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Evaluating Attitudes and Preferences towards Walking in Two European Cities

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Abstract: Understanding pedestrian perceptions and attitudes is crucial for promoting walking as a daily transportation mode for sustainable mobility and the effective development of smart cities. Pedestrian preferences, shaped by factors such as age, gender, and urban infrastructure, play a pivotal role in travel behaviors. Based on a survey study, this paper examines the impact of individual and urban factors on pedestrian perceptions and attitudes towards walking in the cities of Bologna and Porto. Results reveal that individuals generally value short, safe, and green walking routes, appreciating walking for physical activity, cost savings, and time efficiency. Disliked aspects include adverse weather conditions and walking on inadequate sidewalks. Through carrying out Chi-square statistical analysis tests, a variety of significant correlations between individual and urban variables have been revealed on what people like or dislike about walking. For instance, males, young individuals, and students were more likely to prefer short pedestrian routes, while adults and seniors favored safe and green routes. These findings can assist urban planners in identifying factors that make walking both convenient and enjoyable and in supporting sustainable urban mobility policies.

Keywords: pedestrian attitudes; walking preferences; travel habits; waking behavior; pedestrian-friendly cities; urban planning; smart cities

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1. Introduction

Cities worldwide are intensifying their efforts to create pedestrian-friendly spaces, aiming to shift attitudes towards walking. The European Union (EU) has been committed to reducing car traffic congestion and its adverse environment and health effects through initiatives such as Sustainable Urban Mobility Plans (SUMPs). A SUMP is a strategic plan designed to meet the mobility needs of people and businesses in cities and their surroundings for a better quality of life [1]. The goal of SUMPs is to move away from traditional car-oriented planning approaches and paradigms towards more sustainable modes of transport, which include walking [2]. This initiative has led to the adoption of pedestrian-oriented measures in many cities across the EU. For example, Maltese et al. [3] examined the SUMP documents of 20 major Italian cities and found that promoting safe and connected walking (and cycling) infrastructure was the main measure to encourage active travel. In a study of 38 Spanish cities, Mozos-Blanco et al. [4] found that most of the SUMPs included proposals to improve active mobility, such as traffic calming measures and the pedestrianization of urban areas. Similarly, a study by Arsenio et al. [5] examining forty

cities in Portugal revealed that walking (and cycling) had become increasingly prominent in most plans, serving as a significant mode to replace short car trips.

Gaining a nuanced understanding of the factors that shape people's travel behaviors and preferences towards walking is essential to effectively meet the needs of the population and support SUMPs [5]. The degree to which the built environment supports and encourages walking activities is a critical factor, encapsulating the concept of walkability [6]. The relationship between the built environment and travel behavior has been extensively studied over the last three decades. Travel behavior analysis encompasses daily trips, accounting for the timing, locations, means of transportation, and the overall duration and distance of these journeys. Researchers measure these behaviors using a variety of metrics, including the frequency of travel, time spent, distances covered, purposes behind the travel, and the modes of transportation employed [7]. Evidence robustly indicates that modifications in the built environment's characteristics wield a significant influence on travel behavior [8]. Specifically, pedestrian-friendly settings are distinguished by several key attributes of the built environment, such as the diversity and density of land uses, the ease of accessing various destinations, the connectivity of streets, the safety from traffic, the thoughtful design of the streetscape, and the overall quality of pedestrian infrastructure [9]. The evaluation of these built environment attributes employs both objective and subjective methodologies. Objective assessments have substantially increased due to the availability of spatial data and the application of Geographic Information Systems (GIS). These tools effectively gauge the performance of the environment's attributes through walkability indexes and metrics. On the other hand, subjective assessments are often based on questionnaires that gather individuals' perceptions of street-level and micro-scale features, offering valuable insights into the experiential aspects of walkability.

Prior research highlights that individuals living in pedestrian-friendly areas are more inclined to choose walking as their primary mode of transportation [10,11]. However, some studies have identified a less consistent relationship between the quality of the built environment and walking behaviors. For example, Koohsari et al. [12] found that individuals might perceive highly walkable areas by objective standards as less walkable and vice versa, which directly influences their levels of physical activity. This discrepancy suggests that "perceived walkability", or how easy individuals find it to walk in a given area, might more accurately capture walking behavior than objective measures [13,14]. Recent recognition of the role of subjective qualities, such as the perceived suitability and ease of walking, has begun to highlight how pedestrian interactions with urban environments are influenced by these perceptions [14,15]. Walking is thus understood to be shaped by both the physical attributes of the built environment and a range of social and psychological factors, including attitudes, perceptions, preferences, and habits [16,17].

Although often used interchangeably, attitudes and perceptions have distinct meanings. Attitudes are evaluative judgments people make about others, objects, or ideas, influencing their views on various life aspects positively or negatively [18]. Perceptions, however, are beliefs about phenomena, formed through the interpretation of sensory information [19]. These beliefs, whether based on reasoned or unreasoned judgments, play a critical role in shaping travel behavior, garnering increasing focus within social psychology [20]. Transportation preferences involve selecting a specific mode from various options available in a particular area [21], while habits refer to the repetition of trips to the same destinations for similar purposes using the same mode of transportation [7,22].

Individual perceptions significantly mediate the relationship between the objective environment and active travel behavior [23]. Evidence suggests that those with positive attitudes towards active travel are more likely to choose pedestrian or bicycle-friendly residential areas [24]. These positive attitudes are closely linked to a higher adoption rate of active transportation modes [14]. Specifically, perceived walkability has a significant effect on walking habits [14,24]. For instance, Lizárraga et al. [25] argue that security perceptions, shaped by factors like gender and age, can act as significant barriers to walking due to concerns of insecurity.

In turn, individual preferences also play a vital role in travel behavior. Studies have shown a preference for using private modes of transportation when traveling long distances and owning a car [26,27]. Regarding walking trips, Shatu and Yigitcanlar [28] observed that preferred walking routes generally correspond to the shortest path between an origin and a destination. Beyond travel behavior, people's mobility preferences also influence the selection of residential locations [29]. Travel habits also play a crucial role in travel behavior, particularly in terms of route choice and modal change [7]. Daily mobility habits are characterized by significant resistance to change, often resulting in nearly automatic behaviors [30]. Changes in travel habits may occur when the cues that trigger travel decisions are disrupted, as they were during the COVID-19 pandemic. Due to social distancing and health concerns, there was a significant decrease in public transportation use and increased reliance on active and private modes of transportation [31,32].

Thus, from a social perspective, the stimulus produced by the built environment is individually processed, with certain variables being considered while others are ignored. While subjective evaluation is primarily based on built environment attributes, it is also influenced by past experiences, cognitive capabilities, and socio-demographic characteristics [21,23]. Among these, gender, age, education level, and income are frequently cited for their influence on the active mode choice [33,34]. Generally, the literature indicates that females are more likely to walk, often making more daily trips on foot to fulfill family duties compared to males [27,35,36]. On the other hand, females tend to exhibit increased caution regarding the safety and security risks associated with walking. This is especially true when travelling during the night with no lighting, due to concerns about potential victimization from violence and crime [35,37]. Other studies suggest that females are more sensitive to long-distance walks [6,38] and generally express lower satisfaction with pedestrian infrastructure compared to males [35]. Age influences walking behaviors and perceptions of the built environment distinctly across different groups. Young adults are typically more inclined to walk for utilitarian purposes, such as commuting to school or work, while older adults prefer walking for recreational activities and shopping [39,40]. In turn, elderly individuals are less likely to walk far from home [40]. Research also indicates that elderly pedestrians are particularly sensitive to certain aspects of the built environment, expressing concerns about traffic and security [41], valuing access to services [42], appreciating trees and greenspaces [40,42], and sidewalks in good conditions [43]. Regarding education, higher levels are generally associated with healthier lifestyles, attributed to a greater awareness of health behaviors among those with advanced education [44]. However, the correlation between education and walking behavior is not straightforward. While some studies link higher education levels to more positive attitudes towards active travel [45] and a greater likelihood of walking [46,47], others find that those with lower education levels may walk more frequently [38,48]. Clearly other factors simultaneously influence the decision to walk. For example, income levels may explain some of these discrepancies. Income levels further complicate this relationship, with higher-income, highly educated individuals possibly preferring car travel over walking in some contexts [38,49].

