Active Travel Toolbox

The Recreational Expenditure Model

Guidance notes

Delivered by Sustrans in partnership with:

The Recreational Expenditure Model - Guidance notes
Making the Economic Case for Active Travel Toolkit
Active Travel Toolbox

Written by Sustrans with support from Dr Adrian Davis, The TAS Partnership Limited and Living Streets.

About Sustrans

Sustrans is the charity making it easier for people to walk and cycle.

We are engineers and educators, experts and advocates. We connect people and places, create liveable neighbourhoods, transform the school run and a deliver a happier, healthier commute.

Sustrans works in partnership, bringing people together to find the right solutions. We make the case for walking and cycling by using robust evidence and showing what can be done.

We are grounded in communities and believe that grassroots support combined with political leadership drives real change, fast.

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1. Introduction

This document provides guidance on how to use Sustrans' Recreational Expenditure Model (REM). The REM is a tool for estimating the economic benefit of recreational cycling in terms of the expenditure it contributes to the local economy, something that is often excluded from appraisals of investments in cycling.

The REM is typically used in areas with high levels of recreational or tourist cycling and produces highest quality results when used to monitor an identifiable 'route' (such as a riverside path) rather than part of an urban network. As such, it is not appropriate to use the REM in the appraisal of all cycling investments[1].

The model estimates the total annual spend and a 'spend per head' for all home-based recreational cyclists and all cycle tourists. It also calculates the number of full time equivalent (FTE) roles this spend would support.

This document details the inputs required by the tool, and explains the resulting outputs. In Annex A there are details of how the model was developed.

Where appropriate optimism bias has been accounted for by using conservative assumptions. It is important to note that the model has been developed for cycling only and should not be used to estimate the economic impact of leisure and tourist walking.

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1. It is not possible to specify precisely the scenarios in which the REM should be used. Its primary function is to understand some of the economic benefits of leisure and tourist cycling. It is unlikely to be appropriate to use the REM in appraisals of small investments in cycling infrastructure unless they are likely to have a substantial impact on leisure and tourist cycling. The REM may be more suited to appraising investments where leisure routes are being created or comprehensively improved.

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2. Inputs

The model has been developed to use survey data collected from cyclists using the route in question. We recommend that this should continue to be the main source of input data, although suitable proxy data may be used in appropriate circumstances.

2.1 Route details

The first half of the inputs relate to wider information about the route and the desired outputs (Figure 2-1).

Route details	
Route name	Example route name
Survey year	2015
Region	10 Scotland

Figure 2-1 Route details inputs

The 'Route name' is the name that you want to appear in the outputs tab and is primarily there for reference purposes.

The 'Survey year' input is used to adjust the values in the model in line with inflation. If the data are not taken from a specific survey or surveys, then the year in which the input data is taken from should be used.

The 'Region' input is used to estimate the typical income of cyclists on the route, which is one of the variables used in the model[2].

2.2 Route usage

The second half of the inputs tab relates to the data that would typically be drawn from surveys of route users (Figure 2-2 and Table 2-1).

Route usage	
Number of cycle trips per year[1]	
Percentage of cycle trips that are recreational and touring	
Of which originate from...	
Home	
Holiday accommodation (tourists)	

Home-based		Tourists	
% of all home-based trips that are short 'round' trips[2]		% of all tourist trips that are short 'round' trips[2]	
% of all home-based trips that are short 'out and back' trips[2]		% of all tourist trips that are short 'out and back' trips[2]	
Average trip length (km)		Average trip length (km)	
Average group size (including children)		Average group size (including children)	

Figure 2-2 Route usage inputs

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2. Income can vary quite widely across a region. This level of granularity is used in the tool in recognition of the likelihood that recreational and tourist cyclists will be drawn from a wider geography than that for other trip purposes.

