ANALYSING TRANSPORT DEMAND AND BEHAVIOUR

D.3.1.2.
Segmentation analysis

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Summary

The MIMOSA Project has the goal of improving the quality and sustainability of cross-border and coastal passengers' mobility between Italy and Croatia. The specific role of WP3 in the project is to identify and spread sustainable solutions on the basis of an up-to-date knowledge about travels' demand and offer, as well as to propose an action plan for a sustainable transport planning model. In the framework of WP3, Activity 1, this document represents the Deliverable 3.1.1, which includes the qualitative segmentation analysis of the demand for travel between the two Countries.

Segmentation analysis consists in dividing a population of individuals into categories that present a relative homogeneity of behaviour, choice processes and preferences within each category. The goal of such a process is to build a "preference map" aiming at aligning the characteristics of the offer as much as possible with the variety of needs expressed by the demand.

Within the MIMOSA project the segmentation analysis is focused on the identification of needs that can be satisfied through the improvement of the quality and sustainability of services to travellers. This report describes the scientific premises of the analysis that was carried out, the possible methodological alternatives and the one actually pursued, as well as the results of the survey and their policy implications.

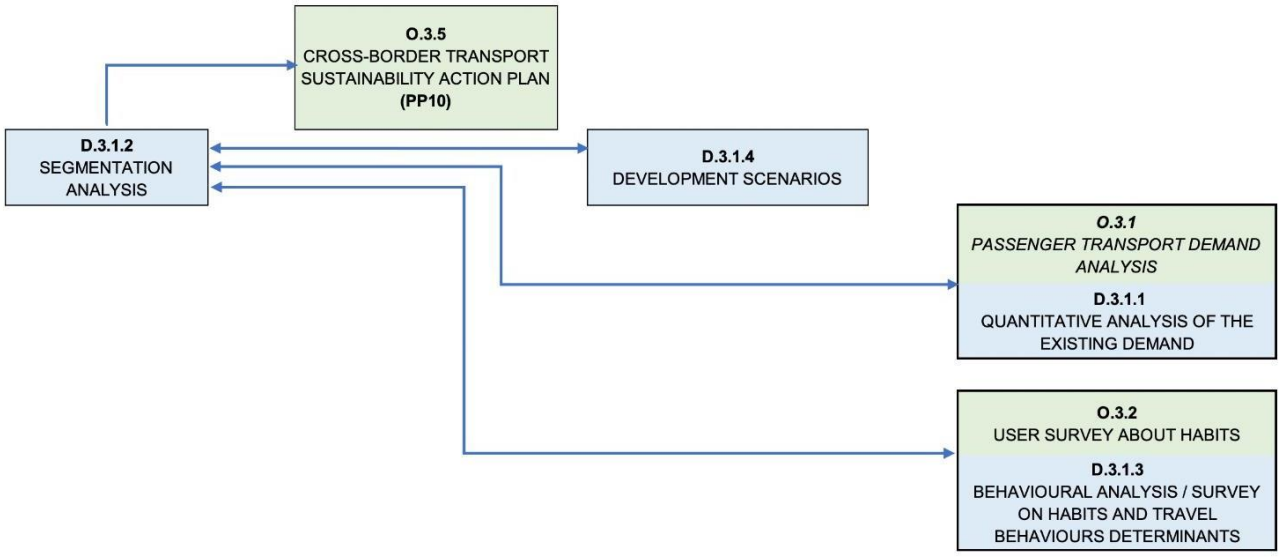
The report is organized as follows: chapter 1 frames the objectives and scope of this document within the MIMOSA project. Chapter 2 clarifies the theoretical background of segmentation analysis in general, and in particular with regard to the rationale behind a study aimed at public interest and non-profit objectives, thus distinguishing the purposes from classical market segmentation adopted for profit-oriented strategies. It also specifies some methodological aspects that should be clarified for the replicability of the study, but also because the final results are conditioned by the methodological choices.

1. Aim and scope of this document

The MIMOSA Project bases its outputs on an in-depth knowledge of the demand for cross-border transport in the programme area. This document, in particular, contains the synthesis of the qualitative segmentation analysis carried out through a questionnaire among a sample of actual and potential travellers, as well as operators and experts, interviewed regarding their knowledge of the main phenomena concerning travel behaviour and choices.

As for the overall MIMOSA objectives, the specific task of the segmentation analysis is to provide a comprehensive picture of the segmentation of travel demand in the programme area, in order to: a) contribute to the definition of an action-plan for sustainable transport in the programme area; b) contribute to the definition of scenarios, c) integrate the quantitative analysis of travel demand and the analysis of travellers' behaviour. Within the framework of the MIMOSA project, the results of this analysis represent an input for further outputs and deliverables of the project, as represented in figure 1.

Figure 1. The relevance and relatedness of D. 3.1.2. with future Outputs and Deliverables



The segmentation analysis was carried out with the goal of identifying policy recommendation to improve the sustainability of transport, i.e. providing indications to orient travel behaviour towards more sustainable transport modes (and in particular to reduce the use of private cars), to improve the offer for people with special needs and to detect the role that some specific services (mostly related to the project pilots) have in creating satisfaction or dissatisfaction for travellers. The complete questionnaire adopted for the survey is presented in the Appendix.

This deliverable contributes to the territorial challenges tackled by the project through providing knowledge about travellers' behaviour and habits that is preliminary and propaedeutic to the transport demand analysis (O.3.1, D.3.1.1) and to the behavioural analysis (O.3.2, D.3.1.3). The peculiar approach of the MIMOSA project makes use of this segmentation analysis in the

perspective of improving the sustainability of transport also from the point of view of appreciation by the demand side instead of a purely supply-side planning.

One of the objectives of the project is to build a knowledge base that can be capitalised on and disseminated among stakeholders. For this reason, in this document we have given space to a rigorous, but concise and accessible to non-expert, description of the scientific principles that have guided the methodological choices adopted to develop this study. We believe that making the assumptions of the study easily understandable is a way to facilitate replicability and to incentive comments and improvements to a wider audience than just people familiar with segmentation techniques. Therefore, although this document is not intended and should not be an academic, some space is devoted to explaining the theoretical framework for the methodological choices and the research itself, for the benefit of future research and projects on similar themes.

Finally, chapter 5 presents the summary of main findings and the policy implication. This is the part of the document that intends to provide the basis for the subsequent definitions of the action plan for transport sustainability (O.3.5) and the definition of the qualitative part of the scenarios (D.3.1.4). The reader who already knows, or is not interested in the review of previous studies, the theoretical background and the methodology used, but only in policy indications, can skip directly to chapter 5.

A final note concerns the role the pandemic has played in changing travel behaviour. The work programme set up for the preparation of this deliverable was so tight that it was not possible to include in this document an analysis of what effects the pandemic has had and will have on travel behaviour. This will be the subject of a subsequent document that will complement deliverable 3.1.3, expected by the end of 2021. However, a preliminary and complementary analysis to the segmentation study was carried out, with the aim of exploring some key aspects related to the perception of safety in COVID pandemic conditions in different travel situations. The summary of this analysis is presented in chapter 6.

2. The theoretical foundations of the segmentation analysis

2.1. Rationale and antecedents of segmentation analysis

Segmentation analysis is a widely known and widely practised field. In broader terms, the main purpose of segmentation analysis is to design, with reference to the demand of a specific market, an offer which is sufficiently varied to be satisfactory for as many individuals as possible, while at the same time being economically viable. To do this, segmentation analysis divides the population representing the potential demand for that market into groups of people (segments) which have relatively homogeneous preferences and which differ significantly from those of other segments. The rationale for this analysis is based on a series of assumptions, including the following. First, the demand of the reference market is not homogeneous but has, instead, a wide variety of needs and preferences. Second, an entity (company or non-profit organisation) offering a product or service has an economic advantage from customising its offer on the preferences of a subset (segment) of the total demand, rather than providing a one-size-fits-all service. The economic advantage of segmentation is due to the occurrence of two conditions. First, a generic offer aimed at the whole of demand in all its variety of preferences would be unsatisfactory for everyone, whereas an offer characterised according to the preferences of a segment improves the attitude and propensity to buy of the latter towards the offeror. In other words, customisation makes demand in the segment less elastic to price increases and more elastic to price decreases, and this represents a competitive advantage wherever there are competing providers for the product or service.

Second, it is assumed that there are scope diseconomies that make customisation across all demand segments disadvantageous. Segmentation analysis is also an essential step in order to evaluate the economic implications of an increase in differentiation, since as the variety of supply increases so do the costs. Segmentation is therefore a prerequisite for choices that bring economic and competitive advantages to the supplier and for the customers as well, to the extent an offer that satisfy a variety of preferences is more effective from the user's point of view than an undifferentiated offer, i.e. one that provides no or little variety of choice.

The normative theory of segmentation has been originally designed to enable a profit-oriented company to define a strategy within the boundaries of the market in which it competes. In fact, segmentation theory and are almost exclusively conceived from the perspective of profit-oriented

market competition, to the extent that it is difficult to find references of this type of analysis outside the strategic and profit-oriented context. Thus, the literature considers the primary purpose of segmentation to be the definition of strategies for improving supply as a function of increasing demand or, in any case, the profitability provided by demand (see, for instance, Sausen, Tomczak, & Herrmann 2005). As we said above, in the context of the MIMOSA project the segmentation analysis shall support the action plan to improve the sustainability of transport. In this, the rationale of segmentation analysis is very different from the typical approach aimed at profit-oriented segmentation. Generally speaking, through the segmentation analysis it should be possible to understand to what extent an increase in differentiation is economically viable. In the context of profit-oriented strategies the segmentation is oriented to identify the market groups which are most convenient to serve on the basis of profitability and cost opportunities. In the case of public services, such as transport services, of course the logic of segmentation is not to select the most profitable part of the demand, but to provide improved services to the entire population in the more effective way as possible. It is therefore a matter of segmentation aimed at improving and expanding the existing offer to citizens, according to their most relevant needs.

The fundamental difference between the two perspectives lies in the fact that in the first case the reference criterion for the offer improvement is profitability. This means tailoring the offer on the major segments and/or those more profitable, or where competition is less intense, etc. In the second case, on the other hand, the reference criteria for improving the offer are oriented towards sustainability, including - but not mainly - economic sustainability. In transport, there are segments that are usually smaller in number and less profitable than other segments (e.g. people with physical disabilities, inhabitants of minor islands and rural areas). Such segments are certainly not a priority in a profit-oriented logic, while they are a priority in a sustainability-oriented logic, as they include part of the population in need of greater protection. In a word, the segmentation process applied to non-profit objectives starts from political and value priorities, typically referred to sustainability principles.

The objective of a segmentation aimed at non-profit public services is therefore different from the traditional profit-oriented market segmentation, and this has methodological implications. First, in profit logic segmentation aims to select the segments that it is most convenient to serve, whereas in public services segmentation aims to verify that all major needs are adequately served. As a

consequence, the analysis must reveal the needs requiring special attention as regards the social dimension of sustainability (accessibility), and demand surveys (through questionnaires or interviews) have to bring out even the most specific, albeit rare, needs, thus giving voice to niche needs, rather than emphasising segments characterised by greater numbers. Second, the analysis should highlight behaviours that lead to less sustainable travel choices from the point of view of environmental sustainability and on which it is therefore appropriate to try to intervene with targeted policies. Third, in order to be able to develop policies aimed at orienting towards more sustainable travel behaviours, it is necessary to understand to what extent the opinion of operators (experts, decision makers, etc.) is aligned with that of demand as regards the factors underlying the positive or negative perception of travel situations.

The segmentation analysis starts from the definition of a context (usually a market demand) that circumscribes the set of objectives and related behaviours to be analysed. Results depend on the approach adopted, whether common-sense or data-driven (Dolnicar, Grün & Leisch 2018). Studies adopting the first of the two approaches seen in the previous section identify segments on the basis of one or more variables that express a key feature of the sample. For instance, Kizielewicz et al. (2017) segments the motives for ferry travels on the basis of travel motivation (Tourists, Visiting relatives, Business-/Work-related and combination of these).

The studies framed within the second approach, group respondents according to the similarity / variability of their answers. For example, Pafi, Flannery & Murtagh (2020). identify four benefit-based segments of coastal tourists, labelled as follows: “Blue Health Seekers”, “Nature Escapers”, “Pristine Seekers”, “Heritage Explorers”. Barić, Anić, & Macías Bedoya (2016) study the segmentation and service quality gap among visitors of the Paklenica National Park in Croatia. They identify five benefit-based segments and label them “Enjoy nature”, “Novelty and learning” “Socializing”, “Escape and solitude”, “Personal achievement”. Both these studies, taken as examples, base the segmentation on the sought benefit, and use a statistical procedure (factor analysis) that highlight distinct groups of behaviour on the basis of the variance of the answers provided by respondents.

Previous studies have highlighted how some socio-demographic, lifestyle and economic variables can be related to specific segments. For instance, the segment of art & culture tourism demand is mainly characterized by higher age and spending power (Pulido-Fernández & Sánchez-Rivero 2010),

and people with multiple motivations are more likely to return (Carvache-Franco et al.,, 2020), and so on. We believe that studies of this kind are highly contingent and results of analyses obtained in other geographical areas are hardly transferable.

In this study we will base our segmentation mainly on benefits and travel motivation as factors from which to trace possible socio-demographic profiles. For this purpose, cross-border travellers in the Italy-Croatia programme area can be framed into the broad context of destination marketing.

Based on the results of the questionnaires (see section 3), the demand for travel between Italy and Croatia is almost entirely attributable to tourism and holidays, work, shopping and family ties. Tourism and holiday demand is the most variegate (Dolnicar, 2004, 2008. For a review of tourism demand segmentation methods, see for instance, Katsoni, Giaoutzi & Nijkamp, 2013). In our framework, benefit-based segmentation for travellers can be clustered according to at least five types of segments: a) coastal destination tourism demand, b) nature-based tourism demand, c) art & culture tourism demand, d) food & wine destination demand, e) relax-seekers. A further group, which was marginal in our sample but is significant overall, is nautical tourism. These groups are united by the recreational vocation of travel but differ, according to some studies, in aspects of lifestyle, associated with different behaviours and choices, that identifies actual different segments (Carvache-Franco et al., 2019, 2020; Onofri & Nunes 2013).

For the peculiar goals of the MIMOSA project we have started from this antecedents, and at the same time we have considered previous contributions which warn against data-driven procedures that validate ex-post segmentation solutions (Hoek, Gendall, & Esslemont 1996), as well as the idea that segmentation should be an “active” tool (rather than a passive clustering) to define ways of enhancing the value of the destination in accordance with the principles of sustainability, and not merely to satisfy the demand (Pafi, Flannery & Murtagh 2020). To clarify this position, we cite as an example a figure which emerged from the survey carried out for this report. There were a series of questions asking, for various aspects: "Please rate in general how important you consider each of the following aspects for a trip to Croatia (or to Italy) on a scale ranging from 1=irrelevant to 5=extremely important The results tell us that the average importance measured for: "Quality of services for physically challenged passengers" was 3.28, that is, very near to neutrality (3 = neutral importance), the lowest value among all investigated aspects.

In a "normal" market approach such a ranking would imply that investments to improve accessibility for physically challenged people would have the lowest priority. However, in our study Obviously, this is not the case for a sustainability-oriented vision. The segments identified in this study as priorities for policy attention are therefore not necessarily the most numerous, but those on which it is possible to operate with targeted communication and services, obtaining significant results in terms of increasing the sustainability of travel behaviours.

2.2. Alternative approaches to segmentation analysis

The segmentation process consists in grouping individuals of a reference population into clusters characterised by relative homogeneity with regard to preferences and behaviour in relation to a specific object of investigation. Underlying any segmentation process is an attempt to learn about preferences and demand behaviour. In order to achieve this, alternative approaches can be adopted, which are approximations of what would be the ideal, but usually not feasible, way.

Theoretically, the ideal result is obtained by interviewing each individual in the reference population (potential demand for a given market) and clustering people according to the answers provided by respondents. Such an ideal solution is impractical or impossible when the target population is very large and, even if it was possible, it is an inefficient solution, given that reliable results can be obtained with much less time- and resource-consuming procedures. These procedures refer to two macro-approaches: a) classification of segments on the basis of observable variables (including activities) considered to be determinants of preferences and behaviour; b) classification of segments on the basis of surveys conducted on a sample of the population. Such a dichotomy is one, generally accepted, (over)simplification among many (see, for instance, Dolničar 2004). Other classifications refer to the way in which behaviour is measured, the type of segmentation variables taken into consideration, the techniques used to cluster the groups, and so on (see for instance: Cooil, Aksoy & Keiningham, 2008). Since the appropriateness of each approach depends on the aims of the research, we describe these two alternatives because they are both compatible with our aims, although not as effective.

Broadly speaking, the first approach bases segmentation on detectable characteristics of the population characteristics, declined in a set of observable variables, such that it is reasonable to

believe that such variables are directly related to choices and preferences. A list of criteria and related variables is listed in table 1.

Table 1: list of possible segmentation criteria and variables

Criteria	Variables		
Demographic	Age Gender Family status Family size	Geographic	Country / region Urban / rural Climate
Socioeconomic	Education Income Job Religion Ethnicity / Nationality	Lifestyle & personality	Activities Values Attitudes Interests & motivations, Vocations Activities

In this approach, segments are defined by identifying groups through the intersection of variables and associating to these groups specific preferences and/or behaviours, inferred on the basis of motivational surveys, prior analysis or simple logical associations (so called *commonsense segmentation*). An example is shown in figure 2, which simulates an inference about the prevailing travel interests from demographic and geographical variables.

Figure 2: Example of commonsense interest-based segmentation of groups of people identified from demographic and geographical variables

Age	Family status	Geographic	Interests
< 18	Single	Northern Europe	Nightlife, entertainment
18 - 24	Couple	Mid-North Europe	Sea and beach sports
25 - 30	Couple with kids	Mid-South Europe	Art and culture
31 - 40	Family group	South Europe	Nature and hiking
41 - 50			Food and wine
>50			Relaxation

The theoretical assumption of this approach is that a reliable correlation (commonsense-driven or data-driven) can be established between segmentation variables and behaviour. Therefore, such an approach provides indications when investigating repeated / routine behaviour, induced by the specific condition described by the variables used for segmentation. It is a particularly suitable

approach to quantify the potential demand of a market from socio-demographic economic variables that are usually available at national level.

On the other hand, it has substantial limitations when it comes to knowing the distribution in the population of occasional behaviour or complex choices, where behavioural variables play a predominant role. For instance, there is a significant correlation between the geographical context in which one resides (urban centre with high-population density, rather than rural low-density area) and the propensity to use a car for daily commuting, depending on the actual availability of alternative means of transport. However, the urban / non-urban location is much less significant when predicting the mode for sporadic or long-distance travel. This type of approach is therefore widely used in market research. Starting with the definition of the potential market, population datasets are used to measure the size of the main possible segments identified.

For the purposes of the MIMOSA project goals, however, it was considered more relevant to identify and classify the behaviours, thus using another approach, consisting in investigating the behaviour of the demand through a survey to actual and potential travellers. In this second approach the underlying assumption is that preferences and behaviours are not necessarily related to individual socio-demographic conditions but to personal evaluations that cut across the segmentation variables seen in the first approach. This approach to segmentation, therefore, classifies behaviours and judgements in a descriptive way. A sample of the reference population is asked to answer a series of questions about their actual behaviour (choices made in the past), as well as a series of assessments of the main characteristics of the object of investigation.

From a methodological point of view, the main difference from the previous approach is that segmentation is based on behaviours or benefits, rather than socio-demographic, geographical and lifestyle characteristics. Then, the behaviour and preferences (or benefits sought) are observed by surveying a sample of the population, possibly looking for correlations with the socio-demographic, geographical and lifestyle characteristics of the respondents. An example of a possible outcome of this approach is shown in figure 3, where segments are labelled according to the main sought benefit by age classes (see also section 2.3 about the expected outcomes of segmentation analysis).

Figure 3: Example of benefit-based segmentation identified from survey and correlation with demographic variables (e.g. age group).

		Age group					
	Relevance to travel choice	<18	19-25	26-34	35-45	45-55	>55
"Nature seeker"	Nature, landscape	0,12	0,23	0,25	0,36	0,34	0,18
	Hiking	0,22	0,12	0,22	0,27	0,35	0,26
"Sea Lovers"	Sea and beach	0,34	0,42	0,34	0,21	0,18	0,25
	Water sports	0,38	0,31	0,21	0,12	0,01	0,04
"Fine taste"	Art, culture, museums	0,05	0,09	0,19	0,21	0,25	0,43
	Food & wine	0,02	0,03	0,13	0,08	0,39	0,34
"Peace seekers"	Relaxation	0,04	0,06	0,20	0,18	0,32	0,55

This approach to segmentation is more effective than the previous one when dealing with the subjective appreciation of services or features of the offer. For instance, from variables such as age, disposable income and geographical area, one can infer demand segments related to the main benefits sought in a holiday trip. But those variables do not predict greater or lesser appreciation of the services used during the trip.

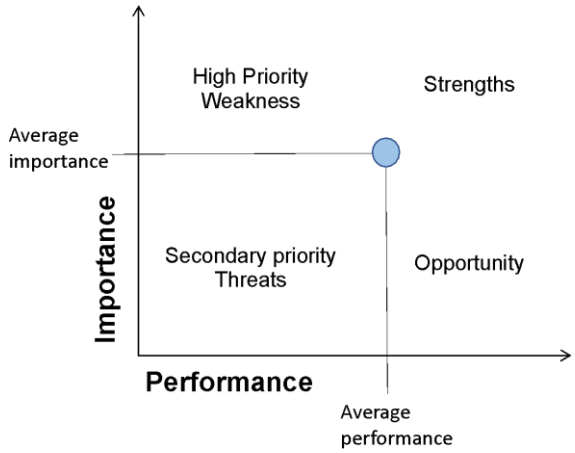
Usually, through this approach very varied judgments are detected, from which it could be inferred that there are as many segments as there is variety in the responses. However, there are statistical techniques that can identify certain variables (called factors) that explain the variety found with relatively few variables. In this way it is possible to translate the (virtually unlimited or very large) variety of preferences of judgments into a discrete set of groups of people with similar preferences, i.e. the segments.

In our study, we also wanted to detect potential strengths and weaknesses through analyses known as *importance-performance* and *Kano analysis* (Kano, 1984). To this end, the questionnaire developed for this study included three types of questions: a) questions descriptive of behaviour and habits (i.e. travel / non travel motivation, travel origin & destination, frequency and recurrence of travel, travel mode choices, accommodation choices, mobility mode choices during stay, etc.); b) questions for the importance-performance analysis of key services (i.e. perceived importance and satisfaction of key aspects of travel and stay, c) questions formulated according to the Kano's methodology (i.e. attitude towards the presence of specific services or features in services). Some demographic and socio-economic characteristics of the respondents were also collected, for classification purposes only, and not for inferential purposes. Further details about the methodology

of the study are in section 4.1, while here we briefly describe the approach adopted in order to highlight strengths and weaknesses of some aspects of travel offer.

The *importance-performance* analysis aims to classify services and characteristics of services according to their relevance in determining the overall attitude of demand towards the offer. Such an analysis allows to identify the priorities to be followed in improving services, as well as strengths and weaknesses of the offer. The procedure for this analysis is to identify a set of choice-relevant services or service characteristics and ask respondents for two judgements, one on the subjective relevance (*r*) of each service, the other on their satisfaction (*s*) with the service. Mapping services according to the average value of relevance and performance (satisfaction) it is possible to highlight strengths and weakness, as well as obtaining a summary judgement of the "criticality" *C* of the services considered, using the algorithm $C = \sum_{i=1}^{n} \quad s_i \cdot \frac{1}{r_i}$, that is: the overall criticality *C* of the service or characteristic taken into consideration is given by the weighted sum of the ratings *s* made by each subject *i* (*n* is the total amount of interviewee) weighed with the inverse of their importance r (figure 4). This index provides a summary measure of criticality by giving values below 1 for those features/services that perform less than they should. It is clearly an approximate indication but nevertheless useful for discriminating areas that require priority intervention.

Figure 4: scheme of the importance-performance analysis results



This type of survey is therefore useful for investigating the presence of criticalities regardless of the number of subjects belonging to a given segment. In this respect, it is consistent with the methodological approach chosen for this study, i.e.: listening to the needs expressed also by smaller parts of the target population.

