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AUTOPILOT

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Abstract
D4.7: User Acceptance assesses user requirements, concerns and expectations with a view to ensure their acceptance and trust. This is achieved by means of a multi-country online survey targeting naïve users, which inquires about the users' perspective towards a selection of services tested in AUTOPILOT. This report introduces the survey design and summarizes first results from the online survey. This first (from overall three) surveys focusses on a touristic service in Versailles, which will be tested as part of AUTOPILOT on the French test site. The survey was conducted in eight selected countries in May and June 2018. The results are discussed in the context of the project focus. A first set of recommendations for the development of the service were drawn from the results of the survey and summarised in this report.

Legal Disclaimer

Abbreviations and Acronyms

Acronym	Definition
EC	European Commission
PO	Project officer
GA	Grant Agreement
WP	Work Package
IoT	Internet of Things
AD	Automated driving
UK	United Kingdom

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Executive Summary

The aim of the evaluation task 4.5 “User Acceptance” in AUTOPILOT is to analyse requirements, expectations and concerns of potential users of different use cases of automated driving progressed by IoT. The methodology used for the evaluation is twofold. On the one hand, the tested scenarios will be evaluated from the perspective of potential users (who do not have experience with the services), based on a multi-country online survey. On the other hand, an evaluation of the tests at the pilot sites from the perspective of potential/test users will be carried out. This deliverable reports the study design for the online survey as well as preliminary results from the first of three surveys in total, providing recommendations for both the set-up of the use-case pilot sites and the evaluation to be carried out at the test sites.

The online survey introduced a multi-stage scenario of a use-case with an accompanying questionnaire designed to evaluate it from the user perspective. The respondents were recruited using a professional service provider. At a later stage, additional respondents will be recruited via social media and partner networks. Overall, three selected scenarios will be evaluated – using a touristic service in France, using a platooning service in the Netherlands, and using an automated valet parking service. The surveys are conducted in the following countries: Finland, France, Germany, Greece, Italy, Netherlands, the UK and Spain.

The first results from the analyses show that potential users attach high importance to various kinds of information which supports them planning their tour and improves the booking and the ease of using the service. Furthermore, one of the core features of the service, real-time touristic information, is evaluated as highly relevant from the user perspective. On the other hand, potential users expressed security concerns related to the payment for the service as well as potential malfunction or false information due to data losses during the usage of the self-driving mode. Overall, respondents in all countries expressed similar opinions for the majority of questions.

Overall, the vast majority of the respondents evaluated the service described in the survey as a positive experience, which was exciting, safe and easy to use. Moreover, most of them stated that they would be willing to use it themselves and would prefer it over renting a car or using a tourist bus in the city. Asked about the data that they would be willing to share in order to user the service, most of the respondents stated that they are willing to share their Name, Surname and E-Mail address. With pronounced security concerns over payment for the service, respondents stated their preference of using other payment methods than their personal bank account.

Based on the results, some general recommendations for developing the service were derived. The results suggest that making the service easy to use and customizable plays an important role in ensuring user acceptance (i.e. willingness to use the service). In addition, coping with concerns related to the safety during the execution of the self-driving functions by providing sufficient information about what the vehicle is doing or about to do for instance, would be crucial. Lastly, providing tourist information in real-time is a desirable feature for potential services. In all these aspects, the Internet of Things will play a crucial role in enabling the provision of more detailed information in a real-time.

2 Introduction

2.1 Purpose of the document

This document presents the results of an analysis of user requirements, concerns and expectations conducted under task 4.5 led by the FIA. Being the first of two deliverables in T4.5, this analysis validates findings of tasks 4.1 (Evaluation methodology), 4.4 (Quality of Life impact assessment) and 4.6 (Legal Issues). Furthermore, the findings of the analysis will add value to the outcome of the project by feeding into the design of the pilot testing and on-site user evaluation, thus allowing for the alignment of the services closer to the user.

2.2 Terminology

Users are understood here in a broader definition as "*anyone who uses the AUTOPILOT functions and services*".

Other road users are road users that are indirectly affected by the use of the AUTOPILOT technology (i.e. in the single use cases), e.g. cyclist, pedestrian, drivers of conventional vehicles; this group can be also interpreted as a part of the stakeholder groups.

Acceptance Degree of intention to use or of incorporation of AUTOPILOT services.

2.3 Structure of the report

The report is structured as follows: Chapter 3 elaborates on the background of the survey, locating among the existing research on user acceptance, and formulates the aim of the analysis. Chapter 4 sets out the underlying methodology, building on the framework delivered in D4.1. Chapter 5 introduces the three driving scenarios used in the online survey, all derived from actual scenarios tested at the pilot sites, before the results of the survey are summarised in chapter 6. Chapter 7 transcripts these results into concrete recommendations for the pilot testing, followed by concluding remarks in chapter 8.

3 Background and aim of the user survey

3.1 Background

This deliverable sets out to examine user acceptance (T4.5) as part of the evaluation activities (WP4) in AUTOPILOT.

User acceptance forms a crucial part in the introduction of new technologies, being a determining factor for their potential to gain market traction and be inclusive. User acceptance can be defined as the demonstrable willingness within a user group to employ an information technology for the tasks it is designed to support (Kaan, 2017).

As using the Internet of Things (IoT) to enhance automated driving functions is still a very recent application, both the users' understanding of potential services, and the industry's experiences in designing them are limited. With this limitation in mind and considering the rapid pace at which the domain is evolving, the user acceptance task in AUTOPILOT will evaluate the tested services in a multiple-step process. This report builds on a multi-country online survey, to inquire users' requirements, concerns and expectations towards some of the tested services before the actual piloting takes place. As described below, the findings will be fed back into the design of the pilot testing, with the goal of ensuring users' acceptance and trust of the aforementioned services. In order to take into account the rapid change in the automated driving landscape, this report will be updated in a few months' time, revisiting the analysed scenario and adding two more scenarios with different potential services.

Seeing that the topics as well as the applied methods of the User Acceptance task overlap with those of Business Impact Assessment (T4.3), Quality of Life Impact Assessment (T4.4) and Legal Issues (T4.6), the results of the below analysis will be shared with those tasks.

The work in task 4.5 User Acceptance is twofold – addressing requirements, expectations and concerns from the perspective of potential users who are not familiar with and have not experienced the services. The results from these analyses are summarised in this deliverable (D4.7). The second and main part in this task continues in the evaluation of user acceptance on the test sites, i.e., will focus on the evaluation from the perspective of users who experience the services or part of the services in the framework of the pilot tests. The results from these works will be summarized in D4.8. Table 1presents the contents of both deliverables.

D4.7 – User Requirements	D4.8 – User Acceptance
• General deliverable • Multi-country general public survey • Potential input to T4.3, T4.4, T4.6	• Pilot site deliverable • Tailored focus group interviews • Main output of T4.5

Table 1: Overview of deliverables in T4.5 User Acceptance

3.2 Aim of the online survey

As established in D4.1, the objectives of user acceptance assessment in AUTOPILOT are to:

- Formulate IoT-related improvements for automated driving functions based on user feedback, and to
- Determine whether there are improvements or added value in automated driving functionalities with and without the assistance of the IoT regarding user acceptance.

Within this overarching goal, the aim of the online user survey is to analyse the user requirements, expectations and concerns with a view to ensure their acceptance and trust in the piloted IoT-enhanced automated driving functions.

Contrary to existing quantitative user acceptance surveys, the present survey does not only focus on the anticipated usefulness and ease of use of these services and functions, but rather the added value from singular IoT functions. Furthermore, instead of examining the user as a mere research object, this analysis considers the user as a co-designer of future IoT-enhanced automated driving functions. Thus, the conducted survey assesses which functions and features are important, useful or desirable and inquires about the users' main concerns related to the potential usage of these services.

4 Methodology

4.1 Research approach

Figure 1 gives an overview of the general approach of the user acceptance evaluation. As shown in the figure, the evaluation of the user acceptance in the project is based on an iterative process. Feedback drawn from the results of various user-centered evaluation methods is provided to the service developers for design changes. The online survey presented in this report is part of this iterative process and plays an important role in the development of the services by providing a first feedback on requirements and concerns related to the use of the developed services from the perspective of potential users. This first survey in the user acceptance task considers (as shown in the figure) preferential and biographical factors of the respondents which are expected to affect the acceptance of the service. The second user survey (shown on the path between "assess experience" and "design feedback") will be part of the trial runs at the pilot sites, addressing the requirements and concerns of potential users after gaining their first experience with the service by participating at pilot site demonstrations.

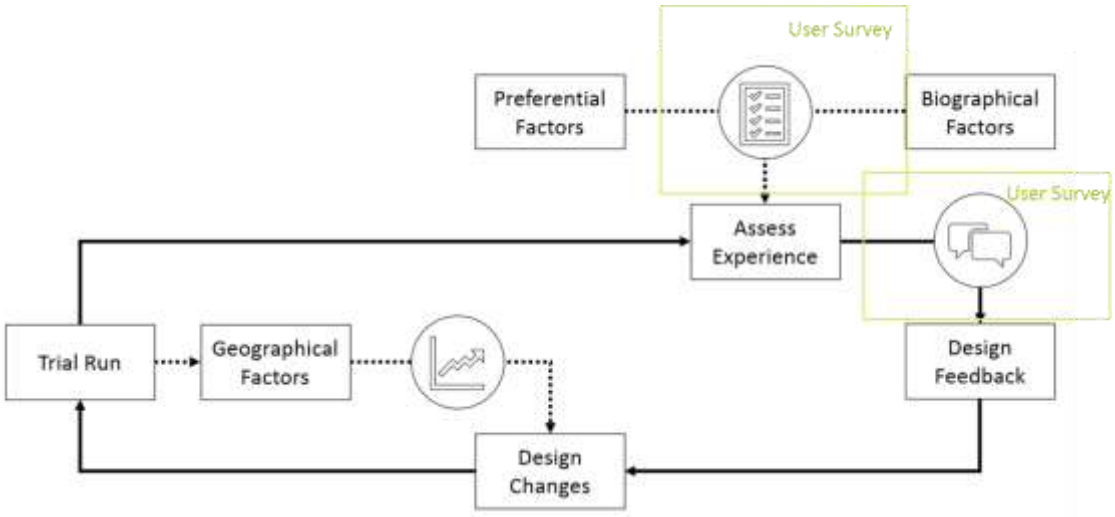


Figure 1: User Acceptance evaluation concept

Most studies on user acceptance conducted in the context of autonomous driving or other innovations use theoretical models, such as the Technology Acceptance Model (TAM) developed by Davis (1985). The TAM is based on the Theory of Planned behavior and implies that the acceptance of innovations or new systems, meaning the willingness to use the innovation or the new system, depends on the perceived usefulness and ease of use of the system.

The authors of the present study, however, decided not to use standardised instruments to measure user acceptance, as the user acceptance evaluation in the project "AUTOPILOT" is based on an approach which considers potential users of the developed services as co-designers rather than study subjects. Although the evaluation of usefulness and ease of use from the respondents' point of view was also considered, the main focus of the survey was to address requirements, expectations, concerns as well as suggestions for further development of the service based on the user evaluation. Therefore, instead of asking people how they like the service, we asked which service functions are relevant for making the service more attractive. This approach allows for more practical insights on preferences and acceptance of users than addressing general preferences and factors affecting acceptance.

4.2 Research Questions and Hypotheses

The present analysis addresses the requirements, concerns and expectations of potential users of the developed services with view on acceptance and trust. The main research question of the evaluation is how IoT might enable, accelerate and/ or enhance automated driving and the usage of services around automated driving. Thus, the study focuses on the consequences of IoT enabled functions for the users and how users perceive the added value of additional information provided through an IoT enabled service. As we assume that the added value of IoT can only be evaluated by analysing the users' perspective on concrete service features, we address which of these features and/ or functions are relevant from the user point of view.

The hypotheses that were tested had in general a more explorative nature. We assumed that an IoT connection will accelerate the use of the service and might enhance the user experience by providing additional features and information.

We analyse, therefore, on the one hand which types of information are required by the users when deciding to use the service and during the operation (especially during using a vehicle in a self-driving mode). On the other hand, study participants were asked which concerns they might have when using the service. Finally, respondents were asked to evaluate the overall scenario and express their expectations related to different parts of the scenario.

4.3 Indicators and Metrics

The survey addresses expectations, requirements and possible concerns of potential users. Since a core function of the Internet of Things is the exchange of information between connected devices, the current study focusses on the relevance of different types of information provided by the service from the users' point of view. Regarding the concerns related to the use of the service, different aspects were addressed, including data privacy and cyber security issues as well as perceived trust in the performance of the technology and the correctness of the information provided. For the measurement of the information required by the users, a Likert scale from 1 = *"very relevant"* to 7 = *"irrelevant"* was used. For the measurement of the perceived concerns related to the use of the introduced services, a Likert scale from 1 = *"not concerned at all"* to 7 = *"very concerned*" was used. Using a seven instead of a five-point Likert scale allows for the assessment of more detailed differences between respondents.

The online survey introduces different scenarios of using automated driving enhanced with IoT. Respondents can choose which scenario to answer. All scenarios are introduced using a short story and pictures. The storyboards were designed following the pilot plans developed by the project partners. However, the story has been modified in order to make it easier to understand by the respondents of the survey.

Figure 2 provides a schematic overview of the structure of the online questionnaire. On the first page of the survey, respondents could choose the language for the survey. The survey was translated in 8 languages (for more on this, see 4.4. "Data Collection"). On the second page, a short introduction of the task was provided, followed by a brief overview of the scenario. On the following pages, specific parts of the scenario were introduced followed by questions related to these parts. The scenario descriptions as well as all questions are presented in Annex 2. All scenario descriptions follow the stories summarised in the Pilot Plans. However, in order to simplify them, we concentrated on less technical details and adjusted the stories in order to make it simple and understandable for the participants. The scenarios are described in section 5 "Selected scenarios" of this report. After finishing the description of the scenario, there were general questions related to

the evaluation of the whole scenario. On the last page, the respondents were asked to report some general information about themselves, such as socio-demographics, their mobility behavior as well as their experience with advanced driver assistance systems and topics related to the Internet of Things.

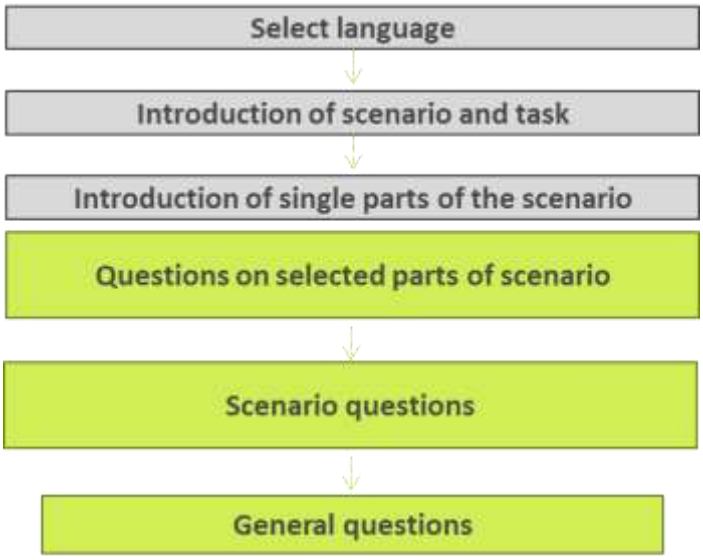


Figure 2: Structure of the questionnaire

4.4 Data Collection

The online survey was conducted in the following eight countries: UK, Germany, France, Italy, Spain, Netherlands, Greece, and Finland. The countries were selected to represent different European countries as well as to cover the countries where most of the project partners come from. The questionnaire was implemented in an online form provided by the company "LamaPoll"[1].

For the recruitment of samples, a professional service provider (respondi AG[2]) was used. All purchased samples were representative by age and gender in the selected countries and for each scenario. This ensures more reliable results from the survey giving a broader overview on user preferences that belongs to different age and gender groups. The sample size was n= 200 persons per country for the first two scenarios (total n=1600 each) and n=100 for the third scenario (Automated Valet parking, total n=800).

In the first version of this deliverable, however, only the results from the representative survey are presented. The survey for the general public will be launched at a later time in the project. The deliverable will therefore be updated with the data from the public survey at a later point in time.

4.5 Study sample

In this part, the samples in all three surveys (scenario A, scenario B, and scenario C) are presented using the results of the analyses of socio-demographic and other respondent-related characteristics, such as mobility behavior and experience.

[1] *https://www.lamapoll.de/autopilot/*
[2] https://www.respondi.com/

An overview of the samples' socio-demographic characteristics by country (age and gender distribution) provided by the professional provider is presented in Figures 3 and 4. The statistics for the representative share of people by age groups were derived from EUROSTAT statistics.

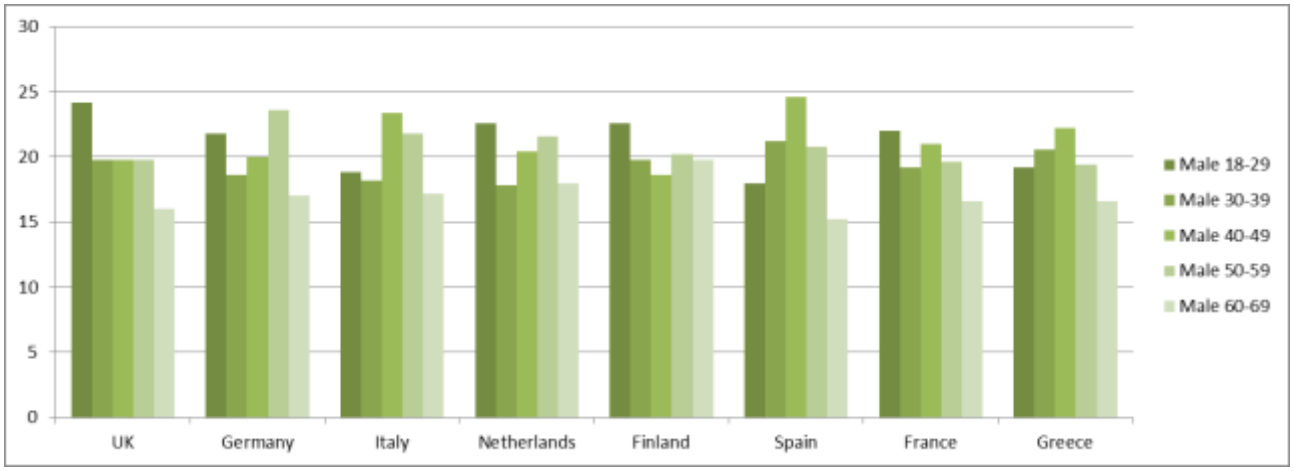


Figure 3: Share of men by age groups for each country [%]

The descriptive analyses of other characteristics of the respondents, such as their mobility behavior or relevant experience, can be found in the annex of this report.

5 Evaluated scenarios

As mentioned above, the scenarios follow the storylines summarised in the Pilot simplifying them in order to make them more understandable for the participants. Note that not all use cases developed and tested in "AUTOPILOT" were considered. The user acceptance task selected only scenarios where IoT plays a crucial role in the service presented.

In this first version of the deliverable, only Scenario A: Carsharing as a touristic experience is addressed. Thus, only this scenario is analysed in detail in this version of the report.

Scenario A: Carsharing as a touristic experience
Scenario A addresses a carsharing service for tourists that will be developed and tested in Versailles, France in the framework of "AUTOPILOT". Following the detailed storyline provided by the project partners involved in the French pilot site, the evaluation team developed an adjusted and simplified short introductory story about a tourist visiting Versailles during his holiday. The storyline has the following parts:

Short overview of the whole scenario:

"Versailles is a city just outside of Paris, France renowned worldwide for its historic palace and beautiful

gardens, both of which are UNESCO World Heritage Sites. The Palace of Versailles is a very popular tourist attraction, receiving millions of visitors each year.

A new service is being introduced in Versailles, which offers tourists a new way to experience the city and its attractions. Visitors now have the opportunity to tour the city using small vehicles which can be driven manually or, on certain routes, can be driven around automatically by the vehicle itself.

These vehicles can be reserve using the new smartphone app "AUTOPILOT". Once a reservation has been made, all that is needed is to collect the vehicle at a car sharing/ pick up station and then visitors can drive along 6 km route around the city. In the Palace Gardens, there is a predefined, fixed route of 2 km, where the vehicle drives by itself."

Scene 1: Preparation and booking the service/ a vehicle:

"Today John is visiting Versailles. He has heard about the new service for tourists and has decided to try it out. He downloads the "AUTOPILOT" app, chooses his language (English), and creates an account.

Using the app, John chooses one of the pick-up stations and reserves a vehicle. The app shows him the route to the station where the reserved vehicle is waiting for him.

John arrives at the station. The app indicates the reserved vehicle's license plate number and parking lot number. He unplugs the vehicle from the station and opens it using the app. He then gets into the vehicle.
John is now ready to start his trip."

Scene 2: Autonomous driving in Versailles Gardens

"John wants to visit the Versailles Gardens, so he selects the destination on the "AUTOPILOT" app. The app helps him navigate and John drives the vehicle to the entrance of the Gardens. From here, the self-driving mode is activated, and the vehicle takes over the driving task. There is no motorised traffic in the Gardens, but the self-driving vehicle is allowed to drive on the paths along with pedestrians and cyclists.

The route through the Gardens is fixed, about 2 km long and with the vehicle travelling at around 15 km/h it takes roughly 20 minutes. The vehicle is self-driving, so John does not have to worry about taking the wheel and can admire the Gardens in peace. Using its sensors and cameras, the car gives way to pedestrians and cyclists. The vehicle arrives near a point of interest.

A notification shows up on screen and a voice message says: "We are in front of the Lake of the Swiss Guard. Would you like to know more about it?" John says "Yes". Now the vehicle stops and he can choose whether he wants to listen to an audio message or to watch a short video (about 1 minute) about this point of interest."

Scene 3: Returning the vehicle:

"The automated vehicle continues along the route, passing other points of interest in a similar way, until it reaches the exit of the Gardens, at which point the self-driving mode ends. John starts driving again and the AUTOPILOT app guides him to the vehicle drop-off station. John parks the vehicle and leaves. After returning the vehicle, a trip summary is displayed on the app (duration and distance of the trip). John can now rate his experience."

Scenario B: Platooning
Scenario B addresses a platooning service which will be developed and tested in Helmond, Netherlands in the framework of "AUTOPILOT". The scenario presented in the online survey introduces the service with the example of two fictive persons who live and work in Helmond and make an appointment to drive from Helmond to Eindhoven in a platoon.

Scenario C: Automated Valet Parking
Scenario C addresses an automated vehicle service which will be developed and tested in Helmond, Netherlands in the framework of "AUTOPILOT". The introduced story focuses on the use of the service with the example of a fictive person who has an appointment by a company on whose parking place the service is available. The story presented and evaluated in the survey describes how the service works.

6 Results

This section summarizes the main results for scenario A "Carsharing as a touristic experience" followed by a general discussion of the results.

6.1 Main results

6.1.1 Information required before using the service

After Scenario A was introduced, participants were asked about the types of information they considered relevant for the users in the booking phase up to entering the vehicle. The question aimed to assess, which information is required by the potential users of the service. Eleven answer options were given, and the participants were asked to evaluate the relevance of each option. A seven-point scale starting from *1 =very relevant* to *7 = irrelevant* was used. Information which is evaluated from 1 to 3 is interpreted as highly relevant to relevant according to the respondents. Information provided by the service which is evaluated with the values 5 to 7 is interpreted as not that relevant and up to irrelevant from the respondents´ point of view.

Eleven answer options were given, and the participants were asked to evaluate the relevance of each option. An overview of the results from the whole sample (all countries, Figure 4) shows that respondents consider all types of information presented in the question as relevant to some degree – a minimum of 71% of the respondents rated the aspects on a 7-point scale between 1 (= *"very relevant")* and 3, 49% rated with 1 or 2. Information most rated "very relevant" was information about the availability of a vehicle (53 % of respondents), followed by instructions on using the service (49 %). Slightly less relevant than the mentioned aspects are the following types of information: estimated waiting time in case that no vehicle is currently available, the route of the tour, availability of a free parking space at the return station, and contact information for customer service. Here again, all mentioned types of information address ensuring the easy use of the service but are also related to a more detailed planning of the service usage including also the route of the tour and the return of the vehicle. The information about restaurants, hotels and cafes was rated to

the least extent relevant by a small margin.

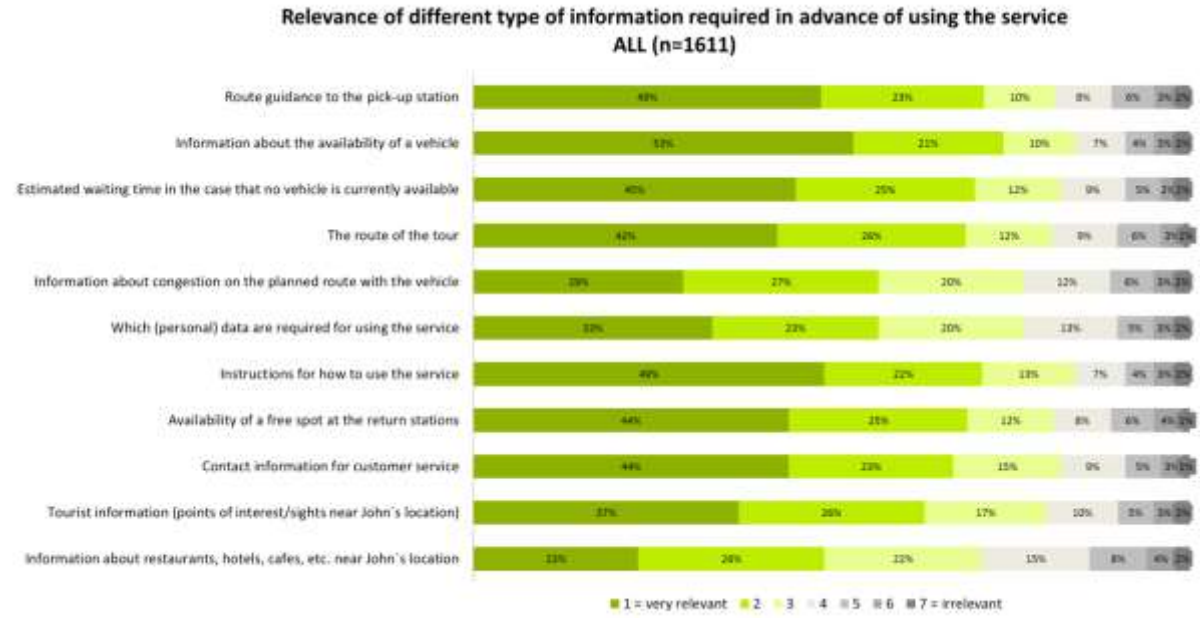


Figure 4: Relevance of different types of information in advance of the usage

6.1.2 Information required during operation

The second question, which addresses the relevance of different types of information provided by the service, has a strong focus on the information required during operation, i.e., when riding in the vehicle in automated mode. This question had five given answer options, some of which were the same as in the previous question (relevance of information in the booking phase).

Real-time tourist information is evaluated by most of the respondents (66%) as (very) relevant when using the service in the Gardens, which is not surprising considering the main purpose of the introduced service. Information related to the automated driving function and contact information for the customer service is evaluated as almost equally relevant at this point. Furthermore, these types of information are evaluated as relevant (mostly with values between 1 and 3 on the 7-point scale), even if only about one third of the respondents evaluated it as *"very relevant"*. Thus, providing people with information about the operation of the vehicle might increase the perceived safety of the service and/ or satisfy their desire to oversee the vehicle operation while driving in a self-driving mode.

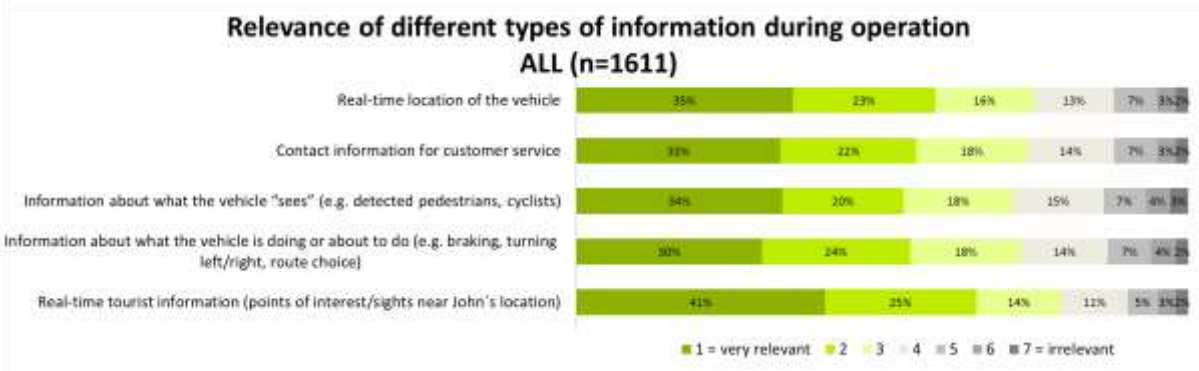


Figure 5: Relevance of different types of information during operation

6.1.3 Concerns

6.1.3.1 Concerns in advance of using the service

Respondents were asked to which extent users would be concerned or not concerned when booking the service. There were five given options to rate and a possibility to add their own concern as an open answer.

