TRAVEL RISK PERCEPTION IN A HEALTH CRISIS CAUSED BY THE COVID-19 VIRUS: THE CASE OF SERBIA

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Abstract

According to the duration of the health crisis caused by the COVID-19 virus, this study examines Serbian tourists' perception of risk (travel risk, destination risk, health and psychological risk, and financial risk) in two different periods of the crisis. The collection of primary data was performed using the questionnaire technique, and the research was conducted during May 2020 (363 respondents) and January 2021 (360 respondents). The research findings revealed that the perception of risk is higher in the first period of the health crisis compared to the second observed period, except for health and psychological risk (higher in the second period of the crisis). After observing both periods of health crisis and the examined control variables (gender, age, monthly income, level of education, travel intention, crisis period), the findings of linear hierarchical regressions indicate that the perception of travel risk and health and psychological risk is significantly influenced by education and travel intention, while the perception of destination risk and financial risk is influenced by travel intention. The results of the cluster analysis identified three characteristic clusters ("carefree", "relaxed", and "concerned") and a change in cluster composition during two periods of the COVID-19 crisis. The results of the study are discussed, the implications are stated, and the directions of further research are suggested.

Implications for Central European audience: The study's findings contribute toward understanding the risk perception of travel in the period of health crisis caused by COVID-19 infection, which can help destination and marketing managers form strategies to reduce risk perception, which is crucial for the recovery of the national and global tourism industry. Also, the findings of the cluster analysis have significant marketing implications for travel organizers and tourist destinations since the recovery of tourism will depend on their ability to develop strategies to attract different segments of Serbian tourists in the crisis and post-crisis period.

Keywords: risk perception; travel behaviour; cluster analysis; COVID-19; Serbia
JEL Classification: L38, Z33

Introduction

The current health crisis COVID-19 indisputably affects the decline in activity in all economic sectors and especially affected the tourism sector and epidemiological measures that include movement restriction struggle the spread of infection between tourist destinations (Khalid et al., 2021; Sánchez-Cañizares et al., 2020; Grančay, 2020). This is the biggest crisis in tourism without precedent, and UNWTO data indicate a decline in international arrivals by 74% in 2020, primarily due to travel restrictions and a huge drop in consumption, while the loss of export revenues is estimated at 1.3 trillion US dollars (UNWTO, 2021). Therefore, tourism is most sensitive to health and security crises, economic and political crises, as well as natural disasters (Çakar, 2020; Milićević & Ervaćanin, 2016). The health crisis caused by the COVID-19 virus has not avoided tourism in the Republic of Serbia, as evidenced by statistics that indicate a total decline in arrivals of 50.7%, while the number of arrivals of foreign tourists is lower by 76%. The data for arrivals of domestic tourists indicate a decline of 24%, which implies that tourist flows during 2020 due to the epidemic were directed to travel within the country (Statistical Office of the Republic of Serbia, 2021). From the beginning when the pandemic was declared until today (December 5, 2021), 265,684,258 cases of COVID-19 cases have been confirmed in the world, of which 5,236,719 died, and 21,069,977 are active cases (Worldometer, 2021). As far as the Republic of Serbia is concerned, 1,262,419 cases and 11,876 deaths have been recorded so far as a result of the COVID-19 virus (Worldometer, 2021), and the epidemiological situation is stable with a declining disease in all parts of the country, given that currently 45% of the population is fully (revaccinated) vaccinated against COVID-19 (Our World in Data, 2021).

Due to the COVID-19 health crisis, travel decisions necessarily involve risk perception, not only because of uncertainty about the conditions and epidemiological situation at the destination but also because of the potential negative outcomes associated with the travel decision (Chang, 2009; Sánchez-Cañizares et al., 2020). Health crises have shown a certain frequency in recent years, so there is a concern of tourists about the risks to their health, which certainly affects their intentions and choice of a tourist destination (Chinazzi et al., 2020; Lee et al., 2012; Sánchez-Cañizares et al., 2020). Numerous studies have examined the impact of risk perception on travel intentions during the COVID-19 health crisis (Abraham et al., 2020; Bae & Chang, 2020; Chua et al., 2020; Neuburger & Egger, 2020; Perić et al., 2021; Sánchez-Cañizares et al., 2020), but according to the duration of the health crisis caused by the COVID-19 virus, there is a lack of research examining risk perception and behavioural intentions during the crisis, and examining tourists´ risk perception at different stages of the health crisis. The purpose of this study is to examine the perception of risk related to travel and tourist behaviour in two different periods of crisis. The aims of this study are to: (1) examine risk perception; (2) examine changes in risk perception at different stages of the crisis; (3) examine the impact of crisis periods on risk perception when controlling the individual characteristics of respondents and travel intentions and (4) identify clusters based on risk perception in the context of the COVID-19 health crisis and examine changes in cluster composition during the two COVID-19 crisis periods.

1 Literature review

1.1 Risk perception in tourism

Every human activity, such as shopping, work, sports activities, using modern techniques and technology, is associated with a certain risk. It can be stated that risk is a constant companion of all human activities. The clearest definition of the term risk was given by Lowrance (1976), according to whom "risk is a measure of probability and severity of the manifestation of negative effects" (as cited in Andretta, 2014). Normative theory of decision-making in conditions of risk, i.e., the theory of expected utility in economic and psychological sciences defines risk as "the product of people's assessment of the severity of possible outcomes and their probability" (Loewenstein et al., 2001).

Tourists are exposed to numerous risks during their journey and stay in a tourist destination. In recent years, increasing attention has been focused on the study of the concept of perceived risk in tourism (Carballo et al., 2017). Wolff et al. (2019) highlight the difference in defining the concept of perceived risk in tourism. Tsaur et al. (1997) define risk in tourism as "the possibility of various accidents that could befall tourists during the tourist arrangement, during travel and stay in a tourist destination", while according to Sönmez & Graefe (1998a), the type of risk and value of risk depend on negative experiences during their journey abroad. Similarly, Reisinger and Mavondo (2006) define risk as "the possibility of danger, damage, or loss; and a chance or hazard", and according to Liu and Gao (2008) the risk is "subjective judgment on the uncertainty of the process and results of tourism activities" (as cited in Cui et al., 2016), while Le and Arcodia (2018) in their study suggest that the perceived risk be defined as "the sum of negative outcomes and the probability of their occurrence". The tourism literature recognizes the definition of perceived risk in alternative ways. Wolff et al. (2019) state that there are examples that equate perceived risk with feelings of fear, anxiety, or nervousness, but also the point of view of the authors Kozak et al. (2007), who equate risk with perceived probability. Based on the above definitions and the concept of perceived risk, it can be concluded that risk perception plays a key role in the travel decision-making process, as well as that it can change rational decisions regarding travel or choosing a travel destination (Kozak et al., 2007; Sönmez & Graefe, 1998b).

