Department for Transport

Traffic Advisory Leaflet 11/00
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Village traffic calming - reducing accidents

Introduction

The Department of the Environment, Transport and the Regions commissioned the Transport Research Laboratory (TRL) to assess the effect on accidents of traffic calming measures in a number of villages. The schemes studied included those within the Village Speed Control Working Group Study (VISP) (see TA Leaflet 1/94) and the Traffic Calming in Villages on Major Roads project (see TA leaflet 1/00).

This leaflet summarises the results of the research. They are set out more fully in TRL Report 452 and a European Transport Conference 2000 paper.

Accident analysis

In all, accidents in 56 village traffic calming schemes were studied. The schemes included 24 from the VISP study and 9 from the Traffic Calming in Villages on Major Roads Study. The remaining 23 schemes were offered by local highway authorities, and have similar characteristics to the other groups.

Villages were classified into the following scheme types:

A. No measures in village, but use of gateway signing associated with significant markings/coloured surface/minor narrowing, and in some cases one-way working through narrowings.

B. Measures within village, involving mainly road markings, coloured surfaces and traffic islands, some with gateway features.

C. Significant physical measures within village, involving horizontal and/or vertical deflections, usually in conjunction with gateways.

The majority of the schemes had been installed during the period 1992 to 1997 and are mostly subject to a30 mph or 40 mph speed limit.

The injury accident data obtained covered an average of 7 years before and 5 years after scheme implementation. It was grouped into slight injury accidents, killed and seriously injured accidents (ksi), and all injury accidents. Over 1400 accidents were analysed.

Results

Table 1 is a summary of the average number of accidents occurring each year in the before (1986 - 1993) and after (1994 - 1998) periods. It reveals distinct reductions resulting from the implementation of the schemes.

TABLE 1: ACCIDENT FREQUENCY PER YEAR SUMMARY TABLE

VILLAGES GROUP		SLIGHT	KSI	ALL	YEARS
VISP	Before	29.3	13.2	42.5	5.9
	After	28.3	7.9	36.2	6.1
Major road	Before	19.7	6.8	26.5	9.3
	After	19.2	2.7	22.0	3.3
Additional	Before	37.7	14.7	52.4	7.8
	After	32.7	6.3	39.0	5.2

TABLE 2: PERCENTAGE CHANGES IN INJURY ACCIDENTS

VILLAGES GROUP	CHANGE IN INJURY ACCIDENT FREQUENCY		
	Slight	KSI	All severities
VISP	-3%	-40%	-15%
Major road	-2%	-60%	-17%
Additional	-13%	-57%	-25%

Comparing the before and after perspectives, Table 2 shows the percentage changes in accident frequency for each of the severity types by village group.

Overall, the frequencies of all injury accidents and ksi accidents have reduced by about25% and 50%, respectively.

National trends over a similar period, see TRL Report 452,excluding motorways, show a7% reduction in all accidents, and a 27% reduction in ksi accidents.

Gateway treatment at Newton Tracey, Devon

The overall injury accident frequency was lowered most at the sites where 85th percentile speeds reduced by 7 mph or more within the village. It showed the least fall where speed reductions were 2 mph or less (Table 3).

TABLE 3: % CHANGES IN INJURY ACCIDENT FREQUENCY BY 85TH PERCENTILE SPEED REDUCTION

SPEED REDUCTION	CHANGE IN ACCIDENT ALL SEVERITIES
0 - 2 mph	-10%
3 - 4 mph	-14%
5 - 6 mph	-32%
7 mph or over	-47%

There was a greater reduction in the overall frequency of accidents involving vulnerable road users than for those involving vehicles only (Table 4).

TABLE 4: PERCENTAGE CHANGES IN INJURY ACCIDENT FREQUENCY BY ACCIDENT TYPE

ACCIDENT TYPE	CHANGE IN INJURY ACCIDENT FREQUENCY		
	Slight	KSI	All severities
All vehicles only	-15%	-52%	-25%
Involving a pedestrian	-15%	-49%	-30%
Involving a child pedestrian	-3%	-77%	-40%
Involving a cyclist	-35%	-52%	-39%
Involving a child cyclist	-52%	-49%	-51%
All vulnerable road users	-26%	-50%	-35%

Accidents involving vulnerable road users aged under 16 were reduced following scheme installation. Child pedestrian ksi accidents were reduced by three-quarters, and the number of all child cyclist injury accidents was halved.

Further analyses of the results were undertaken to establish the scale of all-severity and ksi accident reduction that could be expected, on average, in village situations from a known reduction in speed. Additionally, investigations were made of changes in other parameters of the speed distribution, and which traffic calming features would influence these changes the most. The results are as follows:

- a 1 mph reduction in mean speed would result in a 4.3%reduction in all-injury accidents, and a 10% reduction in ksi accidents;
- schemes with physical measures in the village would reduce mean speeds by almost 8 mph and reduced the proportion of drivers exceeding the speed limit by more than 30 percentage points;
- the most substantial measures (physical features and signing/marking measures with high visual impact) would be the most effective in terms of speed and accident reduction;
- for all types of measures a downward shift in the distribution of speeds would result in a reduction in mean speeds.

Conclusions

Traffic calming measures in villages can yield reductions in speed, which are associated with substantial reductions in injury accidents, particularly ksi accidents.

From previously published results on the VISP and Main Road Schemes, firm estimates can be made of the reduction in mean speeds obtainable from proposed new schemes. It is now possible to predict the reduction in ksi and all-injury accidents that are possible.

Technical enquiries

Traffic Management Division, Department for Transport, Zone 2/06 Great Minster House,
76 Marsham Street, London, SW1P 4DR
Tel: 020 7944 2974

References

TA Leaflet 1/94, VISP - A Summary

TA Leaflet 2/97, Traffic Calming on Major roads: A49, Craven arms, Shropshire

TA Leaflet 6/97, Traffic Calming on Major Roads: A47, Thorney, Cambridgeshire

TA Leaflet 14/99, Traffic Calming on Major Roads: A Traffic Calming Scheme at Costessey, Norfolk

TA Leaflet 1/00, Traffic Calming in Villages on Major Roads.

TRL Report PR85, Speed Reduction in 24 villages: Details from the VISP Study.

TRL Report 212, Traffic Calming on Major Roads: The A49 Trunk Road at Craven Arms, Shropshire

TRL Report 238, Traffic Calming on Major Roads: The A47 Trunk road at Thorney, Cambridgeshire

TRL Report 364, A Traffic Calming Scheme at Costessey, Norfolk

TRL Report 385, Traffic Calming in Villages on Major Roads: Final Report

TRL Report 452, Changes in Accident Frequency Following the Introduction of Traffic Calming in Villages

Paper at European Transport Conference, September 2000, Accident Reductions Resulting from Village Traffic Calming Schemes, by Marie Taylor and Allan Wheeler

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Telephone 020 7944 2478. E-mail: tal@dft.gsi.gov.uk