

# Developing an Approach to Monitoring the Health and Well-Being Benefits of Visits to Scotland's Forests

Vadim Saraev, Liz O'Brien, Gregory Valatin, Jack Forster, Matthew Bursnell and Mandy Cook

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## Extended Summary

This project reviewed evidence on the health and well-being benefits, and social and cultural benefits, of visits to forests, as well as the methods to measure and monitor them. It also provides recommendations for monitoring these benefits to support the implementation of Scotland's Forestry Strategy 2019-2029.

### **Evidence on Health, Well-being, Social and Cultural Benefits**

There is strong evidence that visits to forests deliver a wide range of health and well-being benefits, as well as social and cultural benefits. The benefits include:

- Supporting physical health, including by providing an attractive space facilitating people to be more physically active
- Alleviating stress and symptoms of depression and anxiety
- Supporting general well-being and happiness
- Facilitating social contacts and improving connection to nature

The extent to which visits to forests deliver these benefits is influenced by a range of mediating factors:

- Dose and Exposure – A higher dose of nature, in the form of more frequent or longer visits, typically delivers greater benefits. More

vigorous activities, such as brisk walking, cycling or jogging, deliver greater physical health benefits.

- Forest Characteristics - More biodiverse locations can provide greater well-being and immune response benefits.
- Individual circumstances and characteristics – societal, socioeconomic, cultural and environmental conditions can affect factors such as health status and income. These in turn can affect how strongly an individual responds to nature and the mental health and well-being benefits obtained.

### **Measuring Health, Well-being, Social and Cultural Benefits**

There is significant overlap between the domains of health. Mental health is important for supporting physical health and vice versa. However, single indicators to measure overall health are often focused towards physical health and can fail to capture fully the importance of mental health and well-being. The use of multiple indicators covering different health domains is best in quantifying the diverse health benefits and to provide a more comprehensive understanding.

There is no consensus on what constitutes 'gold-standard' indicators to use for different benefits and contexts. However, cost-effectiveness, specific policy needs, and the extent to which an indicator captures a broad conceptualisation of its health domain make certain health metrics more suitable than others. Recommended indicators for monitoring the implementation of Scotland's Forestry Strategy include:

- Physical Activity (PA) Levels – these are closely aligned to physical health, are comparable across activities and feature prominently in this field. There is also emerging research on monetising physical health benefits based on PA levels.
- Life Satisfaction – this is widely used and is a key component of the Office for National Statistics' recommended well-being measures. It

has been used often for monitoring mental health in the environment and is an effective measure of population-level subjective well-being.

Social and Cultural Mixed-Methods – A mix of indicators can be used including the Nature Connection Index (NCI) which is used to assess the relative importance of nature to people and was used in the Monitoring Engagement with the Natural Environment Survey in England. The Pro-Nature Conservation Behaviour Scale can be coupled with the NCI as there is evidence of a positive association between nature connection, pro-environmental behaviours and wellbeing. Qualitative methods such as semi-structured interviews/focus groups can be combined with all of the above approaches to gain in-depth insights into motivations, benefits and experiences of forest visits.

### **Recommendations on Monitoring Approaches**

To monitor these benefits from visits to Scotland's forests effectively, we recommend a best-practice 'in-depth' approach. A less costly 'intermediate' approach is also noted, which may prove more feasible depending upon the level of resources available. Both approaches involve surveys. We highlight key questions for inclusion and provide rough indicative estimates based upon a cost of £600 for a single pre-coded question and £890 for an open-ended question.

- **In-depth Approach** – We recommend a bespoke longitudinal survey with a large, representative sample of participants. A sample size of 5,000 respondents would deliver a demographically representative Scottish sample covering all protected equality characteristics.

Questions should cover **duration of visits** and **frequency of visits** over a given time period to understand the effects of exposure and to scale up benefits.

Questions on types of **activities conducted** and **activity duration** provide the foundation for estimating physical health benefits. This data can also be readily used to quantify impacts in terms of Quality-Adjusted Life Years (QALYs), a standardised health measurement that can be readily monetised.

A question on **Life satisfaction** should be included for a broad understanding of well-being benefits. In addition, including questions to measure mental health and well-being on the **Short Warwick-Edinburgh Mental Wellbeing Scale** would provide additional insight for understanding benefits associated with improvements in psychological functioning.

Social and cultural benefits could be addressed through similar questions included in **Public Opinion of Forestry (POF) England** that address social and cultural benefits, alongside the inclusion of **open-ended questions** for qualitative feedback. A quantitative metric, the **Nature Connection Index** could be used. Inclusion of an opt-in question to take part in **focus groups** or **interviews** would offer an opportunity to collect further qualitative data and gain in-depth insights into social and cultural benefits.

For comparison of benefits between visits to different sites, questions could be included to ask participants **what type of woodland** they last visited, as well as a list of **what facilities were present** on the site that they visited.

Socioeconomic questions should be included to cover areas including **income** and **health status** as well as **sex, age, relationship status** and **education level**. Controlling for these factors is important for understanding causality when using health

indicators, especially for mental health and well-being benefits. Questions on ethnicity, religion and number of children in households are less important for understanding health and wellbeing causality but may be important inclusions for improving understanding about access to forests and the distribution of benefits.

The above could potentially be complemented by monitoring of biomarkers, e.g. cortisol, before and after a visit.