Risk perception research in tourism reveals that it is a multidimensional phenomenon (Carballo et al., 2017; Cui et al., 2016). Roehl and Fesenmaier (1992) explored in their study the perception of risk associated with travel and enjoyment, and with the use of exploratory analysis, they identified three dimensions of perceived risk: "physical-equipment risk, vacation risk, and destination risk". Lepp and Gibson (2003) examined the risk perception of young adults in the United States and have identified seven types of risks: "health, political instability, terrorism, strange food, cultural barriers, and the nation's political and religious dogma, and crime." Qi et al. (2009) examined perceived risk in American students in a case study of the Olympic Beijing Games. The results of factor analysis revealed four types of perceived risk: "personal safety, cultural, socio-psychological, and violence risk". The study of Fuchs and Reichel (2011) examined the relationship between first-time visitors and repeat visitors in terms of risk perception, and the results identified six types of risk: "human-induced risk, financial, service quality, socio-psychological risk, natural disaster and a car accident, and food safety and weather". Perić et al. (2021) conducted research related to the current COVID-19 pandemic and perceived risk, and the results of the factor analysis identified five

risk categories: "health risk, psychological risk, financial risk, destination, and travel risk". The above types of risks belong to the objective factors of perceived risk in tourism and relate to the negative consequences or negative impacts that may occur during travel and stay in a tourist destination (Cui et al., 2016). Subjective factors influencing risk perception are demographic variables such as age, gender, education level, and income (Floyd & Pennington-Gray, 2004; Gibson & Yiannakis, 2002; Lepp & Gibson, 2003; Pizam et al., 2004; Sönmez & Graefe, 1998a), then personality type, previous travel experience, culture and nationality and others (Kozak et al., 2007; Lepp & Gibson, 2003; Pizam et al., 2004; Reisinger & Mavondo, 2006; Seddighi et al., 2001).

1.2 Risk perception and travel behaviour in health crisis COVID-19

The theory of planned behaviour is most commonly used to explain and predict human behaviour (Chaulagain et al., 2020; Sánchez-Cañizares et al., 2020). According to this theory, a person's intention to behave is determined by his/her attitude (it has a direct impact on intention, which is then the main and direct cause of behaviour) by a subjective norm (perception of the individual influencing the intention to perform the behaviour) and perceived behavioural control, which represents the ability of individuals to perform certain behaviours (Eisen, 1991; Chaulagain et al., 2020; Sánchez-Cañizares et al., 2020). In tourism, the theory of planned behaviour is used to differentiate risk influences on travel decision making (Quintal et al., 2010), as well as to examine the decision-making process when choosing a particular tourist destination (Lam & Hsu, 2006). As evidenced by the results of numerous studies, perceived risk in tourism significantly influences the intention to change travel plans, travel to another travel destination or to avoid travelling to a particular travel destination (Caber et al., 2020; Chua et al., 2020; Deng & Ritchie, 2018; Floyd et al., 2004; Henthorne et al., 2013; Matiza, 2020; Perić et al., 2021; Pennington-Gray et al., 2011; Qi et al., 2009).

From the beginning of the health crisis caused by the COVID-19 virus until today, numerous research was conducted examining the impact of perceived risk on travel intentions. Sánchez-Cañizares et al. (2020) analysed the impact of perceived risk on travel intention during the current health crisis; the results indicate that perceived risk negatively affects attitudes and perceived behavioural control, as well as that perceived risk affects travel intention. Neuburger and Egger (2020) examined the relationship between COVID-19 virus perception, travel risk perception, and travel behaviour among tourists in Germany, Austria, and Switzerland. The research was conducted in two short periods of time, and the findings indicate that in the first period of the pandemic, the perception of travel risk was moderate, while the perception of travel risk in the second period of the pandemic increased significantly, which influenced the change in travel behaviour. Ivanova et al. (2020) analysed the travel intentions of Bulgarian tourists in the COVID-19 post-pandemic world, and the results of the research indicate the willingness to engage in travel, which will primarily depend on the overall perception of personal safety and security. Further, from the American tourism perspective, Chua et al. (2020) examined the role of the negative impact of perceived health risk, insecurity and mental well-being in shaping tourists' attitudes and behaviour regarding the temporary avoidance of global tourist destinations severely affected by the COVID-19 virus. The results of this study show that the negative effects of the health crisis caused by the COVID-19 virus significantly affected health risk, which led to insecurity and mental well-being, which are important predictors of tourists' attitudes and behaviour regarding temporary travel avoidance in certain tourist destinations. In their international study, Abraham et al.

(2020) investigated the impact of the COVID-19 pandemic on the travel attitudes and behavioural intentions, and the findings indicate that the perceived travel risk is negatively related to readiness to travel abroad and positively related to tourists 'willingness to travel within the country. Similar results were obtained by Perić et al. (2021), who examined the impact of perceived risk in Serbian tourists on travel intentions during the COVID-19 health crisis. Their results indicate that the perceived health, psychological, financial, and destination risks negatively affect travel intentions and that the perceived travel risk negatively affects international travel during the COVID-19 health crisis. Also, another study conducted among Serbian tourists indicates that due to the COVID-19 virus, tourists plan to change not only their destination and accommodation but also their behaviour in terms of making decisions not to travel or choose shorter trips, which is related to risk perception and anxiety (Bratić et al., 2021).

2 Methodology

2.1 Survey instrument

The authors applied a questionnaire used in the study of Perić et al. 2021 (see Appendix I) to measure the risk perception, which confirmed its reliability and consistency. Respondents assessed the degree of agreement with the statements in the questionnaire using a five-point Likert scale, and the intention to travel was measured by the answers "yes" and "no" (Floyd et al., 2004; Perić et al., 2021).

2.2 Data collection

The collection of primary data was done using the questionnaire technique, and the research was conducted in two time periods, through an online questionnaire, which was distributed on the social network Facebook. Sampling was performed by the method of sampling without probability, a suitable sample. In the first period, the research was conducted during May 2020 (363 respondents), while the research in the second period was conducted in January 2021 (360 respondents). The total sample consists of 723 respondents, and the basic characteristics of the sample are given in the following table.

