Interreg North-West Europe

Co-funded by the European Union

MONA

Visitor surveys - Baseline

Document/Deliverable name	D.1.6.1 Visitor surveys – Baseline
Author(s)	Neuts, B.; Nawijn, J.; Farkic, J.
Status (Final, Draft)	Final
Date	24 December 2024

Table of contents

Table of tables

Table of figures

1. About MONA

Nature areas in North-West Europe (NWE) face an increasing number of visitors (intensified by COVID-19) resulting in an increased pressure on nature, negative environmental impacts, higher management costs, and nuisance for local residents and visitors. The high share of car use exaggerates these impacts, including peak pressures. Furthermore, the almost exclusive access by car excludes disadvantaged people, specifically those without access to a car. At the same time, the urbanised character of NWE, its dense public transport network, well-developed tourism & recreation sector, and presence of shared mobility providers offers ample opportunities for more sustainable tourism.

Interreg NWE project "MOdal shift, routing and nudging solutions in NAture areas for sustainable tourism" (MONA) aims to ensure that sustainable tourism practices in and around nature areas benefit nature, the environment, visitors, and the local economy. MONA does so by encouraging a modal shift through facilitating sustainable transport modes, providing inclusive routing to and within nature areas, and nudging visitors and stakeholders towards more sustainable behaviour.

2. About this document

The purpose of this document is to describe the results of the baseline visitor surveys, carried out in 2024 at three nature areas, each representing one pilot group from the MONA project. This report forms the baseline measurement for the follow-up visitor surveys at the end of the MONA project. These are going to be described in D1.6.2, focusing on the effects of the interventions.

The baseline resident surveys are reported in D1.7.1 and partly follow the same approach taken here. Therefore some parts of this report are identical or similar to those of D.1.7.1.

3. Methodology

3.1 Nature areas and interventions

As described in D.1.1.1, the MONA project's Pilot A group, brings together National Park Utrechtse Heuvelrug (the Netherlands), Grenspark Kalmthoutse Heide (Belgium) and National Park Montagne de Reims (France). Pilot A group is looking into the encouragement of the **modal shift** from car use to more sustainable mobility options. Within MONA project they are investigating how train stations can be further used as "green entrances" to the nature areas and researching the possibilities of soft mobility options facilitation via mobility hubs. Modal shift is closely related to the determinants of the mobility behaviour to and within nature areas. Pilot B group, brings together Tourism Province of Antwerp, in Belgium, and Visit Brabant and National Park Veluwezoom, from the Netherlands. This pilot group focus their activities on **routing** and re-routing for the purpose of sustainable mobility behaviour, improved visitor spread within and outside of nature areas, and more efficient use of strained natural resources. Pilot C group brings together National Park Montagne de Reims and National Park Scarpe-Escaut in France and Tourismus Zentrale Saarland, Germany. This Pilot group focus their activities on **nudging** for the purpose of sustainable mobility behaviour.

Three nature areas with a unique intervention each were going to be used for data collection. The purpose thus was to have one nature area for modal shift, one for routing, and one for nudging. The nature areas that are included in the visitor (and resident) surveys are **Utrechtse Heuvelrug** for modal shift, **Loonse and Drunense Duinen** (as part of Visit Brabant) for routing, and **Scarpe-Escaut** for nudging.

3.2 Visitor survey

The MONA proposal indicated that the visitor survey would build on the insights of A5 (potential markets for visiting nature areas in general). Due to the fact that the general market survey (A5) ran parallel to the visitor (A6) and resident surveys (A7), it was decided to have multiple discussions and feedback moments between the researchers involved in these activities to make sure that these three surveys were as closely aligned as possible, complementing each other.

3.2.1 Contents

The contents of the visitor survey, according to the MONA proposal, would be **(1) understand current visitor behaviour and motivations**, **(2) modal choice**, **(3) the information visitors collect and use**, **(4) the experience of the visit**, **(5) the regional spread throughout the nature areas**, and **(6) visitor expenditure in the region.** It was decided not to include questions on expenditure in the region in the visitor survey. As addressed in Chapter 1, the MONA project aims to ensure that sustainable tourism practices in and around nature areas benefit nature, the environment, visitors, and the local economy. Potential effects of visitation on the local economy are best captured by

asking residents about their perceived economic impacts at the destination level. For this reason, such economic items were included in the resident survey instead.

Next to these five components, the survey contained **socio-demographics**. Finally, a few specific questions for each nature area were included in each survey. These are reported in Chapters 4, 5, and 6..

(1) understand current visitor behaviour and motivations. The actual visitor survey included an introduction of the MONA project and began with a question distinguishing whether the respondent was a day visitor or overnight visitor and whether they lived inside the region or outside. The actual region was defined according to the wishes of the nature area in question. Another question belonging to (1) listed a number of activities that people participated in that day. This list was compiled in close cooperation with the nature areas. The surveys conducted via the market research organization asked for activities participated in over the time span of a year. A question that dealt with motivations of the visit was part of the survey also. The motivations included in the survey contain typical tourism motivations largely based on foundational work in the field of tourism motivations by Pearce and Lee (2005) but applied to the context of nature areas. Finally, a question on pro-environmental behaviour was included. This question included eight statements that could all be rated as agree or disagree. The phrasing of this question purposely addressed the perceived behaviour of other visitors as to avoid social desirability, which typically occurs in questions in which people are asked whether they stick to laws and regulations. These statements were based on work by Zhang et al. (2023), Natural England (2022), and, Wilson (2018).

(2) modal choice. Respondents were able to tick a number of travel modes they used to reach the nature area. Furthermore, they could provide pre-defined reasons for not choosing public transport, again using tick boxes. The answer options were largely based on the work of Anable (2005).

(3) the information visitors collect and use. To gain insight into information used, respondents were asked to select the information source(s) they consulted. The 18 items used were mostly taken from or adapted from Coromina and Camprubi (2016).

(4) the experience of the visit. The visitor experience was measured in two ways. One question concerned an overall evaluation of the experience by asking respondents how they enjoyed their overall visit to the nature area, using a 5-point scale. A second question asked more specifically about their experience, using nine statements related to their experience of the nature area. Respondents were able to rate these as agree or disagree.

(5) the regional spread throughout the nature areas. Each nature area provided areas to be included in the survey when asking respondents which part of the nature area they had visited or were intending to visit that day. As Loonse and Drunense Duinen is a relatively small nature area, this question was excluded in their survey.

(6) socio-demographics. Socio-demographics included were age, gender, and educational level, which are commonly included in surveys. Respondents were also asked whether they considered themselves neurodivergent and whether they had a physical disability. These two socio-demographics would potentially provide information on accessibility of the nature areas and motivations to visit.

The survey questions that were used in all visitor surveys are included in Chapter 9.

3.2.2 Sampling

The nature areas were in charge of arranging the data collection. Data were collected over the summer of 2024. Data for Scarpe-Escaut were collected using onsite QR codes and interviewers, and for Loonse and Drunense Duinen and Utrechtse Heuvelrug by use of an online panel of a market research organization. Participation was completely voluntary and participants had to be at least 16 years old to participate, which complies with the GPDR. No private information was asked for in the surveys. For the online survey in Qualtrics, IP-tracking was turned off for all surveys. The market research organization used panels consisting of adults who participated in these panels on a voluntary basis. Surveys were conducted in English, Dutch, French, and German, depending on the nature area in question. These translations were performed via Qualtrics translation services, and checked by native speakers of the nature area or the research team. The net responses were 171 for Scarpe-Escaut, 301 for Loonse and Drunense Duinen, and 306 for Utrechtse Heuvelrug.

4. Results for Loonse and Drunense Duinen

4.1 Characteristics of the sample

A first relevant aspect of the sample is its socio-demographic composition in terms of gender, age, and educational level. A total of 301 responses were collected during the survey period. Due to the use of a research panel in Loonse and Drunense Duinen, the sample structure might be explained by the sampling strategy rather than reliably representing the 'average visitor'. Of the 301 respondents, 50.2% were male, 48.5% female and 1.3% identified as non-binary/third gender. Table 4.1 shows the sample composition across age groups, indicating a potential underrepresentation of the category 18-24 years old (2.7%). On the other hand, all other age groups are relatively evenly represented, albeit a quarter of the sample (24.6%) being 65+ years old.

Table 4.1: Age categories of respondents (n = 301)

Age category	Count	Percentage
Under 18	0	0.0%
18-24 years old	8	2.7%
25-34 years old	66	21.9%
35-44 years old	60	19.9%
45-54 years old	44	14.6%
55-64 years old	49	16.3%
65+ years old	74	24.6%

As is often the case in surveys, the sample also appears to overrepresent higher-educated respondents, with 146 people (48.5%) having a university bachelor's degree or higher, as compared to just 64 (21.4%) who completed primary or secondary education.

Table 4.2: Educational level of respondents (n = 301)

Educational level	Count	Percentage
Some primary school	2	0.7%
Completed primary	2	0.7%
Some secondary school	5	1.7%
Completed secondary school	55	18.3%
Vocational or similar	56	18.6%
Some university but no degree	31	10.3%
University bachelor's degree	84	27.9%
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)	62	20.6%
Prefer not to say	4	1.3%

Since the MONA project also aims to be inclusive towards people with different abilities, respondents were asked whether they considered themselves neurodivergent and whether they had a physical disability. These two socio-demographics could potentially provide information on accessibility of the nature areas and motivations to visit. Of the 301 respondents, 15% identified themselves as being neurodiverse, while 85% answered negatively on this statement. However, based on the sampling procedure, it is concluded that it was not always clear for people what is meant with neurodiversity. For this reason, it is not useful to investigate differences between those that considered themselves neurodivergent versus those who did not. Regarding physical disabilities, the percentage of visitors who indicated that they have a physical disability was 9.6%, with the remaining 90.4% of sampled visitors not experiencing any physical disability.

4.2 Type of visitor

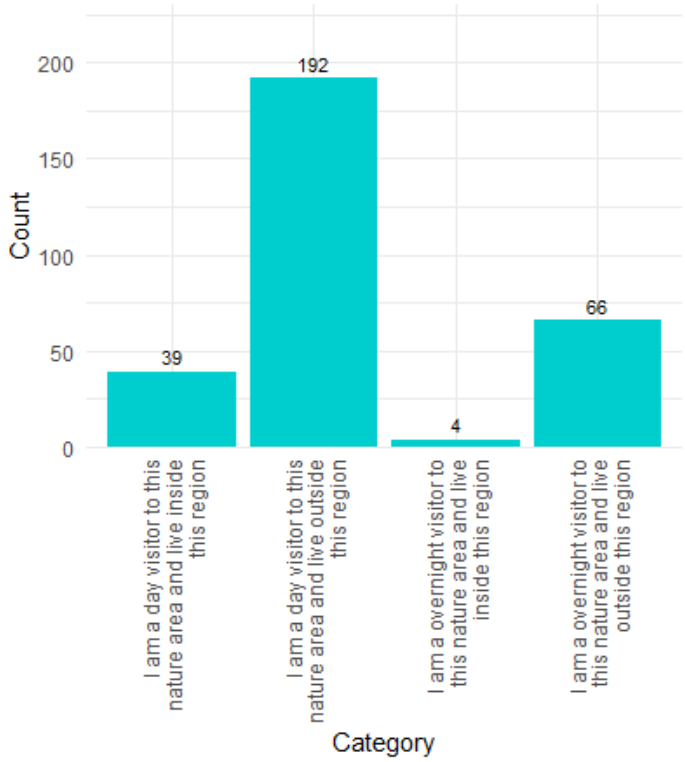

Figure 4.1 provides an overview of the type of visitors that were surveyed. In total, 231 (76.8%) were day visitors, of which 39 people (13.0%) lived within the region of Loonse and Drunense Duinen, while 192 respondents (63.8%) had travelled from outside the region. The remaining 70 respondents (23.2%) were overnight visitors, with 4 of them (1.3%) being residents within the region of the nature area and 66 (21.9%) coming from other provinces/regions.

Figure 4.1: Visitor type and origin (n = 301)

Table 4.3 provides an overview of the main reasons given for visiting the Loonse and Drunense Duinen. Multiple selections could be made, with the percentage being based on the sample size (as opposed to the number of responses). The majority of visitors came to the area in order to relax (64.1%) or to exercise (54.5%). Also important were the motivations to be close to nature (53.5%), to de-stress (33.6%) and to spend time with friends or family (29.9%). Other reasons were much less relevant as motivations to visit.

Table 4.3: Reasons for visiting (n = 301)

Reasons for visiting	Count	Percentage

For business purposes	5	1.7%
Other reasons	17	5.6%
To attend an organized event	7	2.3%
To be close to nature	161	53.5%
To de-stress	101	33.6%
To escape the city	33	11.0%
To exercise	164	54.5%
To learn something new	5	1.7%
To relax	193	64.1%
To spend time alone	22	7.3%
To spend time with friends or family	90	29.9%

Closely linked to the visitor motivations are the activities conducted during a regular visit. Again, multiple selections could be made by respondents.

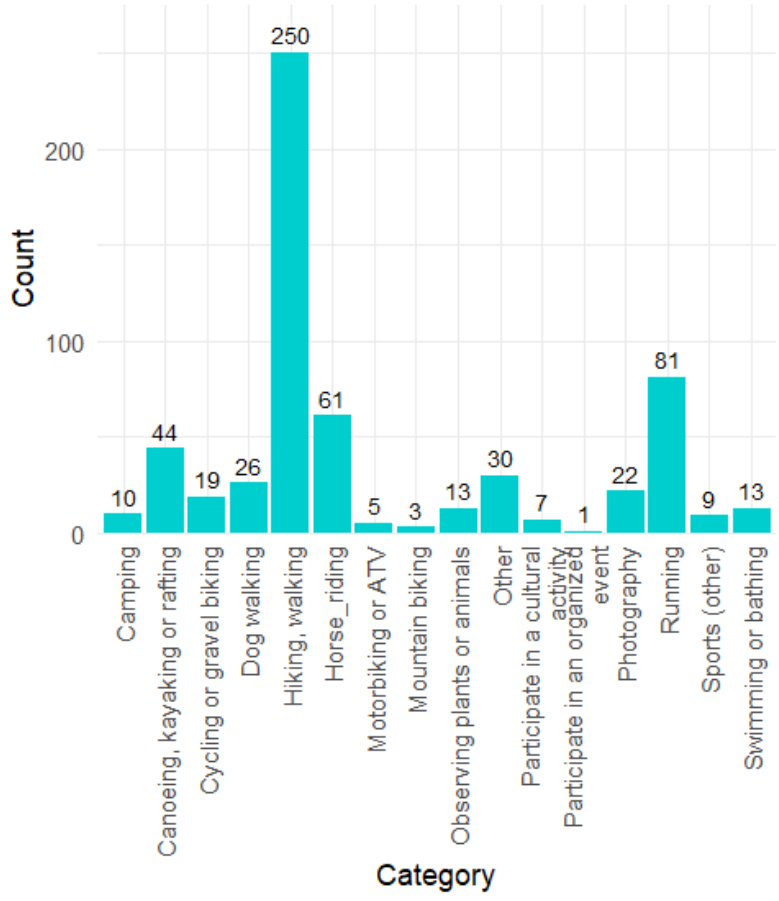

Figure 4.2: Activities conducted in Loonse and Drunense Duinen (n = 301)

As can be seen from Figure 4.2, by far the primary activity at the nature area was hiking, walking (83.1%), with a quarter of visitors (26.9%) also mentioning running. A third important category of visitors are equestrians, with horse riding being an important activity for 1 in 5 respondents (20.3%). Interestingly, a relatively niche activity like canoeing, kayaking or rafting (14.6%) was selected more times than common behaviour such as dog walking (8.6%), photography (7.3%), cycling or gravel biking (6.3%), or observing plants or animals (4.3%). All other activities were marginal at best.

Given the fact that respondents could select multiple activities, it is also interesting to look at correlations between different activities. However, as can be seen from Figure 4.3, there seems to be very little correlation between any of the proposed activities.

