

# Orkney Travel Matters 2023

## Data sources and methodologies

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# Data sources overview

## Where does the data in the 2023 Orkney Travel Matters report come from?

The Orkney Travel Matters report for 2023 was produced by Sustrans with the assistance and support from the Orkney Islands Council.

Data was collated in, and in most cases applies to, 2023. However, in a minority of cases some data is drawn from previous years where 2023 figures were not available. The final report was published in June 2024.

The data contained in the reports are drawn from a set of common data outputs reviewed and agreed within Sustrans. There are four categories of data:

### Attitude and perception data

General attitudes and perceptions of the public towards walking, wheeling, cycling and transport. This includes:

- types of interventions/ facilities/ equipment that would encourage respondents to walk, wheel and cycle more;
- perceptions of existing infrastructure;
- views on walking, wheeling and cycling safety and cycling barriers;
- views on public investment in specific interventions to support walking, wheeling or cycling, and
- views on levels of government spending on different transport modes.

This data was collected in an independent representative survey in Orkney. Perception data were collected for all survey participants, not just for those who walk, wheel and cycle.

## **Behaviour data**

Demand-side measures of residents' travel behaviours, the types of people who are walking, wheeling and cycling, how often, how far, and to which types of destination.

This data was collected in an independent representative survey in Orkney. Behaviour data were collected for all survey participants, not just for those who walk, wheel and cycle.

## **Impact data**

Health, economic, and environmental benefits from walking, wheeling<sup>1</sup> and cycling. This includes modelled economic benefits, premature deaths prevented, impacts for the NHS and reductions in pollutants where people walk, wheel, or cycle instead of using cars.

This data is calculated by Sustrans' Research and Monitoring Unit from a combination of the behavioural data and the best available evidence. For more information see Appendix C.

## **Settings data**

These are objective measures of the current environment for walking, wheeling and cycling. They include:

- Percentage of streets covered by 20mph or 15 mph speed limits.
- Length of existing cycling infrastructure and percentage of households within 125m from them.

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<sup>1</sup> Survey participants were instructed to consider wheeling (the use of wheelchairs and mobility scooters) together with walking. However, all other source data used as model inputs relate only to walking. This is primarily due to the lack of available data on wheeling.

# Data sources and methodologies

The following sections outline the data sources and methodologies behind each data point in the report.

We recognise that some people who use wheeled mobility aids, for example a wheelchair or a mobility scooter, may not identify with the term walking and prefer to use the term wheeling. We use the terms walking and wheeling together to ensure we are as inclusive as possible. Therefore, all walking survey responses within the reports include responses from people who wheel.

## Interpretation of survey data

As a sample and not the entire population has been interviewed, results are subject to sampling tolerances, which mean that not all differences are statistically significant.

We can predict the variation between the sample results and the 'true' values (if everyone in the population had been interviewed) from the knowledge of the sample size on which the results are based, and the number of times answers are given. The confidence with this prediction is usually chosen to be 95%, in that the 'true' value will fall within a specified range 95 times out of 100. Table 1 outlines the predicted ranges for different sample sizes and the percentage results at the 95% confidence level.

For example, with a sample size of 600 interviews where 50% give a particular answer, we can still be 95% certain that the 'true' value will fall within the range of 46% and 54% (+/- 4.0% of the findings).

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**Table 1: Sampling Tolerances**

<b>Sample size</b>	<b>10% or 90% + / -</b>	<b>30% or 70% + / -</b>	<b>50% + / -</b>
100	5.9%	9.0%	9.8%
300 <sup>2</sup>	3.4%	5.2%	5.7%
500	2.6%	4.0%	4.4%
600	2.4%	3.7%	4.0%
700	2.1%	3.3%	3.6%
1,000	1.9%	2.9%	3.2%
1,100	1.8%	2.8%	3.0%

The full sample size in Orkney is 600 responses. The tolerances for smaller samples in the table above are relevant to subsets of the main sample.

See Appendix A and B for further information on the representative survey delivered in Orkney and the questionnaire used.

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<sup>2</sup> Approximate number of cyclists interviewed.

## Page 2 and 3: Forward

### Our vision for walking, wheeling and cycling in Orkney (page 2)

Data item	Sources and notes
Various data	Section written by Councillor Kristopher Leask.

### Orkney Travel Matters (page 3)

Data item	Sources and notes
Number of residents surveyed	Number of residents who completed the independent survey of residents conducted by consultant agency Eyland Skyn in Orkney.



## Page 4 and 5: Headlines

### Population (page 4)

Data item	Sources and notes
Population	This is the total population of Orkney (adults and children), based on the most recent available data for Orkney islands, using 2021 mid-year population estimates (National Records of Scotland).

### Walking, wheeling and cycling in Orkney (page 4)

Data item	Sources and notes
Percentage of residents who travel five days or more a week by (chart): <ul style="list-style-type: none"><li>walking or wheeling</li><li>driving</li><li>cycling</li><li>bus and dial-a-bus</li><li>internal ferry</li><li>internal air</li></ul>	The percentage of respondents answering '7 days a week' or '5-6 days a week' to Q9a, Q6a/b/f combined, Q17, Q6d, Q6g and Q6h in the independent survey of residents.  Driving includes travelling as driver and passenger in either a car, van, or motorcycle.
Percentage of residents who walk or wheel at least once a week	The percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q9a in the independent survey of residents.
Percentage of residents who cycle at least once a week	See explanations for <b>page 8</b> of the report for exact question.

## Walking, wheeling, and cycling participation is not equal (page 4)

Data item	Sources and notes
Proportion of residents who walk or wheel at least five days a week	See explanations for <b>page 6</b> of the report for exact question and other available demographics.
Proportion of residents who cycle at least once a week	See explanations for <b>page 8</b> of the report for exact question and other available demographics.

## Not all residents feel safe walking, wheeling and cycling in their local area (page 4)

Data item	Sources and notes
Proportion of residents who think walking or wheeling safety is good	See explanations for <b>page 7</b> of the report for exact question and other available demographics.
Proportion of residents who think cycling safety is good	See explanations for <b>page 9</b> of the report for exact question and other available demographics.
Proportion of residents who would find improving the behaviour of people driving cars useful to help them start cycling, or cycle more	The percentage of respondents answering 'very useful' or 'fairly useful' to Q34i in the independent survey of residents.

## Everyone benefits when more people walk, wheel and cycle (page 5)

Data item	Sources and notes
Number of serious long-term health conditions prevented annually	<p>Combined for walking and cycling.</p> <p>See explanations for <b>pages 11 and 13</b> of the report for walking and cycling conditions respectively.</p>
Economic benefit created for individuals and Orkney annually	<p>Combined for walking, wheeling and cycling.</p> <p>See explanations for <b>pages 10 and 12</b> of the report for the net annual economic benefit for individuals and society from all walking and wheeling trips and the net annual economic benefit for individuals and society from all cycling trips, respectively.</p>
Tonnes of greenhouse gas emissions saved annually	<p>Combined for walking, wheeling and cycling.</p> <p>See explanations for <b>pages 11 and 13</b> of the report for walking and wheeling and cycling savings, respectively.</p>

## Walking, wheeling and cycling help to tackle the climate emergency (page 5)

Data item	Sources and notes
Number of cars taken off the road daily	<p>Combined figure for walking, wheeling and cycling.</p> <p>Total return walking, wheeling and cycling trips made daily that could have been driven.</p>

Data item	Sources and notes
	<p>Walking, wheeling and cycling trips that could have been driven are trips to a destination (that is, non-leisure trips) by adults who have at least one car or van in their household (from Q5 of the independent survey of residents). To get daily trips, the total annual trips were divided by 365 and to get return trips, these were divided by 2.</p> <p>See explanations for <b>pages 10 and 12</b> of the report for the number of walking and wheeling trips in Orkney in the past year and the number of cycle trips in Orkney in the past year, respectively.</p>
<p>Number of car journeys up to three miles in length that are driven annually</p>	<p>The number of annual short car trips up to 3 miles in length is estimated from the responses to Q7 in the independent survey of residents and scaled up for adult population in Orkney (16+) of drivers (those answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q6a).</p>
<p>Tonnes of greenhouse gas emissions that could be saved annually if 80% of annual car journeys up to three miles in length were walked, wheeled or cycled</p>	<p>Total distance is calculated by multiplying 80% of annual car journeys up to 3 miles in length (see above) by an assumed average trip distance (midpoint of car journeys length from above) of 1.5 miles. Greenhouse gas emissions saved are calculated by multiplying this distance by the quantity of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emitted by an average car per distance unit, expressed as CO<sub>2</sub> equivalent (UK government <a href="#">greenhouse gas reporting conversion factors</a> (2022)).</p>

## Residents want more funding for walking, wheeling and cycling (page 5)

Data item	Sources and notes
<p>Percentage of residents who would like to see more government spending in their local area on:</p> <ul style="list-style-type: none"> <li>walking and wheeling</li> <li>on electric vehicle infrastructure</li> <li>cycling</li> <li>roads and driving</li> </ul>	<p>The percentage of respondents giving these answers to Q41a, Q41b, Q41d and Q41c in the independent survey of residents.</p>

## This would help support more liveable places across Orkney (page 5)

Data item	Sources and notes
<p>Percentage of residents who would and would not find useful the provision of more footpaths, pavements and walking routes between towns and villages, to help them start walking or wheeling, or walk or wheel more or further</p>	<p>The percentage of respondents answering 'very useful' or 'fairly useful' and 'not useful at all' or 'not very useful' to Q30f in the independent survey of residents.</p>
<p>Percentage of residents who would and would not find useful more cycle</p>	<p>The percentage of respondents answering 'very useful' or 'fairly useful' and 'not useful at all' or 'not very useful' to Q33a in the independent survey of residents.</p>

Data item	Sources and notes
paths alongside roads that are physically separated from traffic and pedestrians, to help them start cycling, or cycle more or further	

## Pages 6 and 7: Walking in Orkney

### Walking and wheeling participation (page 6)

Data item	Sources and notes
Percentage of all residents who walk or wheel	The percentage of respondents choosing any frequency other than 'never' for Q9a in the independent survey of residents.
Percentage of residents who walk or wheel at least five days a week	The percentage of respondents answering '7 days a week' or '5-6 days a week' to Q9a in the independent survey of residents.
Proportion of residents who walk or wheel at least five days a week within different demographic subgroups: <ul style="list-style-type: none"> <li>• rurality</li> <li>• gender</li> <li>• age</li> <li>• disability</li> <li>• household income</li> </ul>	The percentage of respondents of these rurality, gender, age, disability and household income demographic subgroups (Q4, Q3, combined Q1/Q2, Q48 and Q42) answering '7 days a week' or '5-6 days a week', to Q9a in the independent survey of residents.

