

## THE PROBLEM STATEMENT

### 2.6 TRAFFIC SURVEYS

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**Problem:** Decisions on road standards and prioritisation are often made in the absence of reliable traffic count data

**Solution:** More emphasis on the collection of reliable traffic count data to forecast average daily traffic volume, traffic frequency and modal choice

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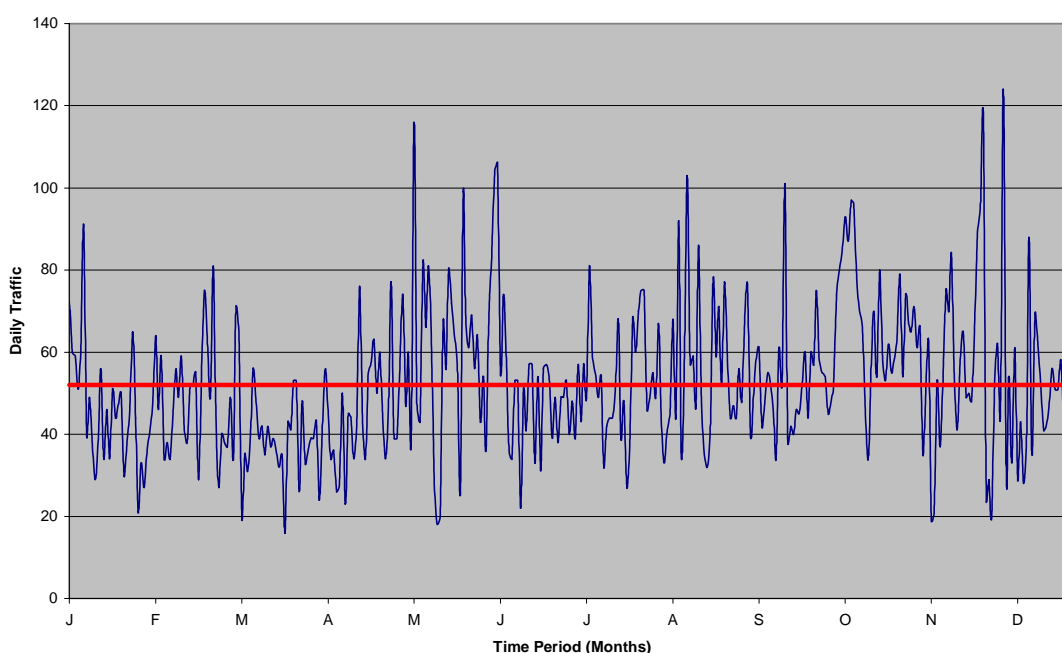
#### BACKGROUND

Traffic counts are one of the most important planning data and can be used for:

- Network appraisal - the ADT represents the most important criteria in determining priorities for expenditure between different roads in a road network. In the majority of cases the importance of a road can be judged by the volume of traffic using it.
- National transport planning - traffic count data can be used in forecasting fuel consumption, the effects of fuel price changes, the consequences of pollution and the estimation of other variables such as trends in annual kilometres driven.
- Social trends statistics - changes in traffic levels can provide a good indicator as to the level of economic growth in an area.

However short period traffic counts, particularly on low volume roads, can be very unreliable because of daily, weekly and seasonal fluctuations in traffic flow. **Figure 1** shows large daily traffic fluctuations over a 12-month period for a road in Thailand.

**Figure 1: Daily traffic counts over a 12 month period for a low volume road in Thailand**



#### IMPROVING THE ACCURACY OF TRAFFIC COUNT DATA

The accuracy of traffic counts can be improved by increasing the count duration, by counting in more than one period of the year and on roads with higher traffic volumes. Improved accuracy can also be achieved by

using local knowledge to determine whether there are days within the week or periods during the year when the flow of traffic is particularly high or low (refer to **Appendix E** for guidance on measuring traffic flow). Factors to look for include:

- market days
- religious days
- people travelling to and from urban areas for the weekend
- wet weather affecting road traffickability and desire to travel
- increased traffic flows during harvest seasons

It is also important to avoid counting on days when there is likely to be exceptionally high or low traffic, counting on these "exceptional days" can have a significant impact on accuracy. Factors to look for include:

