Out of the City Heat—Way to Less or More Sustainable Futures?

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Abstract: Rural alpine areas are affected by climate change in multiple ways. Today, many lower regions already face challenges in winter. However, several authors indicated new potentials for near-metropolitan areas in summer. As the first study for a metropolitan area, this paper discusses results of a large-scale quantitative survey (n = 877) from Vienna (Austria) to evaluate the intentions of urban residents to seek refreshment in nearby mountainous regions. The results regarding their adaptation behavior confirm the likely increase in demand to escape to nearby refreshing areas during heatwaves. This trend could lead to (re-)vitalization potential for rural near-metropolitan areas in Eastern Austria, which are often characterized by depopulation and degradation of infrastructure. A closer look at the respondents’ mobility behavior, reveals a high risk for unsustainable developments. Although the high and increasing share of car-free households in Vienna would suggest a strong demand for public transport, the likelihood to travel by car towards such destinations is high even among this group. Focusing predominantly on on-site mobility offers would be recommended since many travelers did not use their car within the destination. At last, the attractiveness of climate-friendly travel options is discussed considering mobility-related needs and preferences of three touristic motive groups.

Keywords: summer tourism; climate change adaptation; urban heat; tourism mobility; sustainable tourism; Sommerfrische; Austria; rural destinations

1. Introduction

Rural areas, especially in alpine territories, are affected by climate change in multiple ways. In Austria, the socio-economic impacts of climate change have been assessed for several sectors [1]. One of these sectors with strong importance for remote areas is tourism. Climate and related changes in weather conditions affect tourism behavior in many ways [2–8].

In winter, lower regions especially, as it is the case in several near-metropolitan destinations in Eastern Austria, are facing challenges due to a decreasing reliability of snow conditions [9,10]. Various authors (see for example, [3,11–14]) have assumed that, on the other hand, an increase in hot
summers and heatwaves could also lead to an increasing demand from inhabitants of large cities seeking refreshment in near-metropolitan rural destinations during summer time. In this context, the German-speaking literature addresses a revival of the “Sommerfrische” [15,16]. “Sommerfrische”, a term from the 19th century, is used to describe the aestival emigration of urban residents towards rural near-metropolitan mountainous destinations characterized by picturesque sceneries and refreshing climate. The term referred both to the type of vacation as well as the locations itself. According to these authors, rural mountain destinations located close to large agglomerations might become more attractive for tourists in the summer time to relax and refresh away from the urban heat for both short-term trips and longer stays [17]. In several of these areas, tourism and the improvement in infrastructure, in particular public traffic, linked to it, is regarded a major strategy against depopulation, brain drain and ageing of the population [18]. Consequently, knowing about their own adaptive capacities in response to the negative impacts of climate change is essential for these regions.

Whereas the adaptive behavior to climate change in winter has been surveyed in various studies in the past decade [19–25], the changing demand in summer has been scarcely examined [9,17]. No empirical study has so far studied this aspect based on a quantitative survey of a large metropolitan area and its surrounding destinations.

While tourism is affected by climate change, the sector itself also holds a key role in fostering climate change in many different areas [8,26–29]. Compared to other activities in the delivery and consumption of a tourism product (accommodation, gastronomy etc.), the means of transportation in use has a strong direct impact on the carbon footprint of the tourists [27,30,31] and an indirect impact on the carbon footprint of the respective destination [28]. In line with this, the Austrian Tourism Strategy has explicitly identified the need to prioritize climate-friendly travel options in order to mitigate climate change [26]. In more rural, loosely populated areas, the commonly-promoted implementation of better public transport schemes often seems very cost and energy-ineffective. It, therefore, does not always constitute a viable solution to the problem, requiring research to identify and develop alternative solutions.

Regarding the potentially increasing number of short-trips from urban areas to close-by near-metropolitan refreshing destinations, maladaptation could occur when envisaging a stronger multi-seasonal visitor distribution without offering and promoting sustainable climate-friendly transport options. Consequently, it seems advisable to not only investigate the characteristics of future guests (motives, needs, booking behavior etc.) but also at their travel behavior as well as influential factors to increase the acceptance of climate-friendly, sustainable transport modes.

This paper will use a large-scale quantitative survey (n = 877) from Vienna to evaluate the intentions of urban residents to seek for refreshment in nearby mountainous regions as well as to investigate the intended travel behavior and acceptance of sustainable transport modes.

Against this background of challenges for sustainable development in near-metropolitan areas, with tourism as an important source of income, the research aims of this paper are:

- To identify how metropolitan residents, adapt to the increasing number of heat days and tropical nights within the urban agglomeration with respect to their booking and travel behavior, particularly investigating the role of destinations in the nearby mountainous regions.
- To consider current visitor motives and planned activities (at the destination) and to investigate the visitor segments’ specific destination selection criteria and their transport and mobility patterns.
- To derive recommendations for sustainable, climate-friendly and resilient destination management in near-metropolitan areas to help develop a tourism portfolio that responds to tourists’ attitudes in a sustainable way.
2. Background

2.1. The Influence of Climate Change Adaptation on Alpine Destinations

Several researchers point out the effects of climate change on tourism in manifold ways, both in Austria and beyond. Especially in alpine areas, climate change has manifold effects on the tourism sector, mainly because of the current temperature rise which is expected to increase further in the future. Due to its reliance on natural resources as a key asset, the sector of rural nature-based tourism is partly vulnerable to the effects of climate change [1, 9, 32]. Steininger et al. [1] point out the monetary effects for Austrian tourism including rural nature based activities.

Whereas in winter, these regions are facing challenges due to a decreasing reliability of snow conditions [10, 17, 33, 34], there are new opportunities expected in summer due to multiple aspects. In addition to pushing factors, such as heat stress in large metropolitan areas, pulling factors, such as higher water temperatures in lakes and other surface water bodies as well as ameliorated weather conditions for sportive activities are highlighted [35, 36]. Additionally, a shift from Mediterranean destinations to alpine areas has been discussed over the past years, which could be induced by risks of heatwaves, water scarcity and forest fires in some Mediterranean areas as well as political instabilities [37–39].

The adaptation behavior of citizens of metropolitan areas (such as Vienna) to heatwaves as a push factor, and the potential for a revival of the former “Sommerfrische” linked to it, is under-researched so far. “Sommerfrische” formerly implied a longer stay at refreshing rural areas for recreation, social and cultural purposes. Today, this concept comprises both day-trips for leisure activities as well as holidays with various motives [40, 41]. Only Babický and Seebauer [42] analyzed the adaptation behavior of citizens—yet only for small to medium-size metropolitan areas in Styria, a Southern Austrian region. Due to the different adaptation potentials in the metropolitan areas, small- to medium- and large-scale metropolitan areas are limited in their comparability.

