



Rural Speed Management - Looking Ahead

THE ROLE OF RURAL SPEED MANAGEMENT

Speed control has a vital role to play in rural transport strategies. Along with traffic volume and mix, speed is a primary determinant of the impacts of the road transport system.¹ Road casualties and traffic intimidation, the decline of walking and cycling, rising traffic levels and the noise and danger of heavy goods vehicles are familiar problems for country dwellers.

The ability to travel further faster is a major factor behind the relentless traffic growth transforming the countryside. The average distance travelled per person per year has increased steadily while the average amount of time spent travelling has changed very little.²

The result is dispersed development and demand for road building generating a vicious spiral of increasing traffic and increasing journey lengths. Rural areas become congested and urbanised. Local services are undermined and local economies become unbalanced by a combination of commuting and excessive dependence on tourism.³

Policies to manage speed have the potential to curb the growth in rural traffic, improve the road environment for short journeys by foot, bicycle and horse, and direct traffic to appropriate routes. If and when road user charging is introduced for urban networks and fast roads, the need for speed management to constrain rural traffic growth and impacts will become even more pressing.

While speed management strategies are needed to protect the countryside, their implementation poses its own special threats to countryside character. Conventional means of controlling traffic, through signing and traffic calming, are generally highly conspicuous and thus automatically out of place. Even worse, rural communities are faced with the choice of traffic intimidation or destruction of treasured local features. This feeds the vicious spiral of rural traffic growth as car use becomes the only protection against the dangers arising from car use.

NEW TOOLS FOR SPEED POLICY AND PRACTICE

Fortunately, new tools to aid the development of robust speed management policy are becoming available. Most of these were promised in the government's ten year plan for road safety,

*Tomorrow's Roads – Safer for Everyone.*⁴ They include better understanding of the relationship between speed and crashes on rural roads, an assessment framework for setting appropriate speed limits, progress on a rural road hierarchy, a simplified method for setting speed limits, new guidance to local authorities on setting speed limits and an official working definition of 'village' for the purposes of setting 30mph limits.⁵

As the issue of fast traffic goes up the agenda, local communities are becoming increasingly involved in defining the problem and pushing local authorities to develop innovative responses.

This leaflet describes some of these developments. It complements our earlier publication, *Cutting Speed in the Countryside.*

UNDERSTANDING THE SPEED-CRASH RELATIONSHIP OPENS A NEW ERA FOR ROAD SAFETY

While the connection between speed and crashes has long been established, in the last few years the relationship has been quantified to show by how much crash rates can vary with speed and road environment.^{6,7} Both the frequency of crashes and the severity of injuries rise dramatically with mean speed. For rural roads in general, a 10% increase in mean speed results in a 26% increase in the frequency of all injury crashes and a 30% increase in the frequency of fatal and serious crashes.⁸ Road environment, including the presence of pedestrians, the amount of traffic and road geometry, is also an important variable in the speed-crash relationship.

The ability to quantify the effect of speed on crashes opens a new era for road safety. The relationship between speed and crashes can be used '*to estimate the change in accident frequency resulting from a change in mean speed on a given road and, if applied to local or national accident statistics, to estimate the effects of different speed management strategies.*'⁹

In principle, the relative likelihood of crashes occurring can be assessed according to mean speeds even where no casualties have occurred. This is of great importance on rural roads where crashes tend to be scattered. Risks on broadly similar types of road can be compared. Steps can be taken to prevent casualties from occurring as well as to reduce them.

The ability to estimate potential crash reduction across a local authority network permits assessment of desirable intervention levels and the resources required to introduce them. In a context of policies to increase walking and cycling, for example, authorities

PREDICTED CRASH REDUCTION FOR EVERY 1 MPH REDUCTION IN MEAN SPEED

The speed-crash 'rule of thumb' says that for every 1mph reduction in mean speed there will be a 5% reduction in crashes involving injury. Here's what lies behind it:

	mean speeds (mph)	reduction in crash frequency %
URBAN ROADS (1)		
highly congested town roads	20.9	6.2
typical inner city link roads	24.8	4.5
sub-urban link roads	28.7	3.3
semi-rural (fast) link roads	33.0	2.2
RURAL ROADS (2)		
low quality	26 - 41.6	9.4 - 5.9
lower than average quality	37.4 - 47.3	6.5 - 5.1
above average quality	40.0 - 53.0	6.1 - 4.6
high quality	48.1 - 57.6	5.1 - 4.2

(1) Taylor, Lynam and Baruya (2000), Tables 2 and 3

(2) Taylor, Baruya and Kennedy (2002), Table 15

can make realistic estimates about the level of investment required to reduce danger and achieve policy objectives.