Table 1 | Sample characteristics

	Period 1		Period 2	
	N	%	N	%
Gender				
Female	249	68.6	222	61.7
Male	114	31.4	138	38.3
Age				
18-30	55	20.2	35	18.8
31-40	93	34.2	63	33.9
41-50	78	28.7	49	26.3

51-60	38	14.0	28	15.1
61-74	8	2.9	11	5.9
Level of education				
High school	72	19.9	88	24.4
College degree	61	16.8	56	15.6
Faculty degree	141	38.8	144	40.0
Master/PhD	89	24.5	72	20.0
Monthly income[*]				
To 30.000 RSD	63	17.4	77	21.4
From 31.000 to 60.000 RSD	137	37.7	111	30.8
From 61.000 to 90.000 RSD	113	31.1	92	25.6
Over 91.000 RSD	50	13.8	80	22.2
I will travel during the COVID-19 health crisis				
No	91	25.1	174	48.3
Yes	272	74.9	186	51.7

Source: authors

There are 723 respondents in the entire sample, of which 471 (65.1) are women, and 252 (34.9) are men. Most respondents have completed higher education (77.9%). On average, the respondents were middle-aged (M=39.07; SD=11.95). Most respondents have a monthly income between 30,000 and 90,000 RSD (62.7%). Regarding the intention to travel, the majority of respondents intend to travel (63.3%), and out of 458 respondents who intend to travel, 251 (55.2) plan to travel in the country.

3   Analysis and results

Risk perception and changes in risk perception in different phases of the COVID-19 health crisis are shown in the following Table 2.

Table 2 | Reliability and descriptive statistics

	Period 1				Period 2			
	M (SD)	α	AVE	CR	M (SD)	α	AVE	CR
Travel risk	**3.23 (1.05)**	**0.84**	**0.53**	**0.85**	**3.22 (1.11)**	**0.87**	**0.63**	**0.89**
TR1	2.75 (1.25)				2.72 (1.24)			
TR2	2.93 (1.23)				3.07 (1.32)			
TR3	3.45 (1.36)				3.55 (1.33)			
TR4	3.63 (1.43)				3.60 (1.41)			
TR5	3.41 (1.47)				3.13 (1.51)			
Destination risk	**3.14 (0.91)**	**0.81**	**0.45**	**0.80**	**3.05 (0.90)**	**0.80**	**0.48**	**0.82**
DR1	3.64 (1.26)				3.56 (1.21)			
DR2	3.66 (1.16)				3.62 (1.18)			
DR3	2.79 (1.14)				2.80 (1.18)			
DR4	2.60 (1.23)				2.43 (1.16)			
DR5	3.00 (1.27)				2.83 (1.29)			
Health and psychological risk	**3.57 (0.93)**	**0.90**	**0.56**	**0.91**	**3.64 (0.89)**	**0.89**	**0.54**	**0.90**
HPR1	3.85 (1.16)				3.91 (1.15)			
HPR2	3.96 (1.22)				3.94 (1.15)			
HPR3	3.77 (1.10)				3.67 (1.09)			
HPR4	3.28 (1.23)				3.32 (1.22)			
HPR5	3.86 (1.22)				4.03 (1.01)			
HPR6	3.52 (1.30)				3.91 (1,27)			
HPR7	3.29 (1.24)				3.38 (1.28)			
HPR8	3.01 (1.23)				2.98 (1.28)			
Financial risk	**2.74 (0.98)**	**0.84**	**0.62**	**0.87**	**2.72 (0.99)**	**0.86**	**0.65**	**0.88**
FR1	2.64 (1.21)				2.61 (1.17)			
FR2	2.49 (1.08)				2.59 (1.16)			
FR3	2.89 (1.22)				2.92 (1.16)			
FR4	2.92 (1.23)				2.75 (1.23)			

Source: authors

Based on the data presented in the previous table, it can be noticed that the risk assessment is higher in the initial period of the health crisis compared to the second period, except for health and psychological risk, whose assessment is higher in the second period of the crisis.

Travel risk constructs, health and psychological risk, as well as financial risk have an average explained variance (AVE) above the set limit of 0.5 (Hair et al., 2010), while the construct risk of destination is slightly below the set limit. The value of composite reliability (CR) and reliability coefficient (Cronbach α) is above the lower recommended limit of 0.7 for all constructs (Hair et al., 2010).

For checking the influence of the period of a health crisis on the perception of risk when the individual characteristics of the respondents are controlled, a linear hierarchical regression was used. In the first step, only the influence of the control variables on the dependent variable is examined. In the second step, an independent variable is added to the model-the crisis period, where the initial period is coded with 0, and the second period with 1. Control variables are gender (0 - female, 1 - male), age, monthly income (0 - up to 60000 RSD, 1 - over 61000 RSD), education (0 - high school, 1 - everything else) and intention to travel (0 - no and 1 - yes). All control variables were dichotomously coded as dummy variables except the age of the subjects, which is a continuous variable. Dependent variables are travel risk, destination risk, health and psychological risk, and financial risk. A separate model was formed for each dependent variable.

Table 3 | Hierarchical linear regression

	Unstandardized coefficients		Standardized coefficient	t	p
	B	SE	β		
Period 1 and 2					
Travel risk					
Gender	-.018	.080	-.008	-.228	.819
Age	-.002	.003	-.017	-.464	.643
Monthly income	.092	.080	.042	1.145	.253
Level of education	.505	.094	.192	5.375	.000
Travel intention	-.710	.082	-.314	-8.610	.000
Crisis period	.118	.078	.054	1.509	.132
Destination risk					
Gender	.123	.071	.063	1.719	.086
Age	-.004	.003	-.048	-1.286	.199
Monthly income	-.068	.072	-.037	-.948	.344
Level of education	.107	.083	.048	1.277	.202
Travel intention	.386	.073	.201	5.270	.000

Crisis period	-.107	.070	-.058	-1.543	.123
Health and psychological risk					
Gender	-.140	.070	-.073	-1.989	.047
Age	-.001	.003	-.019	-.498	.619
Monthly income	.060	.070	.033	.855	.393
Level of education	.269	.082	.122	3.273	.001
Travel intention	-.400	.072	-.210	-5.546	.000
Crisis period	.083	.069	.045	1.214	.225
Financial risk					
Gender	-.072	.080	-.033	-.904	.367
Age	-.003	.003	-.038	-1.007	.314
Monthly income	-.180	.080	-.087	-2.259	.024
Level of education	.218	.093	.088	2.337	.020
Travel intention	-.402	.082	-.187	-4.911	.000
Crisis period	-.063	.078	-.031	-.815	.416

Source: authors

The period of crisis is not statistically significant in any model, which indicates that the respondents have the same perception of risk in the first and second period of the health crisis caused by the COVID-19 virus.