2.2. The Importance of Adaptation for Rural Development in Remote Areas

Köberl et al. [43] argue—based on the extensive study COIN—that the tourism sector will face losses up to 210 Million Euros per year between 2036 and 2065 when not putting adaptation measures in place. When aiming to maintain their economic capacity, rural tourism destinations could address new tourism segments, requiring them to adapt their tourism portfolio. In this context, the results of other studies [44, 45] indicate a diversification of tourism strategies in particular with regard to seasonality and offers/new target groups as a major adaptation strategy to cope with climate change. Therefore, a closer look at the likely development of demand for near-metropolitan summer tourism can be particularly important for those rural areas with structural weakness, as is the case in some areas around Vienna.

2.3. The Travel Behavior of Metropolitan Citizens and Its Impact on Sustainable Regional Development

Available transport options influence the sustainable development of rural areas in two ways: First, socio-economically by providing access to education, health care and workplace and second, environmentally by decreasing CO2 and particular-matter emissions that affect the global climate. Overall, transport contributes to about 25% of European greenhouse-gas emissions [46]. Tourism mobility has a strong part in this negative effect. However, in particular large metropolitan areas show an increasing trend towards car-free households [47–50]. In Vienna, many households (about 45%) without access to a private car depend primarily on public travel or short-term rental options [51]. Rural tourism areas tend to be characterized by a low accessibility by public transport and high car dependence among both residents and tourists [52]. The connection between on-site activities and the travel options to the destination could significantly influence the travel choice of this group. Consequently, reflecting tourists’ mobility behavior and resulting transport demands seems
increasingly necessary in the context of (more) spontaneous travels outside of the city as a means to adapt to persisting heatwaves.

In this context, it is important to differentiate between the needs of winter and summer tourists. In their study of domestic and foreign tourists travelling to mountain destinations in Austria, Bursa and Mailer [53] found substantial differences between summer and winter travels with regards the aspects impeding them from using public transport to reach their destination. While in summer, uncertainties regarding their mobility needs at the destination itself were the greatest cause of concern, the majority of winter tourists in Austria perceives the question of luggage transport as the most critical issue.

Strong differences can also be observed between arrival and on-site mobility. The FUR travel analysis [4] was the first study to collect data specifically on German tourists’ use of transport means at holiday destinations (major holiday trips were defined as trips of more than five days in the year 2014). This study observed that public transport played a much greater role in on-site mobility than for arrival and departure journeys. Moreover, a wider variety of modes of transport were used at the holiday destination. These results further resonate with the study conducted by Bengsch et al. [54] according to which many guests at rural tourist regions in Germany expressed a high interest in the use of public transport for both arrival and departure journeys, as well as on-site mobility. While around 40% of the day and overnight guests stated that they tried to travel by bus or railway towards their destination, the willingness to use local public transport at the holiday destination was at over 50%. Travelers, hereby, levelled high expectations at transport offers relating to prices or the price/performance ratio. Moreover, the choice of a particular transport mode for the outward journey was shown to be greatly influenced by the local availability of comprehensive and customer-friendly on-site transport options [55].

These results are confirmed by a recent publication from Bursa and Mailer [53] for Austrian destinations. It also suggests that the car is often chosen as a transport mode to guarantee the highest degree of flexibility at the holiday destination. Compared to the outward journey, the study revealed that privately owned cars play a significantly less important role at the holiday destination itself. In addition, the number of transport modes named in the study indicates that on-site mobility is more diverse and likely more context-specific than transport modes used for arrival.

3. Materials and Methods

3.1. Study Design

This investigation, carried out between July 2016 and November 2018, followed a three-step approach. In doing so, it intends to analyze the factors influencing sustainable adaptation to climate change at both the demand and supply side as well as the crucial factors to foster climate-friendly tourism mobility. The three steps of the multi-modal approach are as follows:

1. Qualitative Pre-Research Focus Groups: Exploration of relevant topics and questions in order to inspire the project research framework and, especially, to elaborate the quantitative survey.
2. Quantitative Surveys: Analysis of the source market (demand side) regarding tourists travel behavior, adaptation intentions and capacities (potential), and needs for transport services.
3. Qualitative Future Workshops: Analysis of the case study destination (supply side) through participatory research designs: Development of strategies for adaptation to changes in demand as well as strategies for the mitigation of potential climate change threats arising from the expected increase in travel demands as well as energy and resource needs.

This publication discusses primarily the results of the large-scale quantitative survey and subsequently reflects on it in relation to the qualitative results of the future workshops. Previous results on the pre-survey stage (including the telephonic pre-screening and the analysis of the focus groups) that fed into the overall survey development are summarized in Juschten et al. [56]. The map underneath (Figure 1) shows the study context consisting of Vienna and the two case study regions.
Figure 1. Map of “Sommerfrische” destinations in Austria (green diagonal lines), showing the source market Vienna (red circle) and the two case study regions (grey circles).

3.2. Content of the Survey

In order to gain insight on the different aspects of the research questions—such as the effect of heat on tourism choices as well as different potential target groups for “Sommerfrische” destinations—the survey consisted of different thematic sections. They are as follows:

1. Perceptions of climate change in Vienna, the residential situation and the heat stress perceived during the heat summer 2015 (Note: 2015 was the second hottest summer in Vienna since the measurements started in 1767 [57], turning into a relatable reference point for heat summers which many Viennese citizens still vividly remember).
2. Use of different adaptation options in response to heatwaves.
3. The intention to visit “Sommerfrische” destinations including factors influencing this intention such as attitudes, subjective norms and easiness to plan “Sommerfrische” trips among others.
4. Attributes of a past “Sommerfrische” trip including duration, location, travel motives, used modes of transport, accommodation, and booking behavior.
5. The desired attributes of “Sommerfrische” destinations and the preferences regarding accessibility and transport services.
6. General socio-demographic and psychographic attributes

3.3. Description of the Sample

The survey took place online between June and July 2017, addressing citizens of Vienna aged 14 to 69 years. The age restriction was predetermined by the pool of participants in the online-access panel provider who recruited the respondents. They contacted the panel members with a short email containing the broad topic “Travelling” and a personalized link to the survey. The completion rate of those starting the survey was 80.6% with an average completion time of 20.4 min. The final sample encompassed 877 respondents.

Due to the chosen recruitment method, it was possible to set response quota, thereby allowing for a representative (Viennese) distribution regarding age and gender. No stratification according to education, occupation, income or spatial characteristics took place. All reference values for Vienna are derived from publications based on the micro-census of “Statistik Austria” for 2015 [58–60]. Based on this data we observed a slight over-representation of highly educated people in the sample, which is partly because the Viennese education statistics also contain people above 69, who tend to have a lower level of education. Regarding the current occupation, we observed a slight over-representation of retired people and those still completing their education. The Viennese population statistics were truncated to the age groups represented in the sample (14 to 69 years). This explains the higher
proportion of unemployed and the lower proportion of retired people in Vienna. Table 1 illustrates the sociodemographic attributes.

Table 1. Sociodemographic attributes of sample and Viennese population.

