Highways England investigations into the effectiveness of their skid policy

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Introduction

- Skid policy introduced to the Strategic Road Network (SRN) in the UK in the 1980s
- Implemented through HD28
- Survey strategy based on monitoring lane with greatest proportion of heavy vehicles (usually Lane 1)
- Changes to how network is used in recent years, e.g. Smart motorways
- Is current strategy still fit for purpose?

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Area engineers identify where a lane other than lane 1 may carry more HGVs – based on local knowledge and traffic data (if available).
These lengths are then included in the annual survey but lane 1 is also surveyed at these locations.

Effect of trafficking on skid resistance

- Research undertaken in 1960s & 70s underpinned the introduction of UK skid policy
  - Heavy vehicles have a much greater impact on skid resistance that light vehicles
- Early findings extended to roads with higher traffic levels in the 1990s
- Recent laboratory tests by IFSTTAR in France confirm effect

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Effect of trafficking on skid resistance

- Review of a Highways England maintenance Area in 2004 found that:
  - Skid resistance in lane 2 was lower than lane 1 for only 6% of sites
  - Only 3 sites (of 6,932) where lane 2 was below Investigatory Level when lane 1 was not
- Results supported strategy of routine skid resistance surveys in lane with most HGVs
  - Identified by Area engineers where this may be a lane other than lane 1
  - Lane 1 also surveyed at these locations

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Risk of current approach not identifying lengths below IL is very small.
Local knowledge and traffic flow information (where available) used to identify where a lane other than lane 1 might carry more HGVs.

Assessment of skid resistance and traffic flow

- 2014 - Review of a skid resistance and traffic flows on the SRN
  - Skid resistance data from 2011-2013 where more than one lane had been surveyed
  - Traffic data from MIDAS (Motorway Incident Detection and Automatic Signalling)
    - Total vehicles per lane
    - HGVs per lane

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Assessment of skid resistance and traffic flow

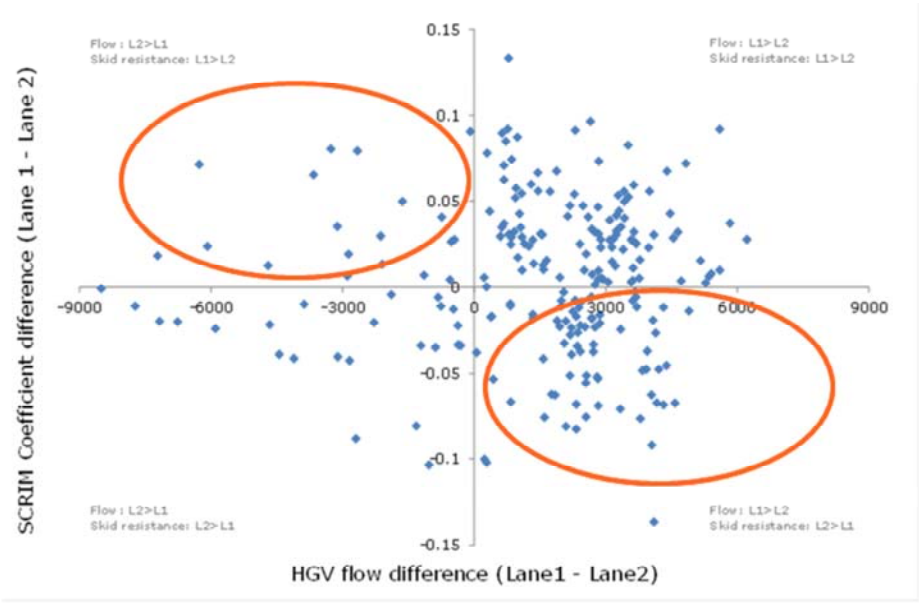

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Figure shows the difference in skid resistance between the two lanes against the difference in HGV flow between the two lanes. If a site has lower skid resistance in lane 1, corresponding to higher HGV flow in lane 1 then a point will appear in the bottom right quadrant of the graph. Points in the top left quadrant of the graph represent sites where skid resistance in lane 2 is lower and HGV flow in lane 2 is higher. If the results of the analysis follow past research then the points should fall in these two quadrants