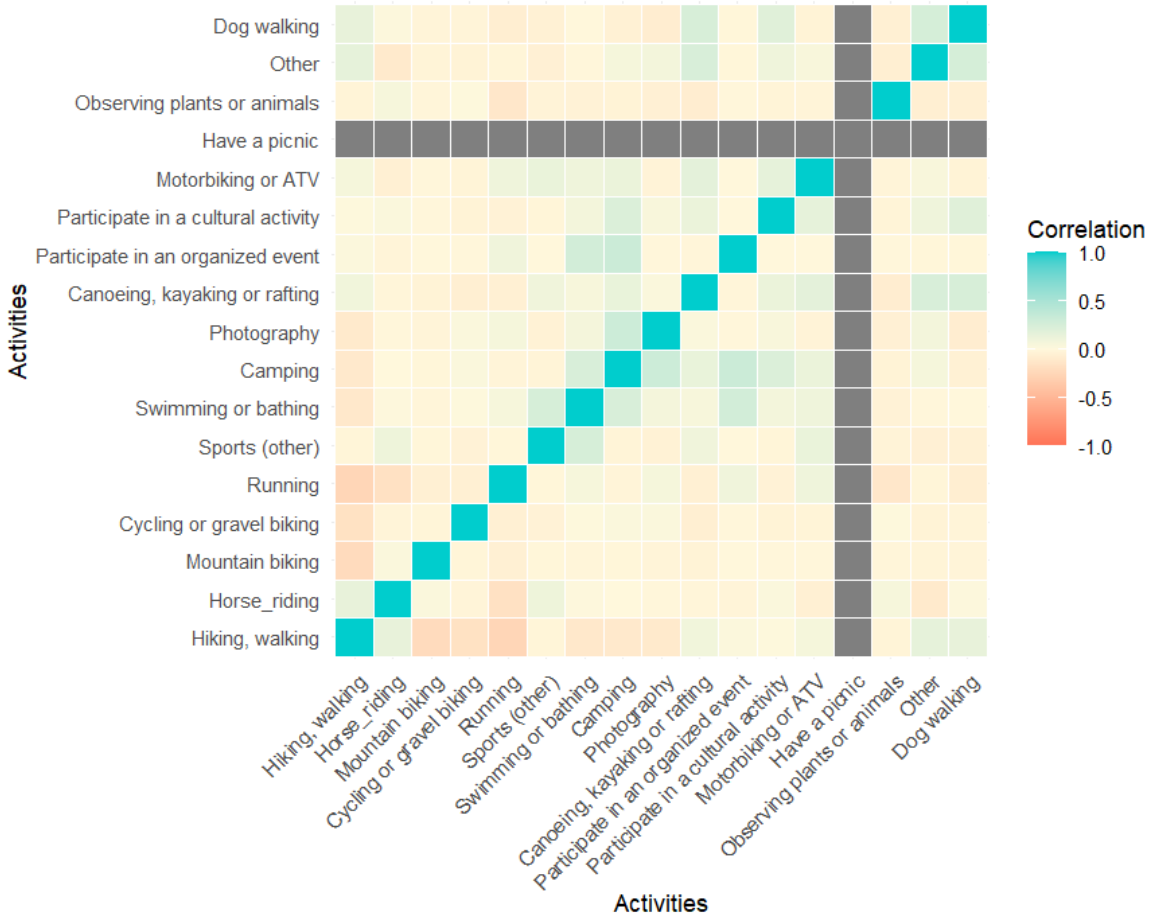

Figure 4.3: Correlations between activities (n = 301)

A similar conclusion can be drawn from looking into the correlations between main visitor motivations (as discussed earlier). Here too, there seems little overlap between categories, with only modestly positive correlations between being close to nature, to de-stress (0.225), to exercise (0.191), and to escape the city (0.157).

4.3 Transportation choices

Given the importance placed on sustainable transportation and modal shift throughout the MONA project, another aspect of interest is the means of transportation used by visitors to Loonse and Drunense Duinen. Table 4.4 highlights the selected means of transportation, which are clearly dominated by car use (74.4%). The large share of car-use might partly be explained by the sample composition, with only 14.3% of respondents living in the region of the nature area, therefore creating potential barriers for soft mobility choices. Still, traveling by bicycle (19.6%) and on foot (13.3%) are the second and

third most selected options. Public and organized mobility only cater to 10.7% of people (6.0% by train, 2.7% by regular bus, and 2.0% by shuttle bus).

Table 4.4: Transportation choices (n = 301)

Transportation choice	Count	Percentage
By bicycle	59	19.6%
By camper van	7	2.3%
By car	224	74.4%
By motorbike	4	1.3%
By regular bus	8	2.7%
By shuttle bus	6	2.0%
By train	18	6.0%
On foot	40	13.3%
Other	2	0.7%

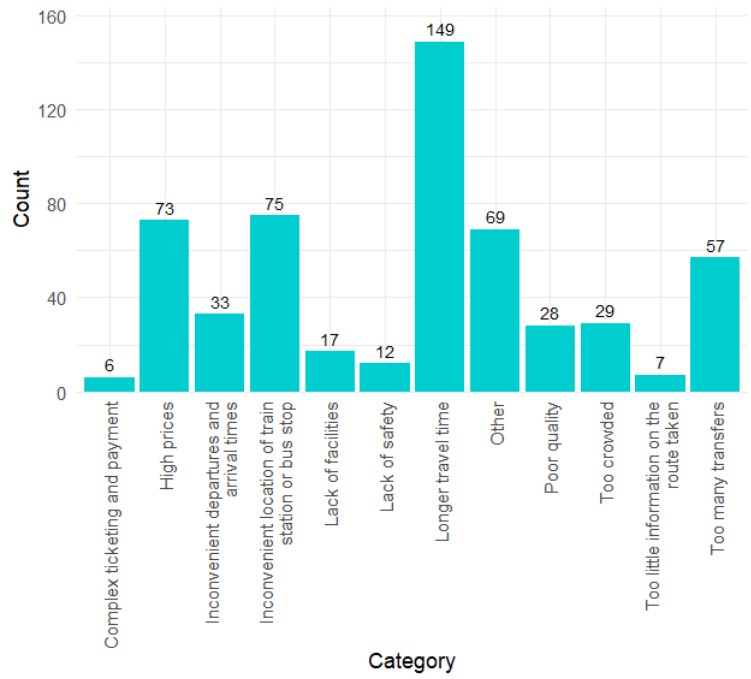

Figure 4.4: Reasons for not selecting public transportation options (n = 301)

Figure 4.4 provides information on the reasons given for not selecting public transportation, with the most mentioned barrier being longer travel times (49.5%), followed by an inconvenient location of train station or bus stop (24.9%), high prices (24.3%), the need for too many transfers (18.9%) or inconvenient departures and travel times (11.0%). All other reasons were mentioned by less than 10% of respondents.

Since a lack of information on the route taken was only a barrier for 2.3%, it is an indication that thresholds cannot easily be overcome by better information but are often the result of challenges that require infrastructural and service developments. Notably though, 22.9% mentioned other reasons for not using public transport.

4.4 Quality of the visitor experience

Prior to analysing visitor experiences in detail, it is also interesting to find out where visitors received information on their visit to the nature area. As clearly seen in Figure 4.5, web-based information sources are of primary importance, with websites (38.2%), search engines (15.6%), and social media (9.6) together mentioned 191 times. Of the offline sources, friends or relatives (29.2%) are the most important influencers. Traditional media such as magazines (0.7%), newspapers (1.0%), radio or podcast (0.3%), or television (1.0%) played almost no role. In that sense, more tourism-focused points of contacts and media such as visitor centres (6.6%), an information point (8.3%), brochures (4.0%), but also signs (10.6%) and maps (11.3%) were more relevant to guide visitors to the nature area. The category 'other' was mentioned a significant number of times as well (15.3%), mostly related to being a return visitor, and therefore not requiring secondary information sources anymore.

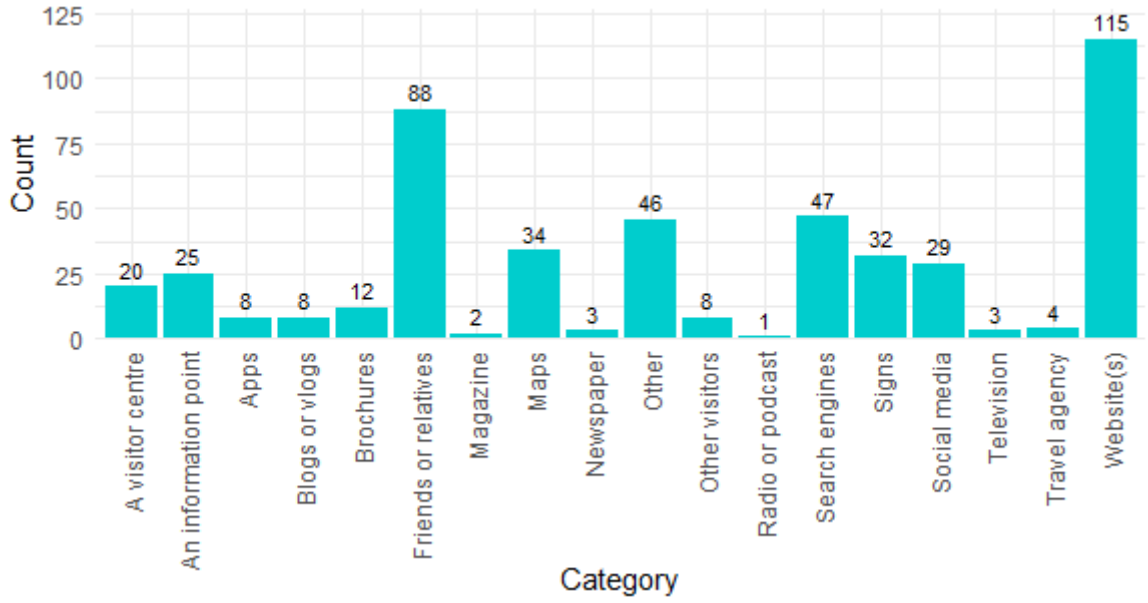

Figure 4.5: Information sources used for preparing visit (n = 301)

In terms of the visitor experience, only 8 respondents (2.7%) assessed the visit as not being enjoyable (not enjoyable at all = 2 people, not enjoyable = 6 people). Another 13 people (4.3%) were neutral on their visit, while the vast majority of respondents (93.1%) were positive about the visitor experience (enjoyable = 160 people, extremely enjoyable = 120 people). Figure 4.6 helps to identify elements that added to – or detracted from – the enjoyment. Only three statements received less than 85% of agreement, namely that there were no crowded areas in Loonse and Drunense Duinen (68.8%), that visitors were able to buy food and drinks (76.08%), and that there were opportunities to meet other visitors (80.7%). All other elements were perceived extremely favourably, both in terms of navigation – with the nature area perceived as easy to access (94.4%), easy to navigate through (93.0%), and good signposting to main attractions (87.7%) – in terms of

cleanliness and maintenance (92.0%), in terms of safety and feeling comfortable during the visit (93.7%) and in terms of information provision of the visitor centre (88.7%).

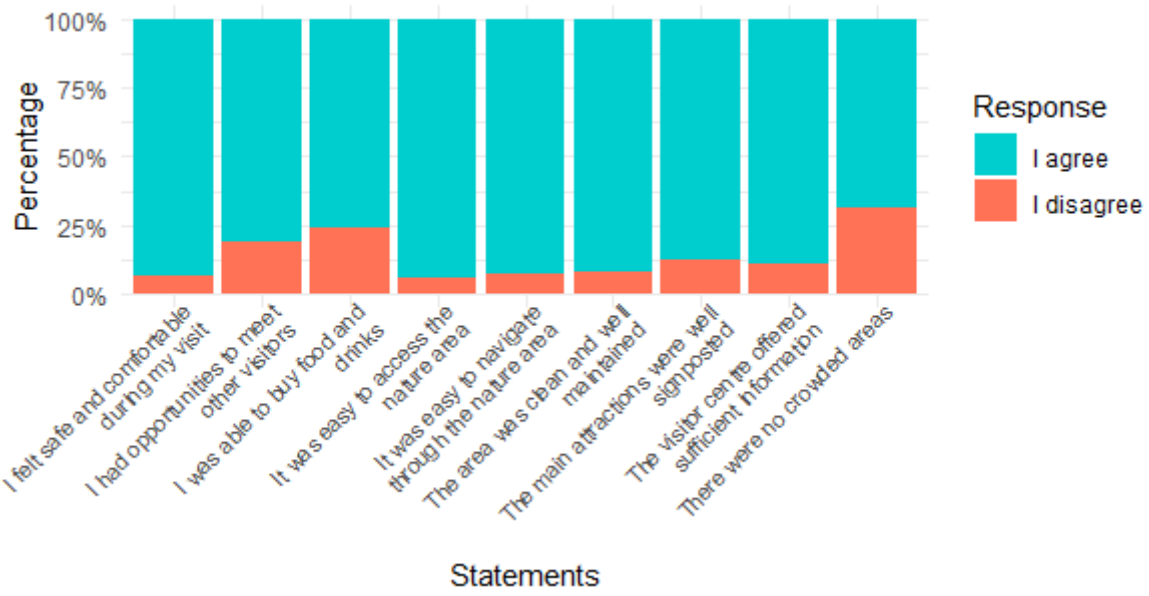

Figure 4.6: Assessment of quality of the visitor experience (n = 301)

An additional question being asked specifically in Loonse and Drunense Duinen, as meant to get a few more insights in visitor return potential and visitor behaviour. There was a very high indication of a return visit, with 93.7% indicating they would certainly return to Loonse and Drunense Duinen, while 73.8% mentioned that in a next visit they would (also) like to visit another nature area. The specific character (sand dunes) at Loonse and Drunense Duinen was a main reason to visit for 68.4% of respondents. Most people did not prepare the visit much beforehand, with only 36.2% indicating they prepared the visit extensively. Potentially related to this limited planning is the observation that 80.7% stayed on the designated routes to move around the area and did not stray of the paths. Finally, there seems a limited, albeit not insignificant potential of visitor spread with 39.9% indicating that they would have liked to know of starting points that are close to but outside of Loonse and Drunense Duinen.

Table 4.5: Visitor spending (per person, n = 301)

Category	€
Food and drinks	47.5
Travel costs	70.0
Parking	10.0
Shopping	50.0
Entrance fees	36.0
Accommodation	90.0
Other	49.5

Furthermore, visitors were asked about their spending behaviour during their visit. Spending is relatively high, with accommodation (where relevant) and travel costs being most significant, but there is also significant per person spending on food and drinks, as well as shopping, indicating a relevant contribution to the local economy.

Finally, Figure 4.7 offers the results of perceived pro-environmental behaviour of (most) other visitors. This questions aimed to establish whether or not Loonse and Drunense Duinen suffered from high-impact negative environmental behaviour, while attempting to avoid social bias that would arise when asking from someone's own behaviour. Respondents largely agree that a majority of visitors behave responsibly, with the most negative aspect related to not leashing dogs in areas where this is required. Only 65.8% agree with the statement that people follow such guidelines when walking with a dog in the nature area. For all other behavioural aspects, agreement is at minimally 80%. Perceptions therefore seems to indicate that visitors generally do not disturb wildlife (89.7% agree), rocks, stones, plants and trees (86.7% agree), ruins or historic sites (88.0%), or the general peace-and-quiet of the nature area (83.1%).

