

Briefing Note for Traffic Congestion Ad-Hoc Scrutiny Committee on 17 April 2008

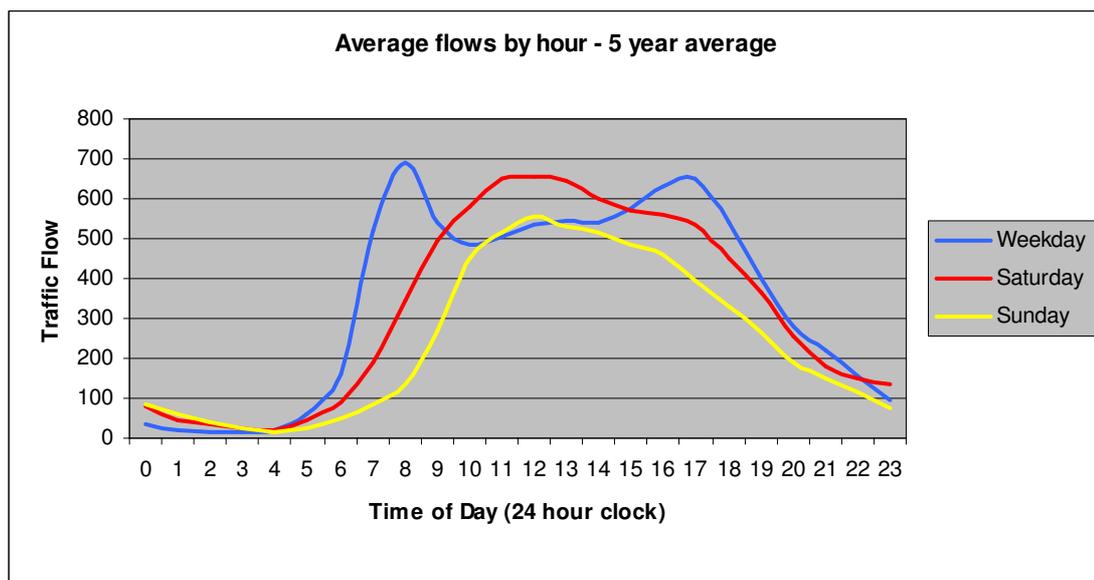
Traffic Congestion and Road Safety

1 Introduction

- 1.1 This paper explores the relationship between traffic congestion and road safety in York.

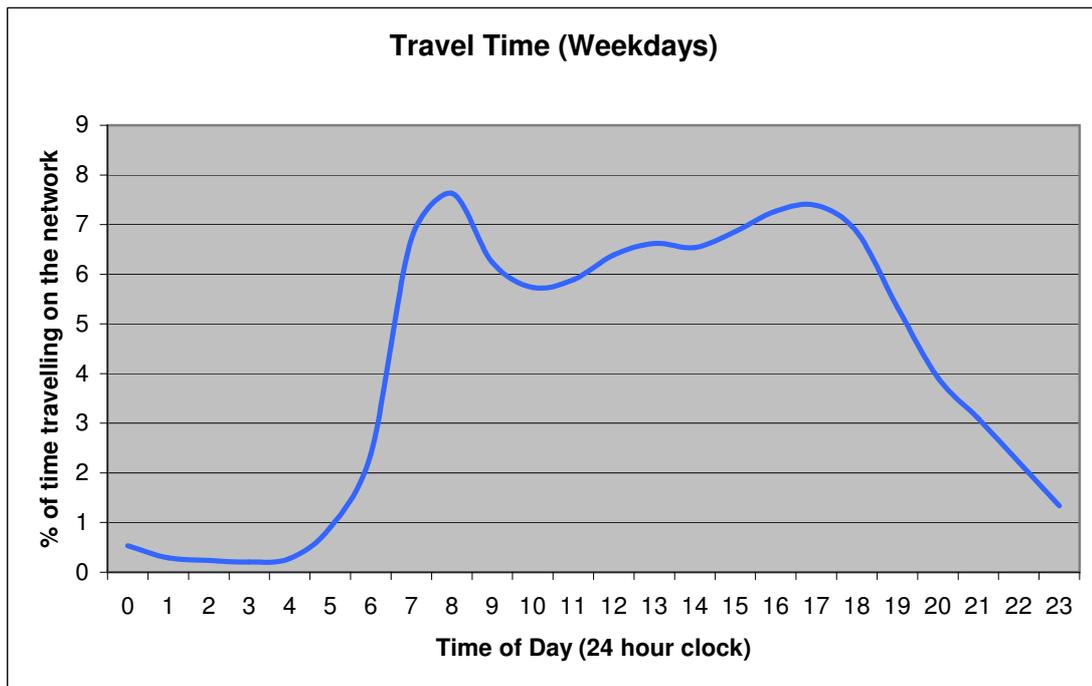
2 Information

- 2.1 In common with most other cities, **traffic flows** in York (and associated congestion levels) vary greatly by time of the day, and by day of the week. The graph below shows the typical traffic flow patterns for weekdays, Saturdays, and Sundays.