Participants were given a choice of a 7-point scale reflecting the level of concern where 1 represented *not at all concerned* and 7 was *very concerned*.

From the results (Figure 6) it can be seen that the given options were rated in a similar way: the rate of concern (options 5 to 7) varied from 40 % to 51 %, and the rate of not being concerned (options 1 to 3) varied from 31 % to 36 %). The option with the most respondents choosing "very concerned" was highest regarding the payment process for using the service (19 % "very concerned" compared to 9–14 % for the other given options).

There were similar share splits between the levels of concern for all aspects except 'other concerns'. The other concerns cannot be compared directly with the specific aspects as the concern being scored varies between respondents. For each specified aspect less than 10% of respondents registered that they were not at all concerned, and at least 9% were very concerned.

Less than 10% of the sample had other concerns, and of these concerns there were much higher levels of both *"not at all concerned"* and being *"very concerned"* compared to the other aspects. The most common other concerns raised were getting help in a technical failure or emergency, data connection, usage and cost as well as vehicle safety.

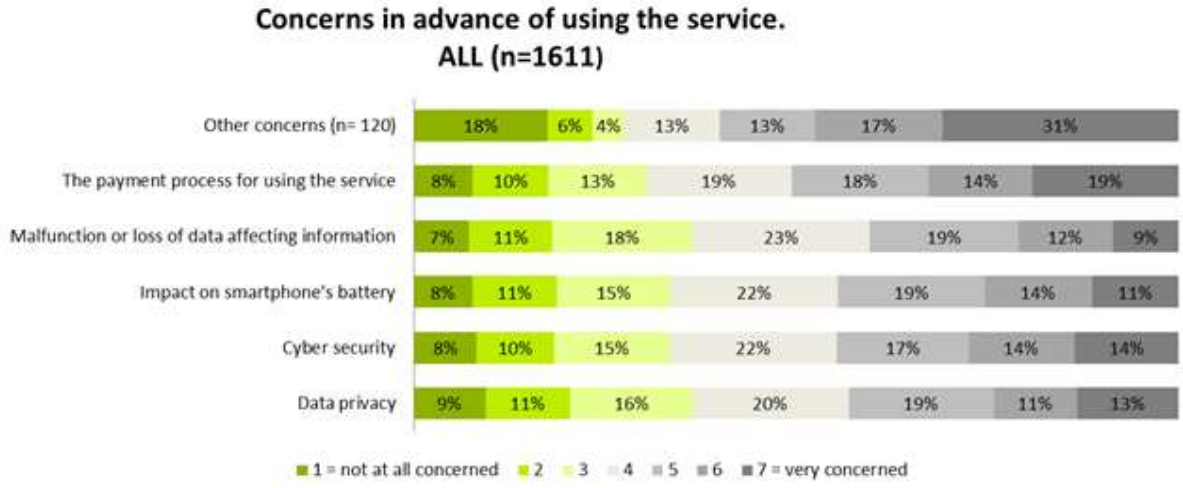


Figure 6: Concerns in advance of the usage

6.1.3.2 Concerns about the service during operation

The next question was about the potential concerns of the user in the vehicle, during the trip. This question had three given options and the possibility to add a concern. Also, here the answers are similarly distributed. The rate of concerned responses (options 5 to 7) varied from 37 % to 47 %, while the rate of not concerned responses (options 1 to 3) varied between 23 % and 39 %.

A follow up question to the above asked the respondents to then place themselves in the position of a user and relate what their concerns were. This was more limited than the first question, and focused only on vehicle malfunction, making other pedestrians and cyclists feel uncomfortable and data loss/malfunction affecting information. Similar to the concerns prior to using the service, there is little variation in levels of concern between the three aspects that are proposed, and there is a relatively even spread, with the greatest concerns appearing to be related to the probability of vehicle malfunction and the least concerning aspect being malfunction or loss of data.

Again, less than 10% of respondents registered any other concerns, but almost 50% of these concerns were scored as being very concerning. The main concern was safety of the vehicle, but there were also many concerns about being able to stop the vehicle during the tour if they wanted to linger at a spot, or if they felt ill.

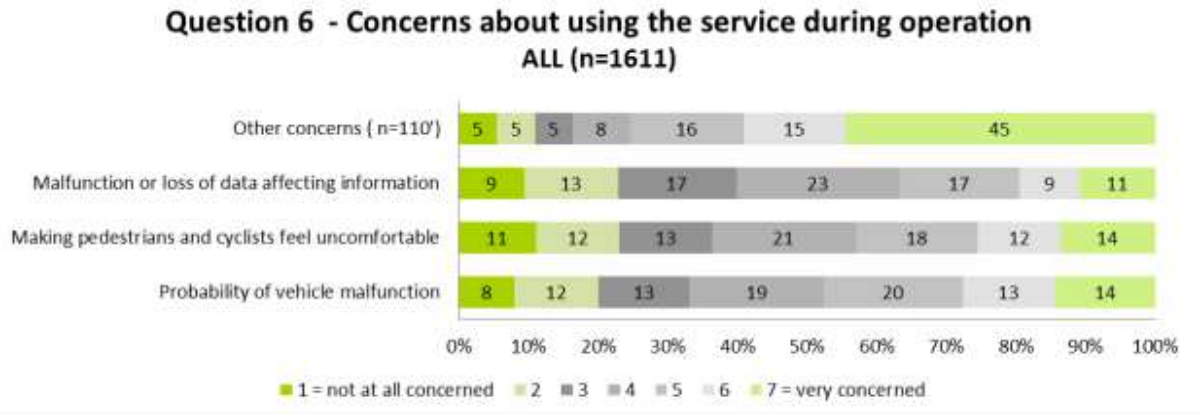


Figure 7: Concerns during operation

6.1.4 Evaluation of the perceived experience

Next, respondents were asked to evaluate the described scenario as a whole, from booking to returning the vehicle, based on the introduction provided. Overall, participants rated the experience of the trip in Versailles as easy to use (77 % of answers 1 to 3, Figure 8), safe (66 %), useful (78 %), exciting (70 %) and a positive experience (84 %). The answers are fairly evenly distributed, but safety received the least positive answers and the most negative ones (11 % answers from 5 to 7).

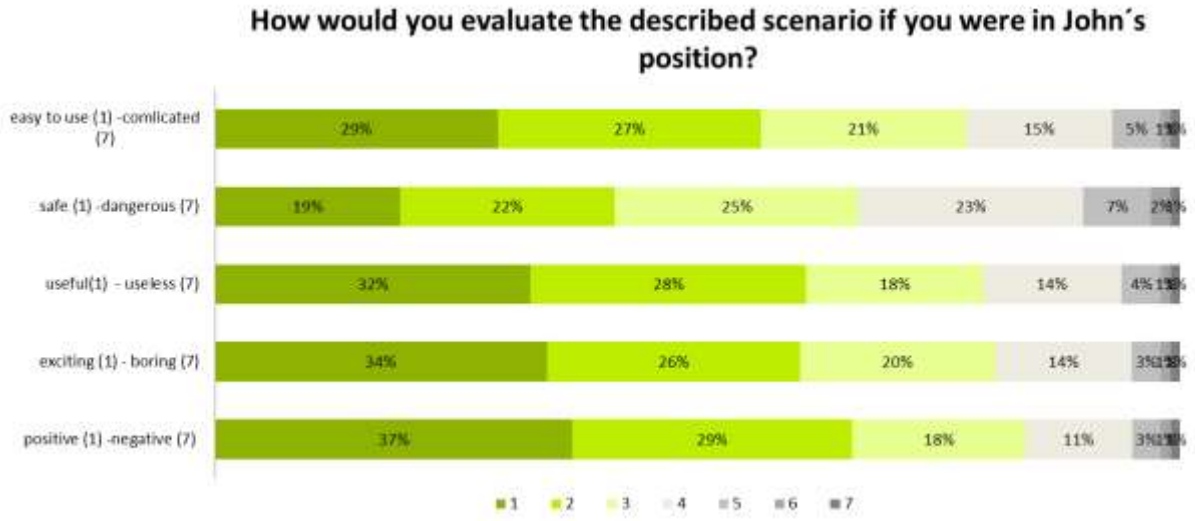


Figure 8: Overall perceived experience

6.1.5 Willingness to use the service and preferences toward using the service over other travel modes

The next question asked how much respondents agreed with the statement "I would use the service if it was available". In response, two thirds of respondents (66 %) stated they agreed and 18 % stated they disagreed. The overall median was 3 on a scale of 1 to 7, where 1 expresses strong agreement with using the service and 7 strong disagreement.

In order to assess potential for change in mobility patterns, the respondents were then asked to state whether they preferred using the self-driving vehicle if it was available over other options: using a tourist bus in the city, renting a car in the city, walking or cycling in the city, or walking or cycling in the gardens.

Around two thirds of the respondents reported that they would prefer the experience with the automated vehicle over renting a conventional car in the city or using a tourist bus (see Figure 9). Interestingly, almost half of the respondents stated that they would prefer using the self-driving vehicle over cycling or walking rather in the city than in the Gardens. However, this preference has a lower positive score than using the vehicle in the city.

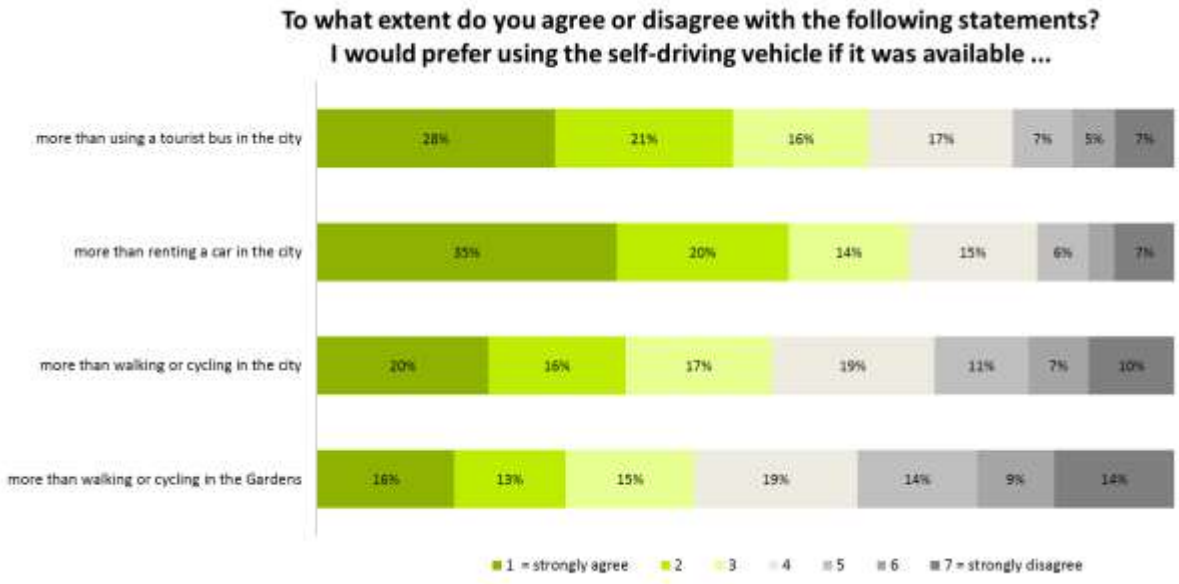


Figure 9: Preferred situations/conditions of using a self-driving vehicle (n=1611)

6.1.6 Preferences toward sharing data to use the service

Respondents were asked whether they would be willing to share different data with the service provider in order to use the service. From the results it can be seen (Figure 10) that E-mail is the most preferred registration method (75%), followed by Name and Surname (66%). Moreover, respondents seem more reluctant to share their bank details (24%) than to use other payment options, such as PayPal (45%). Also, a rather small share of respondents stated to be willing to provide access to the microphone on their smartphone (24%) or to register with an existing account in order to be able to use the service (25%).

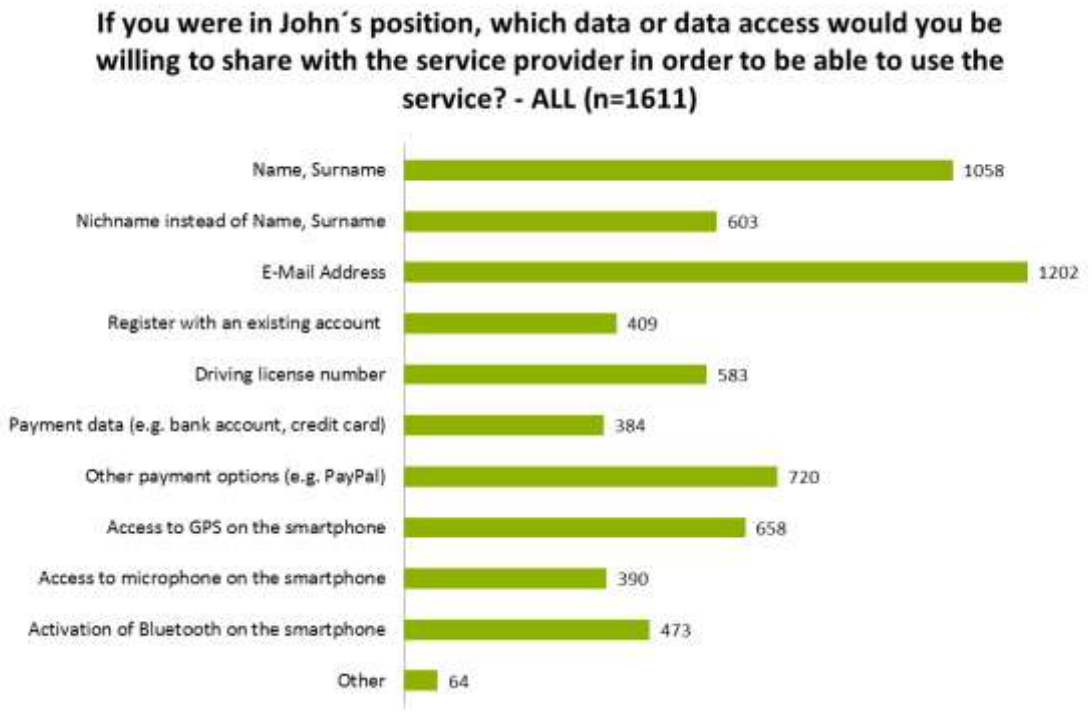


Figure 10: Willingness to share data – ALL (n=1611)

6.1.7 Preferences towards other services provided by the app

The participants were asked of their interest to use the app also for other services than booking the tour in Versailles. More than half (54 % of respondents, Figure 11) stated they would like to use it also for a sightseeing tour without a vehicle, over one third (37 %) stated they would like to use it for other mobility services in Versailles, and 17 % stated they would like to use it also for a similar service in other cities. Almost one in five respondents (19 %) stated they would not like to use the app for any other services.

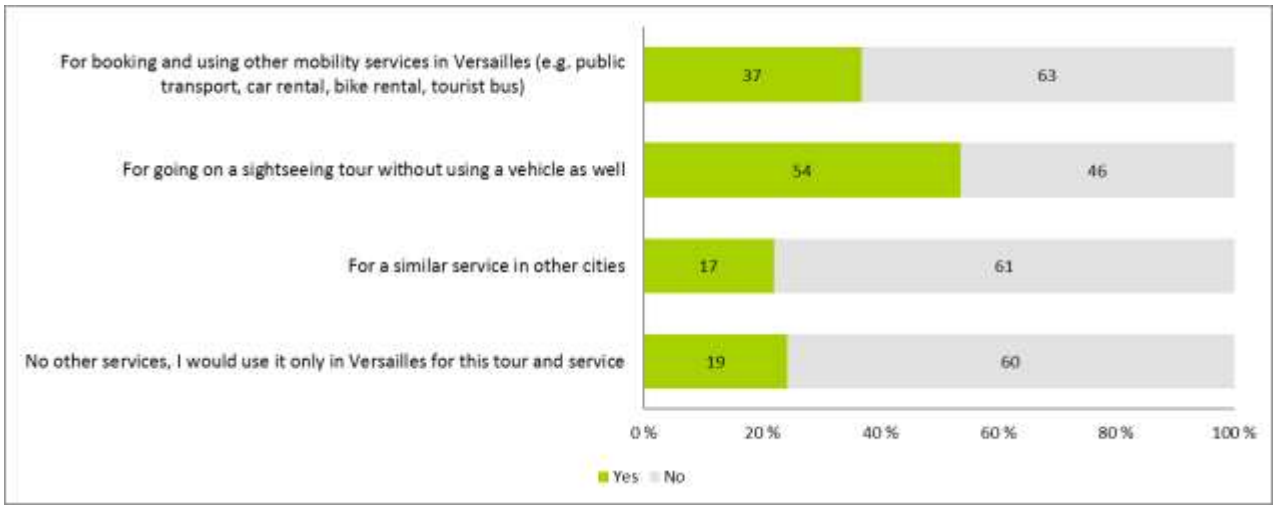


Figure 11: Other uses for the application

6.1.8 Preferences towards pricing models

Next, the participants were asked about their preferred payment types for the trip in Versailles: they were asked to state which option of three they preferred. Across all countries, most of the interviewees (67 %) responded that the most convenient pricing basis for the system is a fixed price for a tour. Almost one in four (23 %) would prefer to pay cost per minute for using the vehicle and one in ten (10 %) preferred having the price of use included in a “tour in Versailles” package, which includes also other mobility and tourist services.

6.1.9 Potential user groups

The next two questions addressed the user groups for which the service could be useful. The respondents were asked to choose all answers that applied in their opinion.

Of the respondents, two in three (68 %) considered the service attractive for people with mobility constraints (e.g. disabilities, age-related constraints) and 62 % considered the service to be attractive for tourists travelling in couple, 47 % for individuals and 43 % for travelling families with children. (Figure 12).

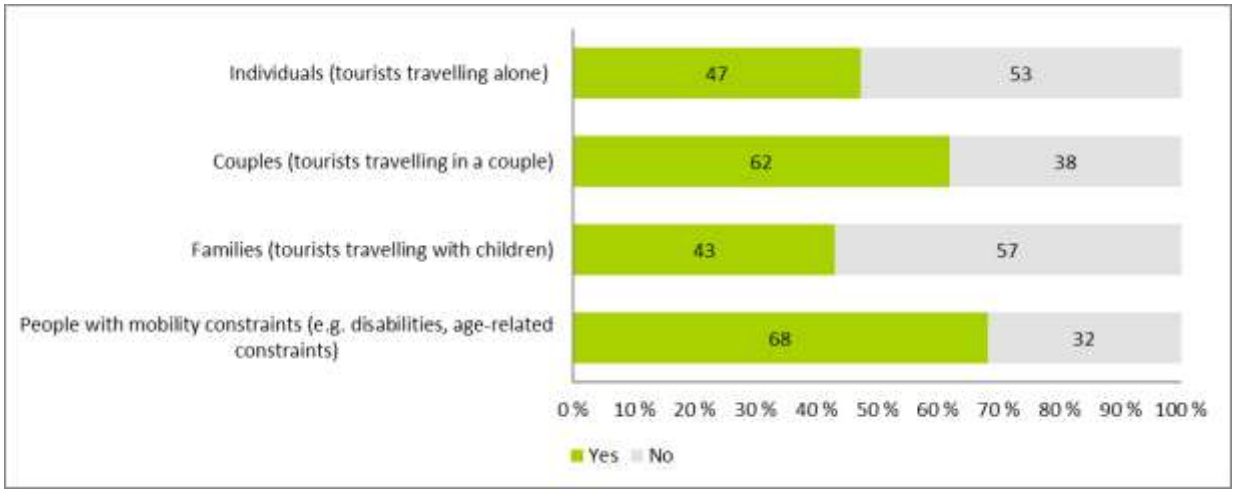


Figure 12: Attractiveness of service for different users

Regarding age groups, more than half of respondents found the service useful for age groups between 40 and 69 years (Figure 13). The service was considered least useful for people under the age of 18 (chosen by only 14 % of respondents).

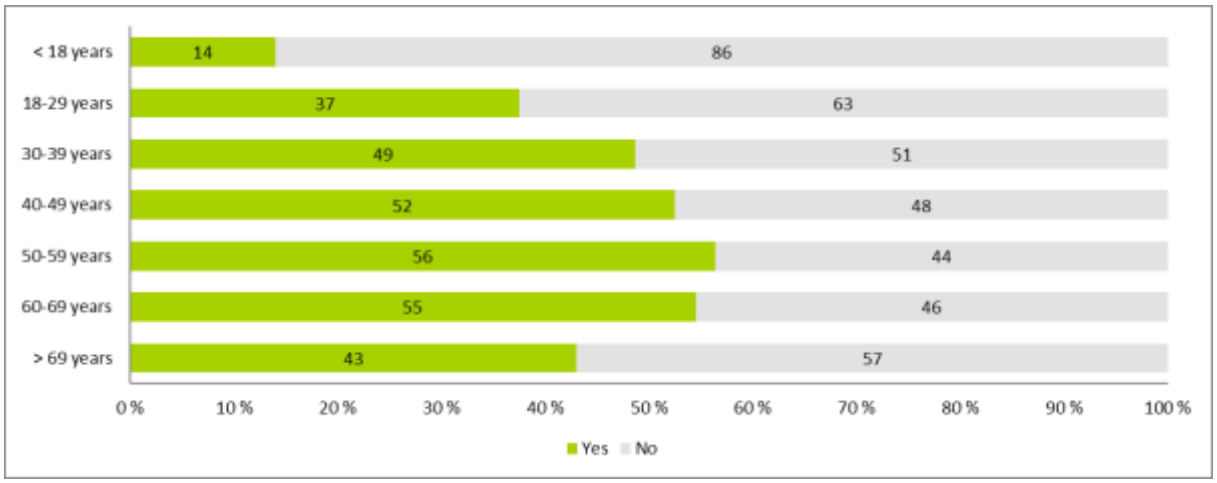


Figure 13: Attractiveness of service for different age groups

6.1.10 Requirements on other features

To assess the respondents' thoughts regarding features enabled by IoT, two types of information were shown and the respondents asked to rate the usefulness of those features (on a scale from 1 to 7, where 1 is useful and 7 is useless).

From the results (Figure 14) it can be seen that both types of information are assessed useful (answers 1 to 3) by at least 61 % of respondents. Real-time information about points of interest was rated slightly more useful (and less useless) than information about the position of pedestrians by using their smartphones.

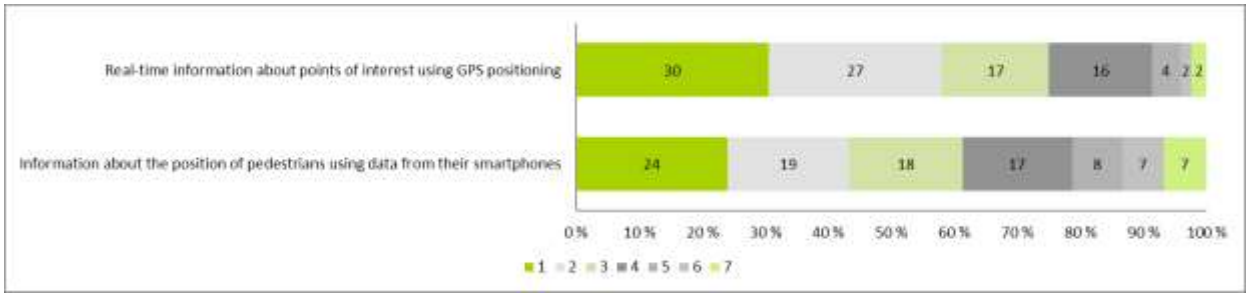


Figure 14: Usefulness of information provided on a scale of 1 (useful) to 7 (useless)

6.1.11 Suggestions for development

As a last question, respondents were asked to provide suggestions on how the service should be developed. The results are summarised in the table below. In total, there were quite many different suggestions. The ones standing out the most were allowing the use of the vehicle also at other locations (other cities, countries or in the centre of Versailles), allowing the user to stop the vehicle when it is in automated mode, to take pictures or enjoy the surroundings, making sure the service is very easy to use for different user groups, and keeping the costs to the users down.

Table 2: Suggestions on how the service should be developed

n	Suggestion
15	allow use also elsewhere (other locations)
8	allow for stops
7	make it very simple to use or provide extra simple version (elderly, disabled)
7	keep costs down
6	add information on other locations (restaurants, relaxing areas, wc)
6	ensure safety
5	allow use/detection also without smartphone
3	show estimated time
3	use separate paths/lanes for AV
3	allow for group bookings, ride sharing
3	cooperate with tourist offices
2	remove need to drive manually
2	use electric vehicles
2	include emergency option
2	allow for voice control/assistance

6.2 Results per country

6.2.1 Information required before using the service

6.2.1.1 Route guidance to the pick-up station

As indicated above, the route guidance to the pick-up station is evaluated as one of the most relevant pieces of information when booking the service. In Greece and from the UK, there was the highest share of respondents (over 60 % compared to 34 to 50% in other countries) that evaluated this type of information as *"very relevant"*. Overall, the differences between the countries are rather small.

Figure 15: Required information – route guidance to the pick-up station

6.2.1.2 Availability of a vehicle

Information about the availability of a vehicle was considered *"very relevant"* by more than half of the whole sample (53%). Interestingly, in Germany almost 70 % evaluated this information as *"very relevant",* and in the UK, Greece and Finland almost or over 60 %. This might indicate that tourists coming from these countries tend to be more interested to have information supporting them to better plan the usage of the service.

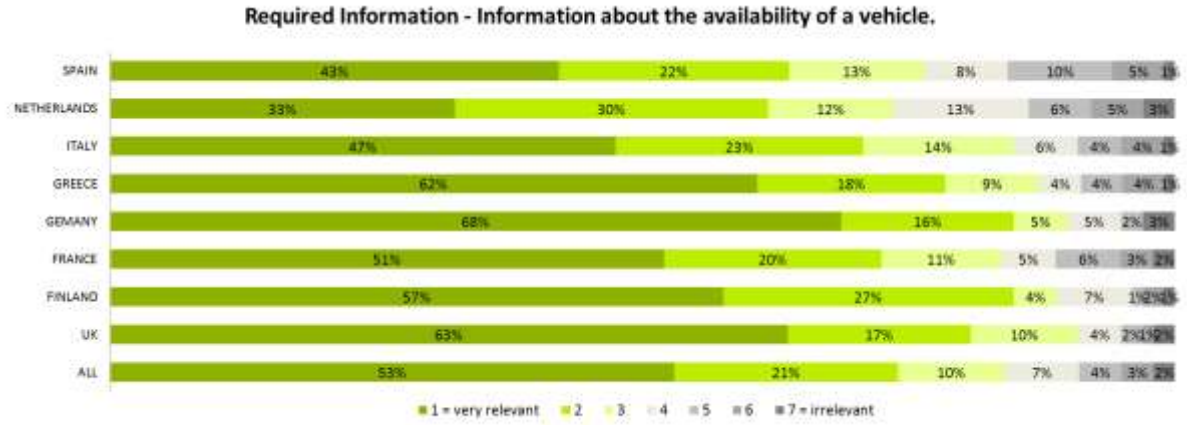


Figure 16: Required information – availability of a vehicle

6.2.1.3 Estimated waiting time in case that no vehicle is available

Considering the relevance of an estimated waiting time in the case that no vehicle is currently available, a similar tendency as in the preferences toward the information about availability of a vehicle can be found in some of the countries. The smallest share of respondents who evaluated this type of information as relevant is in the Netherlands and France.