Figure 4.7: Pro-environmental behaviour of others (n = 301)

4.5 Latent Class Analysis: identifying visitor types

To try to get a more complete understanding of visitor types and relationships between variables, in this section the results of a Latent Class Analysis (LCA) are discussed. In order to avoid sparsity in the dataset, a selection of variables was made and certain categories were combined or dropped. We therefore chose to integrate only four manifest variable groups: (i) Motivations, (ii) Primary activities, (iii) Transportation, and (iv) Information sources. Furthermore, for each of these four variable groups, the response options were somewhat simplified in order to reduce the number of categories. This was done as follows:

1. Motivations:

- Nature-based: combines the motives 'to be close to nature', 'to escape the city', 'to learn something new'
- Friends or family: reflects the category 'to spend time with friends or family'
- Relaxation: combines the activities 'to de-stress', 'to relax', 'to spend time alone'
- Sports: reflects the category 'to exercise'

2. Primary activities:
   - Hiking: reflects the answer category 'hiking, walking'
   - Horse riding: reflects the activity 'horse riding'
   - Running: reflects the activity 'running'
   - Water based: combines the activities 'swimming or bathing' and 'canoeing, kayaking or rafting'
   - Dog walking: reflects the answer category 'dog walking'
3. Transportation mode:
   - Motorized, private transport: combines the transportation options 'by car', 'by camper van', 'by motorbike'
   - Soft and public transport: combines the choices 'on foot', 'by bicycle', 'by train', 'by regular bus', 'by shuttle bus'
4. Information sources:
   - Word of mouth: combines the options 'friends or relatives', 'other visitors'
   - Infopoints: combines the selections 'a visitor centre', 'an information point', 'a travel agency'
   - Signs/maps: combines the choices 'signs' and 'maps'
   - Online: combines the options 'website(s)', 'search engines', 'apps', 'blogs or vlogs', 'social media'
   - Other: reflects the category 'other' (which mostly relates to prior experience due to return visits)

Next to these four manifest variables, two additional variables were included as covariates in the analysis since they could provide potentially interesting information on the composition of visitor clusters. These selected covariates are: (i) Origin of visitors, and (ii) Satisfaction. Again, to simplify the analysis, certain categories were combined as follows:

1. Origin of visitors: Distinguishes between local (living in any of the municipalities within the region) and non-local (coming from outside of the region)
2. Satisfaction: Compares very satisfied visitors (a score of 5) to satisfied visitors (a score of 1 to 4)

The analysis modelled results from two to eight possible clusters. The optimal solution was found through investigation of the AIC, BIC and Log-likelihood model values, which indicated an optimal solution of four to five classes. Table 4.6 describes the result of five classes, based on the probabilities of their manifest variables.

Table 4.6: Latent class probabilities

	Class 1	Class 2	Class 3	Class 4	Class 5
Latent class probabilities	**0.169**	**0.227**	**0.270**	**0.190**	**0.143**
Motivations:					
▪ Nature-based	0.333	0.629	0.630	0.490	0.712
▪ Friends or family	0.137	0.417	0.295	0.231	0.401
▪ Relaxation	0.686	0.782	0.794	0.755	0.621
▪ Sports	0.431	0.572	0.483	0.583	0.702
Primary activities:					
▪ Walking, hiking	0.000	1.000	1.000	1.000	1.000
▪ Horse riding	0.000	1.000	1.000	1.000	1.000
▪ Running	0.529	0.117	0.128	0.488	0.177
▪ Water based	0.137	0.183	0.175	0.038	0.420
▪ Dog walking	0.000	0.060	0.131	0.040	0.209
Transportation mode:					
▪ Soft and public transport	0.431	0.105	0.073	1.000	0.361
▪ Motorized, private transport	0.667	1.000	1.000	0.198	0.860
Information sources					
▪ Word of mouth	0.255	0.652	0.180	0.160	0.294
▪ Infopoints	0.078	0.000	0.020	0.114	0.670
▪ Signs, maps	0.235	0.000	0.080	0.128	0.768
▪ Online	0.490	0.138	1.000	0.459	0.464
▪ Other (return visits)	0.118	0.358	0.000	0.271	0.000

The probabilities in the table can be interpreted as percentages of the likelihood of a certain category being selected when visitors belong to a specific class. As such, by focusing on the patterns in the table five somewhat distinct visitor profiles can be identified:

- Class 1, representing 17% of the sample, can be defined as **Runners**, even though in terms of visitor motivations, relaxation (0.686) takes a more dominant position than practising sports (0.431), in terms of activities, only running (0.529) is a significant behaviour, distinguishing this group from other classes. Like class 5, the chance that visitors use soft or public means of transportation (0.431) is somewhat higher, even though private motorized modes of transport (0.667) are still more likely.
- Class 2 comprises 23% of the sample and can be described as **Social visitors**. While these visitors score high on all motives, including nature-based motives (0.629) and relaxation (0.782) it is the group where spending time with friends or families holds a relatively high position (0.417), comparatively speaking. The social dimension also comes at play in the information sources used, with word of mouth by friends, relatives or other visitors (0.652) being the main source of

motivation. In terms of activities, hiking, walking (1.000) and horse riding (1.000) are common, similar to classes 3, 4, and 5.

- Class 3 comprises 27% of the sample and can be considered **Nature-focused visitors inspired by online information**. Like classes 2 and 5, they have a high motivation to visit for nature-based (0.630) purposes, while they share similar relaxation (0.794) motives to classes 2 and 4. In terms of activities, hiking (1.000) and/or horse riding (1.000) are very likely, while in terms of transportation, they rely heavily on private car use (1.000). In terms of information sources they are distinguishable from other classes by their high use of online resources (1.000), potentially indicating less familiarity with Loonse and Drunense Duinen.
- Class 4 comprises 19% of the sample and could be described as **Relaxation seekers, travelling by soft transport**. Their most defining motivation, when compared to other classes, is relaxation (0.755) while common activities are hiking, walking (1.000) and horse riding (1.000), although running also is a more common occurrence in this class (0.488). This group of visitors is distinguished by a clear preference for soft or public modes of transport (1.000). Combined with a general lack of dominant information sources, this might be an indication of a more local type of visitor.
- Class 5 covers 14% of the sample and involves **Water-based sports practitioners**. Like class 2 and 3, these visitors are heavily motivated by nature-based motives (0.712), but unlike the other classes, they have the lowest likelihood of looking for relaxation (0.621). On the contrary, sports activities are generally more relevant in this class (0.702), with in particular water-based sports activities (0.420) being markedly more common than in the other four clusters. This group of visitors is also relatively uniquely defined by the information sources used, with a dominance of touristic info points (0.670), as well as signs and maps (0.768).

After analysing the manifest variables that contribute to the composition of the five classes, the analysis of covariate coefficients allows to identify whether these classes differ in terms of origin of visitors (local = 1 or non-local = 0), and satisfaction (very satisfied = 1, satisfied = 0). The data in Table 4.7 needs to be interpreted in relation to a baseline class (i.e., Class 1). The coefficients and associated p-values then indicate whether the other classes differ significantly from Class 1. Ignoring the intercept value, Class 3 is significantly less likely to be comprised of local visitors (-18.282, p-value = 0.000), which confirms the earlier observations made around the influence that online information plays in this cluster and its reliance on private, motorized transport. No other relevant differences in cluster composition were found with regard to local-non-local origin and satisfaction levels.

Table 4.7: Estimated covariate coefficients

Class	Covariates	Coefficient	Standard error	p-values
2/1	(Intercept) Local resident Satisified	0.211 0.186 0.129	0.286 0.599 0.445	0.461 0.756 0.772
3/1	(Intercept) Local resident Satisfied	0.775 -18.282 -0.412	0.247 0.000 0.438	0.001 0.000 0.348
4/1	(Intercept) Local resident Satisfied	-0.212 0.869 0.330	0.311 0.599 0.484	0.495 0.147 0.495
5/1	(Intercept) Local resident Satisfied	-0.511 -0.223 0.795	0.373 0.796 0.540	0.172 0.779 0.141

5. Results for Utrechtse Heuvelrug

5.1 Characteristics of the sample

A total of 306 responses were collected during the survey period which can be discussed according to the socio-demographic composition in terms of gender, age, and educational level. As in the case of Loonse and Drunense Duinen a panel was used. As such, sampling strategy might affect the sample composition rather than reliably representing the 'average visitor'. However, since the total research population is unknown, statements on sampling reliability are not made. Of the 306 respondents, 50.3% were male, 48.7% female, 0.7% identified as non-binary/third gender, and 1 person preferred not to answer the question. Table 5.1 shows the sample composition across age groups, indicating a potential underrepresentation of the category 18-24 years old (1.0%). Nearly half of the sample are respondents of 55 years or older, with approximately the other half representing people between 25-54 years old.

Table 5.1: Age categories of respondents (n = 306)

Age category	Count	Percentage
Under 18	0	0.0%
18-24 years old	3	1.0%
25-34 years old	65	21.2%
35-44 years old	44	14.4%
45-54 years old	45	14.7%
55-64 years old	74	24.2%
65+ years old	75	24.5%

As is often the case in surveys and survey panels, the sample is overrepresented in terms of higher-educated respondents, with over half of the sample (50.3%) having a university bachelor's degree or higher, as compared to just 74 (24.2%) who completed primary or secondary education.

Table 5.2: Educational level of respondents (n = 306)

Educational level	Count	Percentage
Some primary school	0	0.0%
Completed primary	1	0.3%
Some secondary school	6	2.0%
Completed secondary school	67	21.9%
Vocational or similar	43	14.1%
Some university but no degree	30	9.8%
University bachelor's degree	83	27.1%

Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)	71	23.2%
Prefer not to say	5	1.6%

Since inclusivity towards differently abled people is a central aspect of social sustainability, respondents were also asked whether they considered themselves neurodivergent and/or had a physical disability. This information could provide information on accessibility of the nature area and motivations to visit. Of the 306 respondents, 13.3% self-identified as being neurodiverse. However, it was also noted that neurodiversity was not a known concept to all sample respondents, making this percentage somewhat unreliable. Regarding physical disabilities, the percentage of visitors who indicated that they have a physical disability was 13.1%.

5.2 Type of visitor

Figure 5.1 provides an overview of the types of visitors that were surveyed. In total, 245 (80.0%) were day visitors, of which 57 people (18.6%) lived within the region of Utrechtse Heuvelrug, while 188 day visitors (61.4%) had travelled from outside the region.

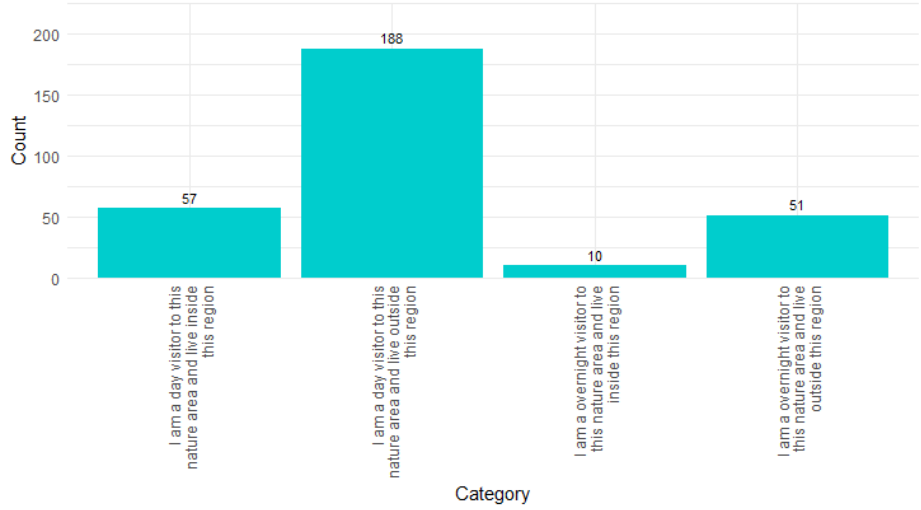

Figure 5.1: Visitor type and origin (n = 306)

The remaining 61 respondents (20.0%) were overnight visitors, with 10 of them (3.3%) being residents within the region of the nature area and 51 (16.7%) coming from other provinces or regions.

Table 5.3 provides an overview of the main reasons given for visiting Utrechtse Heuvelrug. Multiple selections could be made, with the percentage being based on the sample size (as opposed to the number of responses). To relax (69.3%), being close to nature (60.1%), and to exercise (62.4%) are all mentioned to a more or less similar extent, while the social visitor motive of spending time with friends or family is relevant in about one-third of cases (35.3%). Logically there might be categorical overlap as well, with the motives to relax, to de-stress (33.3%), and to spend time alone (7.8%) all potentially relating to similar underlying drivers. It can therefore be relevant to also check correlations in question item selections. The most significant correlation is found between the motives to be close to

nature and to exercise (0.347). The motive to relax is more strongly associated with the motive to escape the city (0.225) than with a motivation to spend time alone (0.115) or de-stress (0.050). Other slightly positive correlations are found for the social motive to spend time with friends or family, combined with escaping the city (0.197) and learning something new (0.161), which might potentially reflect educational visits with children – although this being conjecture and not directly observable from data.

Table 5.3: Reasons for visiting (n = 306)

Reasons for visiting	Count	Percentage
For business purposes	6	2.0%
Other reasons	10	3.3%
To attend an organized event	9	2.9%
To be close to nature	184	60.1%
To de-stress	102	33.3%
To escape the city	47	15.4%
To exercise	191	62.4%
To learn something new	7	2.3%
To relax	212	69.3%
To spend time alone	24	7.8%
To spend time with friends or family	108	35.3%

Closely linked to the visitor motivations are the activities conducted during a regular visit. Again, multiple selections could be made by respondents. As can be seen from Figure 5.2, by far the primary activity at the nature area was hiking, walking (80.4%), with a quarter of visitors (24.2%) also mentioning cycling or gravel biking. Dog walking was the third most-mentioned activity at 16.0%. All other activities were mentioned by less than 10% of the sample, with only observing plants or animals (7.2%), photography (7.2%), having a picnic (6.2%), camping (5.2%), running (5.2%), and other activities (5.2%) scoring above 5%.

Given the fact that respondents could select multiple activities, it is also interesting to look at correlations between different activities. However, as can be seen from Figure 5.3, there seems to be very little correlation between any of the proposed activities. Only sports-related activities seem to be somewhat connected, with mountain biking correlating positively with running (0.300), other sports (0.160), and canoeing, kayaking or rafting (0.262), albeit all of these categories being of limited importance as was discussed earlier.

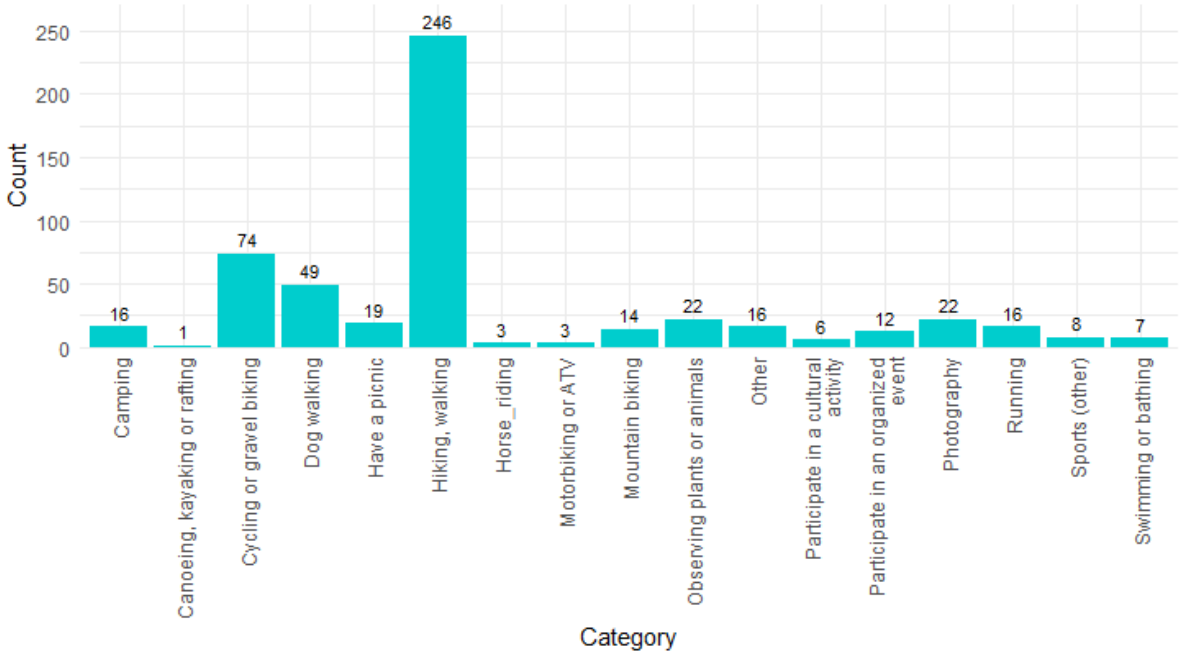

Figure 5.2: Activities conducted in Utrechtse Heuvelrug (n = 306)

Figure 5.3: Correlations between activities (n = 306)

5.3 Transportation choices

Given the importance placed on sustainable transportation and modal shift throughout the MONA project, another aspect of interest is the means of transportation used by visitors to Utrechtse Heuvelrug. Table 5.4 highlights the selected means of transportation, which are clearly dominated by car use (79.1%), potentially partly explained due to the sample, with only 67 respondents living in the region of Utrechtse Heuvelrug. Still, traveling by bicycle (25.2%) is the second travel option, which might link to the earlier described activities, where cycling was an important visitor activity. A further 14.7% of visitors came on foot to the nature area. Public and organized mobility catered to 12% of people (10.1% by train, 1.6% by regular bus, and 0.3% by shuttle bus).

