

Lifestyles and Cycling Behavior—Data from a Cross-Sectional Study

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Abstract: Cycling experiences a remarkable renaissance as an everyday mode of transport and in an increasing number of cities, cycling substantially contributes to the overall traffic. However, cyclists are not a homogeneous group of road users, but very diverse in terms of behavior, motivators, and deterrents. In order to gain better insights into driving forces and behavior patterns of cyclists, we conducted an opt-in online survey, in which socio-demographic, lifestyle, and mobility behavior data were collected. In total, 1234 responses with a completion rate of 87% (1073 complete survey) were collected between 3 May and 3 June 2019. With reference to complete responses, the gender ratio is balanced (53% female) and the mean age is 42 ($\sigma = 12.75$). A relative majority of participants cycles frequently. The fully anonymized dataset contains 107 data points per response, including survey metadata.

Dataset: The dataset is available in the supplementary file.

Dataset License: CC-BY

Keywords: cross-sectional study; online survey; cycling; lifestyle; mobility

1. Summary

Cycling is promoted as a sustainable mobility option worldwide because of its numerous positive environmental, economic, and societal effects. The modal share of cycling has been increasing over the past few years in many regions and cities [1]. This cycling boom is also reflected in a growing body of scientific literature on various aspects of cycling [2]. Although cycling is high on the agenda, policy makers, planners, and researchers still regard cyclists as a homogenous group of road participants in many cases. However, enough evidence is available, which shows the heterogeneity of cyclists in terms of response to environmental variables and mobility patterns [3,4]. In order to further increase the modal share of cycling and to attract yet underrepresented groups, it is of great importance to investigate and consider the diversity among existing and potential cyclists [5]. Moreover, Banister [6] proposes a paradigmatic shift towards sustainable mobility, where the focus is on individuals instead of vehicles and the physical dimension is jointly considered with the social dimension.

The interdisciplinary research project “Bicycle Observatory” (<https://bicycle-observatory.zgis.at>), which runs from April 2018 to September 2020, aims to fuse technical sensor data (such as counting data or trajectories sensed with location-aware mobile devices) and data from social sciences (such as data from focus groups, expert interviews, or questionnaires) into a multi-dimensional, spatially differentiated picture of cycling mobility. The rationales behind these research efforts are twofold. First, systemic insights into cycling mobility should complement existing, domain-specific knowledge.

Second, derived from an integrated data pool, varieties of cyclists with their respective behavior in space and time as well as their reasoning are subject to an in-depth investigation.

In the context of the latter, a cross-sectional study on cycling mobility was conducted as an opt-in online survey in 2019. We recruited participants for the survey through social media channels, email newsletters and at a two-day bicycle festival. Residents and commuters with a workplace in the test area of the project, the Salzburg region in Austria (see Figure 1), were primarily addressed. In total, approximately 25,000 persons in the Salzburg region received an invitation to the online survey via e-mail. Participants from other regions were not directly invited, but found the link to the survey on the web.