- national holidays
- local holidays
- strike days
- closed borders

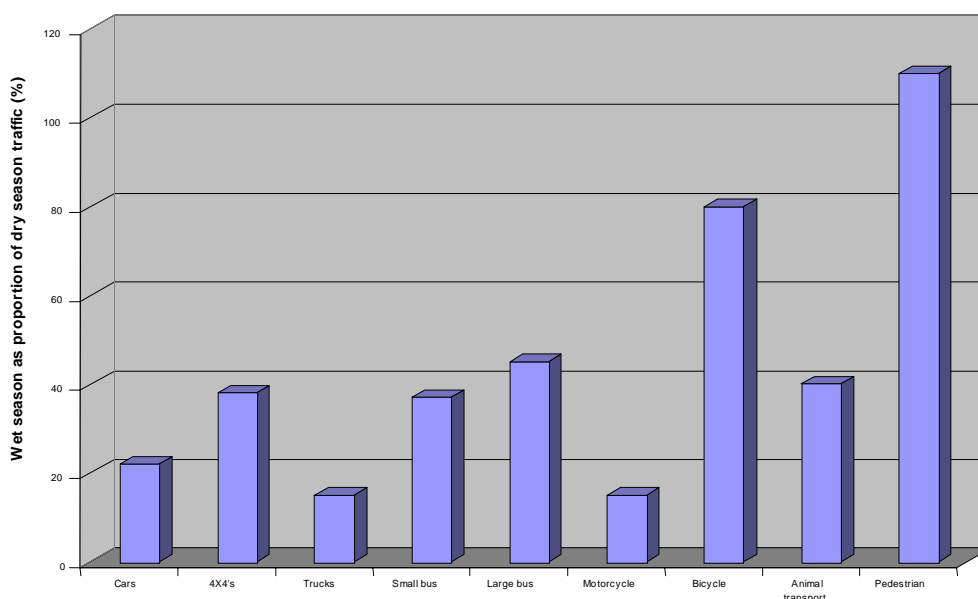
Traffic counts on low volume rural roads should also include pedestrians, bicycles and other non-motorised means of transport (NMT's). Local knowledge should also be used to pick appropriate locations for conducting the traffic counts to ensure a true reflection of the traffic using the road to avoid under or over counting. Factors to look for include:

- Avoid counting too close to towns and villages
- Be aware of the location of junctions and the impact of these on traffic flows
- Pedestrians and NMT's may use local footpaths and tracks in addition to the road. When counting this type of traffic ensure that the count station is located to capture all traffic
- Rural people predominantly travel as the sun is rising and as the sun is setting
- When counting in the wet season have knowledge of local diversions on poor roads

### SEASONAL CHANGES IN TRAFFIC FLOW

Research has shown that traffic levels tend to fall during the wet season on low volume unpaved roads. Typically traffic volumes will fall in the wet season to 80% of their dry season level. On poor quality roads this difference is even more marked and can fall to 35% of dry season traffic levels as can be seen in **Figure 2**.

**Figure 2: The difference in wet season and dry season traffic levels on poor quality roads in Tanzania**



This type of data is important when prioritising investments. Poor seasonal access has very high social and economic costs. Comparing wet and dry season traffic flows is a good way of identifying the roads

which have the worst access problems. **Table 1** gives guidance on how to categorise roads in terms of traffic characteristics.

**Table 1: Road traffic characteristics**

Access category	Wet season as proportion of dry season traffic
Good access	80% - 100%
Medium access	80% - 50%
Poor access	< 50%

Using traffic data in the ways described above it is possible to get a good feel for the engineering condition of the road and hence feed this into an economic or engineering analysis. The two terms that are relevant are traffickability and impassability.

**Impassability:** In this case the road is completely closed to motorised traffic either because of waterlogged soil or flooding. This situation can last from one day to the whole wet season. It is obviously very important to know the extent of impassability because it can potentially have significant impact on social and economic development.

**Traffickability:** a road can be said to exhibit traffickability problems when the wet season traffic flow falls below 50% of the dry season traffic flow. In this case the road is not completely closed but the condition has deteriorated to the point where a substantial amount of traffic stops travelling on the road because of the additional risks involved..

### INCLUDING NON-MOTORISED AND INTERMEDIATE MEANS OF TRANSPORT

On low volume roads it is particularly important to count non-conventional means of transport. These include pedestrians, bicycles, animal transport, motorcycles, tractors and trailers and other simple motorised technology. On low volume roads these types of transport can account for the majority, or at least a significant proportion, of the total transport burden. **Table 2** provides a list of the most common forms of conventional and Intermediate Means of Transport with suggested weightings to allow a direct comparison of transport demand between roads.



















**Table 2: Suggested weightings for most common transport modes**

Vehicle type	Suggested weighting
Pedestrians	1
Bicycle	1.5
Pack animal	2
Animal cart	7
Motorcycle	2
Tractor and trailer	70
Car	10
Pickup / 4X4	15
Small bus / minibus	15
Large bus	70
Truck (5 tonne)	70
Large truck	100

To make the comparisons the ADT for each mode of transport should be multiplied by the suggested weighting and the sum for all modes should be taken. This methodology is particularly useful for very low volume roads, < 10 conventional vehicles per day, and where the road is in very poor condition. In these cases the inclusion of IMT's can significantly re-order priorities.

#### KEY REFERENCES

- Ellis S (1997), Rapid appraisal techniques for identifying maintenance priorities on low volume rural roads. *TRL unpublished report PR/OSC/122/97. Crowthorne: Transport Research Laboratory*
- Fouracre, P. (2001). Rural Transport Survey Techniques. The Rural Transport Knowledge Base. *Crowthorne: TRL Limited. [www.transport-links.org/knowledgebase.htm](http://www.transport-links.org/knowledgebase.htm)*
- Parsley L and S Ellis (2002). Guidelines for short period traffic counts in developing countries. TRL unpublished report. *Crowthorne: TRL Limited*

TRAFFIC COUNT RECORD FORM											
Date.....						Location.....					
Counter's Name.....						Hour Beginning.....am/pm					
Time	Cars 	Pickups 4WD's 	Trucks 	Minibus 	Large Bus 	Tractor 	Motorcycle 	Animal Transport 	Bicycles 	Pedestrians 	Weather 
0-15mins											 or 
15-30min											 or 
30-45min											 or 
45-60min											 or 