<table>
<thead>
<tr>
<th></th>
<th>Survey Sample (1)</th>
<th>Viennese Population (2)</th>
<th>Deviation (1) and (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average age in years</strong></td>
<td>41.7</td>
<td>40.4</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51.3%</td>
<td>51.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Male</td>
<td>48.7%</td>
<td>48.7%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Highest education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No or a primary school diploma</td>
<td>7.2%</td>
<td>27.7%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Apprenticeship diploma</td>
<td>32.8%</td>
<td>36.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td>High school diploma</td>
<td>30.1%</td>
<td>19.1%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Higher education/University degree</td>
<td>29.9%</td>
<td>17.0%</td>
<td>12.9%</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>62.1%</td>
<td>60.5%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6.2%</td>
<td>9.3%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Retired</td>
<td>15.2%</td>
<td>9.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td>In education</td>
<td>12.3%</td>
<td>7.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Other (staying at home etc.)</td>
<td>4.2%</td>
<td>13.7%</td>
<td>9.5%</td>
</tr>
<tr>
<td><strong>Household Types</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult households, no children</td>
<td>73.4%</td>
<td>70.2%</td>
<td>3.2%</td>
</tr>
<tr>
<td>All children between 6 and 17 years</td>
<td>14.8%</td>
<td>17.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>At least one child younger than 6</td>
<td>11.8%</td>
<td>12.8%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

3.4. Data Analysis

After cleaning and preparing the data for further analysis, a first descriptive analysis took place comprising the distribution, means, and standard deviations of all variables. After reviewing these results, an explorative analysis of all bivariate correlations was conducted in order to gain first insights into the covariance structure and relationships between sociodemographic and attitudinal variables with the intention to escape the heat. Furthermore, cross-classified tables were made to show differences between groups such as heat-stressed respondents and those who are not, as well as car-free vs. car-owning households.

As a prerequisite for several statistical tests, the normality for all relevant variables was tested. Within the variables included in the model, skewness ranges from −1.314 to 1.463 and kurtosis ranges from −1.984 to 2.174, illustrating good normality according to the limits indicated by Kline [61]. He suggested skewness to be between −2 and +2 and kurtosis between −3 and +3.

Afterwards, those variables possibly relevant for the segmentation analysis (such as travel motives in general and specifically towards “Sommerfrische” destinations as well as media used for information and booking purposes) entered an explorative principal component analysis (PCA) in SPSS (using Varimax rotation). The aim was to explore meaningful constructs in the dataset on underlying motive structures or travel patterns. The internal reliability of the constructs was tested using Cronbach’s $\alpha$. Section 4.4 of this paper presents the results.

In order to depict different, possibly rather homogenous, target groups for “Sommerfrische” travels and identify their individual characteristics, a segmentation was performed. Following the literature on tourism segmentation, different strategies and segmentation criteria can be used. As explained by Dolnicar [62], such segments can either be defined a-priori (“profiling” before the actual analysis through “common sense”, experience or based on theory) or a-posteriori (data-driven, explorative). Criteria for this segmentation are usually either sociodemographic, behavioral (i.e., motives, booking behavior) or psychographic variables (i.e., attitudes/norms). Pesonen and Tuohino [63] provide an overview of segmentation criteria applied specifically in the context of rural well-being tourism, ranging from travel motives to expenditures or travel search behavior. Within this study, both a-posteriori and a-priori approaches were explored to find meaningful customer segments. The performed cluster analyses based on sociodemographic variables could not reveal
any meaningful segments. Based on other literature, sociodemographics seem to lose their relevance as determinants of different motivation or activity-based tourism segments (see [64,65]). Therefore, a segmentation based on behavioral variables such as travel motives appeared more fruitful.

To do this, we followed the four-step approach of a-priori segmentation as illustrated by Dolnicar [62]. First, the selection criterion was chosen, which in this case were the factors created based on the general travel motives of all respondents. Second, the respondents were assigned to four different groups based on the factor score of the PCA. Respondents were assigned to the factor group for which they had the highest positive factor score; respondents with negative scores on all three factors were assigned to group 4. Third, the segments were described in terms of their sociodemographic, behavioral and attitudinal profile. This was done using a mean value comparison using p-values as a measurement for statistical significance. This step was only done for the first three groups since the fourth is characterized by the non-compliance with any of the given motives. In a fourth step, the usefulness of these segments for tourism planning was discussed.

### 3.5. Future Workshops

Through transdisciplinary future workshops, the outcomes of the research on the demand side were reflected and extended by the perspectives of the actors of the supply side. The study was elaborated together with stakeholders from two near-metropolitan tourism regions, as these areas are well suited to representing the structural situation of mountain destinations located close to Vienna. Both regions suffer from depopulation, especially among the younger population. However, existing railway connections and the proximity to nearby medium-size cities provide opportunities for residents of these regions. Tourism has a long tradition in parts of the two areas, but it was not developed further over the years. Both regions lack strategic development concepts and only recently, activities started to target sustainable, long-term development of the areas.

The main purpose of the future workshops was to strengthen and support the development and climate change adaptation processes in rural areas close to agglomeration by analyzing the challenges and potentials of the regions. At the same time, the prevention of maladaptation and development of recommendations for sustainable destination management were key issues.

Three half-day workshops were designed as a future workshop, where participants were encouraged to develop new and creative solutions to issues of current interest related to tourism development in their region. Around 15 participants from communities, destination management organizations, managers of tourism infrastructure and transport providers joined each workshop in the case study areas. Together with the research team, they underwent three phases (criticism phase, fantasy phase, realization phase) according to the method of future workshops [66].

One of the main challenges in trans-disciplinary work with stakeholders was finding effective ways to translate and transfer research results to the stakeholders, in order to make them usable and useful for them when developing sustainable strategies for the future of the tourism region. Thus, when designing and carrying out the workshops a focus was on how to communicate the scientific results in order to meet their everyday reality, language, interests, needs etc.

The results of the future workshops were documented by photographs and protocols. A comparison between the two regions allowed identifying challenges both regions have in common and compare approaches to overcome these challenges. Before the comparison, the results were analyzed according to the three phases as well as sub-division per categories of regional development. Particular focus was set on the two main aspects—the role of sustainable tourism development as well as climate-friendly mobility.

### 3.6. Limitations

As illustrated above, the segmentation of tourists along socio-demographic and economic variables has become increasingly difficult [64,65]. The same occurred throughout this study, therefore an a-priori segmentation based on motive groups (core travel motives) turned out to be the best
approach. The fact that sociodemographic factors have lost their explanatory power in tourism segmentation also shows in these motive groups; they can mainly be explained by subjective or attitudinal aspects. Therefore, their transferability on a larger tourism population is limited. Yet, for the specific regional context that is studied here, they provide very valuable information.