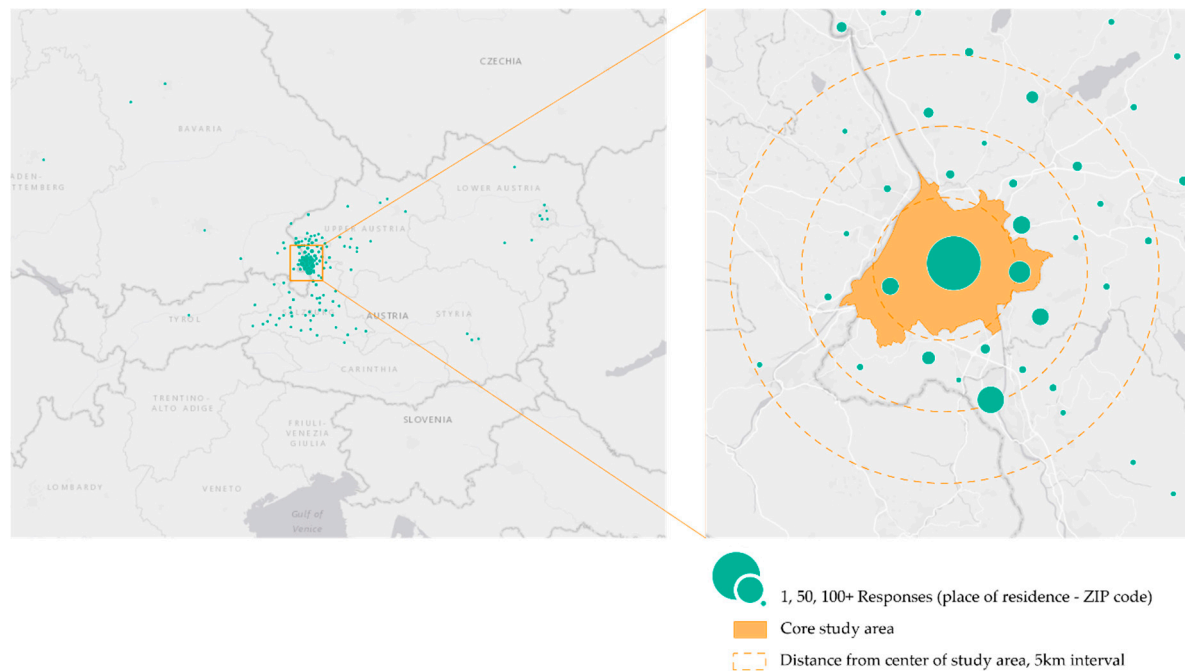


Figure 1. Place of residence, according to participants' response in the online survey. The majority of respondents is located in and around the project's study area in Salzburg, Austria (75% within 15 km from the center of the study area).

1.1. Data Acquisition

Previous studies mainly focus on socio-demographic variables and observable behavior. Our goal was to link these variables with information on lifestyles and personal characteristics. Consequently, the questionnaire revolved around the core research questions "Who is cycling?" and "Why are they cycling?" In order to answer these questions, we collected data in three different categories: personal, behavioral, and motivational. Table 1 provides an overview of the sections of the questionnaire with the respective topic, question format, and number of questions.

Sections 1 and 7 of the survey were designed as a conventional mobility survey with closed-ended questions. For the rest of the questionnaire, we used an extensive set of questions that were intended to stimulate ad hoc, emotional responses ("gut feeling"). For this, we provided two poles for each answer, which frame a spectrum of attitude, values, or behavior. The complete set of questions is documented in Appendix A.

In order to ensure full anonymity, we did not record the IP address or placed cookies on participants' devices. Consequently, recorded metadata are limited to response characteristics (response time, point of break-off, etc.) and do not include any personal information. Since we acquired only anonymized data, which do not allow any connection to individual persons, the study did not need approval of the responsible ethic board.

Table 1. Structure of the online survey.

Section	Topic	Question Format	Number of Questions
1. Intro	Mobility behavior: mode choice, cycling frequency, bicycle availability	List (multiple and single choice)	5
2. Personal information	Lifestyles and habits (general)	Bipolar scalar response (slider)	15
3. Behavior	Cycling behavior: preferences, sensitivity to environmental factors, cycling style	Bipolar scalar response (slider)	9
4. Motivators	Motivators and deterrents for cycling	Bipolar scalar response (slider), ranking	9
5. Experience	Key moments in cycling	Free text	1
6. Perspectives	Future role of cycling, potential promoters	Bipolar scalar response (slider), free text	5
7. Socio-demographics	Media consumption, age, gender, education, ZIP code	Bipolar scalar response (slider), list (single choice), numeric response	5

Incentives are major motivators for participating in and completing online surveys [7,8]. At the final page of the survey, participants were invited to download a voucher for a local sports store. Additionally, all participants who were willing to enter their e-mail address took part in a final raffle with two main prizes. For this, we redirected participants to an input mask, which had no link to the database of the survey. Thus, the e-mail address could not be linked to the responses.

We used the open-source survey tool, LimeSurvey [9], hosted on our own IT infrastructure, for implementing the questionnaire. With this technical environment, we could ensure full control over the survey tool and the acquired data.

1.2. Data Usage

We acquired the dataset presented in this paper for a specific research question in the context of the project “Bicycle Observatory”. The data were primarily used for the identification and description of different types of cyclists. For this, we mined the dataset for patterns (clusters) and analyzed personal characteristics (socio-demographics, lifestyles, values, etc.) with self-reported mobility behavior. In the next step, these results were related to the rich data pool, which we established in our use case study. Results of these analyses are not part of this paper and the usage of the dataset is not limited to these research questions. It can be used for a wide variety of research in the context of mobility, specifically cycling, and social sciences such as environmental psychology, behavioral economics, or marketing. Besides, the cross-sectional survey can be reproduced and compared with the results presented in this dataset.

The rest of the paper is structured as follows: the dataset is described in Section 2 in detail. Data processing and quality control are presented in Section 3. A translated version of the online survey can be found in Appendix A.

2. Data Description

In total, 1234 persons started the online survey in the study period between 3 May and 3 June 2019. The participation was obviously triggered by invitations. On the first two days, visitors at a local cycling festival (“Radfrühling Salzburg”) were invited to participate using a tablet on site. The other two peaks can be traced back to institutional e-mail campaigns (see Figure 2).