In towns and villages the most important variables affecting crashes are average speed, the spread of speeds – the difference between the slowest and fastest road users – and the proportion of drivers exceeding the speed limit.

On rural single carriageway roads, the most important variables are average speed, the number of sharp bends and the number of junctions. Hilliness and the number of accesses along a road are also important. These variables have been used to sort rural single carriageway roads into four groups according to their quality, ranging from low to high. The groups cut across the current A, B, C and U classification system with roads of all these classes falling into each quality group.

A NEW BASIS FOR SETTING RURAL SPEED LIMITS

The single 60mph national speed limit for cars on all single carriageway roads has been gradually eroded as highway authorities around the country have set lower limits in response to crashes, severance and other traffic impacts. The result is a proliferation of signs on rural roads and confusing and often conflicting messages to drivers. This problem has focused attention on the need for a system of rural speed limits which is better matched to the wide variety of rural roads, is consistent from one area to the next and helps drivers to choose appropriate speeds. Grouping roads according to their quality can provide the basis for establishing a simple and appropriate range of limits – the aim of the rural road hierarchy.

Speed data collected by the Transport Research Laboratory (TRL) for a large sample of rural single carriageway roads shows that current average speeds vary from between 35mph on the lowest quality roads to 51mph on the highest.

The importance of the speed-crash relationship and of speed management generally points to a need for local authorities to collect better speed data. More complete speed data would also provide a baseline for monitoring changes in road use and danger as a result of road safety interventions and other factors, such as changes in land use.

A SPEED ASSESSMENT FRAMEWORK

As part of the government commitment to provide revised guidance to highway authorities on setting speed limits, a speed assessment framework is being developed by TRL¹⁰. The framework will enable highway authorities to evaluate the impacts of a change in speed limit on rural single carriageway roads. It takes into account the characteristics of the road, the costs of crashes, journey time and fuel, and policy objectives such as encouraging walking, cycling, horse-riding, or reducing severance and noise. The framework can help to determine whether additional measures would be needed to achieve the desired speeds.

The framework is based on the concept of optimal speed limits. Optimal speed limits ensure that the costs of travel on a given type of road do not outweigh the benefits. A wider range of factors can be taken into account than are covered in the current assessment framework. These wider factors include the traffic reducing impacts of lower speeds, the costs of global warming and currently uncosted aspects of road crashes due to underreporting, quality of life impacts and the burdens people bear in trying to avoid road death and injury.¹¹ All of these factors strengthen the case for lower speed limits. As people become more familiar with the concept of optimal speeds and as understanding of the impacts of speed improves, an even more sophisticated framework can be expected.

Meanwhile the framework under development will be a major step forward. Trials will be needed to demonstrate the effects of changes to speed limits and any accompanying measures to secure compliance. The outcomes can then be compared with those predicted by the framework.

The data on current speeds collected by the TRL and the various methodologies for calculating optimal speed limits justify a system of lower speed limits for the rural single carriageway network. The TRL method for calculating optimal speed limits indicates that currently 50mph speed limits are more suitable than 60mph for the majority of the faster single carriageway roads. The majority of lower quality roads already have average speeds of 40mph or less.¹²

A two or three tier system would provide the starting point for managing a local authority rural road network. 50mph could be the maximum for most of the higher quality roads (groups 3 and 4) with a maximum 40mph on the lower quality roads (groups 1 and 2). Quiet Lanes would have a separate designation, with speeds limits as low as 20mph to make them safe for non-motorised modes for everyday journeys as well as recreation.



Conflicting roadside messages confuse drivers and intrude on landscape

CURRENT MEAN SPEEDS ON RURAL ROADS

Road Quality Group	key features	mean speeds (mph)
1 – low quality	low speed hilly, many bends	35
2 – lower than average	below average speeds many bends & accesses	41
3 – higher than average	above average speeds many junctions, relatively straight & flat	47
4 – high quality	above average traffic speeds few bends, accesses & junctions	51

Source: Taylor, Baruya and Kennedy (2002) *The relationship between speed and accidents on rural single-carriageway roads*, TRL Report TRL511, Table 9.

A SIMPLIFIED METHOD FOR SPEED LIMITS

To reduce the costs of changing speed limits on rural roads and in villages, the Department for Transport will soon be issuing a simplified method of setting and signing limits. The aim is to make drivers aware of the prevailing speed limit while minimising sign clutter and other visual intrusion.¹³

ADVICE ON DEFINING A VILLAGE FOR THE PURPOSE OF INTRODUCING 30MPH LIMITS

Official advice on village 30mph limits is now available.¹⁴ Frontages of 20 or more houses on one or both sides of the road are one factor in the 'reasonable minimum criteria'. If there are fewer than 20 houses, the presence of key buildings, such as a church, shop or school, can be taken into consideration. 400 metres is the minimum recommended road length for a 30mph limit. Local authorities can still use their discretion to decide whether a limit of 30mph or less is appropriate where the minimum criteria are not met.

