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East Lancs Connectivity Study - Burnley to Pendle Corridor

A679/A682 Route - Accident Rate Calculation

1. Purpose

To compare the observed number of accidents on the A679/A682 route with the number predicted by published default accident rates

2. Methodology

The observed number of Personal Injury Accidents (PIAs) was compared with the number of PIAs predicted by national default accident rates. This analysis was undertaken on the A679/A682 route between the junction with the M65 J9 and M65 J13 near Nelson.

National default accident rates were taken from COBA, the industry-standard DfT software for predicting accident numbers during transport appraisals. COBA accident rates vary depending on the speed limit of the road and its classification (e.g. Modern Dual-Carriageway, Motorway, Older Single-Carriageway). This analysis therefore involved splitting the A679/A682 route into several different sections, depending on its characteristics.

Accident rates in COBA are quoted in accidents per million vehicle-kilometres (Veh-Km). Veh-km are derived by multiplying the length of a road by its flow. To derive the number of predicted accidents it is therefore necessary to know the Veh-Km - this is simply the length of road multiplied by its flow. The length of each of section of road was measured using Google Earth, and the flow was extracted from Automatic Traffic Count (ATC) sites at the locations shown in Figure X. The ATC flow data, which is shown in Table 2, was provided in Average Annual Daily Traffic Flow (AADT) - this was multiplied by 365 to derive the traffic over a whole year.

TABLE 1						
Section	Road	Speed Limit	Distance (km) (A)	Representative ATC Site ID	2-way AADT Flow (B)	Annual Veh-Km (C = A B x 365)
1	A679 Accrington Road (M65 Jct 9 to Cavalry Way rbt)	30/40mph	2.6	5108	15716	14,910,452
2	A671 Westway (Cavalry Way rbt to Trafalgar St)	30mph	0.5	2742	33488	5,573,840
3	A679 Westgate (Trafalgar St to Royle Rd rbt)	30mph	0.8	2038	20441	5,927,565
4	A679 Active Way Royle Rd rbt to Church St)	30mph	0.5	2038	20441	4,074,097
5	A682 Colne Rd (Church St to Casterton Ave)	30mph	2.1	5580	23739	17,818,438
6	A682 Colne Rd (Casterton Ave to Halifax Rd)	30mph	1.3	6418	13630	6,677,791
7	A682 Colne Rd (Halifax Rd to Churchill Way)	30mph	0.8	5928	19616	5,790,545
8	A682 Manchester Rd (Churchill Way to Leeds Rd)	30mph	1.5	3258	15576	8,368,947
9	A682 New Scotland Rd (Leeds Rd to M65 Jct 13)	30mph	0.7	3270	15017	3,610,055

TABLE 2 - ATC	2010 AADT flows			-
ATC site	NB	SB	Combined	
5108	7654	8062	15716	
2742	17754	15734	33488	
2038	11362	9079	20441	*Oct 2013 data use
2038	11362	9079	20441	*Oct 2013 data use
5580	11590	12149	23739	
6418	6946	6683	13630	
5928	10226	9390	19616	*2009 used due to r
3258	8057	7519	15576	*2011 used due to r
3270	7884	7133	15017	

The purpose of this analysis was to compare the predicted number of accidents with the observed number of accidents. Observed accident data was collected for 5 years between 2008 and 2012. To compare, it was therefore necessary to calculate how many accidents would be predicted to occur over 5 years based on COBA's accident rates. To derive this, the 5-year Veh-Km for each section of road was multiplied by the relevant COBA accident rate (taken from Table 4/1 in Part 2 of the COBA manual). This is calculated in Table 3, below. Note that COBA accident rates are based on data from 2000, but is known that accident rates fall over time. COBA therefore provides factors to convert from 2000 accident rates to rates for any other year. These factors are provided in Table 4/1 of the COBA manual, with the methodology stating how to use these factors directly preceding the table. As the observed accident rate was based on 2008-2012 data, COBA accident rates were calculated for 2010 (the central year of 2008-2012).

