

agilysis



ARE SMART
MOTORWAYS SAFE?

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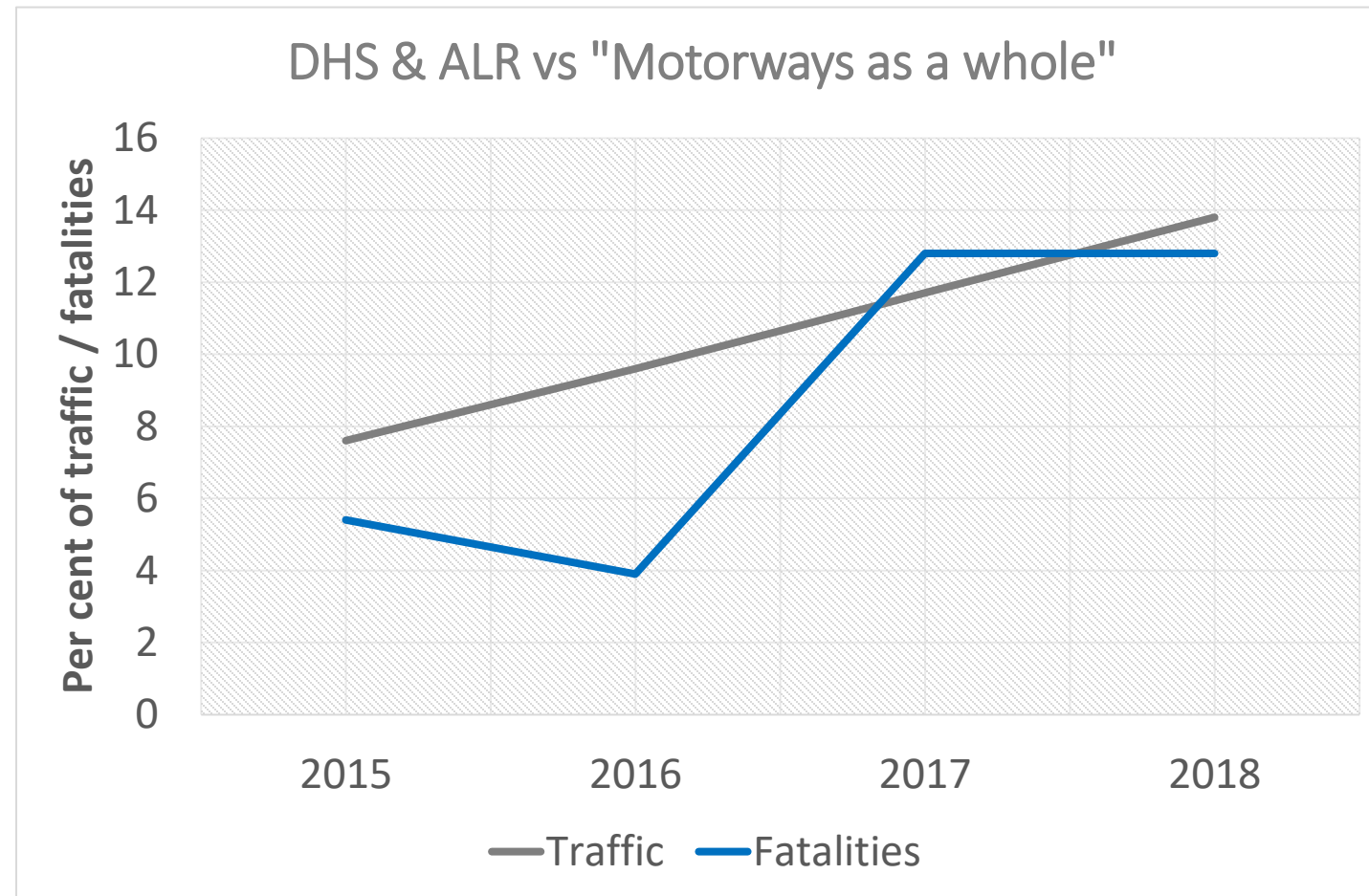


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Smart Motorway Safety Evidence Stocktake and Action Plan

- Controlled Motorways, All Lane Running, Dynamic Hard Shoulder Running
- DHS & ALR analysed in the 'stocktake'
- Data for fatality numbers versus traffic seems to indicate they are 'safer'

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936811/smart-motorway-safety-evidence-stocktake-and-action-plan.pdf





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Figure 5 – Smart Motorways Across the Strategic Road Network

