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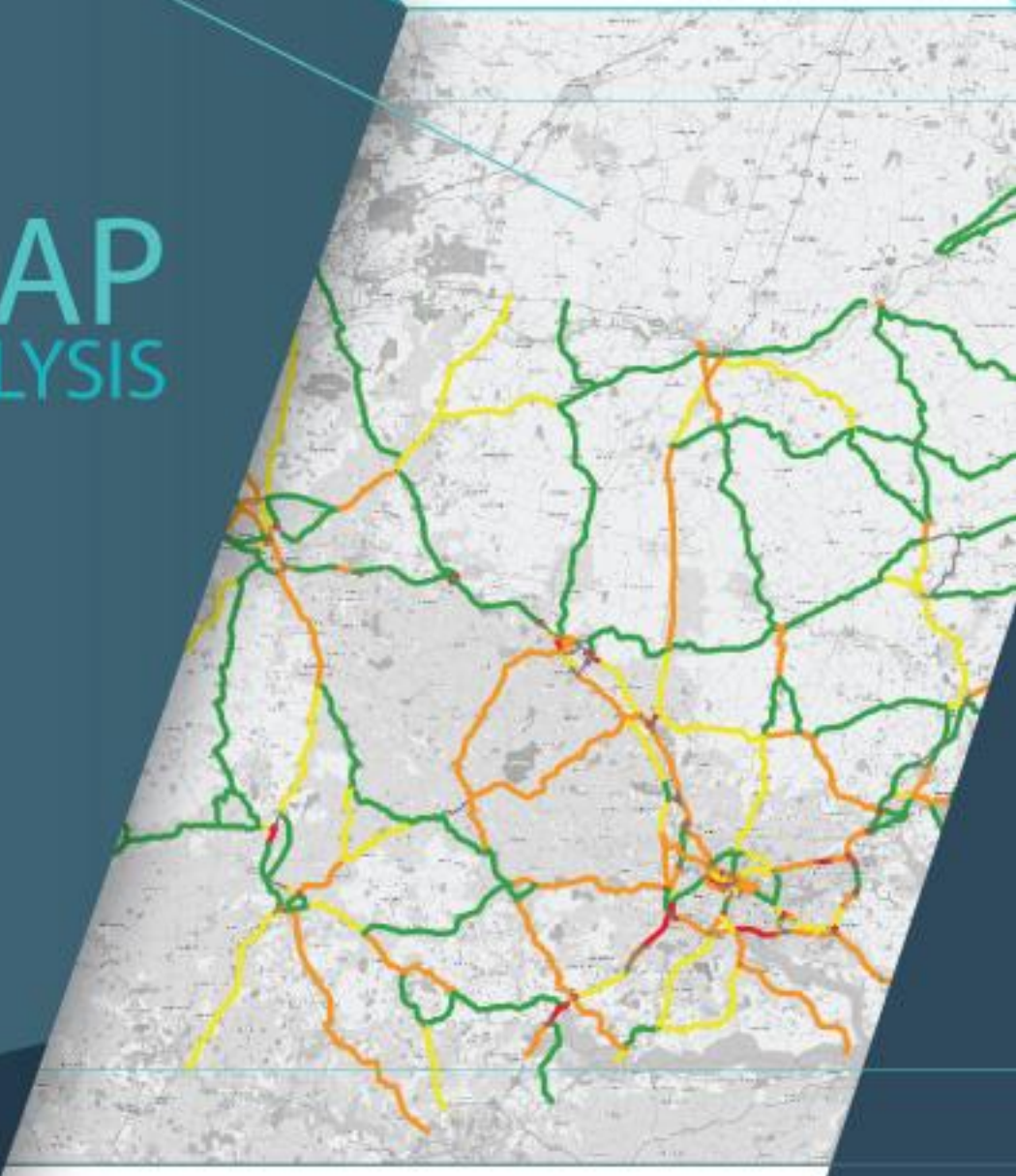
RISKMAP
ROUTEANALYSIS