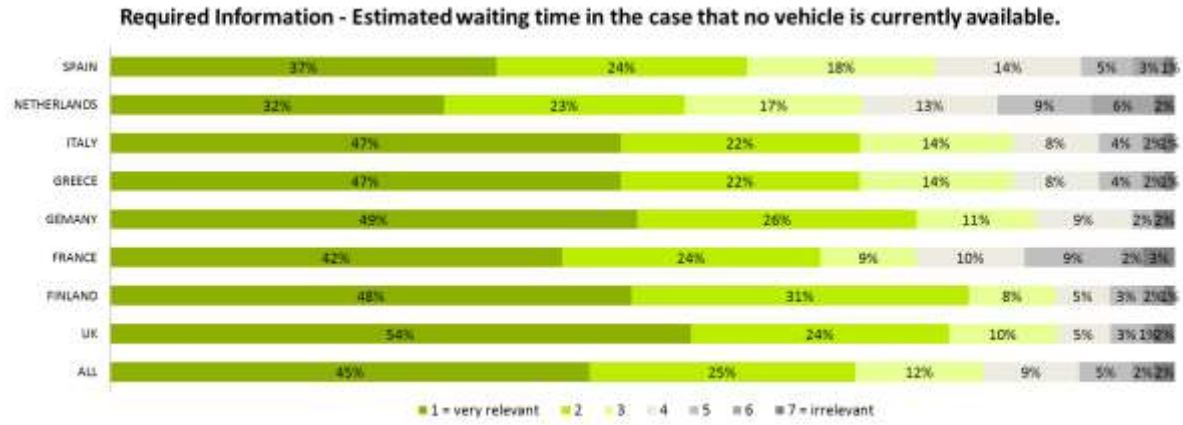


Figure 17: Required information – estimated waiting time when no vehicle is available

6.2.1.4 The route of the tour

In the Information about the route of the tour is evaluated as *"very relevant"* mainly by respondents from Greece and the UK (more than half of respondents), followed by Spain, France and Finland. Here again, the respondents from the Netherlands tend to evaluate the level of relevance in a less extreme way (i.e., the information as less extremely relevant) than in the other countries.

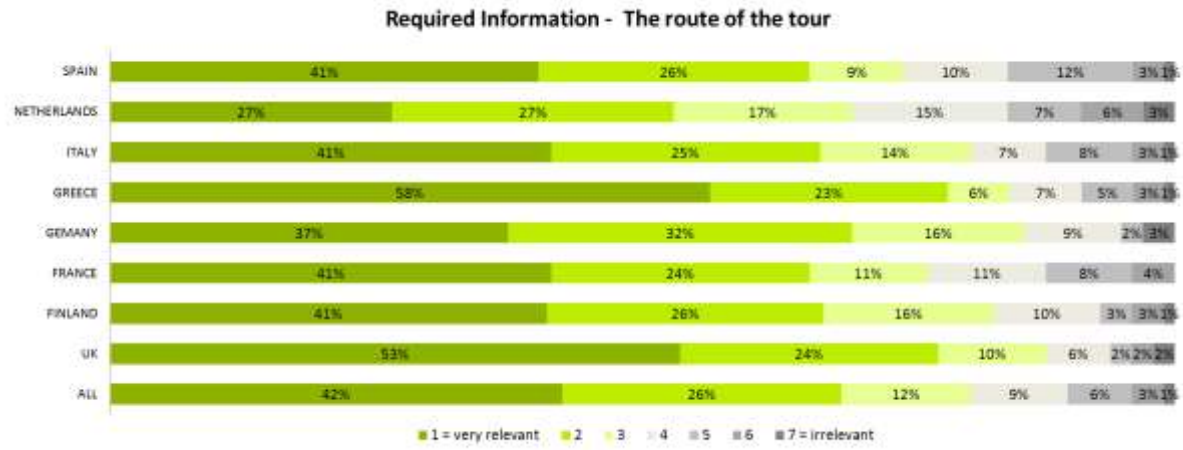


Figure 18: Required information – route of the tour

6.2.1.5 Congestion on the planned route

Providing information about congestion on the planned route was rather less relevant for the respondents than other types of information. The comparison between the countries shows that in Greece and UK, this type of information is evaluated as more relevant than in the other countries.

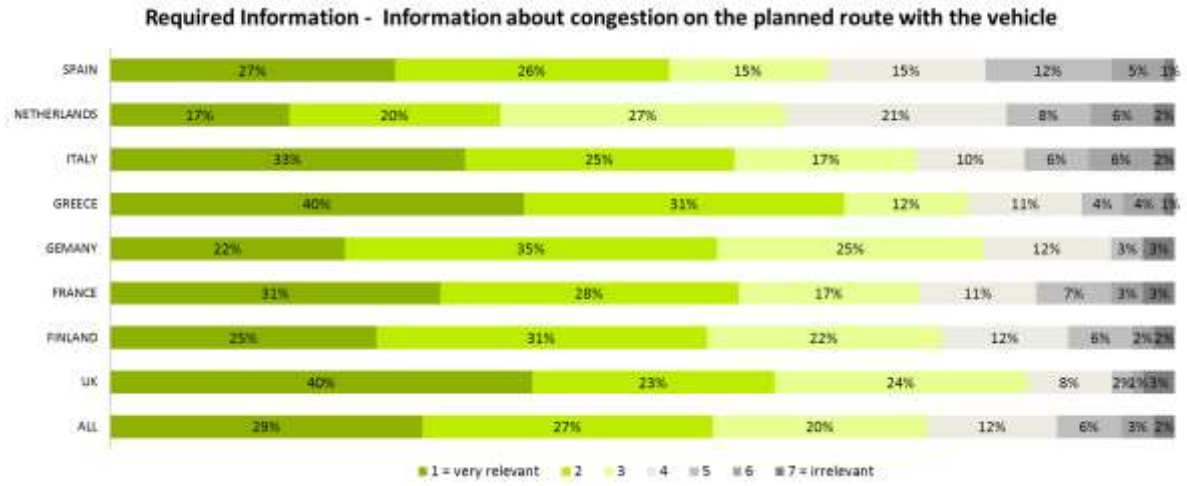


Figure 19: Required information – congestion on the route

6.2.1.6 (Personal) data required for using the service

Furthermore, the information about which (personal) data is required for using the service was evaluated as slightly less relevant as the other types of information provided by the service. However, in Italy, Greece, Germany, Finland and UK, the relevance of this type of information was higher than in the other countries.

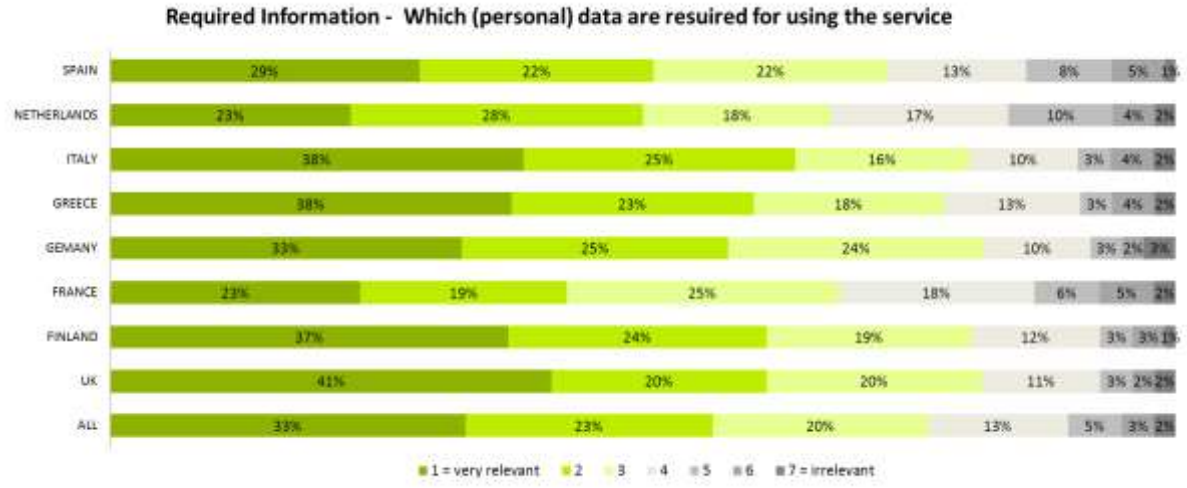


Figure 20: Required information – personal data required

6.2.1.7 Instruction for how to use the service

Information providing instructions on how to use the service is among the types of information that were evaluated as most relevant by the respondents. Comparing the different countries shows that the relevance of this information is slightly higher in the UK and in Finland than in the other countries – most of the respondents in these two countries (60 to 67% of the samples) evaluate the information as *"very relevant".*

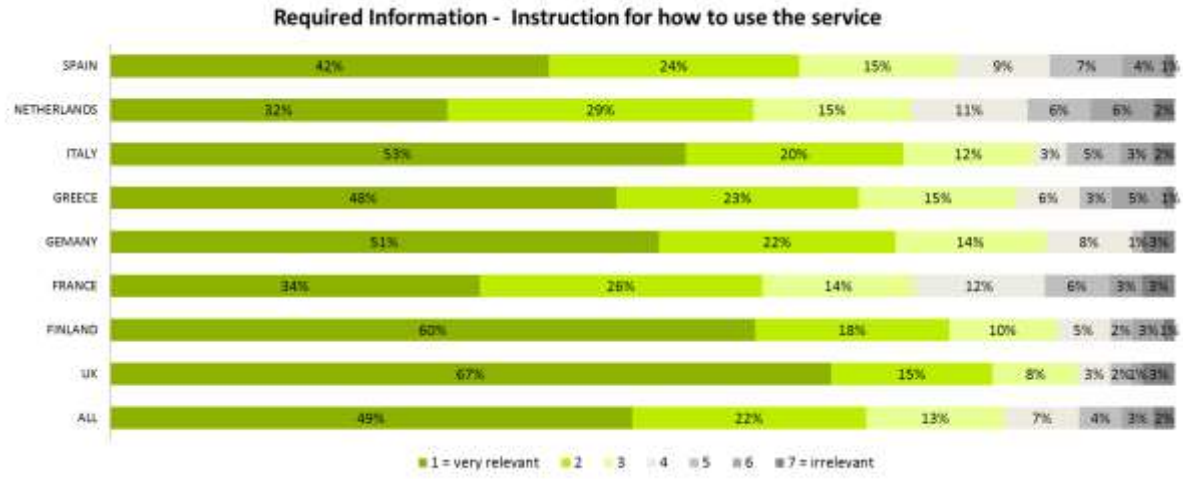


Figure 21: Required information – instruction how to use the service

6.2.1.8 Availability of a free spot at the return stations

Information about the availability of a free parking lot at the return station seems to be more relevant in the UK and Finland compared to the other evaluated countries, followed by Italy and Greece. In general, the differences between the rest of the countries are rather small, with the exception of the Netherlands, where the relevance of this type of information is evaluated as *"very relevant"* by one third of the respondents only. However, here again, still about 75% of the respondents evaluate this type of information as relevant (values between 1 and 3). General differences in the responses of persons from the Netherlands and from the other countries might be related to differences in the mobility behavior in the different countries. For instance, in the Netherlands is the highest share of people which use rather a bicycle than a car as a main mode of transportation in their everyday mobility (see Annex, part "Mobility behavior").

Figure 22: Required information – availability of a return spot

6.2.1.9 Contact information for a customer service

Providing contact information for the customer service is evaluated as more relevant in Finland, UK, Germany and Greece compared to the other countries. At the same time, in Spain and the Netherlands this type of information is rated as slightly less relevant compared to the other countries.

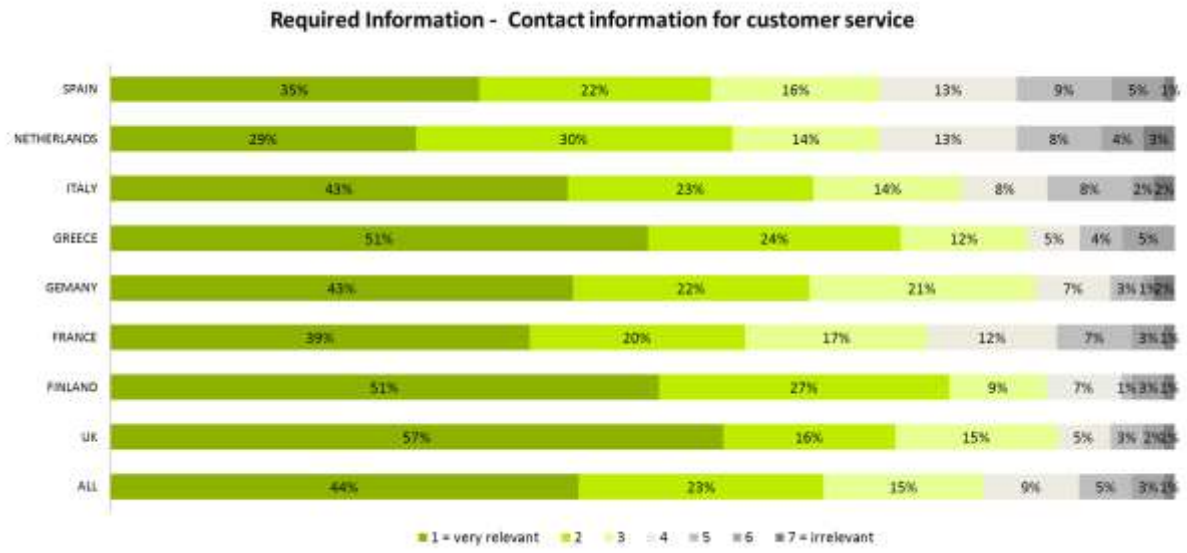


Figure 23: Required information – contact data for customer service

6.2.1.10 Tourist information

Providing tourist information at the beginning of the trip, i.e. when booking the service seems to be less relevant as the other types of information. However, especially in Greece and in the UK, tourist information seems to have higher relevance than in the other countries, followed by Italy and Finland. However, also here, the differences between the countries are rather small.

Figure 24: Tourist information – in advance

6.2.1.11 Information about restaurants, cafés, etc.

Overall, information about restaurants, hotels, cafés, etc. has the lowest values for relevance from all types of information that can be provided to the service users, but it is still considered relevant. Only in UK and Greece, many of the respondents (about 40%) evaluated this information as *"very relevant".*

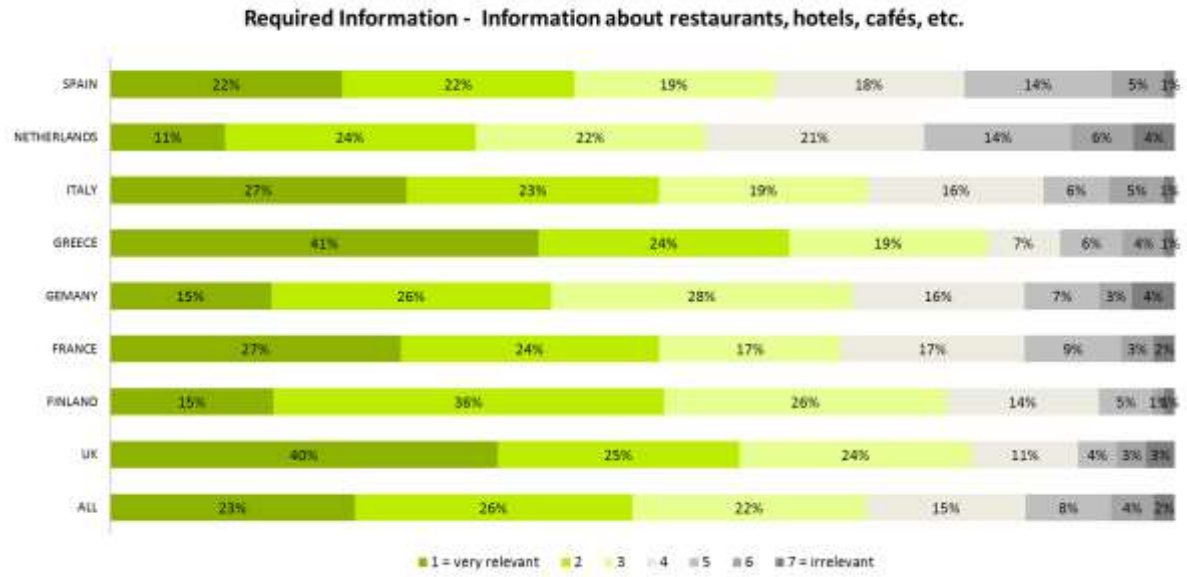


Figure 25: Required information – information about restaurants, café´s, etc.

6.2.2 Information required during operation

6.2.2.1 Real-time location of the vehicle

The evaluation of the relevance of information about the real-time location of the vehicle during the trip by the respondents from the Netherlands shows very heterogeneous picture – 60% of the respondents evaluate the relevance with values between 1 and 3 (on the 7-point scale) which is a smaller share of the sample compared to the other countries. In all other countries, this type of information is evaluated as (very) relevant with rather small differences between the countries.

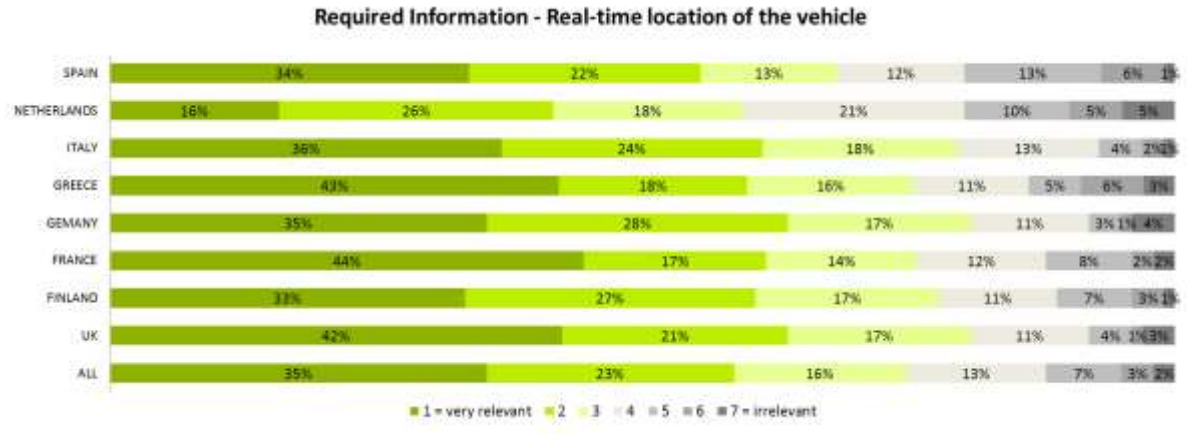


Figure 26: Required information – real-time location of the vehicle

6.2.2.2 Contact information for a customer service

The contact information for a customer service seems to be less relevant during the operation than

when booking the service. However, this might also indicate that respondents assume to receive this type of information at the beginning of the usage and hence, to have it available also during the usage. In Greece, UK, Finland and Italy, this information is evaluated as slightly more relevant than in the other countries.

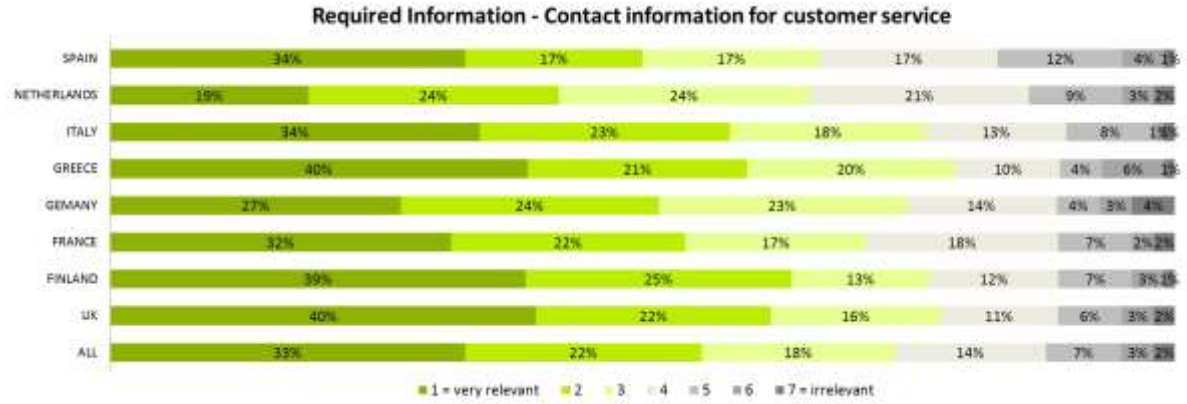


Figure 27: Required information – contact information for a customer service

The tendencies in the answers are similar to the answers for the same question above. This indicates that even if the relevance of this type of information seems to be lower than when booking the vehicle, the differences between the countries remain the same.

6.2.2.3 Information about the vehicle operation

The information about what the vehicle "sees" is part of the information provided by the service to give a feedback about the vehicle operation and status of the self-driving mode to the passenger. The relevance of this type of information is the highest in the following countries: the UK, Italy and Greece, followed by France and Spain, whereas in the Netherlands, only slightly over half (58 %) consider it relevant.

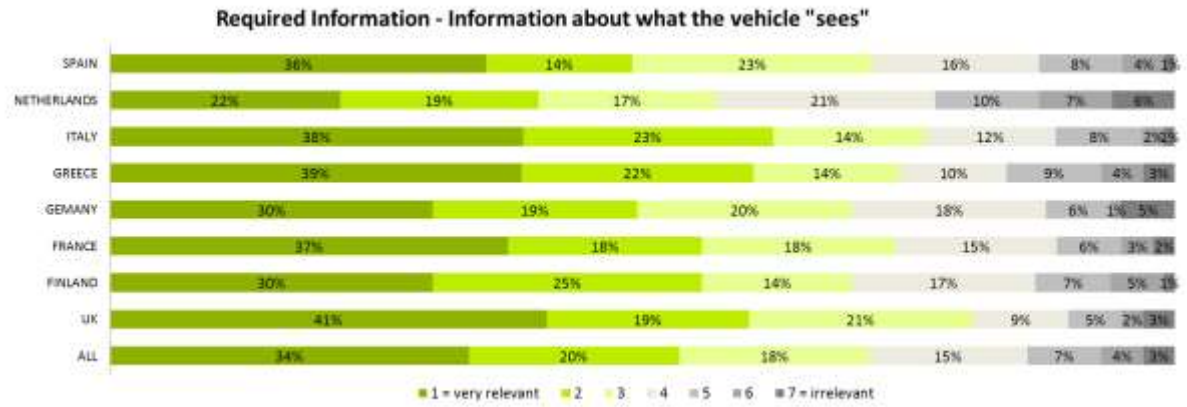


Figure 28: Required information - vehicles´perception

The requirements on the information about what the vehicle is doing or about to do seem to be slightly more relevant than the information about what the vehicle "sees". The relevance of this type of information is rated highest in Italy.

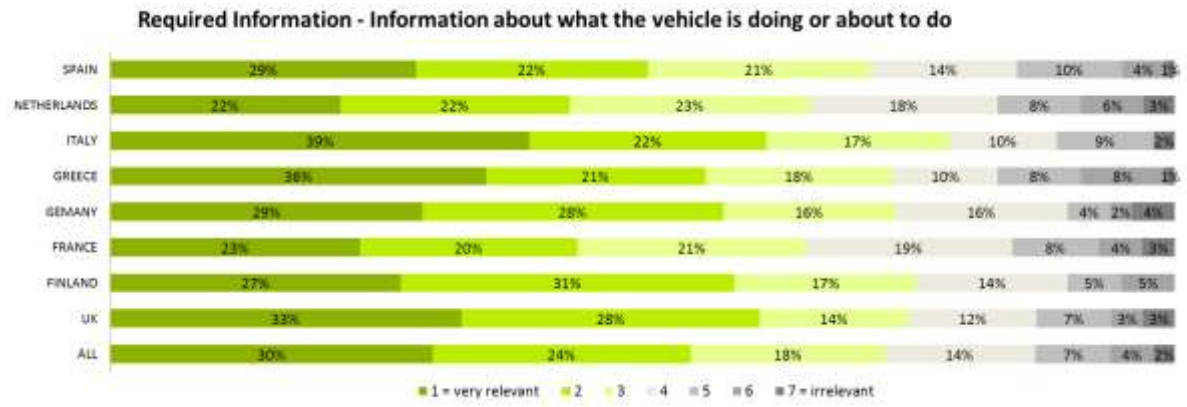


Figure 29: Required information – vehicle operation

6.2.2.4 Real-time tourist information

Real-time tourist information, including points of interest or sights near the location of the user, has slightly higher relevance for the respondents than the information about the vehicle operation. In Italy, Greece and the UK, the relevance of this type of information is rated higher than in the other countries.

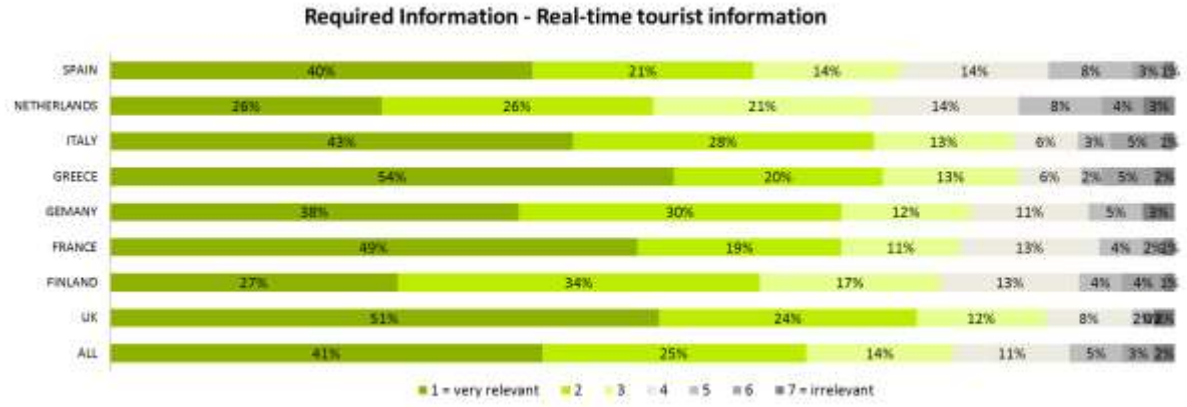


Figure 30: Required information – real-time tourist information

Comparing these results with the answers on the same question when booking the service shows that the relevance of this type of information is, as expected, slightly higher during operation, meaning using the service driving in self-driving mode in the Gardens of Versailles, than when booking the service and reserving a vehicle.

Further analyses of the perceived relevance of different types of information depending on age, gender and other individual characteristics will follow in the further works in the user acceptance task.

6.2.3 **Concerns**

6.2.3.1 Data Privacy

Overall, data privacy is a strong concern for 40% of the respondents, and a very strong concern for 13% of the respondents. The UK had the highest proportion of respondents being very concerned, which double the amount of other countries' concerns. However, Spain had the next highest proportion of respondents being very concerned, with a very low proportion that were not concerned at all and was the only country where more than 50% of respondents scored their level of concern highly. Across the countries, Italian and Greek respondents appear to be the least concerned, having the highest proportions of not being concerned at all about data privacy, and were also the highest proportions having little or no concern.

6.2.3.2 Cyber Security

Cyber security is the 2nd most concerning specific aspect across all countries, with the proportion of respondents being very concerned varying between 5 and 22% between countries. Similarly to other aspects, the UK had the highest proportion of respondents that were very concerned about cyber security. Spain and Finland also have high proportions, and Finland also has the lowest proportion of respondents who are not concerned across all countries. Italy is the country with the highest share having little or no concern, and the lowest share who are highly and very concerned, suggesting it is the least concerned country.

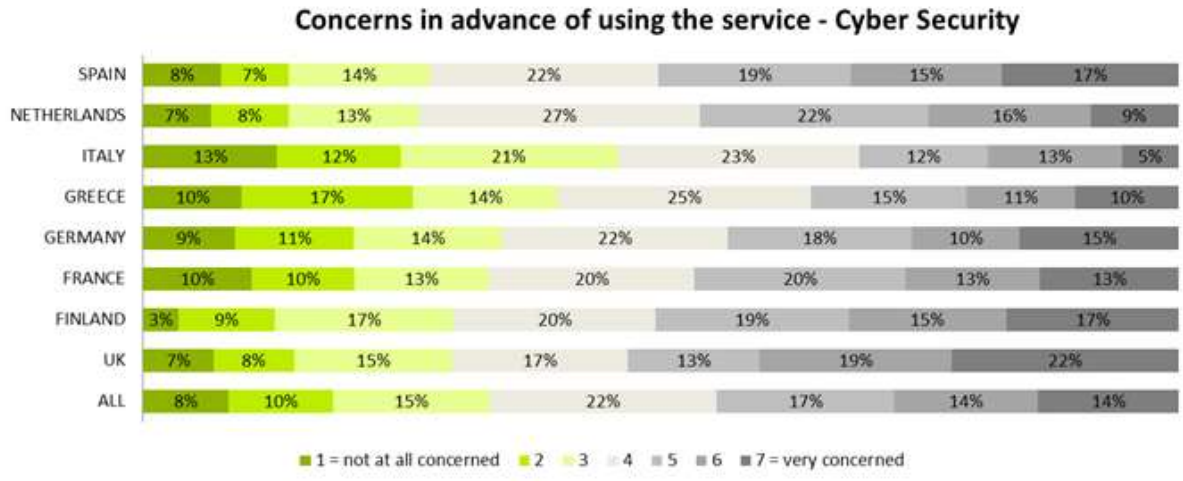


Figure 31 Concerns – cyber security

6.2.3.3 Smartphone Battery

Although there are high levels of concern across all countries, as with other aspects Spain and Italy have the least concern about the service affecting smartphone battery, with the highest shares of respondents registering no or little concern, as well as the smallest shares registering as highly or very concerned. The UK would seem to be the most concerned country with both the smallest proportion with little or no concern, and the highest portion being very concerned with over 50% of respondents registering high levels of concern.