Table 5.4: Transportation choices (n = 306)

Transportation choice	Count	Percentage
By bicycle	77	25.2%
By camper van	3	1.0%
By car	242	79.1%
By motorbike	5	1.6%
By regular bus	5	1.6%
By shuttle bus	1	0.3%
By train	31	10.1%
On foot	45	14.7%
Other	4	1.3%

Figure 5.4 provides information on the reasons given for not selecting public transportation, with the most mentioned barrier being longer travel times (48.4%), followed by high prices (30.4%), an inconvenient location of train station or bus stop (29.7%), the need for too many transfers (19.6%) or inconvenient departures and travel times (10.1%). Importantly, 26.8% mentioned other reasons for not selecting public transport.

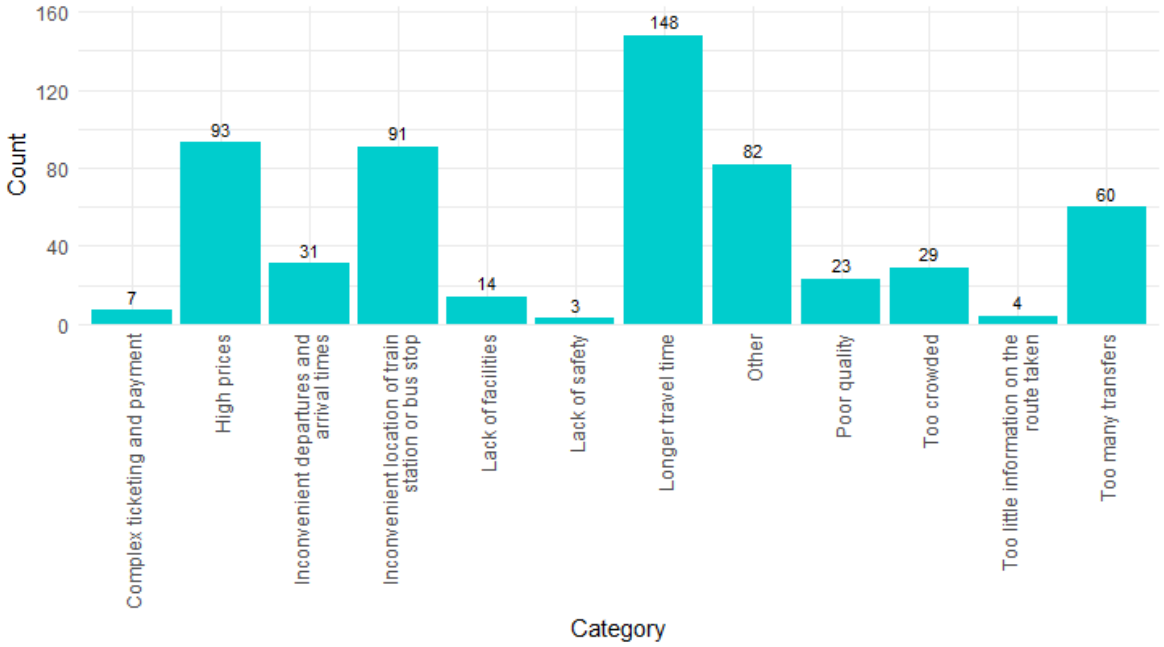

Figure 5.4: Reasons for not selecting public transportation options (n = 306)

Since a lack of information on the route taken was not a significantly mentioned barrier (1.3%), it is an indication that thresholds to using public transport are often related to infrastructural aspects and therefore cannot be overcome by simply providing better information.

Since longer travel times and an inconvenient location of train stations or bus stops were mentioned as prime reasons for not using public transport, additional questions in the Utrechtse Heuvelrug visitor survey asked about the maximum amount of walking or cycling time from the station or parking to the park entrance visitors would be willing to consider.

Table 5.5: Maximum walking/cycling time from station or parking to entrance (n = 306)

Minutes	Walking	Cycling
None	3.6%	12.1%
0-1 min	3.3%	12.1%
2-5 min	25.2%	
6-15 min	51%	42.5%
16-30 min	11.1%	24.2%
More than 30 min	5.9%	9.2%

Table 5.5 shows that for a majority of people the walking/cycling time required needs to remain below 15 minutes in order to be acceptable. If travelling by bike, a larger percentage of people is willing to travel up to 30 minutes (24.2%) or more (9.2%) to the nature area than is the case for people travelling on foot (11.1% and 5.9% respectively).

A few final statements posed at Utrechtse Heuvelrug asked visitors about their willingness to pay for parking and use various sorts of shared mobility services. Less than half of respondents (45.1%) were willing to pay for parking, while 39.5% mentioned a willingness

to use shared mobility for the final parts of their travels. Of the shared mobility choices offered, the electric bike was seen as most interesting (42.2%), followed by a regular bike (36.6%). There was not much apparent demand for an electric carrier bike (6.5%) or regular carrier bike (2.6%).

5.4 Quality of the visitor experience

A first interesting overview to be given, prior to analysing actual experiences, is the way in which visitors informed themselves on the visit. As shown in Figure 5.5, and similar to Loonse and Drunense Duinen, web-based information sources are the main resources for visitors, with websites (56.2%), search engines (21.6%), and social media (9.2%) together mentioned 266 times. Word-of-mouth via friends or relatives (31.0%) remains an important influencer as well. In contrast, traditional media such as magazines (3.9%) and newspapers (2.6%) played only a minor role. Tourism-focused points of contacts and media such as visitor centres (9.2%), an information point (11.4%), brochures (4.2%), but also signs (17.0%) and maps (18.6%) were more relevant to guide visitors to the nature area. The category 'others' also scored high, mentioned by one out of ten people (10.8%), which is mostly linked to being a return visitor, and therefore not necessarily requiring secondary information sources.

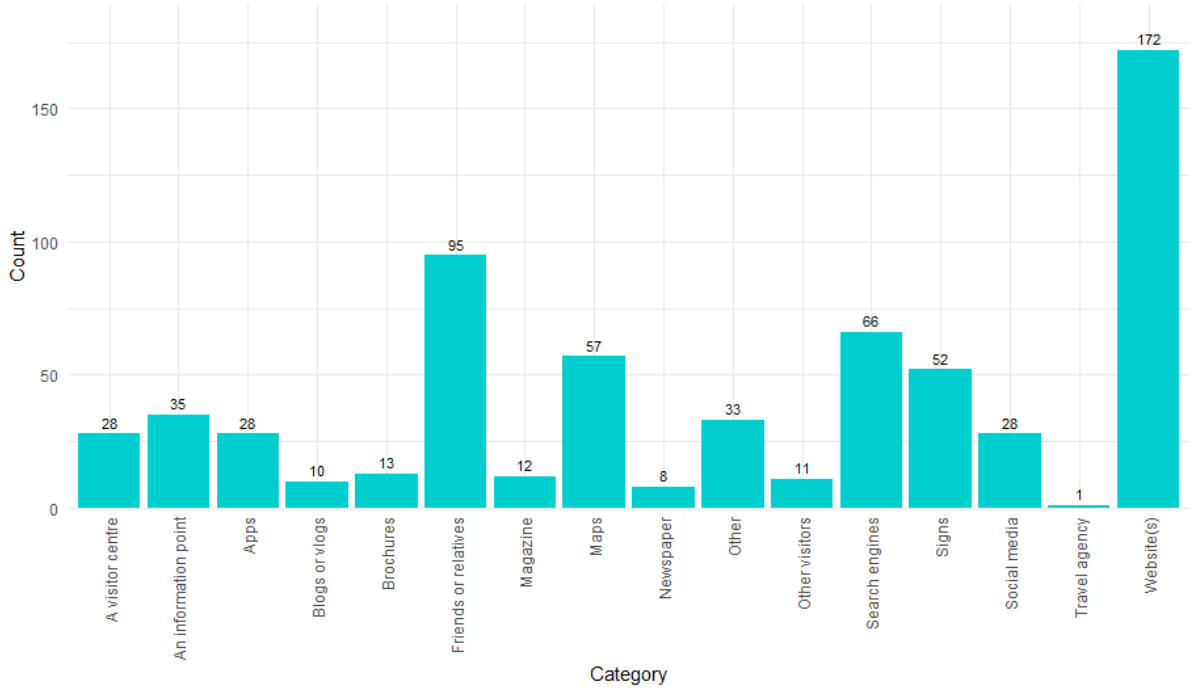

Figure 5.5: Information sources used for preparing visit (n = 306)

The overall visitor experience at Utrechtse Heuvelrug was scored very favourably, with no respondents perceiving their visit as not (very) enjoyable. Only 3 respondents (1.0%) were neutral on their visit, while 198 people (64.7%) found their visit to be enjoyable and a further 105 visitors (34.3%) rating it as extremely enjoyable.

Figure 5.6 helps to identify elements that supported the enjoyment of the visit. Three statements received significantly higher levels of agreement, namely that there were no crowded areas in Utrechtse Heuvelrug (58.2% agree), that visitors were able to buy food and drinks (63.7% agree), and that there were opportunities to meet other visitors (70.9%). Still, given the high rate of the overall visitor experience, it can be presumed that these elements are not central to the enjoyment of the nature area and even higher levels of crowding in certain areas do not carry over to negative sentiments. All other elements were perceived extremely favourably, both in terms of navigation – with the nature area perceived as easy to access (96.1%), easy to navigate through (95.4%), and good signposting to main attractions (92.5%) – in terms of cleanliness and maintenance (95.4%), in terms of safety and feeling comfortable during the visit (98.4%) and in terms of information provision of the visitor centre (86.6%).

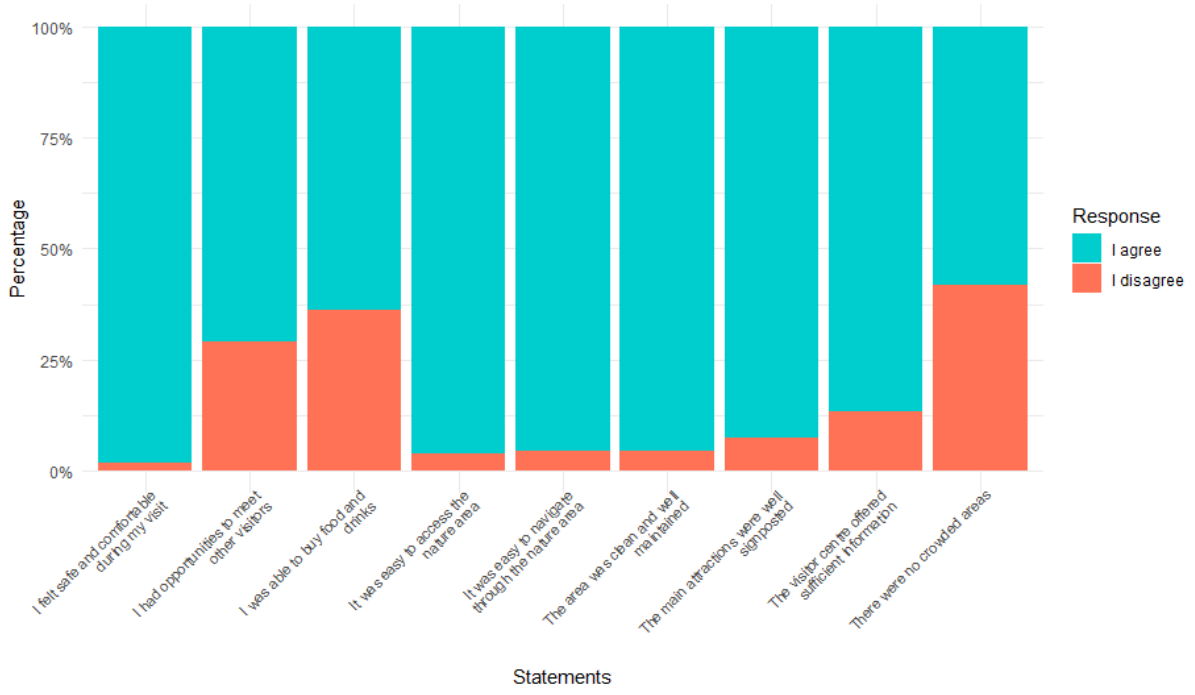

Figure 5.6: Assessment of quality of the visitor experience (n = 306)

Finally, Figure 5.7 offers an overview of perceived environmental behaviour by other visitors, which allows for the identification of potential high-impact negative effects through visitation. While in general respondents seemed to agree that a majority of visitors behave responsibly, an issue appears to exist in terms of the behaviour of dog owners, with only half of respondents (51.0%) agreeing with the statement that most dog owners keep their dogs on a leash when this is required. There are also slightly more negative perceptions on whether most people dispose their garbage properly (79.7% agree that this is done), whether people respect the peace-and-quiet of the nature area (80.7% agree), and whether visitors take care not to disturb wildlife (81.0% agree). Still, negative perceptions on this are only had by about one in five respondents. For all other

behavioural aspects, agreement is well-above 80%. Perceptions therefore seems to indicate that visitors generally follow environmental guidelines (88.6% agree), stay on designated tracks and trails (86.9% agree), and leave rocks, stones, plants and trees (84.6%) or ruins or historic sites (89.5%) undisturbed.

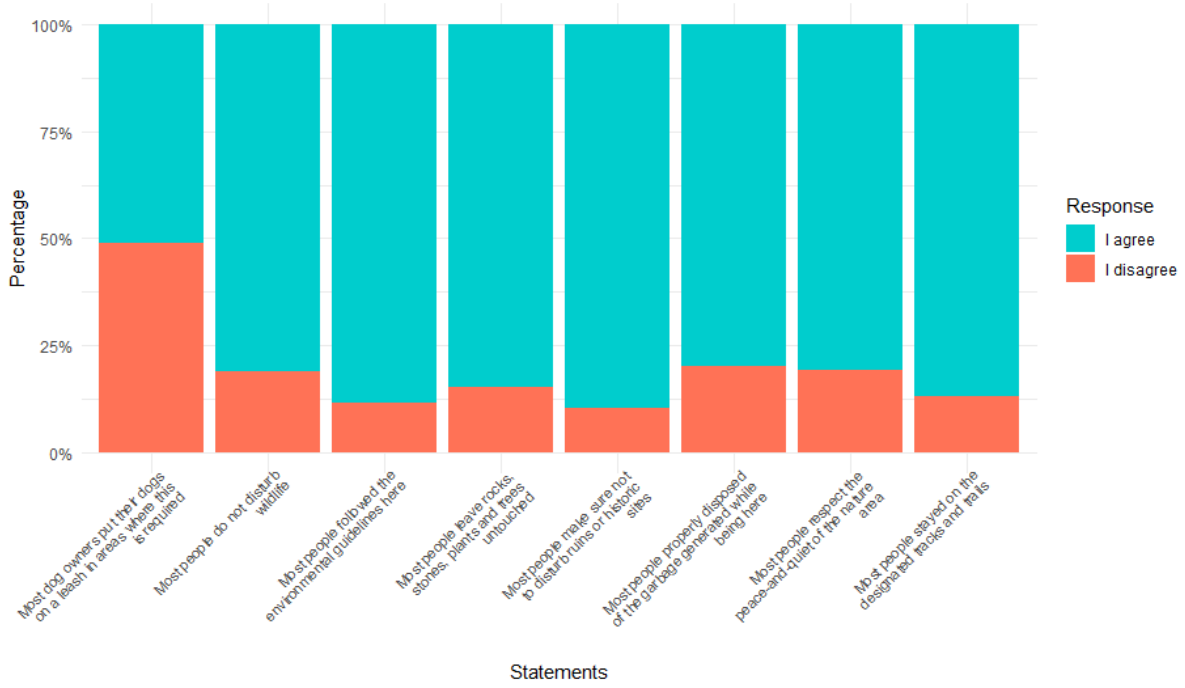

Figure 5.7: Pro-environmental behaviour of others (n = 306)

Finally, the Utrechtse Heuvelrug questionnaire asked respondents about the area(s) that they visited, allowing for an indication of local concentration. As can be seen from Table 5.5, a majority of visitors could be found at Bossen Lage Vuursche (43.5%), followed by the Amerongse Berg (29.1%). At the same time it is important to note that about one in five visitors (18.0%) could not correctly identify the visited areas.

