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RESEARCH ARTICLE

Socio-demographic and geographical patterns in forest and park use: Insights from 33 European countries

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Abstract

1. Access to (urban) nature is vital for people's wellbeing, but this accessibility is not evenly spread across socio-demographic groups, nor across the European continent. This paper fills a research gap by exploring the use patterns and accessibility of forests and parks across European cities, based on a standardised online survey of 10,462 people from 33 European countries.
2. The results highlight a complex relationship between accessibility, socio-demographic factors and personal motivations in shaping the use of forests and parks. Key findings include variations in visiting patterns by age and gender, with younger individuals and women showing a higher propensity for frequent visits.
3. Motivations for forest and park use varied widely, ranging from physical health and recreation to social interaction and mental well-being. Importantly, the study identified accessibility challenges, particularly travel time, connectivity and limited amenities (e.g. safe walking/cycling routes, lighting, toilets), which limit park and forest use.
4. The results also highlight the diversity in use patterns across different European regions and based on gender, revealing significant variations in how people value and use forests and parks.

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5. The study suggests that socio-demographic factors, accessibility and personal motivations play crucial roles in determining forest and park use, underscoring the importance of inclusive urban planning to accommodate diverse needs and preferences.

KEYWORDS
accessibility, Europe, gender, green areas, green infrastructure, motivations, perceptions, survey

1 | INTRODUCTION

Cities thrive when everyday nature is close at hand. Forests and other green spaces in European cities cover approximately 40% of urban areas, providing diverse ecological, social and economic benefits (EEA, 2022a). Beyond listing benefits, we emphasise how these places support physical activity, mental restoration and social connection, and how their value became even more pronounced during the COVID-19 pandemic, when many residents treated nearby nature as an extension of home (Berdejo-Espinola et al., 2021; Da Schio et al., 2021; Derks et al., 2020, 2023; Hewitt et al., 2019; Korpela et al., 2010; O'Brien et al., 2017; Ugolini et al., 2020). Urban nature serves as a linchpin for critical ecosystem services essential for human health and well-being (Berglihn & Gómez-Baggethun, 2021; Fan et al., 2017; Sang et al., 2016; Zhang et al., 2021). These contributions to health and well-being arise through regular, often everyday contact with nearby forests and parks, so the ability to access and use them is critical. The perceived benefits of forests and parks are influenced by what the sites offer (such as naturalness, shade, benches, lighting), how easy they are to reach (time, mode) and who uses them (their age, gender, income, household context), in addition to design, management and broader social factors (EEA, 2022a). Building on this, prior research points to three intertwined drivers that inform our approach.

Research underscores the positive impacts of access to forests and parks in cities on many aspects of urban life (Fan et al., 2017; Jalkanen et al., 2020; Ode Sang et al., 2016). First, people are motivated by restorative experiences, such as 'being away' fascination, calm, which map onto perceived site qualities such as tranquillity, naturalness and coherent paths. Second, accessibility is best understood as a generalised cost (time and effort given available modes), so walkability/cyclability, public transport connectivity and travel time condition how often residents can feasibly visit some green area (Jalkanen et al., 2020). Proximity and good accessibility to forests and parks are consistently associated with higher visitation frequency and with the types of activities undertaken (Callaghan et al., 2020; Jalkanen et al., 2020; Kaczynski & Henderson, 2007), and more frequent use, in turn, is linked to increased physical activity and improved health and well-being outcomes (Akpınar, 2016; Aram et al., 2019; Nowak & Greenfield, 2018; Orstad et al., 2020). Third, applying the equity lens is essential. Studies from the United Kingdom and other European contexts show that the quantity, quality and accessibility of parks and green spaces are particularly important in highly deprived urban neighbourhoods, typically characterised by low incomes, high unemployment, a large share of social or rented housing and poorer health profiles, and that variation in access to high-quality parks is often linked to neighbourhood-level socio-economic conditions, usually operationalised through composite indices of income, education, unemployment and housing tenure (Aasetre et al., 2016; Thompson et al., 2012; Viinikka et al., 2023).

1.1 | Accessibility is unevenly distributed

Building on this equity perspective, socio-demographic studies show that access to and use of forests and parks are patterned rather than uniform, with consequences for who can benefit from their wellbeing effects. Women and men present different sensitivities related to forests and parks due to safety concerns, pleasant views, recreational and health benefits, socialising spots and children's facilities (Braçe et al., 2021; Jim & Shan, 2013; Kong et al., 2007; Ode Sang et al., 2016). There is evidence that women use urban parks more frequently than men and better appreciate the availability of and connection to nature (Neuvonen et al., 2022), yet they may also face greater barriers in accessing peri-urban forests (Oprica et al., 2022). Disadvantaged communities experience limited access to parks, emphasising the need to improve accessibility to promote social justice and public health (Kabisch & Haase, 2014; Łaszkiewicz & Sikorska, 2020). Preferences for 'wild' nature vary among social groups, including between immigrants and native groups (Buijs, 2009). The elderly population appreciate historical connections and are intrinsically motivated to visit parks (Jørgensen & Anthopoulou, 2007), and older visitors generally report higher satisfaction with parks' safety, cleanliness and aesthetic quality than other residents (Deng et al., 2017). Visitors who value aesthetics often explore forests and parks in small groups, driven by motivations like child-friendly play, nature contact, relaxation and social gatherings (Zhai et al., 2018). This body of work underscores that the capacity to profit from forests and parks is not evenly distributed across socio-demographic groups or geographical contexts.

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1.2 | Accessibility matters

Beyond distance, transportation modes and socio-demographic factors, the quality of paths, amenities, safety and security influences the accessibility of forests and parks (Fongar et al., 2019; Kabisch et al., 2016). Importantly, forests and parks differ in characteristics and in the well-being pathways they support—implying that motivations and preferred settings will vary across users and contexts (Braçe et al., 2021; Mohamed et al., 2023). The quality of forests and parks, including their design and maintenance, plays a vital role in residents' engagement with these spaces (Sugiyama & Thompson, 2008). Positive perceptions of parks strongly predict neighbourhood quality of life (Douglas et al., 2018).

While large-scale, comparable respondent-level analyses that jointly link motivations, perceived site qualities, access modes and socio-demographics across many countries remain rare, Europe already has substantial supply-side and city-comparative evidence on green space availability and accessibility (EEA, 2022a; Heikinheimo et al., 2023; Kabisch et al., 2016; WHO, 2016; Willberg et al., 2024). We summarise this context in Section 2 ('Context on green availability across case countries'), using harmonised indicators to frame cross-national differences in our sample. Our contribution is complementary: a 33-country, respondent-level survey that integrates motivations, perceived attributes of forests and parks, and mode/travel time access, enabling cross-national comparisons of use patterns across socio-demographic groups rather than inferring behaviour from supply alone. Because this survey spans 33 countries with heterogeneous urban forms, forest cover and park provision, we interpret cross-national patterns as context-dependent rather than as one-size-fits-all regularities.

1.3 | Aim of the research

While comprehensive and detailed studies on motivations and access to forests and parks have been conducted at the local level in many cities, consistent, comparable larger-scale *respondent-level* studies that jointly analyse motivations, perceived site qualities, access modes and socio-demographics across many countries remain scarce. To address this research gap, this study investigated the motivations and use patterns of forests and parks in urban, peri-urban and rural settings across 33 European countries, providing an overview and general comparison across Europe. In our study, we focused on residents of cities and surrounding peri-urban areas (suburbs and nearby rural areas along the urban fringe), and we analysed results with this urban-focused scope in mind. Notably, the sample included forest use in rural areas, extending beyond traditional villages to regions along the urban fringe that exhibit rural characteristics. This inclusion emphasised the commitment to capturing the overall intentions and factors influencing the use of forests and green spaces, regardless of their location within metropolitan areas, cities, smaller towns or urban peripheries. This inclusion allowed us to compare patterns across the urban–peri-urban–rural gradient while keeping the survey's core focus on access to forests and parks.

To achieve these aims, the study addressed the following research questions:

> RQ1. What are the primary personal motivations for visiting, and how do these relate to perceived site characteristics of forests and parks?
>
> RQ2. What is the frequency of visits and the predominant means of access (modes and travel time) to forests and parks?
>
> RQ3. How do socio-demographic characteristics and country/region context shape motivations, perceived site characteristics and access and visiting patterns for forests and parks?

Taken together, RQ1 and RQ2 provide a descriptive account of motivations, perceived site characteristics and access patterns, while RQ3 builds on these descriptions by asking how these patterns differ across socio-demographic groups and country/region contexts. By addressing these research questions, this paper discusses the broader implications of the relationship between motivations, access and transportation modes for visiting forests and parks. Furthermore, it investigates potential differences and similarities between European countries, providing insights into regional, and socio-demographic variations that may influence diverse approaches and motivations for visiting forests and parks. These results are crucial for developing evidence-based policies and practices that promote the sustainable use of these resources and enhance the well-being of European residents.

1.4 | Theoretical and conceptual background

This study interprets engagement with forests and parks through three complementary lenses that map directly onto our research questions (RQ1–RQ3) and guide our analytic choices (PCA for motivations and site characteristics; comparisons by access mode/travel time; regression/ordered models for visit frequency; and group profiling).

Restorative-environment theory (related to RQ1) proposes that certain qualities of nature, such as 'being away', soft fascination, coherence and refuge, support stress reduction and recovery from attentional fatigue, shaping why people seek out forests and parks and which attributes they value on site (e.g. quietness, naturalness, shade, water bodies/elements) (Kaplan, 1995; Kaplan & Kaplan, 1989).

Complementary to this, basic psychological needs perspectives suggest that visits are sustained when places support autonomy, competence and relatedness, translated here into legible paths and surfaces, toilets and lighting, and opportunities to be with others

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(Ryan & Deci, 2000). This dual lens motivates analysing motivations together with perceived site characteristics (RQ1) and anticipating two broad components: intrinsic/restorative versus social/goal-oriented motivations; and naturalness/attractiveness versus accessibility/amenities in perceived attributes.