In summary, the decision to walk and overall travel behavior are influenced by a complex interplay of factors. These include the physical characteristics of the built environment and streetscape, as well as a wide range of social and psychological variables. These elements interact to form intricate causal relationships that significantly impact pedestrian behavior. Notably, a substantial portion of contemporary research on walkability falls short in fully considering pedestrian preferences and the nuanced effects that socio-demographic factors have on walking habits [50]. This oversight underscores the necessity for further investigation into what drives people's preferences for certain walking routes in urban settings. Further, while strongly recommended by the EU, citizen engagement in sustainable urban mobility planning has been limited [4]. Overcoming these challenges requires involving citizens to gain a comprehensive understanding of the factors that influence pedestrian preferences. This approach enables planners to effectively address the mobility and pedestrian needs of the population and identify better urban solutions [5,51].

This study aims to fill these gaps by examining the influence of individual perceived factors associated with the built environment and streetscape on walking. More specifically, it seeks to answer the following three research questions: (Q1) When walking to a destination, what type of routes do pedestrians prefer the most? (Q2) What do pedestrians like the most about walking as a transportation mode? And, (Q3) what do pedestrians like the least about walking as a transportation mode? These questions are answered based on the findings from a questionnaire (N = 1438) conducted in the cities of Bologna and Porto. Respondents were asked to select their preferred routes and factors related to the built environment and streetscape, based on their perceptions of walking in each city. The study is further enriched with a statistical analysis, employing Chi-square tests to identify relationships between individual and geographic variables and individual perceptions about walking. Understanding these perceptions is crucial for policymakers, enabling them to devise and support sustainable planning policies aimed at positively influencing attitudes towards active travel and walking, both locally and globally.

After this introduction, the second section details the methods and data utilized in our study. The findings are then presented in Section 3 and further discussed in Section 4. Finally, the concluding remarks are presented in Section 5.

2. Materials and Methods

Understanding how individual attitudes and perceptions influence travel behavior is crucial for developing sustainable and effective urban transportation strategies and for enhancing public participation in sustainable urban mobility planning. The influence of individual attitudes and perceptions plays a pivotal role in travel behavior. As a result, this study focuses on the interplay between individual perceptions and walking, with a specific emphasis on the data collected through a comprehensive questionnaire administered in Bologna and Porto within the context of the European research project titled "Smart cities are walkable: Smart Pedestrian Net (SPN)—A model to plan a pedestrian network and a pedestrian navigation system" [24,38,52,53]. The main goal of the SPN was to explore methods for enhancing walkability and promoting pedestrian activity within the framework of smart city development. Smart cities are increasingly recognized as essential for fostering sustainable and livable environments, which entail encouraging active travel [52,54]. Moreover, Bologna has a SUMP tailored for the respective metropolitan area, which aims to reduce 40% of traffic emissions by 2030 compared to 1990 levels. Porto has a SUMP Action Plan for its metropolitan area, which will result in a full-scale SUMP soon. Both cities are engaged in making urban mobility more sustainable, namely by creating more walkable environments, with a particular focus on mitigating the adverse effects of motorized traffic in their city centers. Examples of these initiatives include improving pedestrian infrastructure, enhancing traffic safety, such as introducing low-speed zones, and transforming specific traffic routes into pedestrian-only zones.

The survey questionnaire, designed to collect data on travel attitudes towards walking, was aligned with the SPN research goals in both cities. The questionnaire was previously structured in a closed question format, comprising 13 questions across four main sections. These sections included a mix of single-choice, multiple-choice, ranking, and open-ended questions. The first section aimed to gather personal information, including participants' gender, age, education level, and type of activity. The second focused on collecting data regarding the frequency and purpose of walking. The third assessed pedestrians' perceptions of the built environment and streetscape attributes for walking. The last section collected data on the use of pedestrian navigation apps. The main findings regarding these topics are available in previously published papers [24,38,53]. The second section of the questionnaire included inquiries about preferred pedestrian routes and aspects that people liked most and least about walking, which are specifically examined in this paper for the first time. The questionnaire was collaboratively developed by the four international teams of the SPN and was supported by a comprehensive literature review on the influence of built environment attributes on walkability [9].

The subsequent step of the work involved defining a statistically significant sample of the population living in Bologna and Porto. As depicted in Equation (1), the commonly employed Cochran's formula [55] was utilized to determine the sample size for each city:

$$n = \frac{\frac{z^2 pq}{e^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{e^2} - 1\right)} \quad (1)$$

where n is the sample size needed, N is the population size, z is the critical value (1.96) for the 95% confidence level, p is the sample proportion (0.5), q is equal to 0.5 ($q = 1 - p$), and e is the margin of error (0.05). Given that the population of Bologna and Porto in 2019 was reported as 301,984 inhabitants [56] and 216,606 inhabitants [57], respectively, a sample size of 384 individuals was deemed necessary for each city.

After estimating the sample size, a pilot test was conducted by administering the questionnaire to a small sample of individuals in both cities who were similar to the target population. The purpose of the pre-test was to identify any potential issues with the questionnaire, such as confusing or ambiguous wording, difficulties in understanding and responding to the questions, or unclear instructions. Feedback from participants was used to refine and improve the questionnaire before its full application.

Subsequently, the questionnaire was administered to the full sample for data collection. It was disseminated online via Google Forms, targeting individuals residing in or commuting daily to Bologna or Porto. The choice to administer the survey electronically was motivated by the benefits of online surveys, such as their increased accessibility, the flexibility for respondents to complete them at their convenience and preferred pace, and the encouragement of participation from individuals with more pronounced attitudes on the researched topic [58]. The target population was reached through various channels, including the SPN website, social media, and university and municipal databases in Bologna and Porto. In Bologna, the questionnaire was conducted in Italian from May to July 2019, and in Porto, it was administered in Portuguese from September to November 2019. Therefore, both surveys were conducted several months prior to the onset of the COVID-19 pandemic, which had a significant impact on urban mobility.

The second stage of the project involved analyzing data to identify key success factors and shortcomings. Following basic data editing, correction, and compilation procedures, conventional descriptive statistics were employed to articulate the primary findings concerning travel perceptions and preferences towards walking in both cities. This evaluation was complemented with Chi-square tests of independence to identify inferential statistic associations between individual and geographic variables and walking perceptions and attitudes. The Chi-square test examines the association between two variables by comparing the observed response pattern in the cells to what would be expected if the variables were truly independent. We utilized a significance level of 0.05, corresponding to a confidence level of 95%, which indicates a 5% chance of erroneously rejecting the null hypothesis. When the p-value is $\leq$0.05, there is strong evidence to reject the null hypothesis in favor of the alternative hypothesis, suggesting that the observed difference between groups is statistically significant. Inversely, a p-value > 0.05 indicates that the categorical variables are independent of each other, meaning there is no significant relationship between them. These statistical tests were conducted using the Statistical Package for Social Sciences (SPSS) software, version 22.0.