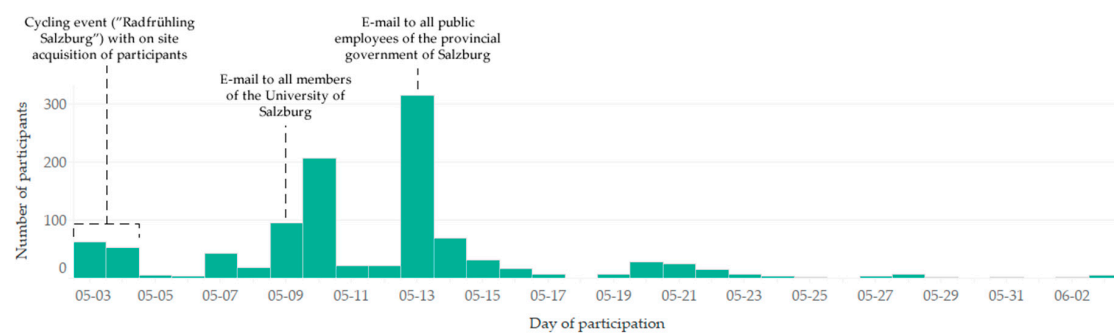


Figure 2. Timeline of responses: targeted invitations resulted in immediate increase of participants.

The data were stored in a single database table and distributed as a TSV file (tab separated text file see the Supplementary Materials), which can be opened with any conventional text editor. For any further analysis, the TSV file can be imported either into a database or directly into the respective software environment.

The survey was presented on seven pages, which correspond to the sections listed in Table 1. Some questions were compulsory, in order to prevent participants from quickly clicking through the questionnaire without responding to the questions. The compulsory questions ensure a minimum of relevant information, even when the rest remained unanswered.

Question number 3 (see Table 2) was used as a key question. Participants who stated “never”, skipped sections 3 and 4.

2.1. Fields and Values

In this subsection, all fields (columns) of the presented dataset are listed and the values are explained. We do not provide any interpretation at this point, but leave this to the particular context in which the dataset is going to be used. The order of the fields in the dataset matches the order of the questions in the survey. Unanswered questions result in blank fields. Break-off responses do not have a submission time stamp and can thus be easily filtered out.

Questions with multiple response options result in binary-coded fields for each option. Where we provided the option for further comments, an additional field (with the suffix “detail”) is generated in the table. In sections 2–7, we largely made use of bipolar scales for the self-assessment of respondents, where they could locate themselves between two poles of a spectrum. Technically, these questions were implemented with a slider that represented numeric values between 0 and 100. Starting from the neutral position (50), the slider could be moved to the left (left pole of the spectrum, first mentioned option) or to the right side (right pole of the spectrum, second mentioned option). Thus, values <50 represent a tendency towards the left pole and values >50 represent a tendency towards the right pole of the provided spectrum. Sliders were also used for indicating the importance of a statement or the frequency of an activity, ranging from 0 for very unimportant/infrequently to 100 for very important/frequently.

Table 2. Fields and values of the dataset. Compulsory questions are indicated with *.

Section	Question Number	Field Name	Values	Explanation & Comments
Metadata		ID	Unique ID for each session	
		time submitted	Time stamp for submission	Break-offs do not have a submission time stamp
		last page	Numeric value [1 ... 7]	Last visited page: the number indicates at which point respondents broke off the survey
		time started	Time stamp	Time stamp of starting the survey
		time last activity	Time stamp	Time stamp of last activity
1. Intro	1	mode used today—car	Yes/No	Multiple choice question (“No” for unclicked)
	1	mode used today—bicycle	Yes/No	Multiple choice question (“No” for unclicked)
	1	mode used today—bus	Yes/No	Multiple choice question (“No” for unclicked)
	1	mode used today—railway	Yes/No	Multiple choice question (“No” for unclicked)
	1	mode used today—walk	Yes/No	Multiple choice question (“No” for unclicked)
	1	mode used today—other	Free text	Participants could specify further modes (not translated)
	2	common mode—car	Yes/No	Multiple choice question (“No” for unclicked)
	2	common mode—bicycle	Yes/No	Multiple choice question (“No” for unclicked)
	2	common mode—bus	Yes/No	Multiple choice question (“No” for unclicked)
	2	common mode—railway	Yes/No	Multiple choice question (“No” for unclicked)
	2	common mode—walk	Yes/No	Multiple choice question (“No” for unclicked)
	2	common mode—other	Yes/No	Multiple choice question (“No” for unclicked)
	3 *	cycling frequency	several times per day 4–7 times per week 1–3 times per week 1–3 times per month less frequent never	Single choice question (mandatory)

Table 2. Cont.