When talking about accessibility (RQ2), access is not only physical distance, but the time and effort required to reach destinations given available modes and the spatial distribution of opportunities. Under the accessibility theory, walkability/cyclability, public transport connectivity and 'last-mile' conditions (safe, continuous paths) shape feasible visit frequency to forests and parks (Schindler et al., 2022; Wang et al., 2022). This perspective aligns with evidence on the travel–built environment nexus (compact, connected areas support more walking) and with public health guidance that operationalises park access via time thresholds (Hogendorf et al., 2020; WHO, 2016; Yu et al., 2024). Accordingly, our analyses consider mode of access and typical travel time when interpreting frequency patterns (RQ2).

Behaviour is embedded in multi-level contexts, individual factors, social norms, neighbourhood infrastructure and policies, so socio-demographic gradients in use (by age, gender, income, migration background) must be interpreted relative to the structural distribution of forests and parks, perceived safety and transport supply (Biernacka & Kronenberg, 2018; EEA, 2022a; Kronenberg et al., 2020). Environmental-justice research, related to RQ3, further shows that green benefits can be uneven; without equity-minded planning, new or improved parks may underserve vulnerable groups ('just green enough' risks) (Wolch et al., 2014). Given heterogeneity across our 33 European countries in urban form, overall forest cover and park provision, we treated cross-country differences as context-dependent rather than universal (RQ3).

A meta-analysis associates green space exposure with improved mental and physical health (Twohig-Bennett & Jones, 2018), underscoring the societal importance of equitable access to forests and parks. These links justify our focus on motivations, site attributes and accessibility as policy-relevant levers.

2 | MATERIALS AND METHODS

2.1 | Research design and data collection methods

The data for this analysis were gathered from March to July 2021 during the COVID-19 pandemic through an online survey involving 33 European countries. The survey was part of a Sino-European research project, which focused on the use of urban forests and other tree-based ecosystems as nature-based solutions to develop more resilient cities and liveable societies with improved human well-being.

The survey consisted of seven thematic blocks encompassing a total of 37 closed questions. The selection of questions and variables was informed by the literature, which identifies socio-demographic factors, motivations, perceived accessibility and site qualities, and mobility patterns as key determinants of urban green space use (De Vreese et al., 2023).

To ensure fluency in understanding questions, the survey was translated into the official languages of the participating countries by native speakers within the research consortium or external researchers. Rigorous testing and adjustments were performed on all translations before any language version received approval. Each national questionnaire was pre-tested in a soft launch (between 30 and 50 responses of $n = 384$ target responses) which allowed the identification of and fixing of any issues before the full launch.

The survey addressed various aspects of people's engagement with forests and parks in Europe. For this paper, we used the sections on socio-demographic characteristics, frequency and mode of visits to forests and parks, reasons for visiting these areas, and the perceived importance of site characteristics (e.g. cleanliness, accessibility, lighting and recreational facilities) (see Annex 1 for the exact items and response options). The goal was to gain insights into respondents' engagement, preferences and motivations for visiting forests and parks. Other questions, such as why people do not use these areas, were covered by other scholarly papers (Łaszkiewicz et al., 2023). When answering questions about site characteristics and accessibility, respondents were explicitly instructed to think about the forest or parks they visit most often. They could also indicate the approximate location of this main forest or green area by clicking on an online map (stored as coordinates), but because only a subset of respondents completed this step reliably, these spatial data were not used in the present analysis.

2.2 | Data collection method and sampling

Data collection was conducted by an external market research company with direct and indirect (through local partner companies) access to online survey panels in 33 European countries. The full sample was randomly chosen from a network panel comprising nearly 2 million members, ensuring representation of geographical, social, gender and age distributions across countries. Respondents were drawn from the panel members in each country, and the proportion of national distributions per characteristic was derived from current census data of statistical offices or Eurostat. Each national sample was deemed representative when age, gender and social attributes had the same probability of being part of the sample, with a confidence level set at 95%. Panel members were invited via email to complete the online questionnaire, and participation was voluntary.

The target group for data collection encompassed the general population aged 18 years and above from all states and regions in the covered countries. Following data cleaning and the elimination of incomplete responses and speeders, information was obtained from a total of 10,462 respondents (Roitsch, 2026). Additional details regarding the data collection process and procedures can be found in the project deliverable (De Vreese et al., 2023).

For regional analysis of the data, the classification of countries in Europe based on the Forest Europe process (Forest

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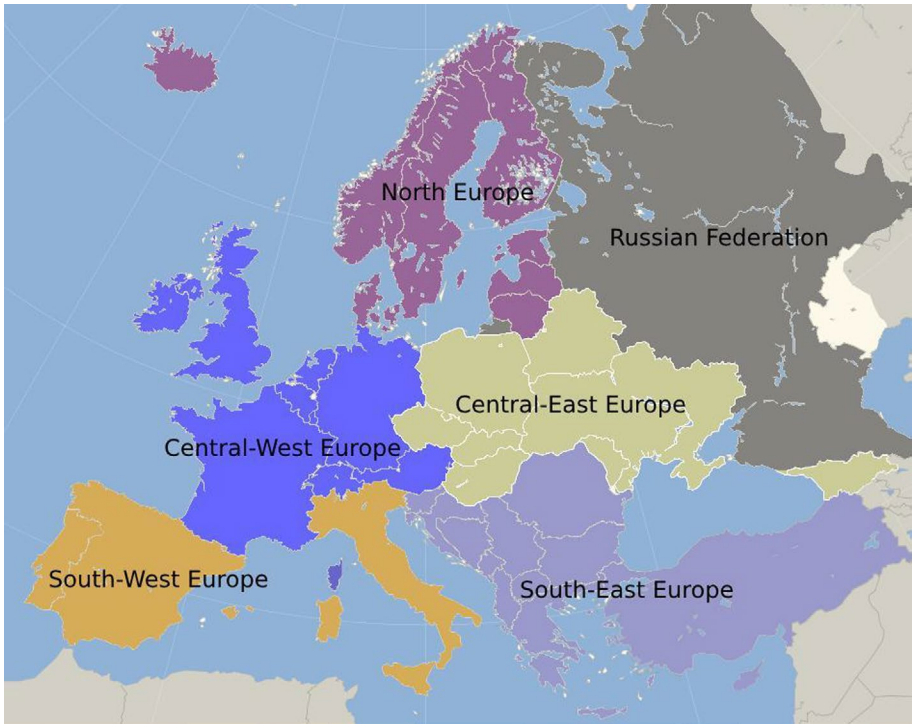

FIGURE 1 Map illustration grouping of countries according to the Forest Europe process (Forest Europe, 2020). This grouping was applied in the analysis of regional differences.

Europe, 2020) was followed. Thus, countries were divided into: North Europe, Central-West Europe, Central-East Europe, South-West Europe, South-East Europe and the Russian Federation (Figure 1).

2.3 | Data analysis

All the data were analysed using SPSS version 23. First, descriptive statistics of participant profiles, overall as well as by certain subcategory levels were generated by frequencies, percentages, means and standard deviations.

Some of the analysed variables are so-called Likert type scaled responses, which are often treated as quasi-interval variables, especially when the categories are logically ordered and approximately equally spaced (Harpe, 2015). In addition, for all scaled responses we calculated skewness and kurtosis (Annex 2, Table A14), whose values were close to zero indicating that those variables were normally distributed (Byrne, 2010; Hair Jr et al., 2010). Further on, the latent structure of access and use of green spaces was analysed by principal component analysis (PCA) including Varimax rotation with Kaiser normalisation of principal axes. Guttman–Kaiser criterion and Cattell scree plot were used in determining the number of significant components or factors, while minimal loading for including an item in factor structure was 0.3.

Differences between various groups of participants (defined by transportation mode or region) on accessibility, visit frequency and aspects of forests and parks and motivation for visiting them were tested by one-way analysis of variance (ANOVA), with Scheffé post hoc tests. Gender-based differences in park preferences and experiences were examined by *t*-test for independent samples. A two-factorial analysis of variance was used to test the joint effects of gender and region, as well as their interaction on the importance of certain characteristics and motivation for green area visiting. Multiple regression analysis was used to test the prediction of the frequency of visits to forests and parks based on a set of predictors (income, GDP, etc.). In our case, we also used the Brown–Forsythe test because it checks whether group means differ even when the groups have unequal variances, providing a robust confirmation that the differences between travel mode groups are reliable.

Further, Canonical discriminant analysis (CDA) was used to examine the prediction of a preference to visit forests or parks, or a preference for a certain mode of transportation based on a set of socio-demographic characteristics of visitors.

2.4 | Context on green availability across case countries

Green provision and accessibility vary substantially across Europe. EEA assessments document persistent north/west vs. south/east contrasts in urban green availability and in the share of people within short walking distance of green/blue spaces, with marked inequalities by neighbourhood socioeconomic status (SES) (EEA, 2022a, 2022b). WHO/Europe recommends time-based access thresholds (e.g. a park within a short walk), which many cities

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now use to benchmark provision (WHO/Europe, 2016). At a national scale, forest cover also differs widely; EU-27 forests average ~39% of land area but exceed 50% in several Member States (Eurostat, 2024), which shapes the broader context for visiting forests and parks (though national cover does not equal urban proximity). City-comparative studies further show large between-city differences in green availability within the EU (Kabisch et al., 2016). To help interpret our results, we provide a compact country context table (Annex 2, Table A1) summarising these indicators for the 33 countries in our sample. These descriptors are not used to explain behaviour causally but to contextualise cross-country patterns observed in our survey.

2.5 | Research ethics

As the survey did not collect any sensitive data, no ethical clearance or advice of an ethical committee was required. The market research company provided the data in an anonymised form to the researchers. The sampling setup within the market research company also do not link individuals to responses, making it impossible to track individual participants. The participants were drawn from a panel curated by the market research company, for which participants signed up voluntarily. Similarly, panellists could voluntarily decide to participate or not in the research reported.