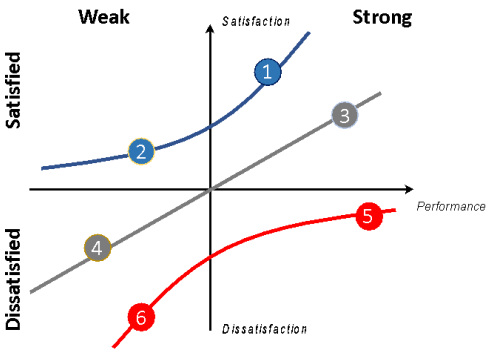
In addition to greater or lesser relevance and level of performance, an important specification is whether the services and their features are considered as necessary requirements rather than optional elements for the quality of the offer. There are, in fact, characteristics and services that are perceived as very important, but, since they are considered as minimal requirements, even if present with high performance they do not necessarily contribute to increase satisfaction / to improve the attitude, while their absence or a poor performance is dissatisfying. Some services, considered ancillary or little known, might have a low rating but, at the same time, be able to convey better satisfaction. For this reason, an important complement to the importance-performance analysis is the Kano analysis, which aims to shed light on the role that the services or characteristics investigated have in generating satisfaction or dissatisfaction in demand. Specifically, this model uses joint questions on attitudes towards situations of presence or absence of benefits, or services, to infer whether a service (or a feature of a service) belongs to one of the following three types of benefit: a) attractive: might provide satisfaction, but since it's not expected or not known, it doesn't provide dissatisfaction if missing or inadequate; b) one-dimensional: provides satisfaction or dissatisfaction according to the level of performance; c) must-be (prerequisites): are considered essential and as such cannot generate additional satisfaction but only dissatisfaction if not present or inadequate. The three types of benefits are represented in figure 4, by the three curves plotted in the diagram joining the level of performance and its effect in terms of satisfaction / dissatisfaction. Different position of a service in that diagram provides (approximately) different policy recommendations, as shown in the extended SWOT matrix on the right (figure 5).

Further labels to the requirements worth mentioning are i) indifferent, whenever satisfaction is not affected by the presence or absence of a specific feature/requirement, and ii) reverse, whenever individuals are satisfied if the feature is not present, and dissatisfied if it is present.

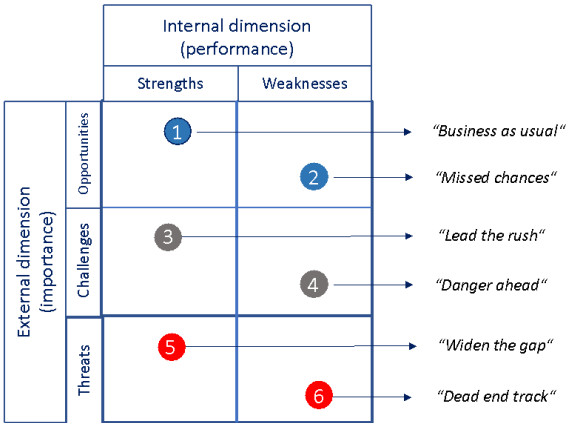
On the whole, a predominantly behavioural statement survey was chosen since it has been considered more appropriate to the project's objectives and better able to provide policy recommendations.

Figure 5: the Kano classification of service and characteristics and the relationship with policy implications.

KANO MODEL



EXTENDED SWOT



2.3. Limits of segmentation analysis

Segmentation analyses provide, as their main result, a classification of clusters of people, labelled on the basis of the type of segmentation, and combined with percentages representing the consistency of the segment. In this, segmentation analysis has both implementation and logical limitations. The first have to do with the inherent uncertainty of representing real preferences and behaviour from the opinions expressed by a sample. Normally preferences and behaviours have a certain repetitiveness over time, but the segmentation is not derived from direct observation but from statements of a sample of individuals. There is no way of verifying the truthfulness of the statements made or, assuming they are true, their durability over time (Hoek, Gendall, & Esslemont 1996). In addition, there is a significant arbitrariness in the choice of data processing techniques and the interpretation of results (Hoek, Gendall & Esslemont, 1996).

The logical limits to segmentation arise from the idea of identifying groups in order to be able to select the most strategically advantageous ones. This view, which is the cornerstone of the strategic marketing approach, might be misleading in a logic of service to the non-profit public. In addition to what we have seen before on this aspect, there is an issue that has been brought to the attention of the community by a recent study by Pafi, Flannery & Murtagh (2020), which concerns the cultural impact that the concept of segmentation can have on policies when this tool is used to define local development policies. These authors take into account the widespread "blue growth" and "blue economy" oriented strategy and argue that tourism: "*To be of use to local communities, tourist*

experiences of coastal landscapes need to be understood from a community-led, rather than market-led, perspective". According to this study, conducted in the context of coastal tourism, since segmentation imposes a vision centred on demand expectations: "*Fail to capture the innate experiential nature of coastal tourism and often result in the production of coastal tourism that is unsympathetic to community landscape perspectives and values*".

It is therefore a process that can potentially trigger policies that can distort the socio-cultural fabric of the destination (instead of enhancing it), in order to favour generic and extemporary but widespread preferences. According to this study, this risk is due to the adoption of a purely statistical and not a qualitative approach to data analysis. It seems to us that there is a significant coherence in all of this with the needs expressed by the non-profit public service logic and sustainability focus of the MIMOSA approach. The situation studied in this paper (coastal tourism in Ireland) has many similarities with the MIMOSA programme area. Consequently, the observations of this study have been taken into account in this deliverable, adopting a segmentation (also similar to the one in Barić, Anić, & Macías Bedoya, 2016). that starts with qualitative aspects deduced from the responses to the questionnaires.

3. Summary of previous studies

Prior to the empirical research based on primary data collected in the programme area, the MIMOSA team performed a desk research aimed at collecting available evidence on segmentation. While there is little evidence considering only travels between Italy and Croatia (this represents a further value added of the present project), the following paragraph outlines the information collected as regards travellers to/from the two Countries in general. In other words, considering for example Croatia, we collected all available segmentation analyses performed on travellers going to Croatia, both from Italy and from other Countries.

This part of the work was essential to get to know the context and was made possible thanks to the active collaboration of all the MIMOSA partners, and some external stakeholders. Further, online documents have been looked for on popular research engines such as Google, Google Scholar, and so on. The aim of this preliminary review is that of gaining better understanding of passengers'

specific characteristics, which could be socio-demographic (e.g., age or gender), behavioural, motivational, and so on.

Data collection methods, aims of the research and variables included in studies and reports are heterogeneous. Although useful to provide an overview on available data on the topic, it is worth mentioning how existing evidence mostly focuses on single aspects connected with segmentation. More in detail, key information pertain to (some of) the following aspects: a) the sample of the study or report (e.g., tourists in the programme area, travellers on a specific mode, etc.); b) socio-demographic information (e.g., information on age, gender, income or education of the sample) c) behaviours (e.g., use of different transport modes); d) motivations (e.g., trip purpose, whether work or leisure related; benefits sought, such as relax, adventure, culture, etc.); e) focus on sustainability (some documents report information specifically angled towards sustainability-related issues; e.g., interest of the sample for sustainability, preferences for green transport modes, etc.); f) other relevant info (a residual category where to input other data and information that could be of interest as regards segmentation of travellers). In this context, our study is peculiar (besides the fact that is tailored on travellers between the two countries of the programme area), insofar all relevant dimensions are included in one single survey (benefits, motivations, behaviours, socio-demographics, and so on).

Table 2, which occupies the following pages, provides an overview on the collected studies, synthesizing key-findings and segmentation variables that have been adopted. We felt it was our duty to collect and present at least a summary of the findings of these studies. However, on the whole the picture that emerges is fragmentary and to our knowledge the one carried out in this project is the first analysis with a truly cross-border broad approach.

Table 2: overview on most relevant segmentation studies previously developed in the programme area

STUDY	SAMPLE & SOCIO-DEMOGRAPHICS	BEHAVIOURS / MOTIVATION	FOCUS ON SUSTAINABILITY / OTHER RELEVANT INFO
Research analysis of passenger consumption on cruises performed in Rovinj, Rovinj PA, 2014	138 passengers on cruises + 4 crew members mostly from USA, Germany and France 87% of the population older than 41 (41-50 13%, 51-60 20%, 60+ 54%), only 13% from 18 to 40 (18-30 7%, 31-40 6%)	Tourist's expenditure: refreshments 57%, souvenirs 47%, postcards and domestic food and alcoholic beverages 22%, clothing and fashion accessories 20%, entertainment 14,4%, transport 8%, sightseeing 3,4%, and museums 2%. High level of satisfaction with sightseeing, hospitality, historical and cultural events, beaches, food and beverages and organized excursions (grade over 4,5), a little lower with souvenirs.	Approx. 1-6h spent time in the destination; to improve in the long run: tourist signalization, land transport, to improve the language more, and to improve the port in certain segments; they would recommend it as a tourist destination (40%) and a cruising destination (30%) or both (30%); should be improved in long run: tourist signalization, land transport, language, port in certain segments
Report about habits and needs of passenger's mobility traveling by rail in the Istria region, HZPP, August 27 to September 4, 2020	111 respondents, primarily passengers of HZPP Surveys were filled mainly by the working population and everyday commuters; Age: 59% are aged 29 to 65, 21% are aged 19 to 28, 11% are older than 66, and 9% are aged 12 to 18; work status: 48% employed, 28% pensioners and 22% pupils / students, 3% did not give an answer	54% use train as the main transport solution, 18% of them use a car while 12% of them use bus or walk, only 4% use bike or scooter; Online data collecting gave slightly different results 56% for work, 27% for leisure and 16% for school; online data: 74% for work, 21% for leisure and 5% for school	52% are familiar with the term sustainable transport, 46% of them have never heard about it, 2% no reply. Online survey shows a ratio of 67% knowing about sustainable transport and 33% doesn't. This only proves that the general population does need additional education and that transport operators should work more on marketing measures in order to provide the population with travelling possibilities on an eco-friendly basis. Way of buying tickets: 44% at the box office, 37% by train or bus, 19% online; deficiencies in rail transport: old trains 51%, timetable 22%, travel times 21%, insufficient information 5%
Report about habits and needs of passenger's mobility traveling by rail in the Istria region, HZPP, August 27 to September 4, 2020 - TRIP TO ITALY	111 respondents, primarily passengers of HZPP; very often travel to Italy (48% from railway hubs and 77% from online data) Surveys were filled mainly by the working population and everyday commuters; Age: 59% are aged 29 to 65, 21% are aged 19 to 28, 11% are older than 66, and 9% are aged 12 to 18; work status: 48% employed, 28% pensioners and 22% pupils / students, 3% did not give an answer	Their only connection is to travel by car (52%; 27% no reply) as the fastest and most convenient transportation mode which indicates issues with public transportation i.e., lacking connections between Croatia and Italy (9% by train and 8% by bus) Highest percentage is leisure time 64% (such as shopping, field trips, sightseeing etc.), only 5% for business	Most of the trips to Italy are on a monthly basis (30% railway hubs, 25% online) and on a yearly basis (28% RH, 57% O)
Study for sustainable development of cruising tourism in Croatia, Institute for tourism Zagreb, 2007	Passengers are mostly Italians (28%) then from USA (23%), Spain (158%), UK (8%), France (8%), Germany (4%). 786 respondents and 300 local population from Dubrovnik	Activities: mostly for consuming beverages, shopping, sightseeing and less for restaurants and organized trips	88% of the interviewed residents (local population) of Dubrovnik believe that cruise passengers "flood" Dubrovnik in the summer, but their reaction to cruisers is mostly positive. Residents recognize tourism as the most important economic activity, and the fact that Dubrovnik is a tourist 'mecca' creates civic pride in them. The attitudes of the respondents are polarized when it comes to the impact of further growth in the number of tourists, which the increased number of cruisers undoubtedly brings, on the quality of life: about 35% of respondents believe that further growth in the number of tourists will endanger the quality of life which means that their attitude is changeable.

			Top 3 destinations: Dubrovnik, Split and Korcula. Weekends are the best, 3-6h staying in destinations. Average consumption: 39 euros, of which 7 euros or 18% refers to the price of an organized excursion / sightseeing. The largest share of guest spending, around 19 euros (49%) relates to purchase costs, followed by food and beverage expenditures in restaurants (10 euros or 26%) and other expenditures, including transport and ticket expenditures. Passengers spend an average of about 41 euros per person, while crew members spend about 29 euros per person. Among travellers, the best consumers are guests from the UK (€ 51 average per person), the US (€ 49 average per person) and France (€ 46 average per person).
Survey on attitudes and expenditures of tourists in Croatia, Tomas institute for tourism, summer 2017	5,950 respondents in hotels, campsites and private households in 67 destinations along the coast and on the islands; tourists from 20 main generating markets 41.5 years is the average age of tourists, 54% between 30 and 49 years of age, 19% is younger than 30, and 27% older than 50, 38% with university degree, 40% of a tourist's household with monthly income higher than 3,000 euro	55% motivated by (passive) rest and relaxation, followed by new experiences (31%), gastronomy (29%), natural attractions (26%), entertainment (24%), sport and recreation (20%)	Travel characteristics: 48% of tourists accompanied by a partner, 38% by family members, 10% by friends, 78% of tourists arrived by car, 15% by plane, 4% by bus. Tourism consumption: 79 Euro per person is the average daily expenditure of tourists in destination (without travel expenses). 49% is the expenditures for accommodation, 17% for restaurants and bars, and 34% for all other services in destination.
A MedCruise report Statistics, Cruise Activities in Med Cruise Ports, 2019	Total number of passengers for each port, total cruise traffic in Adriatic region (5.431.388 pax. - 11,3%, 3.019 calls - 7,6%; Venice and Dubrovnik are the main ports), cruise passenger movements and cruise calls for major ports, cruise traffic per country (total pax-Italy: 46,72%; total calls: 34,41% Italy, 6,09% Croatia); seasonality by region		
Survey about usage of public transport in Istria, IDA ltd., 2020	122 online collected surveys, general public, transport experts and public authorities	Only 24% of participants use public transport, most of them use bus, less ferry, car and train; really small number of participants use bikes as a main transport (less than 10); only 9 participants combine different types of public transport 50% of participants use public transport for traveling to/from work/school/university, 31% for leisure and 19% for other reasons (e.g. visiting events and education, in emergency situations).	Frequency: 44% use once a year or less, 37% never, 12% monthly, 3% weekly, 2% of participants use it daily and 2% only a few times per year; Reasons for not using public transportation: owning a car (more than 80%), not having enough lines on particular time (around 50%) and not living close to a bus or a train (around 35%); Source of information: 81% find information about the lines on the Internet and 19% on a timetable at stop; **CB info**: only 38% of participants travel cross-borders by using public transport mostly to Italy (12%), less to Slovenia (3%) or other EU countries (9%), they often use buses (12%) and less trains (7%) and planes (2%); CB combining different modes of transport: less than 25% combine different modes of public transport, most convenient is a combination of a bus and train, then plane and train, and the last one is plane and bus
Survey of attitudes and expenditures of tourists in Croatia, Tomas	13,582 respondents in hotels, hostels, camps and family accommodation in 143 places throughout Croatia.	73% of tourists in the Adriatic Croatia arrived by car, 19% by plane, 6% by bus;	Travel characteristics: 43% of tourists in the Adriatic Croatia are accompanied by family members, 40% by partner, 11% by friends, and 7% are without travel parties; 38% of tourists in the Continental Croatia are without a travel party, 32% are accompanied by a partner,

institute for tourism, May 2019 to March 2020 (PP11)	The average age of tourists is 43.55% between 30-49 years of age, 15% are younger than 30, and 30% are older than 50. 43% of tourists with university degrees (42% in the Adriatic Croatia and 48% in the Continental Croatia)	49% of tourists in the Continental Croatia arrived by car, 37% by plane, 9% by bus Sea (81%) and nature (56%) are the most important motives for visiting Adriatic Croatia, followed by city break (24%), touring (21%), sport and recreation (15%), culture and art (13%), gastronomy (7%), entertainment/festivals (6%) and other; motives for visiting Continental Croatia are nature (32%), touring (26%), city break (26%), sport and recreation (24%), business (22%), culture and art (16%), hiking and rural areas (by 10%), gastronomy (7%), events (6%) and other	16% by friends and 14% by family members. Tourism consumption: 98 Euro per person is the average daily expenditure of tourists in destination (115 Euro on average in the Continental Croatia and 97 Euro on average in Adriatic Croatia). 54% accounts for the expenditures for accommodation, 17% for restaurants and bars, and 34% for all the other services in destination; the similar distribution is observed in both regions.
Survey on attitudes and expenditures of visitors to health tourism facilities in Croatia, Tomas institute for tourism, 2018	2.540 interviews (1.331 users of wellness services, 793 users of health spa services, 416 users of medical services); Users of wellness and medical tourism services are predominantly foreigners (82% and 73%); users of health spa services are mostly domestic guests (67%) Health tourism services are purchased mostly by middle age and older individuals, users of wellness services are on average the youngest (43 years), while users of health spa services tend to be the oldest (58 years); Users of different types of health tourism services differ significantly in education levels, the largest share of visitors with a university degree is observed in the wellness segment	Road transport is the most frequent way of accessing the destination for all health tourism segments Main motives of health tourism trips are relaxation, physical therapy, dental work and rehabilitation	Satisfaction: All demand segments express a very high level of satisfaction with destination offers and particularly with beauty of nature and scenery, personal safety, atmosphere in destination and friendliness of local population. All demand segments are also highly likely to recommend the destination
Master thesis about analysis of public passenger transport in Lika-Senj County	Survey on 405 passengers in bus transport, 4 in rail, 76 in sea transport SEA 31 pensioners, 22 workers, 11 students, 10 unemployed, 2 pupils	Transport of passengers from less populated places to economic centres (bus lines), small number of passengers transported by rail (only 4 lines in railway transport), approximate number of passengers in Lika-Senj County is 2605 daily with the ratio of 80.77% (2104) in sea transport, 18.85% (419) in bus transport and 0.38% (10) in rail transport **BUS** 214 passengers for education, 53 medical reasons, 47 for business, 44 for visit, 7 for shopping, 7 for bureaucracy;	**BUS** Frequency of travel: 222 passengers daily, 144 not on weekly basis but less often; reason for using public transport: 302 because it is the only way of transportation, 119 because of finance reasons, 30 subventions, 8 ecological awareness, 5 car breakdown; average grade for the bus transport was 3.41; **RAIL** reason: the only way for traveling and financial reasons; average grade for rail was 3.41, elements for improvement: better timetable alignment, cheaper transport tickets, shorter travel times, higher frequency and integration with other transport modes; **SEA** frequency: only 3 people daily, 19 people weekly, 24 monthly, 30 yearly; elements for improvement, 11 better timetable alignment, 33 shorter travel times, 8 cheaper transportation tickets, 7 greater comfort, 5 better content in ports and wharves, 41 higher frequency, 15 better hygienic conditions, 6 greater accuracy, 9 integration with other public transport offer, 6 better pre-travel and travel information, 15 introduction of new line, average grade for the sea transport was 4.51 and for integrated bus and sea transport was 4

		motivation for using bus public transport: 134 because of comfort, 129 said it is cheaper, 126 shorter time of traveling, 85 higher frequency, 76 better hygienic conditions, 57 greater accuracy, 47 station proximity, 33 accurate information; **RAIL** motivation for using rail: 2 of them are employed traveling for job once or twice a month, 1 is a student traveling for education and 1 pensioner traveling for medical reason; **SEA** 37 for medical reasons, 14 for education, 6 for business, 11 for tourism	
Word document for nautical tourism in Split-Dalmatia county, Split-Dalmatia County Tourist Board, 2017-2019	Mostly from Great Britain, France and Netherland; Total number of tourists by counties, top 3: 43% for Split-Dalmatia, 21% Zadarska, 18% Sibenik-Knin county		Expenditure: on average they spend 1,486 euros per person and travel (62% for a boat, 11% transport from the place of residence to the port of departure in Croatia and back, 27% other), and 126 euros per day is the average cost (excluding transport costs). Looking at consumption, UK tourists spend the most (212 euros), followed by those from France (207 euros), and third place goes to boaters from the Netherlands (202 euros). Analyses also show that boaters are known as quality guests, most often highly educated, of higher purchasing power who stay in the Republic of Croatia for an average of 10 days.
Analysis for tourist season in Croatia, Split-Dalmatia County Tourist Board, 2019	Foreign tourists are dominant in the total realized tourist traffic of the region, with a share of 92% in arrivals and 94% in overnight stays; about 18.3 million arrivals of domestic and foreign tourists were realized in commercial accommodation facilities in Croatia, which is 7 percent more than last year, and about 89.5 million tourist nights were realized, which is 4 percent more than last year		Tourist traffic by regions: 27% Istria, 19% Split-Dalmatia, 18% Kvarner, 14% Zadar, 8,5% Dubrovnik, 7% Sibenik etc. 28% of tourist nights realized in the organized segment, 72% of individuals By objects: mostly apartment rents 54%, 24% hotels (47% with 4 stars, 31% with 3 stars), 8% nautical Months traffic dynamics: Nov-Jan least tourists Best destinations in Split-Dalmatia County: Split 52%, Makarska 28%, Hvar 9%, Brač 8% Nautical information: from above; nautical tourism is the fastest growing tourist sector in Croatia
Main plan for the development of transport system of the functional region North Adriatic, 2018	A total of 3,776,813 passengers were transported on 9 existing state lines in the northern Adriatic in 2017	Sea transport: 95% of passengers in the total number of transported passengers in the northern Adriatic were transported by ferries, public transport service was provided by four shipping companies: Jadrolinija, Rapska plovidba, Porat Ilovik and Kapetan Luka; there is a significant difference in the structure of travel by different means of transport between the Adriatic and continental part of Croatia: car - 54% A, 49% C, public transport - 8% A, 15% C, bicycle - 2% A, 7% C, on foot - 35% A, 27% C	Maritime passenger transport is not effectively integrated into local public passenger transport, there is a need for a better and more efficient connection between maritime passenger transport and local public passenger transport; The results of the surveys clearly show that the use of public transport in the entire functional region is low, and in larger cities such as Rijeka and Pula, which already have a relatively large network of public transport, road transport of passengers has a dominant share, more than 80% in Primorje-Gorski Kotar, Istria and Lika-Senj Counties (the functional region of the North Adriatic)

		Every day 25% of respondents travel for business purposes in the Istrian County, 37% in Lika-Senj, and 30% in Primorje-Gorski Kotar	
Statistical information on passengers and tourists - arrivals and nights, Croatian Bureau of Statistics, 2016-2018	Number of passengers in rail, road, cross-border, urban, seawater and inland transport, number of domestic and Italian tourists		Structure of tourist nights: Holiday and other short stay accommodation in 2016 48%, in 2017 49%, in 2018 50%, hotels and similar accommodations in 2016 30%, in 2017 29%, in 2018 28%, camping sites and camping grounds in 2016 22%, in 2017 22%, in 2018 21%
Report from the Interreg GUTTA project (CSA REPORT), June 2019 (Mare Nostrum)	Total number of passengers and vehicles on an individual route		Based on a public database of vessel performance and CO2 emissions emission report details Basic characteristics of the ships, named routes, sailing months
Analysis on passengers on cruises visiting Dubrovnik, 2007	American passengers 34,7%, non-American 65,3% Age: 0-17 years 25,6%, 18-29y 19,3%, 30-39y 13,3%, 40-49y 12,6%, 50-59y 9%, 60-69y 8,33%, 70+y 8,33%; mostly married couples predominate, while the average age of passengers is 45-51 years, the percentage of children is also significant, averaging 10%; attracting families with children, not just the elderly; from the survey on passengers of the Brilliance of the Seas ship - 54 males and 51 females	14 different variables; would you like to spend your vacation in the city, shopping experience, guided tour, satisfaction with the service, safety assessment in the city, the visit met expectations, historical sights, recommendation to a friend for the city, variety of shops, hours spent outside, overall prices in the city, taxis and public transport, satisfaction with welcome, satisfaction with beach	Consumption: average spending per person is $ 80.9, which is less than the 2006 average of $ 82. Consumption is also affected by the length of stay in the port and the size of the ship and the type of cruise. The average stay of passengers was 5.18 hours. The smaller the number of passengers with revenues less than $ 50,000, the largest the number of passengers with revenues from $ 50,000 to $ 75,000 - from the survey on passengers of the Brilliance of the Seas ship
Statistical analysis of tourist traffic, 2019 (Split-Dalmatia County TB)	Tourist arrivals: 23% Istria, 19% Split-Dalmatia, 15% Primorje-Gorski Kotar, 11% Dubrovnik-Neretva, 9% Zadar, 5% Šibenik-Knin, 4% Lika-Senj; total number of Italian tourists in 2019 was 93.232 - 2.8% with 393.939 - 2.3% overnight stays		Increase in arrivals (5%) and in nights (2%) compared to the previous year. By months: the peak of the season are July and August in the structure of tourists 51.14%, the share of the period from the beginning of June to the end of September is 86.38%, all other eight months is about 14% of overnight stays and about 22% of arrivals. By object types: hotels participated with 14.23% in capacities, and 26.15% in realized overnight stays, camps with 6.09% in realized overnight stays, and 6.07% in realized overnight stays, while household facilities participated with 69.84% in realized overnight stays, and 58.77% in overnight stays and of the more important shares of crafts participated with 9.49% in capacities and 8.97% in overnight stays).
Statistical analysis of tourist traffic, 2020 (Split-Dalmatia County TB)	Decrease of 64% in arrivals, and 55% in overnight stays on national level compared to last year; other information only about Split-Dalmatia County		
Word document about the Italian tourists in the Republic of Croatia, Croatian Bureau of Statistics, 2018-2020	Total number of Italian tourists together with a share of Italian tourists in the total number of **arrivals** of foreign tourists in Croatia, the share of arrivals of Italian tourists in he total number of arrivals of foreign tourists in Croatia was 4.1%, and the share of **overnight stays** was 3.47%, for 2019		