Table 5.6: Regional spread Utrechtse Heuvelrug (n = 306)

Area	Percentage
Bossen Lage Vuursche	43.5%
Baarnse Bos	19.0%
Landgoed Groeneveld	16.7%
Kaapse Bossen	20.3%
Doornse Gat	12.4%
Bossen Leersumse Veld	22.2%
Amerongse Berg	29.1%
I don't know	18.0%

5.5 Latent Class Analysis: identifying visitor types

Next, visitor types and relationships between variables were identified through a Latent Class Analysis (LCA). A LCA combines patterns in categorical data, as opposed to cluster methods that rely on distances and thus require interval or continuous data. However, in order to avoid data sparsity due to a lack of responses in selected categories or a problem of degrees of freedom as a result of observations per variable, a first necessary step is the simplification of data, both by dropping less relevant categories and by combining categories. We integrate four manifest variable groups in the LCA exercise: (i) Motivations, (ii) Primary activities, (iii) Transportation, and (iv) Information sources. For each of these four variable groups, the response options were simplified as follows:

1. Motivations:
    - Nature-based: represents the motive 'to be close to nature', 'to escape the city'
    - Friends or family: combines the categories 'to spend time with friends or family' and 'to learn something new'
    - Relaxation: combines the activities 'to de-stress', 'to relax', 'to spend time alone', and 'to escape the city'
    - Sports: reflects the category 'to exercise'
2. Primary activities:
    - Hiking: reflects the answer category 'hiking, walking'
    - Cycling/gravel biking: reflects the activity 'cycling or gravel biking'
    - Other sports (Running, Mountain biking): combines the activities 'running', 'mountain biking', 'sports (others)'
    - Dog walking: reflects the answer category 'dog walking'
3. Transportation mode:
    - Motorized, private transport: combines the transportation options 'by car', 'by camper van', 'by motorbike'
    - Soft transport: combines the choices 'on foot', 'by bicycle'
    - Public transport: reflects the categories 'by train', 'by regular bus', 'by shuttle bus'
4. Information sources:
    - Word of mouth: combines the options 'friends or relatives', 'other visitors'
    - Infopoints: combines the selections 'a visitor centre', 'an information point', 'a travel agency'
    - Signs/maps: combines the choices 'signs' and 'maps'
    - Online: combines the options 'website(s)', 'search engines', 'apps', 'blogs or vlogs', 'social media'
    - Other: reflects the category 'other' (which mostly relates to prior experience due to return visits)

Two additional variables were included as covariates in the analysis: (i) Origin of visitors, and (ii) Satisfaction. These covariates could provide additional information on the composition of clusters. To simplify the analysis, certain categories were combined as follows:

1. Origin of visitors: Distinguishes between local (living in any of the municipalities within the region) and non-local (coming from outside of the region)
2. Satisfaction: Compares very satisfied visitors (a score of 5) to satisfied visitors (a score of 1 to 4)

The analysis modelled results from two to six possible clusters. The optimal solution was found through investigation of the AIC, BIC and Log-likelihood model values, which indicated a preference for five classes. Table 5.6 describes the result of these classes, based on the probabilities of their manifest variables.

Table 5.7: Latent class probabilities

	Class 1	Class 2	Class 3	Class 4	Class 5
Latent class probabilities	**0.378**	**0.061**	**0.280**	**0.208**	**0.073**
Motivations:					
▪ Nature-based	0.475	0.576	0.939	0.541	0.157
▪ Friends or family	0.248	0.155	0.548	0.196	0.804
▪ Relaxation	0.797	0.685	0.902	0.764	0.451
▪ Sports	0.564	0.474	0.925	0.540	0.143
Primary activities:					
▪ Walking, hiking	0.825	0.683	0.986	0.574	0.752
▪ Cycling/gravel biking	0.152	0.267	0.116	0.566	0.244
▪ Other sports (running, mountain biking)	0.048	0.053	0.171	0.122	0.000
▪ Dog walking	0.172	0.050	0.194	0.133	0.134
Transportation mode:					
▪ Soft transport	0.012	0.000	0.377	0.895	0.419
▪ Public transport	0.000	0.000	0.248	0.153	0.091
▪ Motorized, private transport	1.000	0.951	0.847	0.340	0.869
Information sources					
▪ Word of mouth	0.241	0.000	0.478	0.139	1.000
▪ Infopoints	0.120	0.000	0.350	0.159	0.000
▪ Signs, maps	0.169	0.000	0.569	0.376	0.034
▪ Online	0.865	0.000	0.872	0.677	0.000
▪ Other (return visits)	0.031	1.000	0.033	0.128	0.000

The probabilities in the table can be interpreted as percentages of the likelihood of motivation, activity, transportation mode or information source being selected by visitors within this class. By focusing on distinct patterns four visitor profiles are identified:

- Class 1 covers 38% of the sample and can be described as **Relaxation seekers**. They don't show any strong motives to visit, besides relaxation (0.797), in which they appear similar to class 3 and class 4. Hiking, walking (0.825) is the most common activity and also walking with a dog (0.172) is more likely in this cluster. These visitors are predominantly choosing for cars (1.000) as the primary means of transport and collect information about Utrechtse Heuvelrug online (0.865)
- Class 2 comprises 6% of the sample and has no clearly defined identity, broadly describing them as **Casual visitors**. While this might sound as having a negative connotation, what is merely meant is that this group of visitors does not have any strong singular motive, being somewhat nature-based (0.576), somewhat relaxation focused (0.685) and practicing sports to some extent (0.474), while also not scoring high on any activity. They visit the nature area by car (0.951) and receive information for their visit via other sources (1.000), thus indicating that they likely are visitors who use Utrechtse Heuvelrug for everyday leisure purposes.
- Class 3 comprises 28% of the sample and could be described as **Nature-loving hikers**, given the strong nature-based focus (0.939) and prevalence of hiking, walking (0.986). Notwithstanding, visitors in this category also appreciate Utrechtse Heuvelrug for the chances it offers to relax (0.902) and exercise (0.925). Apart from hiking, this category is also the likeliest to participate in other sports such as running or mountain biking (0.171). Similar to class 1, 2 and 5, cars are the most likely transportation choice (0.847), although this class is also somewhat more likely to use public transport (0.248). Online information sources (0.872) and word of mouth (0.478) most often inspire the visit.
- Class 4 covers 21% of the sample and involves **Cyclists/gravel bikers**. In terms of visitor motives, relaxation (0.764) still scores highest, but sports/exercising (0.540) is also relatively prevalent. In terms of activity, this class is least likely among the visitor groups to go hiking/walking (0.574) and most likely to participate in cycling/gravel biking (0.566). Since these visitors are more often visiting Utrechtse Heuvelrug for cycling, this is also logically noticeable from the selected means of transportation, with a large likelihood of soft mobility (0.895).
- Class 5 comprises 7% of the sample and can be considered **Socially-driven visitors**. Comparatively to other classes, these visitors are less likely to visit Utrechtse Heuvelrug to spend time in nature (0.157) or to relax (0.451) or exercise (0.143), but instead they are mainly motivated by spending time with friends or family (0.804). They don't exhibit very outspoken activities, with hiking, walking being most common (0.752), as is comparable to class 1 and class 3. There is some potential use of soft (0.419) means of transport, although by far

most likely is the use of private vehicles (0.869). In terms of information gathering, the social aspect of the visit is again obvious, with word of mouth (1.000) being the most likely inspiration for the visit.

After analysing the manifest variables that contribute to the five classes, covariate coefficients allow to identify whether categories are significantly different in terms of origin of visitors (local = 1 or non-local = 0), and satisfaction (very satisfied = 1, satisfied = 0). The data in Table 5.7 needs to be interpreted in relation to a baseline class (i.e., Class 1). The coefficients and associated p-values then indicate whether the other classes differ significantly from Class 1. Ignoring the intercept value, Class 2 shows no significant differences to Class 1. On the other hand, Class 3 is significantly more likely to consist of local visitors (2.250, p-value = 0.002), which might explain the fact that this group is slightly less car-dominant. This class is also somewhat more likely to be very satisfied (1.460, p-value = 0.002). Similarly, in Class 4, there is a higher likelihood of local residents (3.040, p-value = 0.000), coinciding with a higher use of soft mobility in this class as well. Finally, Class 5 is both more likely to come from the nearby region (2.346, p-value = 0.027), potentially reflected by their social motives, while being less likely to be very satisfied (-14.907, p-value 0.000), even though this final finding is likely unreliable due to the small size of this cluster.

Table 5.8: Estimated covariate coefficients

Class	Covariates	Coefficient	Standard error	p-values
2/1	(Intercept)	-2.169	0.384	0.000
	Local resident	1.520	1.086	0.161
	Very satisified	0.710	0.687	0.302
3/1	(Intercept)	-1.146	0.336	0.001
	Local resident	2.250	0.712	0.002
	Very satisfied	1.460	0.464	0.002
4/1	(Intercept)	-1.364	0.313	0.000
	Local resident	3.040	0.701	0.000
	Very satisfied	0.674	0.516	0.191
5/1	(Intercept)	-1.690	0.357	0.000
	Local resident	2.346	1.064	0.027
	Very satisfied	-14.907	0.000	0.000

6. Results for Scarpe-Escaut

6.1 Characteristics of the sample

A total of 171 responses were collected during the survey period in Scarpe-Escaut. Due to the relatively small sample size and the lack of knowledge on the actual research population, we cannot make estimates on the sample representativeness and merely provide a summarizing overview of the socio-demographics. Of the 171 respondents, 39.8% were male, and 60.2% female, potentially indicate a gender imbalance in the sampling strategy. Table 6.1 shows the sample composition across age groups, indicating a relatively balanced distribution with sufficient representation across all age categories. Nearly half of the sample (45.1%) fell in the middle age groups between 35-54 years old, while 21.1% of respondents were below 35 and 33.9% of visitors were above 55.

Table 6.1: Age categories of respondents (n = 171)

Age category	Count	Percentage
Under 18	3	1.8%
18-24 years old	12	7.0%
25-34 years old	21	12.3%
35-44 years old	42	24.6%
45-54 years old	35	20.5%
55-64 years old	26	15.2%
65+ years old	32	18.7%

As is often the case in surveys and survey panels, the sample is overrepresented in terms of higher-educated respondents, with half of the sample (50.3%) having a university bachelor's degree or higher, as compared to just 35 people (20.4%) who completed primary or secondary education.

Table 6.2: Educational level of respondents (n = 171)

Educational level	Count	Percentage
Some primary school	0	0.0%
Completed primary	4	2.3%
Some secondary school	7	4.1%
Completed secondary school	24	14.0%
Vocational or similar	27	15.8%
Some university but no degree	9	5.3%
University bachelor's degree	46	26.9%
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)	40	23.4%
Prefer not to say	14	8.2%

Apart from focusing on sustainable mobility, the MONA-project also aims to consider social sustainability in its activities, with an important aspect being universal access, particularly for visitors who experience mobility or other challenges. Of the surveyed visitors to Scarpe-Escaut, only 4.2% declared being neurodiverse, with 5.3% having a physical disability. However, particularly in terms of neurodiversity it can be noted that not all respondents were aware of the meaning of the term, potentially leading to an underrepresentation.

6.2 Type of visitor

Figure 6.1 provides an overview of the types of visitors that were surveyed. In total, 147 (86.0%) were day visitors, of which 138 people (80.7%) lived within the region of Scarpe-Escaut, while 9 day visitors (5.3%) had travelled from outside the region. The remaining 24 respondents (14.0%) were overnight visitors, with 19 of them (11.1%) being residents within the region of the nature area and 5 (2.9%) coming from other provinces or regions. This would indicate that, at least within the sample, there is very strong representation of local residents.

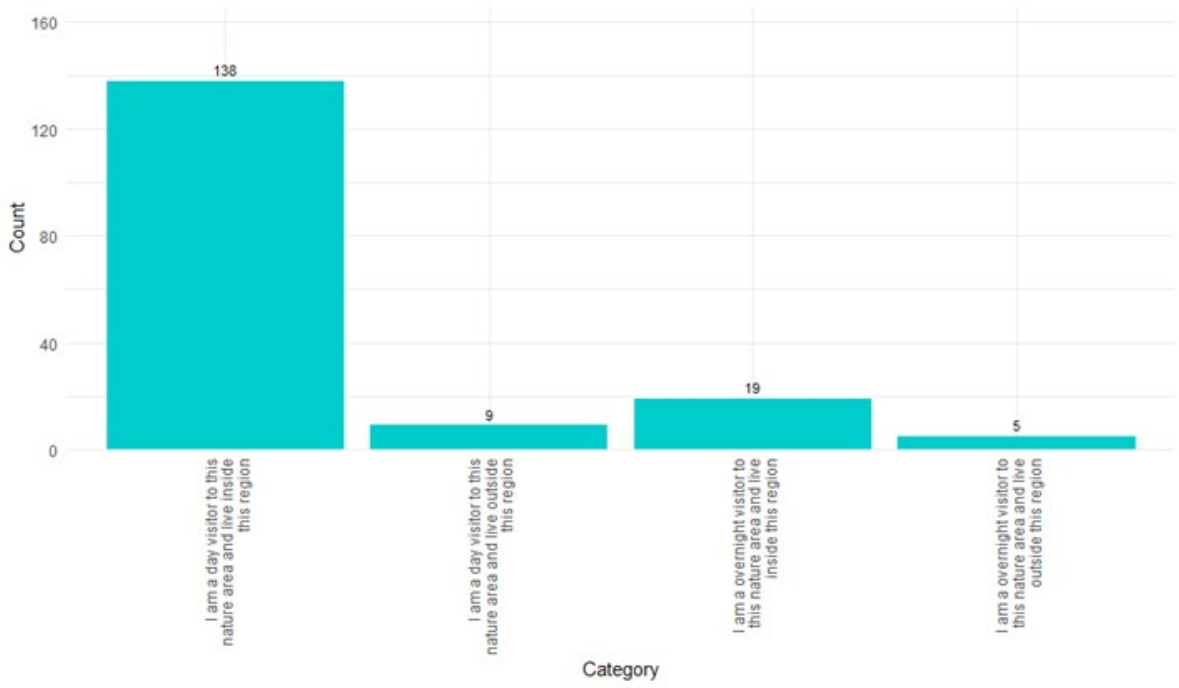

Figure 6.1: Visitor type and origin (n = 171)

Table 6.3 provides an overview of the main reasons given for visiting Scarpe-Escaut. The response category were multiple response (with respondents being able to select multiple motivations). The percentage is calculated on the sample size (as opposed to the number of responses). Being close to nature (66.1%), is the dominant visitation reason, followed

by a social motive to spend time with friends or family (44.4%), to de-stress (34.5%) and to relax (34.5%). For about a quarter of respondents, the opportunity to exercise (26.3%) is also important, while one in ten visitors visit Scarpe-Escaut to attend an organized event (9.4%). Other categories are of less importance. Since multiple answers could be provided it can be interesting to consider potential correlations between selections. The correlation matrix shows logical – albeit minor – positive correlations between the motive to be close to nature and the motive to escape the city (0.225). Similarly, spending time with friends and family is more often also linked with a preference to escape the city (0.223) or to relax (0.316). The latter two categories appear together most often, with a positive correlation of 0.426 between people who select relaxation as a visitor motive, as well as escaping the city.