3 | RESULTS

3.1 | Socio-demographic characteristics of respondents

The sample represents a diverse spectrum of age demographics, as outlined in Table 1, with the majority falling within the 31 to 50 years age range. The subsequent noteworthy segment is composed of individuals aged 18 to 30. Together, these two groups collectively constitute two-thirds of the entire sample.

In terms of gender distribution, the sample is nearly evenly divided between male and female. When it comes to education, the sample is diverse, covering individuals with varying levels of formal education. About 60% had higher education, followed by those who finished secondary school between ages 17 and 19. Concerning the presence of dependent children or young individuals (under 18 years of age) in respondents' households, more than 60% stated that they do not have any minors or dependents living with them. Income distribution represents a variety of financial profiles, while 10.7% of the respondents chose not to disclose their income. Concerning the place of residence, nearly 90% of respondents reside in urban or peri-urban areas in the vicinity of cities (Table 1). Taken together, this indicates that the sample is skewed towards young and middle-aged, relatively well-educated urban or peri-urban residents, and should therefore be carefully considered when interpreting the results.

TABLE 1 Socio-demographic characteristics of survey respondents across 33 European countries.

Socio-demographic characteristics	Frequency	Percent (%)
Gender		
Man	5272	**50.4**
Women	5163	**49.4**
Other	13	0.1
Prefer not to say	14	0.1
Total	10,462	100.0
Age groups		
18–30	3331	31.8
31–50	4299	**41.1**
51–65	1528	14.6
66+	1304	12.5
Total	10,462	100.0
Education		
School up to 16 years of age	449	4.3
School between 17 and 19 years of age	3668	35.1
Undergraduate university degree or equivalent (Bachelor)	3759	**35.9**
Postgraduate university diploma or degree (e.g. Master, PhD)	2512	24.0
No qualifications	74	0.7
Total	10,462	100.0
Income (household income per year after taxes in 2019)		
Less than 3500eur	1008	**9.6**
3500–6500	934	8.9
6501–9500	787	7.5
9501–13,000	905	8.7
13,001–16,000	751	7.2
16,001–22,000	945	9.0
22,001–27,000	760	7.3
27,001–32,000	563	5.4
32,001–37,000	476	4.5
37,001–42,000	413	3.9
42,001–53,000	522	5.0
53,001–63,000	418	4.0
63,001–74,000	266	2.5
74,001–85,000	204	1.9
More than 85,000	387	3.7
Prefer not to say	1123	**10.7**
Total	10,462	100.0
Number of minors in your household (dependent children or young people (under 18 years of age))		
0	6469	**61.8**
1	2216	21.2
2	1370	13.1

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TABLE 1 (Continued)

Socio-demographic characteristics	Frequency	Percent (%)
3	331	3.2
4	51	0.5
5	18	0.2
6–13	7	0.0
Total	10,462	100.0
Place of living		
City or town centre	5627	**53.8**
Suburb of a city or town	2338	22.3
Rural area nearby a city or town	1347	12.9
Rural area/countryside	1126	10.8
Prefer not to say	24	0.2
Total	10,462	100.0

Note: Bold are the highest values.

3.2 | Preferred characteristics of forests and parks and reasons for visiting

For analysing primary motivations and site characteristics driving individuals to visit forests and green spaces, we used items in which respondents evaluated the forest or parks they visit most often and conducted a PCA analysis, which revealed two latent dimensions, explaining 53.71% of variance. Based on loadings on each factor, results were interpreted as belonging to the 'Attractiveness' and 'Accessibility' dimensions (component plot is given in the appendix, Table A2). Factors were interpreted based on the meaning of items with the highest loadings on each of the factors (Gorsuch, 2014; Tabachnick & Fidell, 2018). Forest and green space characteristics, such as presence of playgrounds, picnic places, benches, are evaluated by participants in a similar manner and they represent the same latent construct which we interpreted as attractiveness aspects of forests and green spaces (following the term already used in literature; Biernacka et al., 2022; Biernacka & Kronenberg, 2018). On the other hand, green spaces characteristics related to reaching it were also evaluated in a similar manner, and we interpreted it as accessibility aspects (Table 2, Annex 2, Figures A1 and A2).

Similarly, when analysing the aspects related to motivation for visiting forests and parks, the PCA identified two factors explaining around 54% of the sample variance (the component plot is given in the Appendix). These factors were labelled as 'Getaway (intrinsic)' and 'Social (extrinsic)' motivations (following the terms used in literature; Lu et al., 2025; Ramirez-Andreotta et al., 2019; Ryan & Deci, 2000). Different reasons to visit forests and parks are grouped in such a manner that people who visit them to enjoy the climate or relax alone also tend to visit them to get away from everyday life or to enjoy the beauty of nature. We interpreted this group of reasons to visit forests and parks as intrinsic or getaway motives. In contrast, people who visit green spaces for physical exercise also tend to visit them to meet friends and family, to have picnics or BBQs. We interpreted this group of reasons to visit forests and parks as extrinsic or social motives (Table 3). This intrinsic–extrinsic distinction is consistent with findings from other green-engagement settings: community gardeners report value-based, self-endorsed reasons alongside more instrumental, context-dependent ones (Ramirez-Andreotta et al., 2019) and structural equation modelling in urban forest parks shows that intrinsic motivation is positively associated with behavioural intention to visit, whereas extrinsic motivation can be negatively associated; in both cases, motivation is an important predictor of subjective wellbeing, largely through the mediating role of behavioural intention (Lu et al., 2025).

TABLE 2 Grouping of respondents regarding perceived attractiveness and accessibility characteristics of the forest or parks they visit most often.

Question 20: How important are the following characteristics of this forest/park to you?	Attractiveness (factor loadings)	Accessibility
Availability of playgrounds	0.832	
Availability of public toilets	0.804	
Presence of recreational areas (e.g. sports fields)	0.796	
Availability of benches	0.786	
Presence of road signs and information panels	0.730	
Availability of picnic places	0.728	
Light at night	0.717	
Hard Pathways (concrete, asphalt)	0.670	
Availability of garbage bins	0.666	
Water features (e.g. ponds, fountains, streams, lakes)	0.519	0.312
Soft pathways (blank soils, sand)	0.419	0.396
Within close reach (time to get there)		0.776
Cleanliness		0.707
Accessibility (e.g. parking space, public transport, secure bike stalls)	0.429	0.528

Note: A detailed description of the terminology used in the table is provided in the Annex (Table A2).

3.3 | Types of visited forests and parks, frequency and accessibility

Looking at the types of forest and green space, the majority of respondents (40.2%) mostly visited a 'Park in a city or town'.

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TABLE 3 Grouping of respondents regarding motivations for visiting forests and parks.

Questions 20: Please specify the reasons why you go to the forest/park you indicated on the map	Getaway (intrinsic) (factor loadings)	Social (extrinsic)
To enjoy its climate	0.861	
To enjoy the beauty	0.861	
To get away from everyday life	0.789	
To learn about nature	0.667	
To be alone and relax	0.641	
To walk the dog(s)		0.735
To take the children out		0.704
To physically exercise (running, biking, horse riding, swimming, etc.)		0.611
For social activities (e.g. to meet friends, family, picnics, BBQs)		0.509

Preferences for visiting a 'Forest in the countryside' and a 'Forest in or near a city or town' are almost evenly distributed, accounting for 31.1% and 28.7%, respectively (Annex 2, Table A3). Figure 2 illustrates the variations in the types of forests and parks visited across the studied countries.

Parks were the most preferred green spaces in several post-socialist countries, with the highest percentages of people visiting 'Parks in cities or towns' in Ukraine (64.02%), Serbia (62.13%) and Albania (60.94%). Among countries, Finland (41.46%), Norway (44.20%) and Hungary (44.27%) have the highest percentages of respondents visiting 'Forests in or nearby cities or towns'. In contrast, Austria (51.18%), Belgium (46.91%) and Slovenia (54.18%) show the highest percentages for visiting forests in the countryside, indicating that 'rural nature' holds a relatively greater share of visits among their populations. In Slovenia, this likely reflects the country's small size and high forest cover, which make forests in the countryside relatively easy to access.

A particularly notable contrast was observed in countries like Hungary and Turkey that exhibited a higher preference for forests in or nearby a city or town (44.27% and 42.42%, respectively) over countryside forests (15.92% and 19.10%, respectively).