## Walking and wheeling safety and satisfaction (page 7)

Data item	Sources and notes
Percentage of residents who think the level of safety for walking or wheeling is good	The percentage of respondents answering 'very good' or 'fairly good' to Q38c in the independent survey of residents.
Percentage of residents who think the level of safety for children walking or wheeling is good	The percentage of respondents answering 'very good' or 'fairly good' to Q38d in the independent survey of residents.
Proportion of residents who think walking or wheeling safety in their local area is good within different demographic subgroups: <ul style="list-style-type: none"> <li>• rurality</li> <li>• gender</li> <li>• age</li> <li>• disability</li> <li>• household income</li> </ul>	The percentage of respondents of these rurality, gender, age, disability and household income demographic subgroups (Q4, Q3, combined Q1/Q2, Q48 and Q42) answering 'very good' or 'fairly good' to Q38c in the independent survey of residents.
Percentage of residents who think their local area overall is a good place to walk or wheel	The percentage of respondents answering 'very good' or 'fairly good' to Q38a in the independent survey of residents.
Story from an Orkney resident	Case studies from local residents were sourced from local contacts.



## Pages 8 and 9: Cycling in Orkney

### Cycling participation (page 8)

Data item	Sources and notes
(in text) Proportion of residents who would find improving the behaviour of people driving cars useful to help them start cycling, or cycle more	See explanations for <b>page 4</b> of the report for exact question.
(in text) Percentage of residents citing the following reasons for not cycling or cycling less often <ul style="list-style-type: none"> <li>• Too windy</li> <li>• Too wet</li> </ul>	The percentage of respondents choosing such answers to Q37 in the independent survey of residents.
(in text) Context data for comparison of town of Bodø in northern Norway and Orkney	Sources: <ul style="list-style-type: none"> <li>• The average climate data (wind speed and precipitation) for Bodo comes from the weather app <a href="http://yr.no">yr.no</a>, <a href="http://www.met.no">Norwegian Meteorological Institute</a>.</li> <li>• The average climate data for Kirkwall comes from the <a href="http://www.metoffice.gov.uk">Met Office</a>.</li> <li>• The figure of 8% mode share in Bodo comes from <a href="http://www.itsk.no">På to hjul i Bodø, 2017, Norwegian Institute of Transport Economics</a> paper using data their national travel survey (RVU).</li> <li>• The figure of 1% mode share from traffic counts for Orkney comes from <a href="http://www.cycling-scotland.gov.uk">Annual Cycling Monitoring Report 2022, Cycling Scotland</a>.</li> </ul>

Data item	Sources and notes
Percentage of all residents who cycle	The percentage of respondents choosing any frequency other than 'never' for Q17 in the independent survey of residents.
Percentage of residents who cycle at least once a week	The percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q17 in the independent survey of residents.
Proportion of residents who cycle at least once a week within different demographic subgroups: <ul style="list-style-type: none"> <li>• rurality</li> <li>• gender</li> <li>• age</li> <li>• disability</li> <li>• household income</li> </ul>	The percentage of respondents of these rurality, gender, age, disability and household income demographic subgroups (Q4, Q3, combined Q1/Q2, Q48 and Q42) answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q17 in the independent survey of residents.

## Cycling safety and satisfaction (page 9)

Data item	Sources and notes
Percentage of residents who think the level of safety for cycling in their local area is good	The percentage of respondents answering 'very good' or 'fairly good' to Q38e in the independent survey of residents.
Percentage of residents who think the level of safety for children cycling is good	The percentage of respondents answering 'very good' or 'fairly good' to Q38f in the independent survey of residents.

Data item	Sources and notes
Percentage of residents who think their local area overall is a good place to cycle	The percentage of respondents answering 'very good' or 'fairly good' to Q38b in the independent survey of residents.
Proportion of residents who think cycling safety in their local area is good within different demographic subgroups: <ul style="list-style-type: none"> <li>• rurality</li> <li>• gender</li> <li>• age</li> <li>• disability</li> <li>• household income</li> </ul>	The percentage of respondents of these rurality, gender, age, disability and household income demographic subgroups (Q4, Q3, combined Q1/Q2, Q48 and Q42) answering 'very good' or 'fairly good' to Q38e in the independent survey of residents.
Story from an Orkney resident	Case studies from local residents were sourced from local contacts.

## Pages 10 and 11: Benefits of walking

### Annual walking and wheeling trips by purpose (page 10)

Data item	Sources and notes
The number of times per day Orkney residents walk or wheel the equivalent length of Great Britain	Miles walked or wheeled per day (below) divided by the length of Great Britain using the <a href="#">Land's End to John O'Groats cycle route</a> (1,189 miles).
Number of walking and wheeling trips in Orkney in the past year	This is the sum of the total estimated number of trips walked or wheeled for all purposes. See below for how the annual walking and wheeling trips by purpose was calculated.
Miles walked and wheeled in Orkney in the past year and per day	<p>Respondents to the independent survey of residents were asked to estimate the distance of their most frequent one-way walk or wheel to a destination (Q11), and their most frequent walk or wheel or run just for enjoyment or fitness (Q14).</p> <p><u>Trips by children:</u> For school trips by children in Orkney, an average walking trip distance was taken from National Travel Survey (NTS) 2015-2019 and for child leisure trips an average walking distance was taken from NTS 2020-21.</p> <p>The median trip distance (mean for trips by children) for each trip purpose was multiplied by the total number of trips walked or wheeled for that purpose, and the distances travelled across trip purposes were summed. See below for how the annual walking and wheeling trips by purpose was calculated.</p> <p>Distance per year was divided by 365 to get miles per day.</p>

Data item	Sources and notes
Number of days spent walking or wheeling (based on each resident walking continuously, 24 hours a day) for all yearly miles walked and wheeled in Orkney	The total estimated miles walked or wheeled yearly (see above) divided by the average walking speed in miles per hour (5.3 kmph, HEAT <sup>3</sup> ) then divided by the number of hours in a day (24) and divided by the population of Orkney.
Annual walking and wheeling trips by purpose: Destination – adults only (eg work, school, shopping)	<p>This was calculated by multiplying together:</p> <ul style="list-style-type: none"> <li>• the <b>number of walkers and wheelers</b> in the adult population who walk or wheel at least once a week,</li> <li>• the <b>proportion of respondents who walk or wheel to a destination</b> from the residents survey <b>for each frequency</b> response,</li> <li>• the <b>number of trips per day</b> for that frequency response and</li> <li>• the <b>number of days walked or wheeled per year</b>.</li> </ul> <p>This was then summed and <b>seasonally adjusted</b>.</p> <p><u>The number of walkers and wheelers</u> The number of people who walk and wheel in the adult population was calculated by multiplying the Orkney adult (16+) population by the percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q9a in the independent survey of residents.</p>

<sup>3</sup> The Health Economic Assessment Tool ([HEAT](#)) for walking and cycling by World Health Organisation.

Data item	Sources and notes
	<p><u>The proportion of respondents who walk or wheel to a destination</u>  For example, if 10% of respondents to Q10 in the independent survey of residents selected '9-10 trips', then the proportion for the frequency response '9-10' would be 0.1 (or 10%).</p> <p><u>The number of trips per day</u>  The trips per day for each range was calculated by dividing the lower end of the range by 7 (the number of days in a week). For example, the trips per day figure for 9-10 trips is 1.29 (9/7).</p> <p><u>The number of days walked or wheeled per year</u>  The total number of days that could be walked or wheeled in a year was based on the total number of days in a year (365) minus the number of days lost through sickness absence per worker per year (<a href="#">ONS, 2022</a>) for Scotland.</p> <p><u>Seasonality adjustment</u>  The calculations included a correction for seasonal variation using Sustrans' database of average seasonal variation in walking from a series of 17 rural automatic counters over several years. We are able to correct with confidence for the slightly higher than average levels of walking likely to be exhibited during the survey period of February to April.</p> <p>A factor which takes into account people visiting two or more destinations in one trip (trip chaining) was not applied because there is a low risk of double-counting trips, since there are only two trip purposes for walking and wheeling, and they generally do not overlap.</p>

Data item	Sources and notes
Annual walking and wheeling trips by purpose: School – children only	<p>This was calculated by multiplying together:</p> <ul style="list-style-type: none"> <li>• the <b>proportion of children that walk and wheel to school</b></li> <li>• the number of children within schools for that city (<b>school roll</b>)</li> <li>• the <b>number of days walked to school per year</b>, and</li> <li>• the <b>number of trips in a day</b> (two, for return trips).</li> </ul> <p>This was then seasonally adjusted for Orkney, as the proportion of children that walk to school data was collected in September.</p> <p><u>The proportion of trips to school that are walked and wheeled</u> The proportion of children that walk or wheel to school was taken from the source below. For Orkney it is unknown if wheeling in included.</p> <p><u>School roll</u> The school roll for Orkney was the sum of the school roll for all schools in Orkney.</p> <p><u>The number of days walked to school per year</u> This was the minimum number of school days in a year for Scotland, minus the number of days lost through absence from school for Scotland (sources below). It is assumed that pupils who ‘usually’ or ‘normally’ walk do so on every school day they attend.</p> <p><u>The number of trips in a day</u> This was assumed to be two (to school and back again).</p>

Data item	Sources and notes
	<p><u>Seasonal adjustment</u> As above: Annual trips by purpose: Destination – adults only (eg work, school, shopping). Seasonal adjustment was applied as the proportion of children that walk to school data was collected in September.</p> <p>A factor which takes into account people visiting two or more destinations in one trip (trip chaining) was not applied because there is no risk of double-counting of child school trips in the method.</p> <p><b><u>Sources used:</u></b> School days in a year:  <ul style="list-style-type: none"> <li>Scotland: <a href="#">Term dates (Education Scotland)</a></li> </ul> School absence rates:  <ul style="list-style-type: none"> <li>Scotland: 2020/21 <a href="#">School attendance and absence statistics (gov.scot)</a></li> </ul> School roll:  <ul style="list-style-type: none"> <li>Orkney: <a href="#">Scottish School Roll and Locations (Scottish Government)</a></li> </ul> Proportion of children that walk to school and whether the source includes wheeling:  <ul style="list-style-type: none"> <li>Orkney: Hands Up Scotland Survey (2022); it is unspecified if wheeling trips are counted under walking</li> </ul> </p>
Annual walking and wheeling trips by purpose: Enjoyment or fitness – adults and children (including running)	<p>This is the sum of the total estimated number of trips walked or wheeled for enjoyment or fitness by adults and children.</p> <p><u>The number of trips walked or wheeled for enjoyment by <b>adults</b></u> This was calculated by multiplying together:</p>