Section	Question Number	Field Name	Values	Explanation & Comments
	4	everyone in household has an own bicycle	Yes/No	Single choice question (blank for unanswered)
	5	everyday bicycle type—eBike	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—eBike—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	5	everyday bicycle type—city or trekking	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—city or trekking—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	5	everyday bicycle type—mtb	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—mtb—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	5	everyday bicycle type—road bike	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—road bike—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	5	everyday bicycle type—special	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—special—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	5	everyday bicycle type—other	Yes/No	Multiple choice question (“No” for unclicked)
	5	everyday bicycle type—other—detail	Free text	Participants were invited to provide more detailed information on their bicycle model
	6	comfortable—active	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
2. Personal Information	7	obey social norms—act independently	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	8	independent—integrated	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	9	outdoor activities—urban attractions	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	10	destination—journey	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	11	chaos and freedom—order and safety	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral

Table 2. Cont.

Section	Question Number	Field Name	Values	Explanation & Comments
	12	spontaneous—deliberative	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	13	stability—change	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	14	rather go for a run—rather read a book	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	15	activities with friend or family—individual activities	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	16	many loose friendships—few close friendships	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	17	routine—improvisation		
	18	prefer it simple and clear—complex and detailed	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral. This question was illustrated with two images.
	19	traditions—modern cities	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral. This question was illustrated with two images.
	20	luxury—modesty	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral. This question was illustrated with two images.
	21 *	nice weather—any weather	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
3. Behavior	22 *	in any traffic situation—only protected bicycle ways	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	23 *	fastest, shortest route—more comfortable longer route	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	24 *	signposted routes—cross-country	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	25	careful—self confident	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	26	fast—gently	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	27	wild—disciplined	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	28	classic—punk	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	29	need thrill—prefer calm and orderly	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral

Table 2. Cont.

Section	Question Number	Field Name	Values	Explanation & Comments
4. Motivators	30	means of transport—sports device	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	31 *	use in everyday trips—special occasions	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	32	pragmatic—lifestyle	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	33	many do it—feel like it	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	34	exhausting—sporty challenge	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	35 *	time savings	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	flexibility	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	comfort	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	low cost	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	health benefits	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	eco-friendliness	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	strengthening social contacts	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	image of cycling	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	35 *	pleasure of cycling	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = unimportant, 100 = very important
	36	cycling together—alone	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	37	cycling is part of planning—planning independently	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral

Table 2. Cont.

Section	Question Number	Field Name	Values	Explanation & Comments
	38	common purpose 1 (most frequent)	<div> <div>work, university, school, etc.</div> <div>visit friends/family</div> <div>holiday /leisure trips</div> <div>shopping etc.</div> <div>city stroll/cultural events</div> <div>pick-up and delivery</div> </div>	Ranking of provided six different trip purposes
	38	common purpose 2		
	38	common purpose 3		
	38	common purpose 4		
	38	common purpose 5		
	38	common purpose 6		
5. Experience	39	key situation/turning point	Yes/No	
	39	key situation/turning point: detail	Free text	Original free text in German language
	39	key situation/turning point: classification pos/neg	Pos/neg	Semantic classification of key situation in positive or negative experience (derived field)
	39	key situation/turning point: classification event	Tags	Tags for free text information (derived field)
6. Perspectives	40 *	bicycle—walking	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	40 *	car—public transport	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	40 *	public transport—bicycle	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	40 *	car—walking	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	41	high priority—irrelevant	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	42	personally increase cycling—not necessary	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral
	43	required changes to increase my cycling frequency	Free text	Original free text in German language
	44	promotion activities are important—no interest in public role models	Numeric value [0 ... 100]	Blank = unmoved slider, 50 = neutral

Table 2. Cont.

Section	Question Number	Field Name	Values	Explanation & Comments
7. Socio-demographics	45	daily/weekly newspaper	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	45	news magazine	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	45	television	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	45	radio	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	45	online media	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	45	social media	Numeric value [0 ... 100]	Blank = unmoved slider, 0 = infrequently, 100 = very frequently
	46 *	gender	female/male/diverse	
	47 *	year of birth	Numeric value	Year of birth
	48 *	highest degree	Compulsory school Apprenticeship Post-secondary school diploma University level degree Other	The options in German language correspond to Austrian education levels (Pflichtschule, Lehre, Matura, Höherer Ausbildungsabschluss)
Metadata	49 *	ZIP code	Numeric value	ZIP code of place of residence
		duration: total survey	Numeric values (seconds)	Duration of total survey in seconds
		duration: intro	Numeric values (seconds)	Duration of section 1 (page 1) in seconds
		duration: general type	Numeric values (seconds)	Duration of section 2 (page 2) in seconds
		duration: cycling style	Numeric values (seconds)	Duration of section 3 (page 3) in seconds
		duration: reasons	Numeric values (seconds)	Duration of section 4 (page 4) in seconds
		duration: key situation	Numeric values (seconds)	Duration of section 5 (page 5) in seconds
		duration: wishes	Numeric values (seconds)	Duration of section 6 (page 6) in seconds
		duration: person	Numeric values (seconds)	Duration of section 7 (page 7) in seconds

2.2. Descriptive Data Statistics

The presented dataset contains 1234 responses, acquired between 3 May and 3 June, 2019. 1073 participants finished the survey, which results in a completion rate of roughly 87%. Forty-seven participants (3.8%) clicked on the survey link, but did not start with the first page of the survey. Most participants broke off the survey at the “Intro” section (52 or 4.2%). The number of break-offs decreases with the progress in the survey, with only 6 break-offs (0.5%) at section 6. Thus, it can be concluded that the major reason for breaking off the survey was a lack of personal interest and/or motivation, but not necessarily the design and content of the questionnaire. All of the following descriptive statistics are calculated from completed surveys only.