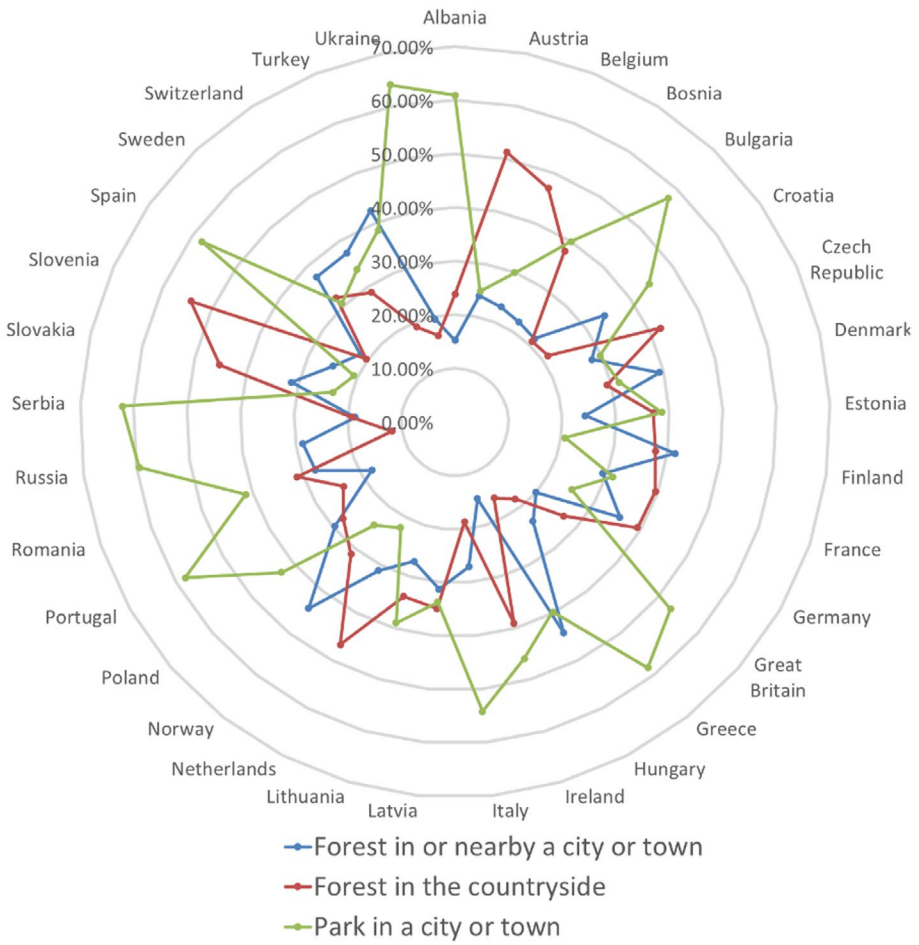

FIGURE 2 Differences of visited types of forests and parks in European countries (every ring represents a percentage of respondents' choice), $N = 10{,}462$.

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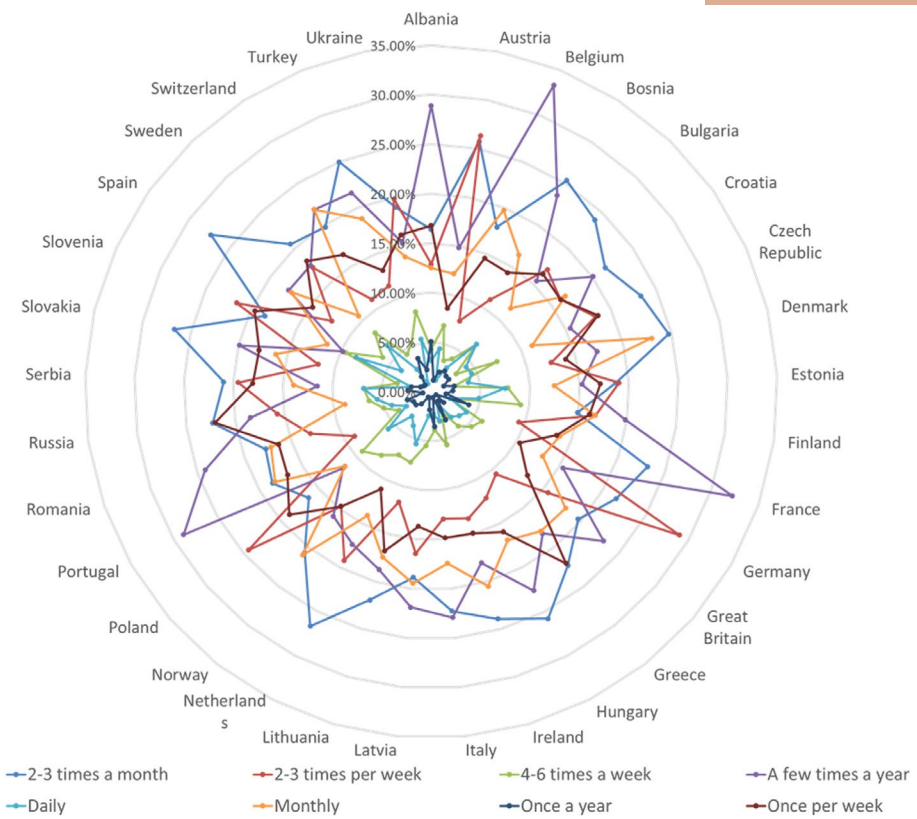

FIGURE 3 Differences in frequency of visits across European countries (every ring represents a percentage of respondents' choice), $N = 10{,}462$.

Low visitation to forests in or nearby a city or town was revealed in Ireland (14.91%), Serbia (18.64%) and Albania (15.23%), which might indicate fewer urban forests or lower engagement with them. Similarly, low countryside forest visitation was found in the Russian Federation (11.85%) and Greece (18.24%). Exceptionally high park visitation was prominent in countries like Great Britain (53.22%), Greece (58.24%) and Spain (58.00%).

In terms of frequency (Figure 3; see Annex 2, Table A3), forests and parks were mainly visited '2-3 times a month' by 21.7% of respondents, followed by 'a few times a year' (19.5%), and almost equally 'monthly' and 'once per week' (15%).

Belgium (33.33%), France (32.21%) and Portugal (28.90%) stood out with the highest percentage of 'A few times a year' visits, suggesting that forests and parks are less often integrated into everyday routines for many people in these countries. Also, low daily visitation in countries such as Turkey (0.84%) and Hungary (1.27%) showed minimal daily engagement with parks and forests.

Regarding transportation, walking emerged as the preferred mode for the majority (53.0%), with 30.8% opting for car travel, 11.4% choosing cycling and 4.8% relying on public transport. Figure 4 illustrates country-specific proportions in transportation preferences. In transportation preferences, Turkey stood out as an outlier. Almost 60% of respondents used a car as their primary mode of travel to forests and parks, while less than 30% walked, which is a big departure from the pattern prevailing in other surveyed countries.

Slovenia had an exceptionally high rate of walking (74.93%) as a mode of reaching forests and green spaces. Similarly, Finland (64.63%) and Norway (63.95%) showed significant engagement in walking. These high shares of walking likely reflect a combination of relatively good local access to forests and parks and everyday habits of using nearby green spaces on foot, but our data do not allow us to disentangle specific underlying causes (e.g. infrastructure, urban form or cultural norms) for each country. Turkey has the lowest percentage of walking (27.81%), followed by Italy (32.26%), which relates to high reliance on cars in Turkey (57.87%) and Italy (50.00%). Hungary led in public transport usage (12.42%), indicating a comparatively high use of public transport for accessing green spaces in our sample, while the GB stood out with the lowest number of cyclists (5.08%).

To examine how often people visit forests and parks depending on how they get there, we conducted a one-way analysis of variance (ANOVA) on visiting frequency (q16) by main mode of transportation (q15), followed by Scheffé post hoc tests comparing mean visit frequencies across modes. This analysis provides context on the relationship between transportation choices and visit frequency across Europe. The results of the ANOVA showed that there are significant differences in visit frequency (mean score on the 1–8 frequency scale, see Annex 2) based on the type of transportation used, with a medium effect size of 11.2% ($F = 438.73$; df1 = 3; df2 = 10,458, $p < 0.01$; $\eta^2 = 0.112$). This means that the mode of transportation had a medium size relation strength with the frequency of visiting forests or parks. Scheffé post hoc tests indicated that the differences in visit frequency

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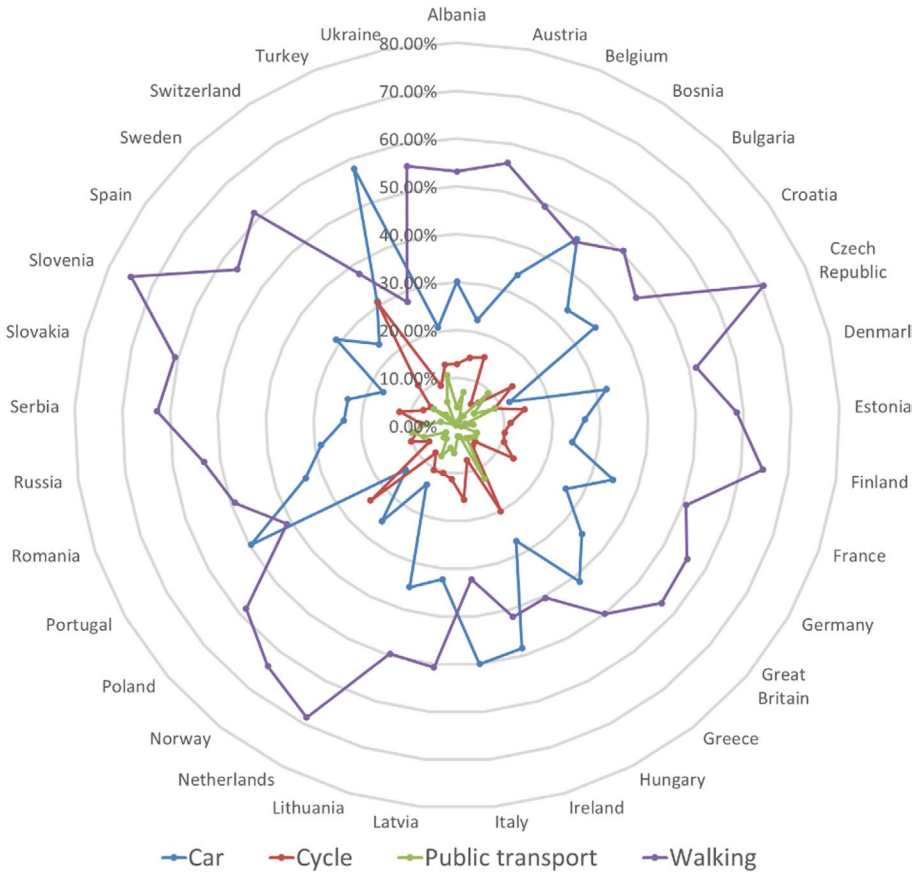

FIGURE 4 Differences in mode of transport used to reach forests and parks in 33 European countries (every ring represents a percentage of respondents' choice), $N = 10{,}462$.