ALL MAJOR ROADS

INDEXED RISK

RAPTOR ANALYSIS

[SAMPLE]

SUFFOLK COUNTY

2017

Suffolk RiskMap Route Analysis – 2011 to 2015

Introduction

This analysis looks at collision risk along the A and B roads in Suffolk. In order to analyse road risk over appropriate lengths of road, the road network has been split at intersections with other A and B roads. Due to the automated nature of this process there are also splits at roundabouts and at other junctions even if the road number of the connecting road is the same. The outcome of this process is a network where routes can be analysed. Collisions have been matched to a route and collision density rates of collisions per year per 10 miles of road have been calculated for each route. Rates have been compared to similar roads, based on road class and rurality, to create a 100-based index value for each route. This has been done compared to all roads nationally to create a national index value and within Suffolk to create a local index value.

Results

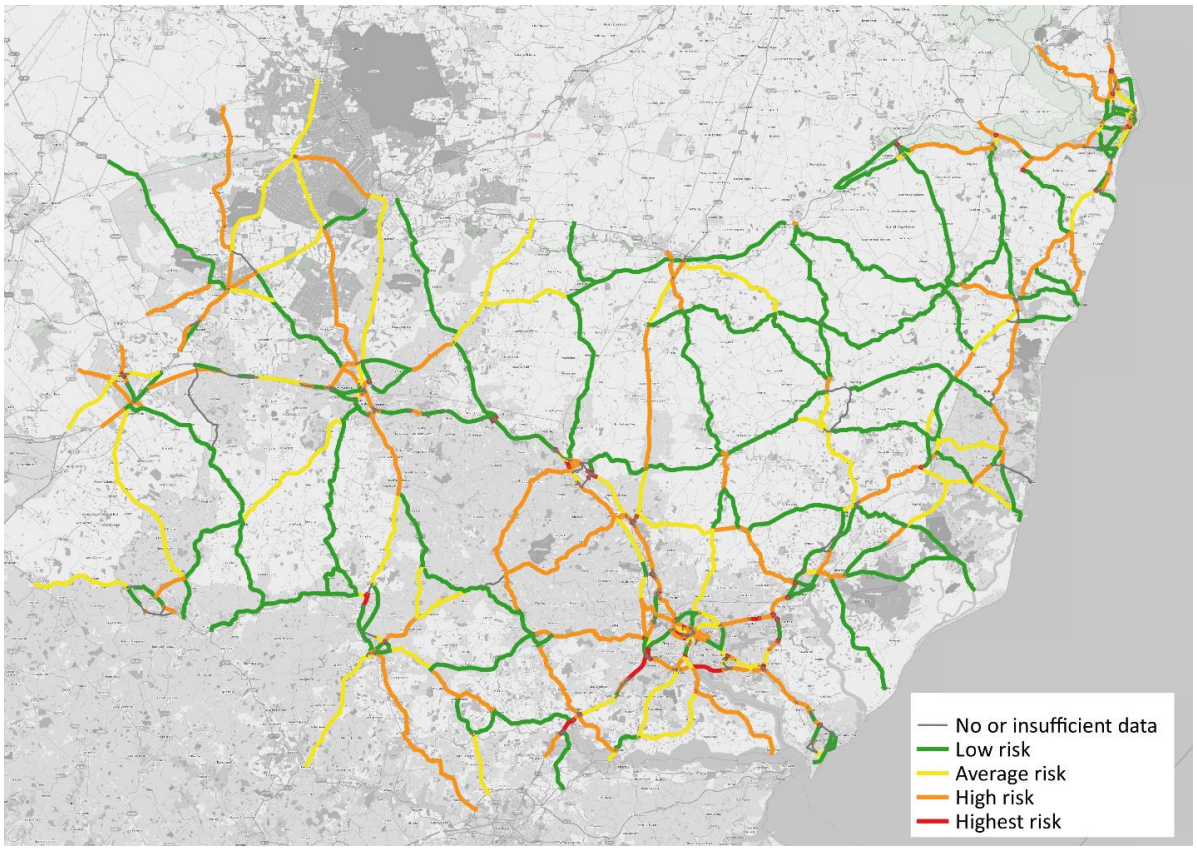
The full results can be viewed via the interactive online map - http://suffolk-majorroads.risk-map.co.uk/. A separate GIS file is available for use in local systems here - http://suffolk-majorroads.risk-map.co.uk/SuffolkRoads_Indices.zip

Collision Density

Figure 1 shows the risk on Suffolk's A and B roads compared to roads of the same rurality and road class nationally.