Data item	Sources and notes
	<ul style="list-style-type: none"> <li>• the <b>number of walkers and wheelers</b> in the adult population who walk or wheel at least once a week,</li> <li>• the <b>proportion of respondents who walk or wheel for enjoyment and fitness</b> from the residents survey <b>for each frequency</b> response,</li> <li>• the <b>number of trips per day</b> for that frequency response and</li> <li>• the <b>number of days walked or wheeled per year</b>.</li> </ul> <p>This is then summed and <b>seasonally adjusted</b>.</p> <p>The calculation and inputs were the same as above: Annual trips by purpose: Destination – adults only (eg work, school, shopping).</p> <p><u>The number of trips walked or wheeled for enjoyment by <b>children</b></u>  This was calculated by:</p> <ul style="list-style-type: none"> <li>• Calculating the adult leisure trips (as <b>Error! Reference source not found.</b>) for the subset of <b>adult walkers and wheelers who have at least one child in their household</b> (including seasonal adjustment)</li> <li>• Dividing this by the <b>number of adults with children in their household</b> to get trips per adult per year</li> <li>• Then multiplying the result by the <b>ratio of leisure walking trips per person per year</b> (adults from households with children: children) and</li> <li>• Multiplied by the child population.</li> </ul> <p><u>The number of adult walkers and wheelers with children in their household</u>  This was calculated by multiplying the proportion of respondents to the residents survey who walk or wheel for enjoyment or fitness at least once a week (Q13) that have at least</p>

Data item	Sources and notes
	<p>one child in their household (Q44) by the <b>number of walkers and wheelers</b> in the population (using the same method as above: Annual trips by purpose: Destination – adults only (eg work, school, shopping), including seasonal adjustment).</p> <p><u>The number of adults with children in their household</u>  This was calculated by multiplying the proportion of respondents to the residents survey who have at least one child in their household (calculated from Q44 and the adult population) by the adult population.</p> <p><u>Ratio of leisure walking trips per person per year</u> (adults from households with children: children)  We calculated the ratio of child leisure trips (15 and under) per child per year to adult leisure trips (aged 16+) by those in households with children per adult per year, by using a custom data table from the National Travel Survey 2021. Leisure trips include the purposes 'day trip' and 'just walk' only.</p> <p>A factor which takes into account people visiting two or more destinations in one trip (trip chaining) was not applied because there is a low risk of double-counting trips, since there are only two trip purposes for walking and wheeling, and they generally do not overlap.</p>

## Walking and wheeling benefit residents and the local economy (page 10)

Data item	Sources and notes
<p>Net annual economic benefit for individuals and society from all walking and wheeling trips</p>	<p>The net annual economic benefit for individuals and society from all walking and wheeling trips is the benefits minus the costs.</p> <p>This is comprised of three parts:</p> <ul style="list-style-type: none"> <li>• the <b>net annual economic value for individuals and society from people with a car choosing to walk or wheel for transport</b>, plus</li> <li>• the <b>value of similarly purposeful trips that are walked or wheeled by people without access to a car</b>, plus</li> <li>• the <b>value of leisure walking or wheeling trips</b> made by everyone.</li> </ul> <p>The value of people with a car choosing to walk or wheel for transport was calculated using the difference between the net economic value to individuals and society for each mile walked and the net economic value to individuals and society for each mile driven multiplied by the estimated total distance walked or wheeled that could have been driven across the year.</p> <p>The distance walked or wheeled that could have been driven was calculated by multiplying the annual walking and wheeling trips by purpose: Destination – adults only (see <b>page 10</b> of the report) by the median trip distance for trips to a destination (from Q11 of the independent survey of residents) and by the percentage of walkers with access to a car (from Q5 of the independent survey of residents).</p> <p>The percentage of walkers or wheelers with access to a car was the percentage of respondents answering ‘7 days a week’, ‘5-6 days a week’, ‘2-4 days a week’ or ‘once a</p>

Data item	Sources and notes
	<p>week' to Q9a in the independent survey of residents who also answered that they had one or more cars or vans in their household in Q5 of the independent survey.</p> <p>The value of purposeful trips walked or wheeled by people without access to a car was calculated by multiplying the net economic benefit to individuals and society for each mile walked or wheeled by the estimated total distance walked or wheeled that could not have been driven across the year.</p> <p>The distance walked or wheeled that could not have been driven was calculated by subtracting the distance walked or wheeled that could have been driven (above) from the distance covered by the annual walking and wheeling trips by purpose: destination (see also miles walked and wheeled in Orkney in the past year, both page 10 of the report).</p> <p>The value of leisure trips walked or wheeled was calculated by multiplying the net economic benefit to individuals and society for each mile walked or wheeled, without the cost of time, by the estimated total distance of annual walking and wheeling trips by purpose: enjoyment or fitness – adults and children (including running) (see also the explanations for <b>page 10</b> of the report regarding miles walked and wheeled in Orkney in the past year).</p> <p>The net economic value to individuals and society for each mile walked is calculated using the same method as the value for each mile cycled, but using average walking speed (from HEAT). The net economic value to individuals and society for each mile cycled and the net economic value to individuals and society for each mile driven are covered with the explanations for <b>page 12</b> of the report (under Net economic benefit to individuals and society for each mile cycled instead of driven).</p>

Data item	Sources and notes
	It was assumed that the benefits of wheeling are the same as the benefits of walking for the purposes of the adapted Index model for Orkney.

## Walking and wheeling unlock health benefits for everyone (page 11)

Data item	Sources and notes
Number of serious long-term health conditions prevented per year by walking (total, and by condition in the chart)	<p>This was calculated using the Sport England MOVES tool (v2.4, 2023), which shows the return on investment for health from sport and physical activity. Credit to Sport England and the University of East Anglia (tool developers) who provided us with a pre-release copy of the new MOVES tool.</p> <p>Physical activity protects against many illnesses. MOVES estimates the number of cases of eight specific conditions that are likely to be prevented:</p> <ul style="list-style-type: none"> <li>• Type 2 Diabetes</li> <li>• Ischaemic Heart Disease</li> <li>• Cardiovascular Disease (Stroke)</li> <li>• Dementia</li> <li>• Depression</li> <li>• Breast Cancer</li> <li>• Colon Cancer</li> <li>• Hip Fracture</li> </ul>

Data item	Sources and notes
	<p>The MOVES tool is based on UK statistics of disease incidence, mortality rates and treatment costs.</p> <p>Note that wheelchair and mobility scooter trips were modelled as walking trips for the purposes of the MOVES model.</p>
Cost saving to the NHS in Orkney	This was also calculated using the MOVES tool (v2.4, 2023), and is the annual saving in health care costs arising from the number of serious long-term health conditions prevented per year by walking (above).
Number of GP appointments this cost equates to	<p>The total cost saving to the NHS in Orkney was divided by the average cost of a GP appointment.</p> <p>UK: £41 (<a href="#">Unit Costs of health and Social Care 2022 (amended 13 July 2023).pdf (kent.ac.uk)</a>)</p>
Number of early deaths prevented annually	<p>This was calculated using the widely recognised World Health Organisation (WHO) Health Economic Assessment Tool (<a href="#">HEAT</a>, version 5.2.0). HEAT estimates the number of premature deaths prevented by specified amounts of walking.</p> <p>Note that wheelchair and mobility scooter trips were modelled as walking trips for the purposes of the HEAT model.</p>
Value of the early deaths prevented	This was also calculated using the WHO HEAT tool, which subsequently estimates the value of the number of early deaths prevented annually. This is based on contingent valuation studies that test the amounts people would be prepared to pay to increase their chances of survival.

Data item	Sources and notes
	<p>The HEAT tool is based on Europe-wide context and is therefore applicable to the UK.</p> <p>Note that the value of early deaths prevented (from HEAT) is sometimes greater than the value shown at the bottom of page 10 of the report for the overall net benefit of walking and wheeling. The HEAT figure is a gross value including the value of early deaths prevented only, while the net benefit of walking and wheeling takes into account the wider range of benefits and costs associated with walking.</p>

## Walking and wheeling in Orkney help mitigate our climate crisis (page 11)

Data item	Sources and notes
Tonnes of greenhouse gas emissions saved annually	<p>Greenhouse gas emissions saved were calculated by multiplying:</p> <ul style="list-style-type: none"> <li>• The distance of walking or wheeling trips that could have been driven (see explanations for <b>page 10</b> of the report regarding net annual economic benefit for individuals and society from people with a car choosing to walk or wheel for transport)</li> <li>• The quantity of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O that would have been emitted by an average car per distance unit (expressed as CO<sub>2</sub> equivalent), as taken from the UK government <a href="#">greenhouse gas reporting conversion factors</a> (2022).</li> </ul>
Equivalent number of flights to a destination	This was calculated by dividing the total greenhouse gas emissions (above) by the average emissions from a single flight from the chosen airport (Aberdeen International) to a London (based on the online flight emissions calculator <a href="#">carbonfootprint.com</a> ).
Contextual data on transport emissions over time	Scotland: Scottish Government (2021) Scottish greenhouse gas emissions 2021 [Online] Available at: <a href="#">Scottish Greenhouse Gas Statistics 2021 (www.gov.scot)</a>

## Walking and wheeling keep Orkney moving (page 11)

Data item	Sources and notes
Number of return walking and wheeling trips that are made daily by people who could have used a car	<p>This is calculated by:</p> <ul style="list-style-type: none"> <li>• multiplying the annual walking and wheeling trips by purpose: destination – adults only (see explanation for <b>page 10</b> of the report)</li> <li>• by the proportion of walkers and wheelers with access to a car,</li> <li>• divided by 365 to get a value per day and</li> <li>• divided by 2 to get return trips.</li> </ul> <p>The proportion of walkers and wheelers with access to a car was the percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q9a in the independent survey of residents who also answered that they had one or more cars or vans in their household in Q5 of the independent survey.</p>
Length of the traffic jam that would result from these cars	<p>The number of return walking and wheeling trips that could have been made by car (above) multiplied by the average length of a parking space (4.8m) to represent one car in a traffic jam for every trip.</p> <p>The place for the end of the traffic jam was identified by using the Google Maps journey planner.</p>



