay KPI), 2018-19



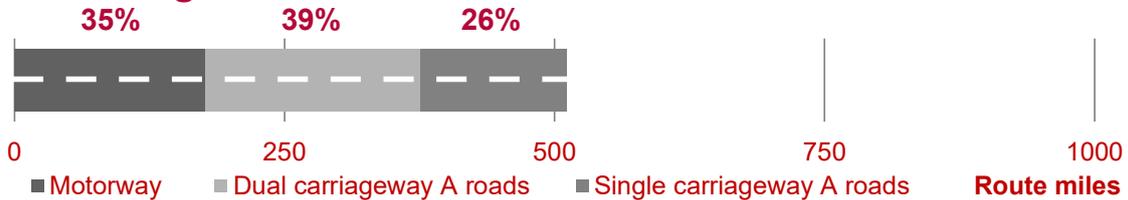
South West



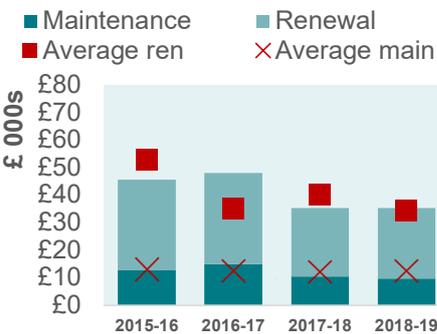
Regional stats



Road length measured in route miles, 2018-19



Spending per lane mile, 2016-17 to 18-19



Motorways



Dual carriageway A roads



Single carriageway A roads



Traffic density

Annual average daily traffic flow, 2018 (vehicles passing a point on a road, in both directions, during an average 24 hour period)

Percentage of HGV traffic



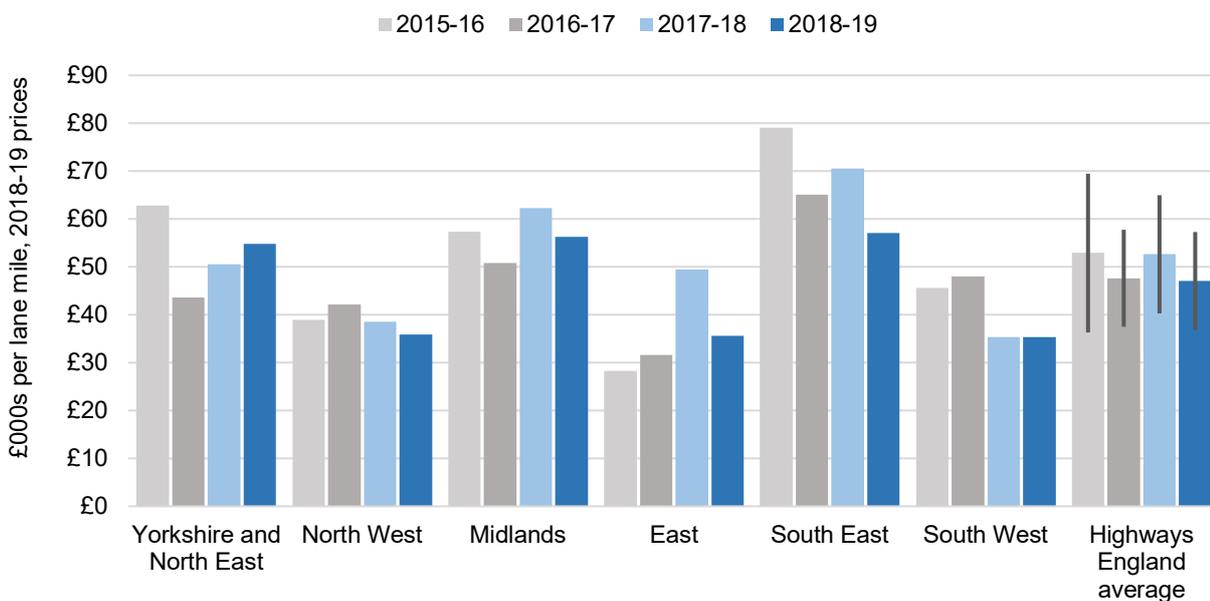
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Highways England’s regional maintenance spending

18. We reported in our previous reports that average maintenance and renewal spending per lane mile fluctuates year-on-year across regions. Figure 7 highlights that the average maintenance and renewal spending in the regions has reduced in real terms (measured by CPI) when compared to the start of RP1. The only exception being the East region which saw a 26% increase.