When both periods of health crisis are observed, the perception of travel risk is significantly influenced by control variables: level of education (β=0.19; p =0.00) and (β =-0.31; p=0.00). The level of education is positively related to the perception of travel risk. Respondents with higher education perceive a higher risk of travel. The travel intention is negatively related to the perception of this risk. Those who intend to travel perceive a lower risk of travel.

Destination risk perception is significantly influenced by travel intention (β=0.20; p=0.00). The travel intention is positively related to the perception of this risk. Those who intend to travel perceive a higher risk of the destination.

The perception of health and psychological risk is significantly influenced by control variables: level of education (β=0.12; p=0.00) and travel intention (β=-0.21; p=0.00), which in the same way affect the perception of travel risk as in the first model (model with control variables). The level of education is positively related to the perception of health and psychological risk. Respondents with higher education perceive higher health and psychological risk, while the travel intention is negatively related to the perception of this risk, more precisely; respondents who intend to travel perceive lower health and psychological risk.

The perception of financial risk is significantly influenced by control variables: level of education (β=0.09; p=0.02) and travel intention (β=-0.19; p=0.00), which in the same way

affect the perception of travel risk as in the first model (model only with control variables). The level of education is positively related to the perception of financial risk. Respondents with higher education perceive higher financial risk. The intention to travel is negatively related to the perception of this risk. Those respondents who intend to travel perceive lower financial risk.

Cluster Period 1

To select the best clustering method, agglomeration coefficients were calculated for five clustering methods (average, single, complete, ward and weighted), and the Ward method with a coefficient value of 0.982 was chosen. Ward's method was used to divide subjects into groups based on the perception of travel risk in a health crisis caused by the COVID-19 virus. Internal validity measures Silhouette Scores and Mantel value was used to determine the optimal number of clusters. This analysis was performed in the statistical software R 4.0.2 using the package den extend 1.14.0 and cluster 2.1.0. According to the results of these two measures, the best solution has 3 clusters.

The results of the ANOVA analysis indicate that there is a significant difference between clusters by travel risk ($F_{(2.360)}=289.61$; $p=0.00$), destination risk ($F_{(2.360)}=67.15$; $p=0.00$), health and psychological risk ($F_{(2.360)}=477.99$; $p=0.00$) and financial risk ($F_{(2.360)} = 55.77$; $p=0.00$).

Clusters and individual characteristics from the first period are shown in the following Table 4.

Table 4 | Cluster characteristics Period 1

	Cluster 1 Carefree		Cluster 2 Relaxed		Cluster 3 Concerned	
	N=43	11.8%	N=160	44.1%	N=160	44.1%
Gender						
Female	27	62.8	105	65.6	117	73.1
Male	16	37.2	55	34.4	43	26.9
Level of education						
High school	13	30.2	32	20.0	26	16.3
College degree	11	25.6	29	18.1	21	13.1
Faculty degree	13	30.2	59	36.9	69	43.1
Master/PhD	6	14.0	39	24.4	44	27.5
Monthly income						
To 30.000 RSD	10	23.3	33	20.6	20	12.5
From 31.000 to 60.000 RSD	20	46.5	53	33.1	64	40.0
From 61.000 to 90.000 RSD	8	18.6	48	30.0	57	35.6
Over 91.000 RSD	5	11.6	26	16.3	19	11.9
I will travel during the COVID-19 health crisis						
No	9	20.9	25	15.6	57	35.6
Yes	34	79.1	135	84.4	103	64.4

Risk perception			
Travel risk	1.527	2.343	3.482
Destination risk	1.667	3.075	2.950
Health and psychological risk	1.666	2.913	3.783
Financial risk	1.405	2.218	2.698

Source: authors

Cluster 1 (Carefree): There are 43 (11.8%) respondents in this cluster. This cluster is characterized by low estimates of all risks: travel (1.53), financial (1.40), health and psychological risk (1.67) and destination risk (1.67). The average age of respondents in this cluster is 39.88 years (SD = 12.72). The majority are female respondents (62.8%), and the majority of respondents have the tendency to travel (79.1%). About a third of the respondents in this cluster graduated from faculty (30.2%) or high school (30.2%). Most have monthly incomes ranging from RSD 31.000 to RSD 60.000 (46.5%).

Cluster 2 (Relaxed): There are 160 (44.1%) respondents in this cluster. The characteristic of this cluster is the relatively low assessment of all risks: travel (2.34), financial (2.22), and the average assessment of destination risk (3.07) and health and psychological risk (2.91). The average age of respondents in this cluster is 39.59 years (SD = 11.10). The majority are female respondents (65.6%), and the majority have the tendency to travel (84.4%). The majority of respondents in this cluster graduated from the faculty (36.9%). Most have a monthly income of 31.000 RSD to 60.000 RSD (33.1%) or 61.000 RSD to 9.000 RSD (30%).

Cluster 3 (Concerned): There are 160 (44.1%) respondents in this cluster. This cluster is characterized by a mediocre assessment of financial risk (2.69), travel risk (3.48), destination risk (2.95) and a relatively high assessment of health and psychological risk (3.78). The average age of respondents in this cluster is 38.61 years (SD = 11.02). The majority are female respondents (73.1%), and the majority have the tendency to travel (64.4%). The majority of respondents in this cluster graduated from the faculty (43.1%). Most respondents have a monthly income of 31.000 RSD to 60.000 RSD (40%) or 61.000 RSD to 90.000 RSD (35.6%).

Cluster Period 2

In order to compare the data from the two periods, in the analysis of the second period, the risk assessments given by the respondents were classified in relation to the clusters obtained from the previous period. For each respondent, the Euclidean distance of the risk assessment from the centroid clusters obtained in the previous cluster was calculated, and the respondent was classified in the cluster closest to him. Then, the average values of travel risk, destination risk, health and psychological and financial risk assessments of such classified respondents were re-selected.