Table 6.3: Reasons for visiting (n = 171)

Reasons for visiting	Count	Percentage
For business purposes	1	0.6%
Other reasons	13	7.6%
To attend an organized event	16	9.4%
To be close to nature	113	66.1%
To de-stress	59	34.5%
To escape the city	29	17.0%
To exercise	45	26.3%
To learn something new	10	5.8%
To relax	59	34.5%
To spend time alone	13	7.6%
To spend time with friends or family	76	44.4%

Closely linked to the visitor motivations are the visitor activities, for which multiple selections could be made by respondents. As can be seen from Figure 6.2, similar to the other studied nature areas, by far the primary activity was hiking, walking (65.5%), with 50 visitors (29.2%) also mentioning observing plants and animals, activities that are likely close related. A different visitor segment is found for about one out of three respondents (33.9%) that mention swimming or bathing, although this percentage could also be explained by the location where visitor surveys were conducted. Other relevant categories were photography (17.5%) and having a picnic (19.3%). Dog walking was mentioned by 26 respondents (15.2)%. Land-based sports activities were surprisingly not very relevant in the sample, with only 10.5% mentioning cycling or gravel biking and 7.0% mentioning running. Although this could also be due to a sample selection bias since sports practitioners are more difficult to capture in the field.

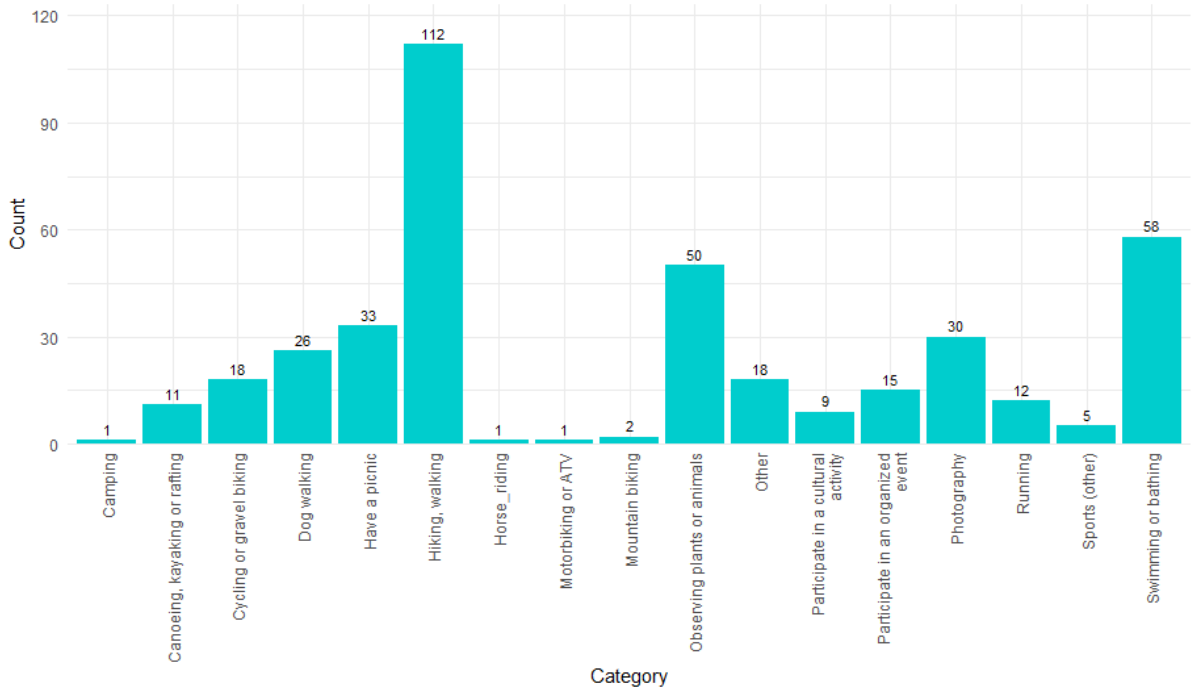

Figure 6.2: Activities conducted in Scarpe-Escaut (n = 171)

Given the fact that respondents could select multiple activities, it is also interesting to look at correlations between different activities. However, as can be seen from Figure 6.3, there seems to be little correlation between any of the proposed activities. As expected, hiking, walking correlates positively with other soft recreational activities such as photography (0.270), having a picnic (0.230), and observing plants or animals (0.304). On the other hand, sports-based activities are more correlated and also show potential overlap with organized events. People who selected cycling or gravel biking are more likely to also have selected running (0.353) or participating in an organized event (0.230) or cultural activity (0.261). Water-based activities equally show some positive correlation between swimming or bathing and canoeing, kayaking or rafting (0.215).

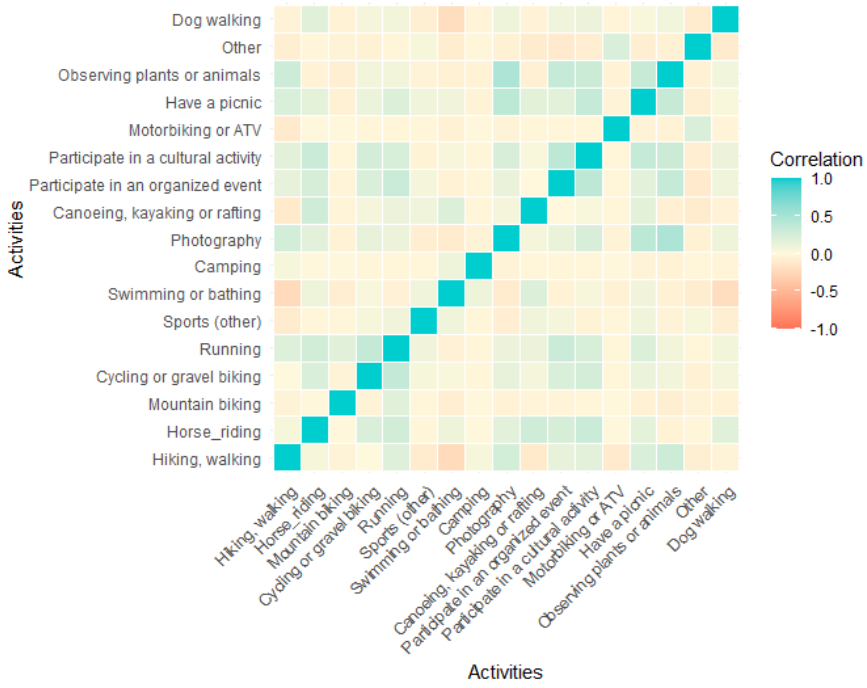

Figure 6.3: Correlations between activities (n = 171)

6.3 Transportation choices

Since sustainable transportation and modal shift are important objectives of the MONA-project as a whole, it is of interest to see how visitors reached Scarpe-Escaut. Table 6.4 indicates that car use (87.7%) is by far the dominant means of transportation, even considering the fact that a large majority of sampled visitors were local to the region. Soft means of transportation by foot (7.0%) or bicycle (12.9%) were the predominant alternatives. The use of public transport to reach the destination is insignificant, with only 4 people (2.3%) using the regular bus.

Table 6.4: Transportation choices (n = 171)

Transportation choice	Count	Percentage
By bicycle	22	12.9%
By camper van	2	1.2%
By car	150	87.7%
By motorbike	0	0.0%
By regular bus	4	2.3%
By shuttle bus	1	0.6%
By train	0	0.0%
On foot	12	7.0%
Other	2	1.2%

Figure 6.4 provides information on the reasons given for not selecting public transportation. Importantly, the other answer-category is dominant here (39.8%), most often reflecting the fact that people who live close by do not have an opportunity (or need) for public transport. Other barriers include longer travel times (23.4%), lack of facilities (22.2%), too little information on the route taken (15.8%), and the need to transfer too often when using public transport (11.1%). Of these barriers, only the lack of information is a problem that might be realistically tackled within the confines of the project, while other limitations are set by public transport planning, availability, and infrastructure.

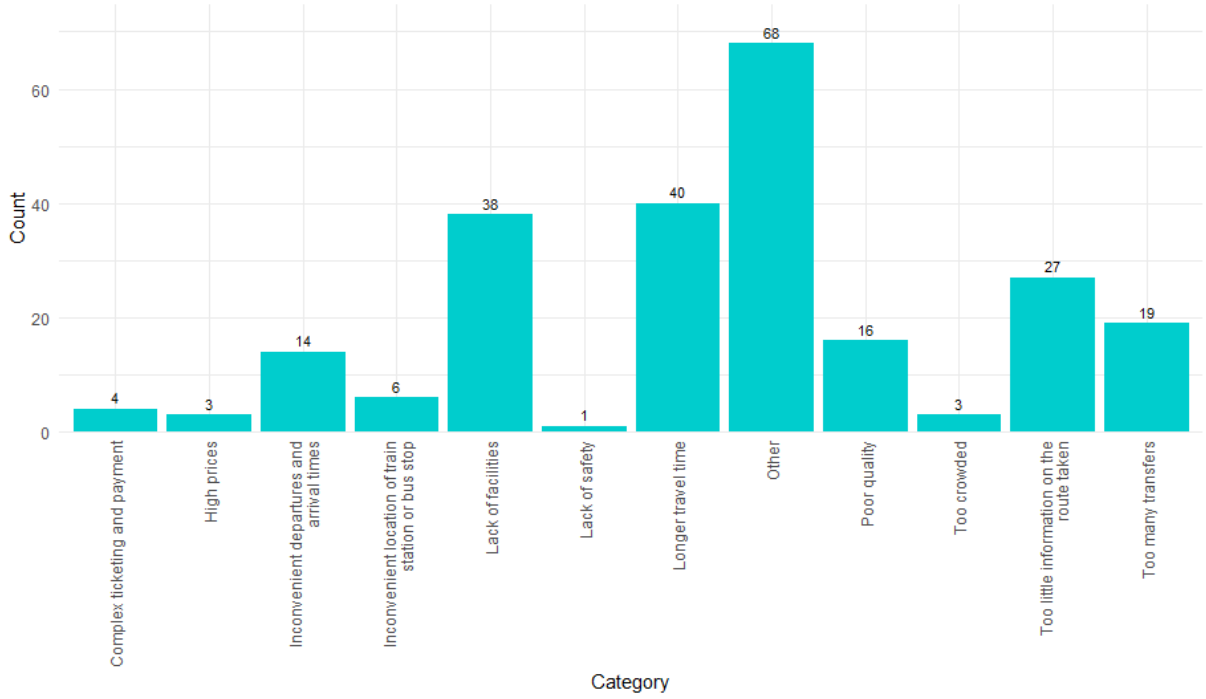

Figure 6.4: Reasons for not selecting public transportation options (n = 171)

6.4 Quality of the visitor experience

Compared to Loonse and Drunense Duinen and Utrechtse Heuvelrug, in Scarpe-Escaut there was no dominance of online information sources to plan or incite a visit. Instead, traditional word-of-mouth from friends or relatives (48.0%) was the dominant information source used. On the second place was the open-ended other category (22.8%), once again being relate to the sample being mainly local and linked to repeat visitors who would not require additional external information. On the third place, is information from other visitors (14.6%). Therefore, in Scarpe-Escaut we find personal relationships to be important drivers of visitation. Websites (14.0%) and social media (12.9%), were comparatively more significant information sources than traditional media such as newspapers (2.3%), magazines (1.8%), or television (0.6%). Also tourism-specific

information points (5.3%) and visitor centres (5.8%), or brochures (9.4%) were not mentioned by many visitors.

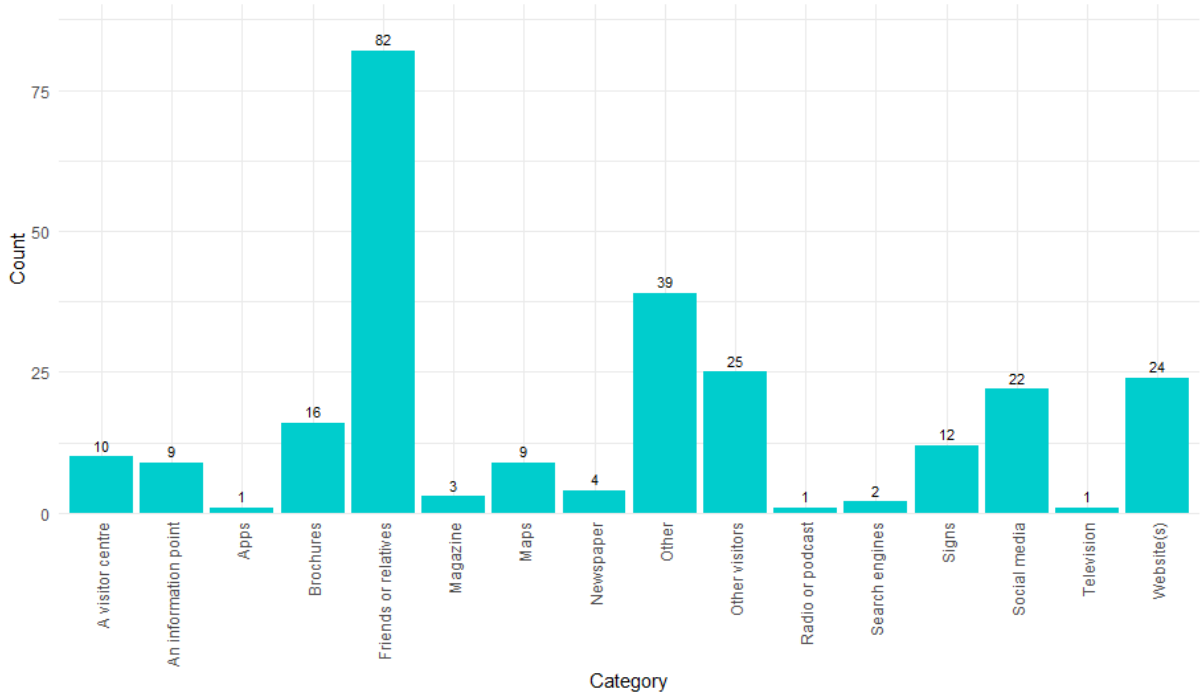

Figure 6.5: Information sources used for preparing visit (n = 171)

The overall visitor experience scored very high, with only one respondent considering their visit unpleasant (0.6%), with another 17 people (9.9%) being neutral. The large majority perceived their visit as enjoyable (46.8%) to extremely enjoyable (42.7%).

Figure 6.6 aims to identify elements that contributed to – or detracted from – the general enjoyment. Four statements stand out as being perceived in a somewhat more negatively light, namely agreement on the statements that visitors were able to buy food and drinks (61.4%), that the visitor centre offered sufficient information (64.9%), that there were no crowded areas (67.8%), and that there were opportunities to meet other visitors (70.8%) was somewhat lower. Still, given the high rate of the overall visitor experience, it can be presumed that these elements were not considered as being very important and therefore do not carry over to negative sentiments. All other elements were perceived favourably, specifically considering navigation – with the nature area perceived as easy to access (93.0%), easy to navigate through (97.1%), and well-signposting towards main attractions (77.2%) – cleanliness and maintenance (90.6%), safety and comfortability during the visit (97.1%).