19. This analysis includes maintenance (resource) and renewal (capital) spending but does not include spending on major projects or operations. In last year’s progress report, we highlighted an increase in average maintenance and renewal spending. Most of this increase, and the variation between regions, was as a result of capital renewal spending. This year, average maintenance and renewal spending per lane mile has fallen to a similar level recorded in 2016-17. We found a reduction in renewal spending in four regions (compared to two in 2017-18). Only Yorkshire and the North East, and the South West regions saw an increase in renewal spending in 2018-19. These fluctuations highlight the difficulties of predicting trends in capital costs and using simple metrics like this to make inferences about regional differences in efficiency.

Figure 7: Maintenance and renewal spend per lane mile, 2015-16 to 2018-19



20. Understanding variations in renewal spend remains complex due to several factors. Highways England has noted that regional allocations are based on historic run rates of investments per region. Historical run rates were used because at the start of the RIS there was not a clear understanding of asset need. Information and experiences from RIS1 have allowed for a more reliable method of allocation. We hope, therefore, that RIS2 allocations will be more firmly based on regional asset needs, and that should help shore up supply chain planning. Highways England has further stated

that the year-on-year variations in renewal spend across the regions are a result of contractual issues and reduction in expenditure to meet wider needs within the organisation. Renewal spending based on asset need is likely to stabilise in RIS2 but some fluctuations might be expected as it is exposed to organisational need.

Also, Highways England will complete the roll-out of its Asset Delivery model for managing the network during road period 2. Under this approach, Highways England will be more directly involved in maintenance decisions and have more control over maintenance-related data.

International and cross-sectoral comparisons

21. Building on last year's study that looked at how Highways England and other road authorities measure pavement condition, we commissioned a study to consider the composition and level of detail of pavement condition data across road authorities in the UK and abroad that are comparable to Highways England's pavement metric. The objectives were to assess the feasibility of comparing and benchmarking pavement condition across road authorities.
22. The study⁵ examined data from Local Authorities, Scotland, Wales, Netherlands and Sweden. There are differences in how pavement condition measures are constructed across all of these road authorities. It was not possible to compare with Sweden because of low traffic volumes on their network and the difference in weather conditions which dictates their approach to maintenance and monitoring. The data collection method differed in the Netherlands but comparison at some level would be workable. There are similarities in the form and structure of the data collected within the United Kingdom with the Local Authorities metric being the most feasible for comparison.
23. In conclusion, the data collection methods and measurements across the comparators do not fully align with Highways England's RIS pavement metrics. So it is not feasible to directly compare condition on the basis of Highways England's metric. However, there is enough similarity in how the metrics are constructed for it to be feasible to base a comparison on individual elements making up the metric, or some "3rd metric" based on the common elements between comparators.

⁵ The full report can be found [here](#)

Developing our benchmarking plans for the second road period

24. At the start of our first report in 2015-16, we set out our benchmarking plan, which included a vision to see Highways England at the heart of international benchmarking network. Over the years we have undertaken several projects comparing Highways England's activities to other countries or sectors. We have faced different challenges in developing comparable metrics with other countries and also data specific limitations.
25. Therefore, in road period 2, we have a more focused plan for our benchmarking work. This concentrates on areas where we have made the most progress during road period 1, and those where our review of Highways England's plans for the second road period highlighted additional benchmarking information could add most value. Our developing plans for the second road period are based around three key pillars:
 - Regional or internal benchmarking;
 - Developing better evidence on pavement (road surface) costs and condition; and
 - Targeted analysis of other sectors and countries.