The results of ANOVA analysis indicate that there is a significant difference between clusters by travel risk ($F_{(2.357)}=131,14$; $p=0.00$), destination risk ($F_{(2.357)}=15.68$; $p=0.00$), health and psychological risk ($F_{(2.357)}=140.64$; $p=0.00$) and financial risk ($F_{(2.357)}=130.53$; $p=0.00$).

The individual characteristics of the cluster from the second period are shown in the following Table 5.

Table 5 | Cluster characteristics Period 2

	Cluster 1 Carefree		Cluster 2 Relaxed		Cluster 3 Concerned	
	N=31	8.6%	N=229	63.6%	N=100	27.8%
Gender						
Female	18	58.1	146	63.8	58	58.0
Male	13	41.9	83	36.2	42	42.0
Level of education						
High school	16	51.6	59	25.8	13	13.0
College degree	4	12.9	36	15.7	16	16.0
Faculty degree	6	19.4	94	41.0	44	44.0
Master/PhD	5	16.1	40	17.5	27	27.0
Monthly income						
To 30.000 RSD	3	9.7	48	21.0	26	26.0
From 31.000 to 60.000 RSD	9	29.0	69	30.1	33	33.0
From 61.000 to 90.000 RSD	8	25.8	54	23.6	30	30.0
Over 91.000 RSD	11	35.5	58	25.3	11	11.0
I will travel during the COVID-19 health crisis						
No	8	25.8	103	45.0	63	63.0
Yes	23	74.2	126	55.0	37	37.0
Risk perception						
Travel risk	1.413		3.050		3.753	
Destination risk	2.040		1.715		2.102	
Health and psychological risk	2.062		3.896		4.357	
Financial risk	1.514		2.345		3.500	

Source: authors

Cluster 1 (Carefree): There are 31 (8.6%) respondents in this cluster. The characteristic of this cluster is the low assessment of all risks: health and psychological risk (2.06), travel risk (1.41) and financial risk (1.51) and destination risk (2.04). Compared to the first period, a decrease in the number of respondents in this cluster can be noticed. The average age of respondents in this cluster is 41.10 years (SD=12.96). The majority are female respondents (58.1%), and the majority show a tendency to travel (74.2%). About a third of the respondents

in this cluster have a monthly income of 31.000 RSD to 60.000 RSD (29%), and about half of the respondents graduated from the faculty (51.6%)

Cluster 2 (Relaxed): There are 229 (63.6%) respondents in this cluster. This cluster is characterized by a mediocre assessment of travel risk (3.05), a high assessment of health and psychological risk (3.90) and a low assessment of destination risk (1.72), and financial risk (2.34). An increase in the number of respondents belonging to this cluster can be seen. The average age of respondents in this cluster is 39.51 years (SD=12.95). The majority are female respondents (63.8%), and the majority show a tendency to travel (55%). About a third of the respondents in this cluster have a monthly income of 31.000 RSD to 60.000 RSD (30.1%), and most have graduated from the faculty (41%).

Cluster 3 (Concerned): There are 100 (27.8%) respondents in this cluster. This cluster is characterized by a high assessment of financial risk (3.50), health and psychological risk (4.36) and travel risk (3.75) and a low assessment of destination risk (2.10). The number of respondents belonging to this cluster has decreased compared to the previous period. The average age of respondents in this cluster is 36.95 years (SD=11.65). The majority are female respondents (58%), and the majority didn´t show a tendency to travel (63%). About a third of respondents in this cluster have a monthly income of 31,000 RSD to 60,000 RSD (33%) or 61.000 RSD to 9.000 RSD (30%). The majority of respondents graduated from the faculty (44%).

To compare changes in risk assessments in clusters between the two periods, the t-test for independent samples was used.

Table 6 | Changes in risk assessment in clusters between two periods

Cluster	Risk perception	Period	M	SD	t	df	p	η^2
Cluster 1 Carefree	Financial risk	Period 1	1.405	0.510	-0.898	72	0.372	0.011
		Period 2	1.514	0.524				
	Health and psychological risk	Period 1	1.666	0.527	-3.029	72	0.003	0.113
		Period 2	2.062	0.591				
	Destination risk	Period 1	1.667	0.773	-1.865	72	0.066	0.046
		Period 2	2.040	0.944				
	Travel risk	Period 1	1.527	0.528	0.824	72	0.412	0.009
		Period 2	1.413	0.658				
Cluster 2 Relaxed	Financial risk	Period 1	2.218	0.793	-1.565	387	0.118	0.006
		Period 2	2.345	0.782				
	Health and psychological risk	Period 1	2.913	0.449	-15.141	387	0.000	0.372
		Period 2	3.896	0.731				
	Destination risk	Period 1	3.075	0.655	21.748	387	0.000	0.550
		Period 2	1.715	0.570				

	Travel risk	Period 1	2.343	0.673	-8.986	387	0.000	0.173
		Period 2	3.050	0.819				
Cluster 3 Concerned	Financial risk	Period 1	2.698	0.729	-9.296	258	0.000	0.251
		Period 2	3.500	0.583				
	Health and psychological risk	Period 1	3.783	0.347	-10.679	258	0.000	0.307
		Period 2	4.357	0.519				
	Destination risk	Period 1	2.950	0.768	9.556	258	0.000	0.261
		Period 2	2.102	0.562				
	Travel risk	Period 1	3.482	0.404	-5.484	258	0.000	0.104
		Period 2	3.753	0.361				

Source: authors

In the first cluster, health and psychological risk were estimated to be significantly higher in the second pandemic period (M = 2.06; SD=0.59) compared to the first pandemic period (M=1.67; SD=0.53), t(72)=-3.03; p=0.00. The magnitude of the difference is moderate, η2=0.11.

In the second cluster, health and psychological risk were estimated to be significantly higher in the second pandemic period (M=3.90; SD=0.73) compared to the first pandemic period (M=2.91; SD=0.45), t (387)=-15.57; p=0.00 and the magnitude of the difference is large, η2=0.37. Destination risk was estimated to be significantly lower in the second pandemic period (M=1.72; SD=0.57) compared to the first pandemic period (M=3.08; SD=0.66), t(387)=21.75; p=0.00 and the magnitude of the difference is large, η2=0.55. Travel risk was estimated to be significantly higher in the second pandemic period (M=3.05; SD=0.82) compared to the first pandemic period (M=2.34; SD=0.67), t(387)=-8.99; p=0.00 and the magnitude of the difference is large, η2=0.17.