The duration, participants needed to complete the questionnaire, varied substantially ($\bar{x} = 711.8$ seconds with $\sigma = 795.5$ s). However, half of the questionnaire was finished in less than 10 minutes ($\bar{x} = 574.6$ s) and very long editing times can be due to breaks or deferred submissions. Figure 3 shows the distribution of response times for the entire questionnaire.

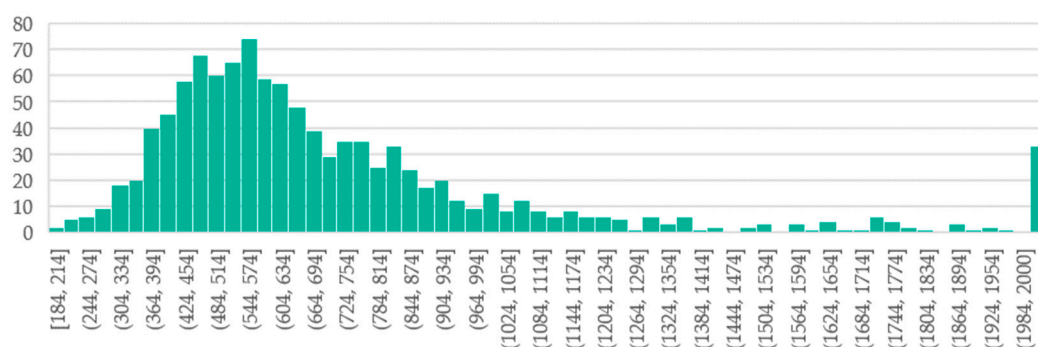


Figure 3. Histogram of binned duration times in seconds for all completed questionnaires (N = 1073). The last bin contains completed questionnaires with a duration >2000 s.

In total, 569 female, 501 male, and 3 non-binary participants completed the survey. The mean age of the participants was 42 years ($\sigma = 12.75$) with a range between 7 and 80 years. The age difference between female ($\bar{x} = 40.75$, $\sigma = 12.59$) and male ($\bar{x} = 43.43$, $\sigma = 12.79$) participants was highly significant ($t = -3.45$, $p < 0.001$). Participants with non-binary gender had an average age of 32 years ($\sigma = 6.16$).

In terms of educational background, the dataset inclined towards highly educated persons; 60.34% of all participants had a university degree, whereas the percentage is 25.18% in the city of Salzburg and 17.0% in the surrounding district (Salzburg-Umgebung) according to official statistics [10]. Participants with compulsory school as highest degree were underrepresented in our sample (0.65% compared to 21.66% and 11.86%, respectively, in the two reference-districts [10]).

The majority of respondents were frequent cyclists and among them, 38.40% were using the bicycle more than once a day. In the survey, 2.80% of all participants were non-cyclists (see Figure 4). Compared to national and regional modal split statistics [1,11], cyclists were overrepresented in the sample. The primary trip purpose of all the respondents was commuting to work, university, or school. Thus, we can conclude that the dataset represented the perspectives of mainly utilitarian cyclists.

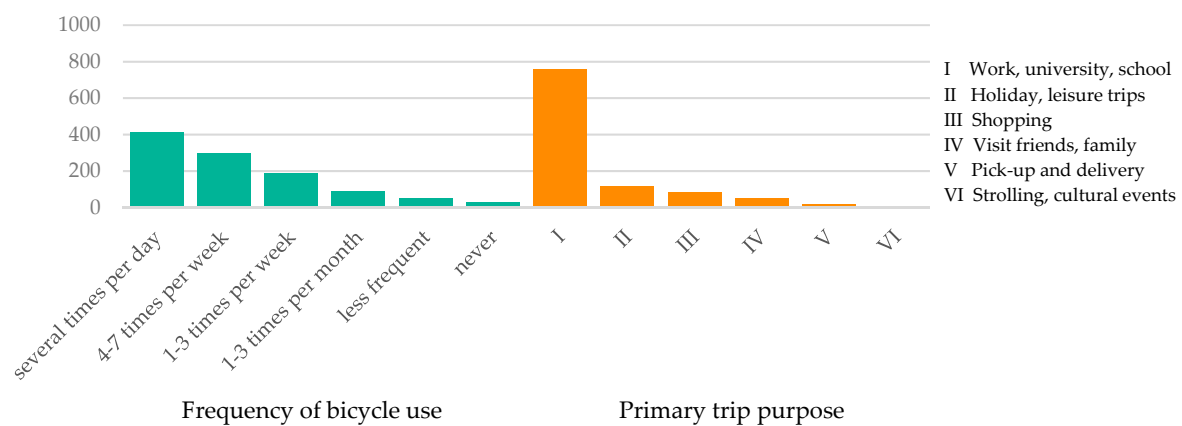


Figure 4. The relative majority of respondents use their bicycle several times a day (left). The primary purpose for cycling is commuting to work, university, or school (right).