TABLE 3 - Predicted and Observed Accident Numbers

Section	Road	Annual Veh-Km (from Table 1) (A)	5 year Veh-km (B = A x 5)	Road Type (see Table 4/1 in Pt. 2 of the COBA manual)	Default Acc Rate per mvkm (2000 base)	Default Acc Rate per mvkm (2010) (C)	Predicted Accidents over 5 years (D = B x C)	Observed Accidents over 5 years	
1	A679 Accrington Road (M65 Jct 9 to Cavalry Way rbt)	14,910,452	74,552,259	Older A S2 Road	0.844	0.718	54	35	-19
2	A671 Westway (Cavalry Way rbt to Trafalgar St)	5,573,840	27,869,199	Older D2 Road	1.004	0.854	24	14	-10
3	A679 Westgate (Trafalgar St to Royle Rd rbt)	5,927,565	29,637,825	Older A S2 Road	0.844	0.718	21	21	0
4	A679 Active Way Royle Rd rbt to Church St)	4,074,097	20,370,486	Older D2 Road	1.004	0.854	17	22	5
5	A682 Colne Rd (Church St to Casterton Ave)	17,818,438	89,092,190	Older A S2 Road	0.844	0.718	64	93	29
6	A682 Colne Rd (Casterton Ave to Halifax Rd)	6,677,791	33,388,957	Older A S2 Road	0.844	0.718	24	32	8
7	A682 Colne Rd (Halifax Rd to Churchill Way)	5,790,545	28,952,726	Older A S2 Road	0.844	0.718	21	21	0
8	A682 Manchester Rd (Churchill Way to Leeds Rd)	8,368,947	41,844,733	Older A S2 Road	0.844	0.718	30	41	11
9	A682 New Scotland Rd (Leeds Rd to M65 Jct 13)	3,610,055	18,050,273	Older A S2 Road	0.844	0.718	13	31	18
						TOTAL	268	310	42

COBA can also be used to predict the severity of accidents. Table 4 calculates how many accidents are predicted to fall within each class of severity (fatal, serious and slight). This is based on proportions taken from Table 3/2 of Part 2 of the COBA manual. In a similar way to the change in accident numbers over time discussed above, the severity of accidents also changes over time. Table 4 calculates the number of accidents of each severity type based on data from 2000, then adjusts these to 2010 proportions based on the factors in Table 4/1 of Pt 2 of the COBA manual.

The methodology stating how to use these factors are found in paragraph 3.3 of Pt 2 of the COBA manual.

TABLE 4 - Predicted and Observed Accident Numbers by Severity

Section	Predicted Accidents over 5 years (from Table 3)	Predicted Fatal Accs (based on 2000 severity proportions)	Predicted Serious Accs (based on 2000 severity proportions)	Predicted Slight Accs (based on 2000 severity proportions)	Predicted Fatal Accs (based on 2010 severity proportions)	Predicted Serious Accs (based on 2010 severity proportions)	Predicted Slight Accs (based on 2010 severity proportions)	Observed Fatal Accs	Observed Serious Accs	Observed Slight Accs
1	54	0	7	47	0	6	48	1	5	29
2	24	0	3	21	0	3	21	0	0	14
3	21	0	3	18	0	3	18	0	4	17
4	17	0	2	15	0	2	15	0	1	21
5	64	1	8	55	1	7	56	0	12	81
6	24	0	3	21	0	3	21	1	4	27
7	21	0	3	18	0	3	18	0	3	18
8	30	0	4	26	0	3	27	0	2	39
9	13	0	3	10	0	3	10	0	6	25
TOTAL	268	1	36	231	1	31	237	2	37	271

3. Results

A summary of the 2008-2012 predicted and observed accident rates is provided in Table 4, below.

	Total Accidents	Total Fatal ccidents Accidents		Slight Accidents	
Predicted	268	1	31	237	
Observed	rved 310		37	271	