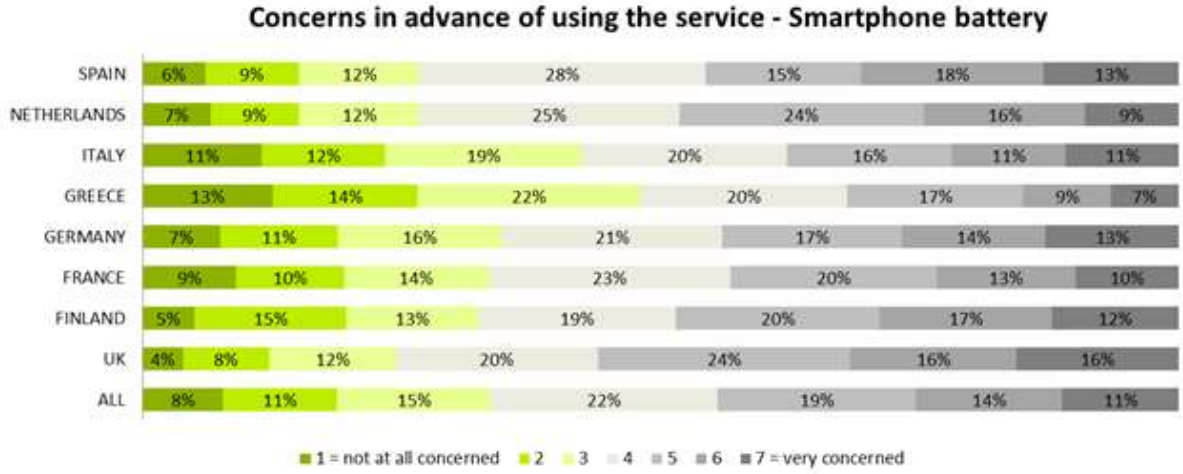


Figure 32: Concerns – smartphone battery

6.2.3.4 Data Loss or Malfunction affecting information

This is the specific aspect which appears to be least concerning across all countries, with the highest levels of little or no concern, and lowest share of highly concerned with only 10% being very concerned. Greece has the highest shares of both no or little concerns, as well as the lowest share being highly concerned. Spain, Finland and UK all have low shares with no or little concern, and the highest shares of those being highly or very concerned.

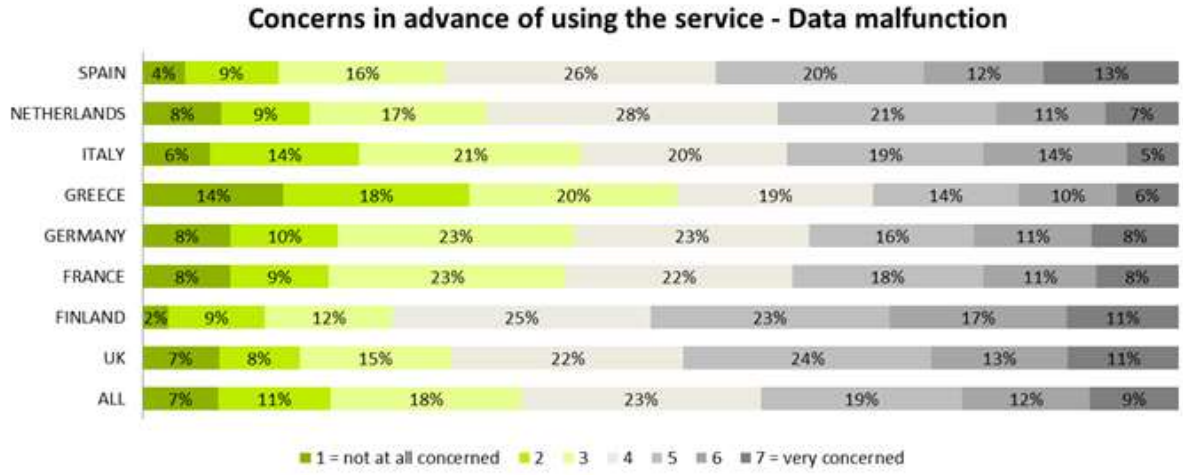


Figure 33: Concerns – data malfunction

6.2.3.5 Payment Process

Payment processing is the specific aspect that is most concerning across all countries, with 50% of people highly concerned and 19% very concerned. Almost a third of the UK respondents are very concerned about the payment process for the service, and France, Finland and Spain, also have high proportions who are very concerned and around 60% of respondents are highly concerned. Greece and Italy are once again the least concerned.

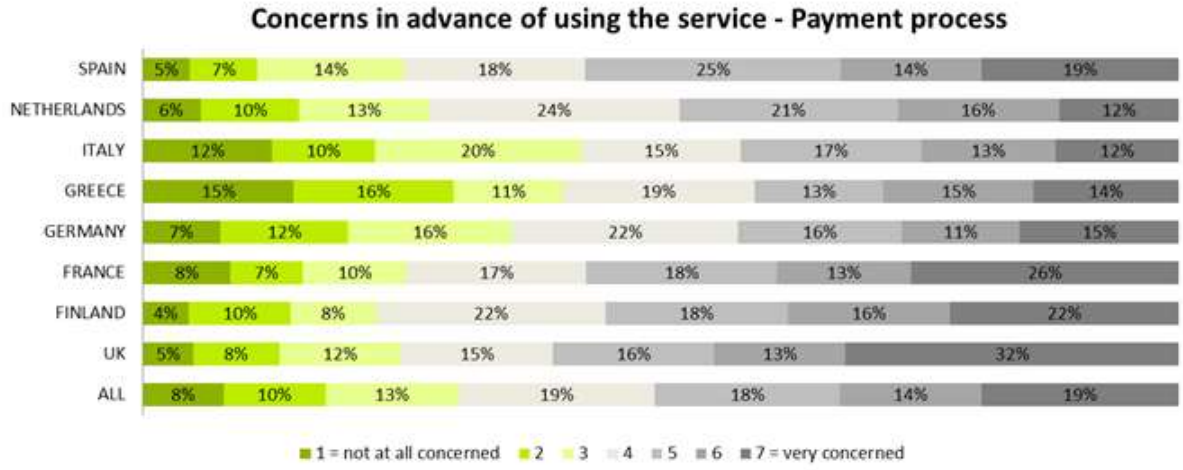


Figure 34: Concerns – payment process

6.2.3.6 Other Concerns

Respondents were asked if they had any other concerns in advance of using the service. For all countries, less than 10% of respondents offered any other concerns. There were much more extreme views regarding other concerns than the specific aspects. Nearly a third of these respondents were very concerned but also almost 20% were not at all concerned, around double that of any of the specific aspects. The concerns varied but were grouped into broad categories, which are presented in Table 3. Some of the stated concerns were the same as the specific aspects already rated, so it may be that the respondents did not fully understand the question. The largest concern was related to how one would get help when there is a technical failure or emergency in the service (which is related to Question 5 were information was scored as highly relevant), and there were also many concerns related to data and safety.

Table 3 - Other Concerns

Concern	Number of Respondents
Getting help in technical failure/emergency	16
Data cost, connection and use	13
Safety	11
Break-down, malfunction, reliability, performance	7
Insurance / deposit	7
Data protection	6
Mobile running out of charge / no smartphone	6
The general concept of automated driving	5
Service fee	5
App malfunction	5
Payment system	4
State of charge on receipt of vehicle	4
Personal security	3

Availability	3
Wrong route / knowing exact location	3
Duration of service	2
Ease	2
comfort and cleanliness of vehicles	2
Weather	1
Distraction of app from sights	1

6.2.3.7 Concerns about using the service during operation

A follow up question to the above asked the respondents to then place themselves in the position of a user and relate what their concerns were. This was more limited than the first question, and focused only on vehicle malfunction, making other pedestrians and cyclists feel uncomfortable and data loss/malfunction affecting information. Similar to the concerns prior to using the service, there is little variation in levels of concern between the three aspects that are proposed, and there is a relatively even spread, with the greatest concerns appearing to be related to the probability of vehicle malfunction and the least concerning aspect being malfunction or loss of data.

Again, less than 10% of respondents registered any other concerns, but almost 50% of these concerns were scored as being very concerning. The main concern was safety of the vehicle, but there were also many concerns about being able to stop the vehicle during the tour if they wanted to linger at a spot, or if they felt ill.

Trends between countries reflected those about concerns prior to operation - Greece and Italy being the least concerned and UK, Finland and Spain being the most concerned.

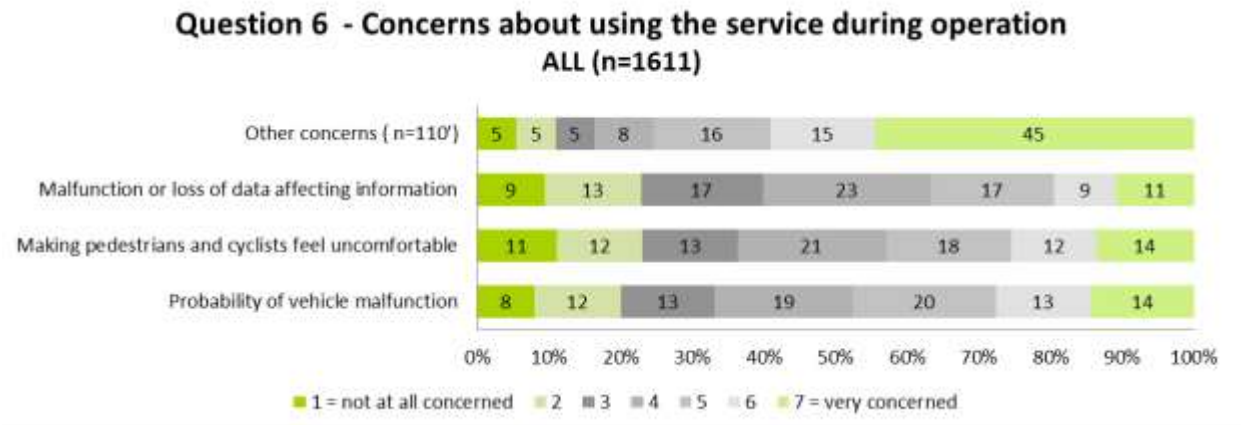


Figure 35: Concerns about use during operation

6.2.3.8 Probability of Vehicle Malfunction

There are high levels of concern about vehicle malfunction across all countries, with only two countries having less than 10% of respondents being very concerned, and all having over 40% being highly concerned. Similar to many aspects before operations, Greece and Italy have the lowest levels of concern, the UK has the highest share being very concerned, and Finland has the lowest share having no concerns.

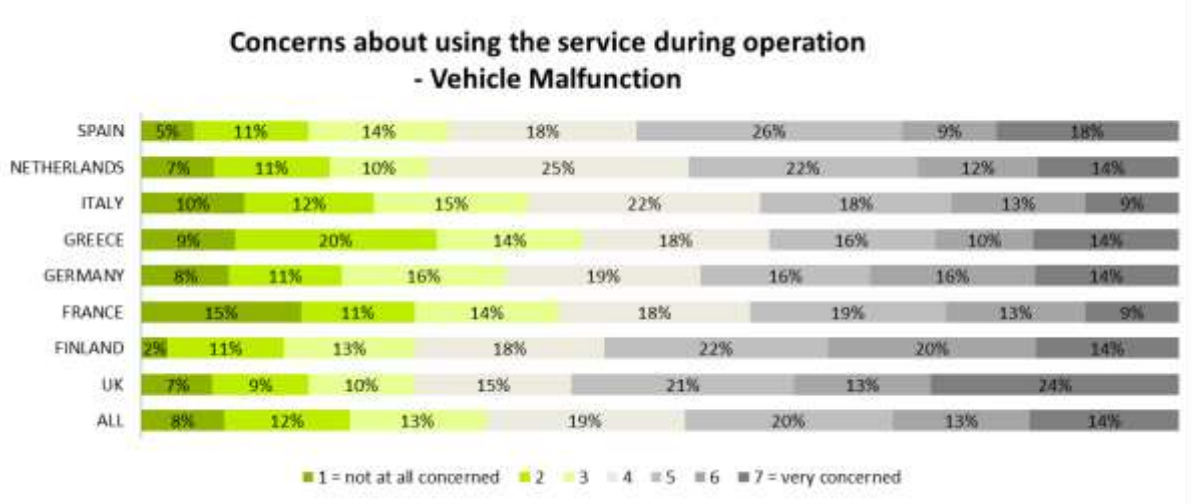


Figure 36: Concerns - vehicle malfunction by country

6.2.3.9 Making Pedestrians and Cyclists feel uncomfortable

Similarly to other aspects, around 40% of all respondents found this aspect highly concerning. There are low levels of concern for Italy, Greece and France, with 23% of Italian respondents being not at all concerned about it. The UK is once again the country with the highest number of respondents who are highly or very concerned and Finland having the lowest shares having little and no concern.

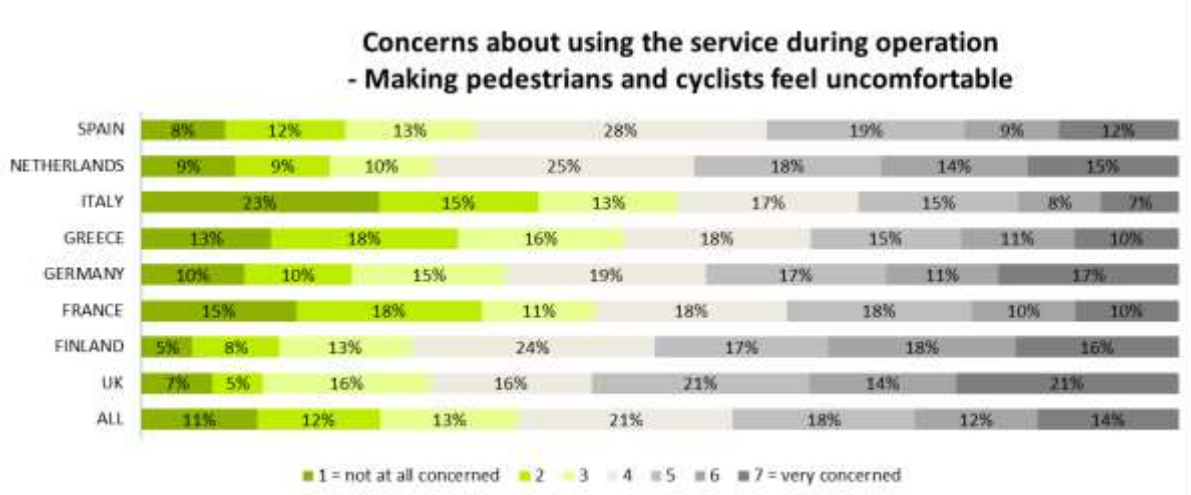


Figure 37: Concerns – pedestrian comfort by country

6.2.3.10 Malfunction or data loss affecting information

Corresponding with the concerns about aspects prior to operation, malfunction or data loss is the least concerning aspect during operation. There are similar country trends to other aspects, with Finland have the lowest proportions of no and little concern, and the UK having the highest share of those being very concerned. Italy and Greece are once again the least concerned, with around 50% of respondents having little or no concern.

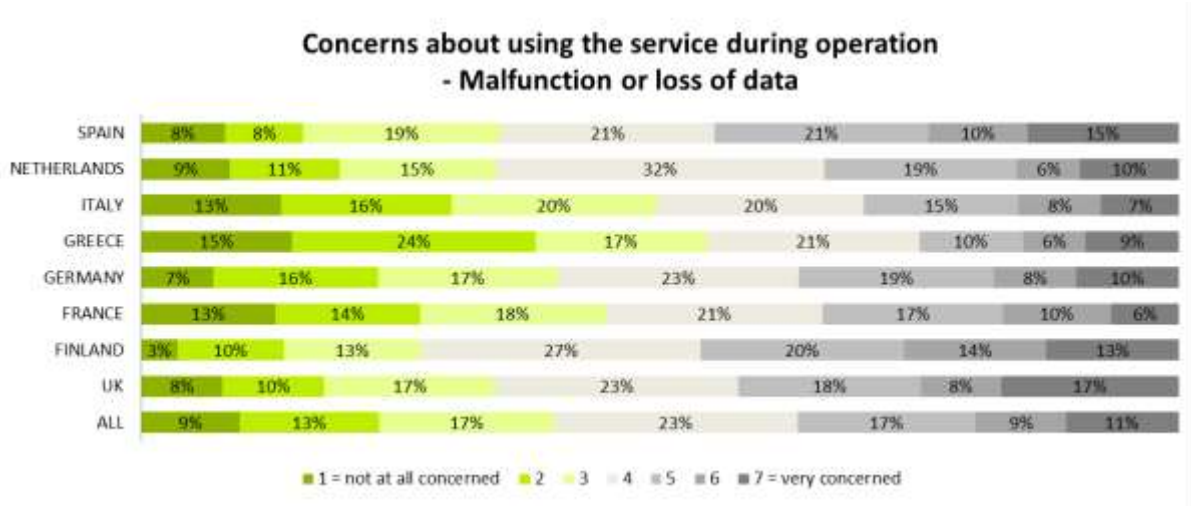


Figure 38: Concerns – malfunction or loss of data by country

6.2.3.11 Other Concerns

As with concerns prior to the service, there were also less than 10 % of respondents in every country who suggested any other concerns during the operation of the service. Nearly 80 % of these respondents were highly concerned and over half these were very concerned. The stated aspects were coded and presented in Table 4. Some stated concerns appear to reflect stated aspects, so the question may not have been fully understood. The highest number of concerns was related to safety, but many people also expressed a desire to be able to the stop the tour and spend time outside the vehicle. There was also a number of people who were uncomfortable with the general concept of automated driving so would not use the service at all.

Table 4 - Other Concerns during operation of service

Concern	Number of Respondents
Safety	33
Being able to stop to linger or if you feel ill	10
Malfunction	7
General concept of automated driving	8
Personal security / vehicle theft or damage / insurance	7
Cyber security	5
Being able to take over driving	5
Vehicle running out of charge	4
Comfort	4
Duration of trip	3
Breakdown or flat tyre	4
Data cost/use	2

Availability	1
Who to complain to if there is a malfunction	1
Don't know if it is operating correctly	1
Wrong route	1

6.2.4 **Evaluation of the perceived experience**

6.2.4.1 Finland

Error! Reference source not found.59% of responders think scenario A is exciting (median=2), **51%** responded it is very useful (median=2) and **35%** that it is safe (median=3). Also, **46%** of respondents believed that the service described in scenario A is easy to use (median=3). Overall, the experience was positive, exciting, useful and easy. Some concerns about safety exist (median=3). Overall, the experience was positive, exciting, useful and easy. Some concerns about safety exist (median=3). Overall, the experience was positive, exciting, useful and easy. Some concerns about safety exist (median=3). Overall, the experience was positive, exciting, useful and easy. Some concerns about safety exist.

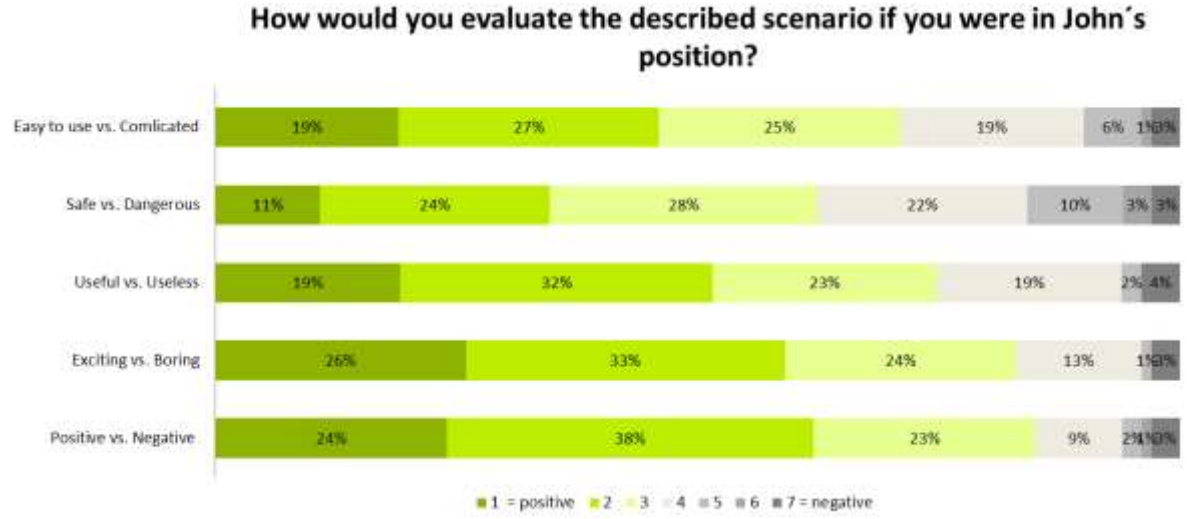


Figure 39: Evaluation of scenario as being in John's position (Question 7) - Finland

6.2.4.2 France

63% of the respondents replied that it is a positive experience versus a negative experience (median=2), **48%** of respondents think scenario A is exciting (median=3), **46%** responded it is very useful (median=3) and **37%** that it is safe (median=3). In addition, **55%** of respondents believed that scenario A is easy (median=2).

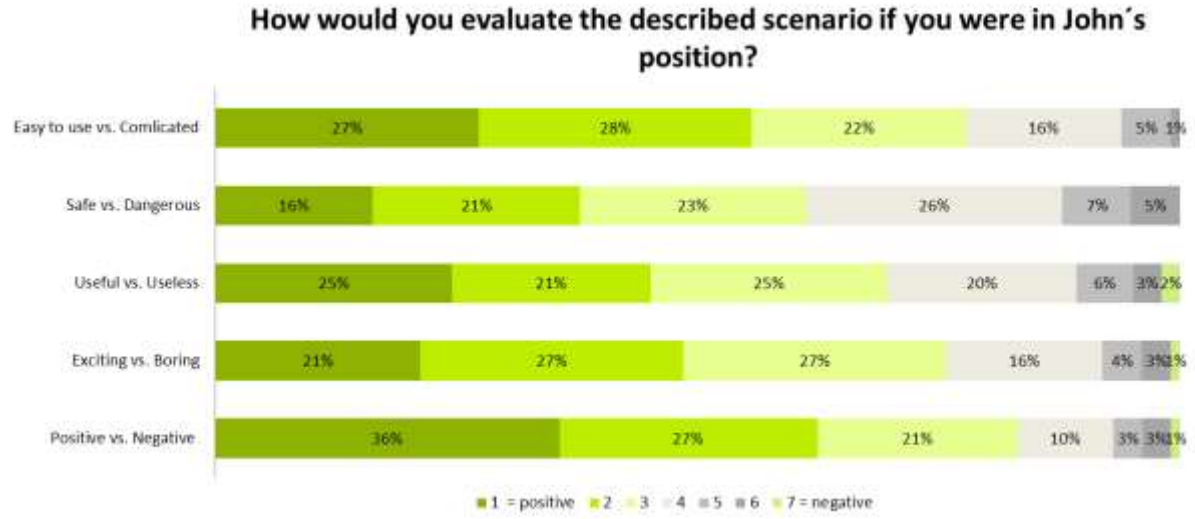


Figure 40: Evaluation of scenario as being in John's position (Question 7) - France

6.2.4.3 Germany

61% of the respondents replied that it is a positive experience versus negative experience (median=2), **57%** of respondents think scenario A is exciting (median=2), **55%** responded it is useful (median=2) and **37%** that it is safe (median=3). Also, **54%** of respondents believed that the service described in scenario A is easy (median=2). Overall, the scenario experience is perceived as positive, exciting, useful and easy. It is additionally perceived as safe, but some hesitations exist. This agrees with the overall finding.

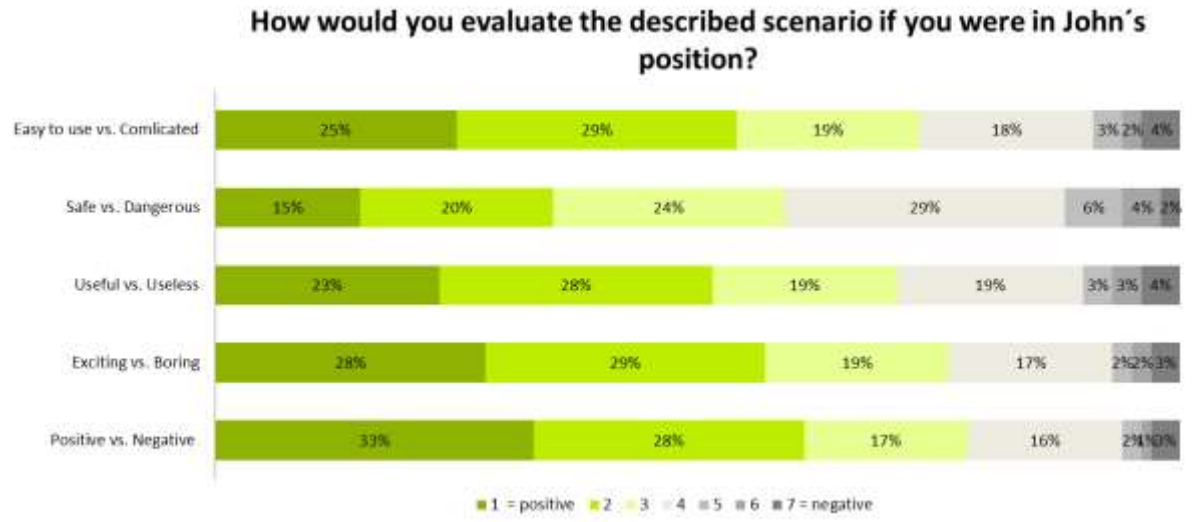


Figure 41: Evaluation of scenario as being in John's position (Question 7) - Germany

6.2.4.4 Greece

60% of the respondents replied that it is a positive experience versus negative experience (median=1), **73%** of respondents think the service described in scenario A is exciting (median=2), **55%** responded it is useful (median=2) and **52%** that it is safe (median=2). Also, **60%** of respondents believed that the service described in scenario A is easy to use (median=2). Overall, the experience was perceived as positive, easy and useful.

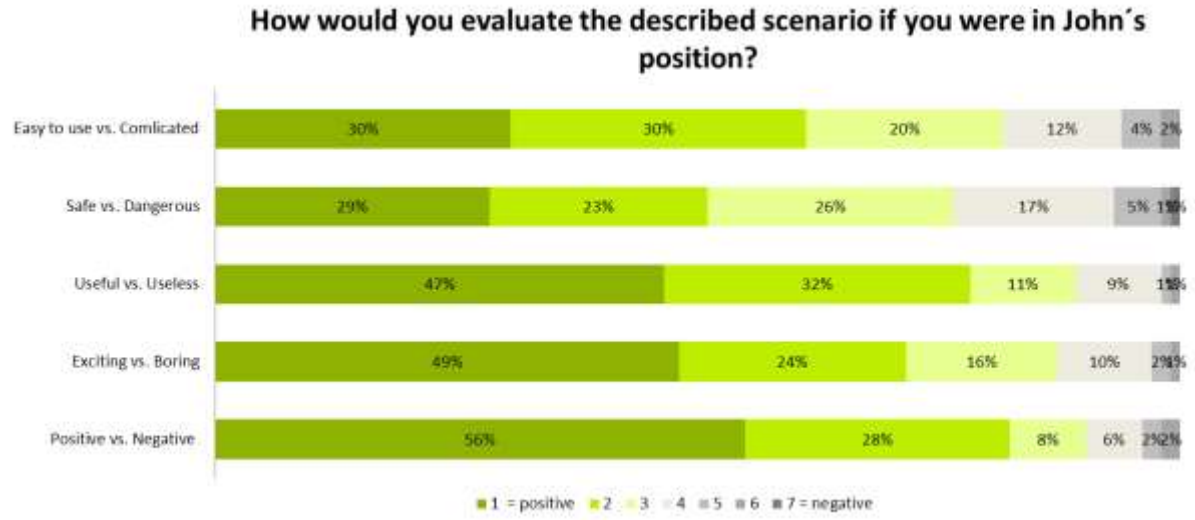


Figure 42: Evaluation of scenario as being in John's position (Question 7) - Greece

6.2.4.5 Italy

60% of the respondents replied that it is a positive experience versus negative experience (median=2), **68%** of respondents think the service described in scenario A is exciting (median=2), **71%** responded it is useful (median=2) and **40%** that it is safe (median=2). Also, **68%** of respondents believed that the service described in scenario A is easy (median=2). Again, the experience is perceived as safe but positive ratings are less when compared to the other categories (i.e. easiness, usefulness, positive experience, exciting).