3. Results

3.1. Sample Description

As depicted in Table 1, a total of 1438 valid responses were collected with the questionnaire. Of these, 865 were from Bologna and 573 from Porto. Respondents consisted of a slightly higher proportion of females, predominantly within the age ranges of 45–65 and 25–45, who had an undergraduate degree, were employed full-time, and resided in their

respective cities. The sociodemographic characteristics of the sample closely align with the population of each city in certain variables, such as gender and residency. However, variations exist in other variables, notably, an underrepresentation of elderly individuals (≥65 years old), while adults, employed individuals, and graduates are overrepresented. These deviations are mainly attributed to the challenges of targeting specific groups through online questionnaires, such as the elderly, who are often less tech-savvy and have limited access to the Internet [59].

Table 1. Sample description.

Variable	Attributes	Population 2019				Questionnaire			
		Bologna		Porto		Bologna		Porto	
		Total	%	Total	%	Total	%	Total	%
Gender	Female	206,589	52.7	119,228	55.0	507	58.6	341	59.5
	Male	185,395	47.3	97,378	45.0	358	41.4	232	40.5
Age	≤24 years old	78,410	20.0	47,846	22.1	84	9.7	110	19.2
	25–44 years old	103,973	26.5	46,821	21.6	266	30.8	236	41.2
	45–64 years old	112,554	28.7	60,223	27.8	477	55.1	214	37.3
	≥65 years old	97,047	24.8	61,716	28.5	38	4.4	13	2.3
Education	Undergraduates	308,816	78.8	163,621	75.5	562	64.9	308	53.8
	Graduates	83,168	21.2	52,985	24.5	303	35.1	265	46.2
Occupation	Student	51,054	15.6	42,089	20.9	111	12.8	155	27.0
	Employed	165,768	50.5	88,452	43.8	735	85.0	402	70.2
	Retired/Unemployed	111,414	33.9	71,235	35.3	19	2.2	16	2.8
Type of pedestrian	Resident	391,984	100.0	216,606	100.0	480	55.5	377	65.8
	Commuter	-	-	-	-	362	41.8	164	28.6
	Tourist/visitor	-	-	-	-	23	2.7	32	5.6

3.2. Preferred Pedestrian Routes

The choosing of a walking path between two locations, known as pedestrian route choice, is a key travel decision. In this study, 46% of participants preferred the shortest paths to their destination. Others preferred routes include those ensuring safety from vehicular traffic (28%), routes with greenery providing shade (17%), and flat routes (7%). Some individuals had other preferences, such as less crowded routes, routes with support facilities like benches, and areas without public security issues.

The shortest path was the most selected option in both cities, yet Chi-square tests revealed interesting relationships between these variables and route preferences (Table 2). In terms of individual variables, gender showed a significant correlation with the preference for the shortest routes, χ^2 (1, N = 1438) = 5.379, p = 0.020, indicating that males are more inclined to choose the shortest paths compared to females. Age also showed a correlation with preferences for certain types of pedestrian routes. Young individuals under 24 were likelier to choose the shortest path, whereas walking on routes with less traffic and those providing shade was more popular among adults and seniors. Similarities were observed between age and occupation in route preferences, with students preferring shorter paths, and employed or retired individuals choosing safer or shadier routes. The urban context of the two cities also influenced preferences, with individuals from Porto favoring shorter and flatter routes, while participants from Bologna showed a preference for routes with less traffic (Table 2).

Table 2. Preferred pedestrian routes.

Variables	Short	Safe	Green	Flat	Secure	Other
Female	43.6%	28.8%	17.5%	7.2%	1.1%	1.8%
Male	49.8%	25.8%	16.3%	5.6%	0.0%	2.5%
Chi-square	5.379	1.581	0.345	1.458	-	0.212
p-value	0.020 *	0.209	0.571	0.227	-	0.645
18–24 years old	72.2%	9.8%	8.8%	6.2%	2.1%	0.9%
25–64 years old	41.9%	30.4%	18.4%	6.6%	0.4%	2.3%
65+ years old	47.1%	27.5%	15.7%	5.9%	0.0%	3.8%
Chi-square	61.468	35.602	10.963	0.089	-	0.358
p-value	<0.001 *	<0.001 *	0.004 *	0.956	-	0.836
Undergraduates	45.6%	27.9%	17.4%	6.0%	0.8%	2.3%
Graduates	47.0%	26.9%	16.4%	7.4%	0.4%	1.9%
Chi-square	0.261	0.170	0.236	1.130	1.131	0.214
p-value	0.609	0.680	0.627	0.288	0.288	0.644
Student	68.8%	10.5%	10.5%	8.3%	1.1%	0.8%
Employed	40.6%	31.9%	18.6%	6.2%	0.4%	2.3%
Retired/Unemployed	51.4%	20.0%	14.3%	5.7%	0.0%	8.6%
Chi-square	69.341	50.100	10.191	1.581	-	5.241
p-value	<0.001 *	<0.001 *	0.006 *	0.454	-	0.073
Bologna	38.7%	38.7%	17.0%	2.3%	0.6%	2.7%
Porto	57.4%	10.7%	16.9%	12.9%	0.7%	1.4%
Chi-square	48.438	136.220	0.001	63.417	0.080	2.606
p-value	<0.001 *	<0.001 *	0.974	<0.001 *	0.778	0.107

* *p*-value < 0.05 (significant).

3.3. What Do Pedestrians Like the Most about Walking

For the 1438 individuals involved in this study, the preferred aspects of walking are summarized in Table 3. Engaging in physical activity was perceived as the preferred aspect of walking, with the majority of participants (50%) highlighting this benefit, regardless of their city of origin or individual characteristics. The only exception was among the youngest individuals, for whom saving money was a more valued aspect. Saving money was reported as the second most preferred aspect of walking (31%). In fact, walking is often considered a cost-free mode of transportation because it typically does not involve direct expenses such as purchasing tickets, paying for fuel, or parking, among others. The third most highlighted aspect was saving time (11%). Bologna and Porto are compact cities with densely populated areas and traffic congestion, which may make short pedestrian trips faster than car trips. Some other aspects were less reported, with around 3% of participants appreciating walking as an eco-friendly mode of transportation (free of emissions). Other respondents mentioned additional aspects, such as enjoying the landscape while walking, the flexibility provided by walking (freedom to choose the routes, door-to-door access), and it being a relaxing and pleasant mode of transportation.

The Chi-square tests indicated that some of these appreciated aspects are correlated with certain individual and urban variables (Table 3). Regarding age, the statistical tests confirmed that saving money is an aspect more likely to be appreciated by younger individuals than by their older counterparts, χ^2 (1, N = 1438) = 71.506, $p \leq 0.001$. Similarly, saving money was found to be statistically correlated with students and not with employed or retired/unemployed individuals. In contrast, saving time was more favored by adult and senior individuals than by those that were younger, χ^2 (1, N = 1438) = 6.058, p = 0.048. In terms of gender, the statistical tests only identified a relationship between females and enjoying the landscape while walking. No association was found between male individuals and enjoying the urban landscape. Various relationships were also found between the type of occupation and what people like about walking. In addition to saving money, which was found to be correlated with students, the results indicated that engaging in physical activity while walking and saving time were aspects more correlated with employed individuals,

while enjoying the urban landscape was statistically correlated with the retired population. Education level also correlates with some preferred aspects of walking. Specifically, we found that saving money was associated with undergraduate individuals, while the flexibility of walking was more related to graduate individuals. Finally, it was found that engaging in physical activity was more likely to be valued by participants in Bologna, while saving money and enjoying the landscape were aspects more preferred by participants in Porto.