Whereas the Swiss Tourism Monitoring includes only people from 16 years onwards, the Austrian Tourism Board already surveys 14-year olds about their travel behavior [67]. This study includes respondents from the age of 14 to be in line with the official tourism monitoring in Austria. We are aware that including young people below 16 might entail certain limitations regarding the validity of their response to household details etc. Depending on the exact question of the survey, it might be necessary to be more cautious when choosing the respondents’ age group because teenagers are often not involved in certain types of household decision-making (i.e., travel budget) possibly requested in surveys (budget aspects are not included in this study though). Therefore, their responses might be less reliable than desired. Since the dataset of this study includes only three people younger than 16, their impact on the results is marginal even within the youngest age-group. Besides the age distribution, we are also aware that these data only cover one respondent per household. Therefore, it was not possible to differentiate between different household members in terms of leisure activities and tourism motives. To account for this, we have taken the individual level as the reference point for the analysis and not the household level.

The degree to which people perceive heat as stressful was based on their memory of the heat of summer, 2015. This way of retrospective question design comes with a few shortfalls: People tend to remember pleasant events stronger than unpleasant ones, therefore possibly underestimating their own past heat stress [68]. Furthermore, their memory might generally be flawed, depending on the quality of people’s memory and the degree to which memories might have been altered a-posteriori based on other people’s stories or perceptions. To ensure that people refer their perceptions to the same event, Tourangeau et al. [68] suggest to give people cues that are distinctive to the aspired reference point. Since 2015 had a strong medial and societal presence for being one of the hottest summers in the Viennese history, it is presumably particularly memorable and therefore a good reference point for such a retrospective question.

4. Results

The following section illustrates the response of urban residents to the experience of heat stress and what they are looking for in near-metropolitan destinations. Next to the adaptation behavior and key motives related to escaping the heat of the city, the final sub-section describes the mobility behavior and preferences as well as attitudes towards climate-friendly transport options.

4.1. Heat Stress Experienced by Urban Dwellers and Its Possible Impact on Travel Behavior

A major part of the survey concerned the perception of heat stress among urban dwellers, as well as their strategies of heat adaptation. As to examine to what extent heat is experienced as a strain, respondents were specifically asked about their memories of the “heatwave summer” of 2015, during which Vienna registered a record-breaking number of heat days.

As shown in Figure 2, almost half of the respondents stated that they had experienced the summer of 2015 as stressful—either generally (46%) or particularly at night (45%). Merely 24% of the surveyed Viennese residents were pleased with the heat and remember the summer months of 2015 positively. The remainder did not remember the summer as particularly noteworthy or did not spend it in Vienna. Thus, around two thirds (64%) of all respondents perceived the heat either partially or under certain circumstances as a strain, while one third perceived it either in a positive or a neutral way.
Along with the analysis of frequencies, the responses to further questions were interlinked with these data on respondents’ experience of heat stress. To that end, respondents were divided into two groups: Those stressed by the heat (yellow bars in Figure 2, n = 557) and those unaffected or pleased by the heat (green and blue bars in Figure 2, n = 320). In terms of socio-demographic characteristics (age, gender, household size, district etc.), the data surprisingly shows no significant differences between the two groups. This contradicts several other studies that find a strong interrelation between heat stress and social status [69]. At least within this sample in the Viennese context, this cannot be confirmed.

Regarding the apartment temperatures (see Figure 3), around half of respondents found the temperatures in their apartments or houses to be tolerable. A total of 37% of the surveyed inhabitants felt that temperatures in their homes were too high, while 15% indicated that they were comfortably cool. The data also illustrate that those people stressed by the heat also tend to either have higher room temperatures at home or at least perceive them as less bearable.

4.2. Adaptation to Heat Stress

In terms of leisure activities during heatwaves, over 80% of respondents stated that they sought out ways to cool down. However, the responses in this regard revealed two opposing strategies, both used at the same rate: “Escaping” to the outdoors (to go swimming, seek out parks or other cooler spaces) or remaining indoors (i.e., staying at home).

When asked about the leisure activities that people do more frequently in times of heatwaves, the data show that heat-stressed people often choose between two rather distinct adaptation strategies: A passive or an active approach. They either stay at home to avoid the heat altogether or they go outside and actively look for refreshing spots inside and outside of the city. In contrast, almost 30% of the people unaffected by the heat declared that their choice of leisure activities was not affected by the heat and that high temperatures had no impact on their recreational habits. Those who did change their behavior, however, mainly chose active adaptation modes by going swimming more often or visiting other refreshing spots. Figure 4 visualizes these different strategies.
4.2. Adaptation to Heat Stress

Overall, 46% of respondents who had already experienced some form of heat stress selected “escaping the heat” as a travel motive in general or specifically for “Sommerfrische” trips (only 23% of those unaffected by the heat considered it to be a motive to travel). Specifically, for “Sommerfrische” trips, 95% indicated that “escaping the heat” was only one out of several motives which influenced their destination choice in favor of a “Sommerfrische” trip. The motives most often cited in addition to “escaping the heat” were “recreation” (76%), “to be surrounded by nature” (76%), and “to replenish mind and soul” (68%).

Concerning the extent to which travel behavior has already been altered because of previous heatwaves, over 70% of those “unaffected by the heat” and 65% of those “stressed by the heat” stated that they have not yet changed their travel habits. Among the “heat-stressed” respondents, a larger percentage indicated that they had already made some changes in their travel behavior, whereby time frames and activities were both modified to the same degree, while holiday destinations were changed less frequently.

While most people have not yet changed their travel behaviors in response to urban heat, the findings of this study suggest that the demand for near-metropolitan rural tourism destinations will increase in the future, in case that heatwaves become more frequent [70]. According to this study, the strongest drivers of such a future demand are the current intention to visit such destinations and the degree of personal heat stress.
4.4. Main Motives for “Refreshing” Trips in Near-Urban Destinations

“Escaping the heat” was often cited in combination with a range of other motives to go on summer trips to refreshing, near-metropolitan destinations. Consequently, it was important to understand what exactly these motives entailed. Furthermore, knowledge about travel motives can be helpful to identify approaches of climate-friendly, sustainable tourism mobility. As illustrated before, a principal component analysis was used to identify meaningful structures in the data. The analysis revealed that the general tourism motives are most promising for identifying customer segments. The subsequent Table 2 shows the construct that the variables create and provides information on their internal reliability using Cronbach’s alpha.

Table 2. Results of principal component analysis and internal reliability of factors. Scores only shown when above 0.45.