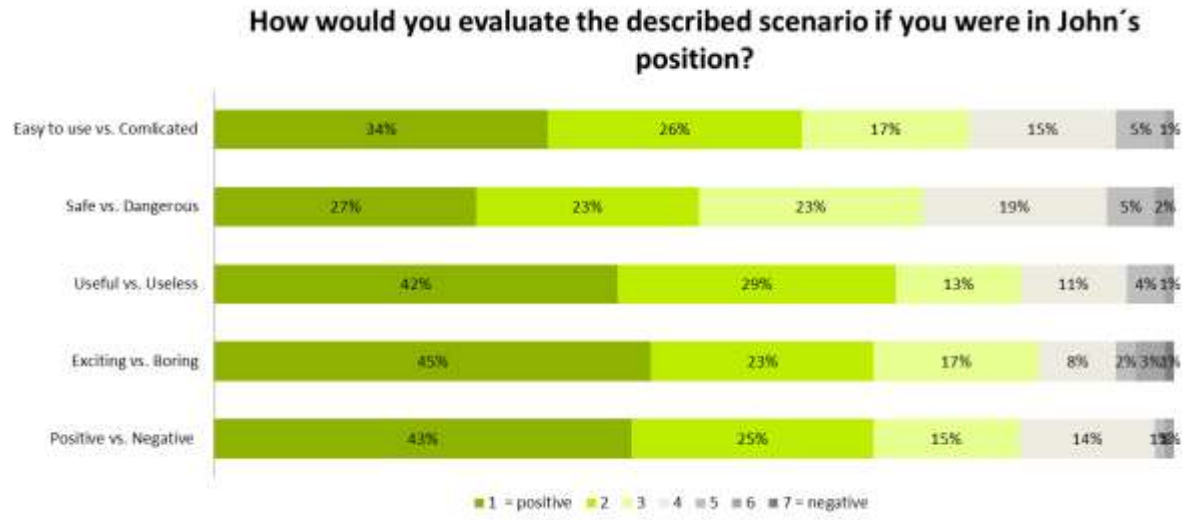


Figure 43: Evaluation of scenario as being in John's position (Question 7) - Italy

6.2.4.6 Netherlands

59% of the respondents replied that it is a positive experience versus negative experience (median=2), **55%** of respondents think the service described in scenario A is exciting (median=2), **59%** responded it is useful (median=2) and **26%** that it is safe (median=3). Also, **46%** of respondents believed that the service described in scenario A is easy to use (median=3). Dutch participants appear to perceive the self-driving vehicle experience as a safe and positive experience, useful, easy to use and exciting. It might be interesting to investigate which are the factors affecting this finding (i.e. if they are over-familiarised with diversity of vehicles in traffic, if there is increased awareness, etc.).

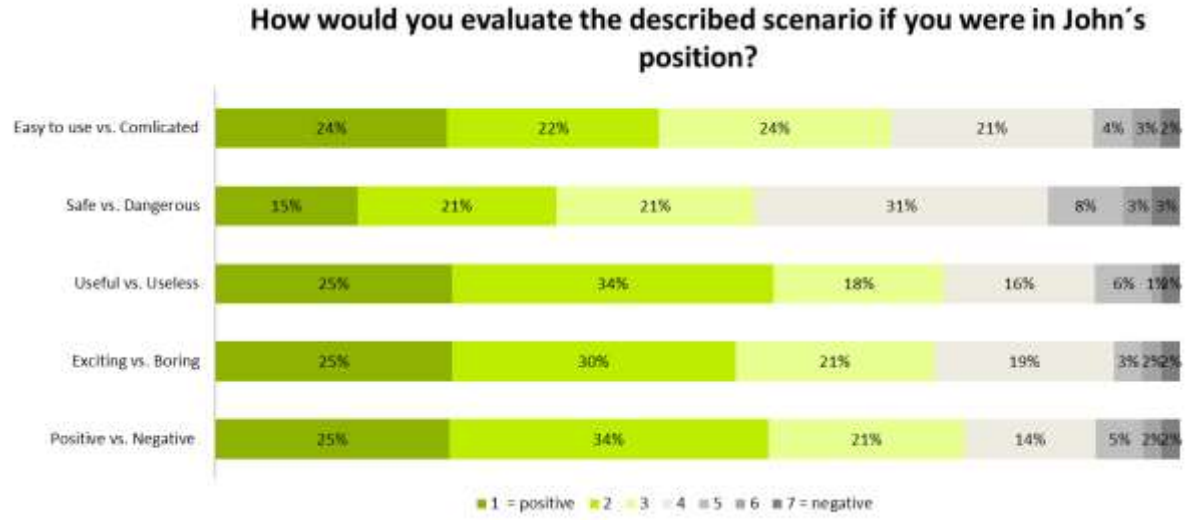


Figure 44: Evaluation of scenario as being in John's position (Question 7) – The Netherlands

6.2.4.7 Spain

65% of the respondents replied that it is a positive experience versus negative experience (median=2), **57%** of respondents think the service described in scenario A is exciting (median=2), **60%** responded it is useful (median=2) and **26%** that it is safe (median=3). Also, **48%** of respondents believed that the service described in scenario A is easy to use (median=2). The experience is perceived as easy to use, useful, a positive experience and safe. Apparently, on one hand, most respondents agree that the experience is safe, however, on the other hand, less do so strongly.

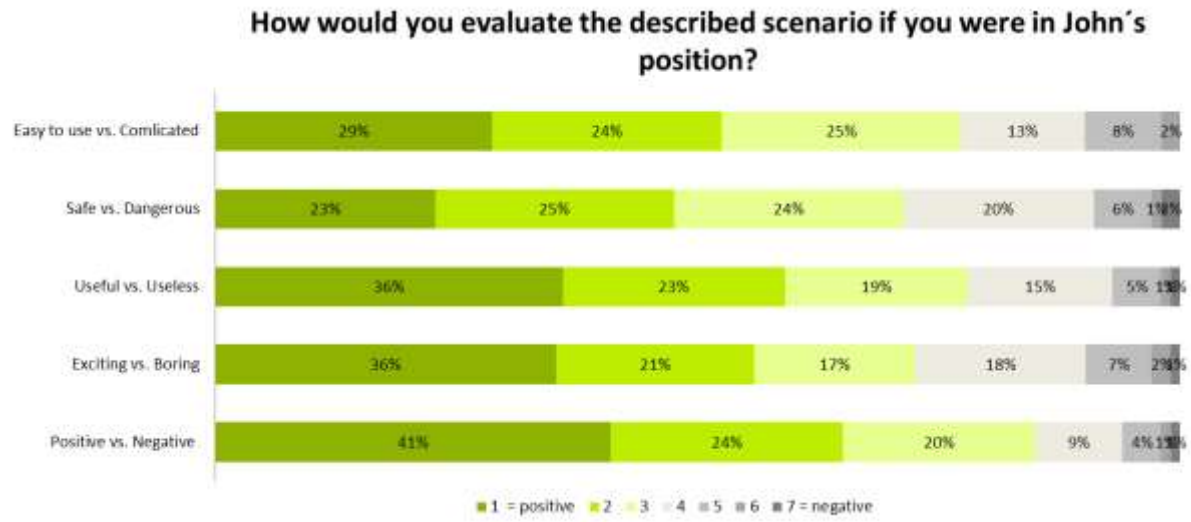


Figure 45: Evaluation of scenario as being in John's position (Question 7) – Spain

6.2.4.8 UK

66% of the respondents replied that the service described in Scenario A is a positive experience versus a negative experience (median=2), **62%** of respondents think the service described in scenario A is exciting (median=2), **60%** responded it is useful (median=2) and **39%** that it is safe (median=3). Also, **60%** of respondents believed that the service described in scenario A is easy to use (median=2).

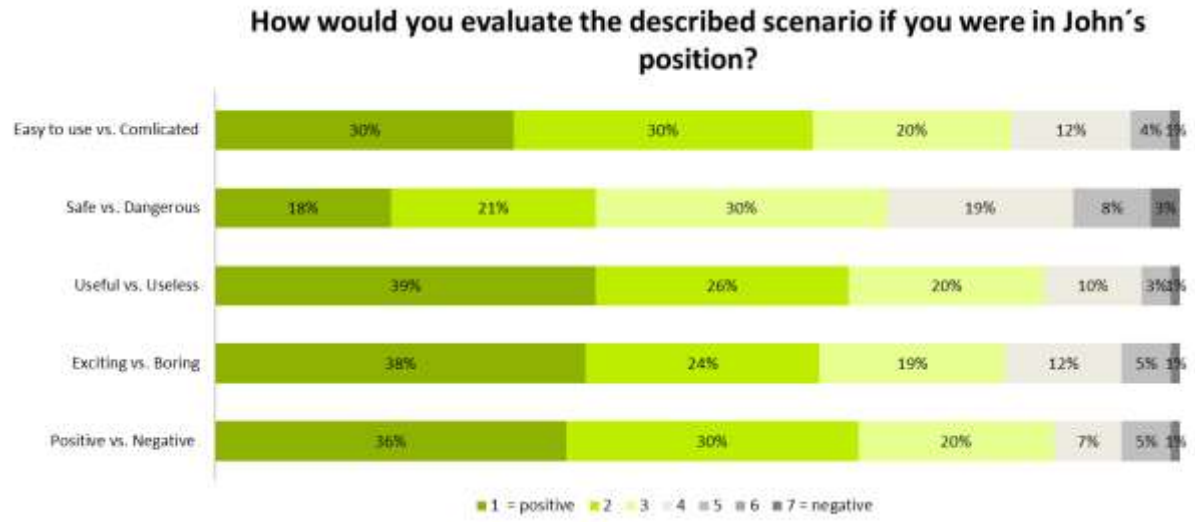


Figure 46: Evaluation of scenario as being in John's position (Question 7) – UK

6.2.5 Willingness to use the service and preferences toward using the service over other modes of transportation

6.2.5.1 Finland

Almost **60%** of respondents replied that they would use the service offered if it was available and **14%** of users stating they would not use this service (median=3). Respondents wish to use the offered services, but they do not seem enthusiastic. **43%** of the respondents replied that they would prefer using the self-driving vehicle over a tourist bus (median=3), **27 %** over walking or cycling in the city and **26%** over doing the same thing in the Gardens (median=4), and **47%** more than renting a car in the city (median=3). It seems respondents would prefer to use the self-driving vehicle rather than renting a car, but this opportunity cannot replace walking or cycling or even taking a touristic bus.

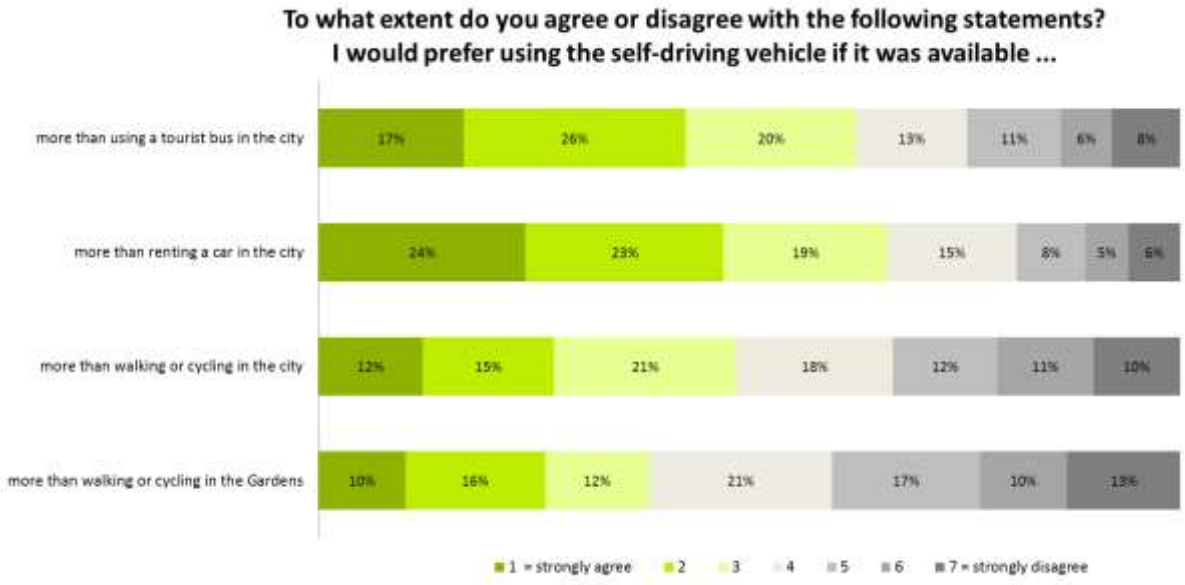


Figure 47: Preferred situations/conditions of using a self-driving vehicle (Question 9) - Finland

6.2.5.2 France

62% of respondents replied that they would use the service offered if it was available and **14%** of users stated they would not use this service (median=3). **52 %** of the respondents replied that they would prefer using the self-driving vehicle over a tourist bus (median=2), **35 %** over walking or cycling in the city (median=3) and **23 %** over doing the same thing in the Gardens (median=4), and **54 %** more than renting a car in the city (median=2).

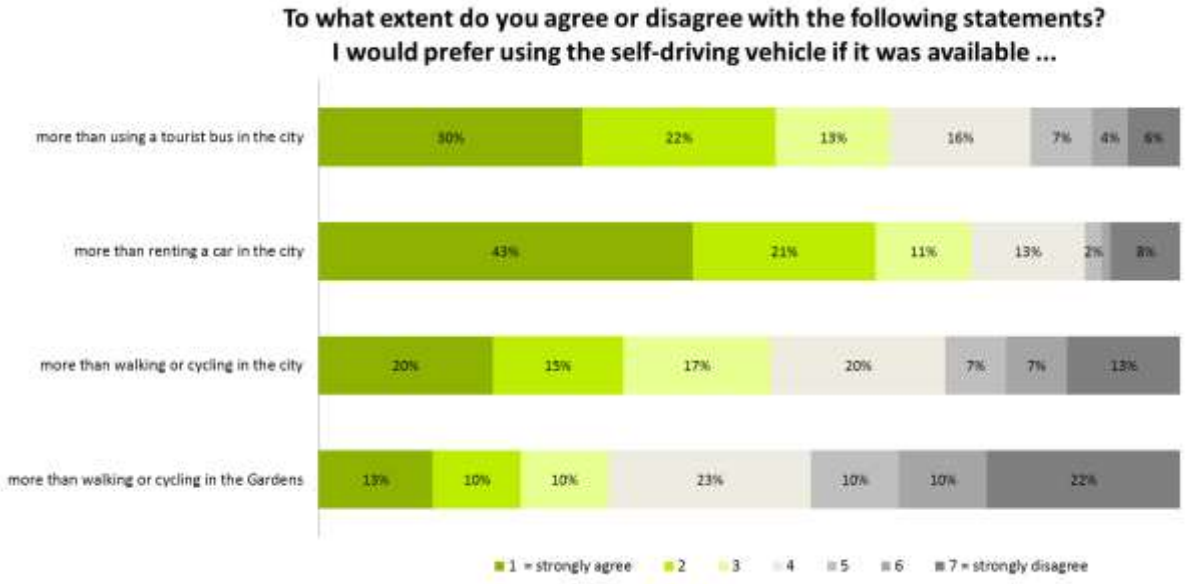


Figure 48: Preferred situations/conditions of using a self-driving vehicle (Question 9) - France

6.2.5.3 Germany

69% of respondents replied that they would use the service offered if it was available and **13%** of users stating they would not use this service (median=3). **46%** of the respondents replied that they would prefer using the self-driving vehicle over using a tourist bus (median=3), **38 %** over walking or cycling in the city (median=3) and **26%** over doing the same thing in the Gardens (median=4), and **49%** more than renting a car in the city (median=3). Using another vehicle (i.e. touristic bus and/ or rented car are least preferred when compared to the self-driving vehicle experience.

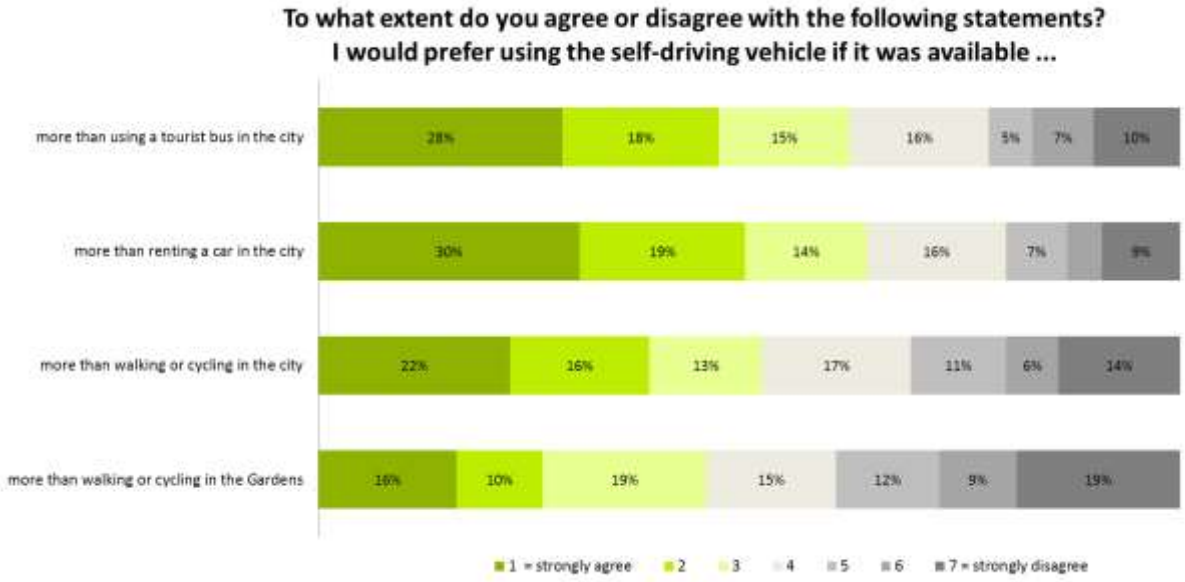


Figure 49: Preferred situations/conditions of using a self-driving vehicle (Question 9) - Germany

6.2.5.4 Greece

75 % of respondents replied that they would use the service offered if it was available and **2 %** of users stating they would not use this service (median=2). **71%** of the respondents replied that they would prefer using the self-driving vehicle over using a tourist bus (median=2), **46%** over walking or cycling in the city (median=3) and **43%** over doing the same thing in the Gardens (median=3), and **68%** over renting a car in the city (median=1). Again, the touristic bus and the rented car are preferred less than the self-driving vehicle experience.

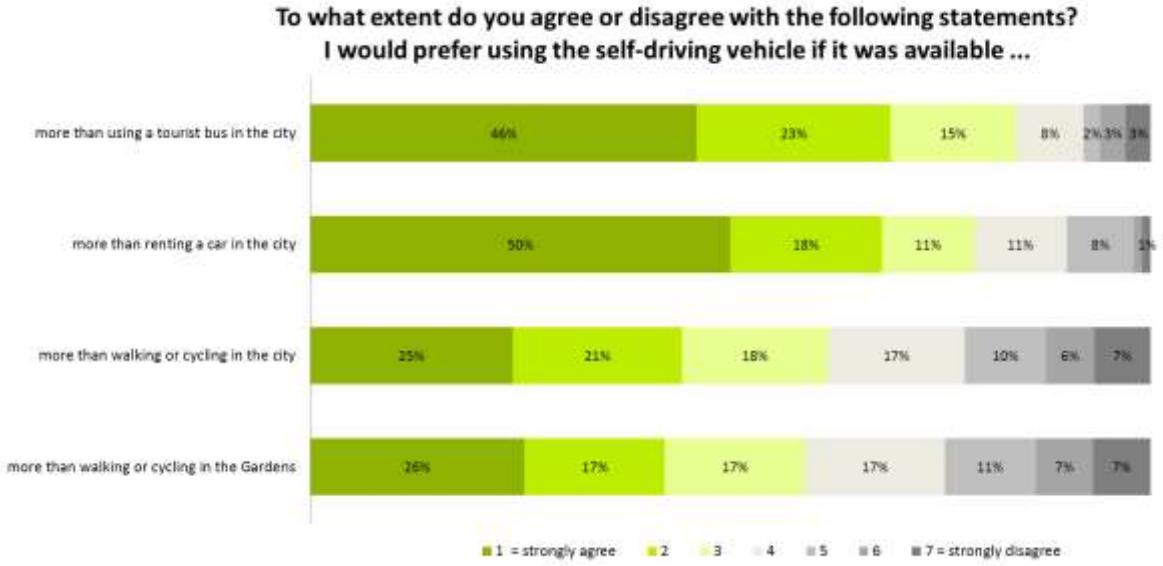


Figure 50: Preferred situations/conditions of using a self-driving vehicle (Question 9) - Greece

6.2.5.5 Italy

66 % of respondents replied that they would use the service offered if it was available and **5 %** of users stating they would not use this service (median=3). **54 %** of the respondents replied that they would prefer suing the self-driving vehicle over using a tourist bus (median=2), **36 %** over walking or cycling in the city (median=3) and **28 %** over doing the same thing in the Gardens (median=4), and **62 %** more than renting a car in the city (median=2). Similarly to previous findings, the self-driving vehicle experience in the Versailles Gardens is preferred over the touristic bus and the rented car around the city.

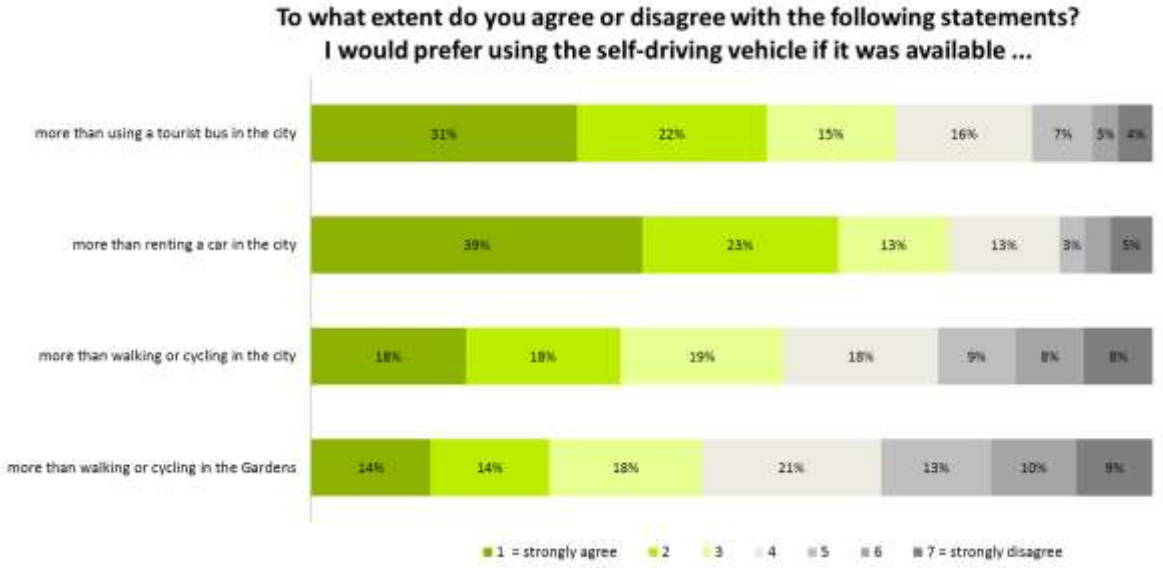


Figure 51: Preferred situations/conditions of using a self-driving vehicle (Question 9) - Italy

6.2.5.6 Netherlands

57 % of respondents replied that they would use the service offered if it was available and **15 %** of users stating they would not use this service (median=3). **38 %** of the respondents replied that they would prefer using the self-driving vehicle over using a tourist bus (median=3), **28 %** over walking or cycling in the city (median=4) and **23 %** over doing the same thing in the Gardens (median=4), and **47 %** more than renting a car in the city (median=3). Similarly to other countries, the self-driving vehicle is preferred over a touristic bus and/ or a rental car, but it is the lowest scoring preferences across all countries. It could be speculated that walking and cycling might be viewed differently by Dutch respondents, but an open question could provide more insight.

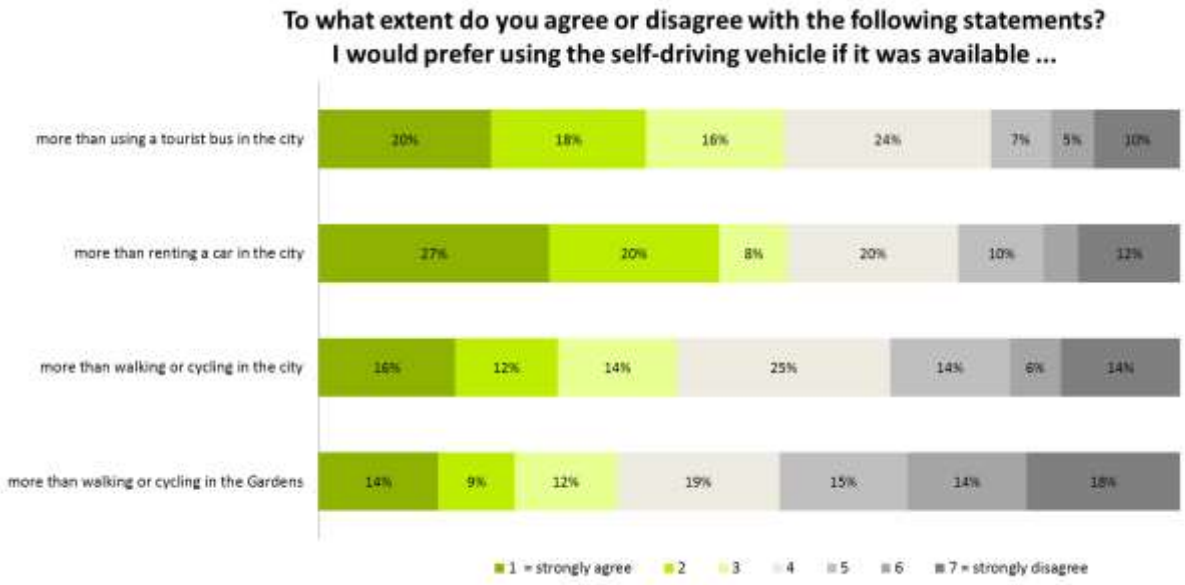


Figure 52: Preferred situations/conditions of using a self-driving vehicle (Question 9) – The Netherlands

6.2.5.7 Spain

68 % of respondents replied that they would use the service offered if it was available and **6 %** of users stating they would not use this service (median=3). **47 %** of the respondents replied that they would prefer using the self-driving vehicle over using a tourist bus (median=2), **38 %** over walking or cycling in the city (median=2) and **23 %** over doing the same thing in the Gardens (median=2), and **31 %** more than renting a car in the city (median=3). More respondents would prefer the self-driving vehicle over renting a car in the city. However, using the self-driving vehicle is equally preferred over taking the touristic bus and walking/cycling in the city.