Table 3. Preferred aspects of walking.

Variables	Physical Activity	Saving Money	Saving Time	Flexibility	Enjoying the Landscape	Eco-Friendly	Other
Female	51.5%	30.0%	10.4%	1.5%	3.1%	3.0%	0.5%
Male	46.6%	32.7%	12.9%	1.7%	1.2%	4.1%	0.8%
Chi-square	3.373	1.132	2.159	0.058	5.482	1.325	0.790
p-value	0.066	0.288	0.142	0.810	0.019 *	0.250	0.374
18–24 years old	28.9%	56.7%	7.7%	1.0%	1.6%	4.1%	0.0%
25–64 years old	52.6%	27.6%	11.7%	1.7%	2.3%	3.3%	0.8%
65+ years old	54.9%	15.7%	19.6%	2.0%	3.9%	3.9%	0.0%
Chi-square	0.358	71.506	6.058	0.486	1.101	0.413	-
p-value	0.836	<0.001 *	0.048 *	0.784	0.577	0.814	-
Undergraduates	47.8%	33.6%	10.7%	1.0%	2.4%	3.7%	0.8%
Graduates	52.1%	27.4%	12.5%	2.5%	2.1%	3.0%	0.4%
Chi-square	2.538	5.959	1.115	4.467	0.139	0.490	1.131
p-value	0.111	0.015 *	0.291	0.035 *	0.709	0.484	0.288
Student	28.2%	58.3%	6.8%	1.1%	1.5%	4.1%	0.0%
Employed	54.9%	24.7%	12.5%	1.8%	2.1%	3.2%	0.8%
Retired/Unemp.	42.9%	28.6%	11.4%	0.0%	11.4%	5.7%	0.0%
Chi-square	62.109	113.450	7.072	-	14.282	1.173	-
p-value	<0.001 *	<0.001 *	0.029 *	-	0.001 *	0.556	-
Bologna	53.1%	26.7%	12.7%	1.2%	1.5%	3.8%	1.0%
Porto	44.1%	37.9%	9.4%	2.3%	3.5%	2.8%	0.0%
Chi-square	10.946	20.035	3.698	2.711	6.072	1.095	-
p-value	<0.001 *	<0.001 *	0.054	0.099	0.014 *	0.295	-

* *p*-value < 0.05 (significant).

3.4. What Do Pedestrians Like the Least about Walking

The majority (63%) of participants expressed a dislike for walking in adverse weather conditions. In Bologna and Porto, unfavorable weather is primarily associated with rainy conditions, making walking unpleasant and uncomfortable. The second most emphasized dislike (21%) was walking on poor/inadequate sidewalks. This aspect has negative implications, as uneven or damaged sidewalks pose safety risks and contribute to uncomfortable walking experiences. Other least liked aspects include: a lack of safety from traffic (7%), associated with concerns about accidents, and the physical effort required to walk (6%), influenced by factors like travel distances, slopes, loads, health, and age. Finally, a few participants also mentioned other dislikes such as a lack of public security, walking in polluted streets, and streets lacking facilities like benches.

As shown in Table 4, the Chi-square tests also revealed correlations between certain disliked aspects of walking and specific individual and geographic variables.

For instance, walking time was more disliked by males than females, χ^2 (1, N = 1438) = 9.035, p = 0.003. In terms of age, it was confirmed that younger individuals expressed a stronger dislike for bad weather and for the physical effort required for walking, whereas adults and seniors were more averse to walking on inadequate sidewalks. Similarly, students tended to dislike bad weather and the physical effort of walking, whereas employed individuals expressed a stronger dislike for inadequate sidewalks. Additionally, individuals with higher education levels tended to dislike traffic safety aspects. Finally, the

statistical tests also confirmed correlations between the disliked aspects of walking and the participants from the two cities. As shown in Table 4, bad weather was an aspect more disliked by participants in Porto, whereas traffic safety, inadequate sidewalks, and walking time were more associated with participants in Bologna.

Table 4. Disliked aspects of walking.

Variables	Adverse Weather	Lack of Safety	Physical Effort	Inadequate Sidewalks	Walking Time	Lack of Security	Other
Female	63.7%	6.0%	6.1%	20.4%	1.4%	1.3%	1.1%
Male	61.2%	7.3%	6.1%	20.5%	3.9%	0.7%	0.3%
Chi-square	0.924	0.924	0.001	0.003	9.035	1.292	2.392
p-value	0.336	0.336	0 981	0.960	0.003 *	0.256	0 122
18–24 years old	72.1%	3.6%	12.9%	7.2%	2.1%	1.6%	0.5%
25–64 years old	61.1%	7.1%	5.0%	22.6%	2.5%	1.0%	0.7%
65+ years old	62.8%	3.9%	5.9%	21.6%	2.0%	0.0%	3.8%
Chi-square	8.721	3.970	17.936	24.156	0.194	-	1.470
p-value	0.013 *	0.137	<0.001 *	<0.001 *	0.908	-	0.480
Undergraduates	63.0%	5.3%	7.0%	20.5%	2.1%	1.2%	0.9%
Graduates	62.1%	8.4%	4.8%	20.3%	3.0%	0.9%	0.5%
Chi-square	0.104	5.629	3.050	0.023	1.236	0.241	0.693
p-value	0.747	0.018 *	0.081	0.880	0.266	0.623	0.405
Student	70.3%	4.5%	12.0%	9.4%	2.3%	1.1%	0.4%
Employed	60.7%	7.0%	4.6%	23.4%	2.6%	1.1%	0.6%
Retired/Unemp.	68.6%	2.9%	8.6%	11.4%	0.0%	0.0%	8.5%
Chi-square	8.978	3.088	21.322	27.684	-	-	9.241
p-value	0.011 *	0.213	<0.001 *	<0.001 *	-	-	0.009 *
Bologna	53.7%	8.7%	5.3%	26.0%	3.4%	1.7%	1.2%
Porto	76.1%	3.3%	7.3%	12.0%	1.1%	0.0%	0.2%
Chi-square	73.476	16.176	2.429	41.355	7.715	-	14.318
p-value	<0.001 *	<0.001 *	0.119	<0.001 *	0.005 *	-	<0.001 *

* *p*-value < 0.05 (significant).