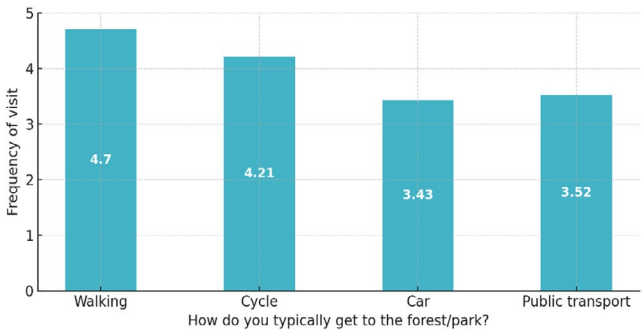

FIGURE 5 Average frequencies of park/forest visiting segregated by different modes of transportation used to reach these green spaces (see Annex for detailed Tables A4 and A5). [The *y*-axis shows mean values on the visit frequency scale (1 = once a year; 2 = a few times a year; 3 = monthly; 4 = 2–3 times a month; 5 = once per week; 6 = 2–3 times per week; 7 = 4–6 times a week; 8 = daily; higher values indicate more frequent visits]

between walking and cycling, walking and driving, as well as walking and using public transport were statistically significant. However, there was no significant difference in visit frequency between cycling and driving, cycling and using public transport, and between driving and using public transport. Summing up these results, we can say that people who walk and cycle have a higher frequency of visits on average than those who travel by car or public transport (see Figure 5). Results were additionally confirmed by Brown–Forsythe robust test of equality of means ($F = 497.08$, df = 3; 3839.6, $p < 0.01$).

To further understand the data, multiple regression analysis was conducted to predict the frequency of visits to forests and parks using participants' socio-demographic characteristics (gender, income, education, age), their motivations, perceived accessibility and attractiveness of forests and parks (PCA-derived indices 'aspects accessibility' and 'aspects attractiveness'; see Section 3.2), and also certain country characteristics (GDP per capita, forest coverage) as predictors (Table 4).

The overall predictive power of the model was relatively low ($F = 25.16$; df1 = 15; df2 = 8835, $p < 0.01$; $r^2 = 0.041$), suggesting that the predictors included explain only a small portion (4.1%) of the variance in the frequency of visits. Table 4 presents significant predictors of the frequency of visits to forests and parks. The highest beta value in analysis indicates that the social (extrinsic) motivation ($\beta = 0.136$) had the strongest predictive value for the frequency of visits. Individuals who were more extrinsically motivated to visit forests and parks for social purposes tend to visit more frequently compared to those who have lower social extrinsic motivation. Also, the forest area coverage showed a comparatively high prediction effect ($\beta = 0.093$), meaning there was a positive relationship between forest cover and the frequency of forest and park visits. Based on these findings, the profile of a more frequent visitor of forests and

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TABLE 4 Regression coefficients for frequency of green area visiting prediction based on a set of parameters (all values are significant and presented in this table, other predictors are presented in Table A5).

Predictor variable	β coefficient	*t*-value	*p*	Correlation	Interpretation
Gender	0.029	2.743	0.006	0.035	Females visit more frequently
Age	0.052	4.741	0.000	0.030	Older individuals visit more frequently
Education	0.026	2.385	0.017	0.029	Higher education levels are associated with more frequent visits
Income	0.035	2.898	0.004	0.029	Higher income levels are associated to more frequent visits
Urban/Rural	0.038	3.467	0.001	0.033	Urban dwellers tend to visit more frequently compared to rural residents
Aspect 'accessibility'	0.045	3.786	0.000	0.085	Greater accessibility is associated to more frequent visits
Motivation 'social extrinsic'	0.136	10.804	0.000	0.142	People who visit forests and parks for social reasons visit more frequently
Motivation 'getaway intrinsic'	0.048	4.136	0.000	0.105	People who visit forests and parks with intrinsic motivation visit more frequently
Forest cover	0.093	7.501	0.000	0.076	Higher forest cover in a country corresponds to more frequent visits to natural areas

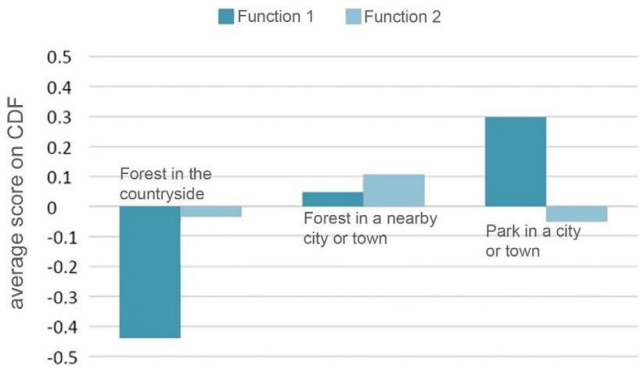

FIGURE 6 Average scores on two canonical functions according to the types of green spaces (group centroids).

parks in Europe tended to be that of a highly educated, high-income, older female urban resident with good accessibility to forests, who visits forests and parks for social reasons or to 'get away,' and lives in a country with higher forest cover.

3.4 | Socio-demographic variables influence access and visiting patterns

3.4.1 | Preference for different type of forests and parks based on urban/rural divide and gender/income influence

To identify the profile of respondents who visit either forests or parks and determine which characteristics were dominant in differentiating between the two groups, a CDA was conducted. By considering these three characteristics, place of residence (urban–rural), income level and gender, it is possible to predict the preferred destination for 46.8% of the surveyed individuals. Two functions or combinations that can differentiate between those who visit forests and parks were identified (Figure 6; for detailed coefficients and canonical function's structure, see Annex 2, Table A7).

The first function [Canonical Discriminant Function (CDF) 1 ($\chi^2 = 896.14$; df = 12; $p < 0.01$; $\rho = 0.296$)] is related to the geographical location or urban–rural divide. As expected, it revealed that individuals living in urban areas tended to visit parks in urban settings more frequently, while those living in rural areas visited forests in rural settings more often. Interestingly, both urban and rural residents visited forests near urban areas to a similar extent (Figure 6).

The second function [Canonical Discriminant Function (CDF) 2 ($\chi^2 = 42.51$; df = 5; $p < 0.01$; $\rho = 0.068$)] highlighted the importance of gender and income on the choice of visiting forests or parks. The results suggest that higher income men were more likely to visit forests near cities, while women and people with lower incomes tended to visit green areas in suburban areas. These findings indicate that gender and income can shape preferences and influence which nature areas are accessible (Figure 6).

3.4.2 | Mode of transportation based on gender/presence of minors and gender/age/education

The purpose of the analysis was to predict the mode of transportation to forests and parks (by car, bicycle or walking) with the aim of

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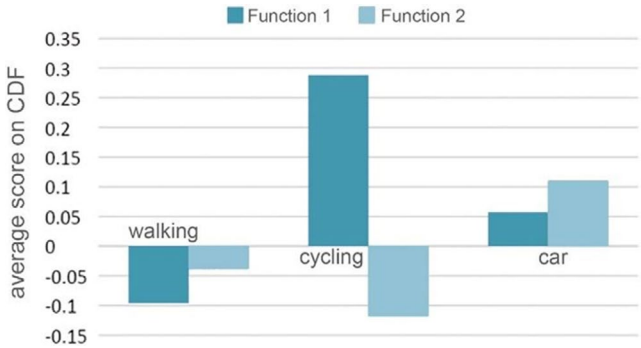

FIGURE 7 Average scores on two canonical functions for all three modes of transport to forests and parks (group centroids).

portraying the profiles of people who prefer to go to forests and parks by different means. The CDA revealed two functions or combinations that differentiate between the modes of transportation for 37.6% of the participants (Figure 7; for detailed coefficients and canonical function's structure, see Annex 2, Table A8).

The first function [Canonical Discriminant Function (CDF) 1 ($\chi^2 = 198.65$; df = 12; $p < 0.01$; $\rho = 0.126$)] was characterised by gender and the presence of minors in the household and showed that men and individuals with dependents (minors) in their households were more likely to cycle the park. On the other hand, women and those without minors either walked or went by car (Figure 7).

The second function [Canonical Discriminant Function (CDF) 2 ($\chi^2 = 56.58$; df = 5; $p < 0.01$; $\rho = 0.08$)], characterised by gender, age and education, revealed that older and more educated women were more inclined to go to the park by car. On the other hand, younger, less educated men were more likely to use bicycles. All groups tended to have a relatively equal preference for walking to the park (Figure 7).

3.4.3 | Analysis of regional differences in how Europeans use forests and parks

One-way analysis of variance was conducted to examine the differences across European regions for the attractiveness and accessibility aspects (see Table 2), as well as social (extrinsic) and getaway (intrinsic) motivations (see Table 3) for forest and park visits. The results show that all differences were statistically significant for all four scales, but the effects were small. The eta squared values, which indicate the effect size, were below 0.09, meaning that the effects were less than 9%.

Despite all differences being statistically significant, the only meaningful ones were those showing effects higher than 5%, which were variables of attractiveness and social (extrinsic) motivation. For these two variables post hoc Scheffé tests were done to understand in detail the grouping of regions based on them. The differences in the other two variables (accessibility and getaway (intrinsic) motivation) were negligible (effects of 1% and 3%, respectively).

TABLE 5 Scheffé post hoc tests subsets for differences between European regions on importance of attractiveness aspects for visiting forests and parks (for detailed statistical parameters see Table A6).

Aspects—attractiveness				
		Subset		
Region	*N*	1	2	3
North Europe	2153	2.86		
Central-West Europe	2473		3.07	
Central-East Europe	1952		3.18	
South-East Europe	2372			3.53
South-West Europe	885			3.59
Russian Federation	346			3.61
Sig.		1.000	0.181	0.632

Analysis showed that European regions can be grouped into three subsets based on the importance of attractiveness (defined as the presence of equipment, organisation of forests and parks, etc.). North Europe showed the lowest importance of attractiveness for visiting forests and parks, followed by Central-West and Central-East Europe. In contrast, the remaining regions, South-East, South-West Europe and Russian Federation, showed the highest importance of attractiveness for the visitations (Table 5).