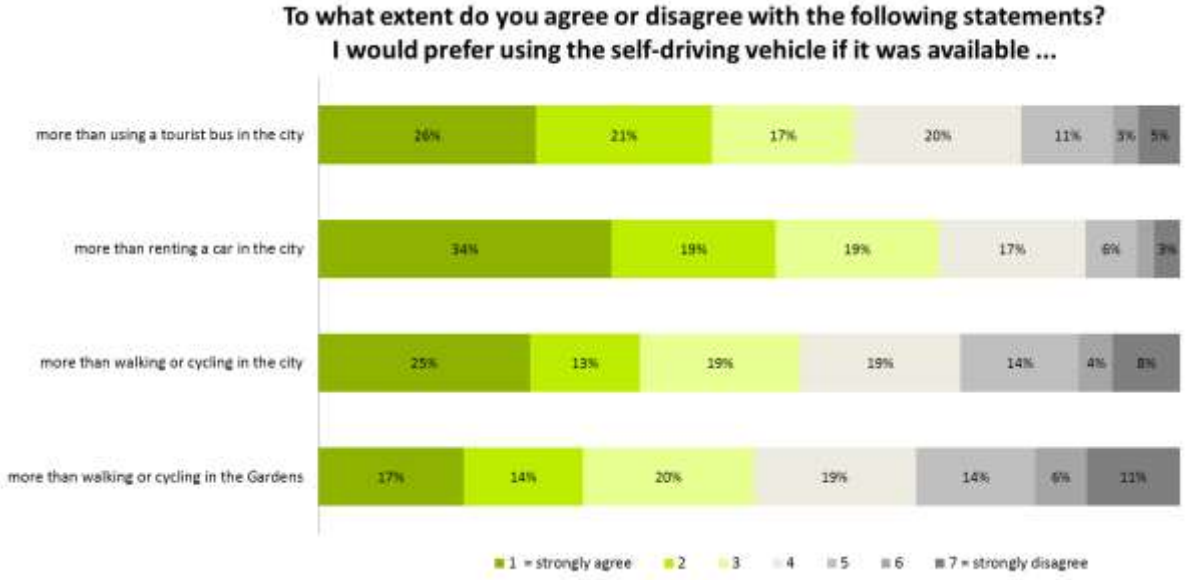


Figure 53: Preferred situations/conditions of using a self-driving vehicle (Question 9) – Spain

6.2.5.8 UK

68 % of respondents replied that they would use the service offered if it was available and **13 %** of users stating they would not use this service (median=3). **43 %** of the respondents replied that they would prefer using the self-driving vehicle over using a tourist bus (median=3), **25 %** over walking or cycling in the city (median=3) and **28 %** over doing the same thing in the Gardens (median=4), and **54 %** over renting a car in the city (median=2). Participants in UK do not seem very eager to use the self-driving vehicle in the Versailles Garden but rather use it for an extensive sightseeing experience. The touristic bus and rental car are least preferred over the self-driving vehicle experience.

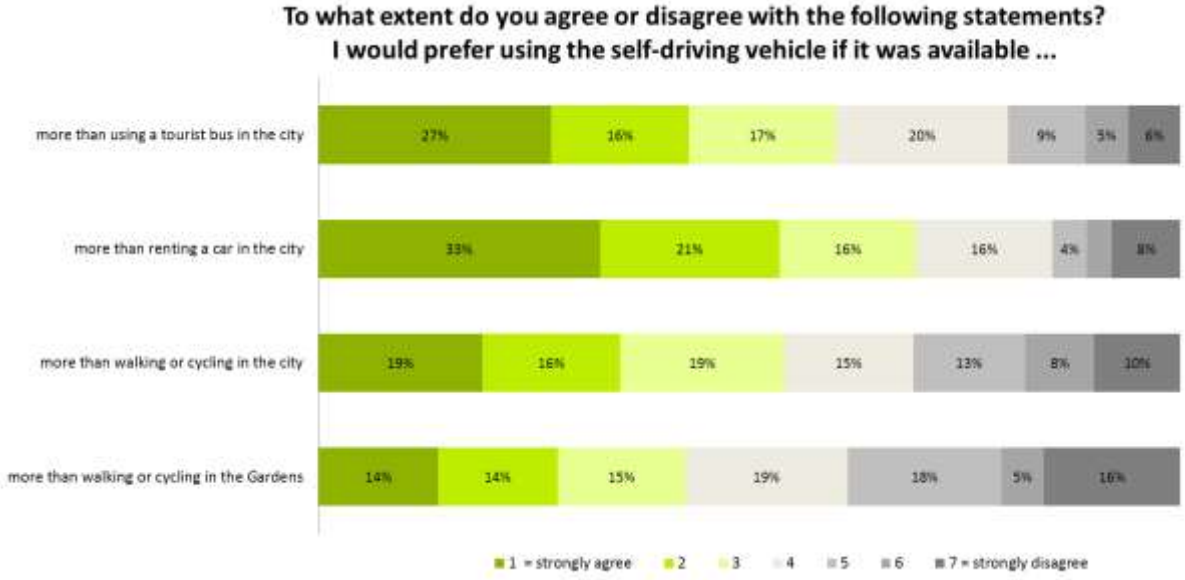


Figure 54: Preferred situations/conditions of using a self-driving vehicle (Question 9) – UK

6.2.6 Preferences toward sharing data to use the service

Finland

69 % of the respondents are willing to provide name and surname, **68 %** prefer to register with an existing account, **41 %** agree to provide their email address, **41 %** would use a nickname ,**36 %** would allow access to their smartphone's microphone, **35 %** would allow access to their location (i.e. GPS), **30%** would provide their vehicle's license number, **24 %** would share their payment data (bank account, credit card), **19 %** other payment options (e.g. PayPal), and **15 %** activation of Bluetooth on the smartphone. In addition, **25 %** respondents agree to share other types of information to be granted access to the service.

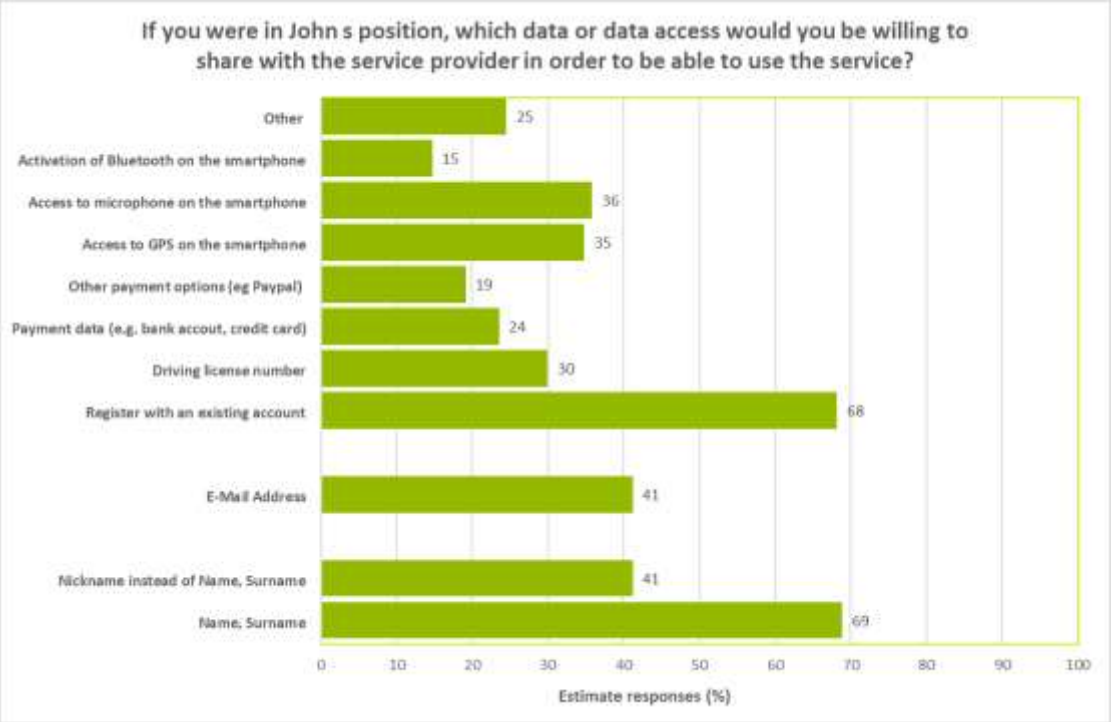


Figure 55: Data types willing to share to access the service (Finland)

France

47% of the respondents are willing to provide name and surname, **68%** prefer to register with an existing account, **64%** agree to provide their email address, **60 %** would use a nickname, **26%** would allow access to their smartphone's microphone, **38%** would allow access to their location (i.e. GPS), **32%** would provide their vehicle's license number, **15%** would share their payment data (bank account, credit card), **32%** other payment options (e.g. PayPal), and **26%** activation of Bluetooth on the smartphone. In addition, **3%** respondents they would prefer to share other types of information, including one person who stated that they would share their home address. 6 respondents stated that they would not give access to any of their data. The email address and an existing account are the preferred registration method.

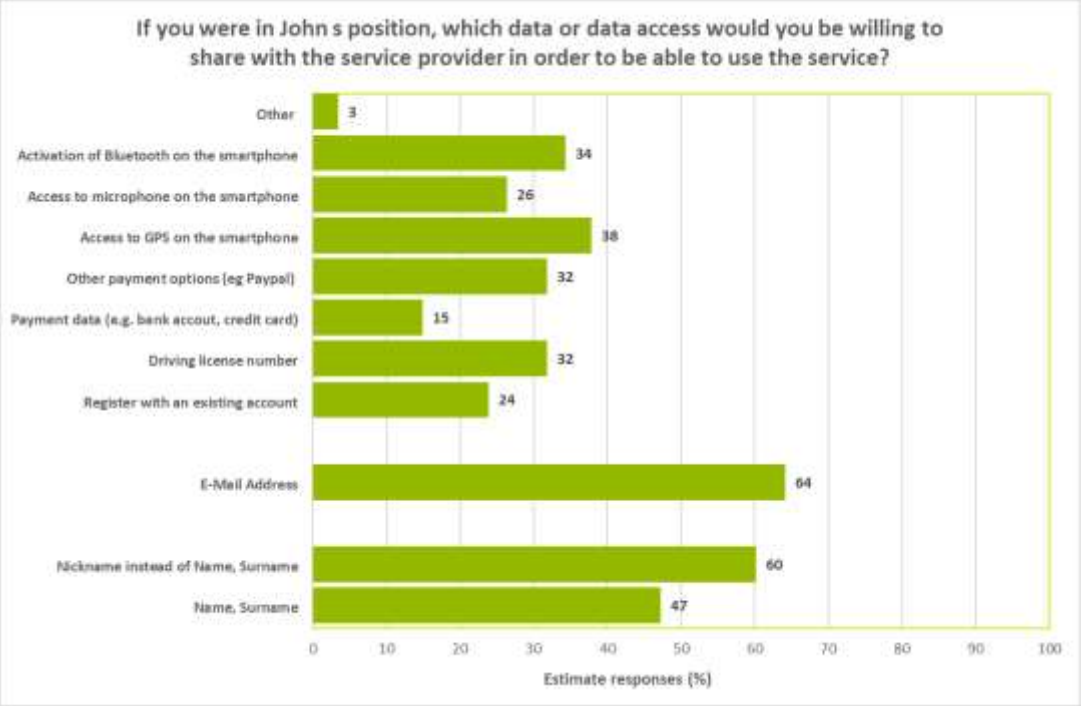


Figure 56: Data types willing to share to access the service (France)

Germany

79% of the respondents are willing to provide name and surname, **15%** prefer to register with an existing account, **76%** agree to provide their email address, **23%** would use a nickname, **25%** would allow access to their smartphone's microphone, **41%** would allow access to their location (i.e. GPS), **45%** would provide their vehicle's license number, **29%** would share their payment data (bank account, credit card), **49%** other payment options (e.g. PayPal), and **30%** activation of Bluetooth on the smartphone. In addition, **6%** of respondents would prefer to share other types of information, including home address, or hotel address for tourists. 6 respondents stated that they would not give access to any of their data. Most respondents prefer to use their own personal details to register (i.e. name/surname) and they are reluctant to share their bank details. The latter finding agrees with the overall finding but the first does not.

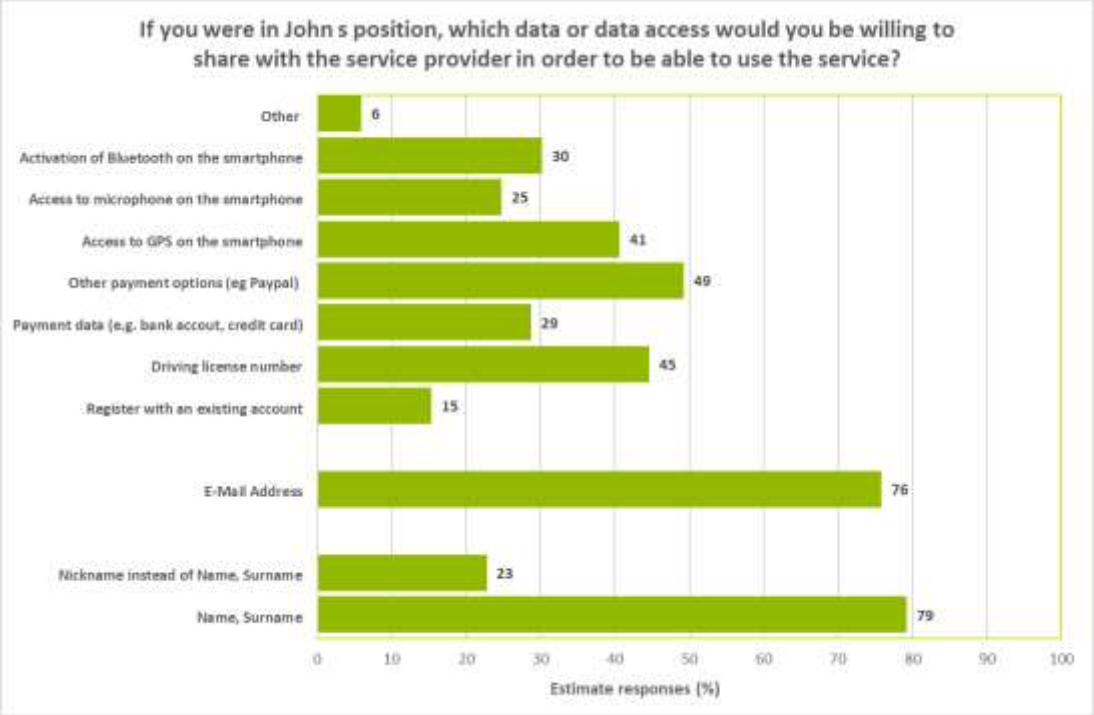


Figure 57: Data types willing to share to access the service (Germany)

Greece

59% of the respondents are willing to provide name and surname, **47%** prefer to register with an existing account, **81%** agree to provide their email address, **54%** would use a nickname, **39%** would allow access to their smartphone's microphone, **56%** would allow access to their location (i.e. GPS), **33%** would provide their vehicle's license number, **19%** would share their payment data (bank account, credit card), **64%** other payment options (e.g. PayPal), and **39%** activation of Bluetooth on the smartphone. In addition, **6%** of respondents stated that they would not give access to any of their data. Email address is the preferred registration method. The same reluctance to share bank details is evident here as with other countries.

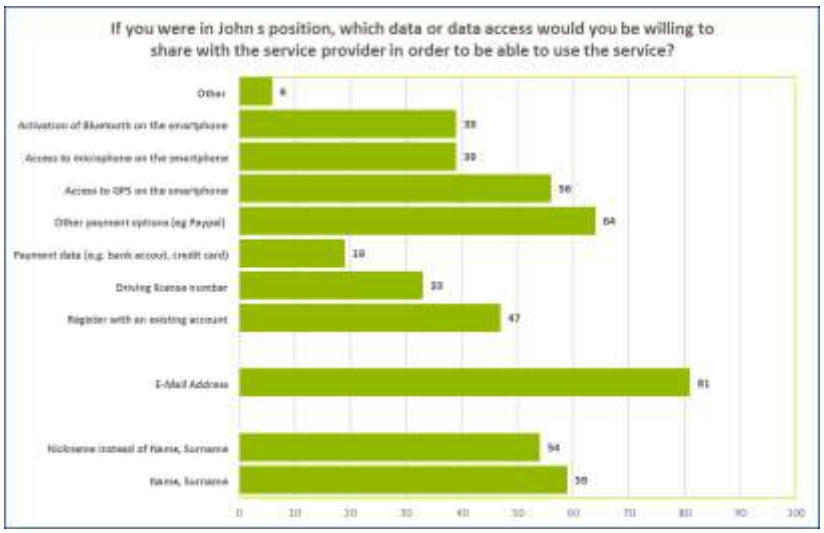


Figure 58: Data types willing to share to access the service (Greece)

Italy

In Question 10, "*If you were in John's position, which data or data access would you be willing to share with the service provider in order to be able to use the service?*", as shown in Error! Reference source not found.**, 25%** of the respondents are willing to provide name and surname, **30%** prefer to register with an existing account, **76%** agree to provide their email address, **25%** would use a nickname, **23%** would allow access to their smartphone's microphone, **35%** would allow access to their location (i.e. GPS), **39%** would provide their vehicle's license number, **23%** would share their payment data (bank account, credit card), **51%** other payment options (e.g. PayPal), and **23%** activation of Bluetooth on the smartphone. In addition, **2%** of respondents stated that they would not give access to any of their data. Again, the email address is the preferred registration method and users are once more reluctant to share bank details.

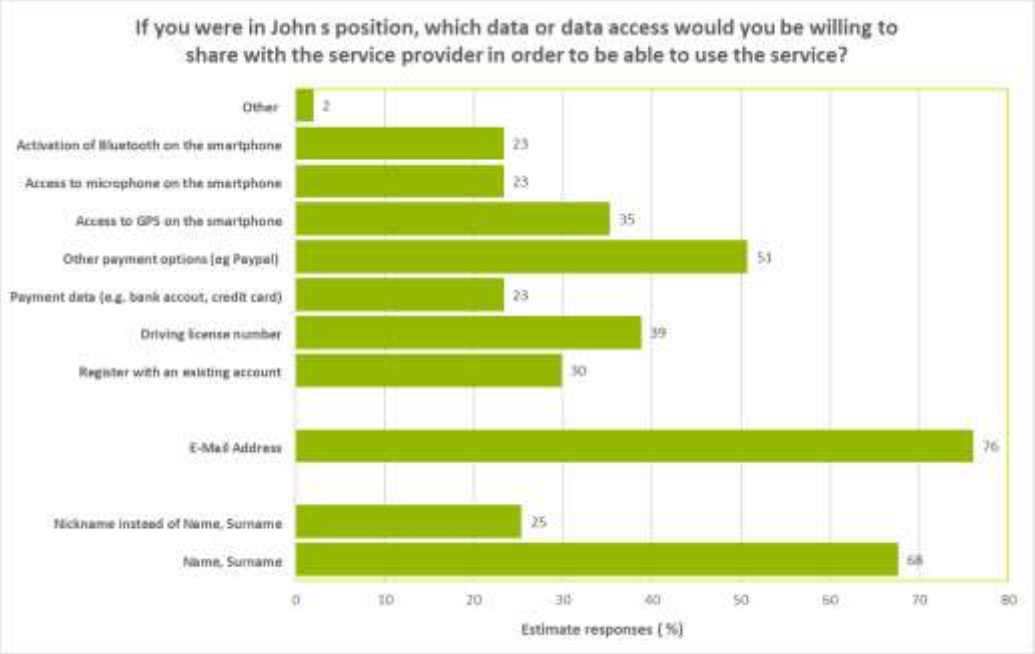


Figure 59: Data types willing to share to access the service (Italy)

Netherlands

68% of the respondents are willing to provide name and surname, **13%** prefer to register with an existing account, **73%** agree to provide their email address, **23%** would use a nickname, **17%** would allow access to their smartphone's microphone, **38%** would allow access to their location (i.e. GPS), **34%** would provide their vehicle's license number, **25%** would share their payment data (bank account, credit card), **22%** other payment options (e.g. PayPal), and **21%** activation of Bluetooth on the smartphone. In addition, **3%** of respondents stated that they would not give access to any of their data. Again, most respondents prefer to register with their email addresses.

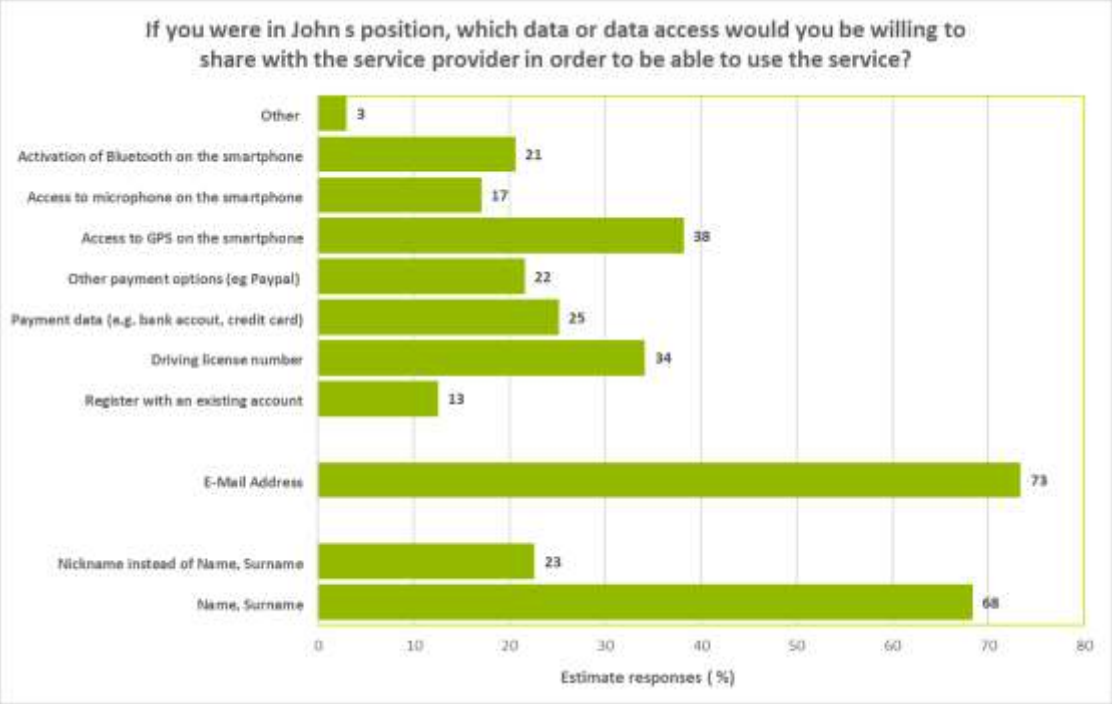


Figure 60: Data types willing to share to access the service (The Netherlands)

Spain

63% of the respondents are willing to provide name and surname, **25%** prefer to register with an existing account, **79%** agree to provide their email address, **38%** would use a nickname, **21%** would allow access to their smartphone's microphone, **37%** would allow access to their location (i.e. GPS), **42%** would provide their vehicle's license number, **35%** would share their payment data (bank account, credit card), **53%** other payment options (e.g. PayPal), and **29%** activation of Bluetooth on the smartphone. In addition, **1%** of respondents stated that they would not give access to any of their data. Email address, once more, is preferred for registration to the service.

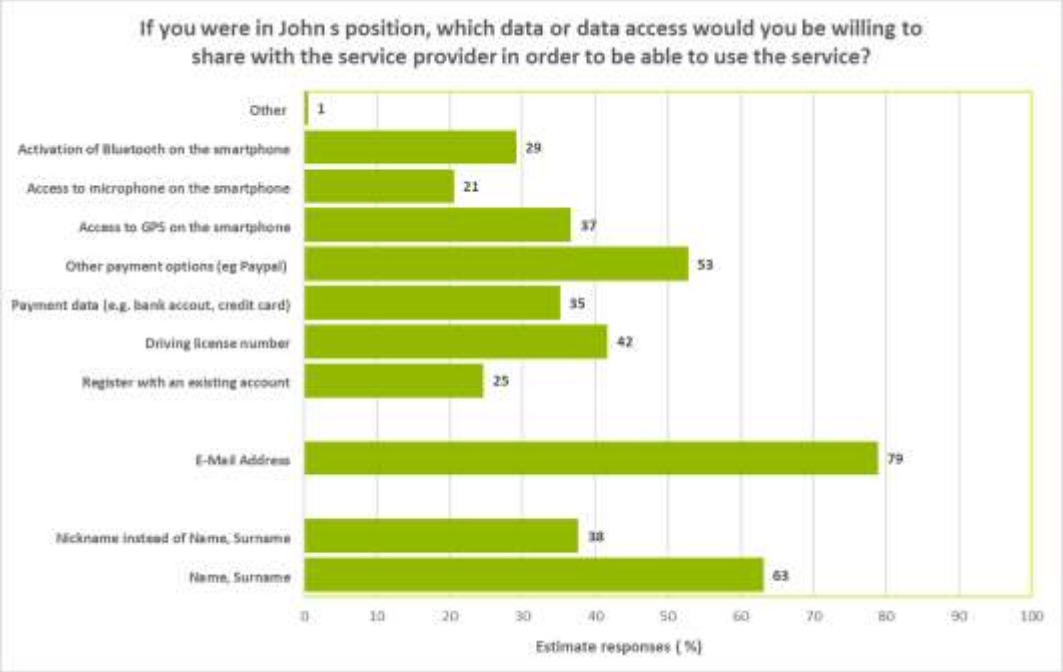


Figure 61: Data types willing to share to access the service (Spain)

UK

59% of the respondents are willing to provide name and surname, **47%** prefer to register with an existing account, **81%** agree to provide their email address, **54%** would use a nickname, **39%** would allow access to their smartphone's microphone, **56%** would allow access to their location (i.e. GPS), **33%** would provide their vehicle's license number, **19%** would share their payment data (bank account, credit card), **64%** other payment options (e.g. PayPal), and **39%** activation of Bluetooth on the smartphone. In addition, **6%** of respondents stated that they would not give access to any of their data. Registration with an email address is preferred.

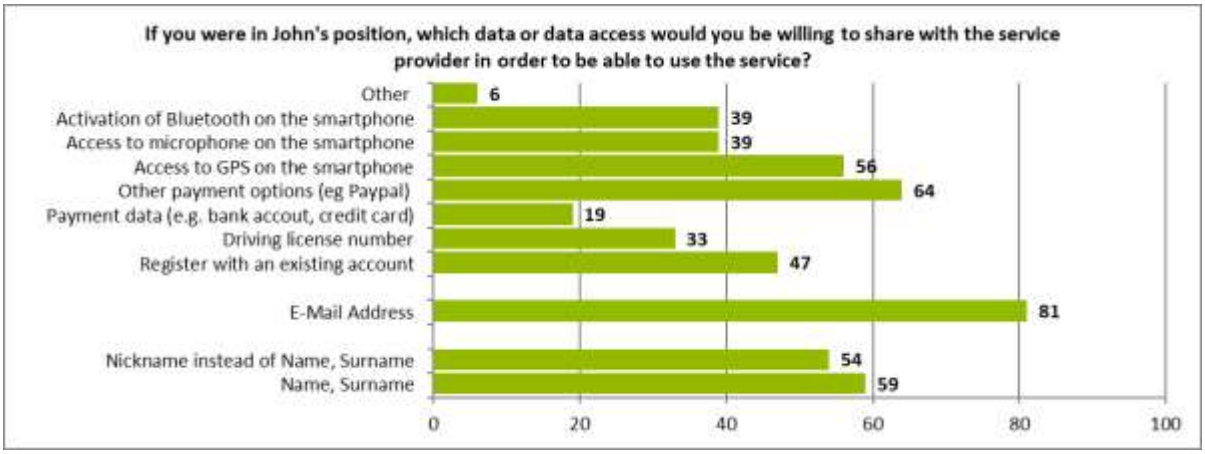


Figure 62: Data types willing to share to access the service (UK)

7 Discussion and conclusion

This deliverable presented the design and preliminary results of an online survey, which was conducted in eight countries. The survey addressed requirements, expectations and concerns of potential users of a use case for enhancing automated driving with IoT. At this stage, only scenario A, of a tourist vehicle in Versailles, has been evaluated. The key findings that were determined from this survey are summarised below and based on these the recommendations of this deliverable are set out in the next section. These chapters will be further enhanced in the future update of the deliverable.

The service described in Scenario A of the user survey is a new concept and not yet available. Both the concepts of automated driving and IoT are new terms and may seem abstract and difficult to relate to, as they are not visibly present in people's daily lives. The concept was explained to participants by using a short story and providing pictures.

In general, respondents across Europe were very positive towards the service described and willing to try it. Regarding concerns, no options really stood out. This may be because of the concept is new and unique – concerns may rise at a later stage with use experience.

As mentioned above, the analysis will be updated at a later date, including scenarios B and C, as well as using newly collected data by means of an online survey open to the public. The update will take into account the then current status of the pilot testing and relevant technology.

7.1 Required information for the service

The results of the survey show that potential users are interested in receiving multiple types of information before using the service. For instance, route guidance to the pick-up station, information about the vehicle-availability and instructions for using the service are highly desired by potential users. In addition to this, the respondents find it important to receive detailed information about the journey, such as estimated waiting times for a vehicle or the predicted route of the tour, as well as contact information for the customer service. During the operation of the service, the results of the survey show that great importance is accorded to real-time information about the touristic sights and the current vehicle location.