Cyclists were asked to rate the importance of motivators for cycling on a continuous, bipolar scale. Averaging all respondents, the image and the social aspect of cycling are regarded as rather unimportant (Figure 5). Flexibility is the major motivator for cycling among all participants of this study. Eco-friendliness and health benefits are of similar importance.

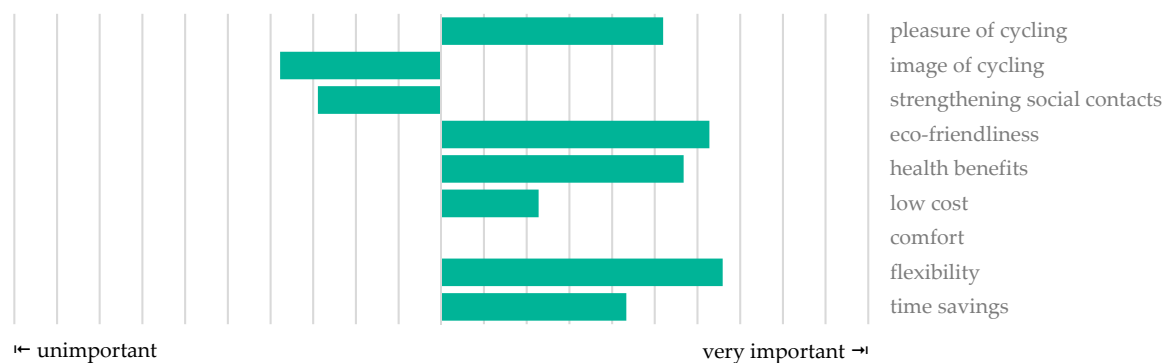


Figure 5. Averaged importance of motivators for cycling.

3. Methods

The study design, the acquisition of survey participants, and the technical set up of the survey are described in Sections 1 and 2. In this section, we briefly elaborate on the data processing. Figure 6 gives an overview of the four major steps.

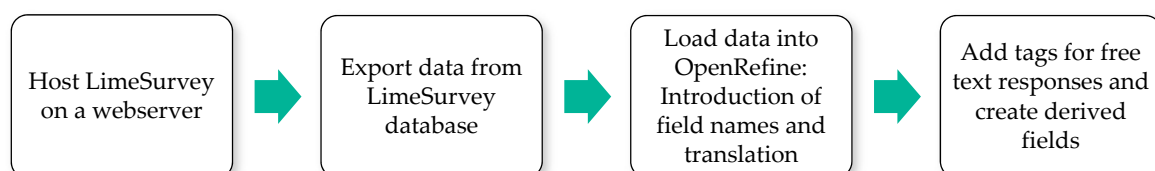


Figure 6. Workflow of data processing.

We stored all responses in a MySQL database, which was hosted together with LimeSurvey on an Apache webserver. After the expiry date of the online survey, we exported all data in a flat table file. Metadata were automatically attached to the responses. The survey was conducted in German language. Thus, we added field names in English and translated the response options. Free text responses were provided in unchanged form and language. However, the free text responses to

question 39 were tagged with English key words and semantically analyzed. We used the semantic analysis for classifying the reported key situations in negative or positive experiences. The tags and the classification were added to the dataset and flagged as derived fields in Table 2.

Due to the anonymity of all respondents, we cannot guarantee that all responses are unique. However, we inspected the dataset for conspicuous patterns such as identical responses or largely unanswered questionnaires, but could not find any. An additional indicator for the soundness of the data is the number of collected e-mail addresses from participants, who registered for the raffle: we collected 935 different e-mail addresses from 1073 completed questionnaires (note that the two databases cannot be linked). Given the fact that not all participants wanted to register for the raffle, we can assume a high percentage of unique participants in the survey.

Supplementary Materials: The dataset is attached as a TSV file at <http://www.mdpi.com/2306-5729/4/4/140/s1>.

Author Contributions: M.L., project leader of “Bicycle Observatory”, was involved in the conceptualization of the survey, and wrote the manuscript. C.W. did the entire data processing. L.H. was involved in the conceptualization of the survey and set up the online survey. P.K. and G.I. were responsible for the conceptualization of the survey.