4. Discussion

In this study, perceptions and attitudes towards walking were significantly influenced by individual characteristics and urban settings. Thus, regarding the first research question (Q1: When walking to a destination, what type of routes do pedestrians prefer the most?), it was found that the preference overwhelmingly leans towards shorter routes. This preference is consistent across different individual characteristics, aligning with previous research that emphasizes pedestrians' preference for the shortest routes and that distance and time are significant barriers to walking [28]. Moreover, through rigorous statistical analysis, a distinct preference for shorter pedestrian paths among males, young adults aged 18–24, and students was identified, indicating a lower propensity among these groups for engaging in lengthy walking journeys. This trend is reflective of a broader preference among young individuals and university students for motorized transportation options for their commute, even over short distances, which is in agreement with findings from other research [27,60]. This pattern suggests a potential area for targeted interventions to encourage walking among these demographics. In contrast, older individuals, notably seniors, exhibit a higher dependency on walking for executing essential daily activities. This trend might explain their propensity to engage in walking for distinct purposes, such as leisure and shopping, surpassing that of younger individuals [38,61]. The observed male preference for shorter pedestrian routes presents an unexpected finding, contradicting previous research [6], which suggested that females, due to familial and caregiving duties, may exhibit a heightened sensitivity towards long-distance walking. Yet, a comprehensive study by Goel et al. [62] spanning 19 major cities across diverse continents revealed a contrary pattern where females

demonstrated a greater likelihood to walk, exceeding males by 5% in active travel time per capita. Hence, our study's outcomes appear to align with these more recent insights. In the context of Bologna and Porto, security perceptions did not significantly influence walking preferences, nor were they correlated with gender or age, challenging the assertions of previous walkability studies [37]. Furthermore, our findings revealed that adults, seniors, employed, and retired individuals were more likely to prefer safe and green routes than young and student individuals. The literature corroborates that adult and senior age groups usually prefer routes offering protection from vehicular traffic and comfortable and pleasant walking experiences [40,42]. Particularly for older adults, who may contend with mobility restrictions, safe pedestrian paths are vital for mitigating outdoor navigation fears, including those stemming from visual and auditory impairments, diminished walking pace, and extended crossing times [61]. The inclination towards greener routes further underscores the appeal of verdant surroundings in enhancing walkability for these groups. Prior research has shown that the presence of street greenery increases both the frequency and duration of walking activities, suggesting that the integration of green spaces is a key factor in urban design to foster pedestrian activity among adults and older adults [63,64]. Distinct preferences linked to the built environment of each city were observed, with respondents from Porto displaying a predilection for flat and short routes, possibly due to the city's hilly landscape, contrasting with those from Bologna, who demonstrated a greater engagement in longer walking durations, particularly for trips exceeding 20 min [38], which could be related to the larger size of the city.

Regarding the second research question (Q2: What do pedestrians like the most about walking as a transportation mode?), physical activity and economic savings emerged as prominent factors. These findings suggest walking is perceived not only as a cost-effective and convenient mode of transportation but also as a means of engaging in physical activity. However, the appreciation of economic benefits was particularly noted among younger, undergraduate, and student demographics, potentially reflecting financial considerations influenced by limited income. Indeed, there is evidence indicating that people with higher incomes are less inclined to use active modes of transportation [49]. The preference for walking as a cost-saving measure was notably more pronounced among Porto participants, a reflection perhaps of the economic disparities between Italy and Portugal, as indicated by the GDP per capita figures in 2019 [65]. Conversely, we did not find correlations between a preference for walking and engaging in physical activity and gender or age. This correlation was observed solely with the type of occupation, being more prevalent among economically active and retired individuals. Walking is a widely adopted form of physical activity, especially among healthy older individuals (retired), who reportedly walk as much as they did when they were younger, primarily for errands and recreational purposes [35,59]. The preference for walking as a form of physical activity was notably more pronounced among participants from Bologna compared to those from Porto, which could be attributed to distinct habits and cultural reasons. This contrast could be related to the generally higher prevalence of insufficient physical activity (less than 150 min of moderate-intensity physical activity per week) among adults in Portugal compared to Italy [66]. Time savings emerged as the third most valued benefit of walking, with a significant correlation among adults and economically active individuals. This group likely faces more significant constraints on travel time due to work commitments and schedules, making utilitarian walking, such as commuting to work, more time-sensitive than recreational walking [38]. Interestingly, the appreciation for saving time was stronger among Bologna respondents, possibly due to the city's larger size and traffic conditions. While the overall enjoyment of the landscape was less valued, it exhibited a significant correlation with specific demographics, including females, adults, and employed individuals. Previous research suggests that women tend to prefer outdoor environments for recreational purposes [67], indicating that walking offers a unique opportunity to enjoy the landscape while traveling. Furthermore, the act of walking and enjoying the landscape has been associated with stress reduction benefits, especially for employed individuals, providing essential mental health benefits [68].

Regarding the third research question (Q3: What do pedestrians like the least about walking as a transportation mode?), participants identified walking in adverse weather conditions and on poor sidewalks as the two most disliked aspects. Both inclement weather conditions [69,70] and sidewalks in bad condition [9,43] are recognized factors that influence active travel behavior and act as barriers to walking. The Chi-square analysis revealed a specific sensitivity to weather variations among younger individuals and students, diverging from the anticipated impact on older demographics, which contrasts with other research findings [71]. Additionally, participants from Porto particularly disliked walking in adverse weather, a finding that is intriguing given the similar climatic classifications of Bologna and Porto, as per the Köppen classification. The difference may be attributed to the architectural features of Bologna, where approximately 40 km of porticoes provide pedestrian protection against adverse weather, unlike Porto. Poor sidewalks, on the other hand, were identified as a disliked aspect more closely associated with adults (economically active) and senior individuals. Concerns over sidewalk conditions were predominantly voiced by participants from Bologna and by economically active adults and seniors, highlighting the risk of falls from obstacles like uneven surfaces and clutter, which significantly endangers elderly pedestrians [72]. Our results also suggested that poorly maintained or inadequate sidewalks particularly impact utilitarian trips, such as those made by employed individuals, for whom efficiency, ease of travel and travel time are crucial considerations. Traffic safety, although it was a less pronounced concern due to the urban designs of Bologna and Porto (compact urban structure, the presence of low-speed zones, pedestrian-only streets, and other traffic calming measures), was significantly more worrisome for individuals with higher education and residents of Bologna, reflecting an awareness of safety issues and perhaps specific local traffic conditions [9]. This is also consistent with previous studies indicating that traffic safety was not a critical factor for pedestrians in Porto [73]. Interestingly, the study reveals that younger pedestrians exhibit greater physical exertion from walking than older individuals, implying a trend towards sedentary lifestyles and decreased physical fitness among the youth. This conclusion is supported by previous research [38], which indicated that those under 25 engaged in walking less frequently and for shorter durations, suggesting a lower level of activity among this demographic in terms of travel habits. Notably, an aversion to walking time was more prevalent among males and individuals residing in Bologna, suggesting a preference among males for shorter walking distances.

5. Conclusions

This study's exploration into pedestrian perceptions and attitudes in Bologna and Porto has yielded vital insights for sustainable urban planning. Beyond individual and urban variables, the highlights demonstrated that individuals in general value short, safe, and green walking routes. They liked walking for aspects such as engaging in physical activity, saving money, and optimizing time. Conversely, poor sidewalk conditions and adverse weather were key disliked aspects of walking.

