



TTF GLOSA and IVS sub-group - TSMA 2021 the results... - Hertfordshire / Overall

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INRIX

Signal Analytics - Monitor Every Movement in the Network

Foundational Elements



The Data

High frequency connected vehicle GPS points snapped to a map using the INRIX Trips engine



The Metrics

Aggregate metrics by movement, approach and junction



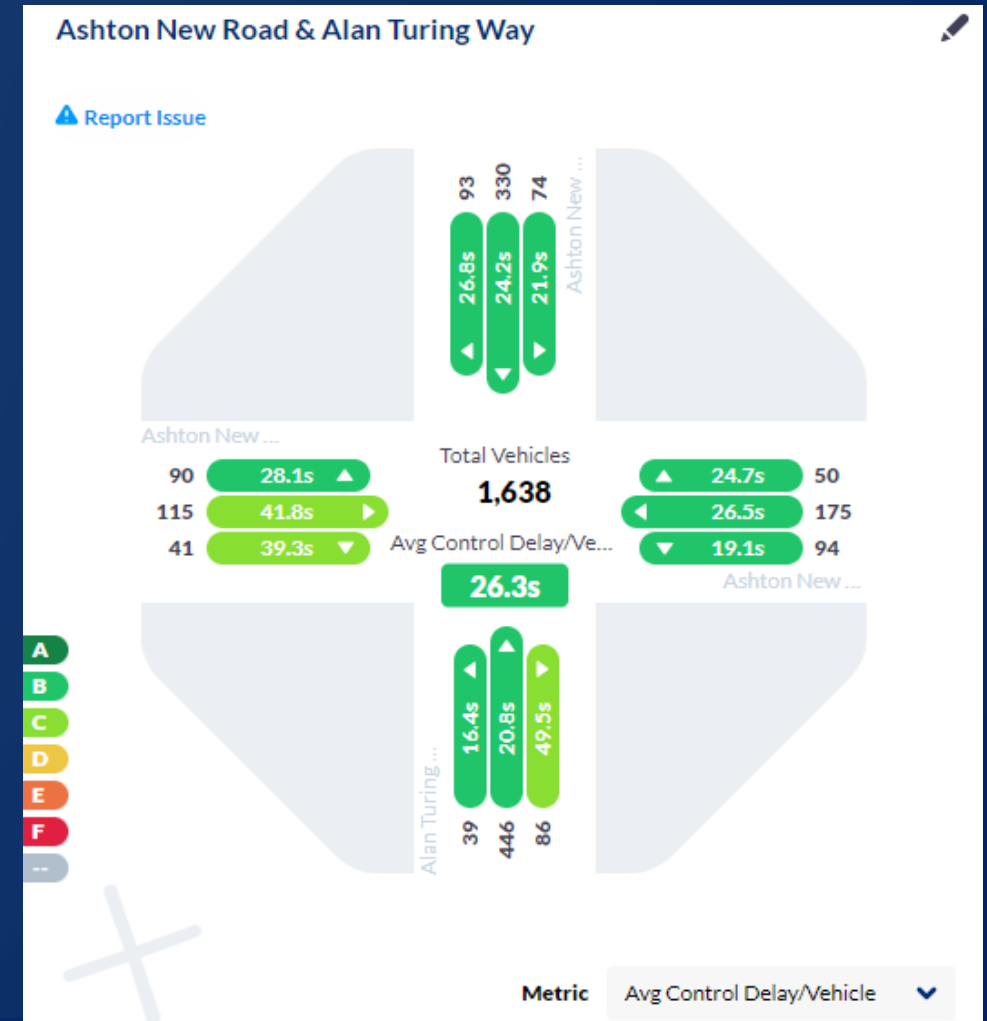
Vehicle Experience

Turning Movement, Travel Time, Speed and Stop



The Tools

Aggregate the metrics by junction.
Report summary metrics over various time periods