	6.77% of arrivals and 6.11% of overnight stays, for 2018 6.9% of arrivals and 6.04% of overnight stays		
Report about tourism in numbers in Republic of Croatia, Ministry of tourism of the Republic of Croatia, 2019	Detailed document on graphic data about tourists' arrivals and overnight stays throughout decades (1980-2015), accommodation capacity by type of facility for 1980-2015 and 2018-2019 and by regions, total number of domestic and foreign tourists' arrivals and overnight stays both individual and organized travel, dynamics of tourist traffic by months (July and August most popular), total number of Italian passengers, tourist traffic by regions, nautical tourism, number of ships in marinas, number of tourists mediated by travel agencies (domestic and Italian), total number of travels by cruises in Croatia		Hotel structure by categories: 5 stars 2018 9%, 2019 10%, 4 stars 2018 48%, 2019 50%, 3 stars 2018 35%, 2 stars 2019 34%, 2018 8%, 2019 6%. Movement of tourist traffic: Individually 2018 was 11.744 (from which 1.360 were domestic), 2019 was 12.400 (1.488 domestic), organized 2018 was 6.922 (661 domestic) and 2019 was 7.164 (723 domestic).
Case study "mobile depot" solutions for bike sharing systems in Ravenna Port cruise terminal, summer 2018	Most of the users were foreigners, mainly coming from the US and Canada; only 28 e-bike rides were registered during the survey Average users' age was 48, maximum age was 78 and minimum 25		20 users said it was their first time using an electric bike, and 8 users had previous experience
Case study on tourists using the public transport in Rimini city within Inter-Connect Project	Gender: 51% of tourists were females and 49% males; age: 82% were 19-65 years old, only 9% younger and 9% older; nationality: 53% of tourists were foreigners (mostly from Russia around 33%, Ukraine around 14% and Germany around 8%) and 47% Italian, 65% on arrival and 35% on departure	Travel solutions during holidays: 44% bus, 23% by foot, 16% train, 10% car, 8% bike	
Survey analysis on the impact of cruising tourism through the ports in Croatia 2009-2017	The number of passengers grew until 2014, when it came to decrease. Over the next two years the number increased, and in 2017 the number decreased again by 13.3%. According to the number of cruise ship inflows into Croatian ports, the leading port is Dubrovnik, followed by Split, Korcula, Hvar, Zadar and Sibenik.		
Counseling conducted by surveying passengers traveling by rail in Croatia, Hakom (online)	641 respondents of whom 68% use railway transport. 32% are persons aged 30 to 39, 29% are persons aged 19 to 30, and 23% are persons aged 40 to 49 (the survey was conducted via the website); 72% male, 93% of working active population use railway transport	36% of them use the train as a means of transport to go to work, then leisure travel 33%, then traveling to school or university 27% and the least rail passenger transport is used to go shopping, only 1%.	68% of passengers to the railway official place use sustainable modes of movement (walking, cycling and public transport). Reasons for using the train: favourable prices are stated by 26%, followed by the availability of transport at 24%. The fact that only 6% of respondents use the train due to the frequency of service is an indicator of low frequency of traffic (small and insufficient number of departures), which makes rail transport unattractive. Comfort and speed of transport are the reasons for traveling by train with 12% and 13%, respectively, which leaves room for

			improvement of these characteristics. Frequency: 42% of respondents use rail transport every day, and only 6% use rail transport several times a year. 45% of respondents evaluate the duration of the trip with an insufficient grade.
Survey about customer satisfaction with the rail transport service in Croatia, Dec 15 2016 to Jan 31 2017	More than 1000 passengers of whom 93% use railway transport 39% were between the ages of 19 and 29, 25% from 30 to 39, 19% from 40 to 49, 9% from 50 to 59, 5% younger than 18 and only 3% older than 61	33%, use the train for leisure travel, and only slightly less (32%) to go to work, 15% students, 4% to go to school and less than 3% to go shopping	31% of respondents use rail transport every day, and only 3% once a year. Reason for using the train: 24% of respondents primarily state the availability of transport, and 23% a favourable price, 7% of respondents use the train due to the frequency of transport, which shows that the current frequency does not meet the needs of most users. Comfort and speed of transport are represented by slightly less than 16%, which also leaves room for improving the quality of service provided. 47% of respondents come to the stop or station on foot, 25% by car, and only 4% by bicycle.
KD Autotrolej business report for the public bus transport in Rijeka, 2018	20,878,223 are regular passengers, and 9,280,250 passengers are subsidized. There is an increase in regular passengers (1.4%) and a decrease in the number of passengers with subsidized tickets (8.5%). Most passengers use annual tickets 65+, followed by workers ', students' and high school tickets, Slightly fewer passengers use social, pension, privileged and student tickets, and the smallest number of passengers use the workers' annual tickets.		
Tourism as a Factor of Demand in Public Road Passenger Transportation in the Republic of Croatia (Google Scholar)	Analysing the volume and characteristics of tourism demand and its connection with transportation, structure of passengers and visitors, tourism expenditure		

4. The survey on Italy / Croatia cross-borders travellers

4.1. Methodology

This study was based on both an analysis of previous research and a direct survey using questionnaires that were submitted between the end of February and the first week of April 2021. Apart from literature analysis, a preliminary step has been to structure the overall methodology and the single questions according to well-established protocols (Brancato et al., 2006). A general principle, adopted also in this study develops the design and testing phases of the questionnaire in 5 stages (Brancato et al. 2006): a) conceptualization, b) questionnaire design, c) questionnaire testing, d) revision, e) data collection.

Here follows a brief description of such stages as developed in our study.

a) Conceptualisation. The main output of this preliminary step is represented by a list of the variables that will be investigated in the survey, as to pinpoint the conceptual basis of the research and the theoretical concepts to be investigated. The goal is to find indicators that represent a proxy (that is, a suitable representation) of the concept we are aiming at analysing. Focus groups and informal meetings have been implemented at this stage as to build the ground for further steps to be implemented later in the process. In the case of project's segmentation analysis, this first step entailed a thorough discussion of the aim and scope of the analysis, and the concepts that would be necessary to investigate as to provide useful information on travellers' segments.

While the concept and the scope of segmentation analysis *per se* have been already described, it is important to focus on the different variables that can be adopted and how these can form new, useful knowledge so that simple data turn into useful information.

The specific goal of the activity is not to discover new segments. Professionals are probably aware of the profiles identified here, that can be singled out crossing different variables, and which have a long track of investigations in the Destination Management literature. The perspective of analysis and the value added this study can provide is to perform a fine-tuning of the analysis of segments with reference to the specific contexts (e.g., youngsters going to Croatia for the sea vs groups visiting Italy for museums and historical sites), and to support policies for improving the overall sustainability of travels in accordance with revealed preferences of selected group of travellers. This preliminary definition of the foundations of the analysis, performed in the conceptualization stage,

has been fundamental to provide the conceptual and strategic basis on which to build the whole survey and perform all subsequent steps.

b) Questionnaire design. The final version of the questionnaire is typically the outcome of a multi-step process where subsequent drafts of the survey are structured and revised. The first step is represented by structuring the questionnaire and dividing it into thematic sections. The MIMOSA segmentation survey can be divided in different sections, as listed below (please see the appendix for the complete list of questions):

- Socio-demographic questions
- Section on the trip
- Section on goals and benefits sought
- Section on importance and performance of specific services (IPA – Importance Performance Analysis)
- Section on the Kano Model

Guidelines and agreed-upon standards have been followed not only with respect to the methodology to test and revise the survey, but also with reference to the specific formulation of the questions. This to ensure the validity of the study, which measure whether the latter collects the appropriate data, thus actually measuring what it is intended to analyse). Before circulating the draft for testing and revision, the project group discussed the questions as to ensure clarity and comprehensiveness. Clarity should be considered as a pre-requisite for any survey to be effective. However, often not all questions are understood by the respondents, as the response choices are not sufficiently clear to elicit the desired responses. This is another reason why pre-testing is a crucial step in the process: questions that appear perfectly clear to the expert eyes of those who wrote the survey might appear less so to some of the participants in the study. A second aspect refers to the comprehensiveness of response choices, so that these cover a reasonably complete range of alternatives.

As regards acceptability issues, we have focused on the priority of drafting a survey that is appropriate in length, and that does not invade the privacy of respondents, which have been also assured about the fact that i) respondents had the possibility to avoid answering specific questions (no force response reply tool has been added to the survey), and ii) replies are anonymous and data

would be analysed at an aggregate level, with no connection between a specific answer and the single respondent. The invitation message spread with the link stated the following:

> *By participating in this survey, you consent to the transfer of the information you submit to Ca' Foscari University of Venice - Italy. The information collected is intended for research purposes. and analysed for the goals of the project, only. The identification of respondents is not possible. Collected data will be deprived from references that could redirect answers to the specific respondent and therefore your answer cannot be associated with your identity. Collected data will be treated adopting technical and organizational measures to protect them from third-party unauthorized access. As a further guarantee of confidentiality, the results of this survey will be presented in aggregated forms (i.e.: no elaboration including less than 10 records).*

Comprehensiveness of questions (and, more specifically, of response choices) has been another key-aspect to consider when framing the survey. In order for the outcome to be meaningful, it is indeed essential that the different aspects considered (e.g., the benefits sought during the trip and the holiday, the services that are relevant in orienting the choice) are investigated with response choices that are sufficiently comprehensive to cover a reasonably complete range of alternatives. For instance, in the question investigating the main motives for traveling to Italy/Croatia, while most studies on destination management focus on the dichotomy between work and leisure related trips, we decided to expand the set of alternatives, including for instance visiting parents as a further response choice, and leaving the possibility for respondents to add other reasons that were not considered in the set of alternatives provided.

As regards the type of questions, the MIMOSA workgroup could choose between two main alternatives: open ended vs closed ended questions. While it is not possible to state whether, in general, one of the two options is to be preferred, some typical pros and cons of the two can be briefly outlined, as their consideration has been at the basis of the choices made (table 3). Further, also close-ended questions can be of different types:

- Likert scales, where respondents are asked to express their agreement or disagreement with a statement. They are easy to prepare and interpret, and simple to be understood by consumers.
- Semantic differential scales, on the other hand, include bipolar adjectives, and are easy to construct and administer. Example from the MIMOSA segmentation survey: *Please rate the relevance of the following aspects when choosing Croatia (Italy) for your vacation, from 1 (irrelevant) to 5 (extremely relevant):*

- Behaviour-intention scales measure the likelihood that respondents (will) act in a certain way, analysing the self-reported behaviours or the willingness to uptake a specific activity in the future. Example from the MIMOSA segmentation survey: *Prior to 2020 and the COVID pandemic, how often did you travel to Italy/Croatia? (different options provided, ranging from Only once to Several times a year).*

- Rank-order scales are a different type of questions, where respondents are asked to provide a ranking of items in terms of preference based on specific criteria.

Table 3: open vs closed ended questions advantages and disadvantages

	Advantages	**Disadvantages**
Open ended: respondents are asked to write down their response to specific questions	Able to spot perspectives the interviewer did not consider, and to describe them in greater detail	Difficult to manage and analyse from an operational standpoint, especially with large numbers of responses. Difficult to systematize and synthesize emerging evidence
Close ended respondents can choose between a fixed list of response choices. They are asked to select one or more of the choices as indicative of best possible answer	Respondents are facilitated insofar questions are made clearer. Respondents are reminded of alternatives and response choices they would have forgotten	Respondents are sometimes compelled to choose the closest representation of actual response. Ease of responding could increase random answering and carelessness.

While in some cases response choices have a specific order (in terms of magnitude, frequency, agreement, etc.), in other cases there is no specific order or direction. As far as the latter are concerned, the following question is an example from the MIMOSA segmentation survey:

> *What is your main reason for travelling to Croatia? (options being Business/work related, Visiting relatives, Tourism [sightseeing, museums, trips, etc.], Vacation [stay at the beach, at the resort, on the island, etc.], Other [(please specify]).*

Given the specific objectives of the segmentation analysis and the need to systematize and synthesize a broad set of data, the research group opted for close ended questions, that will be presented in the next section. However, since it is important to receive also more qualitative feedback from respondents, as well as comments and perspectives that might not have been considered by the project group, two open ended questions were left at the end of the survey. One investigated what were the three aspects that respondents would expect from the travel between the two Countries:

Please write three words expressing what you expect from the travel from Italy to Croatia (Italy) [the travel itself, not the stay abroad]

Further, respondents had the chance to leave further feedback:

If you want, you can leave a comment.

Specific attention has been devoted to the language, keeping in mind the following guidelines to make questions as clear as possible:

- sentences simple, straightforward and to the point,
- avoid jargon, highly technical language or abbreviations,
- avoid whenever possible double negatives,
- avoid ambiguous questions,
- avoid multipurpose questions, which may confuse the respondent by introducing two or more issues with the expectation of a single response.

Further, questions have been structured as to be as neutral as possible, as to invite true responses without producing any bias where respondents subconsciously provide the answer that they feel researchers are willing and hoping to obtain.

Finally, the questionnaire was submitted for verification to the ethics committee of Ca' Foscari University of Venice, which found no ethical criticalities and issued a document of compliance with ethical principles.

c) Testing. Before spreading a survey, a key recommendation is represented by the need to test the survey (at least once) by asking individuals (they do not need to be experts in the field, but as similar as possible to the sample being investigated) to answer the questionnaire, as soon as a fully implemented draft questionnaire has been structured. Clearly, the testing approach depends on many factors, such as for instance whether it is a new or ongoing survey, or whether or not it is based on validated methods and scales. While in ongoing surveys the testing could be limited to problematic questions, new surveys (like in the case of MIMOSA's segmentation survey) need to be tested entirely. In our case, we did not encounter many problematic issues because we followed a traditional approach based on (mostly) closed-ended, multipoint questions, and the more complex tools that have been included (such as the Kano model) have been previously extensively used and validated in literature.

We have drafted a preliminary version of the questionnaire in English. The survey has been pre-tested on a small convenience sample representative of individuals living in the project area and travelling abroad for tourism and/or business, to check for the clarity of the questions and to investigate whether there were ambiguities or formulations that could ingenerate confusion in respondents.

d) Revision. After this preliminary check was completed and the draft was fine-tuned based on the feedback received, the survey has been circulated among MIMOSA partners to receive feedback and suggestions in order to integrate, amend or modify the work in progress and obtain the final version of the survey. A balance has been found between the amount of information that could have been achieved and the need to keep the tool lean and simple, as an excessive length would have hindered both the response rate (as regards completed responses) and the quality of responses themselves. After the survey has been distributed to partners, all their observations and feedback have been carefully considered to structure the final version of the questionnaire. For instance, it has been stressed how it would be important to drop from the sample those respondents that answered randomly to the questions. A control-question has been inserted to serve the purpose and will be described later in this section. Once the revised version of the questionnaire was available, it was translated into Italian and Croatian, and once again tested on a sample of respondents to check for clarity and amend ambiguities.

The two surveys have been then uploaded on the Qualtrics software, and the link provided by the system has been communicated to all project partners. In the email to partners, it was asked to provide support in distributing the link using all available channels, including mailing lists, social networks and webpages.

4.2. The survey sample and socio-demographics

Our reference population includes both Italian and Croatian respondents. When the reference population is very large, samples are interviewed whose representativeness for the analysis also depends on the objective of the analysis. In the case of the survey carried out for the MIMOSA project, the objective was to identify travel needs and preferences in order to provide policy recommendations. In the study, it was decided to focus on the population of the programme area. In this way, it was possible to submit a questionnaire in the mother tongue (Italian and Croatian) to

the sample. Clearly, in this way people of other nationalities travelling from Italy to Croatia and vice versa escaped the survey. However, this seemed a reasonable limitation in view of the greater focus on the objectives of the programme and, in particular, of the MIMOSA project. Consequently, in this study the reference population is the one of the Italy-Croatia programme area, estimated about 12.5 million inhabitants (source: https://www.italy-croatia.eu/cooperation-area). For the calculation of the sample size, the Slovin formula was applied, since it was considered appropriate for the specific characteristics of the survey. This formula is as follows: $C = \frac{N}{(1+N \cdot e^2)}$ where *C* is the sample size as a function of the population *N* and the margin of error *e*.

The confidence level chosen is the one most frequently used in this type of research, i.e. 95% (margin of error 5%). The sample size resulting from Slovin's formula is 400 units; our survey collected a total of 463 questionnaires (247 in Italian and 216 in Croatian). However, for the purposes of the knowledge required for the project the representativeness of the sample is not as fundamental, as that of intercepting relevant aspects that might be in the minority in the population, but which are nevertheless relevant for the purposes of defining policies for greater sustainability. As already mentioned, we do not aim at assessing the weight of the segments since the objective of the research is the definition of policies and not of profit-oriented strategies.

The response rate to the different questions varied widely. In some cases, we decided not to use information concerning questions for which the answers were below a reasonable threshold (20% of those in the sample who actually travelled between Italy and Croatia). To avoid this problem, normally those who prepare the online questionnaires tend to force the answer as compulsory. This has the advantage of always returning complete questionnaires, but on the other hand it reduces the overall response rate and, above all, in our experience results in a high number of random responses. We therefore preferred to run the risk of having to leave out some of the information rather than having little or no reliable information.

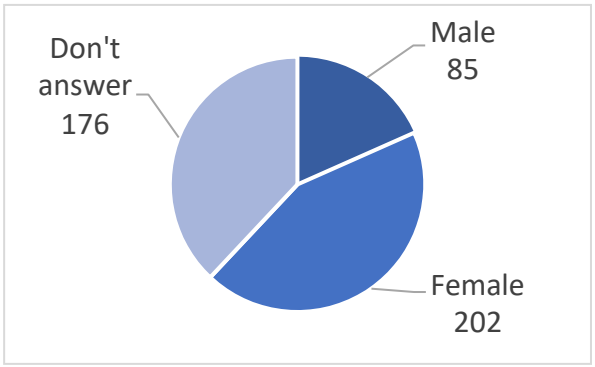
The socio-demographic question investigates the typical AGIE factors such as age, gender, income and education. As good practice suggests, especially for sensible questions, we left respondents the option of not responding to specific questions, and still be able to complete the survey. As regards the age of respondents, we asked to state their exact age instead of proposing an option between age-groups, as to obtain more precise responses and given the extreme simplicity of the question.

Besides AGIE variables, we focused on other variables that could be of interest for the specific object of the research. For instance, we investigated the relationship status since there could be detectable differences in travellers that are in a relationship (and that could therefore travel with partners and family members) or singles. Further, we investigated the area of residence of respondents, as this clearly affects the availability of alternatives and the distance from ports, airports or national borders. The socio-demographic questions have been asked at the end of the survey, consistently with established protocols that suggest structuring the survey according to a bell shape. Easy questions should be asked either at the beginning of the survey (when respondents are still getting familiar with the survey tool) or at the end (once respondents are beginning to feel tired, and are less willing to devote cognitive efforts to complicated questions requiring elaborated speculations). In a similar vein, key questions requiring respondents to think carefully about the correct answer should be put in the middle section of a questionnaire.

As anticipated, a total of 463 surveys have been collected. Of those who answered the question on gender, 70.3% is represented by females and 29.6% by males. It should be noted that 178 respondents (38% of the sample) did not answer this question. This question was made optional in the web-based questionnaire administration system, as well as the others, in accordance with the recommendations provided by the Ethics Committee of Ca' Foscari University, which verified the ethical requirements of the questionnaire during the preparation phase (table 4 & figure 6).

Table 4 & figure 6: respondents by gender

Type of occupation	#	%
Male	85	18,4%
Female	202	43,6%
Don't answer	176	38,0%
Total	**463**	



As regards the age of respondents, youngsters represent the most numerous group as 56.1% are younger than 35, and 32,2% are 22 or younger (figure 7). While predominance of younger age groups could be expected, the magnitude of the over-representation of youngsters in their 20s could be explained by a phenomenon of self-selection bias, according to which those profiles that

are i) more familiar with computers and online surveying tools and ii) more interested in international holidays, have been most likely to volunteer in the project and agree to devote time and complete the survey.

Table 5 & Figure 7: survey sample by age class

Age class	#	%
18 - 22	93	20,1%
23 - 35	98	21,2%
36 - 45	48	10,4%
46-55	30	6,5%
56 - 65	14	3,0%
> 65	6	1,3%
Don't answer	173	37,4%
Total	**462**	

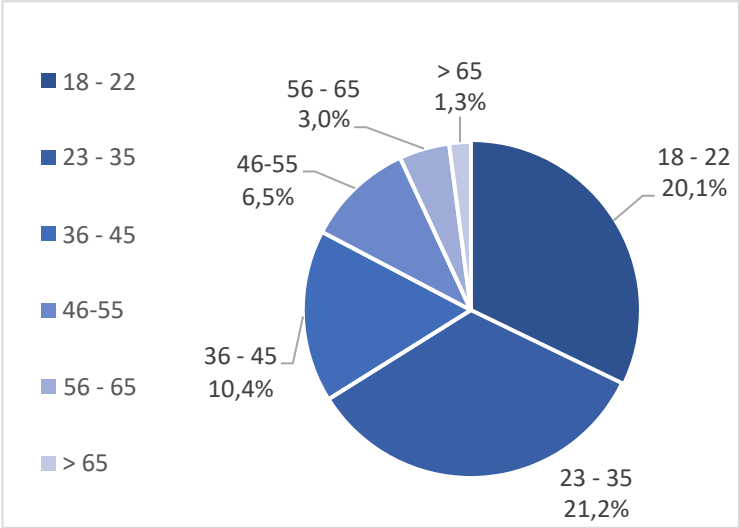


Table 5 synthesizes the data about the occupation of respondents. It emerges that employees represent the modal occupation of respondents followed by students, while other types of occupation state (self-employed, retired or unemployed) represent only a marginal share of the sample. It should be noted that for this question, as well as others that follow, the number of actual respondents decreases significantly. We do not have a comprehensive explanation for this phenomenon, but we found that respondents who had never travelled to the cross-border country before generally chose not to answer the socio-demographic questions.

We also asked respondents about their income. However, we decided not to ask about the amount of annual income since It is common that respondents do not want to answer this question and, besides that, in our case the data would have poor significance for comparisons, given the differences in income between Italy and Croatia. We therefore asked the respondents to compare their income to the average income of their country, in order to obtain comparable categories across the programme area.

A solid majority of respondents considers household income to be average in comparison to Country average, while 13,8% and 10,4% consider their income above (or much above) and below (or much below) average, respectively (table 7 and figure 9).