According to similarity in social motivation (i.e. visit forests and parks for physical exercise and social needs, such as meeting friends) for visiting forests and parks, European regions can be grouped into four subsets (subsets) (Table 6). North Europe and the Russian Federation together showed the lowest intensity of social extrinsic motives as a reason for visiting forests and parks, followed by Central-West Europe and the Russian Federation. The Russian Federation belongs to both subsets, both having low intensity. The next group included Central-East and South-West Europe, which showed a bit higher level of social motives, while South-East Europe has the highest importance of social extrinsic motives for visiting forests and parks.

3.4.4 | Analysis of gender differences in how Europeans use forests and parks

An examination of gender-based differences in forests and parks preferences and experiences using independent samples t-test was done, which revealed how men and women perceive and engage with these areas (Table 7). Although many variables did show statistically significant differences between genders, this can be a consequence of a large sample size. Therefore, we added a point-biserial correlation as an effect size measure and decided to interpret only those significant differences with a relatively notable effect above 0.1.

Among all site characteristics, 'light at night' showed one of the strongest gender differences: women rated good lighting at night as more important than men (Table 7). A notable aspect of the

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TABLE 6 Scheffé post hoc tests subsets for differences between European regions on intensity of social (extrinsic) motives (reasons) for visiting forests and parks.

Motivation_Social extrinsic					
		Subset			
Region	*N*	1	2	3	4
North Europe	2153	2.91			
Russian Federation	346	3.01	3.01		
Central-West Europe	2473		3.11		
Central-East Europe	1952			3.29	
South-West Europe	885			3.30	
South-East Europe	2372				3.52
Sig.		0.362	0.283	1.000	1.000

analysis was the disparity in motivations for visiting forests and parks. Women placed greater importance on enjoying the beauty of nature and using these natural spaces as an escape from everyday life. Accordingly, they attributed higher values to a composite score of intrinsic (getaway) motivation, compared to men who used forests and parks for sports (Table 7). Besides these aspects, others also show statistically significant gender differences, but the sizes of these effects were negligible and gained significance can be attributed primarily to a large sample size (Table 7).

Regional gender differences were revealed by conducting two-factor analysis of variance. Differences by gender (gender effect) were explored by region (region effect) as well as their interaction on the importance of certain characteristics of forests and parks influencing visits to, and motivation for visiting them (for detailed parameters see Annex 2, Table A9).

Significant interaction of region and gender was found in terms of 'Accessibility' (Figure 8, for detail parameters see Annex 2, Tables A10 and A11) and 'Attractiveness' (Figure 9, for detail parameters see Annex 2, Tables A12 and A13) meaning that gender differences varied by region. For Intrinsic and Extrinsic motivation, as well as on the frequency of visit and length of stay, no region-gender interaction was found, meaning that gender differences remained the same regardless of the region.

For 'Accessibility' characteristics, Sidak post hoc tests showed that gender differences existed in all regions, and it was found that women valued accessibility more than men. Although gender differences existed in all regions, the differences were somewhat larger in North and South-West Europe and in the Russian Federation (Figure 8).

In terms of 'Attractiveness', gender differences varied by region (Figure 9). Sidak post hoc tests showed that there were no gender differences in North and Central-West Europe, but they existed in other regions (women valued attractiveness more).

4 | DISCUSSION

In this study, we aimed to bridge the gap in large-scale research on the motivations and use patterns of forests and parks across diverse contexts in 33 European countries. By focusing on reported use (rather than only green space supply), we provide evidence that helps connect green infrastructure debates to everyday mobility, equity and public health. Returning to our three research questions (RQ1–RQ3), we showed how motivations, perceived site characteristics, accessibility, travel behaviour, socio-demographics and regional contexts jointly structure who visits forests and parks, how often, and for which purposes in our multi-country sample. By incorporating urban, peri-urban and rural contexts, we sought to provide a comprehensive overview and comparative analysis of these patterns, emphasising the socio-demographic and geographic factors influencing access and use across diverse planning and cultural contexts. To reflect this, the discussion is structured so that we first foreground socio-demographic differences (social dimension of RQ3), then relate them to motivations, site attributes and accessibility (RQ1–RQ2), and finally examine geographical and regional contrasts (geographical dimension of RQ3).

Overall, the results show that a relatively simple set of constructs captures much of the variation in how Europeans use forests and parks. Two robust motivational and site-attribute dimensions (getaway vs. social motives; attractiveness vs. accessibility), clear differences in visit frequency by travel mode, and systematic, albeit small, associations with socio-demographic variables together provide a coherent picture of everyday forest and park use across 33 countries. The statistical effects were generally modest, but the consistency of patterns across a large, multi-country sample indicates that these results are unlikely to be artefacts of single-city case studies and instead reflect broad, Europe-wide regularities. Importantly, these regularities point to a small set of actionable levers, everyday proximity, low-friction access and basic site quality, that can be addressed through planning and mobility policy.

Our findings underscore the critical role of socio-demographic characteristics in shaping forests and parks use. Similarly, previous research has highlighted the importance of these factors, such as age, gender, education and other socio-demographic factors, in determining visiting frequency and forests and parks preferences (Fongar et al., 2019; Fraser & Kenney, 2000; Phillips et al., 2021)

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TABLE 7 Gender differences in forest and park preferences and experiences: Results of the independent samples *t*-test.

Variables	*t*	df	*p*	r_{pbis}
On average, how often do you visit this forest/park?	**−3.724**	**10,433**	**0.000**	0.036
How long do you need to travel to this forest/park?	**5.713**	**9645**	**0.000**	−0.058
Cleanliness	**−7.798**	**10,433**	**0.000**	0.076
Within close reach (time to get there)	**−7.112**	**10,433**	**0.000**	0.069
Accessibility (e.g. parking space, public transport, secure bike stalls)	**−4.857**	**10,349**	**0.000**	0.048
Light at night	**−10.837**	**10,304**	**0.000**	**0.106**
Availability of garbage bins	**−8.640**	**10,288**	**0.000**	0.085
Water features (e.g. ponds, fountains, streams, lakes)	−1.292	10,275	0.196	0.013
Soft pathways (blank soils, sand)	**−3.317**	**10,265**	**0.001**	0.033
Hard pathways (concrete, asphalt)	**−3.706**	**10,250**	**0.000**	0.037
Presence of recreational areas (e.g. sports fields)	**−2.179**	**10,238**	**0.029**	0.022
Presence of road signs and information panels	**−4.560**	**10,229**	**0.000**	0.045
Availability of benches	**−7.283**	**10,219**	**0.000**	0.072
Availability of playgrounds	−1.777	10,209	0.076	0.018
Availability of public toilets	**−5.653**	**10,201**	**0.000**	0.056
Availability of picnic places	**−5.816**	**10,191**	**0.000**	0.058
To physically exercise (running, biking, horse riding, swimming, etc.)	1.363	10,423	0.173	−0.013
To walk the dog(s)	**−2.356**	**10,309**	**0.019**	0.023
To take the children out	−0.461	10,291	0.645	0.005
To be alone and relax	**−7.493**	**10,285**	**0.000**	0.074
For social activities (e.g. to meet friends and family, picnics, BBQs)	**−8.547**	**10,279**	**0.000**	0.084
To get away from everyday life	**−11.135**	**10,276**	**0.000**	**0.109**
To enjoy its climate	**−9.360**	**10,273**	**0.000**	0.092
To enjoy the beauty	**−11.527**	**10,268**	**0.000**	**0.113**
To learn about nature	**−8.882**	**10,264**	**0.000**	0.087
q20_accesability	**−8.912**	**10,433**	**0.000**	0.087
q20_attractiveness	**−7.044**	**10,304**	**0.000**	0.069
q21_social_extrinsic	**−3.801**	**10,423**	**0.000**	0.037
q21_getaway_intrinsic	**−12.391**	**10,285**	**0.000**	**0.121**

Note: Boldface p-values significance is following "$p < 0.05$, $p < 0.01$, $p < 0.001$".

as well as how they are valued and used (Phillips et al., 2021; Shan, 2014). Their use is also influenced by geographic and cultural contexts (Dade et al., 2020; Phillips et al., 2021). This study builds on that foundation and brings insights that are crucial for urban planning and policymaking and that aim at enhancing forest and park accessibility and use across diverse populations. Effect sizes for individual predictors were small, but with more than 10,000 respondents they point to consistent gradients rather than isolated patterns, which is important when judging the practical relevance of the findings.

4.1 | Patterns observed in motivations and access to forests and parks (with a focus on socio-demographic differences)

4.1.1 | Variations in terms of socio-demographic factors

This study confirmed previous research that found socio-demographic factors to influence forest visit motivations. Given the broad and largely representative cross-national sample, it provides

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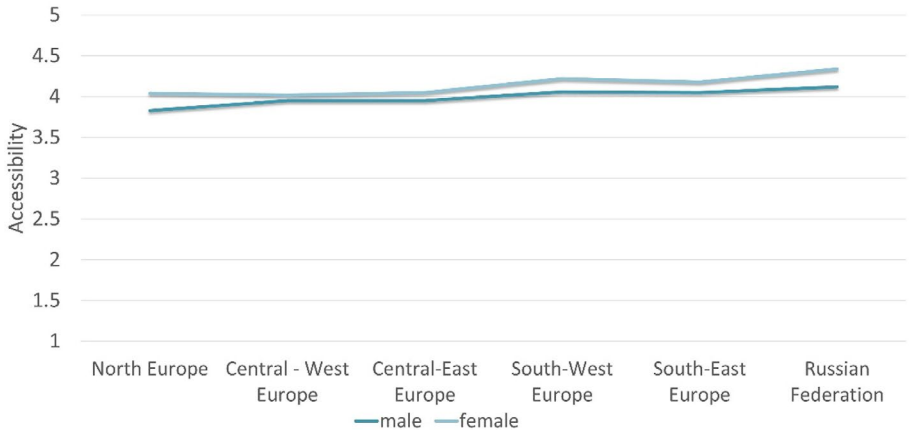

FIGURE 8 Interaction of gender and region on importance of accessibility aspect.

one of the first opportunities to gauge the magnitude and robustness of these effects at a European scale.