## Pages 12 and 13: Benefits of cycling

### Annual cycling trips by purpose (page 12)

Data item	Sources and notes
The number of times per day Orkney residents cycle the equivalent length of Great Britain	Miles cycled per day (below) divided by the length of Great Britain using the <a href="#">Land's End to John O'Groats cycle route</a> (1,189 miles).
Number of cycle trips in Orkney in the past year	This is the sum of the total estimated number of trips cycled for all purposes. See below for how the number of trips by purpose is calculated.
Miles cycled in Orkney in the past year, and per day	<p>Respondents to the independent survey of residents were asked to give an estimate of the typical one-way distance of each trip purpose (work (Q18), education (Q21) or shopping/other purposeful/social trips (Q24)) and the total round-trip distance for leisure trips (Q27).</p> <p><u>Trips by children:</u> For school trips by children in Orkney, an average cycling trip distance was taken from National Travel Survey (NTS) 2015-2019 and for child leisure trips an average cycling distance is taken from NTS 2020-21.</p> <p>The median trip distance (mean for trips by children) for each trip purpose was multiplied by the total number of trips cycled for that purpose, and the distances travelled across trip purposes were summed. See below for how the number of trips for each purpose is calculated.</p> <p>Distance per year was divided by 365 to get miles per day.</p>

Data item	Sources and notes
Annual trips by purpose: Work (adults)	<p>This was calculated by multiplying together:</p> <ul style="list-style-type: none"> <li>• the <b>number of cycle riders</b> in the adult population who cycle at least once a month,</li> <li>• the <b>proportion of respondents who cycle to or from work</b> from the residents survey <b>for each frequency</b> response,</li> <li>• the <b>number of days cycled per year for work</b></li> <li>• the <b>number of trips in a day</b> (two, to include return trips)</li> </ul> <p>This was then summed and <b>seasonally adjusted</b> and multiplied by a <b>trip-chaining factor</b>.</p> <p><u>The number of cycle riders</u> The number of cycle riders in the adult population was calculated by multiplying the adult (16+) population in Orkney by the percentage of respondents answering, '7 days a week', '5-6 days a week', '2-4 days a week', 'once a week', 'once a fortnight' or 'once a month' to Q17 in the independent survey of residents.</p> <p><u>The proportion of respondents who cycle to or from work</u> For example, if 10% of respondents to Q18 in the independent survey of residents selected 'once a fortnight', then the proportion for the frequency category 'once a fortnight' would be 0.1 (or 10%).</p> <p><u>The number of days cycled per year for work</u> The number of workdays per year were based on the number of <u>working days</u> per year in 2023 for Scotland minus 28 days of annual leave, minus the average number of days lost through sickness absence per worker per year for Scotland (<u>ONS</u>, 2022). For a seven-</p>

Data item	Sources and notes
	<p>day work week, 52 compensation rest days per year and national public holidays were also subtracted.</p> <p><u>The number of trips in a day</u> This was assumed to be two (to work and back again).</p> <p><u>Seasonality adjustment</u> The calculations included a correction for seasonal variation using Sustrans' database of average seasonal variation in cycling from a series of 30 rural automatic counters over several years. We are able to correct with confidence for the relatively low levels of cycling likely to be exhibited during the survey period of February to April.</p> <p><u>Trip chaining factor</u> The seasonality-adjusted figure was divided by a trip-chaining factor (Primerano et al., 2008<sup>4</sup>) to account for double-counting of trips within different trip purposes.</p>
Annual trips by purpose: School, college or university (adults)	<p>The calculation for this is the same as for annual trips by purpose: Work (adults) (see explanations above) but using the number of school days in a year in place of the number of workdays.</p> <p>The annual trips to school, college or university by adults (including accompanying a child to school) were estimated from the responses to Q21 in the independent survey of residents and scaled up for the adult (16+) population of cycle riders (once a month or more).</p>

<sup>4</sup> Primerano, F et al. (2008) Defining and understanding trip chaining behaviour, *Transportation* 35, 55–72 [Online].

Data item	Sources and notes
	<p>The number of school days in a year was based on the number of days for Scotland’s school year, minus the school absence rate for Scotland then multiplied by the number of days in the school year (sources as walking, see explanations for <b>page 10</b> of the report).</p> <p>The calculations included a correction for seasonal variation and trip chaining (as above: Annual trips by purpose: Work (adults)).</p>
Annual trips by purpose: School – children only	Annual trips to school by children cycling was calculated in the same way and using the same sources as annual walking and wheeling trips by purpose: school – children only (see explanations for <b>page 10</b> of the report) but using the proportion of children in Orkney who cycle to school.
Annual trips by purpose: Shopping, personal business and social trips (adult)	<p>The calculation for this was the same as for annual trips by purpose: Work (adults) (see explanation above) but using the total number of days that could be cycled for this purpose in a year in place of the number of workdays.</p> <p>The number of shopping, personal business and social trips was estimated from the responses to Q24 in the independent survey of residents and scaled up for the adult population (16+) of cycle riders (once a month or more to Q17 in the independent survey of residents).</p> <p>The number of days that could be cycled for this purpose in a year was based on the total number of days in a year (365) minus the number of days lost through sickness absence per worker per year for Scotland (<a href="#">ONS, 2022</a>).</p> <p>The calculations included a correction for seasonal variation and trip chaining (as above: Annual trips by purpose: Work (adults)).</p>

Data item	Sources and notes
Annual trips by purpose: Leisure (adults and children)	<p>This is the sum of the total estimated number of leisure trips cycled by adults and children.</p> <p><b>For adult leisure trips:</b> The number of trips by adults is estimated from the responses to Q27 in the independent survey of residents and scaled up for the adult population (16+) of cycle riders (once a month or more to Q17 in the independent survey of residents). This is calculated in the same way as annual trips by purpose: Shopping, personal business and social trips (adult), including the same number of days sources.</p> <p>The calculations include a correction for seasonal variation and trip chaining (as above: Annual trips by purpose: Work (adults)).</p> <p><b>Child trips for enjoyment or fitness were estimated using the following method:</b></p> <ul style="list-style-type: none"> <li>• Calculating the adult leisure trips (as <b>Error! Reference source not found.</b>) for the subset of <b>adult cyclists who have at least one child in their household</b>.</li> <li>• Dividing this by the <b>number of adults with children in their household</b> to get trips per adult per year</li> <li>• Then multiplying the result by the <b>ratio of leisure walking trips per person per year</b> (adults from households with children: children) and</li> <li>• Multiplied by the child population</li> </ul> <p><u>The number of adult cyclists with children in their household:</u> This is calculated by multiplying the proportion of respondents to the residents survey who cycle at least once a month (Q27) that have at least one child in their household (Q44) by the <b>number of cyclists</b> in the population (using the same method as Annual</p>

Data item	Sources and notes
	<p>trips by purpose: Shopping, personal business and social trips (above), including seasonal adjustment and trip-chaining adjustment).</p> <p><u>The number of adults with children in their household:</u> This is calculated by multiplying the proportion of respondents to the residents survey who have at least one child in their household (calculated from Q44 and the adult population) by the adult population.</p> <p><u>Ratio of leisure cycling trips per person per year (adults from households with children: children):</u> We calculated the ratio of child leisure trips (15 and under) per child per year to adult leisure trips (aged 16+) by those in households with children per adult per year, by using a custom data table from the National Travel Survey 2021. Leisure trips include the purposes 'day trip' only.</p>

## Cycling benefits residents and the local economy (page 12)

Data item	Sources and notes
<p>Net economic benefit to individuals and society for each mile cycled instead of driven</p>	<p>This is the difference between the net economic value to individuals and society for each mile cycled and the net economic value to individuals and society for each mile driven.</p> <p><b>The net economic value to individuals and society for each mile cycled</b> included figures for (from largest to smallest effect): the value of time spent cycling (costed as the midpoint between commuting and other non-work values), a health value (reduction in</p>

Data item	Sources and notes
	<p>medical costs and work absenteeism), the value of additional life years and operating costs of cycling (ie cycle maintenance), per mile.</p> <p><b>Sources used</b> (adjusted to 2023 prices and, where the value year is provided in the source, 2023 values):</p> <ul style="list-style-type: none"> <li>• Value of time spent cycling: value of time divided by cycling speed <ul style="list-style-type: none"> <li>○ Value of time: DfT <a href="#">TAG</a> (2022)</li> <li>○ Cycling speed: <a href="#">HEAT</a></li> </ul> </li> <li>• Health: <a href="#">Gossling et al (2019)</a></li> <li>• Prolonged life: <a href="#">Gossling et al (2019)</a></li> <li>• Vehicle operating costs: <a href="#">Gossling et al (2019)</a></li> </ul> <p><b>The net economic value to individuals and society for each mile driven</b> included figures for (from largest to smallest effect): vehicle operating costs, the value of time spent driving (costed as the midpoint between commuting and other non-work values), congestion, indirect taxation, greenhouse gases, local air quality, soil and water quality, well-to-tank emissions, noise, and infrastructure maintenance, per mile.</p> <p>Where values were given dependent on area classification, Orkney was assigned 'Rural' from <a href="#">TAG (A5.4)</a>. Where values were given dependent on road type, a weighted average is used based on the proportion of rural traffic on A roads and other roads (excluding motorways) in Great Britain (by vehicle kilometre) from <a href="#">Road traffic statistics</a> (2021). This applies to congestion, indirect taxation, greenhouse gases, local air quality, noise, and infrastructure maintenance.</p>

Data item	Sources and notes
	<p><b>Sources used</b> (adjusted to 2023 prices and, where the value year is provided in the source, 2023 values):</p> <ul style="list-style-type: none"> <li>• Vehicle operating costs: annual cost of owning a vehicle divided by average annual mileage <ul style="list-style-type: none"> <li>○ annual cost of owning a vehicle: <a href="#">Nimblefins</a> (2022)</li> <li>○ average annual mileage (or kilometrage): <a href="#">NTS table 0901</a> (2021)</li> </ul> </li> <li>• Value of time spent driving: value of time divided by driving speed <ul style="list-style-type: none"> <li>○ Value of time: DfT <a href="#">TAG</a> (2022)</li> <li>○ Driving speed: <a href="#">DfT England average</a> speed on rural 'A' roads in England – CGN0503a tab (2022)</li> </ul> </li> <li>• Congestion: DfT <a href="#">TAG</a> (2022)</li> <li>• Indirect taxation: DfT <a href="#">TAG</a> (2022)</li> <li>• Greenhouse gases: DfT <a href="#">TAG</a> (2022)</li> <li>• Local air quality: DfT <a href="#">TAG</a> (2022)</li> <li>• Soil and water quality: <a href="#">Gossling et al (2019)</a></li> <li>• Well-to-tank emissions: European Commission <a href="#">Handbook on the external costs of transport</a></li> <li>• Noise: DfT <a href="#">TAG</a> (2022)</li> <li>• Infrastructure maintenance: DfT <a href="#">TAG</a> (2022)</li> </ul>
<p>Net annual economic benefit for individuals and society from people with a car choosing to cycle for transport</p>	<p>This was calculated by multiplying:</p> <ul style="list-style-type: none"> <li>• the net economic benefit to individuals and society for each mile cycled instead of driven (above)</li> <li>• the estimated total distance cycled that could have been driven across the year.</li> </ul>