Table 6 & figure 8: respondents occupation

Type of occupation	#	%
Self-employed	12	2,6%
Employee	135	29,2%
Retired	6	1,3%
Student	131	28,3%
Unemployed	3	0,6%
Don't answer	176	38,0%
Total	**463**	

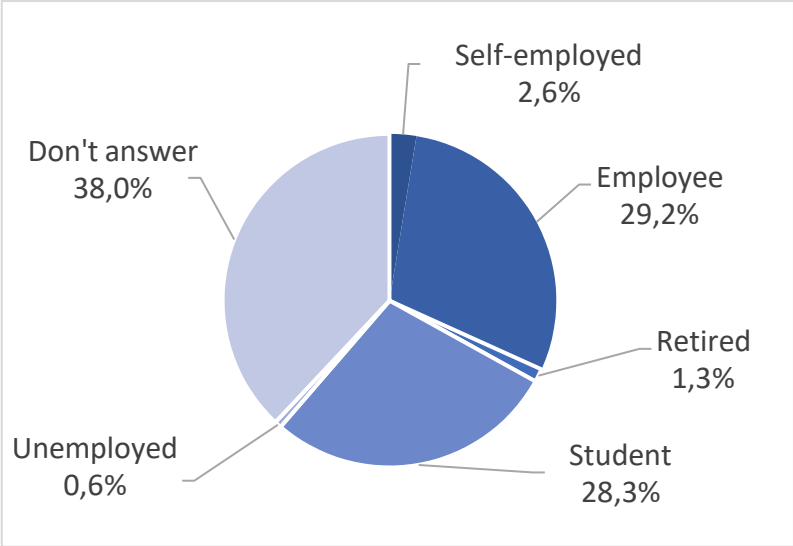
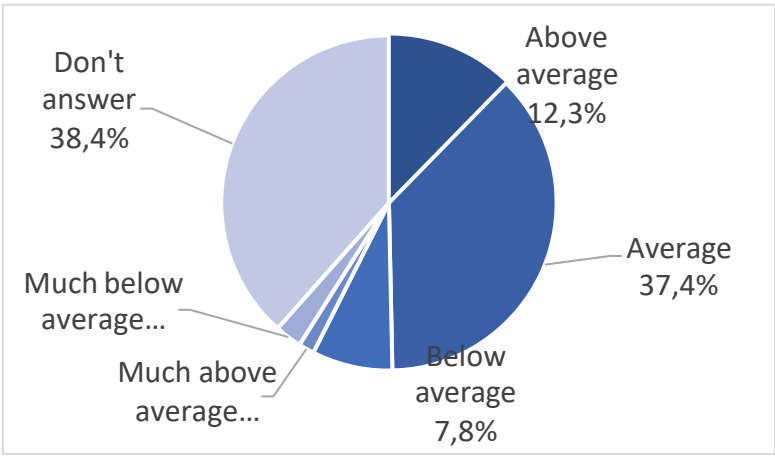


Table 7 & figure 9: respondents by relative level of estimated income

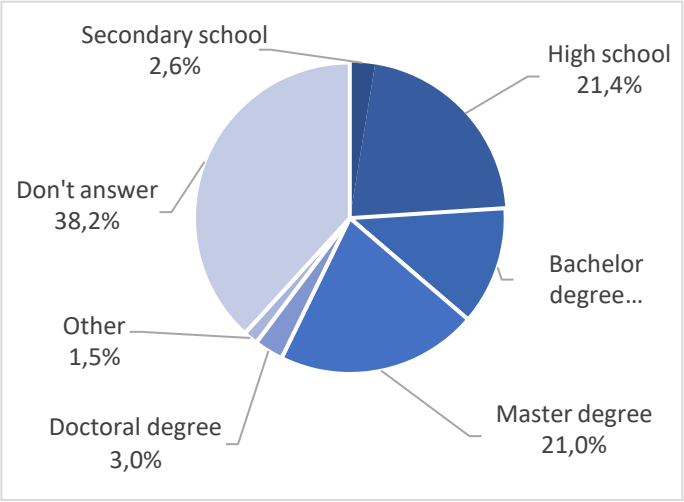
How would you rate your household income, compared to the average of your Country?	#	%
Above average	57	12,3%
Average	173	37,4%
Below average	36	7,8%
Much above average	7	1,5%
Much below average	12	2,6%
Don’t answer	178	38,4%
Total	**463**	



As regards the education level of the sample, the largest segments are represented by respondents with a High School degree (%) and a Master degree (%), followed by respondents with a Bachelor degree (%), while the other alternatives (PhD, secondary school or other) have been selected by a minority of respondents. Since for the submission of the questionnaire we used the channels normally employed by Ca' Foscari for this type of survey (which include social networks and students), it is likely that respondents with undergraduate or postgraduate qualifications are over-represented compared to the distribution of the reference population.

Table 8 & figure 10: respondents by qualification

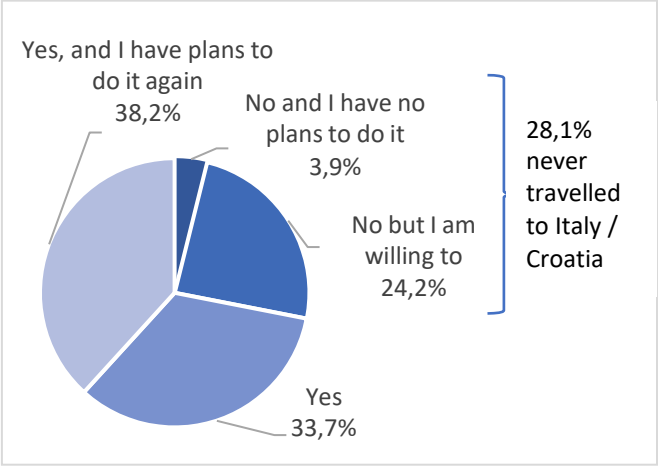
What is your highest degree?	#	%
Secondary school	12	2,6%
High school	99	21,4%
Bachelor degree	57	12,3%
Master degree	97	21,0%
Doctoral degree	14	3,0%
Other	7	1,5%
Don't answer	177	38,2%
Total	**463**	



28,1% of the sample interviewed had never travelled to Italy (if Croatian) or Croatia (if Italian), but only 3,9% declared that they had no intention of travelling to the other side of the Adriatic in the future (table 9 and figure 11). Moreover, 24,2% of the sample (112 persons) stated that they intended to travel overseas in the future. Therefore, about 72% of the sample has at least one travel experience in the neighbouring country and 38,2% state that they intend to repeat the trip in the future, while the segment of "non-travellers" (never travelled I-C and no intention to travel) is very small and will not be further investigated

Table 9 and figure 11: share of sample with previous experience of cross-border travel in the programme area, or willingness to travel

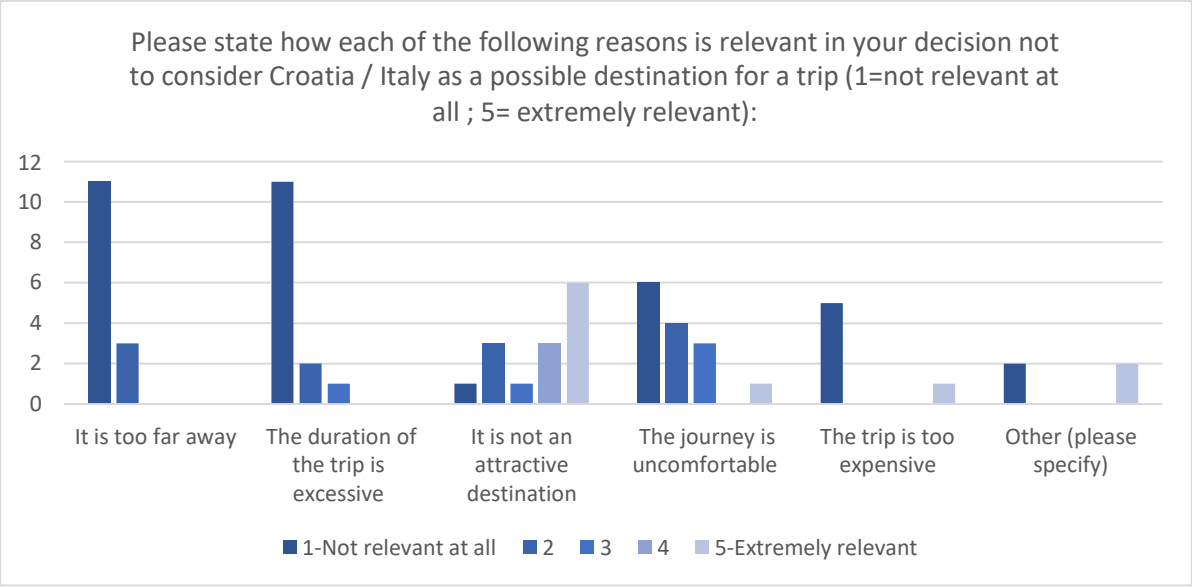
Have you ever travelled to Croatia/Italy?	%	#
No and I have no plans to do it	3,9%	18
No but I am willing to	24,2%	112
Yes	33,7%	156
Yes, and I have plans to do it again	38,2%	177
Total		**463**



We investigated the reasons preventing respondents who never travelled to Italy / Croatia from doing so. The length of the trip and the distance, which one might speculate represent a barrier, are not considered as relevant hindrances, at all. Also, problems specifically connected to the comfort

of the journey, though to a lesser extent, are not key-aspects preventing potential travellers from visiting Italy-Croatia. On the other hand, seemingly the most problematic aspect is represented by the fact that those who decide not to travel do so simply because they do not consider the Country an attractive destination (figure 12).

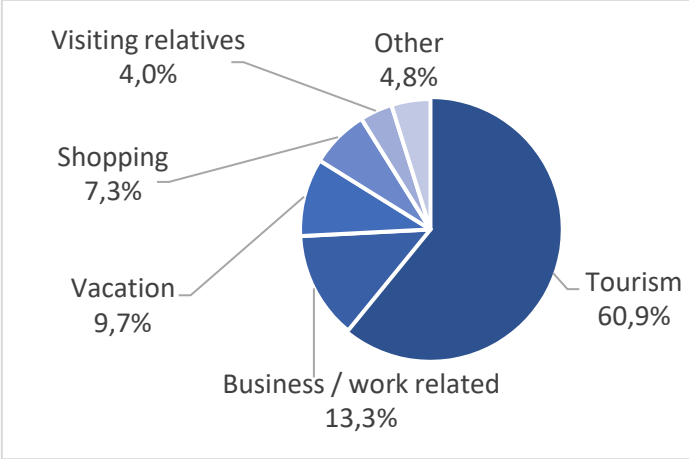
Figure 12: reasons for not considering Italy / Croatia as a destination



The predominant reason for cross-border travel is tourism or vacation (71,6% overall). In the two languages of the questionnaire, a distinction was made between tourism and vacation, the latter being understood as a prolonged stay in the same destination. Actual tourism is the reason for 60,9% of respondents, while vacation counts for 9,7% of answers. Business and work account for 13,3%, shopping for 7,3% (this reason was stated exclusively by Croatian respondents, and visiting relatives for 4,0%. (table 10 and figure 13). Overall, 6,5 % of the sample stated visiting relatives as one of the reasons for the cross-border trip (not necessarily the main one). The predominantly tourist nature of cross-border travel means that in most cases the trip occurs with family (29,4%), with the partner (26,3%), friends (21,1%) or a combination of these. Only 8,0% of the sample declared to have travelled alone and 8,3% took an organised group trip.

Table 10 and figure 13:: prevailing reason for cross-border travel

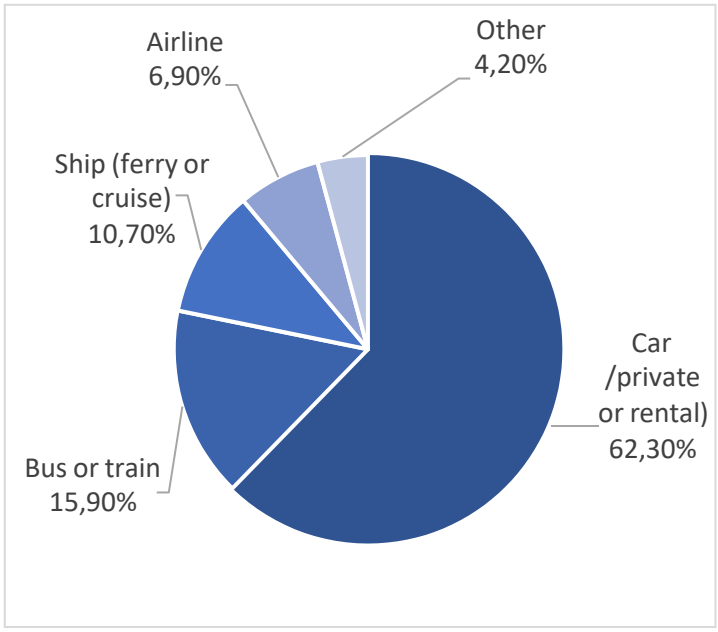
What is your main reason for travelling to Croatia/Italy? - Selected Choice	%	#
Tourism	60,9%	151
Business / work related	13,3%	33
Vacation	9,7%	24
Shopping	7,3%	18
Visiting relatives	4,0%	10
Other	4,8%	12
Total		**248**



By far, the most used mode of travel to reach the destination is the car (58.5%), followed by bus (13.9%), and Ferry (7.8%). Overall, more than 80% of travels are made by road transport, 10,7% by sea and 7% by air, only 2% of travellers used the train (table 11 and figure 14).

Table 11 & figure 14: travel mode choice frequency

How did you travel from Italy to Croatia (from Croatia to Italy)?	#	%
Private car	143	58,6%
Bus	34	13,9%
Ferry	19	7,8%
Low cost airline	12	4,9%
Car rental	9	3,7%
Cruise	7	2,9%
Private boats	6	2,5%
Train	5	2,0%
High cost airline	5	2,0%
Camper	4	1,6%
Road	196	80,3%
Sea	26	10,7%
Air	17	7,0%
Rail	5	2,0%
Total number of respondents	**244**	



Private transport is used in 66.4% of cases. However, 43,6% of the Croatian respondents stated that they travelled exclusively or predominantly by public transport (train, bus, ship or plane), compared to 18,3% of Italians. Such a difference is much higher than expected, and we think that it is a remarkable issue on the path for a more sustainable cross-border mobility.

Table 12 shows the results of a question in which the travellers were asked to indicate any additional means of transport used for the trip in addition to the main means of transport. 57,4% of respondents to the previous travel mode question had a multimodal trip between the two Countries. The use of public transport as an additional mode is higher than expected (67,9% including bus, LPT and train). Specifically, long-distance buses were used by 27,9% of respondents to this question, local public transport by 25,7% and the train by 14,3% (table 12).

Table 12: any additional travel mode beyond the main one

Besides the main transportation mode, which other modes did you use during the journey from your home	**#**	**% on respondents**	**% on respondents to the travel mode choice (244) (table 11)**
Long range bus transport	39	27,9%	16,0%
Local public transport	36	25,7%	14,8%
Car rental / taxi	27	19,3%	11,1%
Train	20	14,3%	8,2%
Ferry / Cruise	11	7,9%	4,5%
Bicycle	7	5,0%	2,9%
Total respondents	**140**		
	Share of multimodal travellers		**57,4%**

On the other hand, public transport in general is the most used means of transport during the stay in the foreign country (table 13). 37.4% of actual travellers said they had used a car during their stay, but, overall, almost 62% said they had used one or more public transport services, either local or long-distance (trains and buses). The percentage of those who used a bicycle during their stay is 15.3% (table 13). Such a relatively low rate was unexpected. The use of electric scooters, which are spreading very rapidly in Europe, was also not mentioned. Unfortunately, when preparing the questionnaire, we did not plan asking specific questions to investigate the reasons for the use or non-use of these means of transport. However, given the importance of these means of transport

in reducing traffic congestion and car dependency, and in conjunction with measures to restrict traffic, a specific study should be devoted to them.

Table 13: transport modes used during the stay

	Total	% on actual travellers (333)*
Private car	**124**	37,2%
Local public transport	**85**	25,5%
Train	**83**	24,9%
Bicycle	**51**	15,3%
Long range bus transport	**39**	11,7%
Taxi	**38**	11,4%
Rental car	**16**	4,8%
Never used the car	**57**	17,1%

*The sum of the percentages is greater than 100% because the question was multiple choice.

Respondents were asked to report the duration of their last cross-border trip. It emerged that in 21,7% of the cases it was a one-day trip, in 26% between 2 and 3 days (presumably a weekend stay). In 40% of the cases the stay was between 4 days and one week (table 14).
The average stay across the border is 4,6 days. Short trips are by far the most popular among Croatian respondents: 78,5% of day trips and 65,5% of 2-3 days trips are from Croatia to Italy.

Table 14: length of stay abroad

	%	#
1 day	21,7%	51
2-3 days	26,0%	61
4-7 days	40,4%	95
8 days or more	11,9%	28
Total		234

4.3. The perceived importance of country characteristics and sought benefits

A relevant part of the questionnaire was aimed at detecting both judgements and preferences about the trip, the stay, the characteristics of the two countries, the expected benefits and the travel experience as a whole. This part of the questionnaire was the one most subject to the risk of erratic

answers, both because it required a particular attention in reading the questions and the proposed categories, and because it was the one that objectively required more time to be filled in.

Naturally, a large part of the questionnaire was aimed at finding out both opinions and preferences about the trip, the stay, characteristics of the two countries, expected benefits and the overall travel experience. It was therefore necessary to check the adequacy of the data collected, in order not to include randomly given answers in the analysis. Data from respondents who: a) gave blatantly contradictory answers (e.g. 'must be' to two opposite categories) b) failed the 'attention test' were therefore excluded. The “attention test” consists of a closed-ended question with a series of alternatives, but where in the question it is expressly stated to leave the field blank. Those who filled any answer were excluded from the calculation.

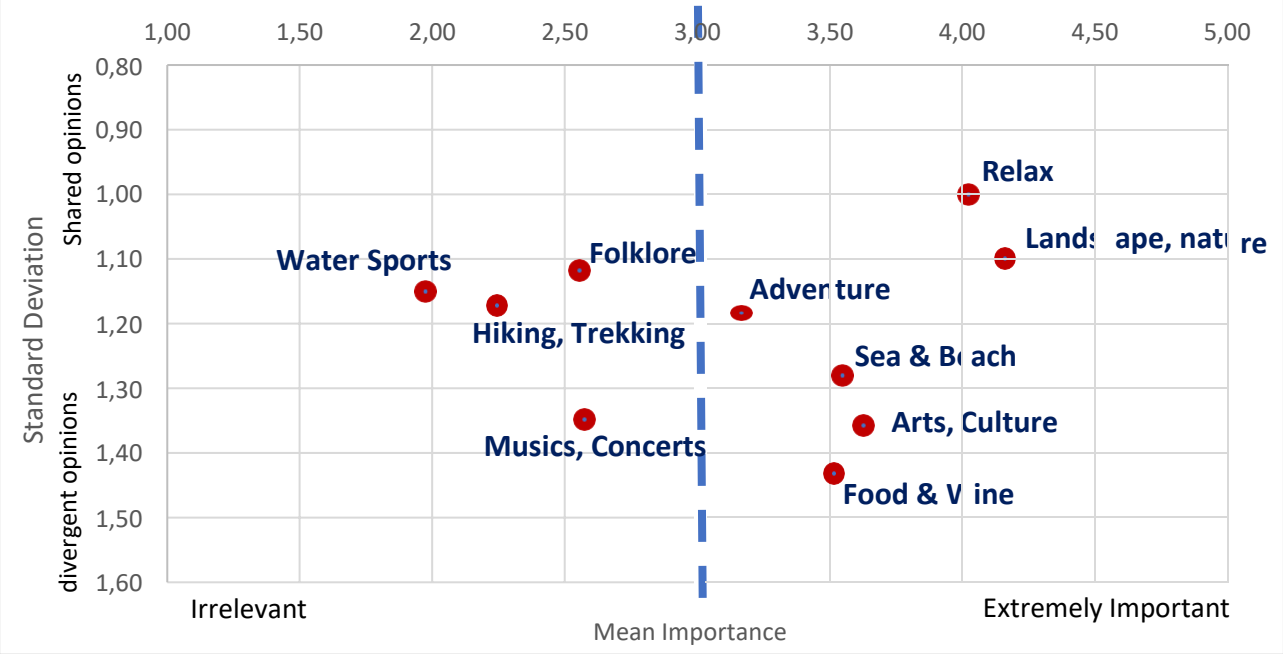
The relevance of country characteristics has been investigated among those who declared to have already travelled from Italy to Croatia or vice versa. Respondents were asked to rate the relevance of a number of experiences. A Likert scale was used (1-5 where 1= not at all relevant, 5 = extremely relevant). Of the 333 travellers, 134 or less answered this question. The average judgements are shown in table 14, together with the values of the standard deviation, that is a measure of the variability of the answers. The predominant factors are Landscape and Nature and Relaxation, both of which have an average relevance value respectively of 4,16 and 4,02 out of 5, and variability of judgement that are the lowest among the various benefits listed in the questionnaire. They are followed by Arts, culture & museums (3,63), Sea & Beach (3,56) and Food & Wine (3,51). On these characteristics, judgements are much more varied, with standard deviation values ranging from 1,26 to 1,42 (table 15). An easy-readable description of the data on table 14 is shown in figure 15, where the ratings are shown on a diagram relating the importance and standard deviation of the ratings. In this way, the aspects of the destination that have a higher average importance and on which there is a broad consensus of opinion are highlighted in the upper right-hand quadrant. It can be seen that the two most important categories (landscape/nature and relaxation) are also the ones on which there is most agreement in the overall sample surveyed. Other aspects with a rating significantly higher than neutrality (Arts, culture & museums, Sea & Beach, and Food & Wine), however, as a whole the opinion on these aspects is very variable (figure 15).

Table 15: relevance of different aspects in the choice of Croatia or Italy as holiday destination.

Please rate the relevance of the following aspects when choosing Croatia (Italy) for your vacation, from 1 (irrelevant) to 5 (extremely relevant)			
	Importance mean value (1-5)	**Standard Deviation**	**Number of Respondents***
Landscape, Nature	4,16	1,10	134
Relax	4,02	1,00	133
Arts, culture, museums	3,63	1,36	134
Sea & Beach	3,56	1,43	132
Food & Wine	3,51	1,28	133
Adventure	3,17	1,19	132
Music, concerts	2,57	1,35	133
Folklore	2,55	1,12	130
Hiking (Trekking)	2,24	1,17	130
Water Sports	1,98	1,15	132

- The number of respondents does not include those who answered 'not applicable'.

Figure 15: Importance and variability of opinion on the importance of characteristics of the destination



We then tried to identify the demographic variables acting as discriminants of the different ratings and it emerged that country of origin is a major factor. Table 16 shows the average importance values of the different characteristics by nationality of the respondents. On the Croatian side, the most important characteristics pursued in the travel to Italy are arts, culture and museum (4,37), landscape & nature (4,33), food & wine (4,20) and relaxation (4,15). On the Italian side, are Sea & Beach (4,19), landscape & nature (4,00), and relaxation (3,90) (table 16).

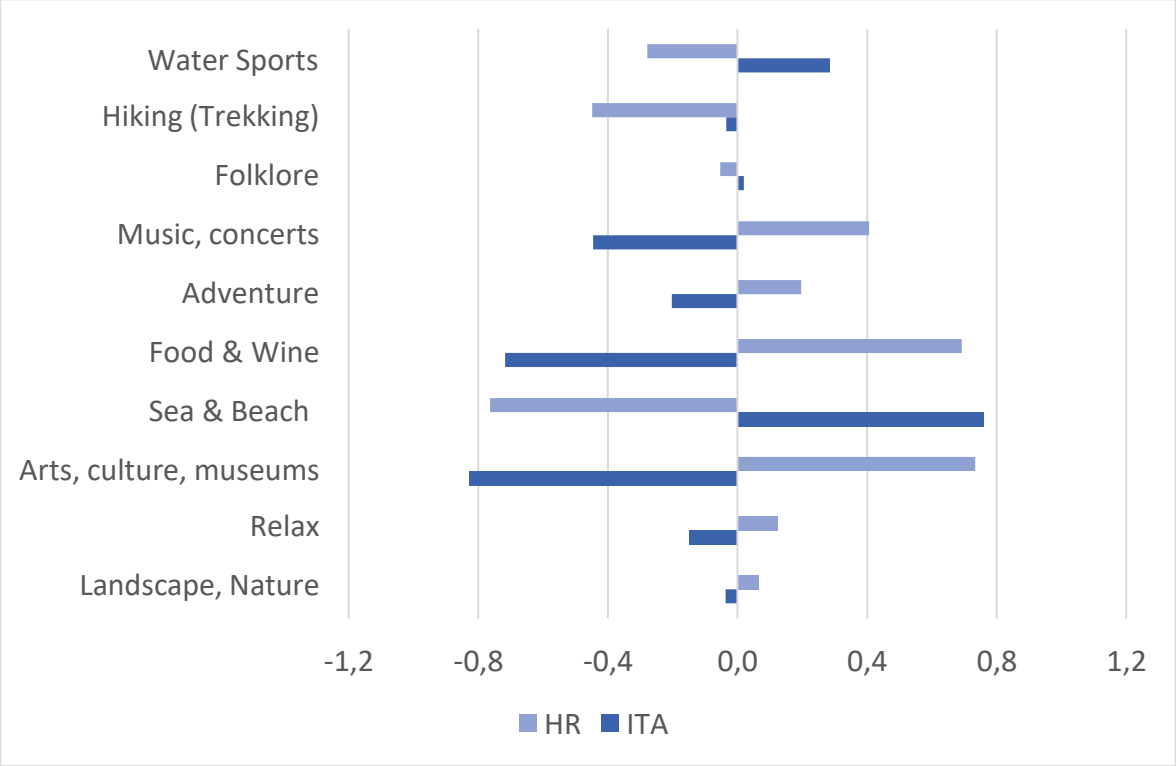
Table 16: country characteristics importance by Country of origin

Croatians travelling to Italy	Mean value	Italians travelling to Croatia	Mean value
Arts, culture, museums	4,37	Sea & Beach	4,19
Landscape, Nature	4,33	Landscape, Nature	4,00
Food & Wine	4,20	Relax	3,90
Relax	4,15	Adventure	2,92
Adventure	3,42	Food & Wine	2,90
Music, concerts	3,00	Arts, culture, museums	2,85
Sea & Beach	2,80	Folklore	2,57
Folklore	2,53	Hiking (Trekking)	2,43
Hiking (Trekking)	2,05	Water Sports	2,23
Water Sports	1,71	Music, concerts	2,15

Figure 16 shows the different importance attributed to the country characteristics by the respondents of the two different nationalities. The main differences were expected: Italians travelling to Croatia mostly seek for Se & Beach, while Croats travelling to Italy aims at Arts, Culture and Museums and Food & Wine. On the other hand, on both side of the sea the importance of Landscape & Nature and Relaxation is very similar (figure 16)

Gender is not a differentiating factor in assessing the importance of destination characteristics. differences in importance by gender is always below 0,3 points. On the other hand, we identified a significant coherence between preferences for certain aspects of travel and the greater or lesser importance (compared to the sample average) of destination characteristics. This aspect is a key segment identifier, and will be taken up in the section on segment analysis.

