Impact Speed (kmh)

Probability (Pedestrian)

SERIOUS INJURY

DEATH

Mackie Research
Crashes:
- Fatal & Serious
- Speed Related
- DSi
ROAD/INTERSECTION TYPE
CRASH MOVEMENT
VEHICLE TYPE
DSi
Roads → Links → Segments
‘Halo’ Effect

Rural: 500m

Urban: 250m
SS = (SR * 0.4) + (DSi * 0.4) + (FS * 0.2)

Where:
SS = Segment Score
SR = Count of speed related crashes
DSi = Sum of weighted crash DSi equivalents
FS = Count of fatal and serious crashes
Requirements

- Approx. 600 sites
- At least 300m long
- Not too curved
- At least 25% of crashes are speed related
- Less than 75% of crashes occurred at an intersection
At least 600 sites?

Assess against additional criteria

Select segments above value

Merge contiguous segments into sites

Threshold Value
Social Cost
CAMERA SITES
Speed Camera Site Selection

Segment Scores

Each link was then further broken down into segments approximately 100m long. All the crashes that were within the halo distance* of an segment and in the same corridor were assigned to the segment.

Speed cameras need to be placed in sites that have a high risk of injury and a high number of speed-related crashes. All other things being equal, they should be placed at sites with a historically high number of fatal and serious crashes.

To combine these characteristics, each segment calculated a segment score using all the crashes that were assigned to it, as follows:

\[ SS = \text{SR} \times 0.4 + \text{DSI} \times 0.4 + \text{FS} \times 0.2 \]

Where:
- \( SS \) = Segment Score
- \( \text{SR} \) = Count of speed related crashes
- \( \text{DSI} \) = Sum of weighted crash DSI equivalents
- \( \text{FS} \) = Count of fatal and serious crashes

This results in a single value that can be used to compare segments. Click on a segment to view its crash data and segment score.

*Halo distance is the distance a hypothetical speed camera would influence. This is 250m in urban speed environments (\( < 70 \text{km/h} \)) and 500m in rural speed environments (\( > 70 \text{km/h} \)).
Speed Camera Site Selection

Social Cost

To work out the optimal location for a speed camera, a ‘virtual camera’ was placed every 100m along each site. These cameras were assigned all the crashes that occurred within the halo distance of the camera.

Crashes that occurred within the last 5 years have a social cost calculated, based on movement type and crash environment. Older crashes were not included in the social cost calculations.

The total social cost is the sum of these values. This total social cost was annualised by dividing it by 5. This represents the total annual social cost of crashes within the halo of the virtual camera.

Click on a red virtual camera to see the annualised social cost.

The camera with the green halo is the best-performing camera in the site. Sometimes multiple cameras perform equally well, so there may be multiple sites with green halos.

Note that speed cameras do not stop all crashes within their halos. Typically cameras will stop between 20% and 42% of injury crashes from occurring.

The social costs described here are in no way related to the fines incurred by speeding drivers once cameras are installed.

What now?
Questions?

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References