Data item	Sources and notes
	<p><u>The distance cycled that could have been driven</u>  This was calculated by:</p> <ul style="list-style-type: none"> <li>• summing the annual miles cycled for the purposes of work, school, college or university (adult) or shopping, personal business and social trips (see explanations for <b>page 12</b> of the report) and</li> <li>• multiplying this by the proportion of cycle riders with access to a car (from Q5 of the independent survey of residents).</li> </ul> <p>The percentage of cycle riders with access to a car was the percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q17 in the independent survey of residents who also answered that they had one or more cars or vans in their household in Q5 of the independent survey.</p>
<p>Net annual economic benefit for individuals and society from all cycling trips</p>	<p>The net annual economic benefit for individuals and society from all cycling trips is the benefits minus the costs.</p> <p>This is comprised of three parts:</p> <ul style="list-style-type: none"> <li>• <b>the net annual economic benefit for individuals and society from people with a car choosing to cycle for transport</b> (above), plus</li> <li>• the <b>value of similarly purposeful trips but cycled by people without access to a car</b>, plus</li> <li>• the <b>value of leisure cycle trips</b> made by everyone</li> </ul> <p><u>The value of purposeful trips cycled by people without access to a car</u>  This was calculated by multiplying:</p> <ul style="list-style-type: none"> <li>• the <b>net economic benefit to individuals and society for each mile cycled</b></li> </ul>

Data item	Sources and notes
	<ul style="list-style-type: none"> <li>the <b>estimated total distance cycled that could not have been driven</b> across the year.</li> </ul> <p>The net economic benefit to individuals and society for each mile cycled is detailed in net economic benefit to individuals and society for each mile cycled instead of driven (above).</p> <p><u>The distance cycled that could not have been driven</u> This was calculated by subtracting:</p> <ul style="list-style-type: none"> <li>the total miles cycled in Orkney in the past year (see page 12 of the report)</li> <li>the estimated total distance cycled for leisure</li> <li>the distance cycled that could have been driven (see net annual economic benefit for individuals and society from people with a car choosing to cycle for transport, above).</li> </ul> <p><u>The value of leisure trips cycled</u> This was calculated by multiplying:</p> <ul style="list-style-type: none"> <li>the net economic benefit to individuals and society for each mile cycled, without the cost of time</li> <li>the estimated <b>total distance of annual trips by purpose: Leisure</b> (adults and children) (see also miles cycled in Orkney in the past year, both page 12 of the report).</li> </ul>

## Cycling unlocks health benefits for everyone (page 13)

Data item	Sources and notes
<p>Number of serious long-term health conditions prevented per year by cycling (total, and by condition in the chart)</p>	<p>This was calculated using the Sport England MOVES tool (v2.4, 2023), which shows the return on investment for health from sport and physical activity. Credit to Sport England and the University of East Anglia (tool developers) who provided us with a pre-release copy of the new MOVES tool.</p> <p>Physical activity protects against many illnesses. MOVES estimates the number of cases of eight specific conditions that are likely to be prevented:</p> <ul style="list-style-type: none"> <li>• Type 2 Diabetes</li> <li>• Ischaemic Heart Disease</li> <li>• Cardiovascular Disease (Stroke)</li> <li>• Dementia</li> <li>• Depression</li> <li>• Breast Cancer</li> <li>• Colon Cancer</li> <li>• Hip Fracture</li> </ul> <p>The MOVES tool is based on UK statistics of disease incidence, mortality rates and treatment costs.</p>
<p>Cost saving to the NHS in Orkney</p>	<p>This was also calculated using the MOVES tool and is the annual saving in health care costs arising from the number of serious long-term health conditions prevented per year by cycling (above).</p>
<p>Number of GP appointments this cost equates to</p>	<p>The total cost saving to the NHS in Orkney was divided by the average cost of a GP appointment.</p>

Data item	Sources and notes
	UK: £41 ( <a href="#">Unit Costs of health and Social Care 2022 (amended 13 July 2023).pdf (kent.ac.uk)</a> )
Number of early deaths prevented annually	This was calculated using the widely recognised World Health Organisation (WHO) Health Economic Assessment Tool ( <a href="#">HEAT</a> version 5.2.0). This estimates the number of premature deaths prevented by specified amounts of cycling.
Value of the early deaths prevented	<p>This was also calculated using the WHO HEAT tool, which subsequently estimates the value of the number of early deaths prevented annually. This is based on contingent valuation studies that test the amounts people would be prepared to pay to increase their chances of survival.</p> <p>The HEAT tool is based on Europe-wide context and is therefore applicable to the UK.</p> <p>Note that the value of early deaths prevented (from HEAT) is sometimes greater than the value shown at the bottom of page 12 of the report for the overall net benefit of cycling. The HEAT figure is a gross value including the value of early deaths prevented only, while the value for overall net benefit of cycling takes into account the wider range of benefits and costs associated with cycling.</p>

## Cycling in Orkney helps mitigate our climate crisis (page 13)

Data item	Sources and notes
Tonnes of greenhouse gas emissions saved annually	Greenhouse gas emissions saved were calculated by multiplying:

Data item	Sources and notes
	<ul style="list-style-type: none"> <li>• The distance of cycle trips that could have been driven (see explanations for <b>page 12</b> of the report referring to net annual economic benefit for individuals and society from people with a car choosing to cycle for transport)</li> <li>• The quantity of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O that would have been emitted by an average car per distance unit (expressed as CO<sub>2</sub> equivalent), as taken from the UK government <a href="#">greenhouse gas reporting conversion factors</a> (2022).</li> </ul>
Equivalent number of flights to a destination	This was calculated by dividing the total greenhouse gas emissions (above) by the average emissions from a single flight from the chosen airport (Aberdeen International) to a London (based on the online flight emissions calculator <a href="#">carbonfootprint.com</a> ).
Contextual data on transport emissions over time	Repeated figures from page 11 of the report: Contextual data on transport emissions over time.

## Cycling keeps Orkney moving (page 13)

Data item	Sources and notes
Number of return cycle trips that are made daily by people that could have used a car	<p>This is calculated by:</p> <ul style="list-style-type: none"> <li>• multiplying the annual trips cycled for the purposes of work, school, college or university (adult) or shopping, personal business and social trips (see explanation for <b>page 12</b> of the report)</li> <li>• by the proportion of cycle riders with access to a car,</li> <li>• divided by 365 to get a value per day and</li> <li>• divided by 2 to get return trips.</li> </ul>

Data item	Sources and notes
	<p>The proportion of cycle riders with access to a car was the percentage of respondents answering '7 days a week', '5-6 days a week', '2-4 days a week' or 'once a week' to Q17 in the independent survey of residents who also answered that they had one or more cars or vans in their household in Q5 of the independent survey.</p>

## Pages 14 and 15: Walking solutions

### Residents want more services and amenities within walking and wheeling distance (page 14)

Data item	Sources and notes
<p>Percentage of residents within different rurality demographic subgroups who would find more local amenities and services useful to help them walk or wheel more:</p> <ul style="list-style-type: none"><li>• Nicer places along streets to stop and rest, eg benches, planting and shelters</li><li>• More shops and everyday services, such as banks and post offices, close to your home</li><li>• Fewer motor vehicles on our streets in towns and villages</li><li>• More public services, such as health care, council services, education, training and learning closer to your home / in a local community hub</li></ul>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'very useful' or 'fairly useful' to Q31d, Q31a, Q31c, Q31b, Q30h and Q31e in the independent survey of residents.</p>

Data item	Sources and notes
<ul style="list-style-type: none"> <li>Better links with public transport (eg more footpaths, pavements and walking routes to bus stops, travel centres, ferry / air terminals)</li> <li>More parks and green spaces close to your home</li> </ul>	
<p>Residents' perceptions of the proximity of the following amenities and services from their home:</p> <ul style="list-style-type: none"> <li>Food shop</li> <li>Healthcare facility</li> <li>Connection to public transport</li> </ul>	<p>The percentage of respondents answering 'short journey', 'medium journey', 'outside local area' or 'do not use' to Q39a, Q39c and Q39f in the independent survey of residents.</p>

## Residents want better streets (page 15)

Data item	Sources and notes
<p>Percentage of residents within different rurality demographic subgroups who would find the following changes helpful to walk or wheel more:</p>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'very useful' or 'fairly useful' to Q30e, Q31h, Q30f, Q30b, Q31g and Q30c in the independent survey of residents.</p>



Data item	Sources and notes
<ul style="list-style-type: none"> <li>• Provision of more footpaths, pavements and walking routes in towns and villages</li> <li>• Fewer parked cars on pavements</li> <li>• Provision of more footpaths, pavements and walking routes between towns and villages</li> <li>• Better pavement accessibility, eg level surfaces, dropped kerbs at crossing points</li> <li>• Lower speed traffic on rural roads in your area</li> <li>• Wider pavements</li> </ul>	
Story from an Orkney resident	Case studies from local residents were sourced from local contacts.