Figure 16: deviations from the sample mean value of the importance attributed to the characteristics of the destination by country of origin



We also investigated the relationship between the choice of destination and the benefits sought through a series of questions that could assess the importance attributed to the benefits sought in travelling to Italy or Croatia. In this case the questions referred to psychological motivation rather than the characteristics of the travel destination. For this question we followed the survey already carried out on Croatian parks by Barić, Anić, & Macías Bedoya (2016), partly using their categories plus others chosen by us. Results are shown in table 16. There is a significant agreement on new experience, relaxation and contact with nature as key benefits sought for the cross-border travel in the programme area, whose importance mean value is significantly above the average (mean value respectively 4,10, 4,09 and 3,82). In contrast to what was observed in relation to the characteristics of the destination, in this case there is very little difference between evaluations provided by respondents of the two different Countries. The average importance assigned to each aspect differs by no more than 0,2 in all cases (figure 17). The interpretation that we think we can draw from this, is that the travellers of both countries are aware of the different characteristics that they can expect

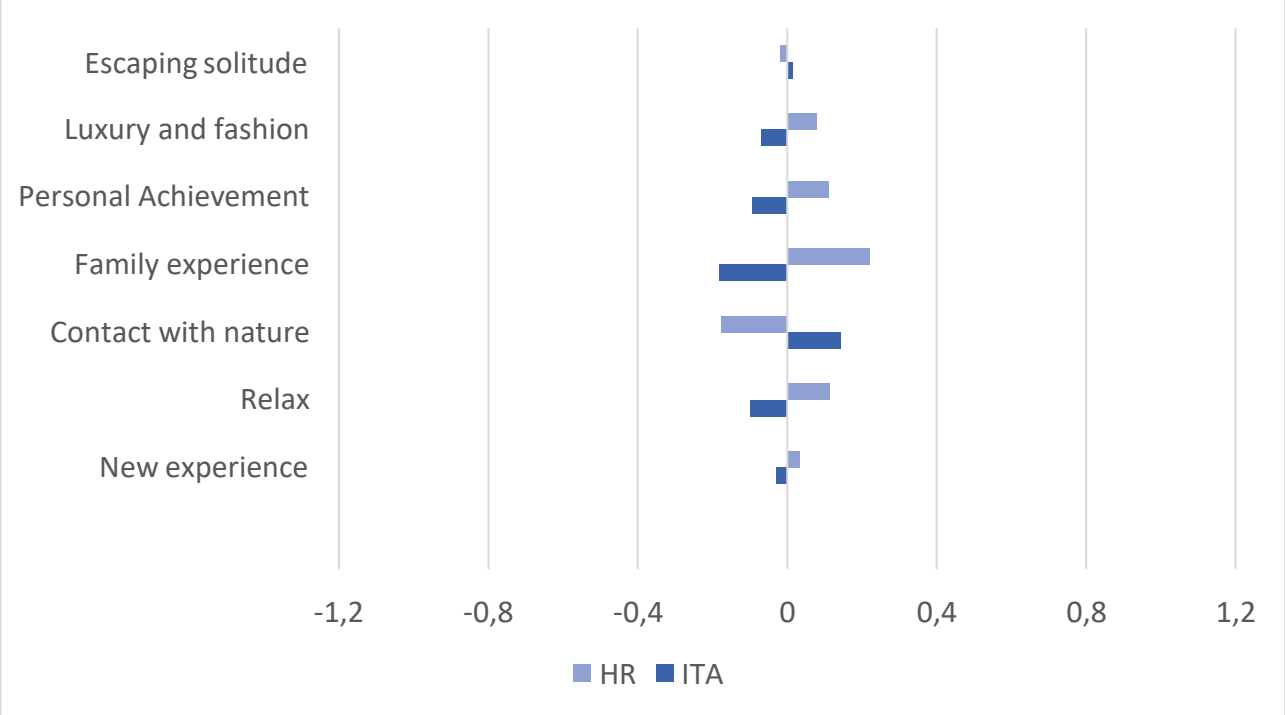
from Italy rather than from Croatia, but the sought benefit determining the destination choice is in fact the same for the citizens of both sides.

Table 17: importance attributed to the travel benefits

	Importance mean value (1-5)	Standard Deviation	Number of Respondents*
Relax	4,09	0,95	264
New experience	3,94	1,05	264
Contact with nature	3,82	1,04	264
Family experience	3,11	1,33	269
Personal Achievement	2,89	1,22	264
Luxury and fashion	2,08	1,28	272
Escaping solitude	1,96	1,16	268

* The number of respondents does not include those who answered 'not applicable'

Figure 17: deviations from the mean value of the benefits importance by country of origin



The survey also investigated the importance that travellers attach to aspects that can make travelling more or less comfortable. The results are shown in table 18, from which it can be seen that travellers' perceptions tend not to consider any aspect as secondary, since almost all those

considered have a relatively high importance and a limited variability of judgements. The aspects that emerge as most important uniformly in the sample are hygiene, comfort, cost of travel, ease of booking online and the courtesy and professionalism of the staff.

Table 18: importance of travel-related aspects

Please rate in general how important you consider each of the following aspects (on a scale ranging from 1=irrelevant to 5=extremely important)	Importance	Standard Deviation	Respondents*
Hygiene of individual areas (e.g., cabin)	4,42	0,95	247
Hygiene of the common areas	4,41	0,92	253
The overall cost of your journey	4,29	0,85	256
Staff professionalism	4,26	0,89	255
Overall comfort of the trip	4,22	0,80	255
Ease of online booking	4,17	1,10	246
Connecting transport to arrival point of the journey	4,14	1,09	256
Staff courtesy	4,11	0,93	253
Connecting transport to starting point of the journey	4,09	1,12	257
Quality of bar, restaurant, food catering	3,88	0,92	133
Luggage storage	3,42	1,29	235
Quality and comfort of cabin for resting	3,42	1,29	234
Entertainment services (movies, slot machines, play area for kids, wellness & spa, etc.)	3,34	1,22	246
Quality of services for physically challenged passengers	3,23	1,52	199

- The number of respondents does not include those who answered 'not applicable'.

The overall aspect that emerges from data shown in table 18 is that tourist demand is generally demanding and requires a high level of service in every respect. This trend is not new and is probably one of the effects of the increasing sharing of travel experiences, with reviews, comments, etc., made possible by highly popular web platforms. Indeed, on the one hand, the increasing transparency of the user experience has the effect of bridging the information gap (thanks to shared

reviews) with regard to a service or experience that one has not experienced first-hand. On the other hand, the possibility of externalizing (for better or worse) one's own experience is an incentive that leads to more severe evaluations of the service obtained.

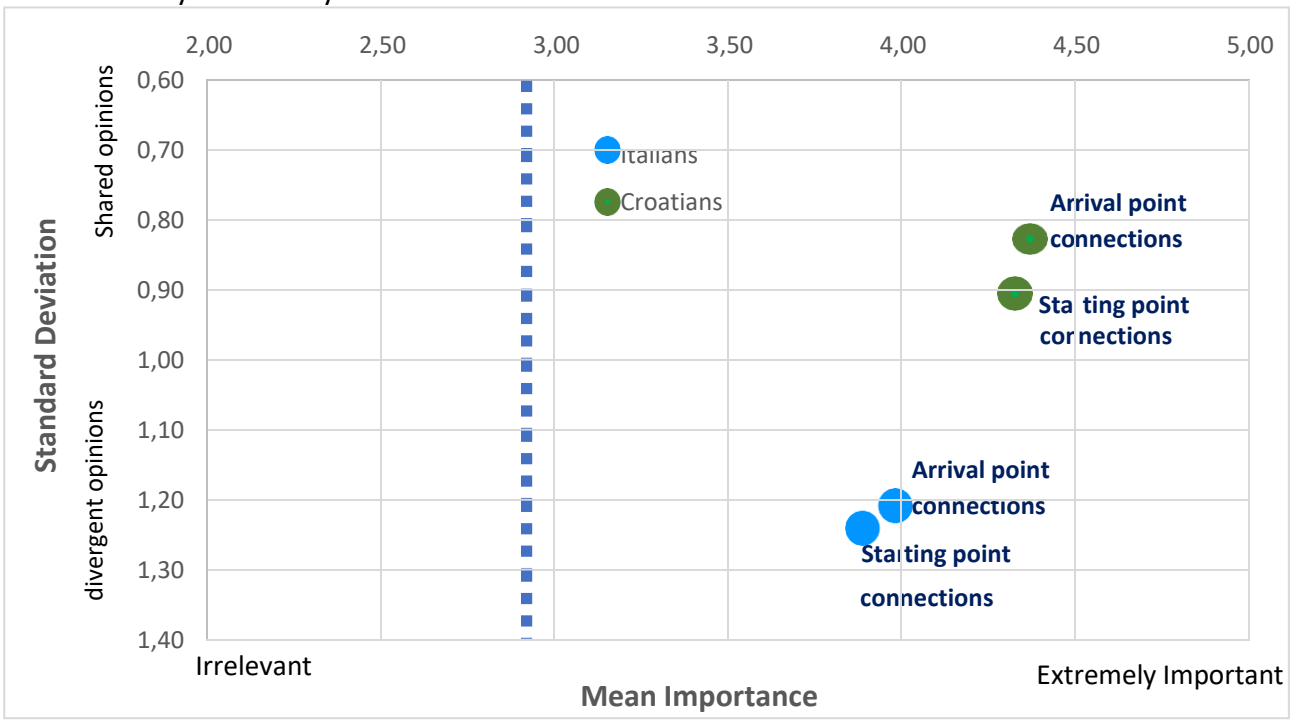
In such framework, however, an unexpected result in this survey concerns the (relatively) low importance assigned to services for people with physical difficulties (mean of 3.23) but with a variability of judgements that is the highest for this specific question (standard deviation of 1.52). The significantly lower response rate for this question compared to the others supports the hypothesis that there was a problem of interpretation. However, we wanted to check whether there were any discriminating factors between the socio-demographic variables surveyed. Values disaggregated by age, gender and education do not show significant differences in importance ratings, while country of origin is. Italian respondents' mean value is 2.84, while it is 3.68 for the Croatians, but the variance within each group is similar to the sample. Differences in this respect are also found according to declared income. The average rating of those who declare an income below the average is 3,71, that of those who declare an income in the average or above the average is 3,15. In particular, the average rating of those who declare an above-average income is 3,0. I (corresponding to a neutral opinion).

The data also reveal a significant difference of opinion between Italians and Croats about the importance of connectivity with the starting and destination points of the trip (table 19 and figure 18). Reinforcing the difference in the average importance assigned to connectivity (3.93 for Italian respondents, 4,34 for Croatian respondents as average of connectivity on origin and on destination) is the figure of the standard deviation (higher than 1,21 for Italians, lower than 0,9 for Croatians), which indicates that Croatian respondents agree much more on this aspect than Italian respondents. This significant difference is consistent with the above-mentioned figure concerning the different percentage of Italians and Croats using public transport for cross-border travel. Since public transport is much more widespread among Croatian travellers (43,6 for Croatians, 18,6 for Italians), it is reasonable that the problem of accessibility of origins and destinations is more acute. Moreover, an impact comes from the different geographical configuration of Croatia, characterised by a large number of islands, which represents an additional modal shift compared to the destination/departure on the Italian side.

Table 19. Country of origin differences in perceived importance of connectivity

Please rate in general how important you consider each of the following aspects for a trip to Croatia/Italy (on a scale ranging from 1=irrelevant to 5=extremely important)	ITA		HR	
	Importance	standard deviation	Importance	standard deviation
Connecting transport to arrival point of the journey	3,98	1,21	4,37	0,83
Connecting transport to starting point of the journey	3,88	1,24	4,32	0,90

Figure 18: Importance and variability of opinion on the importance of connectivity with origin and destination by nationality



In the next section, this aspect will be explored in depth, also by adopting the analysis model known as "importance-performance".

4.4. The Importance-Performance analysis

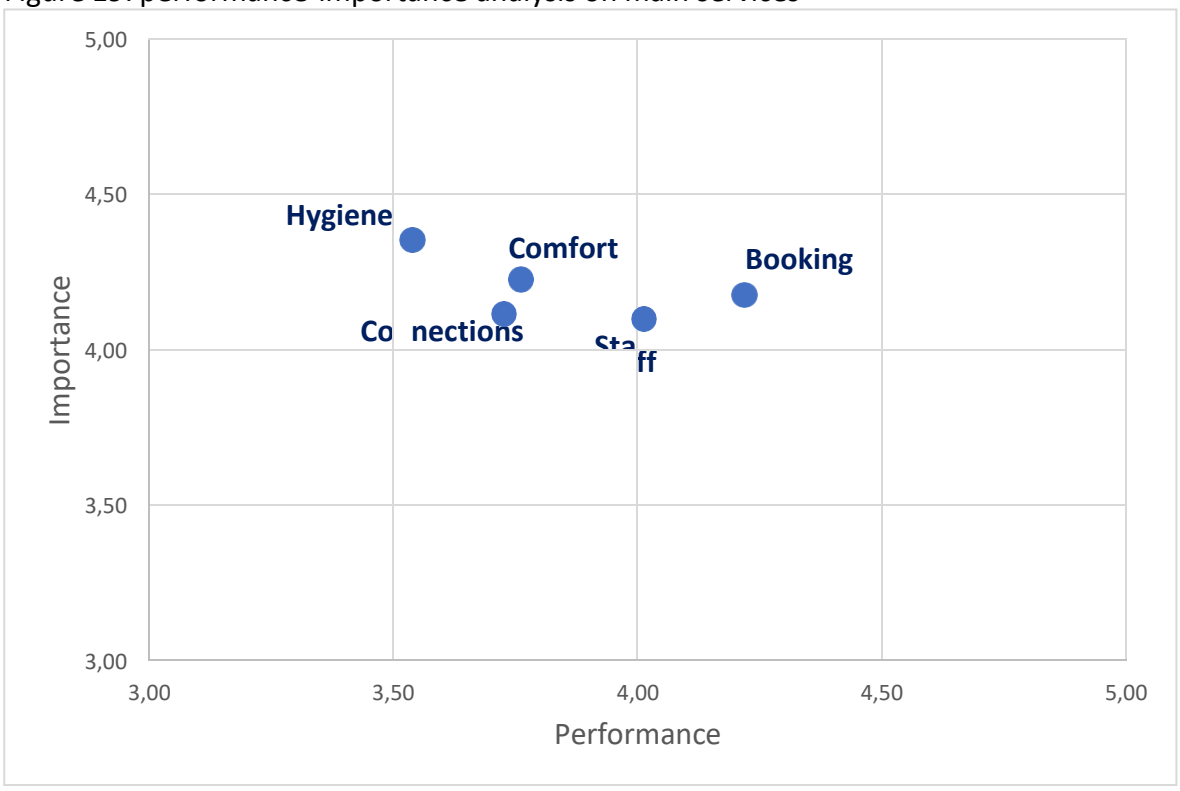
In section 2.2 the methodology and meaning of the importance-performance analysis were briefly described. In this section we see the results of the questionnaire regarding the evaluation of services and travel characteristics. It should be noted that the section of the questionnaire that asked for an

opinion on satisfaction with the series of services investigated received a lower response rate than the other sections of the questionnaire (including in the non-answers the “not applicable” answer). Moreover, since the importance-performance analysis involves the cross-referencing of answers to questions posed in different sections of the questionnaire, the joint effect of non-responses in the two sections leads to a further reduction of the available data. In this section we will present only those results that we consider reliable due to a sufficiently high number of responses (>20% of actual travellers). The results are summarized in table 20 and figure 19.

Table 20: performance-importance analysis on main services

	Performance	Importance	Criticality
Ease of online booking	4,22	4,17	1,01
Connecting transport with the starting / arrival point of your journey	3,72	4,11	0,91
Hygiene of common & individual areas	3,54	4,35	0,81
Staff courtesy and professionalism	4,01	4,11	0,98
Overall comfort*	3,76	4,22	0,89

Figure 19: performance-importance analysis on main services



As explained above, the data must be read in such a way as to commensurate performance with importance, and the most critical situations are precisely those in which high importance corresponds to low performance. We haven't found critical situations (negative performance coupled with high importance) and the evaluations are very similar among the items we have submitted in the questionnaire. The most important gap in this respect is that relating to the hygiene of spaces (common and individual), whose performance is slightly positive (3,54) and importance is the highest among those investigated here (4,35). Although this is not a critical situation, it indicates that there is certainly room for improvement in demand satisfaction. The second relevant area of improvement is the connection with starting and arrival travel point (performance 3,72 and importance 4,11). No particular issues, instead, as for online booking and for staff courtesy and professionalism, both relevant and positively evaluated as well.

4.5. The Kano Model Analysis

We have seen in section 2.2. how the Kano model is useful to gain better insights on how demand perceives different aspects and features of the product (service) provided. It is therefore a tool to understand where to concentrate efforts, insofar producers/providers need to allocate most resources on those aspects that are crucial in orienting customer satisfaction. With this model, one can distinguish aspects that are assessed as necessary from aspects that are considered to be accessory, regardless of the level of importance attached to them. In this sense, the Kano analysis is a fundamental complement to the importance- performance analysis.

The MIMOSA team implemented a focus group to single out features that were to be included in the survey, in accordance to the overall objectives of the project and, specifically, the segmentation analysis. The outcome of the procedure led to a list of requirements, which have been investigated by the Kano methodology and the couples of questions in functional vs dysfunctional form. For instance, with respect to the availability of bicycle rental for free, the questions inserted in the survey are the following:

Functional form - *How would you feel if bicycles rental is available for free at your destination*.

Dysfunctional form - *How would you feel if bicycles rental is not available for free at your destination*.

The answers provided have been analysed on a one-by-one basis (that is, one respondent at a time)

and their matching led to the identification of how the service was perceived by the single individual, according to the analytical structure at the basis of the model and summarized in table 21.

Table 21: classification of customers' requirements according to the Kano Model interview structure

CUSTOMER REQUIREMENTS		NEGATIVE				
		Like	**Must be**	**Neutral**	**Live with**	**Dislike**
POSITIVE	**Like**	*Questionable*	*Attractive*	*Attractive*	*Attractive*	*One dimensional*
	Must be	*Reverse*	*Indifferent*	*Indifferent*	*Indifferent*	*Must be*
	Neutral	*Reverse*	*Indifferent*	*Indifferent*	*Indifferent*	*Must be*
	Live with	*Reverse*	*Indifferent*	*Indifferent*	*Indifferent*	*Must be*
	Dislike	*Reverse*	*Reverse*	*Reverse*	*Reverse*	*Questionable*

Respondents (a few units in total) that answered inconsistently (for instance, suggesting that they liked both the presence and the absence of a specific feature) have been supposed to answer randomly, and have been subsequently dropped from the sample (so-called questionable responses). The set of questions adopted for this analysis were addressed to the following situations (each one proposed in the questions as both existing and non-existing, in accordance to this model methodology):

a) whether or not bicycles rental is available for free at destination;

b) destination is in an area closed to vehicular traffic;

c) destination is accessible for people with motor disabilities;

d) possibility to do the whole trip to get to the final destination with public transport modes;

e) availability of a service to collect luggage at the address of departure and bring it at the final destination (door-to-door luggage service);

f) possibility to consult all the information regarding the trip can on a single App on the smartphone;

g) maritime cruises adopting technologies that reduce environmental impacts;

h) possibility at the final destination area to move only on foot or with zero-emission vehicles;

i) possibility to do the entire travel from Italy to Croatia or vice-versa by train;

j) Connections with Croatian islands/Italy by daily public transport services at regular times and without the need to book in advance. Results are summarized in table 22. For a better reading of the table, please note that "attractive" indicates benefits/features that generate satisfaction if present but do not create dissatisfaction if absent. "One-dimensional" indicates benefits that the more they are present, the more they create satisfaction, while if absent, they cause dissatisfaction;

Table 22 shares of Kano-analysis type of requirement by proposed characteristics / situations

	Attractive	Must be	One dimensional	Indifferent	Reverse
Free bike rental	40%	3%	20%	36%	n.s.
Area closed to vehicles	30%	3%	10%	44%	13%
Guaranteed accessibility for the disabled	7%	40%	25%	28%	n.s.
Whole trip feasible with public transportation	18%	19%	24%	36%	n.s.
Door to door luggage service	26%	7%	11%	53%	3%
All travel info on single App	34%	10%	24%	31%	1%
Sustainable maritime cruises	11%	27%	42%	18%	n.s.
Only pedestrian and 0 emissions vehicles area	34%	11%	16%	31%	7%
Entire travel feasible by train	30%	6%	21%	39%	4%
Islands increased accessibility	27%	11%	36%	25%	n.s.

<3% n. s.	< 10%	10% - 24%	26% - 39%	> 40%

The first fact that emerges clearly is that the only feature that is viewed negatively by a detectable proportion of respondents is the closure to traffic (13%). On the other hand, on this controversial issue, 44% declare themselves indifferent, 30% consider it an attractive benefit and 10% a one-dimensional benefit. This leads us to say that any restriction of vehicle traffic in tourist destinations or more crowded areas would be welcomed by travellers much more than opposed. This is also confirmed by the fact that the number of people who oppose closed traffic zones halves if they are given the opportunity to travel by zero-emission vehicles (7%), as well as indifferents decrease from 36% to 31% and overall in favour (one dimensional) raises from 10 to 16%. As a whole, it can be estimated that a fully pedestrian zone is welcomed by 43% of travellers, while an area accessible only by pedestrian and zero-emission vehicles would be welcomed by 61% of travellers. Of course, given that the closure to vehicular traffic also creates problematic aspects for residents and people physically challenged, a possible approach to policy in this direction should take into consideration balancing and felibilizing the restriction in various ways. We will return to this point when discussing the policy implications.

The availability of free bike rental services is considered as an attractive feature of the destination by 40% of respondents and as a one-dimensional benefit from 20%. Such service is certainly much appreciated by travellers between the two Countries of the program, although its absence would cause dissatisfaction only in a small number of die-hard bicycling enthusiasts. 20% of respondents

consider the service as a one-dimensional requirement, while 35% state their indifference, illustrating how most likely one third of the sample is not interested in biking activities, thus not caring about the presence of dedicated services. As a whole, however, including also the “must-be” answers, such a service would increase the satisfaction of at least 63% of our respondents.

The accessibility of the destination to people with motor disabilities exemplifies the previously mentioned object of MIMOSA segmentation analysis. Indeed, although most likely the percentage of respondents that would personally need to use services for the physically challenged

Is low, 40% consider it as a “must be” requirement, the higher share among any other feature. On the other hand, more than one out of four (28%) are indifferent to this aspect, and we have no clear idea about how to interpret this figure, which we would have expected to be much lower.

On the other hand, relatively moderate interest was expected in the possibility that travel between the two countries could be made by public transport. Less than one traveller out of five (19%) considers the cross-border public transport a necessary requirement, and even less expect there to be an international train (6%, about one out of twenty travellers). The majority is indifferent to this issue (36% and 39% respectively for public transport in general and for trains). The prospects for travellers' adherence to a possible development of scheduled transport are entrusted to 36-37% who say that they consider scheduled public transport and/or rail transport attractive or must be. Such a percentage, however, should not be considered as a potential demand for new services. It is not unlikely that respondents could have their answers driven by altruistic values such as pro-environmental attitudes (trains pollute less than most private vehicles), rather than from actual own preferences. Rather, a key factor for the effectiveness of any such policy is to target the offer to very specific demand segments, for example, on the one hand younger people, sensitive to travel costs and simplification, oriented towards a lifestyle compatible with 'on the road' and 'backpacking' holidays. On the other hand, demand from the elderly, who are less prone to the stress of driving but who typically like to travel as long as they are supported by integrated services that make the journey free of any inconvenience. In this respect, a door-to-door luggage service has been taken into consideration in the questionnaire. This would be a relatively innovative type of service expected as a requirement by 7% of the respondents and considered as an attractive requirement which, although not expected, holds the potential of greatly increasing satisfaction, whenever available (26%). Most travellers, however, remain indifferent to it (53%), but this might be due at

least in part, by the fact that it is a service that is little or not at all known and therefore not considered real.