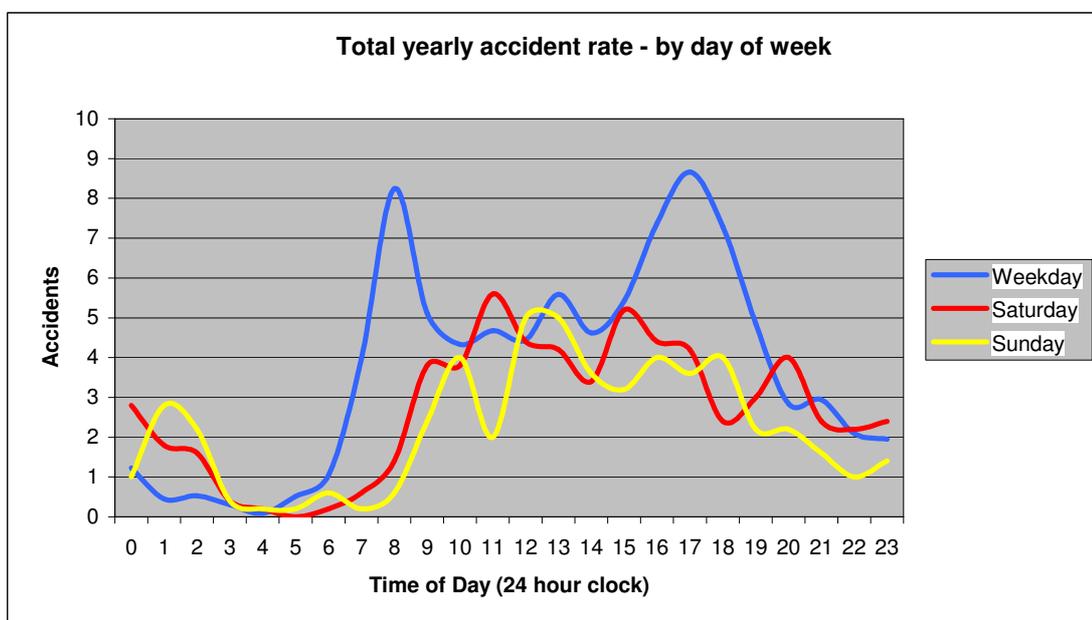
- 2.2 As expected, the graph shows that the highest flows occur in the early morning and late afternoon periods on weekdays. These are generally accepted as the worst periods for traffic congestion. However, it is also interesting to note that similar levels of flow are also experienced on Saturdays, from late morning to early afternoon.

- 2.3 The following graph which shows how **journey times** vary through the day.



2.4 It can be seen that the shape of this graph is almost identical to the profile for traffic flows. This is to be expected, because as traffic flows increase and the road network approaches its capacity, traffic begins to move more slowly resulting in much increased journey times

2.5 The next graph looks at the distribution of **road traffic accidents** by time of day. Again, separate plots are provided for weekdays, Saturdays and Sundays.



2.6 It is interesting to see that for most of the day the distribution of accidents produces a very similar shaped graph to the one for traffic flows, suggesting a very direct relationship between them. For example, it can be seen that there are very pronounced peaks in the accident rates which correspond to the weekday morning and afternoon peak traffic flow periods. This is a logical relationship, given that the weekday peaks are when there are the greatest concentrations of vehicle, cycle

and pedestrian movements all taking place at the same time. This environment gives the greatest potential for conflicts and accidents to occur.

- 2.7 There is also a close correlation between the weekend accident rates and traffic flows. However, the accident rate for the Saturday peak period is not as high that experienced in the weekday peaks, although traffic flows are similar. This probably is related to the fact that there is not as much pedestrian and cycling activity happening during the peak traffic period on a Saturday compared to the weekday peak periods.
- 2.8 It is also interesting to note that although for most of the day the distribution of accidents closely follows the traffic flow profile, there is a clear discrepancy in the early hours of the morning. In this time period accident rates are disproportionately high compared to the traffic flow levels. This anomaly is most likely to be due to the different patterns of human behaviour experienced at that time of the day (such as more drink driving, excessive speeding, tiredness, and walking/cycling under the influence of alcohol /drugs etc).

3.0 Discussion

- 3.1 The information presented above all points to a strong relationship between road safety and congestion, with the highest accidents rates happening in the peak traffic periods. This suggest that any future increases in traffic flow levels on York's road network will generally create conditions where more accidents are likely to happen.
- 3.2 However, there is a logical argument, backed up by some scientific research, which suggests that as urban congestion gets very bad the accident rates do not continue to increase, and can even decrease. This is mainly because severe congestion inevitably leads to very low traffic speeds, which are known to be a critical factor in the in the chances of an accident happening and the severity of the outcome. However, severe traffic congestion could not be tolerated in York for a whole raft of reasons, and certainly could not be recommended as a positive way of improving road safety!
- 3.3 Therefore the evidence presented above suggests that the most effective strategy for improving road safety generally in the City should be based on a combination of measures to reduce traffic flows, manage traffic speeds, and reduce the potential for conflicts, particularly between motorised traffic and pedestrians /cyclists. In addition to these physical measures, there is also much that can be achieved to improve road safety through education, training and publicity. The targeted use of enforcement by the Police also has a key role to play. All of this is entirely consistent with the approach we have been taking in York over a number of years through the Local Transport Plan, and the benefits are being seen through reducing accident numbers.

Mike Durkin
Project Manager (Transport and Safety)