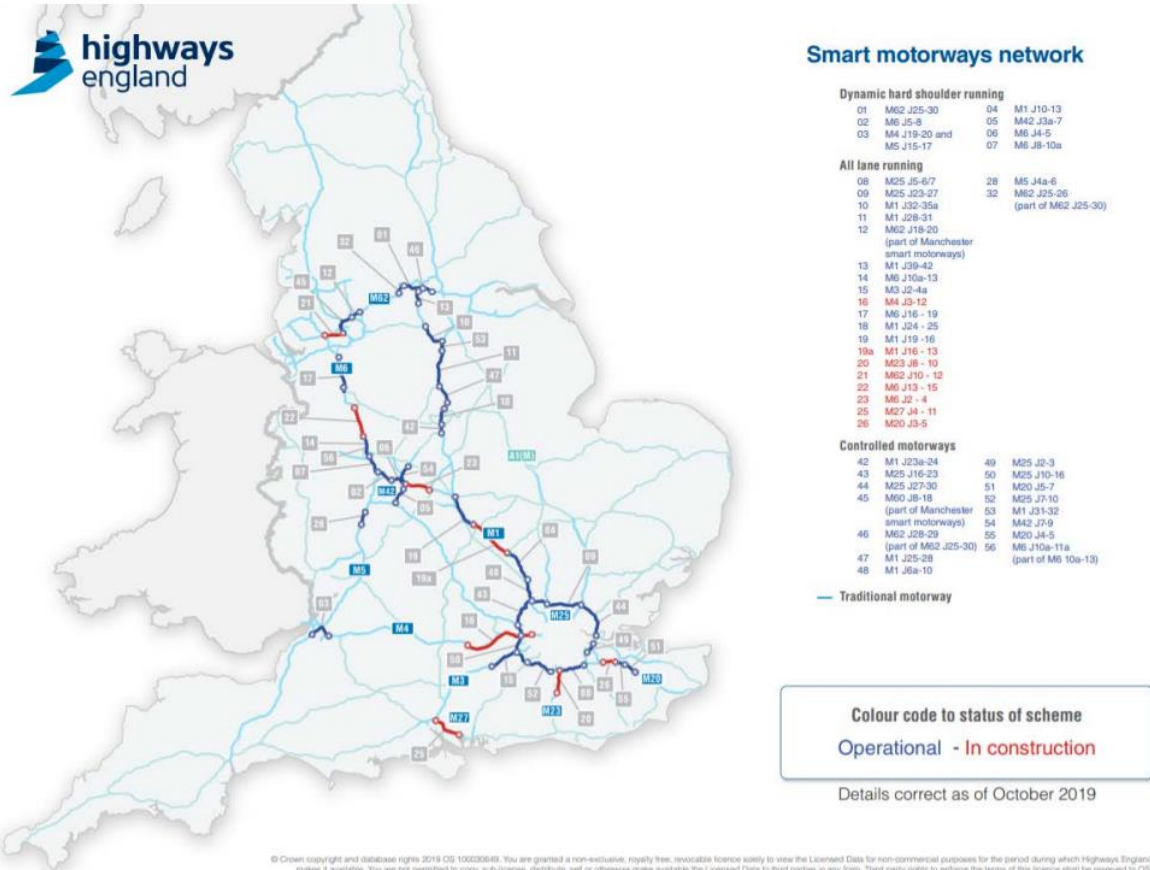


Table 5

Road Class	Motor Vehicle Traffic (Billion Vehicle Miles)									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Conventional Motorway	51.3	50.8	49.1	48.4	47.8	48.1	47.6	47.0	45.2	
Controlled Motorway	2.4	3.3	5.1	5.9	6.1	6.4	6.6	6.6	7.2	
Dynamic Hard Shoulder	0.7	1.0	1.1	1.8	2.9	3.0	3.1	3.2	3.3	
All Lane Running	-	-	-	-	0.6	1.4	2.7	3.9	5.1	
All SRN 'A' Roads	29.1	29.3	29.4	29.3	30.0	30.8	32.2	33.4	34.0	

Source: DfT Road Traffic Statistics on the Strategic Road Network in England from 2010-18.

- Independent analysis requires open data
 - Locations
 - Dates of implementation
 - Dates of roadworks

These are not published*

*Please let me know if they are!



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Smart Motorway Safety Evidence Stocktake and Action Plan

Casualty rates on motorways with hard shoulders but no technology	Comparison with smart motorways		
	Controlled Motorway	Dynamic Hard Shoulder	All Lane Running
Fatal casualty rates (0.16 per <u>hmvm</u>)	Lower (0.07 per <u>hmvm</u>)	Lower (0.07 per <u>hmvm</u>)	Lower (0.11 per <u>hmvm</u>)
Serious casualty rates (1.1 per <u>hmvm</u>)	Slightly higher (1.2 per <u>hmvm</u>)	Slightly higher (1.2 per <u>hmvm</u>)	Slightly higher (1.3 per <u>hmvm</u>)
Slight casualty rates (10 per <u>hmvm</u>)	Higher (14 per <u>hmvm</u>)	Higher (15 per <u>hmvm</u>)	Slightly higher (11 per <u>hmvm</u>)
Fatal Weighted Injury rates (0.38 per <u>hmvm</u>)	Lower (0.33 per <u>hmvm</u>)	Lower (0.33 per <u>hmvm</u>)	Lower (0.35 per <u>hmvm</u>)

FWI = 100 | 10 | 1

WebTag = 84 | 10 | 1

ARE SMART MOTORWAYS SAFE?



Are DHS / ALR really safer?

- Need to review collision circumstances
- Are we really just talking about the lack of a hard shoulder?
- What other changes may have happened that would improve safety?
- What percentage of collisions are caused by live-lane stops where the driver(s) may have been able to access a hard shoulder OR would have made it to an emergency refuge if they were more frequently-spaced?

Are Hard Shoulders safer?

- Analysis from MAST Online* indicated that in the last 10 years 134 KSI casualties occurred when at least one vehicle involved in a crash was entering / stopped / leaving the hard shoulder on an English motorway
- Rate based on traffic figures from the stocktake shows this has remained static
- The difference between safety performance of motorway and high-quality dual carriageway would be large if hard shoulders were as beneficial as they seem, but there is a relatively little difference ^

* www.roadsafetyanalysis.org

^ <http://rsfmaps.agilysis.co.uk/>

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Case closed?

Q. How do you make a road safer without reducing casualties?

A. Increase traffic

Q. What is the simplest way of reducing fatal and serious injuries?

A. Reduce speeds

What else may be happening?

- On-road tests show that drivers pay more attention to their lane ahead when there is no hard shoulder
- Do the other benefits of reduced speeds, reduced close-following, lower differential speeds between lanes outweigh any impact of increased live-lane stops (if we can measure all of these independently)

What do we mean by...

- Safe The absence of risk - zero FSC
- Safer Better than before / a comparator road
- Danger The presence of an attribute / part of the system that is proven to lead to FSC
- Dangerous Road A term used by the public to express their feelings