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Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Appendix A

The online survey used a reduced design, which was compatible with different devices. We put a special focus on user-friendly handling of sliders on mobile devices. The look and feel of the survey are shown in Figure A1.

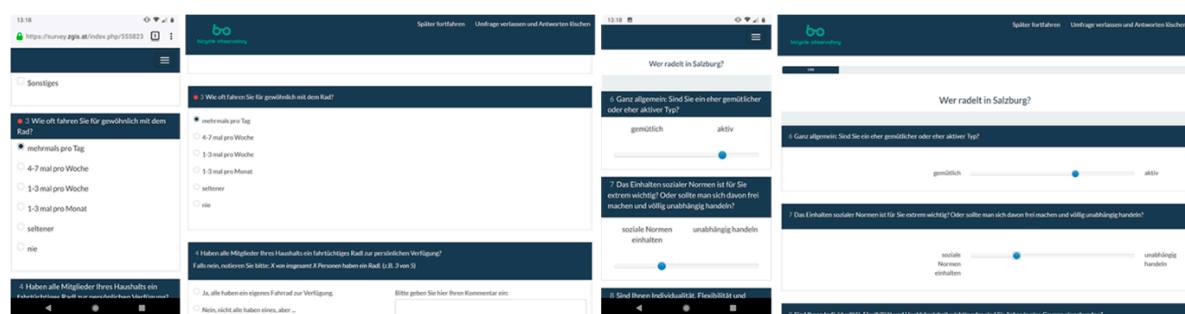





Figure A1. Single-choice question (left) and a bipolar slider (right) on a mobile device and desktop respectively.

In the following the questions and response options are translated from the original questionnaire in German language.

1.	With which means of transport have you been travelling today?	
	<input type="checkbox"/> car <input type="checkbox"/> bicycle <input type="checkbox"/> bus <input type="checkbox"/> railway <input type="checkbox"/> walk <input type="checkbox"/> other	
2.	Which means of transport do you usually use for your everyday trips?	
	<input type="checkbox"/> car <input type="checkbox"/> bicycle <input type="checkbox"/> bus <input type="checkbox"/> railway <input type="checkbox"/> walk <input type="checkbox"/> other	
3.	How often do you usually go by bicycle?	
	<input type="checkbox"/> several times per day <input type="checkbox"/> 4–7 times per week <input type="checkbox"/> 1–3 times per week <input type="checkbox"/> 1–3 times per month <input type="checkbox"/> less frequent <input type="checkbox"/> never	
4.	Do all members of your household have access to a roadworthy bicycle for their personal use? If not, please note: X out of X people have a bicycle. (e.g., 3 out of 5)	
	<input type="checkbox"/> Yes, everyone has his or her own bicycle available <input type="checkbox"/> No, not all have one, but ... [free text] <input type="checkbox"/> No answer	
5.	What type of bicycle do you use for your everyday trips? If you want, specify the type in the text input field.	
	<input type="checkbox"/> eBike [free text] <input type="checkbox"/> City or trekking bike [free text] <input type="checkbox"/> Mountain bike [free text] <input type="checkbox"/> Road race bike [free text] <input type="checkbox"/> Special bike [free text] <input type="checkbox"/> Other [free text]	
6.	In general: Are you a more comfortable or more active person?	
	Comfortable —o— Active	
7.	Meeting social norms is extremely important to you. Or should one free his-/herself from it and act completely independently?	
	Meeting social norms —o— Acting independently	
8.	Are individuality, flexibility and independence important to you, or do you prefer to be part of a group?	
	Independent —o— Integrated	
9.	Are you an absolute outdoor and nature fan? Or do you prefer urban attractions?	
	Outdoor fan —o— Urban attractions	

10.	Is it important for you to reach a destination as quickly as possible? Or is the journey the reward?
	Destination —o— Journey
11.	Do you prefer a bit of chaos and freedom or rather order and safety?
	Chaos and freedom —o— order and safety
12.	You are spontaneous, get excited quickly and then get started? Or are you deliberating on decisions before and after?
	Spontaneous —o— Deliberative
13.	Everything should remain stable, just as it is. Or is every change an opportunity?
	Stability —o— Change
14.	Better to go for a run and exercise for an hour, or to read three chapters of a book and stimulate the mind?
	Go for a run —o— Reading
15.	You like to be active together with your family and friends? Or do you prefer individual activities?
	Family and Friends —o— On my own
16.	Do you maintain many, rather loose friendships or do you have few, but very close friends?
	Many loose friendships —o— Few, but close friendships
17.	You love it when everything runs smoothly and routinely? Or are you thriving when unforeseen things occur and you can show your talent for improvisation.
	Routine —o— Improvisation
18.	Do you like it simple and clear or rather complex and detailed?
	
	Simple and clear —o— Complex and detailed
19.	You like small towns and down-to-earth traditions? Or do you prefer modern and dynamic cities?
	
