Measuring "presence"

Tim Pharoah, 2010

Introduction

Conventionally, pedestrian activity is measures in terms of flow. The method used for counting vehicles is just transferred to counting pedestrians instead. Pedestrians do not, however, behave in the same way as vehicles (drivers) and will often be walking not just as a means of travel, but for other purposes such as window shopping, meeting, talking, and waiting. This note describes a method for capturing this other activity.

It is important to note that when "presence" of pedestrians in the street is measured rather than flow, the amount of pedestrian activity relative to vehicle activity will often be the reverse of the results arising from measurement of flow alone.

Method

What is being measured must be clearly defined. Different conditions apply in streets and spaces:

"Travel pedestrians"

- Pedestrians walking along the street
- Pedestrians crossing the street

"Sojourn/purpose pedestrians"

- People moving along the street but stopping or pausing for purpose (e.g. window shopping, meeting others)
- People staying in the street for purpose (including sitting)

Presence can be measured in the following way

1. A "frame" must be defined within which the people will be counted. It will normally be necessary to identify foreground and background cut-off points, and these can be defined on a still picture of the view and/or drawn on a plan.

2. Snapshot - single view in which the number of people visible within the frame are counted, regardless of the above categories.
   Due to variations from minute to minute, single snapshots should not be used to represent an average or typical position.

3. **Sequence** - regular interval snapshots, with totals averaged for a per hour figure. For example, every 2 minutes for 60 minutes. The average will be the total counted divided by the number of "snapshot" counts. Note that to achieve a representative number, the length of the sequence and number of snapshots must be chosen carefully. If the period of the sequence is too short, the numbers may not be close to the average. If the sequence period is too long, then behavioural

variations will be ironed out. For example a period from 8am to 2pm that extended across school journeys, shopping journeys and lunchtime journeys would not reveal interesting variations arising from those different purposes. The ideal is to have an extended survey period, but to analyse the data by different periods within that.

The sequence method is sufficient to be able to compare presence of people with presence of vehicles.

4. **Continuous** - people are “followed” and the amount of time spent within the frame is measured.

   This method is useful for quantifying “sojourn”, or comparing “sojourn” between different streets or spaces.

   This is much more time consuming since each individual must me “followed” in turn to arrive at the total minutes spent. However, because the measuring is done over a period rather than a moment in time, it will be more representative than a single snapshot. A six minute period will often be sufficient when the data are being collected for comparison purposes. Adding a zero to the result provides an hourly equivalent. For example, if trying to establish variation in “presence” at several locations along a street, a six minute video is taken at each of the locations to be studied (in practice a maximum of four or 5 different locations with a 6 minute video at each one can be achieved within at hour). However, it is important for the period not to straddle a time-critical event, such as a school closing, or film ending at a cinema.

5. **The continuous** method can be used to monitor and compare activity in different parts of a street or space. This can be achieved by diving the “frame” into sub-frames, with activity in each sub-frame monitored separately (for example the sunny and shady parts of the street).

Uses of presence monitoring

1. As an adjunct to pedestrian flow information
2. To monitor/compare levels of vitality, natural surveillance, etc
3. To provide supporting data in promoting investment for walking. When used in conjunction with vehicle flow and presence, presence data can help to identify appropriate vehicle and pedestrian priorities.

Note on method
Retrospective measurement can be undertaken using pre-existing video. However, cameras will need to have been set to include pedestrian areas in the field of view, which often is sadly not the case with traffic monitoring cameras.