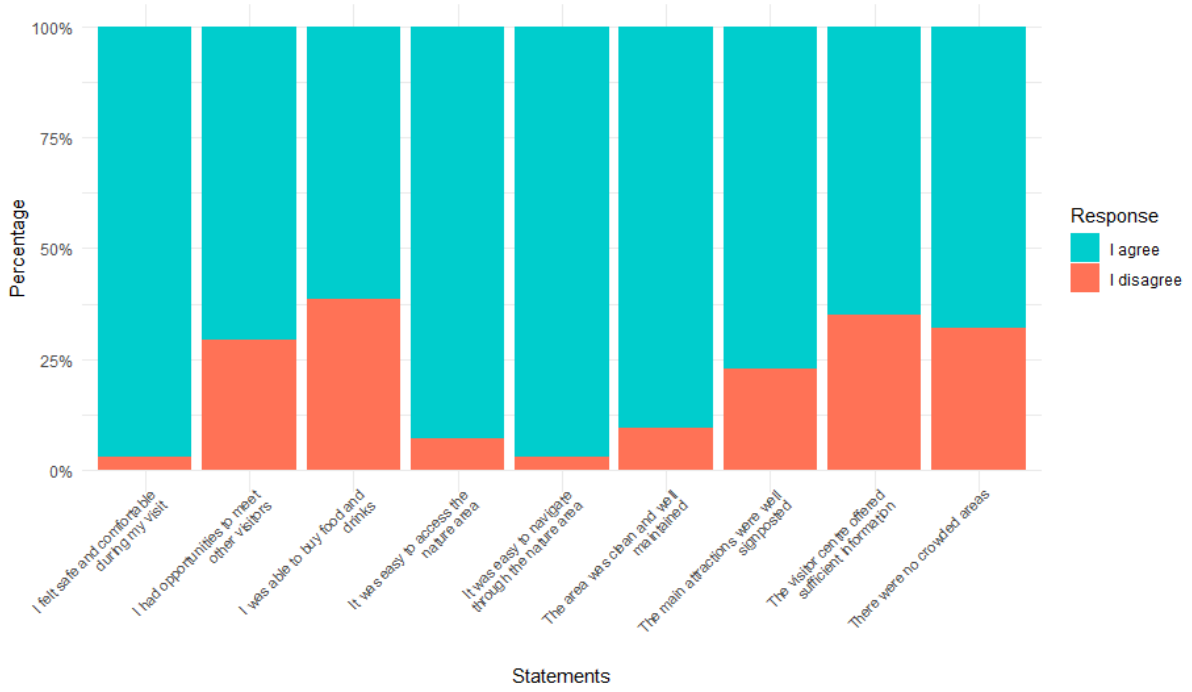

Figure 6.6: Assessment of quality of the visitor experience (n = 171)

Table 6.5: Visitor spending (per person, n = 171)

Category	€
Food and drinks	1.53
Travel costs	0.32
Parking	0.00
Shopping	0.43
Entrance fees	0.04
Accommodation	0.00
Other	0.04

Furthermore, visitors were asked about their spending behaviour during their visit. Contrary to the case of Loonse and Drunense Duinen, where visitor spending was quite high, visitors at Scarpe-Escaut seem to spend very little money. This might partly be explained by the sample, which was of much more local origin in Scarpe-Escaut.

Figure 6.7 further offers an overview of perceived environmental behaviour by other visitors. This analysis can help to identify existing negative impacts of tourism and recreation on the nature area. Respondents mostly agreed that visitors behave responsibly and environmentally-friendly. The most negatively perceived categories relates to the question whether visitors properly dispose of garbage (70.2% agree) and whether dog owners keep their dogs leashed in areas where this is required (70.2 agree). There is largely agreement that visitors follow environmental guidelines (76.6%), that visitors to not disturb wildlife (80.1%), vegetation, rocks and stones (83.6%), and ruins or historic sites (87.7%). Other visitors were further seen to mostly stay on designated tracks and trails (82.5%) and preserve the peace-and-quiet of the area (83.0%).

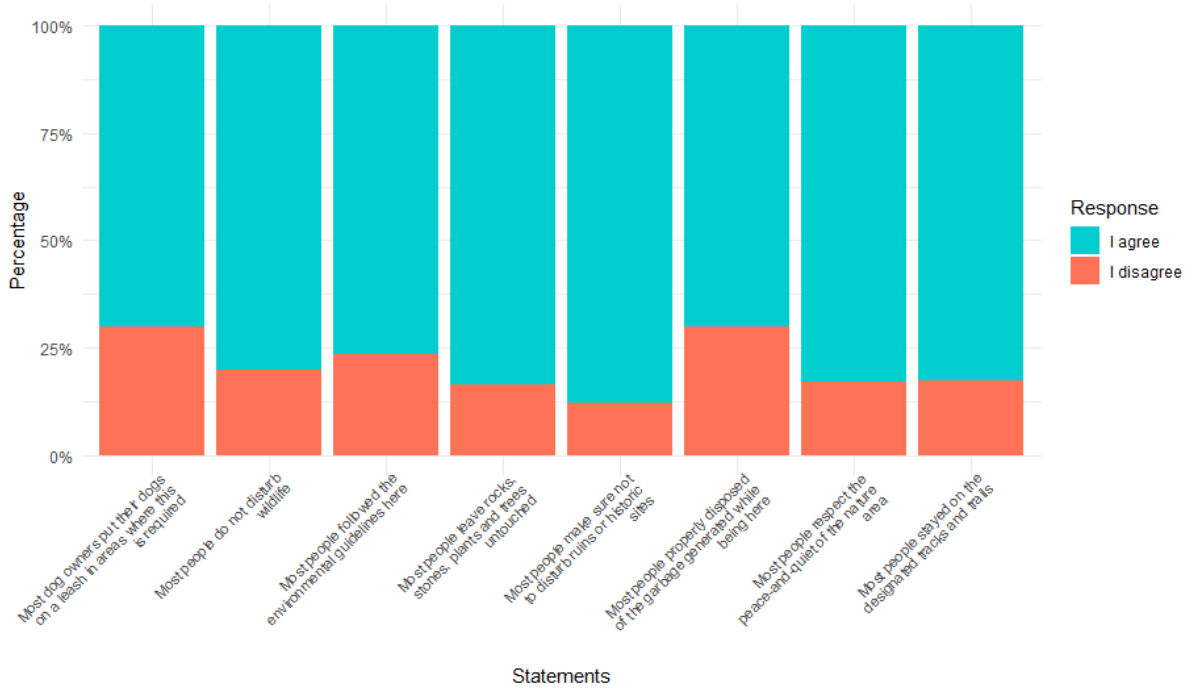

Figure 6.7: Pro-environmental behaviour of others (n = 171)

The relatively high quality of the visitor experience is also reflected by the answers to some additional statements that were presented to visitors of Scarpe-Escaut. While 55% agree that there were many people (thus comparing to the relative perception of crowding discussed above), only 5.8% mentioned feeling oppressed while on the contrary 98.2% indicated that they felt good. The most negative perception was levied at the amount of waste being present, with 25.7% agreeing that there was a lot of waste everywhere (also being reflected in the statement on garbage in Figure 6.7).

Finally, the questionnaire asked respondents about visited areas, although these results might be influenced by the locations of the visitor surveys, so the interpretation cannot be taken as representative. As can be seen from Table 6.5, a majority of visitors are found at the swimming area (59.6%) – also reflecting the importance of swimming as an activity, followed by the bird area (53.8%) and a hike to the Scarpe (28.7%). The commercial relevance of visitors is also reflected in the fact that about one in five people visited the shop and café (22.8%).

Table 6.6: Regional spread Scarpe-Escaut (n = 171)

Area	Percentage
The swimming area	59.6%
The shop and café (Les Chevrettes du Terril)	22.8%
A hike in the area	36.8%
A hike to the Scarpe	28.7%

The bird area	53.8%
The nautical leisure area	17.5%

6.5 Latent Class Analysis: identifying visitor types

In the final section of the chapter, a Latent Class Analysis (LCA) was applied to help identify visitor types and relationships between variables. In order to avoid data sparsity, as a combined result of relatively low sample sizes and a large number of potential manifest variables and categories, a first necessary step is the simplification of data. As was the case for Loonse and Drunense Duinen and Utrechtse Heuvelrug, four manifest variable groups are selected for the LCA exercise: (i) Motivations, (ii) Primary activities, (iii) Transportation, and (iv) Information sources. For each of these four variable groups, the response options have been simplified as follows:

1. Motivations:
    - Nature-based: represents the motive 'to be close to nature'
    - Friends or family: represents the category 'to spend time with friends or family'
    - Relaxation: combines the activities 'to de-stress', 'to relax', 'to spend time alone', and 'to escape the city'
    - Sports: reflects the category 'to exercise'
2. Primary activities:
    - Hiking: reflects the answer category 'hiking, walking'
    - Observing nature: combines the activities 'photography', 'have a picnic', and 'observing plants or animals'
    - Cycling/gravel biking: reflects the activity 'cycling or gravel biking'
    - Water based activities: combines the activities 'swimming or bathing', 'canoeing, kayaking or rafting'
    - Other sports: combines the choices 'mountain biking', 'cycling or gravel biking', 'running', 'sports (other)'
    - Dog walking: reflects the answer category 'dog walking'
3. Transportation mode:
    - Motorized, private transport: combines the transportation options 'by car', 'by camper van', 'by motorbike'
    - Soft or public transport: combines the choices 'on foot', 'by bicycle', 'by train', 'by regular bus', 'by shuttle bus'
4. Information sources:
    - Word of mouth: combines the options 'friends or relatives', 'other visitors'
    - Online: combines the options 'website(s)', 'search engines', 'apps', 'blogs or vlogs', 'social media'

- Other: reflects the category 'other' (which mostly relates to prior experience due to return visits)

Two additional variables were included as covariates in the analysis: (i) Origin of visitors, and (ii) Satisfaction. These covariates could provide additional information on the composition of clusters. To simplify the analysis, certain categories were combined as follows:

1. Origin of visitors: Distinguishes between local (living in any of the municipalities within the region) and non-local (coming from outside of the region)
2. Satisfaction: Compares very satisfied visitors (a score of 5) to satisfied visitors (a score of 1 to 4)

The analysis attempted to model results from two to eight possible clusters, looking for the optimal solution through investigation of the AIC, BIC and Log-likelihood model values. Due to data sparsity, the model only could identify up to four clusters, the results of which are described in Table 6.6, based on the probabilities of their manifest variables.

Table 6.7: Latent class probabilities

	Class 1	Class 2	Class 3	Class 4
Latent class probabilities	**0.445**	**0.099**	**0.177**	**0.279**
Motivations:				
▪ Nature-based	0.619	0.470	0.339	1.000
▪ Friends or family	0.169	0.471	0.794	0.653
▪ Relaxation	0.480	0.412	0.483	0.815
▪ Sports	0.154	0.765	0.195	0.302
Primary activities:				
▪ Walking, hiking	0.725	0.353	0.212	0.931
▪ Observing nature	0.297	0.235	0.110	0.819
▪ Water based activities	0.000	0.471	1.000	0.477
▪ Other sports	0.083	0.530	0.000	0.287
▪ Dog walking	0.198	0.112	0.000	0.188
Transportation mode:				
▪ Soft or public transport	0.019	1.000	0.000	0.306
▪ Motorized, private transport	0.973	0.000	1.000	1.000
Information sources				
▪ Word of mouth	0.595	0.589	0.607	0.553
▪ Online	0.165	0.059	0.311	0.377
▪ Other (return visits)	0.223	0.235	0.107	0.310

The probabilities in the table can be interpreted as percentages of the likelihood of motivation, activity, transportation mode or information source being selected by visitors within this class. By focusing on distinct patterns four visitor profiles are identified:

- Class 1 comprises 45% of the sample and has no clearly defined identity, broadly describing them as **Generalists**. While this group of visitors does not have any outspoken motives, they are generally more nature-based (0.619) than classes 2 and 3, Apart from class 4, they are also the class most likely to visit Scarpe-Escaut for walking, hiking (0.725) and are the category most likely to be walking with a dog as well (0.198). Similar to cluster 3 and 4, they are predominantly using private cars (0.973) for transportation and receive information for their visit from friends, family or other visitors (0.595). We might expect this group to be linked to more day-to-day general visits to a forest area, rather than a visit directed at a specific activity or past-time.
- Class 2 covers 10% of the sample and involves **Sports enthusiasts**. In terms of visitor motives, practicing sports (0.765) scores high, reflected by their more likely occupation in both water-based activities (0.471) and other sports such as running, mountain biking or cycling (0.530). Particularly the prevalence of other sports distinguishes this category from the other identified classes. Since these visitors are more often visiting Scarpe-Escaut for sports, this might also explain the prevalence of soft or public transportation (1.000) in this group.
- Class 3 comprises 18% of the sample and can be considered **Socially-driven visitors, coming to swim or bathe**. Comparatively to other classes, these visitors are mainly motivated by spending time with friends or family (0.794). They exhibit one outspoken activity: swimming or bathing (1.000). They use private motorized transportation to get to Scarpe-Escaut (1.000) and, like the other classes, are mainly informed through word of mouth (0.607), although they are also somewhat more likely to have found information via the internet (0.311).
- Class 4 comprises 28% of the sample and could be described as **Nature-loving hikers**, given the strong nature-based focus (1.000) and prevalence of hiking, walking (0.931) and nature observation (0.819). Similar to class 1 and 3, cars are the most likely transportation choice (1.000), although this class is also somewhat more likely to use public transport (0.306). Online information sources (0.377) are also more likely in this group, even though word of mouth (0.553) still plays the most important role in information gathering.

After analysing the manifest variables that contribute to the four classes, covariate coefficients allow to identify whether categories are significantly different in terms of origin of visitors (local = 1 or non-local = 0), and satisfaction (very satisfied = 1, satisfied = 0). The data in Table 6.7 is interpreted in relation to a baseline class (i.e., Class 1). The coefficients and associated p-values indicate that there are no significant differences between the four clusters in terms of local-non-local residents and level of satisfaction.

Table 6.8: Estimated covariate coefficients

Class	Covariates	Coefficient	Standard error	p-values
2/1	(Intercept)	-1.223	2.567	0.634
	Local resident	-0.266	2.804	0.924
	Very satisified	-0.058	1.065	0.956
3/1	(Intercept)	-0.895	1.074	0.404
	Local resident	-0.329	1.069	0.759
	Very satisfied	0.572	0.543	0.292
4/1	(Intercept)	0.922	0.794	0.245
	Local resident	-1.381	0.821	0.093
	Very satisfied	-0.351	0.516	0.497

7. Conclusions and recommendations

The results of Chapter 4 allow for a number of conclusions and recommendations. Regarding the first topic of **(1) understand current visitor behaviour and motivations**, it can be concluded that most visitors are day visitors going for a walk or hike. In terms of motivations, being close to nature, social aspects, and relaxing / de-stressing are the core reasons for visiting. The main conclusion for topic **(2) modal choice** is that public transport is not used as much as the car. The main reason for this is the longer travel time. For topic **(3) the information visitors collect and use**, it is concluded that websites and friends or relatives are mostly used. Regarding **(4) the experience of the visit**, the conclusion is that crowding in certain areas may be somewhat of a problem. Regardless, the overall experience scores high. For topic **(5) the regional spread throughout the nature areas**, the percentages of the areas visited are noted and serve merely as the baseline measure for the follow-up surveys, which establish whether or not there is an effect on spreading depending on the type of intervention used. Finally, for topic **(6) socio-demographics**, the conclusions are that these resemble mostly the sampling used. In terms of neurodivergence and physical disability, the interpretation of terminology by respondents and the uneven distribution do not allow for meaningful conclusions regarding these two aspects.

The recommendations are twofold. Firstly it is recommended how the visitor surveys can be used as a monitoring tool. Secondly, it is recommended what to keep, add, or change in terms of contents for the follow-up surveys, to allow for a solid foundation for establishing the effect of the interventions, to be reported in deliverable 1.6.2. In terms of using the visitor surveys as a monitoring tool, it is recommended that visitor surveys are used longitudinally. The sampling strategy should be similar for follow-up surveys as otherwise the difference in sampling strategy would explain the differences rather than the actual intervention. Finally, in terms of what to keep, add, or change in the follow-up visitor surveys, it is recommended to remove the two socio-demographics on neurodivergence and physical disability. The latter aspect may be better captured by using an assessment of visitors' perception of the presence of certain facilities that cater to the needs of specific aspects of accessibility such as the possibility to borrow offroad wheelchair at visitor centres or the presence of wheelchair-friendly trails. Furthermore, it is recommended that the follow-up survey reduces answer options as much as possible by removing those that score (close to) 0%, unless these are part of the purpose of a suggested intervention. Finally, a set of specific questions related to the type of intervention used should be included in the follow-up survey, allowing for a more detailed determination of potential effects of an intervention, desired or undesired.

8. References

Anable, J. (2005). Complacent car addicts or aspiring environmentalists. Identifying travel behaviour segments using attitude theory. *Transport Policy*, *12*(1), 65–78. https://doi.org/10.1016/j.tranpol.2004.11.004

Coromina, L., & Camprubi, R. (2016). Analysis of tourism information sources using a Mokken Scale perspective. *Tourism Management*, *56*, 75-84. https://doi.org/10.1016/j.tourman.2016.03.025

Natural England. (2022). *People and Nature Survey: A survey of adults over 16 years old across England*.