	Traditions —o— Modern Cities
20.	Do you love luxury, or are you living modestly?
	
	Luxury —o— Modesty

21.	Do you only cycle when the weather is nice? Or does a little rain make no difference for you—you can dress accordingly!
	Nice weather only —o— Any weather
22.	You do not necessarily need a bicycle way because you can cope with any traffic situation? Or would you rather cycle on a protected bicycle way?
	In any traffic situation —o— On protected bicycle ways only
23.	Fast and short connections are important? Or are you accepting detours in order to gain more comfort?
	Fastest, shortest route —o— more comfortable, longer route
24.	Signposted bicycle routes are important to you? Or do you find your own way and drive cross-country if necessary?
	Signposted —o— Cross-country
25.	You always look several times in all directions before you start cycling? Or a quick look to the left and right and then start cycling self-confidently—the others will see you in any case?
	Careful —o— Self-confidently
26.	You use your bicycle for your everyday trips to get fast from A to B? Or do you rather cycle gently and enjoy the surroundings?
	Fast —o— Gently
27.	As a cyclist, are you wild and free? Or are you disciplined and follow all traffic rules?
	Wild —o— Disciplined
28.	Intuitively: is cycling more classic or more punk for you?
	Classic —o— Punk
29.	If the traffic was calm and orderly, then cycling is boring for you? Or you do not care for the thrill at all?
	Thrill —o— Prefer calm and orderly
30.	Do you regard the bicycle primarily as a means of transport or is it for sports and recreational purposes?
	Means of transport —o— Sports
31.	Do you use the bicycle for everyday trips or only on special occasions?
	Everyday trips —o— Special occasions
32.	Are you cycling for pragmatic reasons, or is cycling an expression of your lifestyle?
	Pragmatic —o— Lifestyle
33.	Do you cycle, because many do it, or because you love it and feel like it?
	Because many do it —o— Because I feel like it
34.	Do you find cycling sometimes unnecessarily exhausting? Or do you regard it as a sporty challenge?
	Sometimes exhausting —o— Sporty challenge

35. How important are the following reasons for cycling for you personally?	
Time savings	unimportant —o— very important
Flexibility	unimportant —o— very important
Comfort	unimportant —o— very important
Low cost	unimportant —o— very important
Health benefits	unimportant —o— very important
Eco-friendliness	unimportant —o— very important
Strengthening social contacts	unimportant —o— very important
Image of cycling	unimportant —o— very important
Pleasure of cycling	unimportant —o— very important
36. Do you prefer travelling with others or alone?	
Cycling together —o— Alone	
37. Do you already consider going by bicycle, when you make an appointment? Or do you make your plans independently and check afterwards if cycling was feasible?	
Cycling is part of my planning —o— Planning independently and checking afterwards	
38. For which trip purposes do you use the bicycle most often? Put the words in the appropriate order.	
Work, university, school, etc. Visit friends/family Holiday/leisure trips Shopping etc. City stroll/cultural events Pick-up and delivery	
39. Was there a specific event in your life that (decisively) changed your attitude towards cycling or your cycling behavior? For example, a key event that made you more or less cycling. If yes, please describe this event in brief.	
<input type="checkbox"/> No <input type="checkbox"/> Yes, the following [free text] <input type="checkbox"/> No Answer	
40. Which means of transport should be pushed more in your city or community? Please indicate your priority.	
Bicycle	—o— Walking
Car	—o— Public transport
Public transport	—o— Bicycle
Car	—o— Walking
41. How important is the future role of cycling in Salzburg?	
High priority —o— Irrelevant	
42. Would you like to cycle more often?	
Yes, of course —o— No, it's fine as it is	
43. What needs to happen to make you cycle more frequently?	
[free text]	

44.	Would you appreciate public cycling promotion activities by the mayor or celebrities? Or are you not interested in public role models at all?	
	Promotion activities are important —o— No interest in public role models	
45.	How often do you use the following media outlets for getting information?	
	Daily/weekly newspaper	Never use it —o— Frequent use
	News magazine	Never use it —o— Frequent use
	Television	Never use it —o— Frequent use
	Radio	Never use it —o— Frequent use
	Online media (blogs etc.)	Never use it —o— Frequent use
	Social media	Never use it —o— Frequent use
46.	Your gender	
	<input type="checkbox"/> Female <input type="checkbox"/> Male <input type="checkbox"/> Diverse	
47.	Your year of birth	
	[Drop down menu]	
48.	Your highest degree	
	<input type="checkbox"/> Compulsory school <input type="checkbox"/> Apprenticeship <input type="checkbox"/> Post-secondary school diploma <input type="checkbox"/> University level degree <input type="checkbox"/> Other [free text]	
49.	ZIP code of place of residence	
	[Numeric input field]	

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