Higher rates compared to the national rate can be found on some of the A roads in and around Ipswich as well as in Stowmarket and other urban areas. Lower than average risk routes tend to be found in more rural areas.

FIGURE 1 - COLLISION DENSITY ON SUFFOLK'S A AND B ROADS



Collision density analysis does not take into account traffic levels and therefore does not provide a 'risk per journey' type of analysis. It is useful however for identifying roads with the highest numbers of collisions which is an important part of the prioritisation process.

Measuring risk to individual road users can be undertaken using traffic counts and information about pedestrians and cyclists. This style of analysis has been pioneered in the UK by the Road Safety Foundation with the EuroRAP UK annual report which reviews fatal and serious collisions in a three year period on major roads. Agilysis offer bespoke, local rate-based analyses upon request. As these require access to traffic flow data a consultation is required prior to commission.

Top 10 routes – RAPTOR Analysis

From the analysis, ten routes have been selected for further investigation. Out of the routes that have above average index values, these are the ten with the highest number of collisions. Alternative selection methodologies are available including using either the raw collision density figure or the indices.

TABLE 1 shows the ten routes with number of collisions over the five-year period 2011-2015, crash rate of collisions per year per 100 miles of road and the national and local index values.

TABLE 1 - TOP 10 ROUTES BASED ON COLLISIONS AND INDEX VALUE

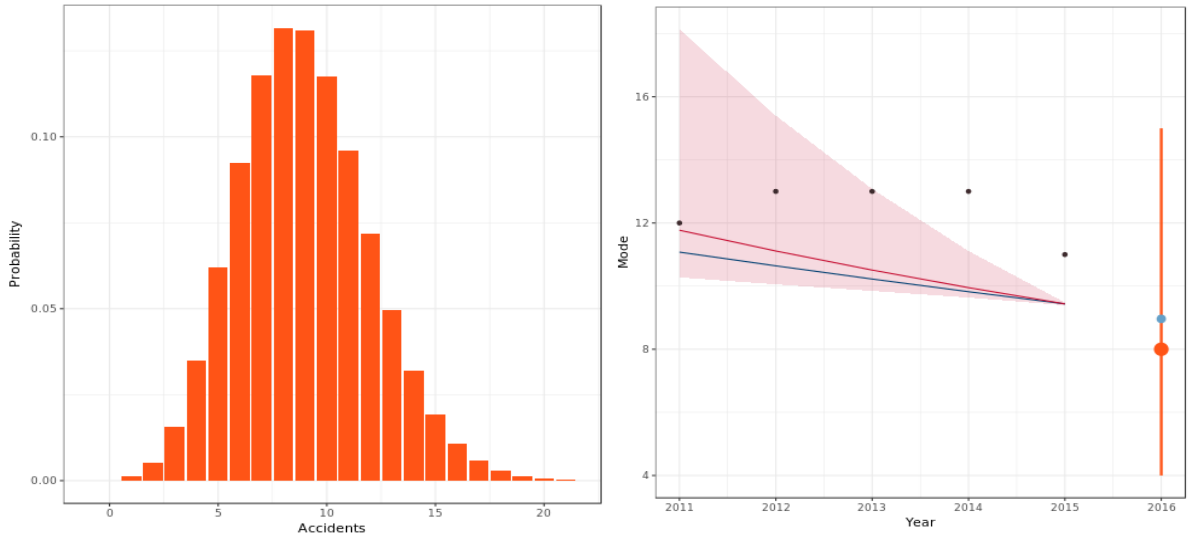
Road	Description	Rural / Urban	Length (miles)	Crashes	Crash Rate	National Index	Local Index
A1156	A1214 to Anglia Retail Park Rbt	urban	1.59	63	79.0	135	214
A14	B1456 to J57 for A1189 Ipswich	rural	1.97	62	63.0	550	528
A140	A1120 Earl Stonham to B1117 Eye	rural	8.21	57	13.9	121	116
B1508	A131 to A12	rural	12.23	56	9.16	168	165
A1071	B1070 Hadleigh to B1113	rural	5.97	52	17.4	152	146
A131	A1124 Halstead to B1115 Sudbury	rural	7.58	48	12.7	111	106
A1071	A1156 Ipswich to A1214	urban	1.5	48	63.8	109	173
B1103	A14 to A1304 Newmarket	urban	1.9	45	47.3	155	245
B1112	Bell Street, Feltwell to Earl's Field, Little Eriswell	rural	7.43	44	11.8	217	214
A134	A1141 to A1302 Bury St Edmunds	rural	5.08	37	14.6	127	122