In the third cluster, financial risk was estimated to be significantly higher in the second pandemic period (M=3.50; SD=0.58) compared to the first pandemic period (M=2.701; SD=0.73), t(258)=-9.30; p=0.00 and the magnitude of the difference is large, η2=0.25. Health and psychological risk were estimated to be significantly higher in the second period of the pandemic (M=4.36; SD=0.52) compared to the first period of the pandemic (M=3.78; SD=0.35), t(258)=-10.58; p=0.00 and the magnitude of the difference is large, η2=0.31. Destination risk was estimated to be significantly lower in the second pandemic period (M=2.10; SD=0.56) compared to the first pandemic period (M=2.95; SD=0.77), t(258)=9.56; p=0.00 and the magnitude of the difference is large, η2=0.26. Travel risk was estimated to be significantly higher in the second pandemic period (M=3.75; SD=0.36) compared to the first pandemic period (M=3.48; SD=0.407), t(2587)=-5.48; p=0.00 and the magnitude of the difference is moderate, η2=0.10.

4   Discussion

In accordance with the aim of the study, the perception of risk was examined (travel risk, destination risk, health and psychological risk, and financial risk), and changing the perception of risk in different phases of the crisis and the impact of both periods of crisis when controlling individual characteristics and travel intentions. The cluster analysis was performed to divide the subjects into groups based on the perception of risk in the conditions of health crisis caused by COVID-19 infection. The findings of the research revealed that the risk assessment is higher in the initial period of the health crisis compared to the second observed period, except for the health and psychological risk, whose assessment is higher in the second period of the crisis. The level of risk perception in the first period of the crisis caused by the COVID-19 virus is in line with previous research that examined risk perception in health crises (Bratić et al., 2021; Cahyanto et al., 2016; Lee et al., 2012; Neuburger & Egger, 2020; Pine & McKercher, 2004; Sánchez-Cañizares et al., 2020). The level of perception of health and psychological risk is higher in the second period of the crisis, which is in accordance with the results of the study by Neuburger and Egger (2020) and Villacé-Molinero et al. (2021), who examined risk perception in two different periods. The increase in the perception of health and psychological risk can be attributed to the increase in the number of cases of COVID-19 virus and the appearance of new strains of the virus, and the increase can be attributed to the media and their permanent reporting. Given the previous health crisis, some research has shown that the media and social networks are one of the factors increasing risk perception (Cahyanto et al., 2016; Guidry et al., 2017; McKercher & Chon, 2004; Oh et al., 2020; Zhang et al., 2015), which was also confirmed in research conducted during the current health crisis caused by the COVID-19 virus (Chemli et al., 2020; Karasneh et al., 2021; Toanoglou et al., 2022).

In both periods of health crisis and the examined control variables (gender, age, monthly income, level of education, travel intention, crisis period), the research results indicate that the perception of travel risk is significantly influenced by the level of education and travel intentions. Respondents with a higher level of education perceive a higher risk of travel, which is in accordance with a study conducted among students and employees in higher education institutions in Macau (Agyeiwaah et al., 2021). Thus, people with higher education perceive a higher risk of COVID-19 infection and perceive travel as risky behaviour (Agyeiwaah et al., 2021; Reisinger & Mavondo, 2005; Sönmez & Graefe, 1998b). Those respondents who intend to travel perceive a lower risk of travel. This finding can be justified by the fact that travel itself has a hedonistic function. People travel for relaxation and rest and thus perceive a lower risk of travel (Aro et al., 2009; Perić et al., 2021), and previous studies have found that tourists with lower risk perception tend to deviate from the norm (Hajibaba et al., 2015). The findings of the study indicate that respondents who intend to travel perceive a higher risk of destination, which means that tourists during the current health crisis will carefully choose a destination with lower risk and avoid those destinations that have a high level of risk (Kozak et al., 2007; Reisinger & Mavondo, 2005; Seabra et al., 2013). Similar research has found that tourists consider domestic travel safer compared to international travel, believe that "home is safer than abroad" (Kock et al., 2020; Matiza & Kruger, 2021).

Health and psychological risk are influenced by control variables, level of education and travel intentions. Respondents with higher education perceive higher health and psychological risk, which is in accordance with previous research (Agyeiwaah et al., 2021; Golets et al., 2020;

Perić et al., 2021), while on the other hand, we have conflicting results which indicate that respondents who intend to travel perceive lower health and psychological risk. This result can be compared with a study that examined the perception of health risk and behaviour of tourists during the Bird flu epidemic (Avian influenza) and whose findings suggest that tourists are willing to take a higher level of health risk associated with travel (Aro et al., 2009). Similar results can be found in the study of Luo and Lam (2020), who came to the conclusion that the fear of infection with COVID-19 does not reduce the intentions of people to travel during the current health crisis. In the perception of financial risk, the findings of the study indicate that this risk is influenced by the level of education and travel intentions. Respondents with higher education perceive higher financial risk, as was the case with travel risk and health and psychological risk. Highly educated people look at the implications of the current health and economic crisis in a different and more serious way, thus assessing higher financial risk, which is in line with Sönmez and Graefe (1998b) that the level of education affects the perception of risk. The findings suggest that the intention to travel is negatively related to financial risk, which is in line with previous research (Cho et al., 2018; Fuchs & Reichel, 2006).