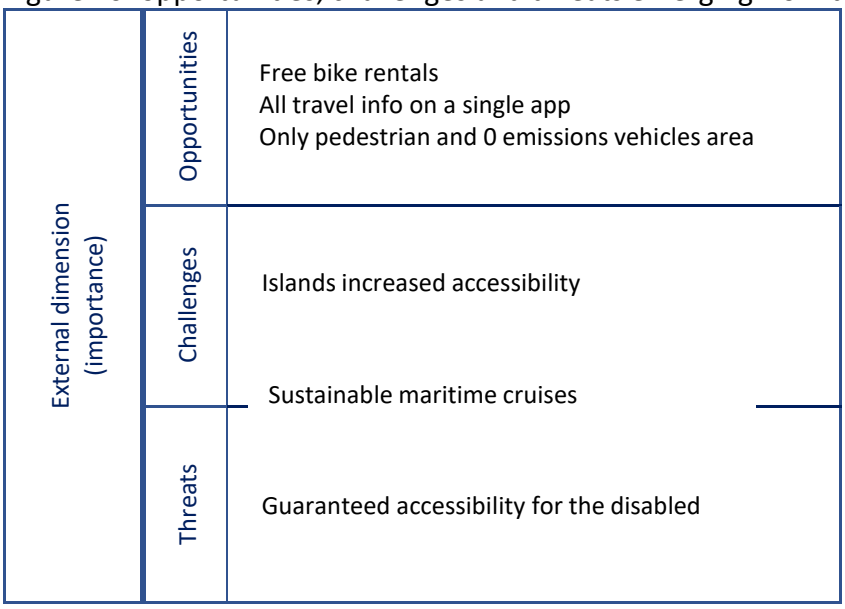
Finally, it can be noted that the two situations that scored highest as "one dimensional" characteristics (i.e. generating a positive or negative attitude depending on the level of performance) are respectively the sustainability of passenger ships and the accessibility of islands. It is the typical situation of conditions that the public considers relevant or very relevant, while at the same time it is aware that they are not taken for granted. In fact, these are also the two characteristics that have the lowest percentage of indifference (18% for the sustainability of passenger ships and 25% for the accessibility of islands).

Kano's analysis makes it possible to go beyond the simple definition of 'satisfaction' or liked/disliked, going into detail about what is perceived as necessary versus what is perceived as liked but not necessary. It can then be used to prioritise actions to be taken. In this respect, we propose two different readings of the results.

In the first reading we take up a criterion for reading the data presented in section 2.2 of this report, which transposes the results of the Kano analysis in terms of opportunities / challenges / threats and strengths / weaknesses. These assessments take up and extend the categories used in the SWOT matrix. However, in our study, the performance of the situations presented was not measured and therefore only opportunities / challenges and threats can be considered. Situations with the highest concentration of evaluations in the “attractive” category are considered as opportunities, because they represent potential policy levers useful to improve travellers' satisfaction while making travel and the use of the destination more sustainable. Those with the highest percentage of “must be” are classified as threats, for the obvious reasons that represent conditions that would provide a very negative evaluation if not properly managed. Those with the highest percentage on “one dimensional” are regarded as challenges, as they are relevant for better or worse and need constant attention in order for the level of performance to remain up to expectations. Our results show that free bike rentals, an app capable of providing exhaustive information on the whole travel and areas only for pedestrian and zero emissions vehicles are the major opportunities highlighted by the survey. To make islands more accessible, through regular / daily line services requiring no booking in advance is the main challenge, together with the improvement of maritime vessels emissions. However, this is also a potential threat (second as for

share of “must be”), while the non-accessibility for disabled people is a condition that would provide a major threat as for the perception of travellers (figure 20).

Figure 20: opportunities, challenges and threats emerging from the Kano analysis



The results shown in figure 20 are the outcome of a qualitative assessment of the Kano’s answers given by the sample that classifies the main requirements in terms of the strategic role they play in mobility policies (i.e. they have the highest concentration in “must be”, “attractive”, etc., as explained above). Such evaluation, however, does not necessarily reflect the priority of actions in terms of what should be considered more relevant or “urgent” to fulfill, since the same weight is given to what is considered necessary and to what is considered pleasant or attractive.

A further way to highlight priorities emerging from this analysis is to provide a measure of the listed situations / characteristics according to a method that emphasises necessity over liking. To do this, the priority can be measured by the weighted sum of the shares for each type of requirements. Specifically, $P = \sum_{i=1}^{n} \quad S_i \cdot r_j$, where P is the measure of the priority, S the share of the i-th situation or characteristic, and r is the weight assigned to the j-th type of requirement. In the logic of this model, the more the requirement impacts satisfaction / dissatisfaction, the higher its priority. The values of r should therefore reflect such impact. In this study we have calculated the overall priority of each situation / characteristic adopted the following scores: “must be” = 1; “one dimensional” = 0,8; attractive = 0,3; indifferent = 0; reverse =-0,5. This priority indicator is constructed in such a way as to assign a higher score (the maximum score is 1) to a

characteristic/situation according to the potential it has to create dissatisfaction, rather than rewarding opportunities arising from unexpected and welcome benefits. Table 23 show the results of this calculation and the consequent rank of priorities. The need for maritime cruises to adopt technologies that reduce environmental impacts and the accessibility for people with motor disabilities have, by far, the highest priority in our sample, followed by islands accessibility and by the development of cross-border public transport (table 23).

Table 23: priorities emerging from the Kano analysis

	P	**Indexed 1st = 100**
Sustainable maritime cruises	0,634	100
Guaranteed accessibility for the disabled	0,616	97
Islands increased accessibility	0,474	75
Whole trip feasible with public transportation	0,426	67
All travel info on single App	0,389	61
Free bike rental	0,305	48
Only pedestrian and 0 emissions vehicles area	0,305	48
Whole travel feasible by train	0,298	47
Door to door luggage service	0,221	35
Area closed to vehicles	0,135	21

It is worth noticing that situations previously identified as opportunities are not at the top of ranking, while threats and challenges are. This reflects the logic of this model of analysis: priorities while opportunities. The priorities identified with this criterion outline strategies for improvement which, if implemented, will affect what the public consider to be minimum requirements for acceptability. In this sense, these requirements determine a judgement that goes beyond the situation of the specific travel.

In essence, according to this approach, it is legitimate to consider that a judgement of inadequacy on the environmental impact of maritime transport rather than on the adequacy of accessibility to the disabled is unrelated to the specific case of the travel between Italy and Croatia. Thus, the opportunities identified above, although useful to target policies to improve the quality perceived by the public, would have only circumscribed and marginal effects when the priorities seen above are not satisfied.

In conclusion, Kano's analysis does not show preferences in the sample that would be obstacles to initiatives aimed at making travel and mobility at the destination more sustainable. In the specific

case of shipping emissions and accessibility for disabled people, this is considered a basic requirement, but even something that in theory could have been opposed, such as the creation of restricted traffic zones, is not opposed. If anything, there is a lukewarm reception for public transport and related services, such as door-to-door luggage services.

4.6. Key segments

The descriptive analysis of the data from the survey provides a series of relevant insights into aspects that are or might be relevant in order to define policies and plans to improve the overall sustainability of travel choice in the programme area. A further step into this direction consists in identifying key-segments of travellers that are or should be the target of focused actions. Of course, there are several alternative methods that can be followed when it comes to cluster groups of respondents. In order to identify the segments that are relevant for improving the sustainability of transport policies and to orient behaviour towards more sustainable travel choices, we have aggregated respondents to the survey in the perspective of highlighting groups declaring similar and coherent preferences particularly related to mobility choices.

We have therefore identified 3 key segments. Such segments, labelled “Deep Green”, “Neutral Grey” and “Easy & Comfortable” are described later on in this section. Overall, net of overlaps, the three segments account for 190 respondents, i.e. 57.05% of those who actually travelled from Italy to Croatia or vice versa.

For an adequate description of the main features of each segment, information about socio-economic and demographic characteristics are necessary. In our questionnaire, we also collected (among other data) the average level of income and educational qualification, since they are important elements of segmentation. Therefore, in order to compare the positioning of the segments with each other and with the sample as a whole with regard to income and educational qualifications, it was necessary to quantify the two qualitative data from the survey regarding income and education. Specifically:

- The level of declared income in relation to the average of your country (How would you rate your household income, compared to the average of your country?).
- The degree of education (What is your highest degree?)

An 'income index' and an 'education index' were then defined as follows

Income index has been calculated as the mean value for the group of responders according to the following ranking scores:

Much above average	2
Above average	1
Average	0
Below average	-1
Much below average	-2

Education index has been calculated as the mean value for the group of responders according to the following ranking scores

Secondary School	-1
High School	0
Bachelor	1
Master	2
Doctoral	3
If employment = student	+1

"Deep Green" Segment

Key features: Well disposed towards public and alternative mobility.

57 respondents (12.3% of the sample and 17.1% of travellers) were identified with these characteristics. It is a segment made up of people who have a decidedly favourable orientation towards the adoption of public transport and traffic restriction measures, with an additionally very positive attitude towards the availability of free bicycle rental (15.7% of the segment considers free bicycles at the place of stay as a basic requirement rather than an additional benefit).

It is a segment of young people, predominantly women, and more rooted among Italians than among Croats. They stay longer than average, their level of education is significantly higher than that of the sample and their income level is significantly lower (tab. 24).

Classification criteria are as follows: they answered "like" or "must be" to the following situations: 1. free bike rental, 2. destination in no-traffic zone, 3. the journey (Italy - Croatia or vice versa) can be done with public transport or 4. by train, 5. destination only accessible on foot or with ZEV.

Table 24: characteristics of the “Deep Green” segment

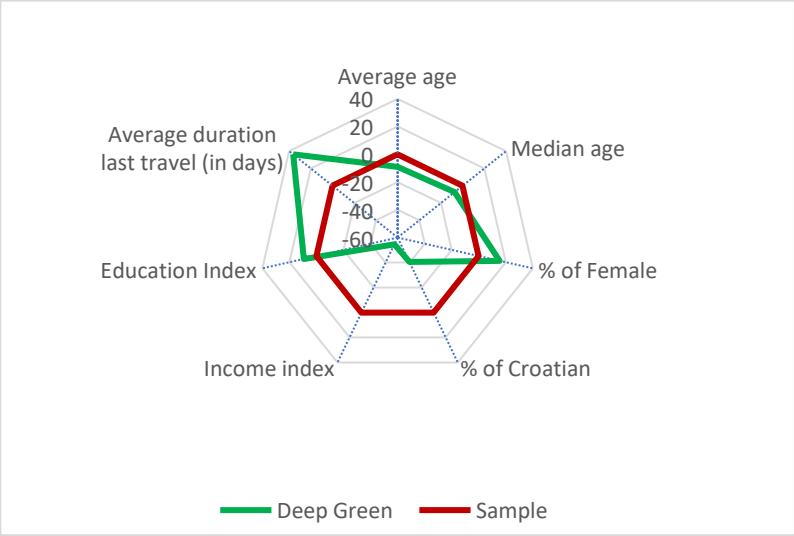
	#	%
# in the sample	**57**	
% of the sample		**12,3%**
% on actual travellers		**17,1%**

	#	Category in “Deep Green”	Same category in the sample
Female	45	81,5%	70,6%
Male	12	18,5%	29,4%
Croatian	18	27,8%	46,7%
Italians	39	72,2%	53,3%
Education Index		1,63	1,49
Average duration of the last travel (in days)		6,23	4,57
Average age		29,6	32,5
Median age		25,0	27,0
Income index		-0,018	0,039

In summary, compared to the sample (Figure 21):

- Lower average age
- Higher % of women than in the sample
- Significantly greater presence of Italians
- Significantly lower average income than the average in the country of origin
- Slightly higher level of education
- Significantly longer average length of stay

Figure 21: characteristics of the “Deep Green” segment compared to the whole sample



"Neutral Grey" segment

Key features: high-income people, against traffic restrictions and neutral or ill-disposed towards public and alternative mobility.

98 respondents (21.2% of the sample and 29.4% of travellers) were identified with these characteristics This segment is characterised by a strong predominance of the use of private mobility. 17.3% of this segment declares in various ways their opposition to closing their destination to traffic. It is mainly made up of people of Croatian origin whose average age is higher, whose income is much higher than the average in their country and who stay for a slightly shorter period than the average (table 25).

Classification criteria are as follows: they answered non-negatively (I like it, it must be that way, I can live with it, I'm neutral) to the following situations: 1. the journey (Italy - Croatia or vice versa) cannot be made by train, 2. nor by public transport, 3. The destination area is open to traffic, 4. The destination area is not only for pedestrians or zero emission vehicles.

Table 25: characteristics of the "Neutral Grey" segment

	#	%	
# in the sample	**98**		
% of the sample		**21,2%**	
% on actual travellers		**29,4%**	
	#	**Category in "Neutral Grey"**	**Same category in the sample**
Female	59	60,2%	70,6%
Male	39	39,8%	29,4%
Croatian	57	58,2%	46,7%
Italians	41	41,8%	53,3%
Education Index		1,34	1,49
Average duration of the last travel (in days)		4,05	4,57
Average age		33,1	32,5
Median age		29,0	27,0
Income index		0,061	0,039

In summary, compared to the sample (figure 22):

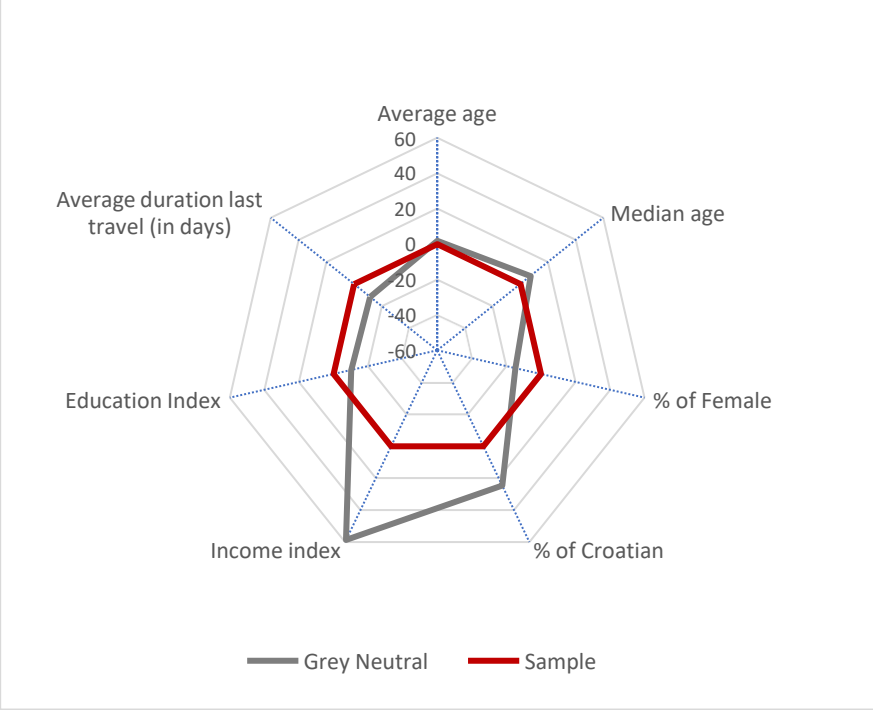
- Higher average age
- Men are more represented than in the sample
- Significantly more Croatians

- Average income much higher than the average in the country of origin

- Slightly lower level of education

- Slightly shorter average length of stay

Figure 22: characteristics of the “Neutral Gray” segment compared to the whole sample



“Easy & Comfortable” segment

Key features: Demanding, high-income individuals seeking comfort and ease in travel operations

67 respondents (14.5% of the sample and 20.1% of travellers) were identified with these characteristics (table 26). Such a segment expresses a strong appreciation of services that can make the journey easier and more comfortable. It is a transversal segment to the other two (which are complementary to each other and therefore do not overlap) and includes 17.9% of respondents classified in the Deep Green segment and 29.9% of respondents classified in the Neutral Grey segment.

Classification criteria are as follows. They answered “like” or “must be” to: 1. Door-to-door baggage service, 2. One app to plan the whole trip. Moreover, they also rated the following aspects of the trip as extremely important (5) or important (4): overall comfort of the trip, staff professionalism, staff courtesy, ease of online booking.

Table 26: characteristics of the "*Easy & Comfortable*" segment

	#	%
# in the sample	**67**	
% of the sample		**14,5%**
% on actual travellers		**20,1%**

	#	Category in "*Easy & Comfortable*"	Same category in the sample
female	46	68,7%	70,6%
male	21	31,3%	29,4%
Croatian	44	65,7%	46,7%
Italians	23	34,3%	53,3%
Education Index		1,44	1,49
Average duration of the last travel (in days)		3,61	4,57
Average age		32,7	32,5
Median age		29,0	27,0
Income index		0,061	0,039

In summary, compared to the sample (figure 23):

- Average age in line with or slightly higher than the sample

- Similar gender distribution to the sample

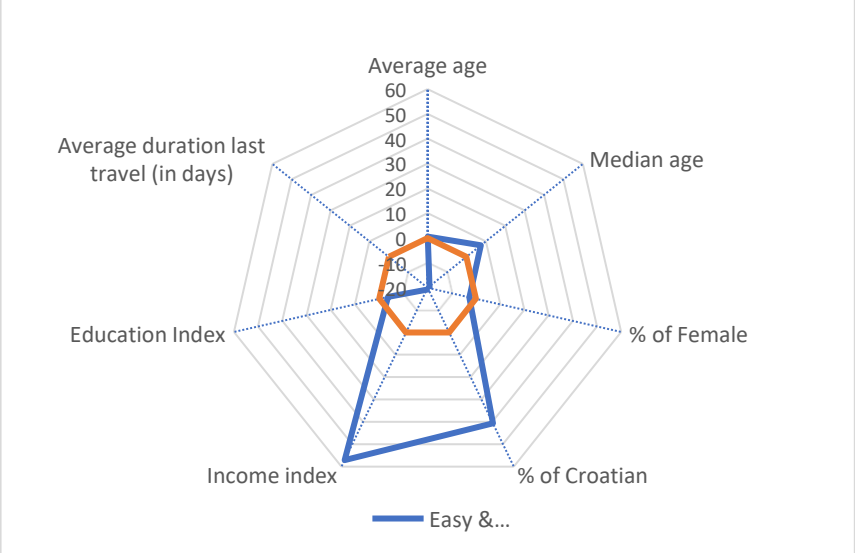
- Significantly more Croatians

- Average income much higher than the average in the country of origin

- Educational level in line with sample

- Average length of stay significantly shorter than average

Figure 23: characteristics of the "Easy & Comfortable" segment compared to the whole sample

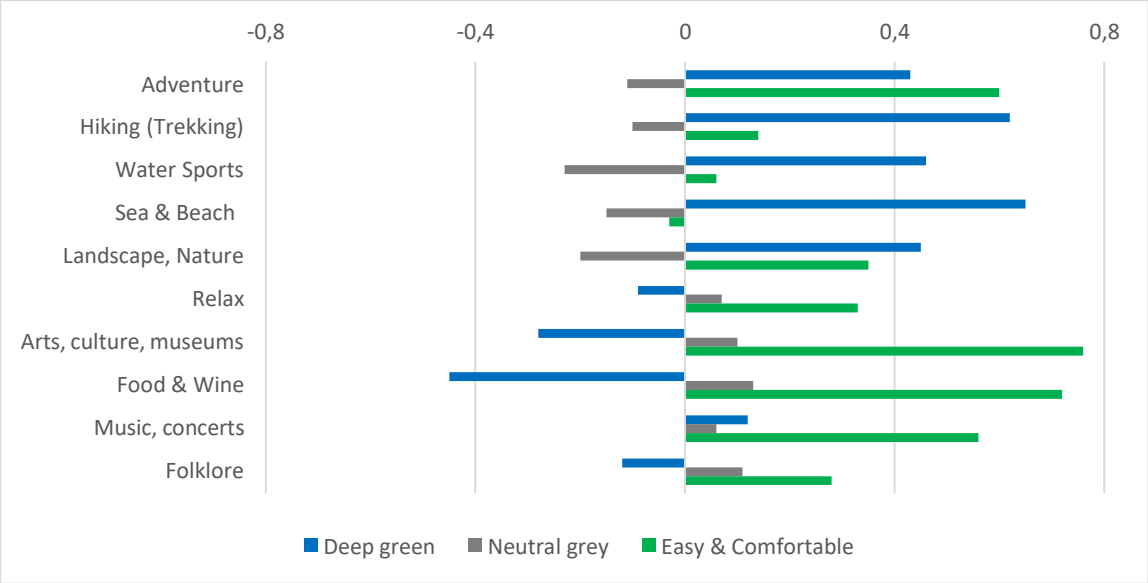


A comparison of segments regarding the importance of destination characteristics is shown in table 27 and figure 24 & 25. The "Easy & Comfortable" segment is distinguished by choices that are especially culturally oriented (art, culture, museums, food and wine, music) than either of the other segments, aspects in which the Deep Green segment is much less interested than the sample average. The "Deep green" segment, on the other hand, in proportion to the sample, has a much stronger preference for outdoor activities (nature, landscape, beach and sea, hiking and water sports) (figure 25).

Table 27: deviations from the sample of importance ratings assigned by segments to country characteristics

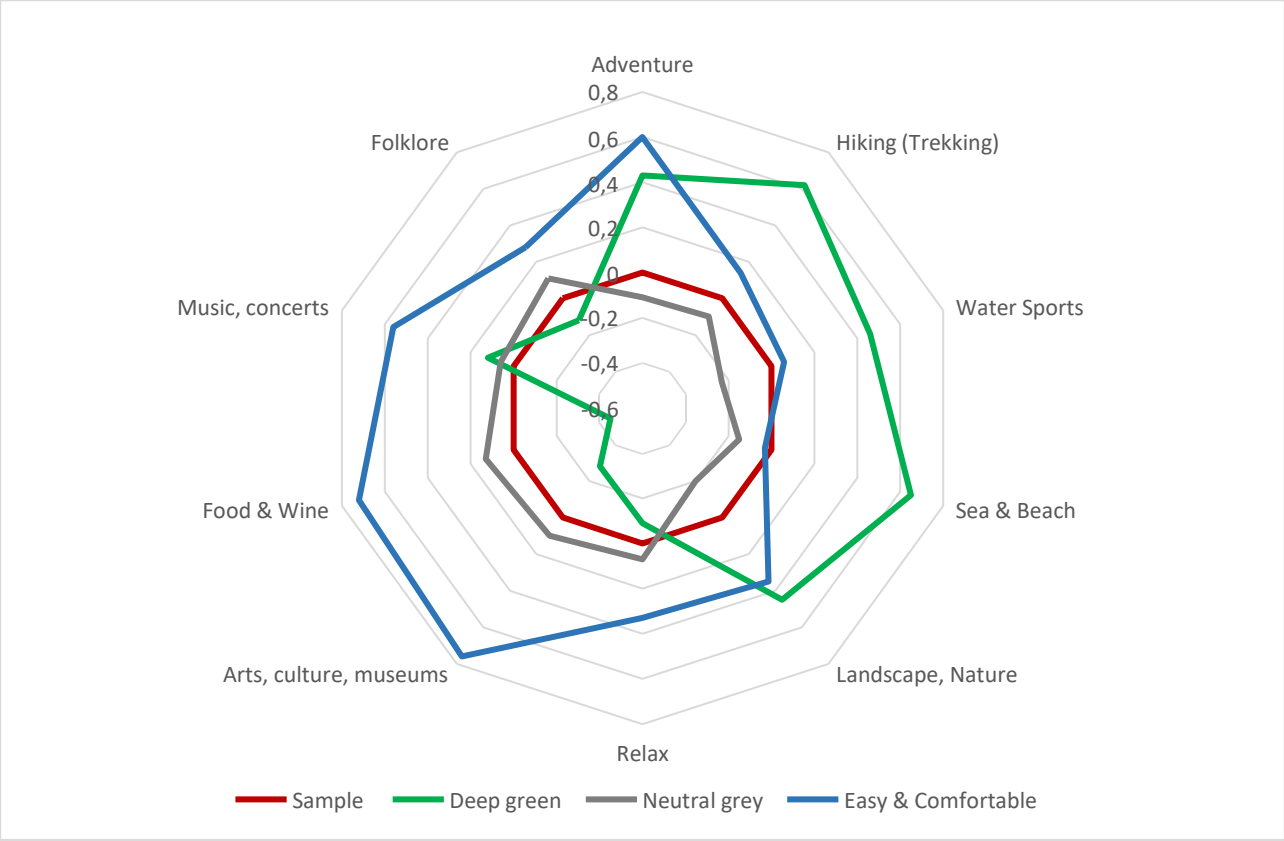
Destination characteristics importance				
	Sample	**Deep green**	**Neutral grey**	**Easy & Comfortable**
Adventure	0,00	0,43	-0,11	0,60
Hiking (Trekking)	0,00	0,62	-0,10	0,14
Water Sports	0,00	0,46	-0,23	0,06
Sea & Beach	0,00	0,65	-0,15	-0,03
Landscape, Nature	0,00	0,45	-0,20	0,35
Relax	0,00	-0,09	0,07	0,33
Arts, culture, museums	0,00	-0,28	0,10	0,76
Food & Wine	0,00	-0,45	0,13	0,72
Music, concerts	0,00	0,12	0,06	0,56
Folklore	0,00	-0,12	0,11	0,28

Figure 24: deviations of destination characteristics importance ratings of the segments from the sample



The 'Neutral grey' segment is the least distinct compared to the sample as a whole, with significantly smaller deviations in importance ratings than the other two segments (table 27 and figure 25). It seems safe to say, therefore, that this segment is characterised exclusively by a strong propensity for freedom of movement by car and a substantial indifference or aversion to public transport and restrictions on the movement of vehicles.