Assessment of skid resistance and traffic flow

- Lack of correlation at odds with research
- However, few measurements in lane 1 &2 had been made with same device at the same time
- Differences between lane 1 & 2 could be influenced by:
  - Reproducibility of measurement device
  - Correction for seasonal variations

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Targeted skid resistance surveys

- Identified sites where HGV flows higher in lane 2 than lane 1
  - Not all sites identified had lane with most HGVs surveyed as part of the annual routine survey
- Skid resistance measurements with same device at same time

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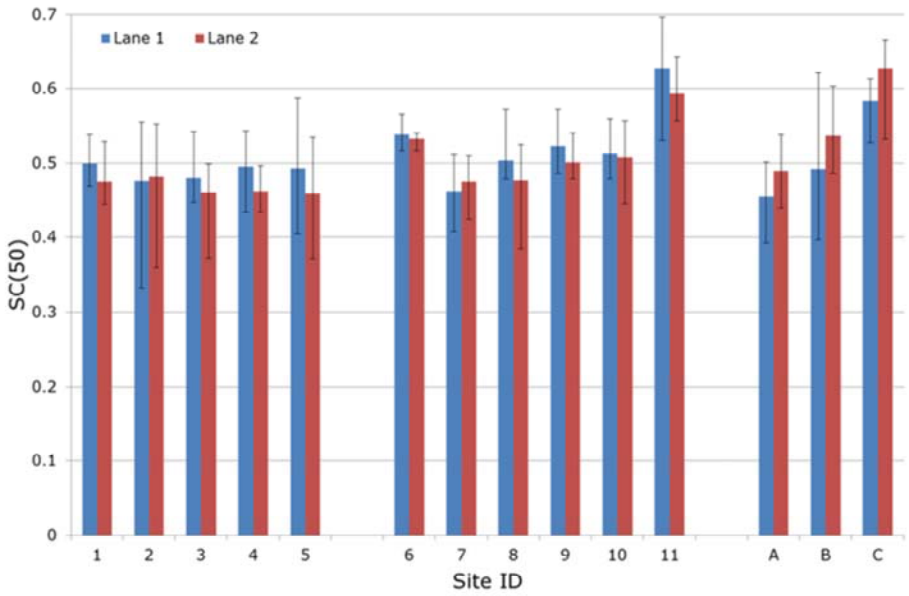
Targeted skid resistance surveys



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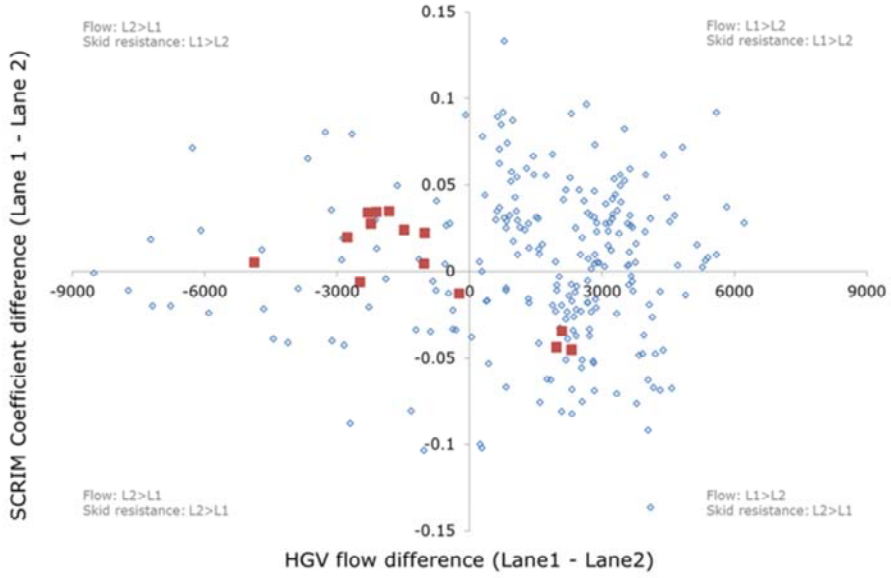
Sites 1-11 had greater HGV flows in Lane 2 than Lane 1