A minimum cost would be £11,380 from questions alone, although likely significant other costs would be associated with overall survey development, reaching respondents and interviews. Total costs for this approach may be comparable to Scotland's People and Nature Survey (SPANS) (~£100k), or the All Forest Survey 2012 (~£250k), if qualitative data collection is prominent. An online panel, rather than using telephone or household data gathering may be more cost-effective.

- **Intermediate Approach** – A less costly approach (if resources do allow the in-depth approach we recommend to be adopted) would be to add additional questions to an existing survey to improve monitoring. If this approach were adopted, we would recommend adding questions to POF Scotland, due to its inherent focus on forestry, and that the following modifications are made:

The insertion of an additional question to capture ***duration of visits***, alongside the existing question on frequency, allowing total time spent on forest visits to be estimated.

Questions included on ***activities conducted*** and ***activity duration*** would allow physical activity levels to be understood in more depth than currently available. This data could also be used to provide QALYs and associated economic values.

The inclusion of a question on **life satisfaction** would capture mental health and wellbeing benefits. Social and cultural benefits could be addressed through including the same or similar questions as **POF England** on social and cultural aspects, with the additional inclusion of at least one **open-ended question** to collect qualitative feedback.

Existing questions already collect data on health status and employment, two highly influential socioeconomic factors. The survey could be improved by including a question on **income**, rather than just employment, although questions on income are often left unanswered by survey respondents.

A limitation of POF Scotland is the survey's relatively small sample size of just over 1,000 (in 2017), limiting its potential to separate out results for different equality groups.

An estimate for costs from question additions would be £5,690.

The SPANS and POF Scotland are the national datasets that gather the most relevant data in relation to forest visits. However, both have several notable limitations in their current forms that hinder effectively monitoring health, wellbeing, social and cultural benefits. Using datasets from these surveys without adding additional questions (a 'minimum' approach to monitoring) is considered insufficient to provide robust basis monitoring of health, well-being, social and cultural benefits of visits to Scotland's forests.

Our overall recommendation would be the adoption of the In-Depth approach. If resources do not allow for this, the Intermediate approach would be an alternative, offering less precision in certain areas. A key improvement for the Intermediate approach, if there is budget availability, would be increasing the sample size.

A graphical summary of our research on evidence and potential monitoring approaches is presented in the following diagram below (Figure 1).

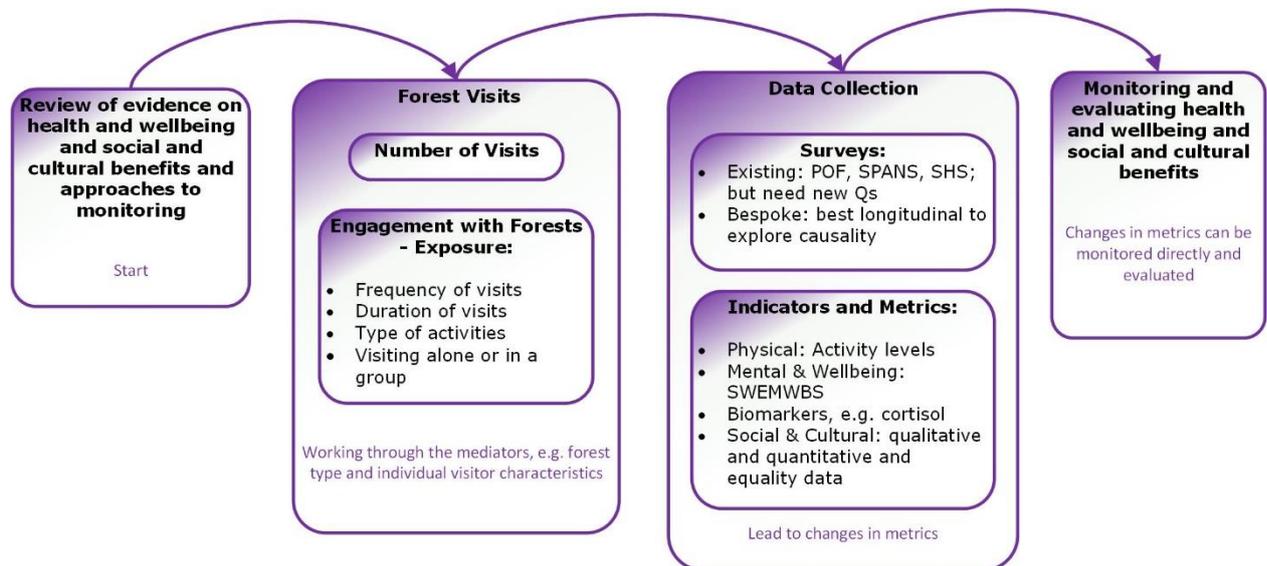


Figure 1 Monitoring benefits of visits to Scottish forests.

The diagram starts with the need to monitor and value the benefits of forests visits; proceeds to the second box on what data are needed drawing upon existing research indicating forest site, visit and individual visitor characteristics and physical mediators that can impact on the magnitude of benefits; the third box covers data collection, highlighting some notable indicators and metrics to underpin monitoring physical and mental health and well-being benefits of forest visits and social and cultural benefits. The fourth box highlights that changes in the indicators and metrics yield monitoring outcomes and provide an opportunity to evaluate change.