Figure 25: importance of the destination characteristics of the three segments compared to the whole sample

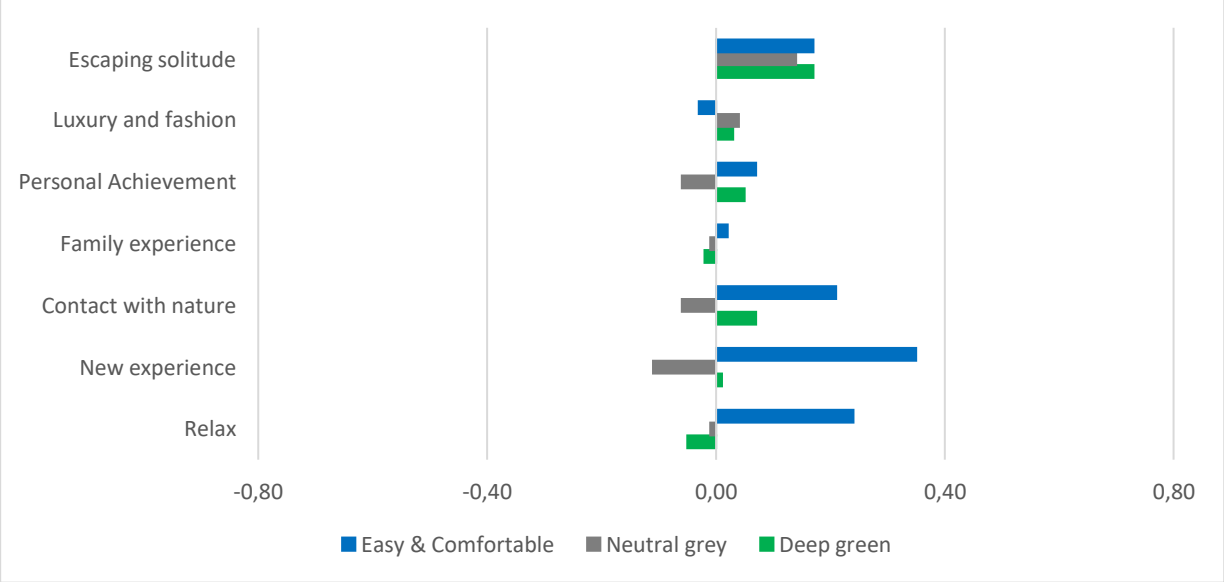


As for the expected benefits of travel, the three segments here identified appear less differentiated from each other and from the sample than they are about the importance of destination characteristics. In a framework of less evident differences from the sample than in the previous case, once again the "Deep Green" and "Easy & Comfortable" segments are more characterised than "Neutral Grey", whose distribution of judgements on this aspect is very similar to that of the sample (figure 26).

Table 28. Importance of the benefits expected from the trip for the sample and the segments

Benefit importance	Sample	Deep green	Neutral grey	Easy & Comfortable
Relax	4,09	4,04	4,08	4,33
New experience	3,94	3,95	3,83	4,29
Contact with nature	3,82	3,89	3,76	4,03
Family experience	3,11	3,09	3,10	3,13
Personal Achievement	2,89	2,94	2,83	2,96
Luxury and fashion	2,08	2,11	2,12	2,05
Escaping solitude	1,96	2,13	2,10	2,13

Figure 26: deviations of benefit importance ratings of segments from the sample



Among the various possible segmentations, the one identified here covers a significant part of the sample of actual travellers (57.05%) and presents sufficiently marked and significant differences to allow us to draw initial conclusions about the overall degree of differentiation of demand as it emerges from the sample interviewed. We followed the psychographic/benefit profile segmentation approach based on responses regarding the importance of services and features, as well as attitudes towards particular travel or destination situations. The segments thus identified are significantly more differentiated than would be segments based on a socio-demographic approach. In fact, we have also verified the differentiating role of the main socio-demographic parameters. As for the country of origin, it emerges that travellers from the two countries have similar preferences regarding the expected benefits of the trip but different expectations regarding the other country.

Figure 27: importance of travel benefits of the three segments compared to the whole sample

Age is a significant differentiating factor only as regards the importance attributed to art, culture and museums, nature and landscape, sea and beach. The study degree is relevant in differentiating preferences for art, culture and museums, nature and landscape, food & wine, while the income level is related to relevant differences only in preferences towards art, culture and museums, and sea & beach. It seems to us, therefore, that the outcome of the segmentation provides useful feedback, mostly supported by the results of previous studies that had identified similar categories as well-defined clusters of travellers.

4.7. Main insights from the interviews

In order to integrate evidence emerging from the survey circulated among travellers, the working group performed qualitative interviews with project partners (operators and policy makers) to hear their voice about the key aspects of mobility across the two Countries.

The goal was twofold. On the one hand, to gain insights on the opinion of operators on aspects such as i) what they believe travellers consider as most relevant in shaping satisfaction for the trip and

the overall travel experience, ii) what is the use that they believe passengers did of specific services and which should be prioritized as to increase travellers satisfaction, and iii) which aspects are thought to be crucial for travellers, what could be done to improve such key-services, and which is in their opinion the level of satisfaction of actual travellers. On the other hand, to shed light on gaps between opinions and satisfaction expressed by travellers and the perception that operators developed on the topic.

Mimosa partners (both Croatian and Italian) have been contacted by email and asked the availability to set up a telephone/videoconference interview that would have most likely lasted around 20/30 minutes). Partners have been thanked for devoting their time for the interview, and informed in the invitation email that the goal was that of gaining further insights on the segmentation of travellers between the two Countries, as to integrate with qualitative feedback from the operators the results of the quantitative survey on travellers. The interview was semi-structured, and the interviewer has been instructed to touch specific points, yet leaving ground, in case respondents were willing to add specific comments or stress peculiar aspects connected to the segmentation of demand, for a flexible development of the discussion.

Seventeen (17) interviews have been developed. The main results from the interviews are listed below. Please notice that the reference questions have not necessarily been asked in the way they are written here, since interviews were semi-destructured, so the actual "question" could have been in fact a discursive introduction to the topic, rather than a more general or more specific statement.

***1) Which are, in your opinion and according to your experience, the key-features that** different segments of travellers (e.g., tourists coming to Croatia/Italy on holiday, individuals coming on business trip, etc.) **consider as most relevant in determining satisfaction/dissatisfaction among passengers for the trip (as regards i) the travel and ii) the stay)**?*

The keywords that emerge are speed, interconnections and information. Operators believe that travellers base their overall evaluation of the travel experience mostly on these factors. In other words, travellers are satisfied as long as the trip is quick, with smooth intermodal changes whenever necessary, and as long as all aspects of the trip (schedules, coincidences, bookings) can be checked in real time.

Linked to both comfort and speed is the aspect of efficient connections, which regards both the trip between the two countries and the mobility at the destination area. Respondents stress how important it is being able to move with public transport without any problem, and intermodal opportunities should be enhanced. Intermodality and bad infrastructure represent a big challenge that needs to be improved. For some routes, direct connection is not available and this, given the length of the travel, represents the biggest problem.

Also, in specific periods of the year (such as in high season in summer months) there are, for road transports, very long queues from the borders. Vignettes are also a problem in Slovenia because you need to pay to come from Croatia to Italy or vice versa. Whenever this occurs, the satisfaction is very low.

Stronger and better connections in public transport and the inclusion of all modes of transport (intermodality), for example, cycling with the train and through the ship (the possibility of bringing bicycles), air transport is not so affected. Strengthening public and multimodal transport and making it all environmentally friendly.

The main obstacles: there is an unnecessary wait at the border crossings, the motorways are not resolved, so after the border there is a wait again. IT-HR collaboration works well. There is huge potential for Schengen to help immensely, but not sure how much regular transport would be a quality alternative because it is questionable how many people are willing to change their current habits (traveling by private cars). A high-speed railway would be a great solution for connecting Italy and Croatia.

It is important that the lines are regular, the biggest problem is the lack of lines, insufficient accessibility to Italy, that you do not have to go all the way around. In general, the simplicity of organizing the trip and stay would be important, easier connection - all in one place. What matters is the speed of travel, the freedom to travel and where to sleep, a common e-ticketing system that would be interoperable. It is also important that airports, ports and stations are bike friendly and availability of bike services.

There is no general agreement, however, as while some partners highlight infrastructural and administrative hindrances connected to road transport, others state that the journey by car does not have any problems, while it is very complicated if choosing public transport, given the poor

connectivity and the subsequent need to change transport mode several times to reach specific destinations.

Seemingly, the most urgent aspects to be addressed should be on the one hand to strengthen intermodality solutions, and to minimize road trip interruptions by means of better infrastructures and quicker bureaucratic tasks (e.g., vignette).

Besides interconnections and trip duration, information is considered as a crucial aspect, connected both to the comfort of having all relevant info on your travel at easy disposal (for instance. On a single app exploiting the potential of new ICTs) and to plan, modify or execute in real time the trip, checking the interconnections that are entailed by multimodal solutions. Excerpts from the interviews are proposed as follows:

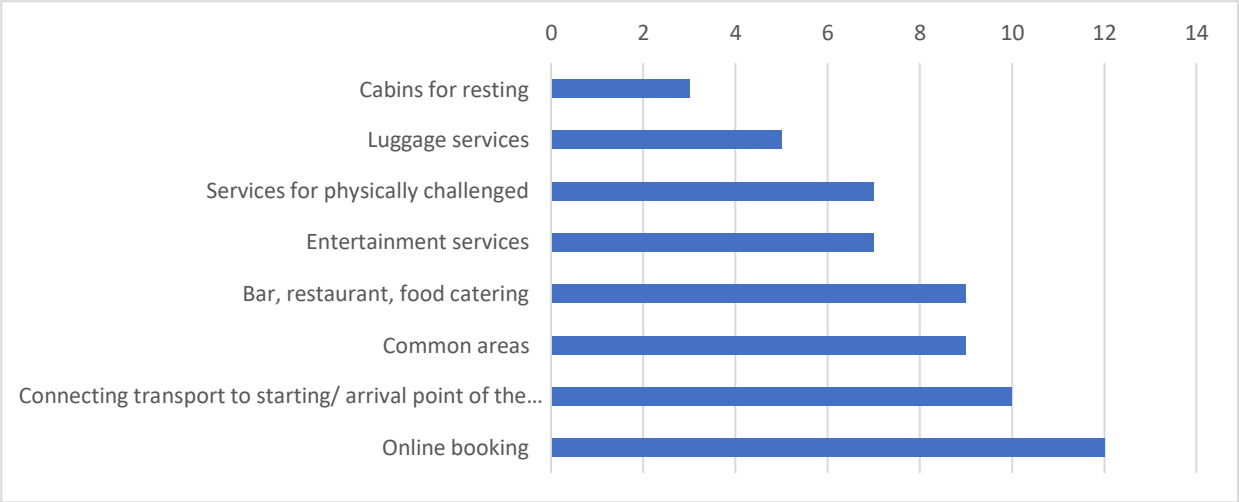
- Online booking is a crucial aspect, yet in some cases it is not of a good quality, and hence needs to be improved;
- The most important are availability of information on the Internet - to be able to plan in advance in the simplest way possible, accommodation and type of transport.
- It is important, to increase travellers' satisfaction, to have all information on one spot online, to have all information under control;
- That everything is available to us on our mobile phones, that we can see at any time where and how we can go and with what type of transport, and that all forms of transport are generally available to us so that we can travel more easily.
- Buying tickets easily by exploiting ICT tools should be a priority.
- The already available digital tools are satisfactory and work well. It would not be bad to better cross-border advertising of some events during the season in the form of some notices, this would help for better connectivity and more frequent travel.

Better information should be prioritized as regards all aspects of the travel experience, including the stay at the destination. The availability of public transport, clear indications of the routes of the transport so that a person who doesn't know the city can easily understand which kind of bus or train should take to reach the destination, availability of taxi, maps guiding the travels in the city, indications for tourists for main attractive and cultural sites.

2) *Please consider the question on the set of services that were (in some cases) available to travellers during their last trip to Croatia/Italy (like for instance Connecting transport with the starting/arrival point of the journey, Online booking, Services for physically challenged passengers, and so on).* ***Do you think such services have been used by many passengers, or at least would have been exploited by most of them, if available? Could you name one aspect that, above others, in your opinion should be strengthened in order to increase the satisfaction of travellers?***

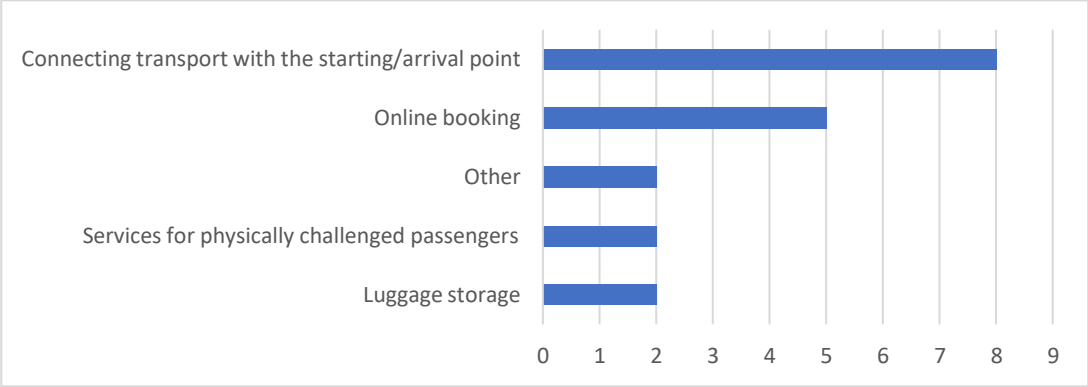
Of course, it is hard to compare services that are in some cases available for most types of transport modes (good connections) with services that are specific to some transport modes, only (such as cabins for resting). However, results show that in general most operators believe that services such as online booking, food services and transport connections with the starting/arrival point are those that are used the most by travellers (see figure 28):

Figure 28: Services most used by passengers according to the interviewed panel



We also ask to indicate the single aspect capable of increasing travellers' satisfaction, hence representing a natural candidate for financial and organizational investments (figure 29). Connecting transport with the point of departure/arrival and booking online emerge as the two priorities, suggested by 8 and 5 respondents, respectively. Also, luggage storage and services for the physically challenged have been mentioned by different respondents (2), while other options were only mentioned, in total, by two respondents (the sum exceeds the number of interviewed actors since some proposed two services *ex aequo* as the most relevant).

Figure 29: Key aspect to increase travellers' satisfaction mentioned by the panelists



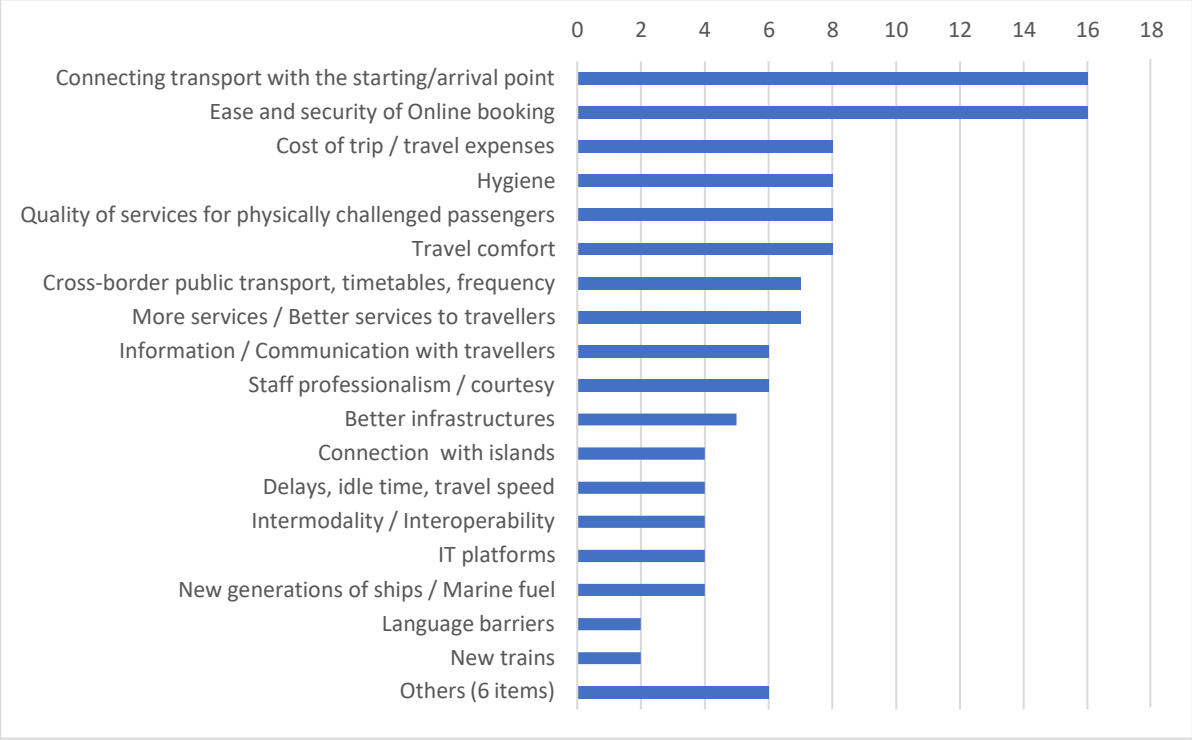
3) *Please consider the question on the relevance of specific aspects/services (the broad question which is not referred to the last trip).* ***Which aspects do you believe are crucial for travellers? What could be done to improve such key-services, and which are the main barriers that hinder such improvements? Furthermore, which do you think is the level of satisfaction of actual travellers? Which are the aspects where there is more room for improvement?***

The panel provided many relevant comments and judgements on different aspects. We have reported a summary in Figure 30, gathering the category that emerged, and grouping similar or strictly related topics (e.g. information to travellers and communication with travellers have been grouped). All respondents indicated a need or opportunity to take action on the reported aspects. On average, the panel evaluated the travellers' satisfaction 3 on a scale from 1 to 5.

Once again it emerges that operators consider the connection with the starting and ending points (together with the online booking services) to be crucial. In fact, this aspect meets with unanimous consensus, which becomes even more evident if we consider that the importance performance analysis also revealed it to be important for travellers, with a level of satisfaction that could be widely improved (3.7 out of 5).

Since part of the interviews was open to general suggestions / consideration, some of the statements collected do not strictly pertain to the categories listed in the figure 30. Several statements provided insights on perspectives that go beyond the assessment of importance / cruciality. Some of these are listed below. Please, notice that although the sentences are quoted in inverted commas, this was done just to evidentiate the origin of statements given in interviews, but are nonetheless summaries of parts of conversation and should not be intended as verbatim transcripts.

Figure 30: aspects mentioned as most relevant in interviews with operators (number of mentions in the interviews)



- *"National legislation and systems are obstacles, so projects are quite important as they try to prove how much it takes to change some attitudes in legislation to really encourage multimodality in public transport."*
- *"We should think more strategically, and make changes regionally and locally"*
- *"We are going step by step with all these projects and this is a good way to improve intermodality."*
- *"Supply improvement should precede demand in order to boost the change."*
- *"Scale economies and economic advantages from internationalisation are the preconditions for the introduction of public transport and new lines are changing."*
- *"Factors like the competitiveness of the region, Schengen, are enabler of more leisurely and faster travel, ie less crowds and waiting at the borders."*
- *"The game changer would be to build a high-speed railway."*
- *"Business people would look at price/speed ratio."*

5. Summary of main findings and policy implications

In this section we summarise what we believe to be the most interesting results of our analysis, to then briefly discuss the implications of these results in terms of possible policies aimed at improving the travel experience between Italy and Croatia in terms of sustainability.

In order to better focus on policy implications, we distinguish results that have more relevant implications for mobility policy to be developed at the local level, at the destinations, from those that are more relevant for policies related to country-to-country transfer.

As for the mobility policy implications at the local level, our study reveals at least two major indications:

a) a number of elements provide a favourable environment to the adoption of car-dependence reduction policies at local level;

b) connections with islands and increased accessibility for physically challenged people are at the top of priorities as criticalities.

Some evidence, among those detailed in previous sections, provide support to our conclusions.

- Although the vast majority of travellers travel cross-border by car, only 37% of the respondents stated that they used their car systematically during their stay, while more than 61% of travellers used the public transport frequently during the stay and 15,3% used the bicycle. The higher propensity to use alternative means to the car for local transfers compared to cross-border travel is also a finding of other previous studies.
- Both questionnaire respondents and the interviewed panel underline the importance of the connectivity with the starting point and arrival point. For our sample the importance of this aspect is high (>4 out of 5), and particularly high for Croatian respondents. Moreover, the importance-performance analysis shows that connectivity is among “critical” factors (Criticality < 1), i.e. factors that are important and perform relatively poorly This aspect is relevant insofar as it represents an indirect indicator of the possible propensity of a significant part of the sample not to use the car, at least for the first or last miles of the journey. Further confirmation of this comes from the fact that a relevant share of travellers (57,4%) stated that they had a cross-border multimodal trip. The adoption of public transport in this cluster is significantly higher than in the sample (around 68%).

- According to the Kano analysis the respondents are mainly in favour or indifferent to the implementation of pedestrian areas / areas restricted to zero-emissions vehicles. Together with the availability of free bikes, this feature is seen as the most attractive, although the same analysis also shows that they are not seen as critical.
- In our sample, the percentage of travellers showing very favourable attitudes towards a combination of traffic restriction policies, emission reduction, development of public transport also cross-border is at least 17.1% ("Deep Green" segment). This segment is especially promising for the future development of travel and tourism because it is on average younger than the sample, has a higher-than-average education rate and stays in the destination country on average longer than the rest of the travellers. They have declared, however, a significantly lower income than the average.

As for the cross-border mobility policy implications, in addition to what can be deduced from the above, the Kano analysis highlights that for the respondents the reduction of environmental impact of maritime traffic and the improvement of accessibility for disabled people are the main priorities, followed by the improvement of the connectivity with islands. Moreover, Interviews both operators and respondents highlight connectivity with departure and destination points as critical travel factors, together with ease of online booking.

As for the use of public transport for the whole trip, there is little doubt that the demand for travel by public transport can increase, in the face of improved connectivity and new transport services in line with expectations. In fact: a) the share of non-car trips is low but significant (16% for buses and trains, about 7% for airlines); b) the share of those who state that they never or hardly ever use the car during their stay is significant as well (17,1%); c) a relevant part of the trips (40,8%) already involve, to varying degrees, one or more modal shifts. What is in doubt, actually, is whether new services would shift demand from the car to public transport or simply increase overall demand, opening up new travel opportunities to hitherto uninterested segments. The real challenge is therefore to trigger the modal shift for existing demand. For this to happen 'technical' solutions (new and better transport lines) are a necessary but not sufficient condition. It is necessary to meet the qualitative (services, comfort, etc.) and logistical (accessibility and connectivity in the first place) requirements indicated as priorities by the demand but also repeatedly pointed out by the panel interviewed.

A first key element to consider is that the majority of trips are for recreational purposes (holidays and vacation account for 70.6% of trips) and the sample responses indicate that travellers are particularly demanding with regard to comfort and travel-related services. In fact, our analysis reveals a segment (labelled 'Easy & Comfortable') that is characterised by a search for comfort and a particular demand for services. It is a high-income segment, which makes shorter trips on average than the sample and accounts for 20.1% of actual travellers. This segment, together with the "Deep Green" mentioned above, account for about 30% of travellers (net of overlaps) and in our opinion represent the main target for a marketing policy aimed at the use of public transport services, appropriately calibrated to the distinct preferences of the two segments. The behavioural and motivational analysis that will be developed for the Deliverable 3.1.3. (due for the end of 2021) will deepen this aspect.

6. Preliminary exploration on COVID impact on travel safety perception

The conclusions drawn from the demand study were obtained with reference to a "normal" situation. In fact, the questionnaire used travel and conditions prior to the Covid pandemic as a reference for the answers. This choice was necessary in order to avoid that the answers were strictly linked to a situation that it is legitimate and desirable to think of as transitory.

The situation created by the pandemic, although exceptional, could have long-term effects. The pandemic had a strong impact on mobility and traveling, as regards both short-range daily commutes and cross-border trips. While, on the one hand, the impact has been exogenous (i.e., driven by travel restrictions imposed by national authorities to hinder the mobility of people and consequently the spreading of the virus and its variants), it is safe to infer that also endogenous determinants played a crucial role. Travelling with any transport mode other than private vehicles entails interaction with other people (passengers), typically in closed environments (in a bus, on a train, on public transportation system), with social distancing sometimes difficult to maintain. This has ingenerated fears and negative attitudes towards modal alternatives where passengers share common spaces that bear the potential of affecting not only generic predispositions and feelings,

but also actual behaviours. Even when travel restrictions are lifted, a share of commuters/travellers with a long track record of public transport use might switch mode and opt for private cars, in the wake of the need to avoid finding themselves in closed spaces and crowded environments.