Regional benchmarking

26. One of the key benefits of regional (or internal) benchmarking is that it avoids many of the data comparability challenges that exist when benchmarking against other organisations. More than that, it also offers the opportunity to highlight different practices that could be more easily rolled out across the business and provides stakeholders with a transparent picture of how the network is performing in their area.
27. We now have four years of consistent regional time-series data and are beginning to be able to make inferences from that. We will continue to collect and report regional data in a similar format. And, while the precise format of some metrics might change, we want to more fully embed, and broaden the scope of, regional reporting in road period 2.
28. We will work with Highways England as it improves the data it collects to provide more insight on regional (or area-level) cost and spending differences. This could include developing econometric models of cost and we will work closely with our rail colleagues as they develop their similar route-based analysis. Finally, while not

regional, we plan to collect more data on the outputs of major enhancement projects, which, combined with project cost data, could provide insight into drivers of major enhancement project costs.

Developing better evidence on pavement costs and condition

29. Pavement renewal has been a significant proportion of spending in the first road period and in Highways England's plans for the second. Those plans were based on a range of internal cost evidence. As discussed above, we plan to work with Highways England to develop more robust evidence on how those costs vary across regions. In the plans for road period 3, we would also like this to be complemented by the benchmarking of costs for other road authorities.
30. Similarly, pavement, or road surface, condition has been an important part of the performance specification during road period 1, and we expect this to continue in road period 2. We have undertaken a number of pieces of work already to establish the feasibility of comparing condition across networks or authorities. Our priority is to determine when in the planning cycle for road period 3 it would add most value to carry out this sort of analysis.

Targeted sector and country analysis

31. We have carried out a wide range of studies during road period 1 and have generally found that other road authorities do not operate in the same environment as Highways England, and/or do not have comparable data. This has limited our ambition to see Highways England at the heart of a data-sharing benchmarking network. But several networks already exist that could provide valuable insight on a more adhoc basis. So, during road period 2, we intend to incorporate knowledge from existing networks such as the Organisation for Economic Co-operation and Development, Conference of European Directors of Roads, and the local authority-based CQC Efficiency Network⁶. We may also undertake more bespoke, targeted analysis when needs arise.

⁶ Customer Quality Cost Efficiency Network

Annex A – Regional dashboards

Calculating the performance radar charts

The ‘radar charts’ on each dashboard show regional performance relative to Highways England’s overall target. Performance has been normalised to the target level and is shown with the red line. If the blue line is outside the red target, then performance exceeded the target for that KPI in that region in that year. The exception is average delay, which has no target. For this KPI the red line represents average delay across the SRN as a whole in 2015-16, with regional performance presented relative to the national average.

The table below sets out the outcome areas, metrics and targets for each of the five KPIs:

Outcome area	KPI metric	Target
Improving user satisfaction	Percentage of NRUSS respondents fairly or very satisfied	>90% NRUSS score by 31 March 2017
Supporting the smooth flow of traffic	Percentage of the network (measured in lane miles) open to traffic	>97% of the network available to traffic
	Percentage of incidents on motorways cleared within 1 hour	>85% of motorway incidents cleared within 1 hour
Encouraging economic growth	Average delay – the difference (in seconds per mile) between actual and free-flow speeds	No target
Keeping the network in good condition	Percentage of the pavement not requiring further investigation for maintenance	>95% of pavement not requiring further investigation

Average delay

As discussed above, performance against this KPI is represented against the average for the SRN, as there is no target. Lower delay represents better performance so the data are transformed in the following way:

Network availability, incident clearance, user satisfaction and pavement condition

These four KPIs are all measured in percentage terms, with a higher number representing better performance. However, the targets for all four KPIs are relatively close to 100%,

making it difficult to demonstrate variation between the regions. Therefore, each metric, and its respective target was transformed as shown in the table below:

	KPI	Target	Transformed KPI	Transformed target
Network availability	% lane availability	>97%	% lane un availability	<3%
Incident clearance	% incidents cleared within 1 hour	>85%	% incidents not cleared within 1 hour	<15%
User satisfaction	% fairly or very satisfied	>90%	% not fairly or very satisfied	<10%
Pavement condition	% of pavement not requiring further investigation	>95%	% of pavement not requiring further investigation	<5%

These transformations produce metrics where a lower score is better. The transformation used for average delay is then applied for presentation in the radar charts. If performance were more than double the target level (for example, if >6% of the network were unavailable), this would give a score of 0. Any such scores are adjusted to 0.05, so as not to appear as 'zero performance' in the radar charts. The 2015-16 regional pavement condition data are based on a pro-rata adjustment to the performance reported that year, to reflect the revised figure for the network as a whole in that year.