Sites A-C were control sites with higher HGV flows in Lane 1

Targeted skid resistance surveys



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2 sites didn't fit expected result.

One had a different surfacing in L1 than L2 – PSV levels could have been different in the two lanes.

The other only had 300 extra HGVs in Lane 2.

BUT all were above IL

Case study

- The extent of "unchanging" sites
  - Those consistently above IL for a considerable period of time
- Impact of skid resistance averaging lengths
  - 50m or 100m depending on site category
  - Data available at 10m averages
- Skid resistance data from Highways England Area 9 from 2009-2013

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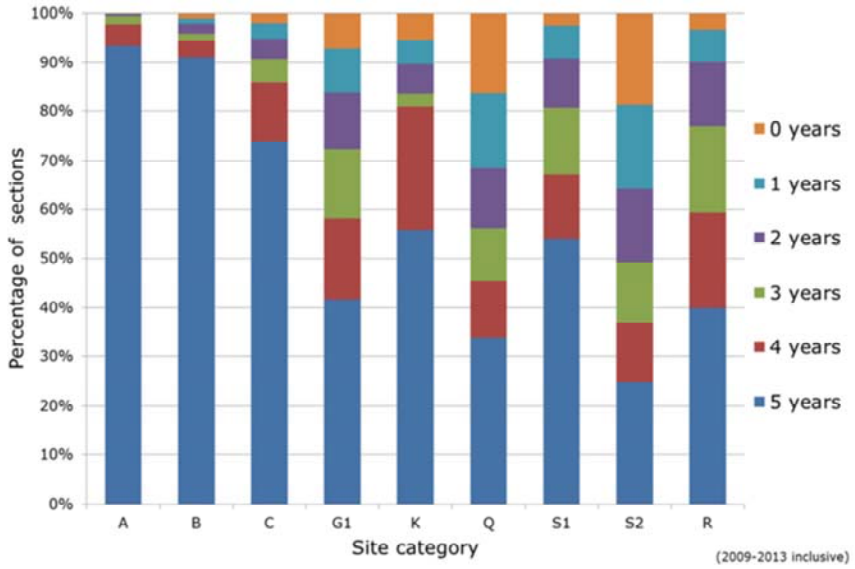
Whole network surveyed annually but some lengths may be above IL for long periods. Do they need to be surveyed every year?

Case study – unchanging sites



Number of years above IL for each site category

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"Non-event" lengths generally above IL year on year

Relatively large proportions of "high risk" sites required investigation at some point during the 5 years analysed

Case for concentrating efforts on collecting valid data for high risk sites but still need data for whole network to identify any rapid changes and manage risks.

Case study – influence of averaging length

	Site category								
	A	B	C	G1	K	Q	S1	S2	R
At or below IL according to skid policy lengths	121	205	150	47	16	265	38	50	65
At or below IL using 10 m lengths	227	281	158	49	29	337	46	55	65
Additional sections at or below IL	160	76	8	2	13	72	8	5	0

Number of unique network sections with lengths at or below IL

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At least some of the additional lengths requiring investigation, based on 10m data, occur on network sections that did not have any lengths at or below IL based on the current averaging lengths.

Conclusions

- No immediate changes to skid policy
- Ensure that lane with greatest proportion of HGVs is surveyed as part of routine survey
- Consider using full resolution of data available (10m) to identify high risk sites requiring further investigation
- Routine measurement of skid resistance should concentrate on ensuring that valid measurements are made on high risk sites

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