A minimum density of an average of three houses per 100 metres is also recommended as a criterion for a 30mph limit, particularly for the first 100m at each end of the village. The 30mph limit should only extend beyond the area of minimum density in exceptional circumstances, for example, to include a key building. 40mph or even 50mph are recommended where these minimum frontage and density criteria are not met. Where villages are less than 600m apart the 30mph limit can be continuous. 40mph should be used as an intermediate limit where there are outlying houses or high approach speeds.

Signs denoting village boundaries and speed limits can be mounted together where they commence together. Repeater signs must be used where there are no street lights and cannot be used where there are. Carriageway speed limit roundels can be used only in conjunction with upright terminal and repeater signs (except in areas of natural beauty, where special authorisation is required). Gateway treatments are recommended to reduce high approach speeds.

A NEW COMMUNITY TRAFFIC IMPACT ASSESSMENT METHODOLOGY

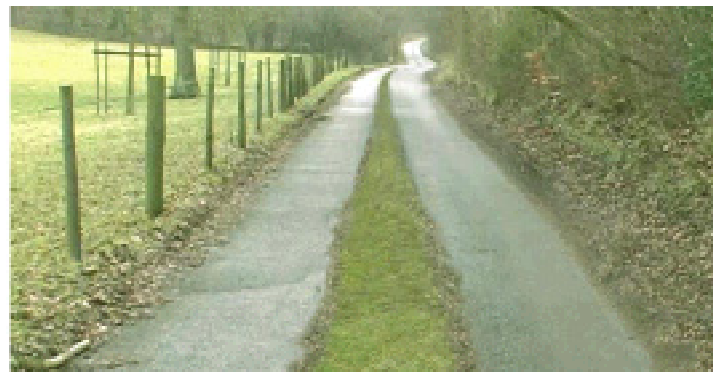
The views of local communities need to be taken into account in proposals to reduce speeds and speed limits. In many cases these

proposals will originate with community demand. A new methodology is being piloted to evaluate the impacts of traffic speed and the volume and mix of traffic on rural quality of life and transport choice. The aim is to provide an objective and representative assessment for rural communities seeking action from their local authorities.

This methodology will be of use to local authorities, police and safety camera partnerships in evaluating the extent to which speeding drivers and heavy traffic impose fear and danger on communities. It will complement the technical aspects of the speed assessment framework. It will be a useful supplement to evaluation processes such as the Countryside Agency's Market Town Health Check.¹⁵ (For further information about the assessment methodology, contact the Slower Speeds Initiative.)

DESIGNING FOR LOWER SPEEDS THROUGH PARTICIPATION AND APPLIED RESEARCH

In a development of the Village Design process,¹⁶ local communities in the Surrey Hills Area of Outstanding Natural Beauty (AONB) used photography to identify the best and worst features of their local lanes. The aim was to preserve and enhance the rural character of these lanes and to discourage rat-running traffic. Photographs of the lanes were sorted according to whether they appeared appropriate to an AONB, would encourage faster or slower driving, and whether they would encourage or discourage walking and cycling. The results showed that lanes for walking and cycling required clear refuge areas and good sight lines. The most attractive lanes had a minimum of markings. Higher speeds were associated with good visibility, white lines, a wide road and predictability.¹⁷

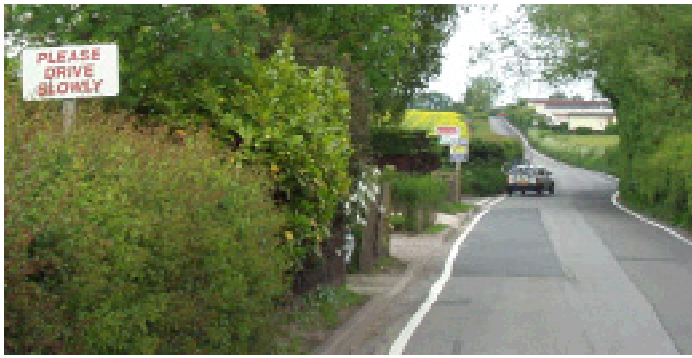


A central grass strip would discourage fast drivers from using a lane

Surrey University's Environmental Psychology Research Group conducted surveys using a photo questionnaire with an image of a lane digitally manipulated to produce four different environments.¹⁸ Respondents, who included locals, commuters and visitors, were asked to suggest what speed they would drive along each version of the road and how fast they thought others would drive.

The researchers found that speed choice depended on the appearance of the lane, the type of driver and the type of journey. Higher speeds were more likely on work-related journeys. For such journeys the lane with white lines was perceived to be the most suitable. It was also preferred by the faster drivers.