Based on the comprehensive urban planning recommendations derived from the study, it is advocated to enhance sidewalk infrastructure for accessibility, promote compact urban designs, enrich streets with greenery, ensure pedestrian safety, mitigate adverse weather impacts, engage communities in planning, and launch public campaigns emphasizing walking's benefits. These strategies collectively aim to advance walkability in urban environments, fostering cities that prioritize pedestrian comfort, safety, and environmental aesthetics, while also encouraging active travel through well-supported and community-informed urban development initiatives. These recommendations could be used to strengthen sustainable urban mobility plans in both cities (and beyond) by improving walkability and reinforcing pedestrian mobility as a main mode of transportation for short trips or in combination with other modes for longer trips. In this last case, walking is particularly important as a "last-mile" solution, bridging the gap between conventional transportation hubs and final destinations. These measures are

crucial not only for making walking more attractive than certain forms of micromobility, such as e-scooters and e-bikes, which are less active and sustainable, but also for reinforcing walking as a key component of urban mobility. Despite the potential of light vehicles, such as e-scooters and e-bikes, to cover greater distances in a shorter time with less physical effort [74], prioritizing walking aligns with sustainability goals and active lifestyles. Moreover, integrating walking within the emerging concept of Mobility as a Service (MaaS) can further enhance its role by providing access to multiple modes through a single platform. With a few exceptions, such as Google Maps, walking has been undervalued and not integrated into MaaS platforms as a modal option [75]. However, walking serves as a vital link between one or more wheel-based modes in a trip, and the inclusion of pedestrian options, such as the shortest pedestrian route or the route with better pedestrian infrastructure between two transportation hubs, could enhance the information given by these platforms. These measures are also crucial for making cities smarter. As highlighted by Manca et al. [76], in order to be considered smart, cities need to be sustainable first. Particularly, the comprehensive understanding of individual walking habits and preferences provided in this study can support a variety of innovative measures, namely, (i) enhancing the pedestrian-friendliness of the built environment, and (ii) developing technological solutions, such as customized pedestrian apps, to promote and support regular walking habits [53].

Despite the significant findings, this study has some limitations that should be highlighted. First, preferences and aspects related to walking, including what people like most and least about walking, are underrepresented for certain demographic groups, particularly elderly individuals, while others, such as adults and employed individuals, are overrepresented. Online sampling methods are often associated with biases, making it challenging to reach older individuals, especially those with lower levels of education and limited technological proficiency, thereby leading to the underrepresentation of the elderly population. Additionally, given that the SPN project specifically focused on aspects related to utilitarian walking, it might have attracted greater attention from adult and employed individuals. Consequently, it is crucial to recognize that the findings presented in this study may be influenced by the disproportionate representation of certain demographic groups, which could impact the generalizability of the results. Second, the pre-pandemic timing of the research warrants a consideration of the changing dynamics of urban mobility and pedestrian preferences that were not reflected in the described results. Despite these challenges, the recommendations presented here have the potential to positively influence sustainable urban planning practices, not only in Bologna and Porto but also in similar urban contexts globally. By fostering environments that prioritize pedestrian needs, cities can become more sustainable, livable, and resilient in the face of evolving urban challenges.

For future research, it is essential to delve into the nuanced dynamics of pedestrian preferences post-COVID-19, exploring how pandemic-induced changes in urban mobility and public space usage influence walking behaviors. Investigating technological advancements in pedestrian navigation and their impact on walkability, alongside a deeper analysis of socio-demographic factors across diverse urban settings, will further enrich our understanding of walkability. Additionally, longitudinal studies could provide insights into the evolution of pedestrian attitudes over time, contributing significantly to the development of more adaptive and responsive urban planning strategies. To mitigate the over/underrepresentation of certain groups, future studies can utilize diverse sampling strategies, such as stratified sampling, to ensure a more balanced sample composition and enhance the generalizability of their findings.

In light of the insights garnered and the forward-looking strategies delineated, this investigation reaffirms the imperative of reimagining urban spaces to prioritize pedestrian well-being. The commitment to creating more walkable and sustainable cities, as exemplified by the findings from Bologna and Porto, underscores a universal call to action. It is in embracing these comprehensive recommendations that urban environments can transform,

ensuring that pedestrian needs are at the forefront of urban development, thereby fostering communities that are not only more walkable but intrinsically more humane and resilient in the future.

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References

1. European Commission. Sustainable Urban Mobility Planning and Monitoring. Directorate-General for Mobility and Transport, Ed. Brussels. 2023. Available online: https://transport.ec.europa.eu/transport-themes/urban-transport/sustainable-urban-mobility-planning-and-monitoring_en (accessed on 2 April 2024).
2. Hartl, R.; Harms, P.; Egermann, M. Towards transformation-oriented planning: What can sustainable urban mobility planning (SUMP) learn from transition management (TM)? *Transp. Rev.* **2023**, *44*, 167–190. [CrossRef]
3. Maltese, I.; Gatta, V.; Marcucci, E. Active travel in Sustainable Urban Mobility Plans. An Italian overview. *Res. Transp. Bus. Manag.* **2021**, *40*, 100621. [CrossRef]
4. Mozos-Blanco, M.; Pozo-Menéndez, E.; Arce-Ruiz, R.; Baucells-Aletà, N. The way to sustainable mobility. A comparative analysis of sustainable mobility plans in Spain. *Transp. Policy* **2018**, *72*, 45–54. [CrossRef]
5. Arsenio, E.; Martens, K.; Di Ciommo, F. Sustainable urban mobility plans: Bridging climate change and equity targets? *Res. Transp. Econ.* **2016**, *55*, 30–39. [CrossRef]
6. Hatamzadeh, Y.; Habibian, M.; Khodaii, A. Walking mode choice across genders for purposes of work and shopping: A case study of an Iranian city. *Int. J. Sustain. Transp.* **2020**, *14*, 389–402. [CrossRef]
7. Alizadeh, H.; Sharifi, A. Analyzing urban travel behavior components in Tehran, Iran. *Future Transp.* **2023**, *3*, 236–253. [CrossRef]
8. Larrañaga, A.; Rizzi, L.; Arellana, J.; Strambi, O.; Cybis, H. The influence of built environment and travel attitudes on walking: A case study of Porto Alegre, Brazil. *Int. J. Sustain. Transp.* **2016**, *10*, 332–342. [CrossRef]
9. Fonseca, F.; Ribeiro, P.; Conticelli, E.; Jabbari, M.; Papageorgiou, G.; Tondelli, S.; Ramos, R. Built environment attributes and their influence on walkability. *Int. J. Sustain. Transp.* **2022**, *16*, 660–679. [CrossRef]
10. Ribeiro, A.; Hoffimann, E. Development of a neighbourhood walkability index for Porto metropolitan area. How strongly is walkability associated with walking for transport? *Int. J. Environ. Res. Public Health* **2018**, *15*, 2767. [CrossRef]
11. Juul, V.; Nordbø, E. Examining activity-friendly neighborhoods in the Norwegian context: Green space and walkability in relation to physical activity and the moderating role of perceived safety. *BMC Public Health* **2023**, *23*, 259. [CrossRef]
12. Koohsari, M.; Badland, H.; Sugiyama, T.; Mavoa, S.; Christian, H.; Giles-Corti, B. Mismatch between perceived and objectively measured land use mix and street connectivity: Associations with neighborhood walking. *J. Urban Health* **2015**, *92*, 242–252. [CrossRef] [PubMed]
13. Pot, F.; van Wee, B.; Tillema, T. Perceived accessibility: What it is and why it differs from calculated accessibility measures based on spatial data. *J. Transp. Geogr.* **2021**, *94*, 103090. [CrossRef]
14. De Vos, J.; Lättman, K.; van der Vlugt, A.; Welsch, J.; Otsuka, N. Determinants and effects of perceived walkability: A literature review, conceptual model and research agenda. *Transp. Rev.* **2023**, *43*, 303–324. [CrossRef]
15. Vallejo-Borda, J.; Cantillo, V.; Rodriguez-Valencia, A. A perception-based cognitive map of the pedestrian perceived quality of service on urban sidewalks. *Transp. Res. F Traffic Psychol. Behav.* **2020**, *73*, 107–118. [CrossRef]
16. Bozovic, T.; Stewart, T.; Hinckson, E.; Smith, M. Clearing the path to transcend barriers to walking: Analysis of associations between perceptions and walking behaviour. *Transp. Res. F Traffic Psychol. Behav.* **2021**, *77*, 197–208. [CrossRef]
17. Mahmoudi, J.; Zhang, L. Impact of the built environment measured at multiple levels on nonmotorized travel behavior: An ecological approach to a Florida case study. *Sustainability* **2020**, *12*, 8837. [CrossRef]