The effects on COVID on behavioural patterns and attitudes towards different modal alternatives will be investigated in detail as part of the behavioural analysis which will be performed over the next months, having an output in deliverable D3.1.3. However, to have some preliminary insights and to take into account a phenomenon with unprecedented impacts on personal mobility, the MIMOSA team performed a preliminary analysis aimed at collecting some evidence on i) the change in modal choices that occurred after the outbreak of the covid emergency; ii) the changes in the perception of safety with reference to different modal alternatives, and iii) the relevance that both traditional (punctuality and comfort) and new (social distancing) attributes of public transports (buses, trains, etc.) have in the mind of commuters and travellers. Further, as regards social distancing we also applied the Kano model to investigate more in detail how it is perceived by respondents.

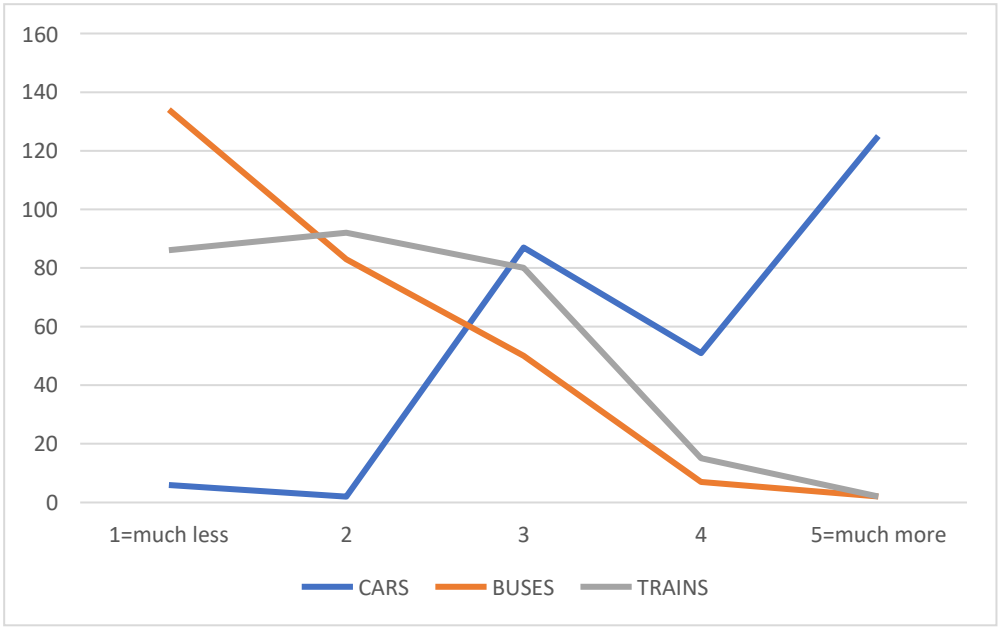
We structured a lean survey that has been distributed to a convenience sample, and we gathered 276 replies. 160 respondents were male and 116 females, with younger age-groups being over-represented as only 36% of the sample is 30 years old or older. This has clearly implications for the generalizability of the findings, as youngsters are likely to be less worried about the consequences of covid infection, thus more likely to maintain old habits notwithstanding the new scenario.

However, results show that a solid majority of the sample now sees private mobility as much safer compared to the pre-covid era, while the opposite happens for transport modes that entail sharing of spaces with strangers, such as in the case of public transport, buses and trains. This pattern clearly emerges in Figure 31. Respondents were asked to answer the question “Compared to the pre-covid situation, how safe do you feel now using the following transport modes?”, adopting a 5 point scale ranging from 1 (I feel much less safe) to 5 (I feel much safer).

As regards car use, almost no respondent feels less safe now: the few units suggesting they feel less safe to use the car probably interpreted the question in a broader sense, as (also) the use of cars entails traveling and doing activities out of home that are perceived as risky. 87 Respondents state their safety perceptions did not change over the past months, while 176 respondents (64%) feel safer now (and almost one respondent out of two, 45% of the sample, feel much safer). The opposite

trend characterizes, on the other hand, transport modes entailing social interaction such as trains and buses. A small minority of respondents answers to feel safer now: perhaps, for some individuals the fact that now trains and buses operate with a limited number of passengers represents a factor that increases perceived safety of the overall trip, whereas safety is likely to be referred to personal safety rather than epidemiological safety. However, while for a relevant share of respondents feelings of safety to use trains and buses did not change (80 and 50, respectively), an overwhelming majority of respondents considers this type of transport mode less safe, compared to the pre-pandemic age. More in detail, 217 respondents (81%) feel less safe when on a bus trip: 31% feel marginally less safe, and one out of two (50%) feel much less safe. Similarly, almost two thirds of the sample (64%) feel less safe while traveling on trains, with 31% answering that they feel much less safe. Buses and trains hence share similar trends, with differences such as the more pronounced share of respondents feeling much less safe on buses compared to trains, probably given the overcrowding that is harder to contrast on many bus lines compared to trains. As regards the latter, further, relevant differences in the answers could be ascribed to both subjective factors and objective ones: some trains guarantee social distancing thus project feelings of safety, while others are still crowded, even during the months characterized by covid restrictions.

Figure 31: perceived safety of travel modes



A crucial aspect to investigate is how these modified perceptions and attitudes towards different transport modes translate into actual changes in behaviours. Clearly, as the goal of the project is to trigger a shift to more sustainable cross-border mobility, attitudes and feelings represent important behavioural antecedents. However, if we lack perceived behavioural control, we fail to turn intentions and predispositions into actions (so-called attitude behaviour gap), so that no practical result will be achieved. Further, in the specific case of the covid pandemic, the result might be counterproductive for environmental sustainability of traveling behaviour. Although private cars represent a broad and heterogeneous category encompassing models that entail entirely different degrees of polluting emissions and impacts, typically they are considered as the least sustainable option, compared to public transportation, buses and trains. However, if this might be true with reference to the environmental side of sustainability, one might speculate that in times of covid pandemic private cars represent the socially sustainable option, preventing travellers from sharing closed environments and the subsequent risks. Environmental and social dimensions of sustainability could be hence speculated to operate in diverging directions. Figures 32 and 33 illustrate for each considered transport mode the changes in perceptions of safety vs actual behavioural changes. Answers were given to a 1-to-5 point scale. We assume that intention to adopt a specific transport modes is a proxy of actual behaviours, although we are aware that, while intentions represent the closest antecedent of behaviours (Fishbein & Ajzen, 1975), the actual link depend on subjective or contextual factors.

Figure 32: change in perceived safety of transport modes.

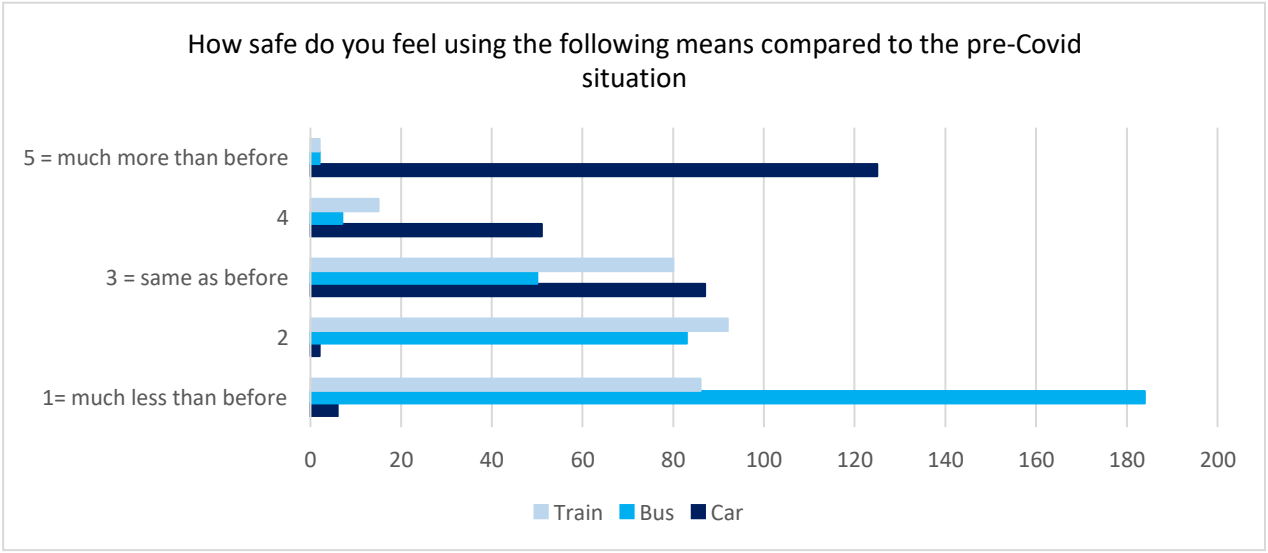
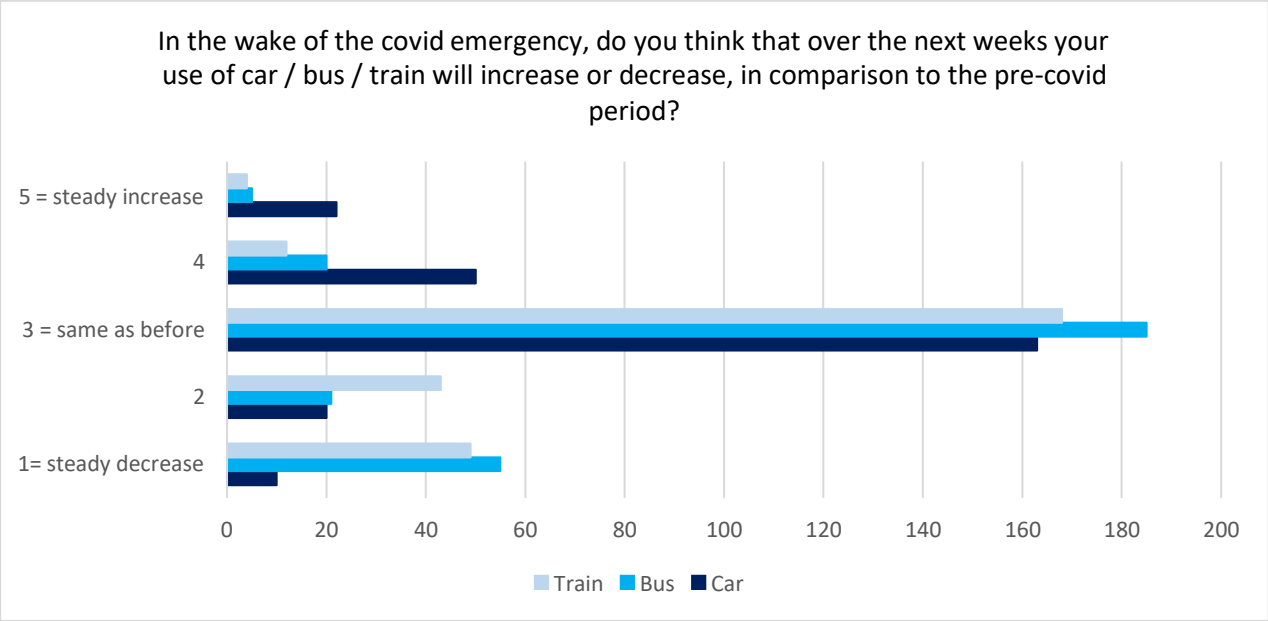


Figure 33: intention to change transport mode use

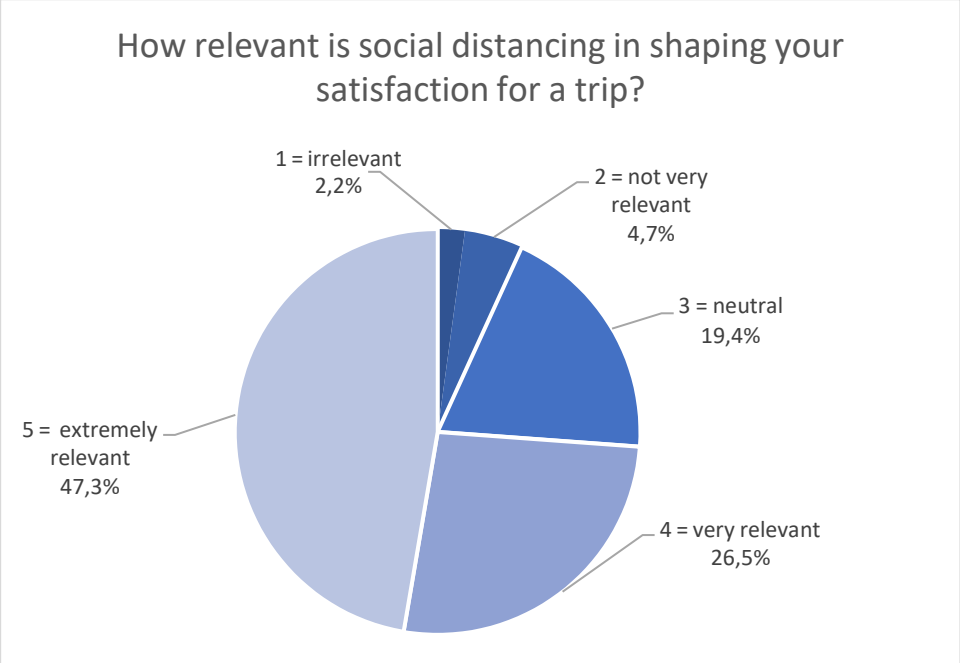


The first result that clearly emerges from the collected evidence is that (intentions about) behavioural changes are consistent with the new feelings of safety triggered by the pandemic. That is, cars are perceived as safer, and accordingly people intend to use them more in the future, while buses and trains are perceived as more risky, and people intend to use them less in the future. However, the magnitude is different as the share of those who actually believe will increase the use of private cars (and decrease the use of buses and trains) is smaller in comparison to the share of those that feel cars are much safer (and buses and trains much more dangerous). As a matter of fact, the use of cars, buses and trains is expected to remain constant by 61%, 69% and 63% of respondents, respectively. So roughly two thirds of the individuals who participated in the survey affirm that they are not likely to change their travel behaviours, although their perceptions about the risks associated with different transport modes have been highly impacted by covid. This could be primarily explained by the lack of alternatives: it could be, for instance, the case of households where there are no cars for all members of the family, so that some of these will have no other choice than travelling with modes alternative to private vehicles, regardless of their fears about social distancing and contagion. Or it could be the case of commuters that would find it extremely time-consuming to use private cars for their daily trips (it is the case for instance of people working in big urban centers where streets are congested and parking is difficult and expensive).

31% of respondents are going to use the car more than what they used to do prior to the pandemic, while 28% are going to use buses less, and 34% are going to use trains less. The covid emergency is hence going to have a practical impact on the modal choices of roughly one third of the sample being investigated.

The obvious determinant of answers to above transport mode perception and intention is of course the perceived risk of infection, which can be measured as a variable related to the importance assigned to social distancing. Thus we investigated the role played by social distancing, both through its relevance in shaping satisfaction (figure 34) and on its role in terms of prerequisites rather than additional benefit, through the Kano methodology (figure 35). As we expected, almost half of respondents consider it extremely relevant (4%7,3), while only a marginal minority (6,9%) consider it either irrelevant or only marginally relevant (Figure 34).

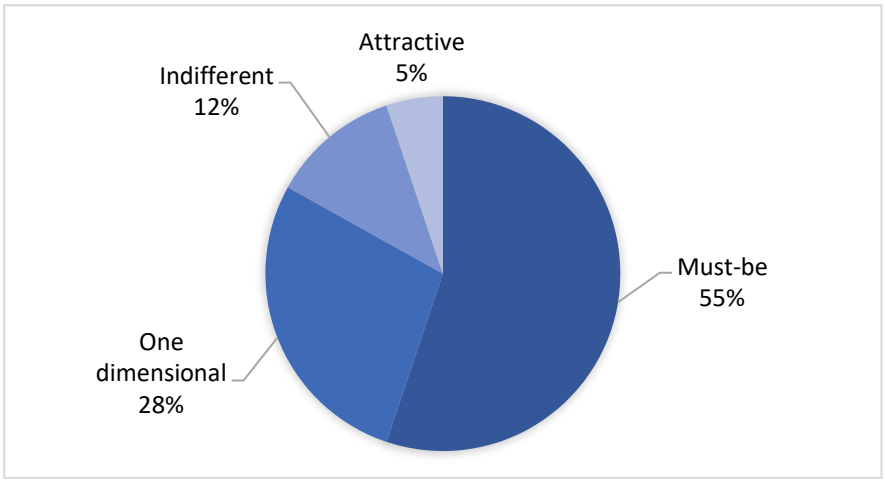
Figure 34: Importance of social distancing in shaping satisfaction for a trip



The Kano methodology highlights that 55% of respondents consider social distancing a prerequisite for any trip, given the current circumstances and the risks associated with the pandemic. In case of overcrowding of transport modes, these respondents would experience great disappointment, looking for alternatives whenever available. 28% of respondents consider social distancing

favourably so that they are satisfied whenever they travel in a situation where the latter can be guaranteed, while are disappointed if there is no social distancing.

Figure 35: Role of social distancing in shaping satisfaction for a trip



A minority of respondents is not expecting social distancing when travelling so it is not disappointed if this cannot be guaranteed, yet show favourable predispositions towards it and are satisfied whenever present. There is also a share of respondents (12%) who remain indifferent to social distancing, so that they do not base their satisfaction on the evaluation of the presence vs absence of such a feature

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APPENDIX. Questionnaire adopted for the survey

01. Have you ever travelled to Croatia*?
- No and I have no plans to do it
- No but I am willing to
- Yes
- Yes, and I have plans to do it again

* ("Croatia" is substituted with "Italy" in the Croatian version of the questionnaire)

If answer to Q01 is "Yes" or "Yes, and I have plans to do it again" the questionnaire skips to 04

If answer to Q01 is "No but I am willing to" the questionnaire skips to 03

02. Please state how each of the following reasons is relevant in your decision not to consider Croatia as a possible destination for a trip (1=not relevant at all ; 5= extremely relevant)
- It is too far away
- The duration of the trip is excessive
- It is not an attractive destination
- The journey is uncomfortable
- The trip is too expensive
- Other (please specify)

If answer to Q01 is "No and I have no plan to do it" the questionnaire skips to 23

03. Why are you planning to go to Croatia in the future?
- Business/work related
- Visiting relatives
- Tourism
- Holiday
- Other (please specify)

If answer to Q01 is "No but I am willing to" the questionnaire skip to 18

04. Prior to 2020 and the COVID pandemic, how often did you travel to Italy/Croatia?
- Only once
- Two or three times
- More than three times but less than once a year
- About once a year
- Two or three times a year
- Several times a year

05. What is your main reason for travelling to Italy/Croatia?
- Business/work related
- Visiting relatives
- Tourism
- Vacation
- Other (please specify)

06. Did you ever go to Croatia for multiple purposes?
- No
- Business + visiting relatives
- Business + tourism
- Visiting relatives + tourism
- Other (please specify)

07. Please, consider your last trip to Italy/Croatia. What was the origin of the trip?

8. What was the destination of the trip?

9 . Check the options corresponding to your journey experience / multiple answer

I travelled:	alone	O		
	with my partner	O		
	with kids 14 or less	O 1	O 2	O 3 or more
	with my parents	O 1	O 2	
	with relatives	O 1	O 2	O 3 or more
	with friends	O 1	O 2	O 3 or more
	with colleagues	O 1	O 2	O 3 or more
With an organized group		O		
	Other (please specify)	O		

10. Who organized the last trip?
- I organized it
- Other family members organized it
- A friend organized it
- My company (or a work-related institution) organized it.
- A travel agency organized it
- Other (please specify)

11. Who paid for your last trip? (consider only travel expenditures, e.g. ticket price)
- I paid / my family paid
- my company/organization/institution paid
- other (please specify)

12. Including the journey, how many days did your last visit to Croatia/Italy last?

13. Where did you stay? - / multiple answer

- Private house/apartment (options: private, relatives; partner; friends, etc.)
- Hotel (options: 1 - 5 where 1=budget and 5=luxury)
- Apartment rental
- Camping
- On my boat/yachts
- Other (please specify)

14. How did you travel from Italy to Croatia (from Croatia to Italy)?
- by air (check if low cost airline)
- by sea (check option: cruise, ferry line, private sailing boats/yachts, others (specify)
- by land (check option: private car, car rental, train, bus, bicycle, other to specify)

15. Did you bring bicycles with you?
- Yes
- No

16. Besides the main transportation mode, which other modes did you use during the journey from your home in Italy (Croatia) to your accommodation in Croatia (Italy)?
- private car
- rental car
- private motorcycle
- rental motorcycle
- long range bus transport
- local public transport
- taxi
- train
- bicycle
- other (please specify)

17. While abroad in Croatia (Italy), which transport modes did you use for your local trips?

	Never	Once or twice	Some times	Often but not every day	Every day
Private car					
Rental car					
Private motorcycle					
Rental motorcycle					
Long range bus transport					
Leave this blank					
Local public transport					
Train					
Taxy					
Bicycle					
Other (please specify)					

If answer to Q05 is NOT “Tourism” the questionnaire skip to 19

18. Please rate the relevance of the following aspects when choosing Croatia (Italy) for your vacation, from 1 (irrelevant) to 5 (extremely relevant):

	1 Irrelevant	2	3	4	5 Extremely relevant
Nature, landscape					
Sea & beach					
Water sports					
Trekking					

Relax					
Adventure					
Arts, culture, museums					
Food & wine					
Folklore					
Music, concerts					
Other (please specify)					

19. Please rate the relevance of the following benefits when choosing Croatia (Italy) for your vacation, from 1 (irrelevant) to 5 (extremely relevant):

	1 Irrelevant	2	3	4	5 Extremely relevant
New experiences					
Relax					
Contact with nature					
Socialising					
Personal achievement					
Family experience					
Luxury and fashion					
Escaping solitude					
Escaping boredom					
New knowledge					
Other (please specify)					

If answer to Q01 is “No but I am willing to” the questionnaire skip to 21

20. Please consider your last trip to Croatia/Italy. Please answer about the use or not of the following services

	I used it	I didn’t used and I was not interested in using	I didn’t used but I would have used if available
Online booking for the travel			
Connecting transport with the starting point of the journey			
Connecting transport with the arrival point of the journey			
Services for physically challenged passengers			
Luggage storage			
Bar, restaurant, food catering services			
Cabins for resting			
Common areas			
Entertainment services (movies, slot machines, play area for kids, wellness & spa, etc.)			

21. Now, for each of the following aspects of your journey, please express your satisfaction on a scale ranging from 1 (extremely dissatisfied) to 5 (extremely satisfied)

	1 Extremely Dissatisfied	2	3	4	5 Extremely Satisfied	Not applicable
Ease of online booking for the travel						
Duration of the journey						
Connecting transport with the starting point of your journey						
Connecting transport with the arrival point of your journey						
Quality of services for physically challenged passengers						
Luggage storage						
Quality of bar, restaurant, food catering services						
Comfort and quality of cabins for resting						
Hygiene of the common areas						
Hygiene of individual areas (e.g., cabin)						
Staff courtesy						
Staff professionalism						
Entertainment services (movies, slot machines, play area for kids, wellness & spa, etc.)						
Overall comfort of the trip						
The overall cost of your journey						

22. Please rate how important you consider each of the following aspects for a trip to Croatia/Italy (on a scale ranging from 1=irrelevant to 5=extremely important)

	1 Irrelevant	2	3	4	5 Extremely Important	Not applicable
Ease of online booking						
Connecting transport with the starting point of your journey						
Connecting transport with the arrival point of your journey						
Quality of services for physically challenged passengers						
Luggage storage						
Quality of bar, restaurant, food catering services						
Comfort and quality of cabins for resting						
Hygiene of the common areas						
Hygiene of individual areas (e.g., cabin)						
Staff courtesy						
Staff professionalism						

Entertainment services (movies, slot machines, play area for kids, wellness & spa, etc.)						
Overall comfort of the trip						
The overall cost of your journey						

23. Your gender is
    - Male
    - Female

24. Your age is:

25. Your nationality is:

26. Your city of residence is:

27. Your family status is
    - single
    - in a relationship

28. How would you rate your household income, compared to the average of your Country?
    - much below average
    - below average
    - average
    - above average
    - much above average

29. What is your occupation?
    - Student
    - Autonomous worker
    - Dependent employee
    - Unemployed
    - Retired

30. What is your highest degree?
    - Primary school
    - Secondary school
    - High school
    - Bachelor degree
    - Master degree
    - Doctoral degree
    - Other

31. Please write three words expressing what you expect from the travel from Italy to Croatia (Italy) [the travel itself, not the stay abroad]

32. If you want, you can leave a comment.

(thanks follow)