Gender differences

Gender significantly influences green space usage. Our study reveals that women visit forests and parks more frequently than men, primarily for relaxation, solitude and enjoyment of natural beauty. This aligns with Laurén (2009), who noted women's preference for forests for emotional reasons and physical recreation, highlighting the importance of nearby green spaces for women's daily lives and wellbeing. According to Laurén (2009), women prefer silent, peaceful forests close to home. Additionally, women generally believe more strongly than men that green spaces benefit health, as supported by a Dutch survey (den Van Berg, 2012). However, direct evidence of gender differences in the nature–health relationship remains inconclusive (Konijnendijk et al., 2023).

Both men and women engage in social and physical activities in green spaces, but men slightly prioritise extrinsic motivations such as sports, walking dogs or social gatherings. Men often visit green spaces with another adult, a dog, or alone, whereas women are more likely to accompany children (Garrido-Cumbrera et al., 2020), a finding confirmed in our study. Women also value features enhancing safety, comfort and cleanliness, like well-lit areas, clean paths and garbage bins, consistent with other studies (Jansson et al., 2013; Jorgensen et al., 2002; Ode Sang et al., 2016; Sreetheran & van den Konijnendijk Bosch, 2014). Proximity to home, ease of access via public transportation and availability of parking are also prioritised by women. Amenities such as off-leash dog areas, children's playgrounds, pleasant views, drinking fountains and safety are important to women (Braçe et al., 2021; Conedera et al., 2015). Gender differences in forest and park utilisation were not uniform across regions, suggesting that cultural, social and urban planning factors play significant roles in shaping these patterns. Jalkanen et al. (2020) assert that personal preferences and geographical factors heavily influence willingness to travel to green spaces, necessitating location-specific assessments.

Age differences

Age is another critical factor influencing forests and parks use. A substantial portion of respondents falls within the 31 to 50 years range, showing a strong interest in green areas among a middle-aged demographic in this study case. This age group often seeks green spaces for both intrinsic motivations, such as relaxation and mental health benefits, and extrinsic motivations, including physical activities and social interactions. Understanding these age-specific preferences can guide the development of targeted interventions to promote green space use among different age groups. This aligns with findings that the quality and arrangement of green spaces significantly impact their use, particularly among middle-aged users who benefit from stress reduction and improved mental wellbeing (Hoffimann et al., 2017; WHO, 2017).

Supporting this, studies have found significant positive associations between time spent visiting green spaces and mental health and vitality among various age groups (den Van Berg et al., 2016). Additionally, perceptions of green space quantity were positively associated with psychological wellbeing among middle-aged adults (Cleary et al., 2019). However, some studies show that the benefits of green spaces vary significantly with age and gender. For instance, Bos et al. (2016) found that green space was associated with better mental health only in specific age and gender groups, suggesting that middle-aged adults might not benefit uniformly (Bos et al., 2016). Older adults perceive greater aesthetic value and wellbeing from urban green spaces compared to younger individuals (Ode Sang et al., 2016).

Education and income

Higher education levels correlate with more frequent visits to green spaces, suggesting that educational attainment may play a role in green space use. Studies have shown that higher education levels are associated with more frequent visits to green spaces, supporting the idea that educational attainment influences green space use (den Van Berg et al., 2016). Additionally, in the highly urbanised city of Barcelona, low-educated residents experienced stronger positive

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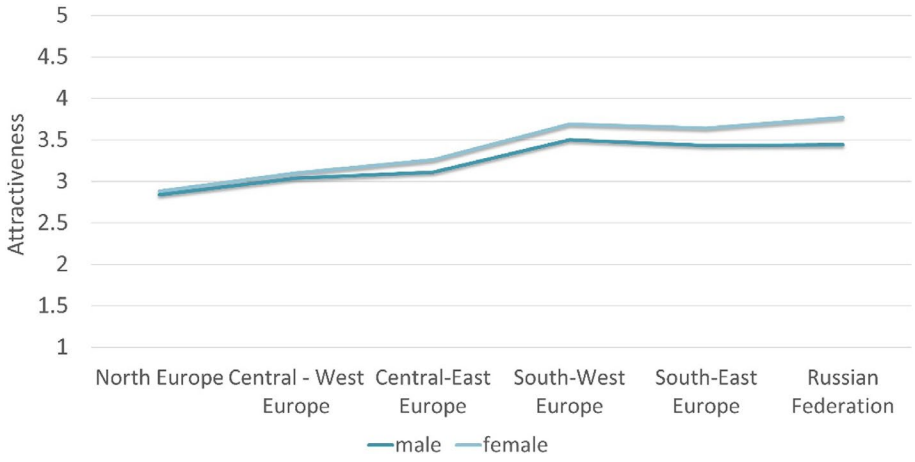

FIGURE 9 Interaction of gender and region on importance of 'Attractiveness' based on the Sidak post hoc test.

associations between neighbourhood green space and self-rated general health than higher-educated residents, suggesting that nearby green may be particularly important for the health of disadvantaged groups in dense urban settings, rather than necessarily indicating higher levels of use (Ruijsbroek et al., 2017).

Income distribution also plays a crucial role in green space use. Disparities in urban green space access are often related to income inequalities within cities. Higher income residents generally have more access to green space, although this can vary by city (Buckland & Pojani, 2022). Across Europe, lower-income urban neighbourhoods tend to have less green space available than higher income ones, pointing to persistent socio-spatial inequalities in green space provision and in opportunities to access nearby nature (EEA, 2022b). These inequalities in provision and accessibility are likely to shape how often residents can visit and benefit from green spaces, even though actual use also depends on preferences, time and cultural context. Furthermore, the influence of greenness on perceived quality of life is more marked in lower-income cities, emphasising the importance of economic diversity in green space usage patterns (Giannico et al., 2021). In German cities, strong disparities in green space provision related to income, age and education further indicate the significant impact of socioeconomic factors on green space accessibility (Wüstemann et al., 2017). In line with this, several studies show that people living closer to green spaces, or in greener neighbourhoods, tend to visit them more frequently, with distance and perceived quality emerging as key predictors of visit frequency, particularly among lower-income residents when accessible sites are available (den Van Berg et al., 2016; Fongar et al., 2019). Taken together, these patterns point to environmental injustices: disadvantaged and lower-educated groups often have fewer nearby, good-quality green spaces and face more barriers to use. This calls for prioritising green space creation and upgrading in low-income neighbourhoods, better walking/cycling and public transport links, and participatory design that actively involves women, older adults and other under-represented users.

4.1.2 | Variations in terms of motivations and access patterns

In line with RQ1 and RQ2, we interpret differences in motivations, preferred site characteristics and modes of access as the behavioural and perceptual backdrop against which the socio-demographic gradients described above play out.

In the survey, it was found that forests and parks are visited 2–3 times a month by most respondents. The predominant mode of transportation was walking, followed by car use, cycling, and public transport. Similar patterns are observed in a study by Jang et al. (2019), where visiting neighbourhood forests 1–2 times a month by walking from home was the usual frequency of visit as the primary mode of commuting. In Helsinki, green spaces closer to home are preferred by residents, highlighting the importance of proximity and personal experience in urban green space usage (Korpilo et al., 2021). The study by Jalkanen et al. (2020) corroborates this statement.

Results indicate that the preference for attractive versus accessible green spaces is divided among respondents, with slightly higher significance attributed to attractiveness. Similarly, a clear dichotomy exists between those seeking solitude or a nature-centric experience ('getaway intrinsic') and those with social or activity-based intentions ('social extrinsic'). These motivational profiles are relevant because the health benefits of green space are largely realised through actual visits that satisfy such motives. The inclusion of respondents from 33 European countries allows for cross-cultural insights and strengthens the generalisability of findings. Such extensive data provide valuable evidence for shaping spatial planning and public health policies across Europe. Studies during the COVID-19 pandemic, for example, showed that people who continued to visit urban nature sites reported stronger perceived mental and physical health contributions, and that organisational and social conditions (e.g. rules on gatherings, crowding) shaped the possibility to pursue social or restorative motives (Talal & Gruntman, 2022). In a similar vein, research on environmental qualities indicates that different site characteristics

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support different health-related motives: quiet, aesthetically pleasing and 'natural' areas are more often associated with stress recovery and mental restoration, whereas well-maintained paths and facilities for sports and walking relate more to physically active motives (Pyky et al., 2018).

Furthermore, Elbakidze et al. (2022) identified 61 explanatory variables for green space use, including accessibility and personal nature connectedness, highlighting the nuanced impact of these factors on human-urban green space interaction. While the predominance of organisational and social aspects in influencing forests and green spaces visitation is emphasised in some studies (Fan et al., 2017), others (Fongar et al., 2019; Jalkanen et al., 2020) highlight the significant roles of accessibility and personal experience, underscoring the multifaceted nature of forests and green spaces visitation dynamics. Our PCA and regression results are consistent with this literature: attractiveness and accessibility emerged as distinct but complementary dimensions, and both intrinsic ('getaway') and social ('extrinsic') motivations were positively associated with more frequent visits, even though they explained only a small share of variance in visit frequency.

4.1.3 | Variations across European regions

Addressing the geographical component of RQ3, we now consider how visitation patterns, accessibility and motivational profiles vary across European regions and how these relate to broader differences in forest cover, urban form and planning legacies.

