Automatic Traffic Counters (ATC's)

Tube Recorders:

The majority of the County Council's automatic traffic counts are undertaken using pneumatic tubes. This is the standard technique for acquiring data over a shorter period of time, typically 1-4 weeks. They consist of two rubber tubes (spaced one metre apart) placed across the carriageway at right angles to the direction of traffic flow, connected to a recorder box. Vehicles passing over the tubes are counted (volume of traffic) and classified by speed and vehicle type. Vehicle speed and classification is determined by the time it takes the vehicle to pass over the two tubes and by a complex series of algorithms that allow the equipment to identify the vehicle's chassis type.

The quality of the data recorded by a tube counter varies depending on the location and the installation of the tubes. It is estimated that if manufacturer's guidelines are followed for the installation of tubes and operation of equipment, an accuracy of 95% or greater can be achieved. However, even if strict installation guidelines are followed and favourable locations are chosen (e.g. away from junctions, under 'free flow' conditions etc) problems can still occur. For instance, when two vehicles pass over the tubes simultaneously, either travelling in opposite directions or by overtaking, the counter has difficulties in distinguishing between the two vehicles. This can result in under or over estimating vehicle flow, an unusually low/high speed reading and difficulties in classifying the vehicles correctly. Tubes also have trouble classifying vehicles that are similar in size as the same chassis can be used for more than one vehicle type. Buses can sometimes be classified as HGV's and vice versa whilst large vans are often recorded as HGV's instead of LGV's. It is widely regarded that although better than nothing, automatic counts are less reliable than manual counts when classifying vehicles. Other problems with tube counters include difficulty recording vehicles that straddle the tubes (e.g. whilst queuing), accuracy degrading with tube wear and the equipment being subject to vandalism.

Analysis:

It is standard practise, when analysing speed data, to determine an appropriate course of action using the 85th percentile speed. This is the speed below which 85% of traffic is travelling. This avoids the problem of a small number of bad data (or bad drivers) biasing the results and giving an unrepresentative picture. We also exclude all speed readings of 0mph because this is the 'error' default speed allocated to vehicles whose actual speed could not be determined by the equipment. This is why total speeds recorded will almost always be lower than the total volume of traffic. It is more difficult to exclude vehicles recorded travelling at excessively high speeds. For example, if a vehicle is recorded travelling at 80-100mph within a 30mph speed limit, it will almost certainly be as a result of the problems described above. However, without observing on site or using a speed gun it is impossible to say for certain whether the vehicle was not travelling at 80mph. As these events are so rare the impact on the average speeds and 85th percentile will be negligible.