7.2 Concerns

The responses show that users have a significant level of concern in general. For each analysed concern, at least 40 % and a maximum of 51 % respondents were concerned (indicating 5 and above on a scale of 7). In this sense, 51 % of all respondents are concerned (5 and above) when it comes to the security of the payment process. This is also the concern with the highest amount of very concerned (indicating 7) respondents (19 %). The other concerns show similar levels of concern (5 and above), namely between 40 % and 45 %. Here, cyber security, data privacy and the impact of the service on the smartphone battery status, also show high level of concerns. In respect of other concerns raised by the respondents themselves, getting help in the case of technical failures or emergencies is mentioned the most.

The levels of concern that could eventually occur during the vehicle operation show little variation between the aspects. These are namely: malfunction or loss of data affecting the information, making pedestrians and cyclists feel uncomfortable and the probability of vehicle malfunction. They

all show levels of concern (5 and above) at around 37% to 40%. Other mentioned and important concerns raised by the respondents are safety and the possibility of being able to stop to linger or when feeling ill. Of all other concerns that were mentioned, almost 50 % of these were scored as being very concerning.

The level of concern both before and during operation differed noticeably by country. Generally, respondents from the UK and Finland appeared most concerned whereas respondents from Italy and Greece appeared least concerned.

7.3 General evaluation

Results from the online survey for Scenario A (Sightseeing in Versailles), show that potential users value receiving versatile information. The experience was rated positive, exciting, useful, safe and easy to use. Most respondents would be willing to use it themselves. Many would also like to use the application for a sightseeing tour without a vehicle. Regarding concerns, about half of respondents expressed concern on the topics asked.

The service was rated useful especially for people with reduced mobility and single travellers or couples. The age groups, which would benefit most, were the middle aged and elder (ages 40–69). For payment, a fixed price for the tour was preferred over charging per used time or as part of a mobility and tourist package.

8 Recommendations for Pilot Testing

8.1 Recommendations for use-case pilot testing design

Based on the results of the survey, the following recommendations for use-case pilot testing design can be derived:

- Information for planning and using the service must be clear and accessible to ensure ease of use and confidence in the service. This includes tourist information, vehicle operation (to ensure trust) and service costs.
- As half of participants show concern regarding the security of the payment process, great emphasis should be placed on that (e.g. using well-established payment methods or providers).
- It is important to provide the users with substantial help in the case of technical failures or emergencies.
- The service should be made easy to use and customisable, allowing for
    - different user groups,
    - choosing between manual and automated driving,
    - choosing when to stop the vehicle,
    - lowering speed,
    - multiple payment options, and
    - choosing which information is provided.
- It is important to ensure the user gets enough information on the service and how it works.
- Wherever possible, the service should be easily transferable to other locations.

8.2 Recommendations on the user acceptance evaluation on the test sites

Further recommendations address requirements for the user acceptance evaluation on the test sites:

- Real tourists would prove a valuable sample not only for the validity of the findings but because the results about the preferences of use were different in the French sample compared to the rest of the countries. Familiarization and previous experience might have played an important role in their responses – 56% of the respondents in France stated that they have visited Versailles compared to less than 30% in all other countries
- Background information about the participants regarding the type of traveler and/or tourist they are might be useful as their existing preferences and attitudes might affect the results.
- Participants prefer to register (and be contacted) with their email addresses more than any other method and this was a consistent finding across countries.
- Some of the main concerns of the respondents were related to the safety of the vehicle. Thus, one important topic at the pilot tests should be discussing different solutions how to ensure trust, i.e., increase the perceived safety level, when riding in a self-driving car. A special focus here, considering the aim of the project, should lie on information providing using the IoT features.
- It is important in the focus groups to ensure that steering questions are open enough for respondents to raise other concerns than those specifically raised, as in the online survey this identified some wide spread high concerns such as the general concept of automation, allowing autonomy to the user and service costs.

9 References

Davis, F. (1985). A technology acceptance model for empirically testing new end-user information systems - theory and results, PhD thesis, Massachusetts Inst. of Technology.

Kaan, J. (2017). User acceptance of autonomous vehicles: factors and implications. Master of Science Thesis. Faculty of Technology and Management (TPM) – Delft University of Technology.

AUTOPILOT Deliverable D4.1 - Methodology for Evaluation, available on Project Place https://service.projectplace.com/pp/pp.cgi/r1690653003.

AUTOPILOT online User Acceptance survey, https://app.lamapoll.de/autopilot/

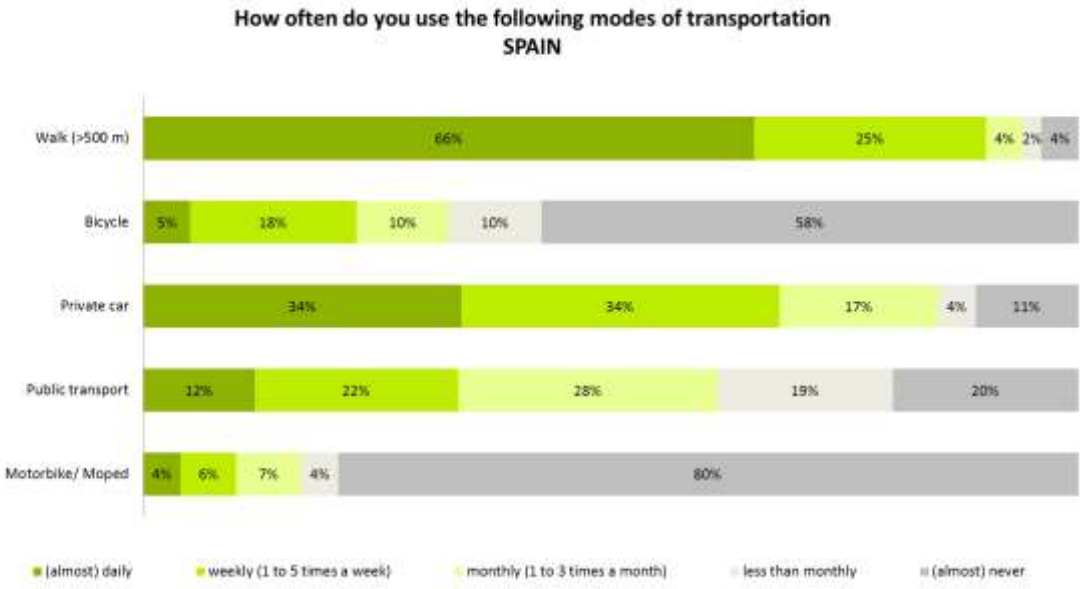
10 Annexes

10.1 Detailed descriptive analysis of the survey in tables

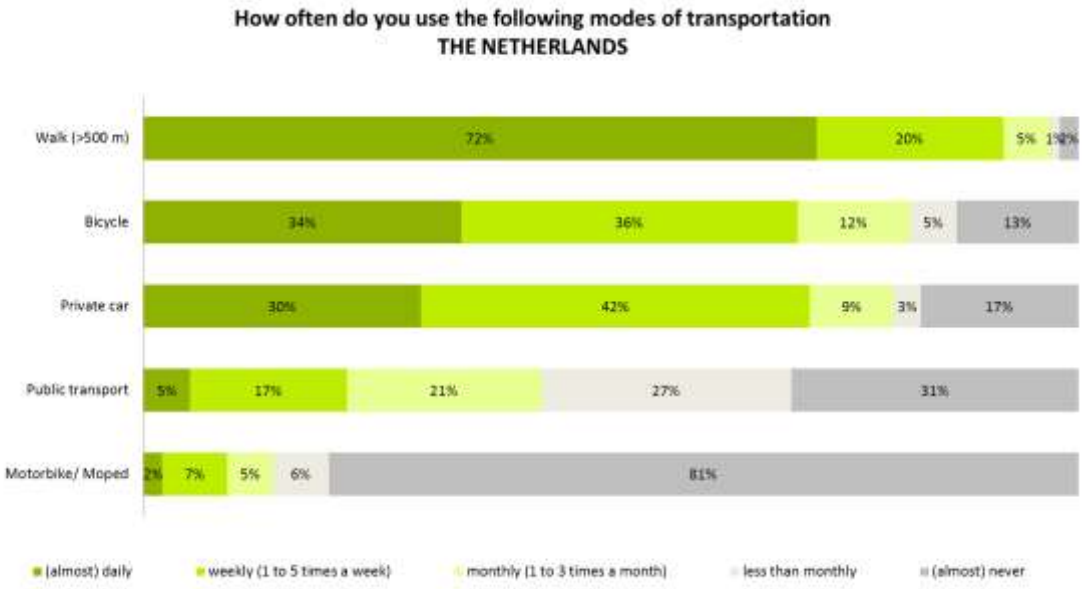
10.1.1 Mobility behaviour

To describe the mobility behaviour of the respondents with a strong focus on their mode choice, a question on the frequency of the use of different travel modes was set. The results are presented for each country. An average use for the whole sample would not be useful as mode choices depend strongly among other factors on the geographical characteristics and mobility market in the selected countries.

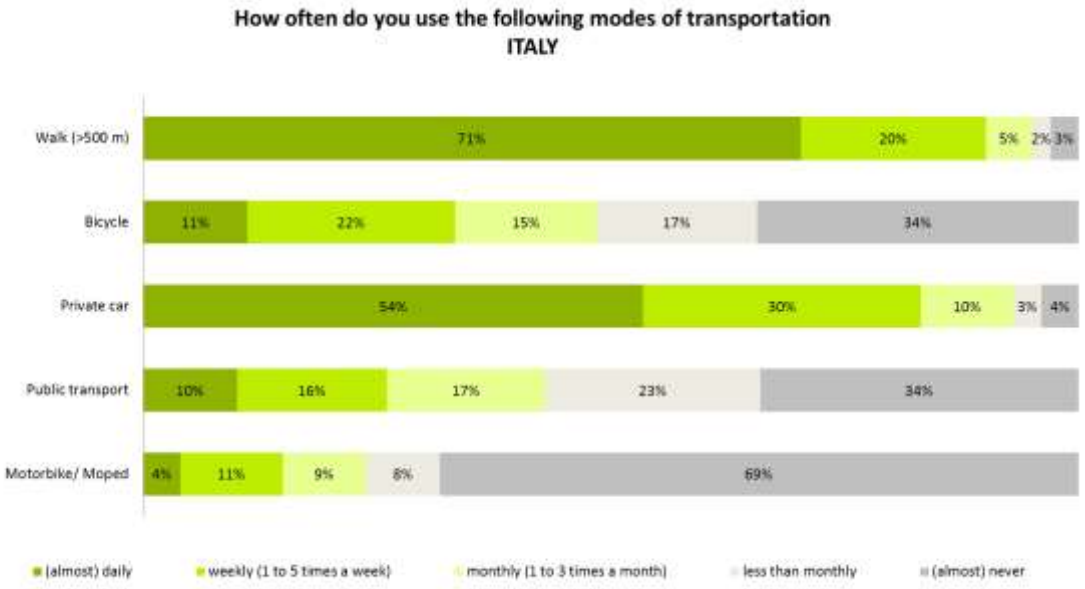
In **Spain** a private car is the most frequently used motorised mode of transport. From the active travel modes, a strong preference for walking can be seen. Bicycles are not used on a regular basis. In fact, more than half of the respondents (58 %) stated that they (almost) never use a bicycle. The frequency of public transport use differs in this sample. Only a third (34 %) of the respondents reported that they use public transport (almost) daily or weekly. Motorbike and mopeds are, similarly as in the other countries, the least frequently used mode of transportation.



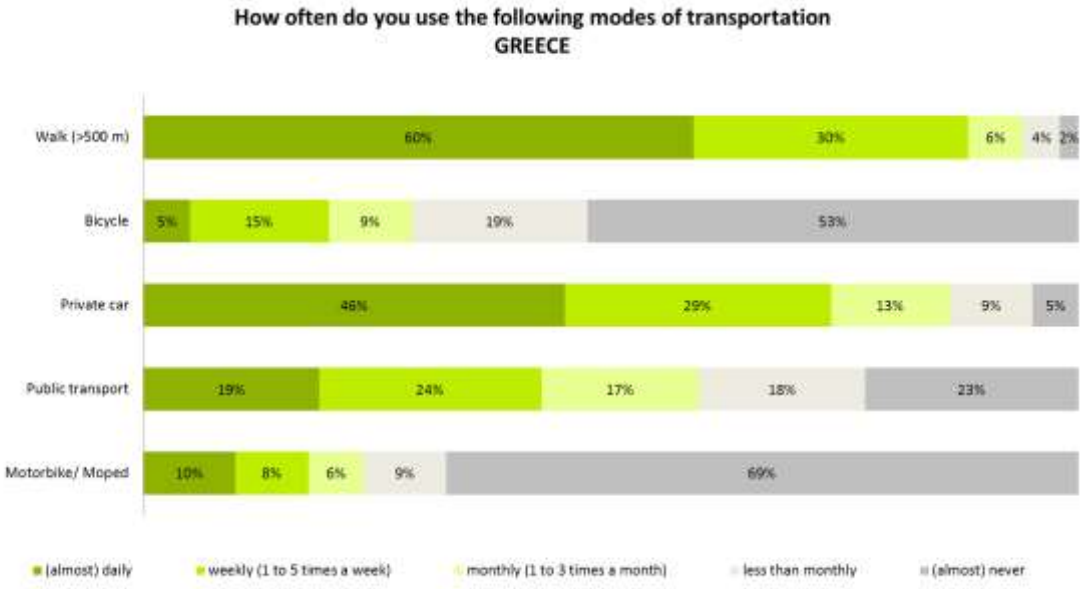
In the **Netherlands**, contrary to most of the other countries, there is a very frequent use of the bicycle, which is used as frequently as a private car. Also walking is a frequently used alternative in the everyday life. Public transport seems to play a less important role.



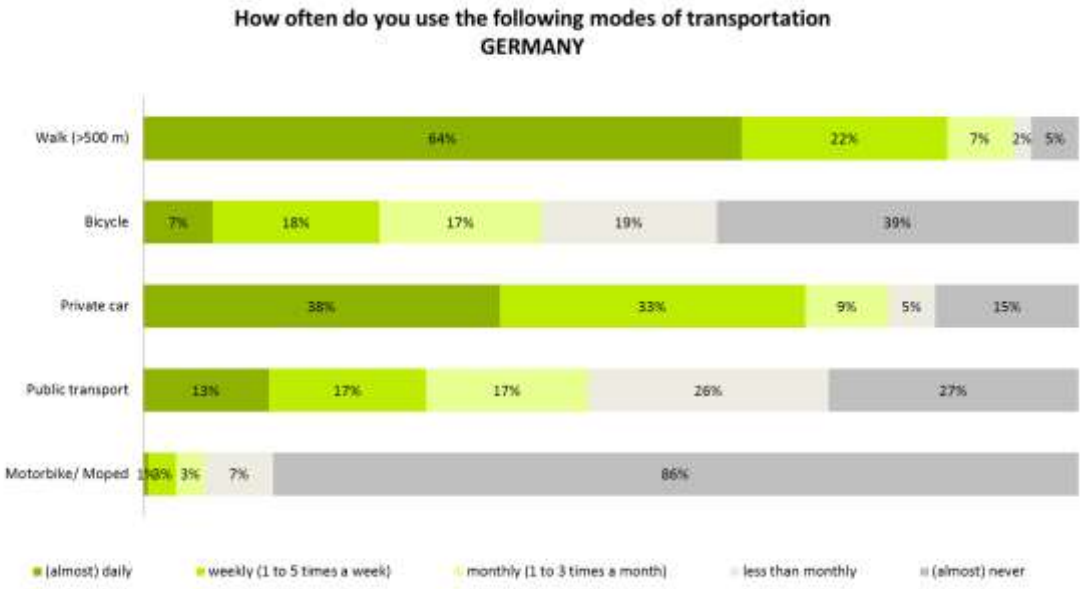
In **Italy**, the travel mode most frequently used by the survey sample is the private car. Walk, also in the other countries, could be considered as an access/ egress mode of transport. However, no multimodal trips are addressed in the survey and hence, this remains only an assumption. Bicycles are more frequently used as in Spain, but don´t reach the high use frequency as in the Netherlands. Also here public transport plays a smaller role than the private car, but it seems to be used by more persons than in the Netherlands.



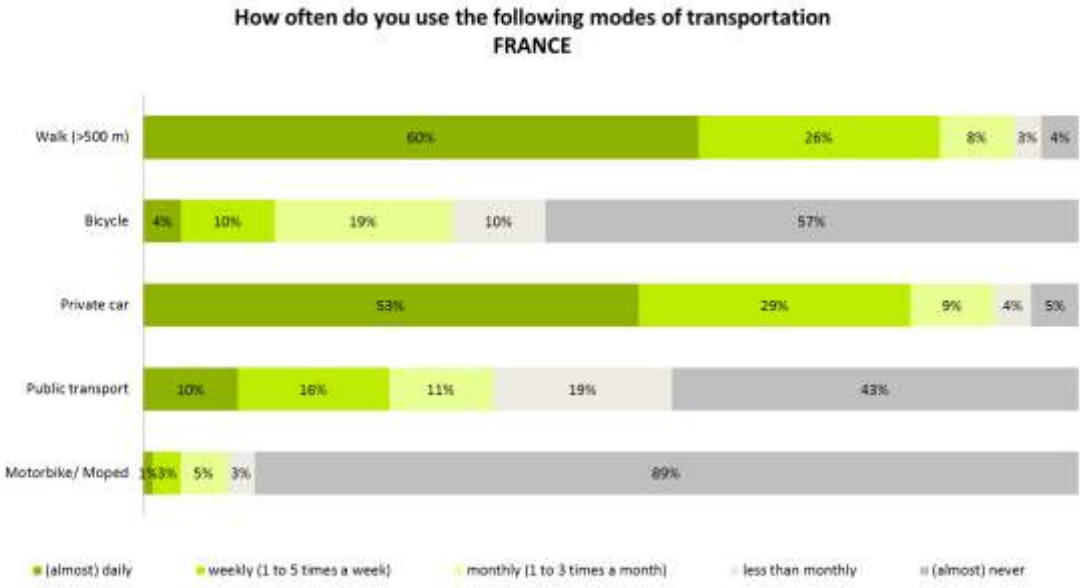
In **Greece,** similar to the other countries, the private car is the most frequently used travel mode. In Greece, public transport is used more frequently than in the other countries. Bicycles play a rather small role in the everyday mobility patterns.



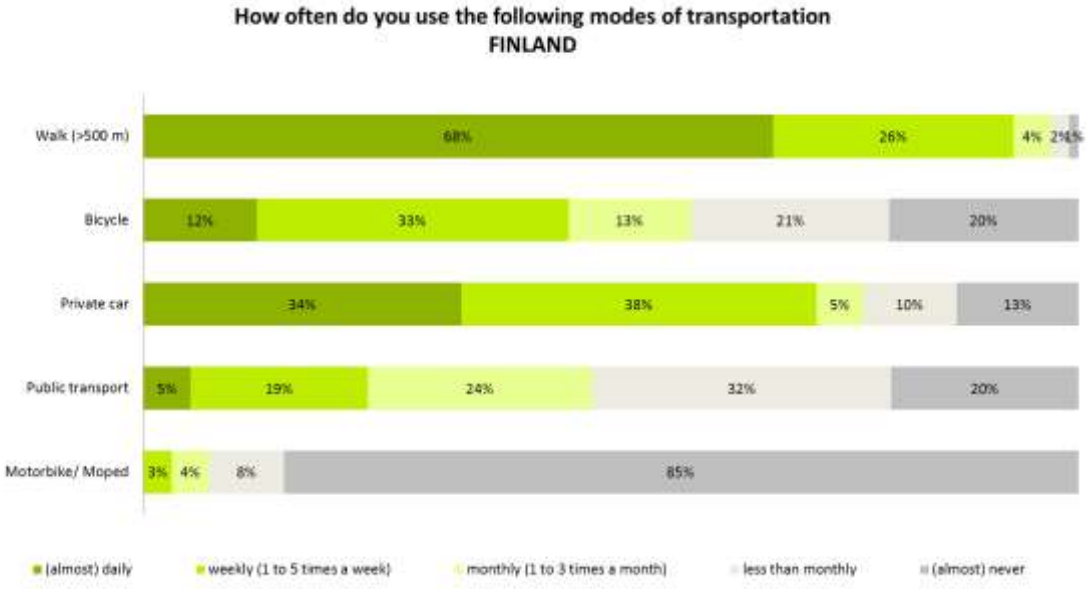
In **Germany** the private car plays an important role in everyday mobility as well. However, it is less frequently used than in other countries, such as for instance in France or in Italy. Public transport is preferred among using the bicycle. However, also here, no multimodal patterns were considered. At the same time, active modes of transport are in some cases combined with the usage of public transport.



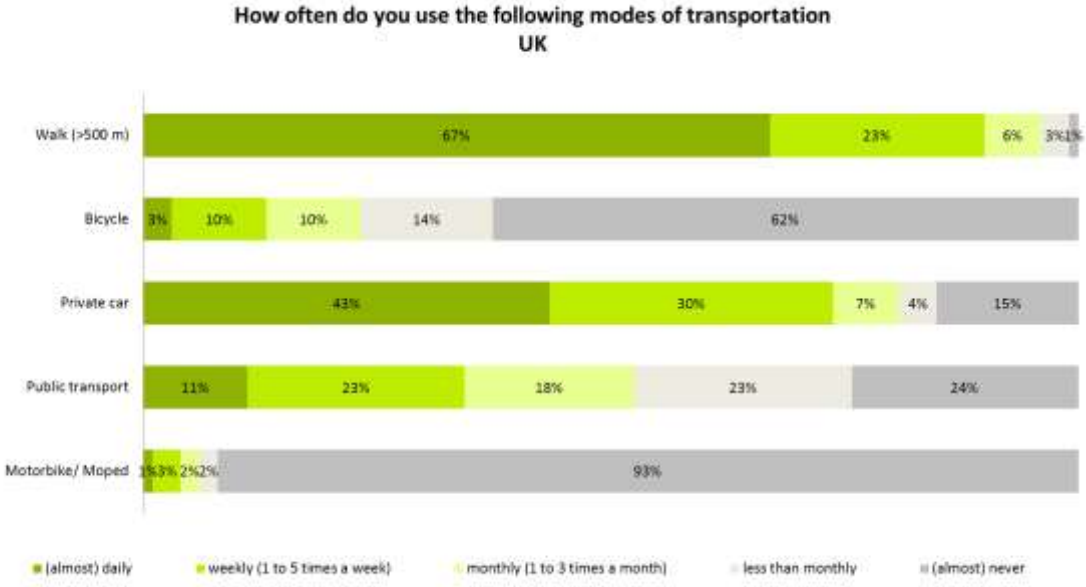
In **France**, the private car is the most frequently used mode of transport. More than half of the respondents in France (53%) reports that they use the private car (almost) every daily, while only 10% of the sample state using the public transport on a daily basis. The bicycle plays a rather less important role – about 57% of the respondents in France use it (almost) never.



In **Finland** public transport is also less frequently used than a private car. The bicycle is used by one third of the sample at least weekly. Note that the reported values give only a tendency how frequent different modes of transportation are used on average in the selected countries. At the same time, the modal split depends strongly also on spatial characteristics and hence, comparing urban and rural areas in the selected countries might show very different picture than the average values presented here.



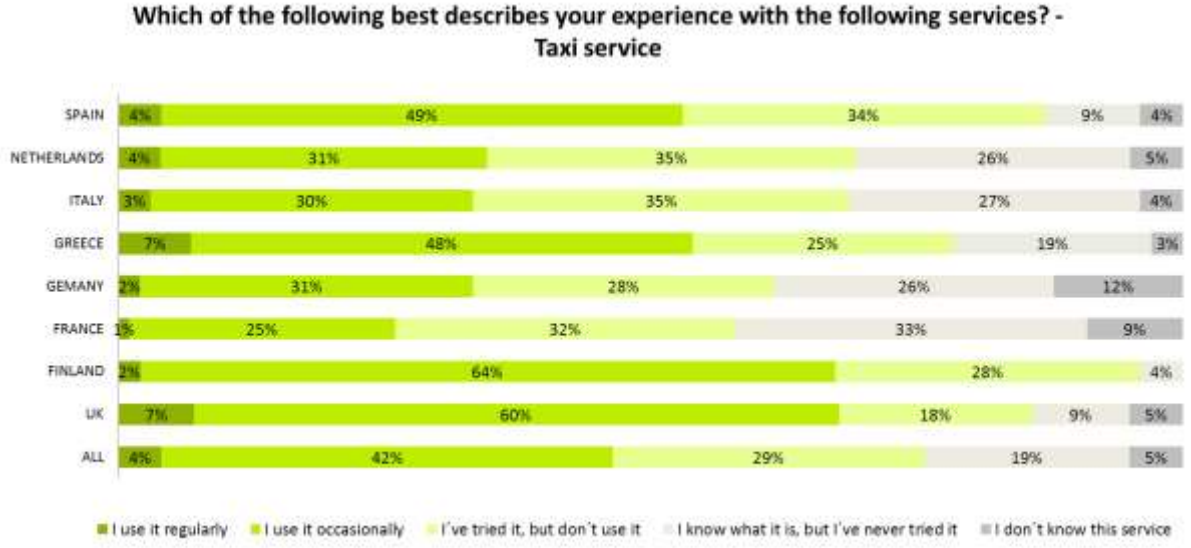
In the **UK,** the frequency of the daily use of a car is among the highest values for the selected countries after France, Italy and Greece. The frequency of using public transport is distributed over the sample – about a third (34 %) report using it daily or at least weekly while almost half (47 %) report using it less than monthly or (almost) never.



10.1.2 Experience with mobility services

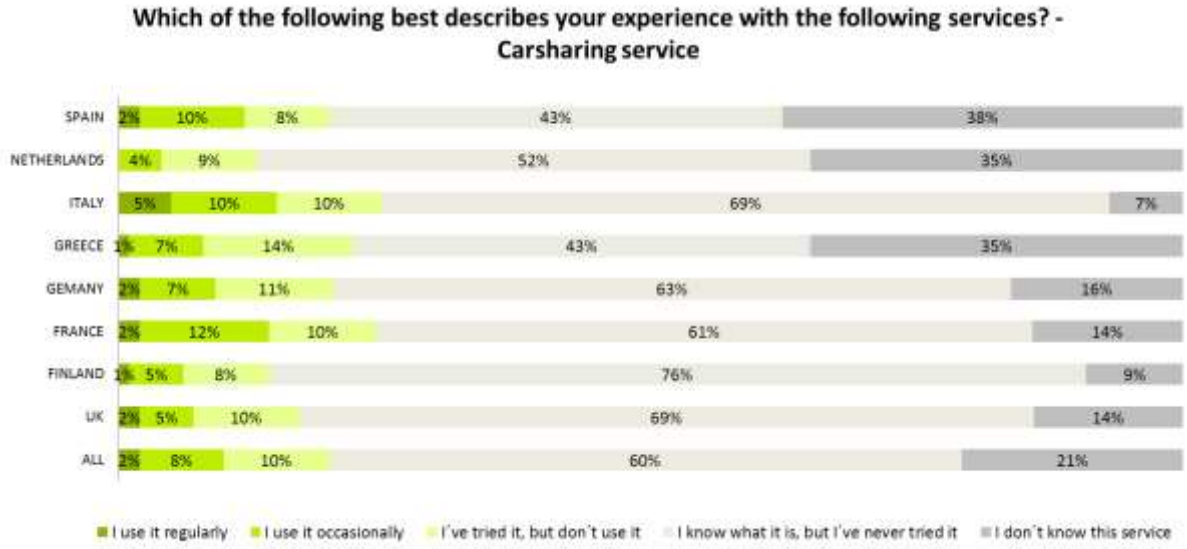
Respondents were asked about their experience and frequency of use of different mobility services, such as taxi, carsharing and UBER.

Taxi services are used occasionally especially in the UK and Finland, followed by Spain and Greece. Around one third of the respondents in the Netherlands, Italy and Germany stated that they use taxi also occasionally. Interestingly, France, Italy and Germany have the highest proportion of people who did know the service but have never used it.