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<thead>
<tr>
<th>Variables</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s alpha</td>
<td>0.721</td>
<td>0.587</td>
<td>0.504</td>
</tr>
<tr>
<td>Doing sports/being active</td>
<td>0.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doing sth. good for own health</td>
<td>0.789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning something new</td>
<td>0.622</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being in nature</td>
<td>0.545</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertaking cultural activities</td>
<td></td>
<td>0.719</td>
<td></td>
</tr>
<tr>
<td>Experiencing sth. exceptional</td>
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<td>0.686</td>
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<tr>
<td>Meeting new people</td>
<td></td>
<td>0.599</td>
<td></td>
</tr>
<tr>
<td>Experiencing culinary joys</td>
<td></td>
<td>0.594</td>
<td></td>
</tr>
<tr>
<td>Relaxing</td>
<td></td>
<td></td>
<td>0.772</td>
</tr>
<tr>
<td>Doing sth. good for own soul</td>
<td></td>
<td></td>
<td>0.743</td>
</tr>
<tr>
<td>Escaping the city</td>
<td></td>
<td></td>
<td>0.492</td>
</tr>
</tbody>
</table>

The dataset allowed for the identification of four groups categorized based on their key travel motives. Their characteristics are described subsequently and in Table 3:

- Group 1: Sports and outdoor-oriented travelers (highest on factor 1)
- Group 2: “Manifold experiences”-oriented travelers (highest on factor 2)
- Group 3: “Relaxation close to nature”-oriented travelers (highest on factor 3)

From the point of view of the tourist sector, the most interesting groups are those looking for “manifold experiences” and those wanting to be “physically active” during their trips, as they exhibit particularly distinctive travel behaviors. Respondents in these groups visited places identified in the project as refreshing “Sommerfrische” destinations on average between five and seven times a year. Particularly the “sports and outdoor” group displayed an above average intention to make further trips to refreshing destinations in the future (between six and eight times a year). A look at each group’s economic impact, however, reveals that their attractiveness as potential target groups for a destination varies. While the groups looking for “manifold experiences” and to be “sports and outdoor” frequently sought out family-friendly accommodations (holiday apartments, guest houses and lodges) in the lower quality and price range (one- to three-star establishment in the hotel business), the group interested in “recreation close to nature” stayed at four- and five-star establishments in near-metropolitan refreshing destinations. Further characteristics of these motive-related groupings are detailed in Table 3 below.
Table 3. Core travel motive groups and their “Sommerfrische” preferences.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Sample</th>
<th>Group 1 Outdoor (n = 260)</th>
<th>Group 2 Experience (n = 248)</th>
<th>Group 3 Relaxation (n = 304)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>mean</td>
<td>mean</td>
<td>mean</td>
<td>mean</td>
</tr>
<tr>
<td>Age **</td>
<td>41.7</td>
<td>43.2</td>
<td>38.7</td>
<td>43.0</td>
</tr>
<tr>
<td>Gender</td>
<td>Female **</td>
<td>51.3%</td>
<td>50.8%</td>
<td>47.2%</td>
</tr>
<tr>
<td></td>
<td>Male **</td>
<td>48.7%</td>
<td>49.2%</td>
<td>52.8%</td>
</tr>
</tbody>
</table>

| Heat perception and adaptation         |              |                            |                              |                             |
| Heat—burdensome                       | 63.5%        | 61.5%                      | 64.9%                        | 64.5%                       |
| Heat—positive                         | 24.2%        | 25.8%                      | 27.4%                        | 21.1%                       |
| Adaptation—escaping the city          | 18.6%        | 16.9%                      | 17.7%                        | 14.5%                       |
| Adaptation—staying at home *          | 42.0%        | 36.5%                      | 42.3%                        | 44.1%                       |

| “Sommerfrische” trip duration          |              |                            |                              |                             |
| Day trips                              | 27.7%        | 28.0%                      | 27.8%                        | 25.9%                       |
| Short getaway (1 to 4 days)            | 53.0%        | 50.7%                      | 56.1%                        | 51.9%                       |
| Long holiday (5 or more days) *        | 19.3%        | 21.3%                      | 16.0%                        | 22.2%                       |

| “Sommerfrische” travel motives         |              |                            |                              |                             |
| Doing sports/being active **           | 25.5%        | 45.5%                      | 17.1%                        | 17.2%                       |
| Doing sth. good for own health **      | 26.5%        | 38.4%                      | 17.6%                        | 25.9%                       |
| Learning something new **              | 3.4%         | 4.7%                       | 5.3%                         | 1.3%                        |
| Being in nature **                     | 57.3%        | 63.0%                      | 50.8%                        | 60.7%                       |
| Undertaking cultural activities **     | 11.0%        | 12.8%                      | 18.2%                        | 5.0%                        |
| Experiencing sth. Exceptional **       | 14.4%        | 13.3%                      | 20.9%                        | 11.3%                       |
| Meeting new people **                  | 7.5%         | 6.6%                       | 12.8%                        | 4.6%                        |
| Experiencing culinary joys **          | 22.8%        | 14.7%                      | 27.8%                        | 26.4%                       |
| Relaxing **                            | 57.3%        | 53.1%                      | 51.9%                        | 66.5%                       |
| Doing sth. good for own soul **       | 52.3%        | 47.9%                      | 46.5%                        | 62.8%                       |

| Booking preferences                    |              |                            |                              |                             |
| Travel agency                          | 2.4%         | 2.4%                       | 3.2%                         | 2.1%                        |
| Directly at accommodation              | 44.2%        | 46.0%                      | 38.5%                        | 47.3%                       |
| Internet portal/website **             | 20.3%        | 23.2%                      | 26.7%                        | 14.2%                       |
| Tourism office                         | 3.4%         | 4.3%                       | 3.7%                         | 1.7%                        |
| Spontaneously at destination           | 28.6%        | 27.5%                      | 27.8%                        | 29.3%                       |

| Fellow travelers                       |              |                            |                              |                             |
| Alone                                  | 7.5%         | 7.1%                       | 6.4%                         | 8.8%                        |
| Friends **                             | 28.7%        | 27.5%                      | 38.0%                        | 23.0%                       |
| Partner **                             | 59.4%        | 61.1%                      | 50.3%                        | 65.3%                       |
| Children *                             | 20.6%        | 22.7%                      | 14.4%                        | 23.8%                       |
| Family/Acquaintance                   | 18.1%        | 19.4%                      | 22.5%                        | 15.1%                       |
| Unknown people/travel groups           | 2.1%         | 3.3%                       | 1.1%                         | 1.7%                        |

| “Sommerfrische” accommodation          |              |                            |                              |                             |
| 4–5 star hotels **                     | 25.1%        | 23.0%                      | 17.8%                        | 32.2%                       |
| 1–3 star hotels                        | 14.5%        | 17.8%                      | 14.1%                        | 12.4%                       |
| Holiday flat                           | 16.1%        | 16.4%                      | 21.5%                        | 12.4%                       |
| Guesthouse                             | 24.2%        | 28.9%                      | 25.9%                        | 19.2%                       |
| Holiday farms                          | 6.5%         | 9.9%                       | 4.4%                         | 5.1%                        |
| Alpine huts                            | 4.1%         | 4.6%                       | 4.4%                         | 3.4%                        |
| Youth hostel                           | 2.9%         | 3.9%                       | 2.2%                         | 2.8%                        |
| Camping                                | 4.9%         | 4.6%                       | 7.4%                         | 4.5%                        |
| Private accommodation *                | 18.1%        | 15.1%                      | 25.2%                        | 2.8%                        |
| Secondary residence                   | 3.5%         | 3.3%                       | 1.5%                         | 16.4%                       |