## Pages 16 and 17: Cycling solutions

### Many Orkney residents cycle or want to cycle (page 16)

Data item	Sources and notes
<p>Percentage of residents who see themselves as someone who:</p> <ul style="list-style-type: none"><li>• Regularly cycles,</li><li>• Occasionally cycles,</li><li>• Are new or returning to cycling,</li><li>• Do not cycle but would like to,</li><li>• Do not cycle and do not want to</li><li>• Don't know / prefer not to say</li></ul>	<p>The percentage of respondents giving these answers to Q36 in the independent survey of residents.</p>
<p>Proportion of residents who said they 'do not cycle but would like to' within different rurality demographic subgroups</p>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'do not cycle but would like to', to Q36 in the independent survey of residents.</p>

## Residents want improved cycling infrastructure (page 16)

Data item	Sources and notes
<p>Percentage of residents within different rurality demographic subgroups who would be helped to cycle more by better facilities:</p> <ul style="list-style-type: none"> <li>• More cycle paths along roads which are physically separated from traffic and pedestrians</li> <li>• More signposted local cycle routes along quieter streets</li> <li>• Better links with public transport (eg secure parking at travel centres, bus stops, ferry terminals and airport / airfields)</li> </ul>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'very useful' or 'fairly useful' to Q33a, Q33c and Q33f in the independent survey of residents.</p>
<p>Length of shared use footways</p>	<p>Shared use footways are pavements, adjacent to the carriageway that are shared by pedestrians and people who cycle.</p> <p>Data calculated by Sustrans using ESRI shapefile polygons dataset which was supplied by the Orkney Islands Council and additionally supplemented by lengths of cycle route in the Orkney Islands known to the Sustrans team.</p>
<p>Percentage of households within 125m of these routes</p>	<p>This was calculated by Sustrans using the route types above and postcode data from 2022-1 Scottish Postcode Directory Files: Postcode index (compiled by <a href="#">National Records of Scotland</a>).</p>

Data item	Sources and notes
	<p>The distance of 125m was taken from the Welsh Active Travel Act, where cycling networks should be designed to have a mesh width of 250m in central areas (<a href="#">Active Travel Act guidance (gov.wales)</a>).</p> <p><b>Household data sources and licence numbers:</b>            Postcode Index is maintained as part of the SPD in CSV format which is freely available under the Open Government Licence. Also Contains NRS data © Crown copyright and database right (2022).            © Crown Copyright 2023. All rights reserved. Licence numbers 100019918, 100046668 (Scotland).</p>
Proportion of residents that have access to an adult cycle	<p>The percentage of respondents answering that they owned at least one of the following types of adult cycles, in the independent survey of residents.</p> <ul style="list-style-type: none"> <li>• Adult pedal bicycle (non-electric) (Q16a)</li> <li>• Adult electric bicycle or e-bike (Q16b)</li> <li>• Other adult cycles, including hand-cycles, tricycles, tandems, recumbents (pedal or electric) (Q16c)</li> <li>• Cargo cycles (with space to carry children, or shopping; pedal or electric) (Q16d)</li> </ul>

## Residents want more support to cycle (page 17)

Data item	Sources and notes
<p>Percentage of residents within different rurality demographic subgroups that would find the following support useful to cycle more:</p> <ul style="list-style-type: none"> <li>• A cycle sharing scheme to loan bikes on a short or longer-term basis</li> <li>• Improving the behaviour of people driving cars</li> <li>• Access to secure cycle storage at key destinations like work, shops, in town</li> <li>• Fewer motor vehicles on our streets in towns and villages</li> <li>• Access to a suitable or better bicycle</li> <li>• Fewer motor vehicles on rural roads in your area</li> </ul>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'very useful' or 'fairly useful' to Q34a, Q34i, Q33e, Q34c, Q34e and Q34d in the independent survey of residents.</p>
<p>Story from an Orkney resident</p>	<p>Case studies from local residents were sourced from local contacts.</p>

## Pages 18 and 19: Neighbourhood solutions

### Residents want measures to make their neighbourhoods and communities better places to live (page 18)

Data item	Sources and notes
<p>Percentage of residents within different rurality demographic subgroups that agree that these kinds of interventions would make their local area, community, isle or parish a better place to live, learn, work or visit?</p> <ul style="list-style-type: none"><li>• Increase space for walking, wheeling and cycling and allowing space for social interaction in towns and villages, even if this reduces space for cars</li><li>• More measures to reduce crime and antisocial behaviour on the street or in public spaces</li></ul>	<p>The percentage of respondents of rurality demographic subgroups (Q4) answering 'strongly agree' or 'tend to agree' to Q40d, Q40e, Q40b, Q40c and Q40a in the independent survey of residents.</p>

Data item	Sources and notes
<ul style="list-style-type: none"> <li>• Restrict through-traffic on local residential streets in towns / villages</li> <li>• Reduce speed limits on local roads in towns / villages to 20 mph</li> <li>• Close streets / roads outside local schools to cars during school drop-off and pick-up times</li> </ul>	
Percentage of streets in Orkney that are 20mph or 15mph	<p>This is the percentage of the total street length to which a 20mph or 15mph limit applies, not the percentage of named streets that are 20mph or 15mph.</p> <p>Data calculated by Sustrans using OS Open Roads, OpenStreetMap (OSM), Google Street View and ESRI shapefile polygons dataset which was supplied by the Orkney Islands Council.</p>

## Places must be designed with children in mind (page 19)

Data item	Sources and notes
Story from an Orkney resident	Case studies from local residents were sourced from local contacts.
Average age when people in Orkney who have children in their household	Median age given by respondents living with children in their household (Q44) by answering to Q45 in the independent survey of residents.

Data item	Sources and notes
would let them walk, wheel or cycle independently in their local area	
Context data for average age of independent travel of children in Norway	Source: <a href="#">Children's Independent Mobility: an international comparison and recommendations for action, 2015</a> .
Percentage of residents living with children, who use the following when they travel with them: <ul style="list-style-type: none"> <li>• a buggy or pushchair when walking or wheeling</li> <li>• a baby carrier or sling</li> <li>• a child seat or cargo bike when cycling</li> </ul>	The percentage of respondents with children in their household (Q44) choosing these answers to Q46 in the independent survey of residents.



## Pages 20 and 21: Developing Orkney

### Recent walking, wheeling, cycling and neighbourhood changes

Data item	Sources and notes
Information on projects, schemes and investments across Orkney	Information developed in partnership between Sustrans Scotland and the partner authority.

# Pages 22 and 23: Looking forward

## Better streets and places for everyone

Data item	Sources and notes
Information on future plans for walking, wheeling and cycle schemes and investments across Orkney	Information developed in partnership between Sustrans Scotland and the partner authority.
Story from an Orkney resident	Case studies from local residents were sourced from local contacts.

# Appendices

## Appendix A: Independent resident survey - methodology

An independent representative survey of residents was conducted in Orkney by the consultant agency Eyland Skyn. The survey was conducted from February to April 2023.

The survey aimed to gather a representative sample of respondents aged 16 and above. The format of the survey was 'push to online'; a letter was posted to all addresses in Orkney and residents were invited to access the survey online. If required, residents could also request a paper format of the questionnaire and return it by prepaid envelope. Only one-person aged 16+ in each household could complete the questionnaire.

The total sample size for the survey is 600 responses, covering approximately:

- 5.6% of all Orkney households<sup>5</sup>, and
- 3.2% of those aged 16 or older<sup>6</sup>.

### Weighting:

At the analysis stage, survey data was weighted using a two-step weighting process to adjust for differences in individual response rates. In the first step, weighting was applied using gender and age categories. For the second step, a corrective weight was applied to the regional areas based on the rurality level by combining relevant Data zones. All weighting proportions were based on the 2021 mid-year population estimates from the National Records of Scotland (NRS).

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<sup>5</sup> [Mid-2022 Household Estimates by Council Area in Scotland](#), Total households, Orkney Islands, 2001-2022.

<sup>6</sup> 2021 mid-year population estimates (NRS)

# Appendix B: Survey questionnaire<sup>7</sup>

## Orkney Travel Matters Survey

### Introduction

In 2021, *Orkney Matters* asked you for your views on what is important to people in Orkney about the place in which you live. The importance of transportation across the County was highlighted, and a strong community aspiration to make improvements to the walking and cycling environment.

This follow up *Orkney Travel Matters* survey will help us get a clearer picture of walking and cycling across Orkney, and specifically what is important for you, your family, and your community.

By completing this survey and sharing your views, you will help inform the improvements required to support people to walk, wheel and cycle more, more often and further.

### How to complete the survey?

**Only one person aged 16+ in your household** should complete this questionnaire.

**Please complete the survey in one go.**

**The survey should take up to 15 minutes to complete. All answers provided will be entirely confidential and no personal identifiable information is asked for.**

Most questions can be answered by selecting the relevant box next to the answer choice that applies to you. Some questions ask you to select all that apply. In this case select as many boxes that apply to you. Some questions ask for your

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<sup>7</sup> Note that questions marked with \* were mandatory. However, all demographic or sensitive mandatory questions had an option 'Prefer not to say'.

comments or thoughts. Please answer all questions as fully as possible.

If you need assistance with completing the survey or if you would prefer a paper copy to complete please contact us and we will send you a survey and a free self-addressed envelope for the survey's return.

[\[email contact details\]](#) or call or text your details to: *[mobile phone contact]*

**Please note:**

We use the term '**wheeling**' throughout the questionnaire. We recognise some people may not identify with the term walking and prefer wheeling, for example those who use a wheelchair or mobility scooter.

This survey is research commissioned by Sustrans. Sustrans is the charity making it easier for people to walk and cycle.

**Section 1: Demographics**

In order to understand that we have gathered responses from a representative cross-section of Orkney please answer the following questions as fully as possible. This survey is anonymous and no identifiable private information is being requested.

**\*Q1.** Please can you tell me your age?

NUMERIC ENTRY [16...120]
Prefer not to say

**\*Q2 (ASK ALL WHO REFUSED AT Q1)** To which of these age bands do you belong?

1.	16-20
2.	21-25
3.	26-30
4.	31-35

5.	36-40
6.	41-45
7.	46-50
8.	51-55
9.	56-60
10	61-65
11	66-70
12	71-75
13	76+
14	Prefer not to say

**\*Q3.** Which of the following describes how you think of yourself?

1.	Female
2.	Male
3.	In another way
4.	Prefer not to say

**\*Q4.** In which area, parish or island do you live? [Drop down menu]

1.	Birsay	19.	Rendall
2.	Burray	20.	Rousay
3.	Deerness	21.	Sanday
4.	Dounby	22.	Sandwick
5.	Eday	23.	Shapinsay
6.	Egilsay	24.	South Ronaldsay
7.	Evie	25.	St Margaret's Hope
8.	Finstown	26.	St Marys
9.	Firth	27.	Stenness
10	Flotta	28.	St Ola
11	Graemsay	29.	Stromness
12	Harray	30.	Stronsay
13	Holm	31.	Tankerness
14	Hoy and Walls	32.	Toab
15	Kirkwall	33.	Westray

16	North Ronaldsay	34.	Wyre
17	Orphir	35.	Other, specify....?
18	Papa Westray	36.	Prefer not to say

**\*Q5.** How many cars or vans are owned, or are available for use in your household?

1.	None
2.	One
3.	Two
4.	Three or more

## **Section 2: Frequency of using different travel modes**

**\*Q6.** How often do you...? Please give your best guess.

a)	Travel by car or van as a driver
b)	Travel by car or van as a passenger
c)	Use a taxi
d)	Use the bus or dial-a-bus
e)	Use an adult push scooter or electric scooter (e-scooter)
f)	Use a motorcycle
g)	Use the internal ferry services (Orkney Ferries)
h)	Use the internal air services (Loganair inter isle)

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week
4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never

**\*Q7.** (ASK ONLY THOSE WHO EVER DRIVE) In the **last 7 days**, how many one-way journeys did you make by car or van **up to 3 miles** in length? (If you travelled to a place and back, please count that as two trips.)