Pearce, P. L., & Lee, U.-I. (2005). Developing the Travel Career Approach to Tourist Motivation. *Journal of Travel Research*, *43*(3), 226-237. https://doi.org/10.1177/0047287504272020

Wilson, V. (2018). Scotland's People and Nature Survey 2017/18 – outdoor recreation and health modules – technical report. In *Scottish Natural Heritage Research Report 1063.*

Zhang, H. M., Zhang, X., Yang, Y. J., & Ma, J. Y. (2023). From nature experience to visitors' pro-environmental behavior: the role of perceived restorativeness and well-being. *Journal of Sustainable Tourism*. https://doi.org/10.1080/09669582.2023.2184314

9. Appendix 1: MONA visitor survey

MONA visitor survey

Welcome to the visitor survey of the Interreg North-West Europe MONA project. MONA promotes sustainable tourism in the protected areas of north-western Europe, benefiting the environment, visitors and local economies. The survey data will be used to enhance the visitor experience of nature areas for visitors and residents, while preserving the natural environment.

Participation in the visitor survey is completely voluntary and your answers cannot in any way be traced back to you. Participation is only allowed when you are at least 16 years It will take approximately 10 minutes to fill out the survey. Your help is greatly appreciated. Should you have any questions, please contact us via info@monanweurope.eu.

(1) understand current visitor behavior and motivations

Q
First, we would like to know whether you live in this region and whether you are a day visitor or an overnight visitor. By region we mean the municipalities of XXX. Please select the answer that or was most applicable to you.

- ○ I am a day visitor to this nature area and live inside this region (1)
- ○ I am a day visitor to this nature area and live outside this region (2)
- ○ I am a overnight visitor to this nature area and live inside this region (3)
- ○ I am a overnight visitor to this nature area and live outside this region (4)

Q

Please select which activities you did or will do in this nature area today. You may select multiple answer options.

- ☐ Hiking, walking (1)
- ☐ Dog walking (16)
- ☐ Horse riding (2)
- ☐ Mountain biking (3)

- [ ] Cycling or gravel biking (4)
- [ ] Running (5)
- [ ] Sports (other) (6)
- [ ] Swimming or bathing (7)
- [ ] Camping (8)
- [ ] Photography (9)
- [ ] Canoeing, kayaking or rafting (10)
- [ ] Participate in an organized event (11)
- [ ] Participate in a cultural activity (12)
- [ ] Motorbiking or ATV (13)
- [ ] Have a picnic (14)
- [ ] Observing plants or animals (17)
- [ ] Other (15)

Q

Why did you visit the nature area? Please select the motivations that apply to your visit to this nature area. You may select multiple answer options.

- [ ] To be close to nature (1)
- [ ] To exercise (2)

- [ ] To spend time with friends or family (3)
- [ ] To de-stress (4)
- [ ] To escape the city (5)
- [ ] Other reasons (6)
- [ ] To attend an organized event (7)
- [ ] To relax (8)
- [ ] To spend time alone (9)
- [ ] For business purposes (10)
- [ ] To learn something new (11)

Q

Now we would like to ask you to respond to statements that are about respecting the nature area and its guidelines. Do you agree or disagree with the following statements?

	Disagree (1)	Agree (2)
Most people properly disposed of the garbage generated while being here (1)	○	○
Most people followed the environmental guidelines here (2)	○	○
Most people stayed on the designated tracks and trails (3)	○	○
Most dog owners put their dogs on a leash in areas where this is required (4)	○	○

Most people do not disturb wildlife (5)	○	○
Most people leave rocks, stones, plants and trees untouched (6)	○	○
Most people make sure not to disturb ruins or historic sites (7)	○	○
Most people respect the peace-and-quiet of the nature area (8)	○	○

(2) modal choice

Q

How did you reach this nature area? You may select multiple answer options.

- ☐ On foot (1)
- ☐ By car (2)
- ☐ By camper van (3)
- ☐ By bicycle (4)
- ☐ Other (5)
- ☐ By train (6)
- ☐ By regular bus (7)
- ☐ By shuttle bus (8)
- ☐ By motorbike (9)

Q

In case you did not use public transport, what prevented you from using public transport? You may select multiple answer options.

- [ ] Not applicable because I used public transport (10)
- [ ] Longer travel time (1)
- [ ] Too crowded (2)
- [ ] Poor quality (3)
- [ ] Lack of safety (4)
- [ ] Lack of facilities (6)
- [ ] High prices (8)
- [ ] Inconvenient location of train station or bus stop (11)
- [ ] Too many transfers (12)
- [ ] Too little information on the route taken (13)
- [ ] Complex ticketing and payment (14)
- [ ] Inconvenient departure and arrival times (15)
- [ ] Other (9)

(3) the information visitors collect and use

Q

How did you obtain information about this nature area? You may select multiple answer options. I received information by using

- [ ] A visitor centre (1)
- [ ] An information point (2)
- [ ] Signs (3)
- [ ] Maps (4)
- [ ] Website(s) (5)
- [ ] Blogs or vlogs (6)
- [ ] Social media (7)
- [ ] Search engines (8)
- [ ] Friends or relatives (9)
- [ ] Other visitors (10)
- [ ] Brochures (11)
- [ ] Apps (12)
- [ ] Travel agency (13)
- [ ] Television (14)
- [ ] Radio or podcast (15)
- [ ] Newspaper (16)

- [ ] Magazine (17)
- [ ] Other (18)

(4) the experience of the visit

Q

What was the overall experience of your visit to this nature area like?

- ○ Not enjoyable (1)
- ○ (2)
- ○ (3)
- ○ (4)
- ○ Extremely enjoyable (5)

Q

In this section, we would like to know in more detail how you experienced this nature area. Do you agree or disagree with the following?

	Disagree (1)	Agree (2)
It was easy to access the nature area. (1)	○	○
It was easy to navigate through the nature area. (2)	○	○
The visitor centre offered sufficient information. (3)	○	○
The main attractions were well signposted. (4)	○	○

There were no crowded areas. (5)	○	○
I was able to buy food and drinks. (6)	○	○
The area was clean and well maintained. (7)	○	○
I felt safe and comfortable during my visit. (8)	○	○
I had opportunities to meet other visitors. (9)	○	○

(6) socio-demographics

Finally, it is important for us to know whether the nature areas in the MONA project are welcoming all types of visitors. Therefore we ask you to provide us with some general information about who you are as a person. Please note that your answers cannot be traced back to you in any way. You may also skip a question in case you do not want to answer that specific question. Thank you again for your participation in the survey.

Q

What is the highest level of education you have completed?

- ○ Some primary school (1)
- ○ Completed primary (2)
- ○ Some Secondary school (3)
- ○ Completed secondary school (4)
- ○ Vocational or Similar (5)
- ○ Some university but no degree (6)
- ○ University Bachelors Degree (7)
- ○ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.) (8)

- ○ Prefer not to say (9)

Q

How do you describe yourself?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer to self-describe (4) _____
- ○ Prefer not to say (5)

Q

Would you consider yourself to be neurodivergent?

- ○ Yes (1)
- ○ No (2)
- ○ I don't know (3)

Q

Would you consider yourself to have a physical disability?

- ○ Yes (1)
- ○ No (2)

Q

How old are you?

- ○ Under 18 (1)

- ○ 18-24 years old (2)
- ○ 25-34 years old (3)
- ○ 35-44 years old (4)
- ○ 45-54 years old (5)
- ○ 55-64 years old (6)
- ○ 65+ years old (7)

10. Appendix 2: Frequency tables

Table: Type of visitor

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
I am a day visitor to this nature area and live inside this region	18.6%	13%	80.7%
I am a day visitor to this nature area and live outside this region	61.4%	63.8%	5.3%
I am an overnight visitor to this nature area and live inside this region	3.3%	1.3%	11.1%
I am an overnight visitor to this nature area and live outside this region	16.7%	21.9%	2.9%

Table: Activities

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Hiking, walking	80.4%	83.1%	65.5%
Horse riding	1.0%	20.3%	0.6%
Mountain biking	4.6%	1.0%	1.2%
Cycling or gravel biking	24.2%	6.3%	10.5%
Running	5.2%	26.9%	7.0%
Sports (other)	2.6%	3.0%	2.9%
Swimming or bathing	2.3%	4.3%	33.9%
Camping	5.2%	3.3%	0.6%
Photography	7.2%	7.3%	17.5%
Canoeing, kayaking or rafting	0.3%	14.6%	6.4%
Participate in an organized event	3.9%	0.3%	8.8%
Participate in a cultural activity	2.0%	2.3%	5.3%
Have a picnic	6.2%	0.0%	19.3%
Motorbiking or ATV	1.0%	1.7%	0.6%
Observing plants or animals	7.2%	4.3%	29.2%
Dog walking	16.0%	8.6%	15.2%
Other	5.2%	10.0%	10.5%

Table: Motivations

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
To be close to nature	60.1%	53.5%	66.1%
To exercise	62.4%	54.5%	26.3%

To spend time with friends or family	35.3%	29.9%	44.4%
To de-stress	33.3%	33.6%	34.5%
To escape the city	15.4%	11.0%	17.0%
To attend an organized event	2.9%	2.3%	9.4%
To relax	69.3%	64.1%	34.5%
To spend time alone	7.8%	7.3%	7.6%
For business purposes	2.0%	1.7%	0.6%
To learn something new	2.3%	1.7%	5.8%
Other reasons	3.3%	5.6%	7.6%

Table: Pro-environmental behaviour

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Most people properly disposed of the garbage generated while being here	79.7%	85.7%	70.2%
Most people followed the environmental guidelines here	88.6%	89.0%	76.6%
Most people stayed on the designated tracks and trails	86.9%	85.4%	82.5%
Most dog owners put their dogs on a leash in areas where this is required	51.0%	65.8%	70.2%
Most people do not disturb wildlife	81.0%	89.7%	80.1%
Most people leave rocks, stones, plants and trees untouched	84.6%	86.7%	83.6%
Most people make sure not to disturb ruins or historic sites	89.5%	88.0%	87.7%
Most people respect the peace-and-quiet of the nature area	80.7%	83.1%	83.0%

Table: Modal choice

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
On foot	14.7%	13.3%	7.0%
By car	79.1%	74.4%	87.7%
By camper van	1.0%	2.3%	1.2%
By bicycle	25.2%	19.6%	12.9%
By train	10.1%	6.0%	0.0%
By regular bus	1.6%	2.7%	2.3%
By shuttle bus	0.3%	2.0%	0.6%

By motorbike	1.6%	1.3%	0.0%
Other	1.3%	0.7%	1.2%

Table: Barriers to use of public transport

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Longer travel time	48.4%	49.5%	23.4%
Too crowded	9.5%	9.6%	1.8%
Poor quality	9.3%	7.5%	9.4%
Lack of safety	1.0%	4.6%	0.6%
Lack of facilities	4.6%	5.6%	22.2%
High prices	30.4%	24.3%	1.8%
Inconvenient location of train station or bus stop	29.7%	24.9%	3.5%
Too many transfers	19.6%	18.9%	11.1%
Too little information on the route taken	1.3%	2.3%	15.8%
Complex ticketing and payment	2.0%	2.3%	2.3%
Inconvenient departure and arrival times	10.1%	11.0%	8.2%
Other	26.8%	22.9%	39.8%

Table: Information sources

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
A visitor centre	9.2%	6.6%	5.8%
An information point	11.4%	8.3%	5.3%
Signs	17.0%	10.6%	7.0%
Maps	18.6%	11.3%	5.3%
Website(s)	56.2%	38.2%	14.0%
Blogs or vlogs	3.3%	2.7%	0.0%
Social media	9.2%	9.6%	12.9%
Search engines	21.6%	15.6%	1.2%
Friends or relatives	31.0%	29.2%	48.0%
Other visitors	3.6%	2.7%	14.6%
Brochures	4.2%	4.0%	9.4%
Apps	9.2%	2.7%	0.6%
Travel agency	0.3%	1.3%	0.0%
Television	0.0%	1.0%	0.6%
Radio or podcast	0.0%	0.3%	0.6%
Newspaper	2.6%	1.0%	2.3%
Magazine	3.9%	0.7%	1.8%

Other	10.8%	15.3%	22.8%

Table: Overall experience of the visit

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Not enjoyable at all	0.0%	0.7%	0.0%
Not enjoyable	0.0%	2.0%	0.6%
Neutral	1.0%	4.3%	9.9%
Enjoyable	64.7%	53.2%	46.8%
Extremely enjoyable	34.3%	39.9%	42.7%

Table: Specific experiences of the visit

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
It was easy to access the nature area	96.1%	94.4%	93.0%
It was easy to navigate through the nature area	95.4%	93.0%	97.1%
The visitor centre offered sufficient information	86.6%	88.7%	64.9%
The main attractions were well signposted	92.5%	87.7%	77.2%
There were no crowded areas	58.2%	68.8%	67.8%
I was able to buy food and drinks	63.7%	76.1%	61.4%
The area was clean and well maintained	95.4%	92.0%	90.6%
I felt safe and comfortable during my visit	98.4%	93.7%	97.1%
I had opportunities to meet other visitors	70.9%	80.7%	70.8%

Table: Age

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Under 18	0.0%	0.0%	1.8%
18-24 years old	1.0%	2.7%	7.0%
25-34 years old	21.2%	21.9%	12.3%
35-44 years old	14.4%	19.9%	24.6%
45-54 years old	14.7%	14.6%	20.5%
55-64 years old	24.2%	16.3%	15.2%
65+ years old	24.5%	24.6%	18.7%

Table: Gender

	Utrechtse Heuvelrug	Routing	Scarpe-Escaut
Male	50.3%	50.2%	39.8%
Female	48.7%	48.5%	60.2%
Non-binary / third gender	0.7%	1.3%	0.0%
Prefer not to say	0.3%	0.0%	0.0%

Table: Educational level

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Some primary school	0.0%	0.7%	0.0%
Completed primary	0.3%	0.7%	2.3%
Some secondary school	2.0%	1.7%	4.1%
Completed secondary school	21.9%	18.3%	14.0%
Vocational or similar	14.1%	18.6%	15.8%
Some university but no degree	9.8%	10.3%	5.3%
University bachelor's degree	27.1%	27.9%	26.9%
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)	23.2%	20.6%	23.4%
Prefer not to say	1.6%	1.3%	8.2%

Table: Neurodivergence

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Yes	13.3%	15.0%	4.2%
No	86.7%	85.0%	95.8%

Table: Physical disability

	Utrechtse Heuvelrug	Loonse and Drunense Duinen	Scarpe-Escaut
Yes	13.1%	9.6%	5.3%
No	86.9%	90.4%	94.7%

11. Appendix 3: Additional questions per nature area

11.1 Loonse and Drunense Duinen

Table: Additional visitor statements

I will certainly return to Loonse and Drunense Duinen	93.7%
I would have liked to known of starting points that are close to but outside Loonse and Drunense Duinen	39.9%
I have prepared the visit to Loonse and Drunense Duinen extensively	36.2%
I visit Loonse and Drunense Duinen due to its specific character (sand dunes)	68.4%
Next time, I would like to visit another nature area	73.8%
I used the designated routes to move around Loonse and Drunense Duinen	80.7%

Table: Visitor spending

Food and drinks	47.50
Travel costs	70.00
Parking	10.00
Shopping	50.00
Entrance fees	36.00
Accommodation	90.00
Other	49.50

11.2 Utrechtse Heuvelrug

Table: Additional visitor statements

I am willing to pay for parking my car	45.1%
I am willing to use shared mobility for the final part of my travels	39.5%
Shared mobility – bike	36.6%
Shared mobility – electric bike	42.2%

Shared mobility – carrier bike	2.6%
Shared mobility – electric carrier bike	6.5%

Table: Maximum walking time from station or parking to nature area

None	3.6%
0-1 minutes	3.3%
2-5 minutes	25.2%
6-15 minutes	51%
16-30 minutes	11.1%
More than 30 minutes	5.9%

Table: Maximum cycling time from station or parking to nature area

None	12.1%
0-5 minutes	12.1%
6-15 minutes	42.5%
16-30 minutes	24.2%
More than 30 minutes	9.2%

11.3 Scarpe-Escaut

Table: Additional visitor statements

There are a lot of people here	55%
I feel good	98.2%
I feel oppressed	5.8%
I got lost	12.3%
There is a lot of waste everywhere	25.7%

Table: Visitor spending

Food and drinks	1.53
Travel costs	0.32
Parking	0.00
Shopping	0.43
Entrance fees	0.04
Accommodation	0.00
Other	0.04