The results of the cluster analysis of period 1 identified different segments of tourists based on their perception of risk. Specifically, three characteristic clusters have been identified. Cluster 1 "Carefree" is characterized by low assessments of all risks, while cluster 2 "Relaxed" is characterized by relatively low assessment of travel risk and financial risk, as well as moderate assessment of destination risk and health and psychological risk. Cluster 3 "Concerned" is characterized by a mediocre assessment of financial risk, travel risk, destination risk and a relatively high assessment of health and psychological risk. Consistent with the existing literature (Dolničar, 2005; Floyd & Pennington-Gray, 2004; Ritchie et al., 2017; Seabra et al., 2013), cluster analysis findings in the first period indicate that risk perceptions differ depending on tourist segments. Also, the level of education affects the perception of risk (Sönmez & Graefe, 1998b), but also that greater perception of health and psychological risk can affect travel intentions and travel avoidance (Cahyanto et al., 2016; Neuburger & Egger, 2020; Pennington-Gray et al., 2011). Cluster analysis of period two shows a change in composition compared to the first period. Namely, the number of respondents in cluster 1 "Carefree" and cluster 3 "Concerned" decreased, while the second cluster "Relaxed" shows a significant increase in the number of respondents compared to the first period. When it comes to changes in risk assessment in clusters between the two periods of the COVID-19 crisis, the findings indicate that a higher perception of health and psychological risk in the second period of the crisis was identified in all clusters. Also, in the second and third cluster ("Relaxed" and "Concerned"), a higher perception of travel risk was identified compared to the first period, while in the third cluster, a higher perception of financial risk was identified, bearing in mind that increased financial risk awareness reduces behaviour of tourists travelling during the current pandemic (Perić et al., 2021). These findings suggest that over a period of time during a crisis may lead to a higher perception of travel-related risks. The findings of this study are consistent with the results of other studies, which indicate that the perception of risk, primarily health and psychological, is negatively related to travel intention (Liu et al., 2016; Perić et al., 2021; Reisinger & Mavondo, 2005).

Conclusion

The current health crisis caused by the COVID-19 infection is an unprecedented crisis, and the ongoing vaccination process will ensure that the pandemic in the world and the epidemic

in Serbia are brought under control, which will enable the tourism industry to gradually recover. The COVID-19 health crisis has evolved, and travel destinations have eased a number of restrictions introduced at the beginning of the crisis, which was in effect during the periods when the research was conducted. Unfortunately, due to the emergence of new strains of the virus, new restrictions are being introduced.

The aim of this study was to examine the perception of travel-related risks in different phases of the health crisis, to examine the impact of crisis periods on risk perception when individual characteristics of respondents and travel intentions are controlled (travel risk, destination risk, health and psychological risk, and financial risk) in the conditions of health crisis caused by COVID-19 infection. Two periods of a health crisis were observed (May 2020 and January 2021), and the research findings indicate that the perception of risk is higher in the initial period of crisis, except for the perception of health and psychological risk, which is higher in the second period of the health crisis. The vaccination process can have a significant impact on reducing the perception of health and psychological risks, and the fair and efficient distribution of COVID-19 vaccines worldwide is crucial, especially in developing countries. The research findings indicate that the perception of travel risk and health and psychological risk is significantly influenced by the level of education and travel intentions, while the perception of destination risk and financial risk is influenced by travel intention. While observing two periods of crisis, the findings of the cluster analysis identified different segments of tourists based on their perception of travel-related risks during the period of the current COVID-19 health crisis. Understanding how tourists perceive risk is the basis for reducing risk perception. The study's findings contribute toward understanding the risk perception of travel in the period of health crisis caused by COVID-19 infection, which can help destination and marketing managers form strategies to reduce risk perception, which is crucial for the recovery of the national and global tourism industry (short-term and long-term). In addition to the strategy for reducing risk perception, tourist destinations should develop a communication strategy and find ways to inform tourists about the possible risks associated with travel and COVID-19 infection, as well as how they can be minimized. To achieve this, public authorities and tourist destinations must be transparent in communicating information on the epidemiological situation, safety, and health protocols that tourists need to follow. This is one of the few studies and the only one in Serbia that, observing two periods of the health crisis, identified clusters based on the perception of risk associated with travel and the current health crisis caused by COVID-19 infection. The findings of the cluster analysis have significant marketing implications for travel organizers and tourist destinations since the recovery of tourism will depend on their ability to develop strategies to attract different segments of Serbian tourists in the crisis and post-crisis period.

Certain limitations of the results of this study are highlighted. A suitable sample as a sampling approach without probability enables researchers to easily obtain data, but the problem that remains is the generalization of results, respectively the impossibility of generalizing the research results to the population, which is the case with our study. Also, data collection was limited to Serbian tourists only, and it cannot be assumed that the results of the cluster analysis are universal outside the context of this study. The research findings provide only a partial insight into the perception of travel-related risks in the period of the current COVID-19 health crisis. Given the variability of the nature of the COVID-19 virus and the duration of the health crisis or pandemic, further future research is needed in other cultural environments on

the prevalence of travel risks in different phases of the crisis. In addition, future research requires segmenting tourists according to risk perception (including other characteristics).

References

Abraham, V., Bremser, K., Carreno, M., Crowley-Cyr, L., & Moreno, M. (2020). Exploring the consequences of COVID-19 on tourist behaviours: perceived travel risk, animosity and intentions to travel. *Tourism Review*, 76(4), 701-717. https://doi.org/10.1108/TR-07-2020-0344.

Agyeiwaah, E., Issahaku, A., Dayour, F., & Badu Baiden, F. (2021). Perceived impacts of COVID-19 on risk perceptions, emotions, and travel intentions: evidence from Macau higher educational institutions. *Tourism Recreation Research*, 46(2), 195-211. https://doi.org/10.1080/02508281.2021.1872263.

Andretta, M. (2014). Some considerations on the definition of risk based on concepts of systems theory and probability. *Risk Analysis*, *34*(7), 1184-1195. https://doi.org/10.1111/risa.12092.

Aro, A. R., Vartti, A. M., Schreck, M., Turtiainen, P., & Uutela, A. (2009). Willingness to take travel-related health risks—A study among Finnish tourists in Asia during the avian influenza outbreak. *International journal of behavioral medicine*, *16*(1), 68-73. https://doi.org/10.1007/s12529-008-9003-7.

Bae, S. Y., & Chang, P. J. (2020). The effect of coronavirus disease-19 (COVID-19) risk perception on behavioural intention towards 'untact' tourism in South Korea during the first wave of the pandemic (March 2020). *Current Issues in Tourism*, 24(7), 1017-1035. https://doi.org/10.1080/13683500.2020.1798895.

Bratić, M., Radivojević, A., Stojiljković, N., Simović, O., Juvan, E., Lesjak, M., & Podovšovnik, E. (2021). Should I Stay or Should I Go? Tourists' COVID-19 Risk Perception and Vacation Behavior Shift. *Sustainability*, *13*(6), 3573. https://doi.org/10.3390/su13063573.

Caber, M., González-Rodríguez, M. R., Albayrak, T., & Simonetti, B. (2020). Does perceived risk really matter in travel behaviour? *Journal of Vacation Marketing*, *26*(3), 334-353. https://doi.org/10.1177%2F1356766720927762.