1.	15+ times
2.	13-14 times
3.	11-12 times
4.	9-10 times
5.	7-8 times
6.	5-6 times
7.	3-4 times
8.	1-2 times
9.	None

**Q8.** (ASK ONLY THOSE WHO HAD AT LEAST ONE CAR JOURNEY UP TO 3 MILES IN LAST 7 DAYS (Q7.)) And what **share (in percentages)** of these journeys would you say are very short trips of **less than 1 mile**?

NUMERIC ENTRY [0-100%]
------------------------

### **Section 3: About walking or wheeling and running**

**\*Q9.** How often do you...? Please give your best guess.

a)	Walk or wheel
b)	Run

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week
4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never

**\*Q10.** (ASK THOSE WHO EVER WALK OR WHEEL) Please give your best estimate of how many one-way trips you walked or wheeled in the **last 7 days** from home to a **destination** like work, school, shopping, the gym, a bus stop / travel centre, the ferry, the hospital, or to visit friends / family.



Do not count simple walks with no particular destination, such as walking the dog. If you walk / wheel to a place and back, please **count that as two trips**.

1.	15+ times
2.	13-14 times
3.	11-12 times
4.	9-10 times
5.	7-8 times
6.	5-6 times
7.	3-4 times
8.	1-2 times
9.	None
10.	I only ever walk / wheel for leisure, or not at all

**Q11.** (ASK THOSE WHO SAID ONCE OR MORE) Thinking about your most frequent **one-way walk or wheel to a destination**, please give your best estimate of how far this is in **metres**.

NUMERIC ENTRY IN METRES [100-10,000 metres]
---

**Q12.** (ASK THOSE WHO SAID ONCE OR MORE) Please give your best estimate of how long this takes in **minutes**.

NUMERIC ENTRY IN MINUTES [1-180 minutes]
--

**\*Q13.** (ASK THOSE WHO EVER WALK or RUN) Please give your best estimate of how many **walks, wheels or runs you took in the last 7 days for enjoyment or fitness** (just for pleasure or to keep fit, including running or walking a dog)?

1.	15+ times
2.	13-14 times
3.	11-12 times
4.	9-10 times
5.	7-8 times
6.	5-6 times
7.	3-4 times

8.	1-2 times
9.	None
10.	I never walk / wheel or run for recreation or enjoyment

**Q14.** (ASK THOSE WHO SAID ONCE OR MORE) Thinking about your most frequent **walk, wheel or run for enjoyment or fitness**, please give your best estimate of how far this is in **metres**.

NUMERIC ENTRY IN METRES [100-20,000 metres]
---

**Q15.** (ASK THOSE WHO SAID ONCE OR MORE) Please give your best estimate of how long this takes in **minutes**.

NUMERIC ENTRY IN MINUTES [1-500 minutes]
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**Section 4: The next questions are about cycling**

**Q16.** How many of each of the following are owned within your household?

a)	Adult pedal bicycle (non-electric)
b)	Adult electric bicycle or e-bike
c)	Other adult cycles, including hand-cycles, tricycles, tandems, recumbents (pedal or electric)
d)	Cargo cycles (with space to carry children, or shopping; pedal or electric)
e)	Children's bicycles, tricycles and other types of cycles (pedal or electric)

1.	None
2.	One
3.	Two
4.	Three or more

**\*Q17.** How often do you cycle? Please give your best guess.

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week

4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never

**\*Q18.** (ASK THOSE WHO EVER CYCLE) How often do you cycle to and from **work**?

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week
4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never
9.	I do not work, or I work from home all of the time

**Q19.** (ASK THOSE WHO SAID EVER ON Q18) Please give your best estimate of the typical distance in **miles** of a one-way cycle trip to or from **work**.

NUMERIC ENTRY IN MILES [0.25-50.00 miles]
---

**Q20.** (ASK THOSE WHO SAID EVER ON Q18) Please give your best estimate of the typical duration in **minutes** of a one-way cycle trip to or from **work**.

NUMERIC ENTRY IN MINUTES [1-150 minutes]
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**\*Q21.** (ASK THOSE WHO EVER CYCLE) During school term (not holidays), how often do you cycle to or from **school, college or university**? This includes accompanying a child or someone else.

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week

4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never
9.	I do not go to school, college or university, or accompany anyone else to them

**Q22.** (ASK THOSE WHO SAID EVER ON Q21) Please give your best estimate of the typical distance in **miles** of a **one-way** cycle trip to or from **school, college or university**.

NUMERIC ENTRY IN MILES [0.25-50.00 miles]

**Q23.** (ASK THOSE WHO SAID EVER ON Q21) Please give your best estimate of the typical duration in **minutes** of a **one-way** cycle trip to or from **school, college or university**.

NUMERIC ENTRY IN MINUTES [1-150 minutes]

**\*Q24.** (ASK THOSE WHO EVER CYCLE) How often do you cycle for **shopping, personal business or social trips**? e.g. to travel from your home to the supermarket, doctors, or to visit friends or family.

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week
4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never
9.	I do not make any shopping, personal business or social trips

**Q25.** (ASK THOSE WHO SAID EVER ON Q24) Please give your best estimate of the typical distance in **miles** of a **one-**

way cycle trip for **shopping, personal business or social trips.**

NUMERIC ENTRY IN MILES [0.25-50.00 miles]

**Q26.** (ASK THOSE WHO SAID EVER ON Q24) Please give your best estimate of the typical duration in **minutes** of a **one-way** cycle trip for **shopping, personal business or social trips.**

NUMERIC ENTRY IN MINUTES [1-150 minutes]

**\*Q27.** (ASK THOSE WHO EVER CYCLE) How often do you cycle just for **enjoyment or fitness?**

1.	7 days a week
2.	5-6 days a week
3.	2-4 days a week
4.	Once a week
5.	Once a fortnight
6.	Once a month
7.	Less often
8.	Never
9.	I do not go out for fitness / enjoyment

**Q28.** (ASK THOSE WHO SAID EVER ON Q27) Please give your best estimate of the typical distance in **miles** of your **round** trip cycle ride for **enjoyment or fitness.**

NUMERIC ENTRY IN MILES [0.25-150.00 miles]

**Q29.** (ASK THOSE WHO SAID EVER ON Q27) Please give your best estimate of the typical duration in **minutes** of your **round** trip cycle ride for **enjoyment or fitness.**

NUMERIC ENTRY IN MINUTES [1-500 minutes]

**Section 5: These next questions are about why you choose to walk, wheel or not**

**Q30.** How useful, if at all, would each of the following **infrastructure developments** be to help you to start walking or wheeling, or to encourage you to walk or wheel more or further?

*Randomly order:*

a)	More streets with 20 mph speed limits in towns and villages, and around key services, such as schools.
b)	Better pavement accessibility, for example, level surfaces, dropped kerbs at crossing points, fewer obstructions.
c)	Wider pavements.
d)	More frequent road crossings in towns and villages.
e)	Provision of more footpaths, pavements and walking routes in towns and villages.
f)	Provision of more footpaths, pavements and walking routes between towns and villages.
g)	Better lighting of footpaths, pavements and walking routes.
h)	Better links with public transport (e.g. more footpaths, pavements and walking routes to bus stops, travel centres, ferry / air terminals).

1.	Very useful
2.	Fairly useful
3.	Not very useful
4.	Not useful at all

**Q31.** And how useful, if at all, would each of the following **social and community aspects** be to help you to start walking or wheeling, or to encourage you to walk or wheel more or further?

*Randomly order:*

a)	Access to more shops and everyday services, such as banks and post offices, close to your home.
b)	Access to more public services, such as health care, council services, education, training and learning closer to your home / in a local community hub.

c)	Fewer motor vehicles on our streets in towns and villages.
d)	Nicer places along streets to stop and rest, for example benches, planting and shelters.
e)	More parks and green spaces close to your home.
f)	Fewer motor vehicles on rural roads in your area.
g)	Lower speed traffic on rural roads in your area.
h)	Fewer parked cars on pavements.
i)	More frequent maintenance / cutting of verges alongside single track roads to provide refuge from vehicles.

1.	Very useful
2.	Fairly useful
3.	Not very useful
4.	Not useful at all

**Q32.** What would be your **top priority** in terms of something that could be done to help you to start walking or wheeling or to walk or wheel more or further? Please describe.

Free comment box

**Section 5: These next questions are about why you choose to cycle or not**

**Q33.** And how useful, if at all, would each of the following **infrastructure developments** be to help you to start cycling or to cycle more or further?

*Randomly order:*

a)	More cycle paths alongside roads that are physically separated from traffic and pedestrians.
b)	More traffic-free cycle paths away from roads e.g. through parks.
c)	More signposted local cycle routes along quieter streets where there is less traffic.
d)	More streets with 20 mph speed limits in towns and villages.

e)	Access to secure cycle storage at key destinations like work, shops, in town.
f)	Better links with public transport (e.g. secure parking at travel centres, bus stops, ferry terminals and airport / airfields).

1.	Very useful
2.	Fairly useful
3.	Not very useful
4.	Not useful at all

**Q34.** And how useful, if at all, would each of the following **social and community aspects** be to help you to start cycling or to cycle more or further?

*Randomly order:*

a)	A cycle sharing scheme to loan bikes on a short or longer-term basis.
b)	More cycling training and organised social rides.
c)	Fewer motor vehicles on our streets in towns and villages.
d)	Fewer motor vehicles on rural roads in your area.
e)	Access to a suitable or better bicycle.
f)	Access to a suitable or better e-bike / electric bike.
g)	Access to a suitable or better adapted cycle, e.g. a tricycle or handcycle.
h)	Access to a suitable or better cargo cycle (with space to carry children or shopping).
i)	Improving the behaviour of people driving cars.

