

How Smart Towns Wi-Fi Footfall Data Collection Works

Mobile phones and devices regularly send out signals when searching for Wi-Fi.

The Smart Towns Wi-Fi system picks up these signals—even if the person doesn't connect to the Wi-Fi network.

Each detection is recorded as a "ping" and is logged on the spreadsheet left hand side column.

Each time a device is detected, it is logged (monthly) in the left-hand column of the spreadsheet. This does not mean the person connected to the Wi-Fi—just that their device was nearby and broadcasted a signal.

The column on the left-hand side shows the footfall figures, however due to the limitations in the capacity of the system whilst it 'sees' all the devices it cannot register all of the devices in the area. The columns on the left are the devices it has registered; however the system calculates how many devices it has seen and calculates the daily average capture rate. This capture rate represents the % of devices registered out of the total number of devices 'seen' in the area. For example, in Kinmel Bay in January for the month you'll see the daily capture rate is 24.9%, meaning that the 31275 passersby were 24.9% of the total in the area. We have applied a weighting formula to estimate a more accurate footfall figure, this is represented in cells H2 – H6.

To improve accuracy, the system doesn't rely solely on pings. Instead, it calculates a daily average rate percentage based on how many devices connected to the Wi-Fi out of all devices detected. (Connected Column on the left)

This percentage is then applied to the total number of detected pings using a weighting formula. The result is a more accurate estimate of real-world footfall, adjusting for factors like duplicate detections and people who didn't connect.

Limitations

- Not all devices are detected: If someone has Wi-Fi turned off, their presence won't be logged.
Devices where the wi-fi is off are still detected, according to [Location Analytics - Cisco Meraki Documentation](#)
Conwy's understanding is that the part of the phone which finds and connects to wi-fi (the antenna) is always on. Should you switch off the wi-fi on your phone this stops the phone connecting to anything but essentially your device is still sending a signal which the AP detects.
- Multiple detections: a person may have multiple devices on their person. A person standing still or walking slowly will only be counted once as the AP is sophisticated enough to differentiate between counted and not counted. The

AP also keep a record of how long a device remains in an area that's how it classifies whether a person is visitor or passerby.

- The weighted formula improves accuracy, but the data still represents trends (estimation) rather than exact numbers.