| Type of travel                         |              |                            |                              |                             |
| Mainly staying at destination **       | 49.8%        | 45.5%                      | 42.2%                        | 57.3%                       |
| Doing day trips around destination **  | 38.0%        | 43.6%                      | 43.9%                        | 30.5%                       |
| Roundtrip w. several destinations      | 6.5%         | 5.7%                       | 8.0%                         | 6.3%                        |

| Main transport mode choice for “Sommerfrische” trips |              |                            |                              |                             |
| Arrival—by car **                      | 55.9%        | 56.5%                      | 49.6%                        | 62.8%                       |
| Arrival—by public transport *          | 18.2%        | 18.5%                      | 22.6%                        | 14.1%                       |
| Arrival—Bike or walking *             | 1.4%         | 3.5%                       | 0.4%                         | 0.7%                        |
| On-site—by car                        | 25.1%        | 22.7%                      | 25.4%                        | 27.6%                       |
| On-site—by public transport **        | 14.5%        | 19.2%                      | 14.9%                        | 11.5%                       |
| On-site—cycling                       | 6.7%         | 8.5%                       | 7.3%                         | 5.3%                        |
| On-site—afoot                         | 20.1%        | 18.1%                      | 14.9%                        | 25.3%                       |

** indicates significant results with \( p < 0.05 \), * indicates results with \( p < 0.1 \).
4.5. Mobility Behaviors on Refreshing Trips to Near-Urban Areas

The presented survey differentiates between modes of transport chosen for the journey towards and those within the destination (on-site mobility) since major differences between them were expected. This was confirmed by the study’s results as illustrated in Figure 5. It became evident that car is particularly important for the journey towards the destination, being chosen as the primary mode of transport by 72% of respondents. In contrast, only 32% of respondents used their car as the main transport mode at the destination itself. Public transport, too, is rather used for journeys towards the destination: A total of 24% chose to travel by train to a refreshing destination, while 19% used public transport offers for on-site mobility. Regarding active modes of transport, the trend is reversed: While these modes are basically inexistent for arrival (pedestrian 1%, cycling 1%), they play a significantly greater role at the destination (pedestrian 26%, cycling 9%). These numbers suggest that hiking and cycling are popular activities in “Sommerfrische” destinations. The fact that 14% of respondents did not indicate any mode of on-site transport gives another hint toward the preferred activities in “Sommerfrische” destinations: Visitors often seek relaxation. The dominance of cars primarily shows for arrival journeys and is significantly lower at the destination itself.

With regard to respondents’ attitude towards car-free travel, the analysis shows that the majority of respondents indeed considers it as reasonable (78%) and worthy of support (76%), yet respondents’ personal willingness to undertake car-free travel is significantly lower (54%). This reluctance could derive from a lack of experience with car-free travels: Only 44% of respondents stated that they had already in the past travelled to refreshing destinations without the use of a car. The data illustrated in Figure 6 clearly reveal the discrepancy between respondents’ generally positive attitudes towards car-free travel and their limited personal commitment to put it into practice. This trend is aggravated when distinguishing between those people that have used the car to reach the “Sommerfrische” destination they have specified and those who arrived by public transport, as visualized below. It becomes visible that members of car-free households consistently rate car-free travels more positively. Surprisingly, not all those who reached the destination without a car stated that they have already done car-free travel.

![Figure 5. Main transport modes used for arrival and on-site mobility, n = 679.](image)

![Figure 6. Level of acceptance of car-free travel options towards “Sommerfrische” destinations for the entire sample (blue bar) and two sub-groups (dots for car and car-free travelers respectively), n = 877.](image)
Since the number of car-free households is continually rising in metropolitan areas such as London or Vienna [48–50] this segment of the population might play an increasingly relevant role as a target group in the tourist sector. The following characterization of car-free households is based on a mean value comparison between car-free and car-owning households and contains only those attributes for which the two groups showed statistically significant differences.

Overall, the data indicate that car-owning households tend to travel more often. This holds true for both day trips, as well as short and long-term holidays. While car-owning households on average stated that they had undertaken 4.5 “Sommerfrische” trips in the last two years, car-free households amounted did only 3.3. Furthermore, respondents of car-owning households were often accompanied by their partner and/or children, whereas respondents of car-free households travelled more often with friends or by themselves. This is also reflected in household size, which lay at 2.44 for car-owning households (with a significantly higher number of children in the household), compared to a size of 1.75 for car-free households.

This difference in household structures has a corresponding effect on leisure habits and the related mobility needs of each group. While members of car-free households often seek out parks/forests or other refreshing urban spaces on hot days, “escaping the city” was the adaptation strategy most often cited (21%) by respondents of car-owning households (by comparison: 12% of respondents of car-free households chose “escaping the city” as an adaptation strategy).

With respect to the respondents’ individual perception of refreshing, near-urban destinations, the survey reveals that members of car-free households found these destinations to be more challenging to reach. It is therefore hardly surprising that car-free households named enhanced accessibility among their most desired improvement measures. In the context of desired improvements of the overall supply quality, this study also evaluated the respondents’ interest in specific measures for climate-friendly transportation (see Figure 7). Regarding the appeal of the proposed mobility offers, car-free households again consistently evaluated these offers more positively; however, the order into which they were placed was the same among both groups. A reasonably priced journey without having to switch vehicles constituted the most appealing option among all suggested offers or improvements, for both groups alike.

**Figure 7.** Interest in different transport/mobility offers, illustrated as a deviation from the mean interest in the respective offer (mean for each variable—scale 0 to 1—is added in brackets), n = 877.

### 4.6. Relevance for Sustainable Regional Development—Results from the Future Workshops

The fact that tourism (especially summer tourism and “Sommerfrische”) can play an important role in regional development was clearly recognised by the future workshops in both regions. Most participants of the future workshops expect a reduction of emigration, especially of young people in case the tourism development is fostered. Enough jobs for locals could counteract the brain drain and company closures to their opinion. A vacancy of buildings and the impression of an “extinct region” could be avoided consequently. Furthermore, positive influence on infrastructure is expected in the
two regions, such as primarily the expansion of public transport, local suppliers and medical care. Positive effects to prevent depopulation and brain drain are expected by the locals.

