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Traffic Composition during the Morning Peak Period

Implications for Urban Traffic Management Systems

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Abstract

Using registration plate analysis, this paper investigates 1) the proportions of 'unique' vehicles, 2) the proportions of vehicles re-appearing from day-to-day and their individual arrival variances and 3) the numbers of locally registered vehicles among those seen during the morning commute period on three roads in Southampton.

During incidents, a traffic controller would hope to divert the more familiar drivers onto less congested parts of the network using VMS and other media. Knowing the proportions of regular and unique drivers which make up the peak commuting periods would help in the timely dissemination of this traffic information.

The proportions of unique vehicles varied significantly with road and time. Vehicles appearing on more than one day formed 80% of the traffic before 08:15 but only 60% between the 08:45 and 09:00 peak period during the 1996 Bassett Avenue survey ($F(4,20) = 60.1, p < 0.001, Mse = 6.2$). Although the proportions of vehicles re-appearing from day to day varied significantly with road, ($c 2(3) = 1501, P < 0.001$), their arrival variances were found to be very similar. On average, 65% of the returning vehicles re-appeared within +/- 5 minutes of their previous day's time implying that this frequency of arrival could be part of an habitual behaviour pattern.

The results suggest that for occasions where congestion can be anticipated in advance, such as prior to emergency roadworks or special events, warning messages would be most effective before 08:30 a.m. when the largest proportion of regular vehicles would be using the roads. If regular users are more familiar with the local road network than one-off 'unique' vehicles, and would be more likely to divert on receiving incident information relevant to their route, then later in the morning, the proportion of knowledgeable local drivers falls substantially.

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