The lane with the grass strip proved to be the one that would slow drivers down the most. It was considered the most attractive, the most suitable for non-motorised road users and the least suitable for use under time pressure or for work-related journeys.



Researchers found that faster drivers prefer lanes with white lines.

Surrey County Council have now begun to apply this research. A trial scheme using coarse aggregate in the centre and on the edge of a lane to encourage grass is underway within the AONB. Such natural traffic calming features, together with the removal of lining and signing, could become important elements in indicating speed limits and discouraging inappropriate traffic on lower quality roads in the rural road hierarchy.

CONCLUSION: STRATEGIC SPEED MANAGEMENT AHEAD

A sound evidence base for controlling speed in support of a wide range of transport objectives is beginning to emerge. Local authorities and communities are in a better position than ever to answer the two key questions for speed policy: what speed limit is appropriate and how should compliance be ensured? These developments are taking place in time for strategic speed management to feature prominently in the second round of Local Transport Plans. Many local authorities are already beginning to consult with communities on their next Local Transport Plans.

It will be possible to evaluate the impacts of different levels and distributions of traffic across a local highway network and use speed limit policy to influence these. Representative speed data can give highway authorities and local communities a better understanding of the levels and distribution of danger on their roads. The speed assessment framework will help to define networks for journeys on foot and bicycle, and plan local safety schemes and routine maintenance.

Speed limit policy can reinforce land use policies, counteract the traffic generating impacts of development and underpin local vitality by making access by sustainable modes both practical and safe.

More effective cooperation between communities and local authorities is needed to define and deliver local transport objectives. The innovative approaches highlighted in this leaflet have a part to play in protecting rural characteristics valued by communities and ensuring that transport resources, ranging from road safety budgets to the roads themselves, are more equitably shared.

NOTES

¹ Plowden, S. and Hillman, M. (1996) *Speed Control and Transport Policy*, London: Policy Studies Institute ² Department for Transport (2002) *National Travel Survey: 1999/2001 Update* ³ Countryside Agency (2003), *Transport in Tomorrow's Countryside*, CA143 ⁴ Department for the Environment, Transport and the Regions (2000) *Tomorrow's roads – Safer for Everyone* ⁵ See Department for Transport website for Road Safety Research, completed and ongoing ⁶ Taylor, M.C., Lynam, D.A. and Baruya (2000) *The effects of drivers' speed on the frequency of road accidents*, TRL Report 421, Crowthorne, Berks: Transport Research Laboratory ⁷ Taylor, M.C., Baruya, A. and Kennedy, J.V. (2002) *The relationship between speed and accidents on rural single carriageway roads*, TRL Report 511, Crowthorne, Berks.: Transport Research Laboratory

⁸ Taylor et al. (2002) ⁹ Taylor et al. (2002), p2 ¹⁰ Lynam, D.A. (2003) *Developing a speed assessment framework*, Presentation to IHT/CSS Rural Safety Management Conference, 13 November 2003 ¹¹ Plowden and Hillman (1996) ¹² Lynam (2003) ¹³ DfT Road Safety Ongoing Research web page ¹⁴ Department for Transport (2004) *Village Speed Limits*, Traffic Advisory Leaflet 1/04 ¹⁵ The Countryside Agency, *Market Towns Initiative Healthcheck Summary* www.countryside.gov.uk/market-towns ¹⁶ Countryside Agency (2003) *Parish Plans: Guidance for Parish and Town Councils*, CA122 ¹⁷ Surrey County Council (2003) *Traffic management for rural lanes in the Surrey Hills Area of Outstanding Natural Beauty*, Surrey County Council, Surrey Hills AONB and University of Surrey ¹⁸ Uzzell, D. and Leach, R. (2001) *Engineering Quiet Lanes in the Surrey Hills AONB: Predicting Drivers' Speed Final Report*, Department of Psychology, University of Surrey

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USEFUL ADDRESSES

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CAMPAIGN TO PROTECT RURAL ENGLAND

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info@cpre.org.uk www.cpre.org.uk

CTC (Cyclists Touring Club)

Cotterell House, 69 Meadow, Godalming GU7 3HS 0870 873 0063
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CHILDREN'S PLAY COUNCIL

National Children's Bureau, 8 Wakley Street, London EC1Y 7QE
020 7843 6016 homezones@ncb.org.uk www.homezonenews.org.uk

ENVIRONMENTAL TRANSPORT ASSOCIATION

68 High Street, Weybridge KT13 8RS www.eta.co.uk

LIVING STREETS (PEDESTRIANS ASSOCIATION)

31-33 Bondway, London SW8 1SJ 020 7820 1010
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THE ROAD DANGER REDUCTION FORUM

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