The data for these ten routes, together with a representative sample of the other 827 Suffolk routes, has been passed through the Newcastle University RAPTOR[1] Hotspot ID predictive analysis tool. By comparing performance against other sites an accurate estimate of trend can be calculated. RAPTOR then uses a full Bayesian simulation to estimate the effect of RTM and trend to produce a central estimate (mean) prediction for the next year in the series (2016).

[1] http://roadsafetyanalysis.org/raptor/

No independent variables were used in the analysis (e.g. traffic flow, road class) although it is possible to include as many of these variables as required. RAPTOR produces a series of plots and histograms (Figure 2) for each site and these outputs have been used to create Figure 3

FIGURE 2 – SAMPLE RAPTOR OUTPUT



The results generally indicate lower predicted levels for collisions compared to the final figure for 2015 which is in line with a generally reducing number of collisions. Reductions versus the 2011-2015 average vary between 20% (Sites 729 and 780) and 35% (site 653). No sites are predicting an increase against the baseline.

Overall the central estimate predicts 76 collisions at the ten sites compared to 86 in 2015. At the 95% confidence interval the lower bound is set at 20 collisions and the upper bound at 144 although this is an extreme estimate of the best and worst probabilities occurring at all ten sites.

Next Steps

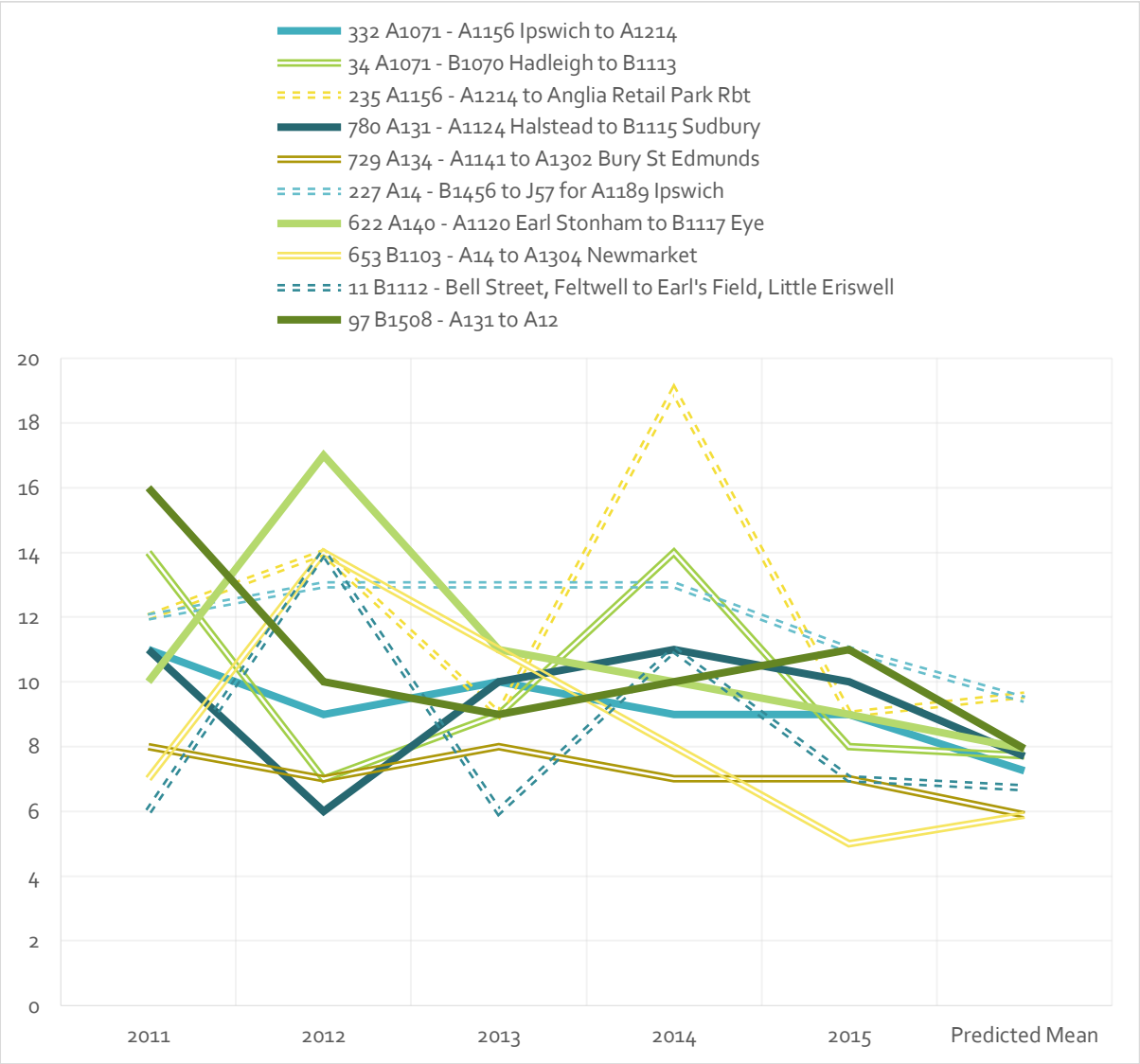
