

Monitoring Path Use

Why count people using a path? Finding out how well a path is used and when people use it can help to justify the path network and make the case for funds for further path development. Count data can also help to plan path maintenance.

This factsheet describes the uses of count data and methods of collecting it. It also describes some of the automatic counters available.

Uses of Count Data

It is important to decide how the information gathered will be used. This will indicate the type of equipment you will need and how it can be used.

Evaluating path network development

Evaluating the use and benefits of a path network will strengthen the case for more path development and make more funding available. It will also help to make the case for resources to carry out path maintenance.

Comparing 'before' and 'after' path usage is a simple, but effective way of achieving this. Install a counter a year before development takes place to get a full picture of existing path use. If accurate data is obtained it should be possible to do a cost benefit analysis on your path project – effectively determining the cost of the project for each new user.

Accurate count data which distinguishes user types will demonstrate that access by a wider range of people has been encouraged.

A path management tool

Knowing how many people are using a path and when peak use occurs can aid path management.

- Monitoring total use of a path will enable data to be collected on how long a path will last before re-surfacing becomes necessary. If a path needs to be closed for upgrading or repair works, knowing when the quiet periods occur will

minimise disruption to path users. If a path suffers from damage from a washout or a landslip, the effect on use can be recorded and used as a justification for funding repairs.

- Counters can be used to detect vehicular usage, whether legitimate or otherwise. This could aid choice of specification for new works and the necessity and effectiveness of vehicle barriers and access controls.
- It is often possible to determine why people use a path. If high use occurs during early morning and evening during the week, then it is likely that the path is being used by people travelling to work or school. This may influence decisions to upgrade a path. Similarly, if peak use occurs at weekends, then the path may be more important for recreation. Knowing who is using a path network can help to identify target audiences for promotional campaigns.

Manual Counts

Before considering automatic counters, it's important to remember that path use can be counted manually. Simply have someone sit by the path and make a note of who passes and when. Using a 'clicker' counter (a device which counts the number of times a button is pressed) will enable basic use data to be collected. To obtain more comprehensive data it is good practice to use prepared forms with tick boxes for the various different users. It is possible to record all user types, including age and gender, the time when they passed and even where they were going. It is helpful to do a count for a single day period. Ideally counts should be carried out on the same day for two or three weeks for a more accurate picture of use. Also, try to do counts at weekends and weekdays to gain an indication of what the path is used for.

Automatic People Counters

A typical automatic counter consists of two parts - a *recognition* device which **detects** users and a *recording* device which **counts** and stores data.

Recognition devices

There are a variety of devices which register when someone has passed. The main ones are:

Pressure pads – A pad or mat buried under the path surface which registers a count when trodden on.

Beam counters – An infra red or radio beam is set up across the path with a sender and receiver unit. When someone passes, the beam is broken momentarily and a count is recorded.

Induction loop counters – These detect metal objects. The passage of a bicycle or wheelchair induces a brief current in the loop which is recorded as a count.

Gate / Stile switches – A simple switch is placed on a gate catch or rocking stile plank. When the gate is opened and closed or the stile trod on, the switch is pressed and a count is recorded.

Recording devices

There are two main types of recording devices:

Dial Counters – A dial counter simply records counts on a numerical display (like an electricity meter). These are useful for recording total usage of a path or network. The frequency with which you take a reading (daily, weekly, monthly, annually) determines the detail you will get about usage.

Data Loggers – These record count information hourly and can store the data for up to a year. The information is downloaded onto a computer. Comprehensive path use analysis is possible, such as daily, weekly and seasonal patterns of use.

Managing Automatic People Counters

Where to Place Your Counter

Choose the location of any counter carefully to maximise the accuracy of the data. If possible, place counters at 'pinch points', i.e. narrow sections of path, such as path entrances, where most users will be in single file. This prevents groups of people moving together being miscounted.

To reduce vandalism, position and conceal counters in woodland or shrubbery. This is particularly important if parts have to be buried. Grassy areas show up disturbance more easily and may attract vandals. It is a good idea to go back and check on the site a few days after installation of pressure pad counters, as it is possible that as the disturbed surface settles fully, the pad becomes visible as a depression in the ground.

Beam counters can be installed into posts set at either side of the path. Incorporating the posts into a fence or gate will make them less obvious. Radio beam counters can also be concealed behind plastic or wooden sign boards.

It is surprisingly easy to lose a counter! This is a particular problem for pressure pad / data logger counters which are buried and left for long periods between readings. The landscape can change dramatically in a year, and the landmark you have used to locate the counter may have disappeared. Avoid having to dig holes over the whole area where your counter is lost by:

- Noting down accurate location details including sketches and measurement from fixed objects
- Taking location photos, particularly with a digital camera.
- Using a global positioning system (GPS) locator, to get a very accurate grid reference.

Calibration of Counters

The accuracy of your count data can be influenced by many factors. Groups of people may be miscounted, frozen ground may reduce sensitivity of pressure pads and leaf fall or wildlife may cause beam counters to over count. You can improve the accuracy of count data by carrying out a *calibration survey*. This is essentially a *manual count* of people using the path (see section below). The result from the manual count is compared with the data received from the counter. If you divide the total number of counts from the manual count by the total number of counts recorded by the counter, you get a calibration factor. This factor is then multiplied by all subsequent counts to get the true count figure. Calibration surveys should be done when the counter is first installed and then once a year subsequently. Be aware that carrying out sufficient manual counts to give an accurate calibration figure can be very time-consuming.

$$\text{Counter calibration factor} = \frac{\text{Number recorded on counter}}{\text{Number recorded on manual count}}$$

$$\text{Adjusted count figure} = \text{Calibration factor} \times \text{Recorded count figure}$$

For detailed information on calibrating counters, see the SNH publication 'Visitor Monitoring Training Manual'.