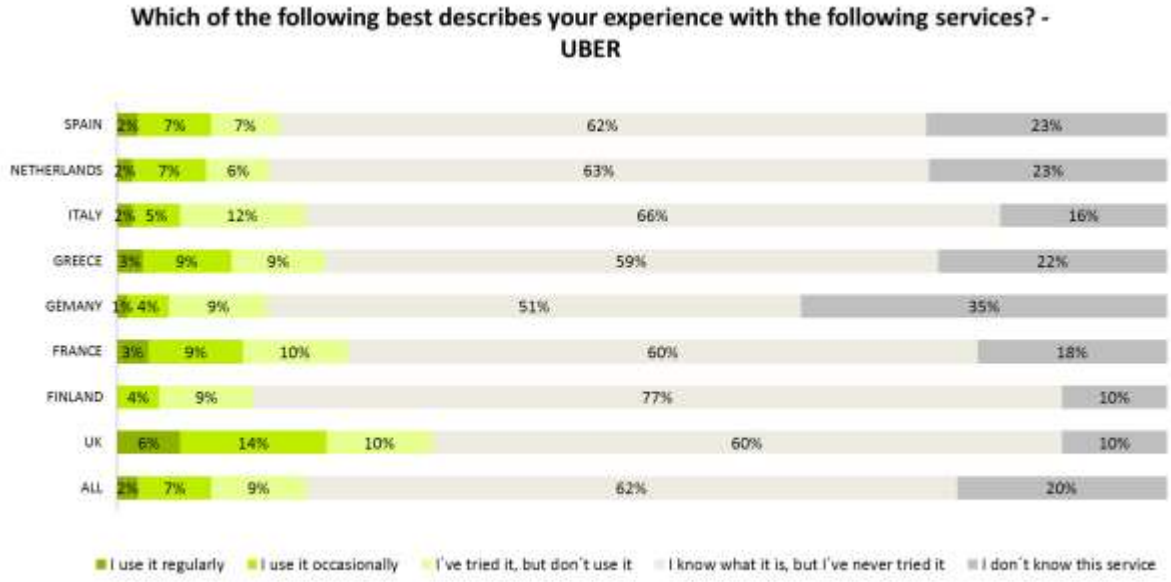


Unlike taxi services, car-sharing services have only become available relatively recently and mostly only in larger cities. Thus, it is not surprising that a rather small proportion of the respondents in all countries use the service regularly or occasionally. The share of people that have tried it, but don´t

use it on a regular basis in all countries is in the same range (between 8 % in Finland and up to 14 % in Greece). The share of people that know the service, but have never tried it, is highest in Finland, Italy and the UK, followed by Germany and France. In Spain, the Netherlands and Greece, between 35 % and 38 % of the respondents stated that they don´t know this service, which is the highest share among all countries.



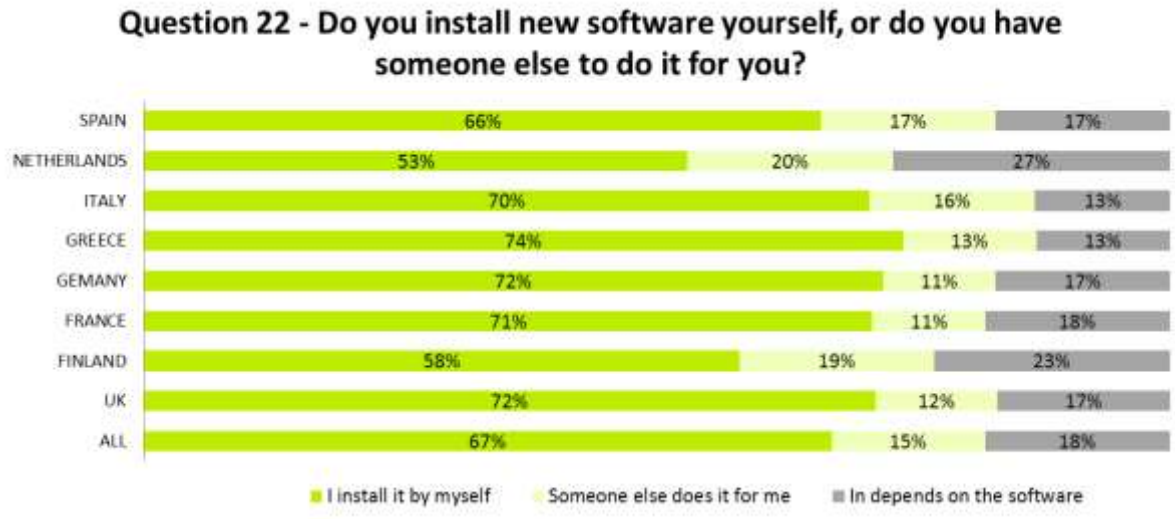
Considering respondents´ experience and use of the mobility service UBER shows a similar picture as when considering the experience with car-sharing services – the majority of the respondents know the service but have never tried it. The highest share of persons that use the service regularly or at least occasionally is in the UK, followed by France and Greece. Note that the service is not available in many parts of the addressed countries and in some of them it is also not legally allowed, for instance in Germany. Hence, it is not surprising that Germany has the highest share of people who stated that they don´t know the service, followed by Spain, the Netherlands and Greece.



10.1.3 IT experience and familiarity with the topic IoT

The IT experience and technology/ software affinity were addressed using a question on whether the respondents install new software by themselves or not. As it was an online survey, we decided not to ask about their internet usage as we assume that persons who are part of an online panel or who are recruited via online social media have overall high affinity to computer and internet usage.

The results show that the majority of the respondents (67 %) install new software by themselves. The share is lower in the Netherlands and Finland with consequentially higher share of respondents stated that it depends on the software. All other countries have similar share of persons who stated that they install new software by themselves (ranging from 66 % in Spain up to 74 % in Greece).

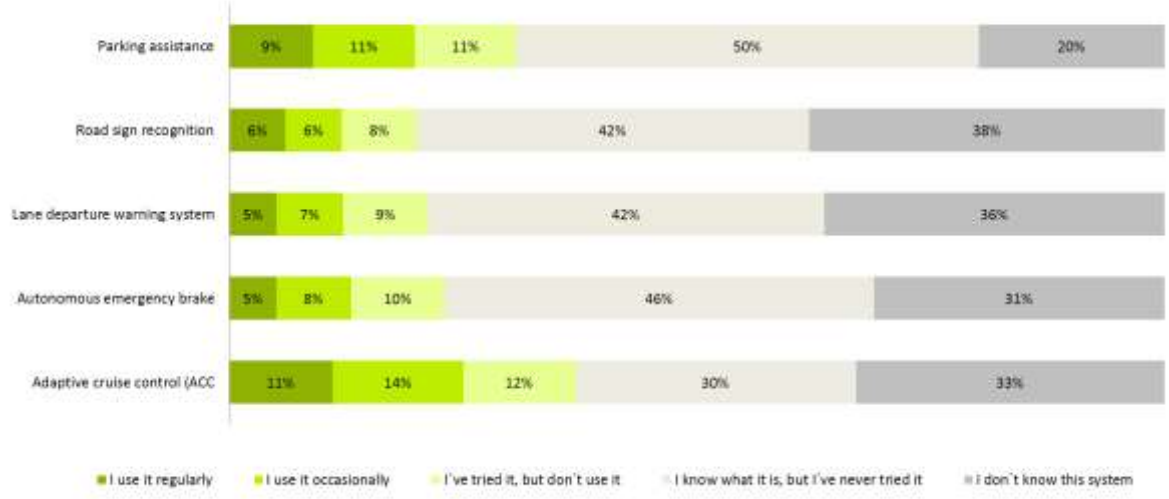


When asked how familiar they are with the topic Internet of Things (IoT), one third of all respondents (33 %) state that they are not familiar with the topic at all. Comparing the countries shows that (almost) half of the respondents from Germany and Finland are not familiar with the topic at all. Note that the higher share of people in Germany who stated that they are not familiar with the topic at all can be also attributed to the fact that the term “Internet of Things” was used in the survey in Germany only as English term (no translation of the term was presented to the respondents). This will be considered for all countries in the surveys on scenario B and C. Most familiar with the topic are the respondents in France, Greece, and Italy, followed by the UK, Finland, Netherlands and Spain.

Experience with advanced driver assistance systems (ADAS)

The respondents were also asked to report their experience with different advanced driver assistance systems. The results are shown for the whole sample and not differentiated by country. The results show that adaptive cruise control (ACC) is the assistance system that the most respondents have experience with compared to the other systems (37 % have at least tried it), followed by the parking assistance (31 % have tried). The other systems (road sign recognition, lane departure warning system and autonomous emergency brake) are used by about the same proportion of respondents (20–23 % have tried). This is not surprising considering the fact that these systems are available primarily in new vehicle models and in higher class cars. Road sign recognition and lane departure warning system were also the items that have the highest proportion / numbers of the answer “don´t know”.

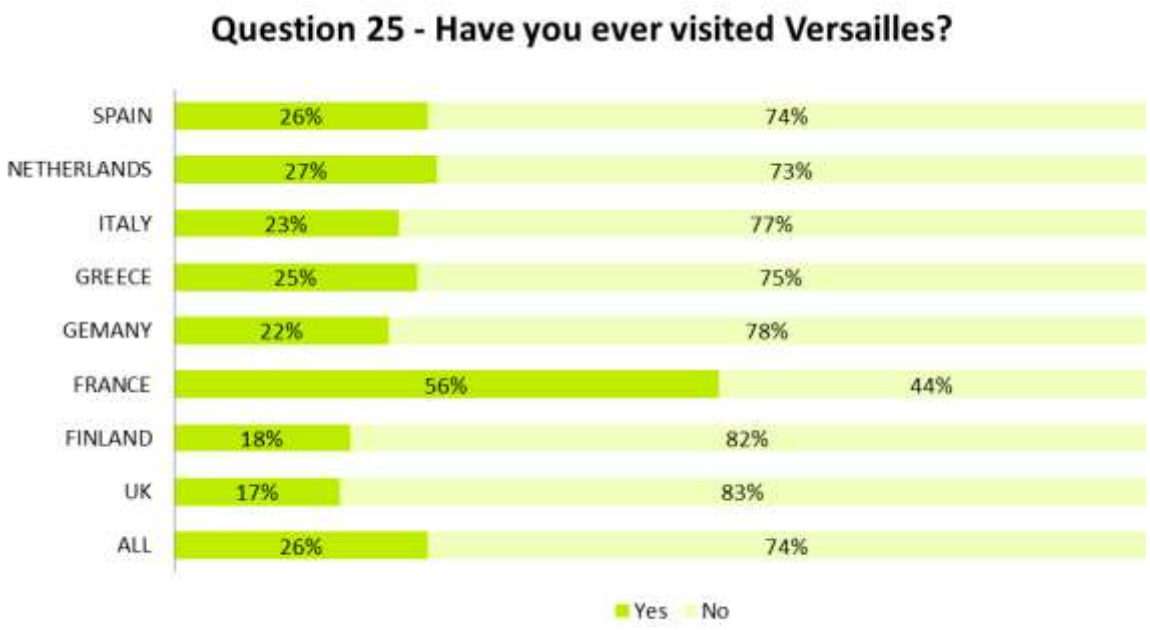
Which describes best your experience with the following advanced driver assistance systems?
ALL (n=1611)



Question 23: How familiar are you with the topic Internet of Things (IoT)

10.1.4 Other relevant experience

In scenario A the respondents were also asked whether they have been to Versailles. As expected, only in France a majority of respondents (56 %) have visited Versailles. In all other countries, respondents have less experience with the city – ranging from 17 % up to 27 % of the respondents stated that they have visited Versailles.



10.2 Screenshots of the online questionnaire (English version)

Page 1:

Page 2:

Page 3:

AUTOPILOT

John is a tourist who is visiting France on his holiday. Let´s see how the new touristic service works with the example of John´s trip to France.

Today John is visiting Versailles. He has heard about the new service for tourists and has decided to try it out.

He downloads the app "AUTOPILOT", chooses his language (English), and creates an account.

Using the app, John chooses one of the pick-up stations and reserves a vehicle.

The app shows him the route to the station where the reserved vehicle is waiting for him.

John arrives at the station. The app indicates the reserved vehicle's license plate number and parking lot number.

He unplugs the vehicle from the station and opens it using the app. He then gets into the vehicle.

John is now ready to start his trip.

The service can provide different types of information to John via the app.

What do you think about the relevance of the following information?

	1 = very relevant	2	3	4	5	6	7 = irrelevant
Route guidance to the pick-up station	○	○	○	○	○	○	○
Information about the availability of a vehicle	○	○	○	○	○	○	○
Estimated waiting time in the case no vehicle is currently available	○	○	○	○	○	○	○
The route of the tour	○	○	○	○	○	○	○
Information about congestion on the planned route with the vehicle	○	○	○	○	○	○	○
Which (personal) data are required for using the service	○	○	○	○	○	○	○
Instructions for how to use the service	○	○	○	○	○	○	○
Availability of a free spot at the return stations	○	○	○	○	○	○	○
Contact information for customer service	○	○	○	○	○	○	○
Tourist information (points of interest/ sights near John´s location)	○	○	○	○	○	○	○
Information about restaurants, hotels, cafes, etc. near John´s location	○	○	○	○	○	○	○
Other information *(please specify or write "no")*:	○	○	○	○	○	○	○

John might have some concerns about using the service.

If you were in John´s position, to what extent would you be concerned about the following aspects?

	1 = not at all concerned	2	3	4	5	6	7 = very concerned
Data privacy (e.g. abuse of private data)	○	○	○	○	○	○	○
Cybersecurity (e.g. vulnerability to hacking/ exploitation)	○	○	○	○	○	○	○
Using the service will influence smartphone battery (e.g. it will decrease quickly because of the data volume used for the service)	○	○	○	○	○	○	○
The information provided by the service might be incorrect due to malfunction or data losses	○	○	○	○	○	○	○
The payment for the service might be not secure	○	○	○	○	○	○	○
Other concerns *(please specify or write "no")*:	○	○	○	○	○	○	○

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Survey created with LamaPoll

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Page 4:

AUTOPILOT

John wants to visit the Versailles Gardens, so he selects the destination on the "AUTOPILOT" app.

The app helps him navigate and John drives the vehicle to the entrance of the Gardens. From here, the self-driving mode is activated and the vehicle takes over the driving task.

There is no motorised traffic in the Gardens, but the self-driving vehicle is allowed to drive on the paths along with pedestrians and cyclists.

The route through the Gardens is fixed, about 2 km long and with the vehicle travelling at around 15 km/h it takes roughly 20 minutes.

The vehicle is self-driving, so John does not have to worry about taking the wheel and can admire the Gardens in peace. Using its sensors and cameras, the car gives way to pedestrians and cyclists.

The vehicle arrives near a point of interest.

A notification shows up on screen and a voice message says: *"We are in front of the Lake of the Swiss Guard. Would you like to know more about it?"*

John says "Yes". Now the vehicle stops and he can choose whether he wants to listen to an audio message or to watch a short video (about 1 minute) about this point of interest.

Again, the service can provide different types of information to John via the app while he is travelling in the self-driven vehicle.

What do you think about the relevance of the following types of information at this point?

	1 = very relevant	2	3	4	5	6	7 = irrelevant
Real-time location of the vehicle	○	○	○	○	○	○	○
Contact information for customer service	○	○	○	○	○	○	○
Information about what the vehicle "sees" (e.g. detected pedestrians, cyclist)	○	○	○	○	○	○	○
Information about what the vehicle is doing or about to do (e.g. breaking, turning left/right, route choice)	○	○	○	○	○	○	○
Real-time tourist information (points of interest/ sights near John ' s location)	○	○	○	○	○	○	○
Other information (*please specify or write "no"*):	○	○	○	○	○	○	○

If you were in John ' s position and were travelling in self-driving mode in the gardens, to what extent would you be concerned about the following aspects?

	1 = not at all concerned	2	3	4	5	6	7 = very concerned
Probability of the automated vehicle malfunctioning	○	○	○	○	○	○	○
Whether the automated vehicle will make pedestrians and cyclists feel uncomfortable	○	○	○	○	○	○	○
The information provided by the service might be incorrect due to malfunction or data losses	○	○	○	○	○	○	○
Other concerns (*please specify or write "no"*):	○	○	○	○	○	○	○

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Page 5:

AUTOPILOT

The automated vehicle continues along the route, passing other points of interest in a similar way, until it reaches the exit of the Gardens, at which point the self-driving mode ends.

John starts driving again and the AUTOPILOT app guides him to the vehicle drop-off station. John parks the vehicle and leaves.

After returning the vehicle, a trip summary is displayed on the app (duration and distance of the trip). John can now rate his experience.

To conclude, we would like to ask you to evaluate the whole scenario from booking to the end of the trip.

How would you evaluate the described scenario if you were in John´s position?

a positive experience	○ ○ ○ ○ ○ ○ ○	a negative experience
exciting	○ ○ ○ ○ ○ ○ ○	boring
useful	○ ○ ○ ○ ○ ○ ○	useless
safe	○ ○ ○ ○ ○ ○ ○	dangerous
easy to use	○ ○ ○ ○ ○ ○ ○	complicated

To what extent do you agree or disagree with the following statement?

	1 = strongly agree	2	3	4	5	6	7 = strongly disagree
I would use the service if it was available.	○	○	○	○	○	○	○

To what extent do you agree or disagree with the following statements?

I would prefer using the self-driving vehicle if it was available ...

	1 = strongly agree	2	3	4	5	6	7 = strongly disagree
... more than walking or cycling in the Gardens.	○	○	○	○	○	○	○
... more than walking or cycling in the city.	○	○	○	○	○	○	○
... more than renting a car in the city.	○	○	○	○	○	○	○
... more than using a tourist bus in the city.	○	○	○	○	○	○	○

If you were in John´s position, which data or data access would you be willing to share with the service provider in order to be able to use the service?

Please check all that apply:

- ☐ Name, Surname
- ☐ Nickname instead of Name, Surname
- ☐ E-Mail Address
- ☐ Register with an existing account: Facebook, Google, etc.
- ☐ Driving license number
- ☐ Payment data (e.g. bank account, credit card)
- ☐ Other payment options (e.g. PayPal)
- ☐ Access to GPS on the smartphone
- ☐ Access to microphone on the smartphone
- ☐ Activation of Bluetooth on the smartphone
- ☐ Other *(please specify)*:

In this scenario, the app works only for this service in Versailles. In the future, it could be expanded to cover other services and cities. For which other services would you like to use the app?

- ☐ for booking and using other mobility services in Versailles (e.g. public transport, car rental, bike rental, tourist bus)
- ☐ for going on a sightseeing tour without using a vehicle as well
- ☐ for a similar service in other cities
- ☐ for other services *(please specify)*:
- ☐ no other services, I would use it only in Versailles for this tour and service

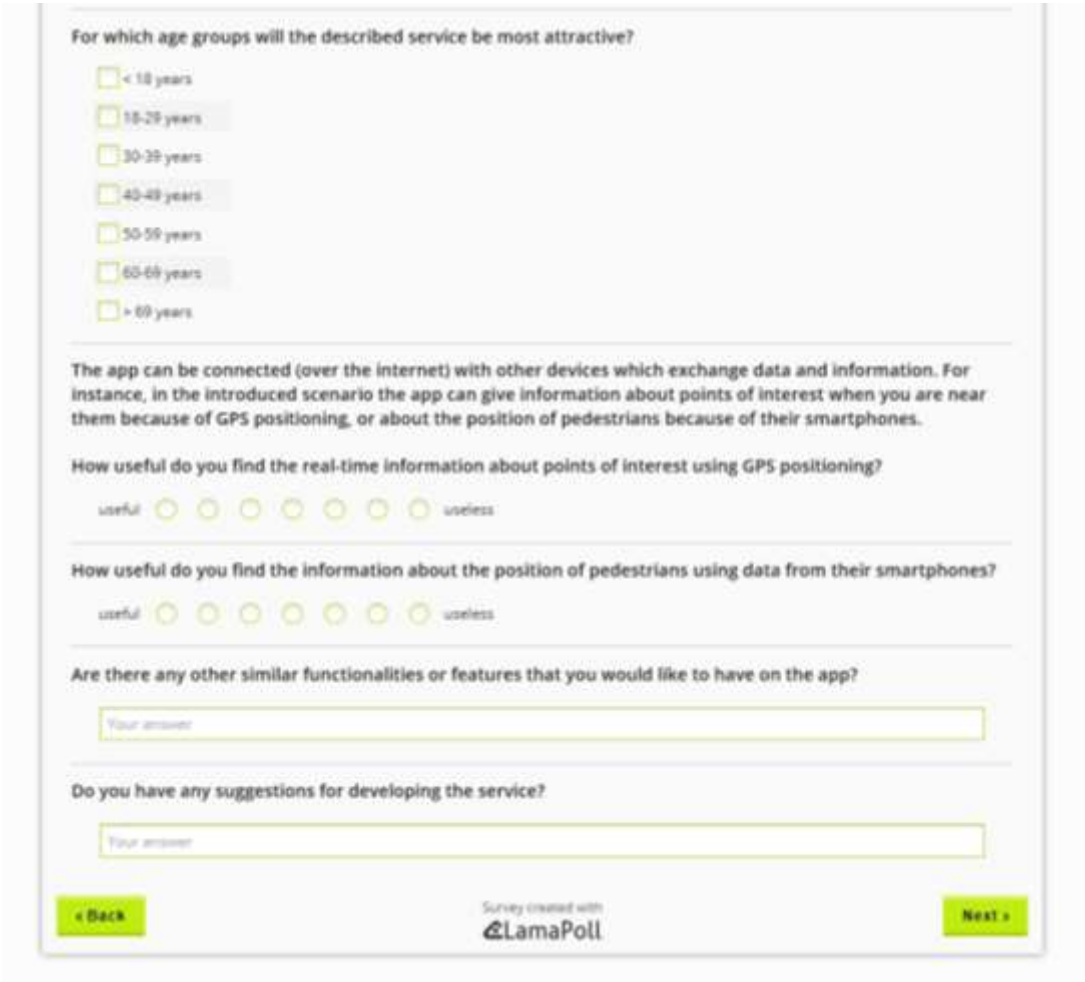
What do you think would be the most convinient pricing basis fot the system?

- ○ Cost per minutes when using the vehicle
- ○ Fixed price for a tour
- ○ Included in a package "Tour in Versailles" comprised of other mobility and touristic services

For which people will the described service be most attractive?

Please note that the service can include also other vehicle types and sizes than the introduced one.

- ☐ Individuals (tourists travelling alone)
- ☐ Couples (tourists travelling in a couple)
- ☐ Families (tourists travelling with children)
- ☐ People with mobility constrains (e.g. disabilities, age-related constrains)
- ☐ Other *(please specify)*:



For which age groups will the described service be most attractive?

- [ ] < 18 years
- [ ] 18-29 years
- [ ] 30-39 years
- [ ] 40-49 years
- [ ] 50-59 years
- [ ] 60-69 years
- [ ] > 69 years

The app can be connected (over the internet) with other devices which exchange data and information. For instance, in the introduced scenario the app can give information about points of interest when you are near them because of GPS positioning, or about the position of pedestrians because of their smartphones.

How useful do you find the real-time information about points of interest using GPS positioning?

useful ○ ○ ○ ○ ○ ○ ○ useless

How useful do you find the information about the position of pedestrians using data from their smartphones?

useful ○ ○ ○ ○ ○ ○ ○ useless

Are there any other similar functionalities or features that you would like to have on the app?

Your answer

Do you have any suggestions for developing the service?

Your answer

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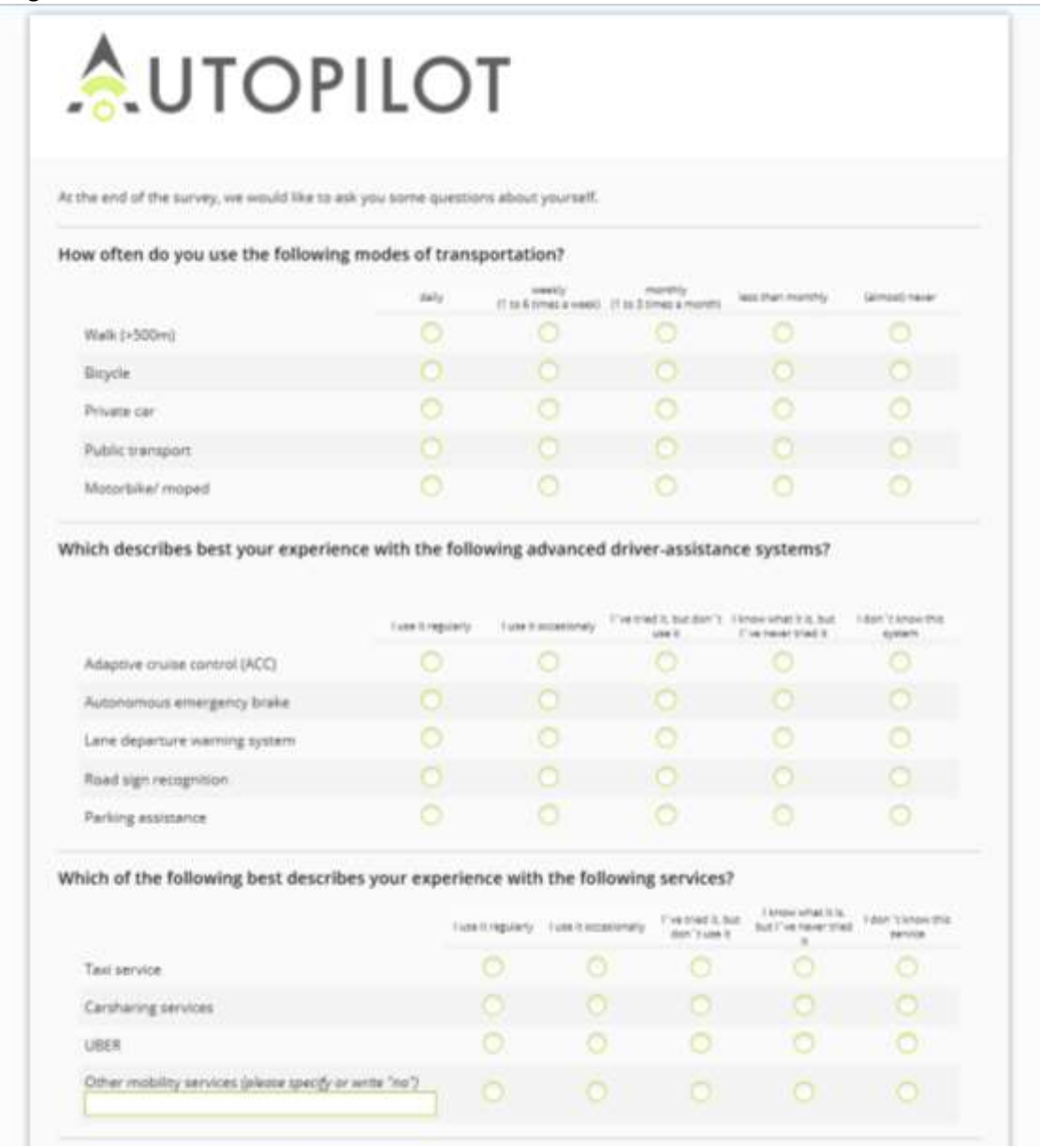

AUTOPILOT

At the end of the survey, we would like to ask you some questions about yourself.

How often do you use the following modes of transportation?

	daily	weekly (1 to 6 times a week)	monthly (1 to 3 times a month)	less than monthly	(almost) never
Walk (>500m)	○	○	○	○	○
Bicycle	○	○	○	○	○
Private car	○	○	○	○	○
Public transport	○	○	○	○	○
Motorbike/ moped	○	○	○	○	○

Which describes best your experience with the following advanced driver-assistance systems?

	I use it regularly	I use it occasionally	I've tried it, but don't use it	I know what it is, but I've never tried it	I don't know this system
Adaptive cruise control (ACC)	○	○	○	○	○
Autonomous emergency brake	○	○	○	○	○
Lane departure warning system	○	○	○	○	○
Road sign recognition	○	○	○	○	○
Parking assistance	○	○	○	○	○

Which of the following best describes your experience with the following services?

	I use it regularly	I use it occasionally	I've tried it, but don't use it	I know what it is, but I've never tried it	I don't know this service
Taxi service	○	○	○	○	○
Carsharing services	○	○	○	○	○
UBER	○	○	○	○	○
Other mobility services (please specify or write "no")	○	○	○	○	○

Do you install new software yourself, or do you have someone else to do it for you?

- I install it by myself
- Someone else does it for me
- It depends on the software

How familiar are you with the topic Internet of Things (IoT)?

1 = very familiar | 2 | 3 | 4 | 5 | 6 | 7 = not familiar at all

Where do you live?

- City/ Town:

Have you ever visited Versailles?

- Yes
- No

Please select first your age group:

- < 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-69 years
- > 69 years

Please specify your gender:

- Male
- Female
- Other
- Prefer not to say

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