Treatment of DBFO-managed sections of the network

Management of the SRN is split into a series of areas and regions. There are thirteen areas, one of which (the M25) is managed by a private contractor under a Design, Build, Finance, Operate (DBFO) contract. The other twelve areas are combined together into six regions, with two areas in each region.

Including the M25, there are eleven sections of the network managed under DBFO contracts. Private operators are appointed to design, build and finance major improvements to the network, and to operate (maintain and renew) it over a 30-year period.

The regional dashboards, including the network and traffic data, relate only to those parts of the network managed by Highways England's regions – DBFO-managed roads are excluded. The user satisfaction KPI in the radar charts is the exception, as it is not possible to differentiate between DBFO and non-DBFO sections of the network.

The maps on the dashboards show the SRN but do not differentiate between sections that are directly managed by Highways England's regions.⁷ More detail on which parts of the network fall into each region, and which are managed by DBFO operators, can be found here: <https://www.gov.uk/government/publications/roads-managed-by-the-highwaysagency>

Regional stats, road length, spending and traffic

Population

Regional population estimates for mid-2018 were sourced from the ONS and are rounded to nearest 100,000 in the dashboards:

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

GVA per head

Gross value added (GVA) data for 2018 were sourced from ONS; divided by regional population to give GVA per head; and are rounded to the nearest £250 in the dashboards: In this report, GVA(I) which we used in our previous report has now been superseded by GVA(B). The new measure, GVA (B) is a balanced measure of estimates from gross value added income (GVA (I)) and gross value added production (GVA (P)).

<https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalregionalgrossvalueaddedbalancedperheadandincomecomponents>

Structures

The number of structures on each region of the SRN is sourced from Highways England's Structures Management Information System (SMIS)). The main categories of structures included are:

- bridges and large culverts,
- masts,
- retaining walls,
- road tunnels, and
- signs and / or signal gantries.

⁷ Use of the data included in the maps is subject to terms and conditions. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which Office of Rail and Road makes it available; You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form; and Third party rights to enforce the terms of this licence shall be reserved to Ordnance Survey.

Road length

Two measures of the length of the SRN are presented in the dashboards:

- route length, split by road type – the sum of the main carriageway lengths only (e.g. excluding slip roads) with a factor of 0.5 applied to dual carriageways; and
- lane length – the sum of the carriageway sections multiplied by the number of permanent running lanes (i.e. hard shoulders are excluded).

Data were sourced from Highways England's pavement management information system (HAPMS) and represent a snapshot for 31 March 2019.

Spending

Maintenance and renewal spending data were sourced from statements F2.1 and F3.1 of Highways England's 2018-19 performance monitoring statements. The spending figures are divided by the lane length data described above to give a figure per lane mile, and are compared with the average across the six regions:

<http://assets.highwaysengland.co.uk/Corporate+documents/Performance+Monitoring+Statements+2018-19.xlsx>

Traffic

Traffic data are for 2018 and were sourced from DfT Road Traffic Statistics. Traffic on DBFO-managed roads was separately identified but the regional boundaries do not exactly match the boundaries of Highways England's regions. The source data gives vehicle kilometres in 2018 by road and vehicle type. We have converted this to annual average daily traffic flow by dividing annual vehicle miles (for all vehicle types) by route length (as defined above) and then by 365 days to give the daily average.

Flow refers to the number of vehicles passing a point on a road over a given period of the time. The annual average daily traffic flow represents the number of vehicles (travelling in both directions) that would pass a point on the network during an average 24-hour period in 2018.

The percentage of HGV traffic is the proportion of HGV miles in total vehicle miles.



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