Both regions aim to commit themselves to sustainable tourism development. They want to integrate a sustainable development in their daily life e.g., by permaculture, increased consumption of local products and environmental education. In their expectation, tourism that focuses above all on the beauty and originality of nature can also contribute to a positive natural development of a region, e.g., in the form of an expansion of nature park areas. The two areas expect positive effects on local people’s behavior, who might become aware of the natural treasures of their region. Some regions already offer their guests attractions where they can support local people: e.g., by landscape conservation measures such as assistance in mowing pastures or felling trees. This could create a win-win situation for regional development, support the needs of the regional population and stimulate new tourism activities. Both regions hope that regional economy can benefit from more guests if it creates specially tailored offers, e.g., regionally produced souvenirs for guests, marketing of “self-sufficiency products”. In their mind, it is important that locals identify with the tourism focus of the region. In the two workshop areas focus can also be on “reduction” in the sense of “back to the roots” (simple life, WiFi/Internet-free, no electricity, no running water, regionally produced food etc.).

Both regions are aware that they can act as a retreat for heat-infested city dwellers. Temperatures—especially at night—are well below the heat records of cities like Vienna. Cool summer nights appeal guests who are looking for a restful night’s sleep. The touristic advertising offers of these regions still take up too little of these aspects and should be improved. The regions are also currently even more concerned about “bad weather alternatives” than about the effects of climate change in relation to heat in neighboring cities. In the sense of the “Luftkurorte” (climatic spas) that were prominent in the last century, a new counterpart to “pleasant summer climate resorts” or “Sommerfrische-villages” should possibly be created, which could not only promote good air but also cool air. To avoid maladaptation, climate-friendly travel should be set as standard in these regions.

Due to the need to create sustainable travel options and because of the relative remoteness of the two case study regions, the issue of regional and local public transport was perceived as utterly important. One region might gain attraction through the development of a high-speed train connection at the entrance of the valley. Again, the connection in the region remains a challenge and gains increasing relevance, in particular, to benefit accordingly from the new opportunities to attract car-free households. Both case study regions are directly adjacent to each other. A cross-border (federal states border) transport concept would possibly benefit both regions too.

5. Discussion

5.1. Adaptation to Heatwaves and Expected Changes in Tourism Demand

Overall, the investigations conducted within study reveal that half of the respondents experience high temperatures inside their city apartments as “bearable”, while a little more than a third of the respondents perceives them as “burdensome”. In relation to the record-breaking heatwaves of the summer of 2015, around two-thirds remembered the heat to be “burdensome” and/or as “particularly challenging at night”.

These results are in line with several recent studies and published strategies (see [9] for a comprehensive summary), which describe heat stress as a fundamental issue that demands substantial efforts to adapt on the part of the population. The results of this study also re-enforces the conclusions drawn in several recent tourism studies [11,15], namely that heatwaves are already experienced as burdensome by large parts of the urban population. The gained insights, moreover, confirm studies on international cities, which describe heat as an increasingly common phenomenon [71] that can represent a problem for both residents as well as tourists [72,73].

Besides the heat, the weather conditions play an important role as a trigger for tourism demand. The results of a study by Falk ([74], p. 24) show that average sunshine duration and temperatures in
the peak summer season “had a significant and positive impact on domestic overnight stays in the same season, whereas average precipitation had a significantly negative effect”. These impacts are target-group specific of course as e.g., Arabic guests appreciate moderate weather conditions.

Climate and weather patterns are also an essential resource for outdoor tourism activities. Therefore, changes in climate and weather patterns might affect the future state of tourism. A study by Grillakis et al. [75] analyzed the effects of a 2 °C global warming on summertime climate comfort in the sense of exercising activities that involve light body activity.

“The results indicate improvement in the climate comfort for most European areas for the May to October period. For the June to August period, central and northern European areas are projected to improve, while marginal improvement is found for Mediterranean countries. Furthermore, in specific cases of adjacent Mediterranean areas such as the southern Iberian Peninsula, the June to August climate favorability is projected to reduce as a result of the increase to daytime temperature” ([75], p. 1205)."}

With respect to leisure activities during times of severe heat, most respondents in this study stated that they looked for ways to cool down. Hereby, two opposing adaptation strategies emerged from the data, both employed with the same degree of frequency (seeking refreshment outdoors or staying indoor). Similar to Babcicky and Seebauer’s study [42] of the populations of the cities of Graz and Leibnitz, this study found that people from 50 years onwards were particularly likely to retreat into their own apartments during heatwaves. By contrast, adaptation strategies of younger age groups also included trips to the countryside to escape the heat. Around 20% of Viennese respondents chose to leave the city as an adaptation strategy in times of extreme heat. In Babcicky and Seebauer’s study, only 8% of respondents named “trips to the countryside” as an adaptation measure they had applied in the past. This study demonstrates that the willingness to leave the city is so far greater among the Viennese population than in smaller cities such as Graz and small towns such as Leibnitz. The larger the metropolitan areas are the stronger the impact of heatwaves might influence the behavior of the citizens also in the future.

In this context, Babcicky and Seebauer [42] also underline the danger of maladaptation, since escaping the city to the countryside can contribute to climate change by causing additional CO₂ emissions, especially if no “climate-friendly” transport options are available or used.

5.2. Travel Behavior and Acceptance of Climate-Friendly Transport Modes

The insights gained in this study emphasize the crucial importance of reducing the complexity of car-free journeys to the destination. For the respondents, the most critical concerns relate to the organization of luggage transport (including sports equipment, suitcases, etc.), a minimal number of required changes between vehicles (ideally no required changes), and lower costs. These points are in line with the results presented in various other studies, that also highlight the perceived or actual difficulty of planning and performing travels by rail, especially when carrying luggage (see for instance [76–78]).

The travel behavior of the Viennese respondents living in car-free households differs significantly from those living in car-owning households in several key areas. Individuals who do not own a car generally travel less frequently and respond to heatwaves less often by leaving the city than their car-owning counterparts. This situation may be explained by the fact that spontaneous trips, in particular, are more feasible by car, as such trips were undertaken significantly less often by car-free households. Moreover, they tend to rate the accessibility of “Sommerfrische” destinations more poorly than those owning a car. Their infrequent visits to “refreshing” destinations can, therefore, be linked to the way these destinations are—or appear to be—difficult to access.

The results of the survey, here, clearly demonstrate that there is still a lot to be done in the domain of public transport travel, both in terms of creating more options for travelers to plan and execute uncomplicated spontaneous trips, as well as the way existing offers are communicated to the greater
public. A stronger focus on demand-oriented tourism mobility options seems to be a fruitful way forward, as previously suggested by other studies [78]. Specifically, the results of this study suggest that the connection of flexibility with affordability should be the core challenge of such offers. Gronau and Kagermeier [78] highlight, however, that negative associations with public transport (as being rather “un-fun”) often weigh stronger than a good public transport connection, especially when performing leisure trips.

Since most places already allow access via public transport, on-site mobility involves a greater element of uncertainty. Destinations will have to address this issue head-on and work towards alleviating doubts, preferably already in the tourists’ planning phase. To this end, they may take advantage of existing synergies between touristic and ordinary, regional traffic to improve mobility for different user groups without exceeding limited financial resources.