18. Arroyo, R.; Ruiz, T.; Mars, L.; Rasouli, S.; Timmermans, H. Influence of values, attitudes towards transport modes and companions on travel behavior. *Transp. Res. F Traffic Psychol. Behav.* **2020**, *71*, 8–22. [CrossRef]
19. Lyu, Y.; Forsyth, A. Attitudes, perceptions, and walking behavior in a Chinese city. *J. Transp. Health* **2021**, *21*, 101047. [CrossRef]
20. van der Vlugt, A.; Curl, A.; Scheiner, J. The influence of travel attitudes on perceived walking accessibility and walking behaviour. *Travel. Behav. Soc.* **2022**, *27*, 47–56. [CrossRef]
21. Wolnowska, A.; Kasyk, L. Transport preferences of city residents in the context of urban mobility and sustainable development. *Energies* **2022**, *15*, 5692. [CrossRef]
22. Anastasopoulos, P.; Fountas, G.; Sarwar, M.; Karlaftis, M.; Sadek, A. Transport habits of travelers using new energy type modes: A random parameters hazard-based approach of travel distance. *Transp. Res. C Emerg. Technol.* **2017**, *77*, 516–528. [CrossRef]
23. Blitz, A. How does the individual perception of local conditions affect cycling? An analysis of the impact of built and non-built environment factors on cycling behaviour and attitudes in an urban setting. *Travel. Behav. Soc.* **2021**, *25*, 27–40. [CrossRef]
24. Fonseca, F.; Papageorgiou, G.; Tondelli, S.; Ribeiro, P.; Conticelli, E.; Jabbari, M.; Ramos, R. Perceived walkability and respective urban determinants: Insights from Bologna and Porto. *Sustainability* **2022**, *14*, 9089. [CrossRef]
25. Lizárraga, C.; Martín-Blanco, C.; Castillo-Pérez, I.; Chica-Olmo, J. Do university students' security perceptions influence their walking preferences and their walking activity? A case study of Granada (Spain). *Sustainability* **2022**, *14*, 1880. [CrossRef]
26. Guzman, L.; Arellana, J.; Alvarez, V. Confronting congestion in urban areas: Developing Sustainable Mobility Plans for public and private organizations in Bogotá. *Transp. Res. Part A Policy Pract.* **2020**, *134*, 321–335. [CrossRef]
27. Ribeiro, P.; Fonseca, F.; Meireles, T. Sustainable mobility patterns to university campuses: Evaluation and constraints. *Case Stud. Transp. Policy* **2020**, *8*, 639–647. [CrossRef]
28. Shatu, F.; Yigitcanlar, T. Development and validity of a virtual street walkability audit tool for pedestrian route choice analysis—SWATCH. *J. Transp. Geogr.* **2018**, *70*, 148–160. [CrossRef]
29. Haustein, S.; Kroesen, M. Shifting to more sustainable mobility styles: A latent transition approach. *J. Transp. Geogr.* **2022**, *103*, 103394. [CrossRef]
30. Moser, C.; Frick, V.; Seidl, R.; Blumer, Y. Teaming up for sustainability: Promoting sustainable mobility behaviour through sports clubs in Switzerland. *Energy Res. Soc. Sci.* **2019**, *53*, 89–97. [CrossRef]
31. Echaniz, E.; Rodríguez, A.; Cordera, R.; Benavente, J.; Alonso, B.; Sañudo, R. Behavioural changes in transport and future repercussions of the COVID-19 outbreak in Spain. *Transp. Policy* **2021**, *111*, 38–52. [CrossRef]
32. Cirianni, F.; Comi, A.; Luongo, A. A sustainable approach for planning of urban pedestrian routes and footpaths in a pandemic scenario. *J. Land Use Mobil. Env. (TEMA)* **2022**, *15*, 125–140. [CrossRef] [PubMed]
33. Ek, K.; Wårell, L.; Andersson, L. Motives for walking and cycling when commuting–differences in local contexts and attitudes. *Eur. Transp. Res. Rev.* **2021**, *13*, 46. [CrossRef] [PubMed]
34. Vahedi, J.; Shams, Z.; Mehdizadeh, M. Direct and indirect effects of background variables on active commuting: Mediating roles of satisfaction and attitudes. *J. Transp. Health* **2021**, *21*, 101054. [CrossRef]
35. Pirra, M.; Kalakou, S.; Lynce, A.R.; Carboni, A. Walking in European cities: A gender perception perspective. *Transp. Res. Proc.* **2023**, *69*, 775–782. [CrossRef]
36. Pollard, T.; Wagnild, J. Gender differences in walking (for leisure, transport and in total) across adult life: A systematic review. *BMC Public Health* **2017**, *17*, 341. [CrossRef] [PubMed]
37. Rišová, K.; Sládeková Madajová, M. Gender differences in a walking environment safety perception: A case study in a small town of Banská Bystrica (Slovakia). *J. Transp. Geogr.* **2020**, *85*, 102723. [CrossRef]
38. Fonseca, F.; Conticelli, E.; Papageorgiou, G.; Ribeiro, P.; Jabbari, M.; Tondelli, S.; Ramos, R. Levels and characteristics of utilitarian walking in the central areas of the cities of Bologna and Porto. *Sustainability* **2021**, *13*, 3064. [CrossRef]
39. Ghani, F.; Rachele, J.; Loh, V.; Washington, S.; Turrell, G. Do differences in built environments explain age differences in transport walking across neighbourhoods? *J. Transp. Health* **2018**, *9*, 83–95. [CrossRef]
40. Wang, Z.; Ettema, D.; Helbich, M. Age as effect modifier of the associations between the physical environment and adults' neighborhood walking in The Netherlands. *Cities* **2023**, *135*, 104194. [CrossRef]
41. Yu, R.; Cheung, O.; Lau, K.; Woo, J. Associations between perceived neighborhood walkability and walking time, wellbeing, and loneliness in community-dwelling older Chinese people in Hong Kong. *Int. J. Environ. Res. Public Health* **2017**, *14*, 1199. [CrossRef]
42. Van Cauwenberg, J.; De Bourdeaudhuij, I.; De Meester, F.; Van Dyck, D.; Salmon, J.; Clarys, P.; Deforche, B. Relationship between the physical environment and physical activity in older adults: A systematic review. *Health Place* **2011**, *17*, 458–469. [CrossRef] [PubMed]
43. Corazza, M.; Di Mascio, P.; Moretti, L. Management of sidewalk maintenance to improve walking comfort for senior citizens. *WIT Trans. Built Environ.* **2018**, *176*, 195–206. [CrossRef]
44. Kroesen, M. Is active travel part of a healthy lifestyle? Results from a latent class analysis. *J. Transp. Health* **2019**, *12*, 42–49. [CrossRef]
45. Kamargianni, M.; Polydoropoulou, A. Hybrid choice model to investigate effects of teenagers' attitudes toward walking and cycling on mode choice behavior. *Transp. Res. Rec.* **2013**, *2382*, 151–161. [CrossRef]