Regional variations in visitation patterns

Our study reveals notable regional disparities in forests and parks usage. At an aggregate level, regions with higher national forest cover, such as the Russian Federation and certain parts of North Europe, have a higher frequency of visits to natural areas, indicating that the availability and accessibility of natural forests play a crucial role in encouraging outdoor activities and park use. However, the forest cover indicator is based on total country-level cover, while the survey mainly targets urban, peri-urban and nearby rural residents. Countries may combine high overall forest cover with forests located far from major urban centres, whereas others may have lower total forest cover but more wooded areas close to cities. As a result, the observed association between forest cover and visit frequency should be interpreted with caution, and finer-scale measures of forest availability around urban areas could refine these regional patterns. Study by Edwards et al. (2013) confirms that North European countries, such as Finland, exhibit a high frequency of forest visits, underscoring the cultural significance of outdoor activities in these regions. Similarly, differing preferences for forest were found by Arnberger et al. (2019) among visitors in Vienna and Minneapolis, affected by the emerald ash borer, with Vienna respondents showing a higher preference for more natural conditions.

Further differences in regional patterns in the use of forests and parks are highlighted by additional results. In North Europe, lower emphasis on attractiveness characteristics of green spaces was outlined compared to other regions, again indicating a stronger preference for 'naturalistic' and less structured green areas. This contrasts with South-East Europe, South-West Europe and the Russian Federation, where higher importance was placed on attractiveness, suggesting a preference for well-equipped parks and forests with amenities. The impact of minors in households also influenced the varied frequency of visitation of forests and parks, with a higher engagement among families observed in Central-West Europe.

Accessibility and transportation modes

Significantly more importance was attributed to accessibility in South-West Europe and the Russian Federation, where respondents showed a higher valuation of accessibility features. This might reflect urban planning characteristics (e.g. higher densities, fragmented or privatised green space networks and physical barriers such as major roads) (Badiu et al., 2019; Kronenberg et al., 2020) or the availability of public transport options in these regions, emphasising the need for easily reachable green spaces. It might also reflect the general tendency in post-socialist countries to privatise public space and to hinder the accessibility of forests and parks in multiple ways (Kronenberg et al., 2020). A study by Buckland and Pojani (2022) showed that higher income residents had more access to green space in Brussels, Milan, Prague and Stockholm. However, in Birmingham, lower-income neighbourhoods presented higher green accessibility. This shows that regional differences can be linked with income distribution; however, we could not directly make the link based on data from this study.

Marked regional differences are shown in the mode of transportation to green spaces. A significant portion of respondents in urban areas, particularly in Central-West Europe, prefer walking, highlighting the importance of green space proximity in densely populated regions. In contrast, reliance on cars is more notable in regions where green spaces are less accessible or farther from residential areas, such as in South-East Europe. In the case of South-East Europe, the loss of green areas (i.e. after the 90s) might impact this issue, as well as the change in governance, that is the transition between the two planning systems (socialist and post-socialist) that led to the extensive development of residential buildings and commercial spaces in some regions and cities that lost green space or where green spaces became more distant (Badiu et al., 2019). Results in this study highlight Portugal along Turkey and Italy as outliers in preferred modes of transportation, particularly with a strong preference for car usage, consistent with findings by Pinto et al. (2022). The prevalence of car usage can be attributed to limitations in public transportation, exemplified in cities like Coimbra, Portugal. Addressing these limitations through enhancements in coverage, frequency, accessibility, comfort, reliability and affordability of public transport can promote more sustainable and efficient transportation options, facilitating access to urban green spaces (Pinto et al., 2022).

Motivational drivers

In terms of intrinsic vs. extrinsic motives, varied motivations behind forest and park visitation are exhibited by regions. Central-East

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Europe and South-East Europe exhibit a higher intensity of social (extrinsic) motives, indicating a cultural or societal inclination towards utilising green spaces for socialising and communal activities. Conversely, lower scores for social extrinsic motives are shown by North Europe and the Russian Federation, possibly reflecting a more individualistic approach to green space utilisation, focusing on solitude and personal relaxation. These cross-national differences in visitors' preferences for social conditions could be attributed to site-specific environments and linked with the visitor composition in the sample (Arnberger et al., 2017). Other studies show that Norwegian men are more active than women, engaging more in activities like running, cycling and ball games. These activities decrease with greater distance to green space (over 5 km) and are significantly associated with quality perceptions of green space. Norwegian women are more motivated by extrinsic activities such as walking the dog, collecting food items and playing with their children (Fongar et al., 2019). Our results might be also linked to landscape changes, changing behaviours; unclear urban green planning strategies and uneven urban redevelopment also mark the difference in Eastern Europe (post-Socialist). These cultural and societal inclinations should be considered in green space planning and management to cater to diverse user needs, as they can reshape green space availability and perceived quality (maintenance, safety, amenities), thereby influencing whether visits reflect extrinsic (social) or intrinsic (solitude/relaxation) motives (Fongar et al., 2019; Kabisch & Haase, 2014).

4.2 | Limitations and future research

Methodologically, our analysis relies on a relatively limited set of socio-demographic variables and self-reported accessibility measures. Future research could refine this by linking survey data to additional social indicators and fine-grained spatial data on green space and transport networks, to better clarify how socio-demographic factors shape both accessibility and use. Future research should explore the causes of usage disparities in forests, examining green space characteristics, land use, housing policies and barriers to access, particularly for women. Moreover, delving deeper into cultural differences and their impact on green space preferences can provide valuable insights for enhancing human-urban green space interactions.

4.3 | Integrated implications for planning and policy

The findings suggest that forests and parks should be treated as everyday infrastructures of wellbeing rather than residual land uses. Results related to motivations and perceived site characteristics (RQ1) imply that planners and managers need to support both restorative and social/goal-oriented uses within the same network of spaces, combining quieter, more natural areas with facilities for activity and social interaction. Patterns in accessibility and travel time (RQ2) underline that local, walkable and cyclable forests and parks remain crucial, and that integrating green spaces with public transport and active-mobility planning can help stabilise frequent, low-cost visitation. Finally, socio-demographic and regional gradients (RQ3) point to the importance of explicitly equity-oriented and context-sensitive strategies, where investments in design, safety and connectivity are targeted to under-served groups and neighbourhoods. In practical terms, this means focusing less on how much green space exists and more on whether people can use it easily and safely. Because travel mode strongly shapes visit frequency in our study, green space planning should be linked to walking/cycling routes, safe crossings and public transport. We also recommend adding simple user-based indicators (perceived access, safety and visit frequency) to check whether investments reduce inequities over time. In combination, our three strands show how respondent-based monitoring of motivations, access and use can complement existing supply-side indicators and support more deliberate, long-term green infrastructure policy at European and national levels.

5 | CONCLUSION

This 33-country study provides a Europe-wide view of how people engage with forests and parks and why these places matter for wellbeing. Three patterns stand out. First, motivations and perceived site qualities move together: restorative goals (e.g. 'getting away', calm) and basic amenities (clear paths, benches, lighting, cleanliness) are linked to use. Second, accessibility, captured by typical travel time and mode of transport, helps explain visit frequency, with walking and cycling associated with more frequent visits. Third, socio-demographic and regional differences are present but generally modest; age and gender shape patterns of use and motivation, and between-country contrasts should be read considering differing urban forms, park provision and overall forest cover.

Taken together, these patterns indicate where interventions are likely to be most effective: aligning site design with dominant motivations and perceived qualities, reducing the time and effort required to visit, and targeting groups and neighbourhoods with systematically lower access.

These findings point to practical steps for cities. Improving everyday access (safe, continuous walking/cycling links and reliable public transport), ensuring core amenities (seating, lighting, toilets), and co-designing sites with under-served groups can lower frictions to visit and better match diverse motivations. Done well, this supports more equitable, frequent and enjoyable use of forests and parks. Doing so also requires targeting investments to under-served neighbourhoods and groups, especially low-income and low-educated residents, women with caregiving responsibilities, and older adults, and monitoring the distribution of green space quantity, quality and accessibility, not only overall provision. This research provides valuable insights for urban planning, public health and environmental management, emphasising the importance of

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preserving and enhancing green spaces to improve health and well-being. By prioritising accessibility and inclusivity, planners and policymakers can promote equitable access and encourage greater use by residents, fostering more sustainable, resilient and healthy communities. Context-aware investments that make it easier and more comfortable to reach and use nearby nature are likely to yield the greatest gains in participation and well-being across European cities.

AUTHOR CONTRIBUTIONS

Ivana Živojinović: Conceptualisation, methodology, formal analysis, writing—original draft; writing—review and editing; **Stojan Ivanović:** Formal analysis, writing—original draft; writing—review and editing; **Oliver Tošković**: Data curation, formal analysis, writing—original draft; writing—review and editing; **Helga Pülzl**: Supervision, writing—review and editing; **Rik De Vreese**: Funding acquisition, methodology, data curation, writing—review and editing; **Clive Davies:** Funding acquisition, supervision, writing—review and editing; **Georg Winkel:** Supervision, writing—review and editing; **Dennis Roitsch:** Methodology, data curation, writing—original draft; **Jakob Derks**: Writing—review and editing; **Silvija Krajter Ostoić**: Writing—review and editing; **Dijana Vuletić**: Writing—review and editing; **Jakub Kronenberg**: Writing—review and editing; **Marko Lovrić**: Methodology, data curation, writing—review and editing; **Corina Basnou**: Writing—review and editing; **Liisa Tyrväinen**: Supervision, writing—review and editing; **Nicola da Schio**: Writing—review and editing; **Ivana Sentić**: Writing—review and editing; **Jelena Tomićević-Dubljević**: Writing—review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest. Jakub Kronenberg and Marko Lovrić are both Associate Editors for People and Nature but were not involved in the peer review and decision-making process.

DATA AVAILABILITY STATEMENT

Data will be made available at Zenodo Repository (Roitsch, 2026). Public perceptions and demands towards forests and green spaces in Europe—Dataset Survey results (2021). DOI: https://doi.org/10.5281/zenodo.18301957.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Annex 1. Set of questions used for this paper.

Annex 2. Supplementary tables and figures.

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