This suggestion also responds to the results of this study. While journeys to the destination have shown to be strongly dominated by car-use, this study revealed that on-site mobility is much more diverse. The main modes of transport used by respondents to reach their destination were relied upon much less often on-site and were frequently replaced by other modes (e.g., cycling and walking). This constellation—almost half of the survey’s total number of respondents currently take the car to their destination but do not use it on-site—implies that there is already a fairly large number of people who could potentially conduct their “Sommerfrische-travel” without a car. A study in Berlin came to a similar conclusion, demonstrating that 36% of respondents who regularly use a car in their daily life could picture themselves travelling without a car to a holiday resort [54].

Despite the burden of negative associations, this study, however, also highlights the suitability of leisure travels for using public transport and the willingness of travelers to do so. The study by Schlemmer et al. [79] for example underlines the increased willingness among tourists to try out other means of transport during their holidays. Their mobility survey conducted in western Austria showed that decision-making factors and mobility needs during holidays significantly differed from those in everyday life. During holidays, respondents displayed greater willingness to switch to public transport than in their daily lives, which was in turn related to activity levels and people’s willingness to partake in physical activities on-site. This propensity can provide a valuable opportunity for destinations to develop attractive mobility offers which promise both comfort and interesting experiences. Thereby, destinations may simultaneously support their clients in experimenting with and consolidating new travel habits and sharpen their own touristic profile. In doing so, destinations should try to present alternative travel options as “fun” rather than just functional since this seems to be a relevant criterion for leisure trips [78].

These findings suggest that the provision of climate-friendly modes of transport needs to be a priority. Tourism is always closely linked to mobility. Therefore, sustainable tourism should be linked to the concept of sustainable mobility. Destinations should consider mobility as an essential strategic component of sustainable tourism planning which gives them the chance to attract emerging and increasing segments of sustainable demand [80].

5.3. Motive Group Specific Travel Demand

To help ensure that the development of mobility offers can be sustainable, detailed results in consideration of different travel motives can offer a more precise indication of urban dwellers’ travelling needs. Those predominantly interested in “recreation close to nature” constituted the largest segment of respondents. This group displayed a two-pole modal choice; both the car and public transport were used for journeys to the destination. Meanwhile, the segment looking for “manifold experiences” more often travelled by public transport and on foot. Lastly, those travelling with the motive to be “sports and outdoor” exhibited the widest range of used transport modes.

Regarding their potential for further changes in mobility behavior, two groups particularly stood out: The “physically active” segment and the segment “looking for diverse experiences”. Both travel above average on foot or by bicycle.
The “sports and outdoor” group could be tempted to switch to car-free travel through special offers, such as hiking buses and bicycle transport-offers (see the example of South Tyrol mobile). These suggestions are in line with recommendations published by the Danube Competence Center [81], which saw the biggest potential for climate-friendly mobility patterns in the segment “nature and ecotourism”. Additionally, Solèr et al. [82] found out that the guest segments “outdoor friends” and “social and sports active” are particularly open for climate-friendly mobility solutions. They assume a further potential for the type of “tradition-conscious” when combined with hiking or walking. They state that climate-friendly mobility is not only appreciated by regular customers but also has the potential to attract new guests.

Offers that enable easy access to different attractions are particularly interesting for the group looking for “manifold experiences”. Such offers could be comprised of shuttle buses to tourist sites, as well as on-site carsharing systems, (e-) bike or Segway rentals. The group pursuing “recreation close to nature” may carry a large potential to make the switch to public transport based on their on-site mobility habits (journey to the hotel/spa and few/no further transport routes at the destination). Yet, this segment also displayed a particularly strong affinity for car-use as their preferred mode of transport for the outward journey. In order to gain a deeper understanding of possible tourism mobility patterns in relation to each of these differently motivated segments, further research will be necessary, as well as a detailed comparison with other transport-related segmentations (see for example [83]).

To address psychological barriers which may impede the switch to climate-friendly modes of transport, it would be a big advantage to customize offers and communication strategies to each target group’s needs. Such measures may not only boost interest in the introduced initiatives but may indeed embolden some to “take the plunge”. Therefore, further research could be useful that identifies the needs of people travelling without a car to develop mobility and tourism offers that diminish the perceived complexity of car-free travels.

5.4. Planning Implications

Overall, it has been determined that personal attitudes towards car-free travel constitute a big hurdle for the acceptance of initiatives encouraging the use of public transport. Particularly among respondents who use the car for their outward journey, this study observed a significant gap between general attitudes and actual behavior. While these respondents generally rated the idea of going car-free worse than those who were already travelling without a car, their approval rate sunk even further when it came to an assessment of their own habits and the likelihood of a behavioral change. Just under a half of respondents travelling by car stated that car-free journeys might be an option for them in the future, whereas only a third stated that they already had experience with car-free travel. These numbers confirm the results presented in several other recent studies [84,85]. The recommendations published by the project “Last Mile Link” emphasize the importance of gaining different experiences in dealing with alternative mobility options in order to dispel fears, especially as the urge to hold on to old habits such as car-use will instinctively appear as the most comfortable option [86]. Possible initiatives could include special events or introductory offers.

To counterbalance this lack of acceptance or willingness to “switch”, it cannot be enough to expand and improve the range of available offers. Mobility offers increase their appeal when they confront the client with a concrete added value [78]. Aside from cost advantages, this is mainly achieved by conveying a “novelty”, “experience” or “fun” factor (e.g., electric cars, e-bikes, e-scooters, bicycle taxis, horse-drawn carriages, boats, rafts, nostalgia busses, rickshaws). Therefore, innovative mobility solutions should become an integral part of the overall holiday experience.

6. Conclusions

This first representative study on the heat stress of Viennese citizens, a two million capital city, and the adaptation behavior of those stressed by the heat confirms the likely increase in demand to escape to near-metropolitan refreshing areas in times of heatwaves for both leisure and vacation
purposes. This trend could lead to (re-)vitalization potential for mountainous tourism areas suffering from losses in winter tourism as well as remote destinations rich of forests and/or water bodies, which are often characterized by depopulation and degradation of infrastructure.

A closer look at the respondents’ tourism mobility behavior when travelling to rural Austrian areas, reveals a high risk for an unsustainable development and “maladaptation”. Although the high and increasing share of car-free households in Vienna would suggest a strong demand for public transport, the study reveals that the likelihood to travel by car towards such destinations is even surprisingly high among this group. Results of this study suggest focusing firstly on the on-site mobility since most “Sommerfrische” travelers did not rely on a car during their stay at the destination. A closer look at the specific traveler segments of car-free households as well as their travel motives and mobility-related needs and preferences can help to develop more attractive mobility offers. As such, it might be interesting to analyze the different spatial characteristics and the supply quality of those destinations that are already visited by car-free travelers.

To maintain or increase the sustainable development of a region, the attractiveness to the tourists’ needs should, however, not be the sole focus. Where possible, the long-term and multi-seasonal benefit should also ameliorate living conditions for the local population as to also prevent depopulation amongst the youth.


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