1.	Very useful
2.	Fairly useful
3.	Not very useful
4.	Not useful at all

**Q35.** What would be your **top priority** in terms of something that could be done to help you to start cycling or to cycle more or further? Please describe.

Free comment box
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**\*Q36.** Which of the following best describes you personally?

1.	Does not cycle but would like to
2.	Does not cycle and does not want to
3.	Is new or returning to cycling
4.	Occasionally cycles
5.	Regularly cycles

**Q37.** Here are some reasons people often give for not cycling or not cycling more often. Please select all that apply to you.

*Randomly order:*

1.	Cycling is not for people like me.
2.	I am not confident in my cycling skills.
3.	I am not confident in my ability to maintain and fix a bike.
4.	I am concerned about safety.
5.	I am concerned about cycling in the hours of darkness.
6.	The cost of a suitable cycle.
7.	Lack of facilities at home or work, for example secure cycle storage or shower facilities.
8.	Lack of appropriate clothing or equipment.
9.	I travel with children, or passengers or have too much to carry.
10.	I live too far away from where I need to get to.
11.	It can be too windy to cycle.
12.	It can be too wet to cycle.
13.	I would find it too hilly in my area to cycle.
14.	Other, please specify...
15.	None of these

The recent Orkney Matters consultation highlighted the importance of transportation across the County. It identified a strong community aspiration to walk and cycle more. For some there were also concerns over road safety, the speed of traffic

and how this affects a person's choice to walk, wheel or cycle and how often we would make such journeys.

This next section looks to draw out more detail on your views about transport, walking, wheeling and cycling in your local area.

**Q38.** Generally speaking, what do you think about walking, wheeling and cycling in your local area? For each statement, please say whether you think it is good or bad.

a)	Your local area overall as a place to walk or wheel
b)	Your local area overall as a place to cycle
c)	Safety when walking or wheeling
d)	Children's safety when walking or wheeling
e)	Safety when cycling
f)	Children's safety when cycling

1.	Very good
2.	Fairly good
3.	Neither good nor bad
4.	Fairly bad
5.	Very bad

**Q39.** For your most frequent journey to each of the services listed below, please indicate whether this is a short journey, a medium-length journey or a journey that is longer and outside your local area.

**Short journey** - means a short journey from home (a 10-minute walk distance (or 20-minute round trip) or equivalent very short drive away from home)

**Medium length journey** - means beyond a 10-minute walk distance or equivalent but still within your local area, parish or island

**Outside local area** - means outside my local area, parish or island

Please, give one answer for each service.

a)	A food shop which sells a range of fresh fruit and vegetables
b)	Park or green space
c)	Healthcare facility (e.g. doctor's surgery or social care facility)
d)	Nursery / childcare
e)	School (i.e. that children within your household attend)
f)	Bus stops, travel centre, pier for ferry services or airfield
g)	Post Office and or bank
h)	Any public indoor meeting place (e.g. a pub, café, community centre, local hall, place of worship)

1.	Short journey
2.	Medium length journey
3.	Outside local area
4.	Do not use

**Q40.** For each of the following statements, how much do you agree or disagree that this could make your local area, community, parish or isle a better place to live, learn, work or visit?

a)	Close streets / roads outside local schools to cars during school drop-off and pick-up times
b)	Restrict through-traffic on local residential streets in towns / villages
c)	Reduce speed limits on local roads in towns / villages to 20mph
d)	Increase space for walking, wheeling and cycling and allowing space for social interaction in towns and villages, even if this reduces space for cars
e)	More measures to reduce crime and antisocial behaviour on the street or in public spaces

1.	Strongly agree
2.	Tend to agree
3.	Neither agree nor disagree
4.	Tend to disagree
5.	Strongly disagree

**Q41.** Would you like to see more or less government spending on each of the following in your local area, or do you think the level of government spending is about right?

a)	On walking and wheeling
b)	On cycling
c)	On roads and driving
d)	On Electric Vehicle (EV) infrastructure

1.	More spending
2.	Less spending
3.	The level of spending is about right

And now some questions about your household to help us understand travel choices, barriers, and solutions for households in varying circumstances. Please answer the following questions as fully as possible. All given answers will be grouped together and not analysed individually.

**\*Q42.** Please tell us about the **total annual income of your household** (before tax and deductions, but including any benefits/allowances).

1.	Up to £9, 999
2.	£10,000 to £19, 999
3.	£20,000 to £29, 999
4.	£30,000 to £39, 999
5.	£40,000 to £49, 999
6.	£50,000 to £59,999
7.	£60,000 and above
8.	Prefer not to say

**\*Q43.** Could your household afford to pay an unexpected, but necessary, expense of £850?

1.	Yes, easily
2.	Yes, but with some struggle / cuts on other expenses
3.	No
4.	Prefer not to say

**\*Q44.** How many **children under the age of 16** are in your household?

1.	None
2.	One
3.	Two
4.	Three or more

**\*Q45.** (ASK THOSE WITH AT LEAST ONE CHILD UNDER 16 IN HOUSEHOLD) At what age would you let children in your household walk, wheel or cycle independently in your local area, parish or island?

NUMERIC ENTRY [drop down list 3-21]

**Q46.** When travelling with children do you use:  
(Select all that apply)

1.	A buggy or pushchair when walking or wheeling
2.	A baby carrier or sling
3.	A child seat or cargo bike when cycling
4.	None
5.	I do not travel with children

**\*Q47.** How many **adults aged 16 or over** are there in your household including yourself?

1.	One
2.	Two
3.	Three or more

**\*Q48.** Do you have any physical or mental health conditions or illnesses lasting or expected to last for 12 months or more? If you have a physical condition and a mental health condition please choose both answers.

1.	Yes, I have a physical condition
2.	Yes, I have a mental health condition
3.	No
4.	Prefer not to say

**Q49.** (ASK THOSE WHO HAVE EITHER PHYSICAL OR MENTAL HEALTH CONDITION OR BOTH) Do you use a mobility aid to get around? Please select all that apply.

1.	I do not use mobility aid
2.	Wheelchair
3.	Mobility scooter
4.	A cane or guide dog
5.	A walking stick or frame
6.	An adapted cycle
7.	Other

**Q50.** Please use this space to provide any further comments in respect to walking, wheeling, cycling or travel in and around your local area, parish or island, including any ideas that you have that could improve the facilities for walking, wheeling and cycling. Comments left may be used in reports.

Free comment box
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**Thank you for your time today.**

**Please refer to the flier you received for further details.**

# Appendix C: The Orkney modelling process

For modelling of Orkney estimates, Sustrans' Research and Monitoring Unit (RMU) adapted The Walking and Cycling Index model for the rural environment. Orkney Travel Matters uses several models that, in combination, provide estimates of the Orkney-wide level of walking, wheeling and cycling, and associated economic, health and environmental impacts.

## Orkney walking and cycling models

These models estimate the Orkney-wide level of walking, wheeling and cycling using inputs from the residents' survey and other sources such as the population of Orkney and the mode share of travel to school. The method for calculating individual figures derived from these models are described in further detail, under explanations of data for **pages 10 and 12** of the report.

## Societal gain model

The societal gain model puts a financial value on walking, cycling and driving by assigning values to their related costs and benefits. For example, the cost to run a car or the health benefits to the NHS from being physically active cycling.

When it comes to non-survey inputs and values used for Societal gain modelling, they are based on best available evidence in the UK, including the data taken from the Government's standard Transport Analysis Guidance (TAG). For some cases evidence from across Europe has been used.

This methodology is based upon that used for the Copenhagen Bicycle Account, which has been established for 20 years and was one of the main inspirations for the Walking and Cycling Index (formerly Bike Life) urban model, which was adapted for rural Orkney.

The benefits and costs included in our model are shown in the table below. Internal costs and benefits are those to the

individual, while external costs and benefits are to society. The values assigned to each are based on the best available evidence at the moment of running the model.

<b>Cost/benefit</b>	<b>Description</b>
Time Cost (travel time, non-work)	The value of time spent travelling. The value of time is from the country's transport appraisal guidance and is divided by the average speed. No time cost is ascribed to leisure trips. Internal only.
Vehicle Operating Costs	The cost of owning and running a car (driving), cycle (cycling) or shoe wear (walking). Excludes initial purchase cost. Internal cost: vehicle tax is considered an external benefit but an internal cost.
Prolonged Life	Longer life expectancy from physical activity. Internal benefit and a small external cost (welfare cost).
Health	Decrease in illness incidence, reduced cost of medical treatments, fewer days of sick leave. Includes both an internal and external benefit.
Congestion	The time loss imposed on <i>other travellers</i> because of simultaneous use of the road network, including travel time, operating cost and fuel cost. External cost.
Infrastructure Maintenance	Resurfacing, overlay and road markings of infrastructure used by cars. Infrastructure maintenance cost for cycling and walking is too low to quantify. External cost.
Local Air Quality	This relates to the health and environmental impacts of atmospheric emissions of pollutants from motorised vehicles (CO <sub>2</sub> , CO, SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , Hydrocarbons, Benzene, 1,3-butadiene). External cost.
Noise	Based on the relationship between average noise levels and property prices. External cost.



Cost/benefit	Description
Greenhouse Gases	The cost associated with the impact on climate change from vehicle CO <sub>2</sub> output. External cost.
Indirect Taxation	Fuel duty. External cost.
Soil and Water Quality	Pollutants released to soil, water bodies and groundwater, such as hydrocarbons, non-gaseous exhaust, heavy metal particulates from the wear of mechanical components such as brake pads, as well as salt and gravel used for anti-icing or winter maintenance. External cost.
Well-to-tank Emissions	Emissions (of greenhouse gases and other pollutants) due to fuel production and transport to the consumer. External cost.

## The Health Economic Assessment Tool (HEAT)

The World Health Organisation's Health Economic Assessment Tool<sup>8</sup> (HEAT) provides the value of decreased mortality (reduction of the risk of death across the population) that is attributable to the amount of cycling or walking being done by a population, compared to a scenario in which they aren't cycling or walking.

## MOVES

MOVES, Sport England's Model for estimating the Outcomes and Values in the Economics of Sport and physical activity<sup>9</sup>, estimates the number of cases of disease avoided by a specified level of physical activity, and the associated savings to the NHS. This is distinct from HEAT, which relates to the monetary value of longer life expectancy attributable to the level of cycling or walking being done in Orkney.

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<sup>8</sup> The Health Economic Assessment Tool ([HEAT](#)) for walking and cycling by World Health Organisation

<sup>9</sup> Sport England [MOVES](#) tool