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Table 2-1 Route usage inputs

Input	Details
Number of cycle trips per year	The total annual number of cycle trips on the route, regardless of trip purpose.
Percentage of cycle trips that are recreational and touring	The proportion of the total number of cycle trips on the route each year that are for recreational purposes.
Of which originate from…	This input identifies the proportion of recreational trips that originate from a person's home (making them 'home-based') or from holiday accommodation (making them a 'tourist').
% short round trips	Identifies the proportion of all home-based and tourist trips that are short (under 3 hours) round trips – that don't return on the same route.
% short 'out and back' trips	Identifies the proportion of all home-based and tourist trips that are short (under 3 hours) 'out and back' trips – that do return on the same route.
Average trip length (km)	The average trip length of all recreational trips made by home-based or tourist cyclists.
Average group size	The average group size of cyclists making recreational trips, including children.

There are notes included at the bottom of this tab which clarify how the data should be entered. The differentiation between 'round' trips and 'out and back' trips is to avoid double counting those trips that would pass the survey point twice on both the outward and inward bound legs of the trip. If this level of detail is not available, the proportion of short trips should be split between 'round' and 'there and back' trips equally. For instance, if 80% of trips are short trips, the value used for both 'round' and 'there and back' trips would be 40%.

We would recommend that 'short' trips are classified as those lasting no more than 3 hours. The research that lies behind the REM indicates that 'short' trips do not typically result in any expenditure.

The purpose of these inputs is to identify the variables that will be included in the expenditure model:

- Number of applicable trips
- Trip duration
- Group size

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3. Outputs

The 'Outputs' tab of the REM is presented as a printable document, but the results can also be copied and pasted as required.

The outputs consist of the following values split according to whether the trip started from home or whether it was made by a tourist group.

- • Current number of recreational trips per year
- • Annual recreational spend
- • Recreational spend per head per trip
- • Annual recreational spend by sector
- • Direct and indirect employment supported by recreational spend (FTEs)
- • The annual 'social value' of the recreational trips. This is a measure of the value placed upon the route – the 'public good' – by the users, which is not otherwise reflected in their expenditure.

4. Conclusion

The Recreational Expenditure Model helps to identify the economic impact of recreational cycling, a benefit which is often excluded from appraisals of investments in cycling.

Used correctly, although the outputs should be seen as indicative rather than precise estimates, the tool will help to improve the appraisal of cycling interventions which in turn will help with the development of a successful strategy for investing in, and increasing, levels of cycling.

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5. Annex A – Development of the model

The primary research behind the Tourism and Recreation Model is outlined in 'The Economic Impact of Cycle Tourism in North East England' (ITT 2007). This report was based on data collected by Sustrans on the National Cycle Network across four routes between 2001and 2006. The routes used in the paper were as follows:

- C2C (Sea to Sea) Cycle Route
- Coast and Castles Cycle Route
- Hadrian's Cycleway
- Pennine Cycleway (northern section)

These were chosen as the main tourist routes in the North East of England, although the routes also continue into the North West, Scotland and Yorkshire and the Humber.

Automatic cycle counters and manual counts were used to determine the level of usage while Route User Intercept Surveys (RUIS) were used to collect data on the user profiles. A travel diary was used to collect data on user expenditure.

Survey locations were chosen according to the concept of 'gravity' modelling, when trip generation reflects the density of populations at the source(s) and destination(s) of a route. To collect a representative sample of route users, survey locations were chosen at access points to populations along the routes.

A total of 1,736 travel diaries were issued concurrently with RUIS. Although the vast majority of diaries recorded no expenditure, 401 (23.1% of the total) did record some expenditure. A number of these omitted data on income or other key variables leaving 182 usable diaries for analysis.

During 2010 the model was revisited, reviewing the process and adapting the model for more general use. The model has continued to be updated iteratively within Sustrans. In general these have focussed on improving the usability of the model.

The model is based on a linear regression analysis which seeks to estimate the expenditure of a group of cyclists, using the size of the group, the group income and the trip duration as explanatory variables, with an additional constant if there is an overnight stay involved.

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