This initial analysis identifies roads with high collision rates but does not differentiate between fatal and serious collisions (FSC) and those where only minor injuries were sustained. A review of the more serious collisions would require the network to be simplified and routes defined over longer distances between significant nodes.

By creating this bespoke network further analyses of vulnerable road users (VRUs) would also be possible. Investing the time in defining the local major road network is usually a one-time effort and re-analysis of risk is made easier by simply adding more data.

Independent variables can be added to the RAPTOR analysis such as ViDA star rating, presence of enforcement, traffic flows, 85th percentile speeds, percentage VRU, speed limit, and many other sources of information.

Even without this extra analysis the Suffolk RiskMap provides and excellent source of information about roads with high collision densities and persistent casualty problems.

FIGURE 3 – TOP 10 ROUTES WITH PREDICTED VALUES



SiteID	Description	2011	2012	2013	2014	2015	Predicted Mean
332	A1071 - A1156 Ipswich to A1214	11	9	10	9	9	7.254
34	A1071 - B1070 Hadleigh to B1113	14	7	9	14	8	7.719
235	A1156 - A1214 to Anglia Retail Park Rbt	12	14	9	19	9	9.589
780	A131 - A1124 Halstead to B1115 Sudbury	11	6	10	11	10	7.706
729	A134 - A1141 to A1302 Bury St Edmunds	8	7	8	7	7	5.894
227	A14 - B1456 to J57 for A1189 Ipswich	12	13	13	13	11	9.462
622	A140 - A1120 Earl Stonham to B1117 Eye	10	17	11	10	9	7.934
653	B1103 - A14 to A1304 Newmarket	7	14	11	8	5	5.884
11	B1112 - Bell Street, Feltwell to Earl's Field, Little Eriswell	6	14	6	11	7	6.719
97	B1508 - A131 to A12	16	10	9	10	11	7.937

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