46. Florindo, A.; Barbosa, J.; Barrozo, L.; Andrade, D.; de Aguiar, B.; Failla, M.; Gunn, L.; Mavoa, S.; Turrell, G.; Goldbaum, M. Walking for transportation and built environment in Sao Paulo city, Brazil. *J. Transp. Health* **2019**, *15*, 100611. [CrossRef]
47. Karusisi, N.; Thomas, F.; Méline, J.; Brondeel, R.; Chaix, B. Environmental conditions around itineraries to destinations as correlates of walking for transportation among adults: The RECORD cohort study. *PLoS ONE* **2014**, *9*, e88929. [CrossRef] [PubMed]
48. Rachele, J.; Kavanagh, A.; Badland, H.; Giles-Corti, B.; Washington, S.; Turrell, G. Associations between individual socioeconomic position, neighbourhood disadvantage and transport mode: Baseline results from the HABITAT multilevel study. *J. Epidemiol. Community Health* **2015**, *69*, 1217–1223. [CrossRef] [PubMed]
49. Moniruzzaman, M.; Farber, S. What drives sustainable student travel? Mode choice determinants in the Greater Toronto Area. *Int. J. Sustain. Transp.* **2018**, *12*, 367–379. [CrossRef]
50. Saadi, I.; Aganze, R.; Moeinaddini, M.; Asadi-Shekari, Z.; Cools, M. A participatory assessment of perceived neighbourhood walkability in a small urban environment. *Sustainability* **2022**, *14*, 206. [CrossRef]
51. Bunds, K.; Casper, J.; Hipp, J.; Koenigstorfer, J. Recreational walking decisions in urban away-from-home environments: The relevance of air quality, noise, traffic, and the natural environment. *Transp. Res. F Traffic Psychol. Behav.* **2019**, *65*, 363–375. [CrossRef]
52. Conticelli, E.; Maimaris, A.; Papageorgiou, G.; Tondelli, S. Planning and designing walkable cities: A smart approach. In *Green Energy and Technology*; Springer: Cham, Switzerland, 2018; pp. 251–270. [CrossRef]
53. Fonseca, F.; Conticelli, E.; Papageorgiou, G.; Ribeiro, P.; Jabbari, M.; Tondelli, S.; Ramos, R. Use and perceptions of pedestrian navigation apps: Findings from Bologna and Porto. *ISPRS Int. J. Geo-Inf.* **2021**, *10*, 446. [CrossRef]
54. Kim, E.; Gong, Y. The smart city and healthy walking: An environmental comparison between healthy and the shortest route choices. *Urban Plan.* **2023**, *8*, 81–92. [CrossRef]
55. Salehpour Jam, A.; Tabatabaei, M.; Mosaffaie, J.; Soltani, M.; Shadmani, A. Barriers to participatory implementation of soil conservation projects: Perspectives and priorities. *Environ. Sci. Policy* **2022**, *131*, 36–45. [CrossRef]
56. ISTAT-Istituto Nazionale di Statistica. *Annual Estimated Population 2019*; Istituto Nazionale di Statistica: Rome, Italy, 2019.
57. SP-Statistics Portugal. *Annual Estimated Population 2019*; Statistics Portugal: Lisbon, Portugal, 2019.
58. Herian, M.; Tomkins, A. Citizen satisfaction survey data: A mode comparison of the derived importance-performance approach. *Am. Rev. Public Adm.* **2012**, *42*, 66–86. [CrossRef]
59. Blasius, J.; Brandt, M. Representativeness in online surveys through stratified samples. *BMS Bull. Sociol. Methodol.* **2010**, *107*, 5–21. [CrossRef]
60. Ribeiro, P.; Fonseca, F. Students' home-university commuting patterns: A shift towards more sustainable modes of transport. *Case Stud. Transp. Policy* **2022**, *10*, 954–964. [CrossRef]
61. Kim, D. The transportation safety of elderly pedestrians: Modeling contributing factors to elderly pedestrian collisions. *Accid. Anal. Prev.* **2019**, *131*, 268–274. [CrossRef] [PubMed]
62. Goel, R.; Oyebode, O.; Foley, L.; Tatah, L.; Millett, C.; Woodcock, J. Gender differences in active travel in major cities across the world. *Transportation* **2023**, *50*, 733–749. [CrossRef] [PubMed]
63. Zang, P.; Liu, X.; Zhao, Y.; Guo, H.; Lu, Y.; Xue, C. Article eye-level street greenery and walking behaviors of older adults. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6130. [CrossRef]
64. Lu, Y. Using Google Street View to investigate the association between street greenery and physical activity. *Landsc. Urban Plan.* **2019**, *191*, 103435. [CrossRef]
65. EUROSTAT. Real GDP Per Capita. 2019. Available online: https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en (accessed on 31 January 2024).
66. OECD; World Health Organization. *Physical Activity in Europe: Trends and Patterns*; OECD Publishing: Paris, France, 2023. [CrossRef]
67. Rosa, C.; Larson, L.; Collado, S.; Cloutier, S.; Profice, C. Gender differences in connection to nature, outdoor preferences, and nature-based recreation among college students in Brazil and the United States. *Leis. Sci.* **2023**, *45*, 135–155. [CrossRef]
68. Han, A.; Kim, J.; Kim, J. A Study of leisure walking intensity levels on mental health and health perception of older adults. *Gerontol. Geriatr. Med.* **2021**, *7*, 1–8. [CrossRef] [PubMed]
69. Gao, J.; Wang, D.; Ettema, D.; Helbich, M. Weather conditions as cross-sectional moderators of the associations between the physical environment and walking behavior in the Netherlands. *Int. J. Sustain. Transp.* **2023**, *17*, 1129–1138. [CrossRef]
70. de Montigny, L.; Ling, R.; Zacharias, J. The effects of weather on walking rates in nine cities. *Environ. Behav.* **2012**, *44*, 821–840. [CrossRef]
71. Wagner, A.; Keusch, F.; Yan, T.; Clarke, P. The impact of weather on summer and winter exercise behaviors. *J. Sport. Health Sci.* **2019**, *8*, 39–45. [CrossRef] [PubMed]
72. Hosseini, M.; Miranda, F.; Lin, J.; Silva, C. CitySurfaces: City-scale semantic segmentation of sidewalk materials. *Sustain. Cities Soc.* **2022**, *79*, 103630. [CrossRef]
73. Jabbari, M.; Fonseca, F.; Ramos, R. Combining multi-criteria and space syntax analysis to assess a pedestrian network: The case of Oporto. *J. Urban Des.* **2018**, *23*, 23–41. [CrossRef]
74. Moinse, D.; L'Hostis, A. Optimizing intermodal commuting by way of detours and breaks: Evidence of micromobility users in France. *J. Transp. Geogr.* **2024**, *116*, 103821. [CrossRef]

75. Lyons, G. Walking as a service–Does it have legs? *Transp. Res. A Policy Pract.* **2020**, *137*, 271–284. [CrossRef]
76. Manca, F.; Daina, N.; Sivakumar, A.; Yi, J.; Zavistas, K.; Gemini, G.; Vegetti, I.; Dargan, L.; Marchet, F. Using digital social market applications to incentivise active travel: Empirical analysis of a smart city initiative. *Sustain. Cities Soc.* **2022**, *77*, 103595. [CrossRef]