Understand the Performance of Junctions and Corridors Systemwide

Signal Performance Metrics



Travel Time



Turn Ratios



Control Delay



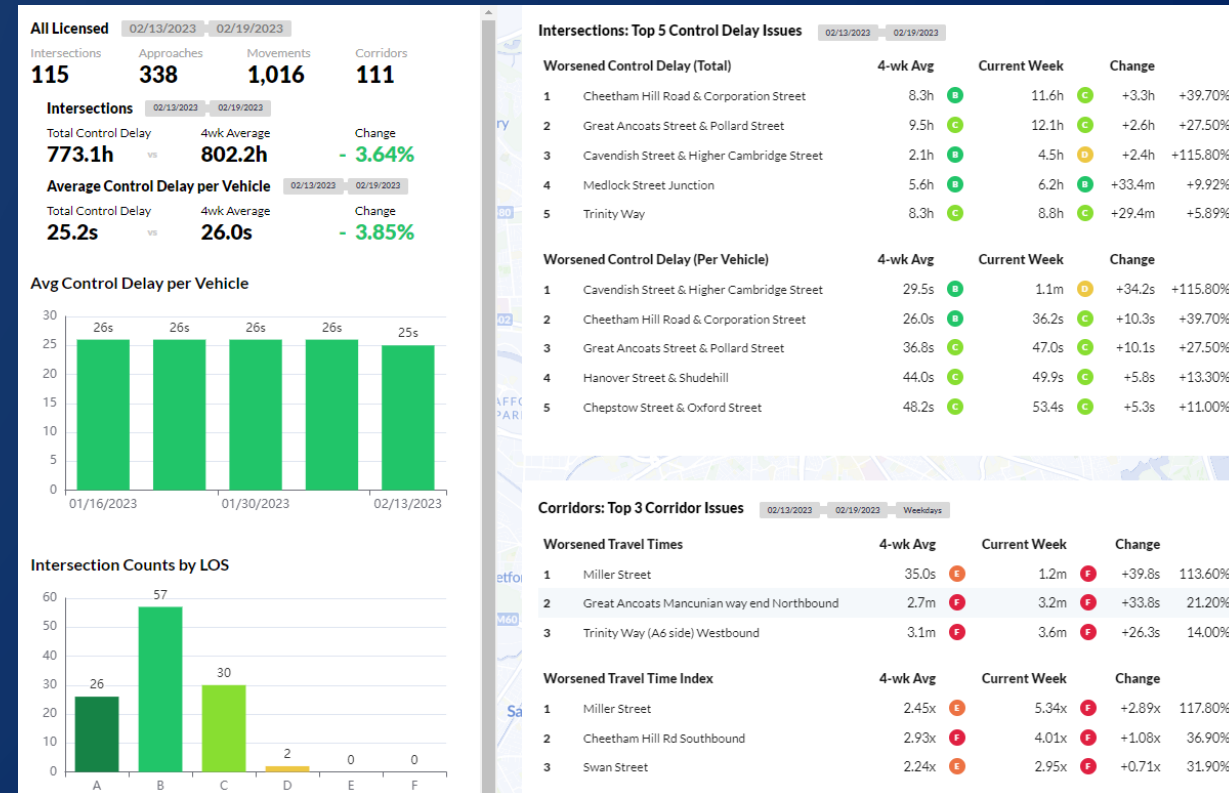
Vehicle Counts



Level of Service



Stops / AOG



Results



- Measuring improvements
 - Hertfordshire (using Signal Analytics)
 - Overall (Signal Analytics Scorecard)

Measuring Junction Improvements – Hertfordshire (detail)

Signal Approach		Baseline Avg TT Secs	1 month after Refurb	Last Week Delay Secs (27/Feb/23)	Week on week vs baseline (%)	Baseline% - Control%
S062	S062 - Hatfield Rd (Eastbound)	26.6	18.965	18.742	29.6%	41.8%
	S062 - Hatfield Rd (Westbound)	23.8	19.539	19.465	18.4%	30.6%
	S062 - Stanhope Rd (Northbound)	38.3	25.169	25.977	32.2%	44.4%
	S062 - Clarence Rd (Southbound)	37.0	34.145	29.744	19.7%	31.9%
S136	S136 - High St (Northbound)	21.1	16.395	11.873	43.8%	56.0%
	S136 - High St (Southbound)	31.3	21.95	16.623	47.0%	59.2%
	S136 - Station Rd (Westbound)	14.8	12.872	11.477	22.6%	34.9%
S278	S278 - Farraline Rd- Wiggshall Rd (Westbound)	22.8	15.706	18.977	16.9%	29.1%
	S278 - Vicarage Rd (Eastbound)	35.1	28.462	36.759	-4.9%	7.4%
S544	S544 - Queens Rd (Northbound)	24.8	29.333	28.364	-14.3%	-2.1%
	S544 - St Johns Rd (Eastbound)	32.8	35.614	32.572	0.6%	12.9%
	S544- Orphanage Rd (Westbound)	26.7	25.672	26.027	2.7%	14.9%
S597	S597 - Durrants Hill Rd (Westbound)	40.0	32.602	48.418	-21.2%	-8.9%
Control	CAM - Woolgrove Rd (Southbound)	15.9	n/a	16.412	-2.9%	
	CAM - Willian Rd (Westbound)	32.7	n/a	35.039	-7.3%	
	CAM - Cambridge Rd (Southbound)	25.4	n/a	29.327	-15.4%	
	CAM - Cambridge Rd (Northbound)	32.4	n/a	38.668	-19.3%	
			Overall Control Change %		-12.2%	