Counter Maintenance

People counters all need maintenance. At the very least, batteries will need to be changed. In most cases this is done when readings are taken. Take time to check that the counter is still operating. This is particularly important for counters with data loggers which can be left for long periods of time between readings. Beam counters generally need more maintenance than pressure pads. Also, ensure senders and receivers are aligned, equipment boxes are dry and water tight and posts (if used) are secure. Buried pressure pads should also be dug up periodically to check for punctures. You may also have to prevent material over the pads from getting too compacted, reducing counter sensitivity.

Commonly used People Counters

This gives a brief description of the common types of counter in use today. The particular benefits of each counter and points to watch when using them are also noted:

Schmidt pressure pad

This uses a rubber mat pressure pad that is buried up to 80mm below the path surface. Different versions can either record all users or distinguish between walkers and cyclists. The recording devices are usually data logger pods which are read onto a laptop on site or else swapped over and read on an office based computer. A simple dial counter recorder is also available.

Benefits:

- Easy to install
- Easy to hide (everything is buried) and therefore more vandal-proof
- Long life batteries and high data capacity mean pods can be left for up to 1 year in some circumstances.

Points to watch:

- Rubber mats are susceptible to damage from sharp stones
- They need a layer of sand or dust and a geotextile to protect them
- The path surface can become spongy over the mat, if it is not buried deep enough
- They will not work on sealed surfaces, or if the ground is frozen or covered with snow

Line top infra red beam counter

This is a compact unit using a separate transmitter and receiver placed on either side of a path. Various options are available from simple dial counters recording total numbers, to more detailed information downloadable onto a computer.

Benefits:

- Does not require the surface to be dug up
- Can be used on sealed surfaces
- Easily movable to compare use on different paths.

Points to watch:

- Infra red beams are susceptible to miscounts from leaf fall, snow, heavy rain, insects and birds
- Set up requires care to ensure beam is detected by sensor
- They are very susceptible to vandalism due to difficulties concealing the equipment
- Data logger models require a computer/laptop on site to take readings
- They do not distinguish between user types
- Batteries must be recharged regularly (every month or two) and a spare set of batteries are needed for while one set are charging.

Chambers radio beam counter

This counter uses a radio beam which is generated and detected by two units placed at either side of the path. The radio beam needs something solid ie. a person) to break it, so they are less susceptible than infra red beam counters to false counts from leaves and snow. They record data on logger units. These must be attached to a computer for reading. They can be set to count any two out of the three users: pedestrians, bicycles and horses, by measuring the time the beam is broken. The units are compact and use little battery power.

Benefits:

- Does not require surface to be dug up so can be used on sealed surfaces
- Can distinguish horses and bicycles from pedestrians
- Can be hidden behind wooden or plastic signs

Points to watch:

- Exposed components are susceptible to vandalism
- A laptop is required to read loggers, or else you need a spare set of loggers to take back to the office
- Large groups of people or slow walkers can be miscounted

Chambers induction loop counters

One version has sensors set above ground beside the path. This detects bicycles only but a pressure pad can be incorporated to record pedestrian use. Another version detects cars only. Recorders are dial counters or data loggers.

Benefits:

- Can be used on all surfaces
- Can distinguish pedestrians from cyclists

Points to watch:

- Exposed detectors susceptible to vandalism

Duddon Electronics Vehicle Logger (DEVL)

This is an induction loop counter which is positioned beside a track or road. It can distinguish between bicycles, cars and motorcycles. It records information onto a data logger which is read by connecting a laptop computer to the unit.

Benefits:

- Very compact, easy to hide, and completely concealed once installed
- Low power consumption so long battery life

Points to watch:

- A computer is needed to read data
- Will not detect pedestrians or horses, although this may be a benefit if you only wish to monitor vehicle use

General Conclusion

No one counter will detect and distinguish all different users. While it is possible to combine counters, such set ups are difficult to manage. Manual counts are the easiest way of counting all user types. Automatic counters are useful for obtaining overall path usage patterns over prolonged periods of time. Choose a counter based on the type of path, target users to count, staff and management resources for reading data and how the information gathered will be used.

Counter manufacturer/supplier details

Schmidt Electronics – Inverness

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Chambers Electronics – Inverness

Tel: 01463 790400, email: ac@chambers-electronics.com , website: www.chambers-electronics.com

Duddon Electronics Ltd. – Cumbria

Tel: 01539 441437, email: enquiries@duddon-electronics.co.uk , website: www.duddon-electronics.co.uk

Linetop Ltd. – Gwent

Tel: 08700 115772, email: info@linetop.com , website: <http://www.linetop.co.uk/> .

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Important note

This factsheet has been compiled using the best information available to Paths for All at the time of publication. It is intended as a general guide to the topic and should not be viewed as a substitute for expert advice and professional guidance.

Other publications

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