Work not complete

Aim was slower safer
Env for Cyclists and
pedestrians



Overall

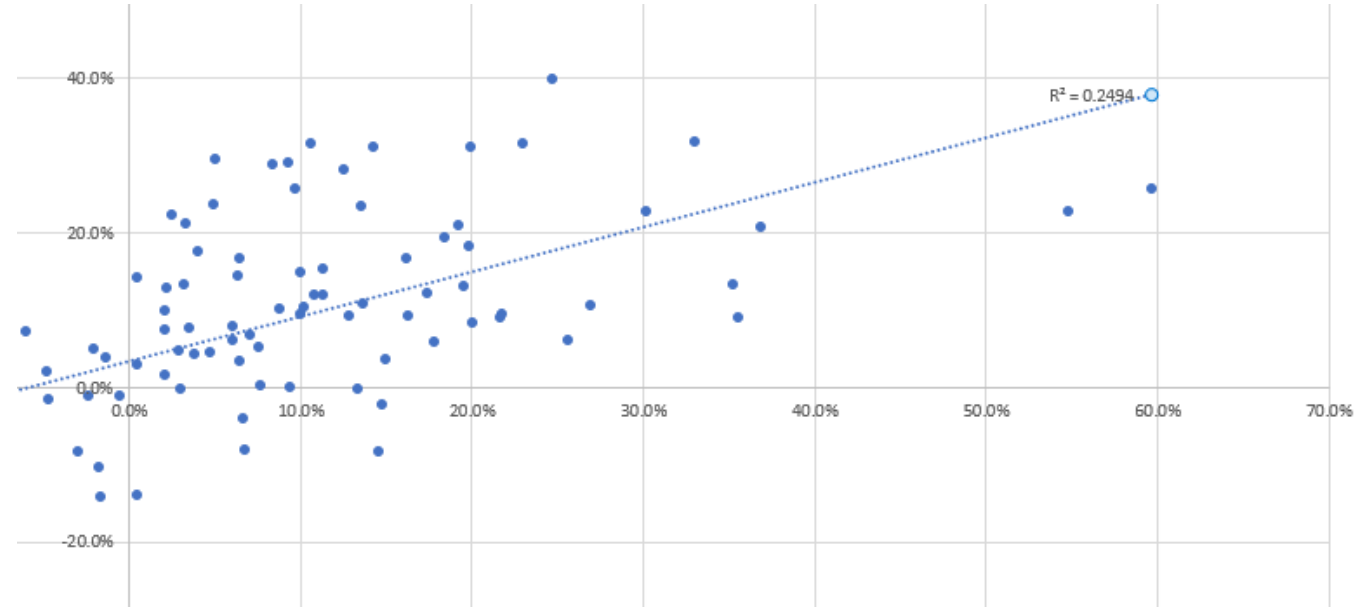
- 27 of the 39 winning authorities formed part of the scorecard. The others were pedestrian mid block signals not assessed
- 88 sites before and after maintenance for the same May Period in 2022 and 2023
 - Bank Holidays & non typical days excluded, given the coronation of King Charles III
- Wide range of signal environments across the authorities
 - Cities / Towns / Rural
- Reasonable spread across England based on population outside most populous urban areas
- 68 junctions had a positive journey time improvement
- 20 junctions had a negative journey time improvement
 - This may have been by design / policy, as confirmed by Hertfordshire in the focused view
- 30 junctions experienced a positive change of over 15% in journey time, only 5 having the opposite.
- Percentage Arrival on Green was positive for all but 12 junctions
 - A good indicator in signals engineering



Summary of findings

- Plotting results between the pre and post periods per junction

- Chart shows
 - Y axis - % change in delay
 - X axis - % change in Arrival on Green
 - Trend line – Linear
 - R squared value – 0.25



- Larger spread of positive vs. negative change
- Correlation between Delay & Arrival on Green



Conclusions – that helped secure £70M TSMA

- Across all junctions, over all journey time savings of 8% between the pre and post periods
- On average this was a saving of 1.4s per vehicle per junction
- Most notably, overall motorists experienced 16% more Arrival on Green.
- Approximately* 130K vehicle hours saved per year.
- Assuming around £17 per hour, across the positive schemes assessed Circa £5m annual saving vs £15m spend, results payback within 3 years.
- Traffic demands change yearly and shift across years, depending on numerous societal factors
 - Importance of understanding signal network performance.
 - Signal timings are appropriate (maintained) and not adversely causing delay

*Based on the data looked at pre and post periods and scaled using the same method in the focused results, thus not as statistically robust.



The background is a dark blue map with a grid of streets. A green circle highlights a traffic light icon at an intersection. The word "Questions" is written in white, underlined, in the lower-left area.

Questions