Çakar, K. (2020). Tourophobia: fear of travel resulting from man-made or natural disasters. *Tourism Review*. *76*(1), 103-124. https://doi.org/10.1108/TR-06-2019-0231.

Carballo, R. R., León, C. J., & Carballo, M. M. (2017). The perception of risk by international travellers. *Worldwide Hospitality and Tourism Themes*, *9*(5), 534-542. https://doi.org/10.1108/WHATT-07-2017-0032.

Cahyanto, I., Wiblishauser, M., Pennington-Gray, L., & Schroeder, A. (2016). The dynamics of travel avoidance: The case of Ebola in the US. *Tourism Management Perspectives*, *20*, 195-203. https://doi.org/10.1016/j.tmp.2016.09.004.

Chang, S. Y. (2009). Australians' holiday decisions in China: A study combining novelty-seeking and risk-perception behaviors. *Journal of China Tourism Research*, *5*(4), 364-387. https://doi.org/10.1080/19388160903382533.

Chaulagain, S., Pizam, A., & Wang, Y. (2020). An integrated behavioral model for medical tourism: An American perspective. *Journal of Travel Research*, 60(4), 761-778. https://doi.org/10.1177%2F0047287520907681.

Chemli, S., Toanoglou, M., & Valeri, M. (2020). The impact of Covid-19 media coverage on tourist's awareness for future travelling. *Current Issues in Tourism*, 25(2), 179-186. https://doi.org/10.1080/13683500.2020.1846502.

Chinazzi, M., Davis, J. T., Ajelli, M., Gioannini, C., Litvinova, M., Merler, S., ... & Vespignani, A. (2020). The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak. *Science*, *368*(6489), 395-400. https://doi.org/10.1126/science.aba9757.

Chua, B. L., Al-Ansi, A., Lee, M. J., & Han, H. (2020). Impact of health risk perception on avoidance of international travel in the wake of a pandemic. *Current Issues in Tourism*, 24(7), 985-1002. https://doi.org/10.1080/13683500.2020.1829570.

Cho, S. H., Ali, F., & Manhas, P. S. (2018). Examining the impact of risk perceptions on intentions to travel by air: A comparison of full-service carriers and low-cost carriers. *Journal of Air Transport Management*, 71, 20-27. https://doi.org/10.1016/j.jairtraman.2018.05.005.

Cui, F., Liu, Y., Chang, Y., Duan, J., & Li, J. (2016). An overview of tourism risk perception. *Natural Hazards*, 82, 643-658. https://doi.org/10.1007/s11069-016-2208-1.

Deng, R., & Ritchie, B. W. (2018). International university students' travel risk perceptions: an exploratory study. *Current Issues in Tourism*, *21*(4), 455-476. https://doi.org/10.1080/13683500.2016.1142939.

Dolničar, S. (2005). Understanding barriers to leisure travel: Tourist fears as a marketing basis. *Journal of Vacation Marketing*, *11*(3), 197-208. https://doi.org/10.1177%2F1356766705055706.

Floyd, M. F., & Pennington-Gray, L. (2004). Profiling risk perceptions of tourists. *Annals of Tourism Research*, *31*(4), 1051-1054. https://doi.org/10.1016/j.annals.2004.03.011.

Floyd, M. F., Gibson, H., Pennington-Gray, L., & Thapa, B. (2004). The effect of risk perceptions on intentions to travel in the aftermath of September 11, 2001. *Journal of Travel & Tourism Marketing*, *15*(2-3), 19-38. https://doi.org/10.1300/J073v15n02_02.

Fuchs, G., & Reichel, A. (2006). Tourist destination risk perception: The case of Israel. *Journal of Hospitality & Leisure Marketing*, *14*(2), 83-108. https://doi.org/10.1300/J150v14n02_06.

Fuchs, G., & Reichel, A. (2011). An exploratory inquiry into destination risk perceptions and risk reduction strategies of first time vs. repeat visitors to a highly volatile destination. *Tourism management*, *32*(2), 266-276. https://doi.org/10.1016/j.tourman.2010.01.012.

Gibson, H., & Yiannakis, A. (2002). Tourist roles: Needs and the lifecourse. *Annals of tourism research*, *29*(2), 358-383. https://doi.org/10.1016/S0160-7383(01)00037-8.

Golets, A., Farias, J., Pilati, R., & Costa, H. (2020). COVID-19 pandemic and tourism: The impact of health risk perception and intolerance of uncertainty on travel intentions. *Preprints 2020.* http://dx.doi.org/10.20944/preprints202010.0432.v1.

Grančay, M. (2020). COVID-19 and Central European Tourism: The Competitiveness of Slovak Tourist Guides. *Central European Business Review*, *9*(5), 81-98. https://doi.org/10.18267/j.cebr.259.

Guidry, J. P., Jin, Y., Orr, C. A., Messner, M., & Meganck, S. (2017). Ebola on Instagram and Twitter: How health organizations address the health crisis in their social media engagement. *Public Relations Review*, *43*(3), 477-486. https://doi.org/10.1016/j.pubrev.2017.04.009.

Hair, J., Black, W., Babin, B.Y.A., Anderson, R., & Tatham, R. (2010). *Multivariate Data Analysis: A Global Perspective.* London: Pearson Education.

Hajibaba, H., Gretzel, U., Leisch, F., & Dolnicar, S. (2015). Crisis-resistant tourists. *Annals of Tourism Research*, *53*, 46-60. https://doi.org/10.1016/j.annals.2015.04.001.

Henthorne, T. L., George, B. P., & Smith, W. C. (2013). Risk perception and buying behavior: An examination of some relationships in the context of cruise tourism in Jamaica. *International Journal of Hospitality & Tourism Administration*, *14*(1), 66-86. https://doi.org/10.1080/15256480.2013.753808.

Ivanova, M., Ivanov, I. K., & Ivanov, S. (2020). Travel behaviour after the pandemic: the case of Bulgaria. *Anatolia*, 32(1), 1-11. https://doi.org/10.1080/13032917.2020.1818267.

Karasneh, R., Al-Azzam, S., Muflih, S., Soudah, O., Hawamdeh, S., & Khader, Y. (2021). Media's effect on shaping knowledge, awareness risk perceptions and communication practices of pandemic COVID-19 among pharmacists. *Research in Social and Administrative Pharmacy*, 17(1), 1897-1902. https://doi.org/10.1016/j.sapharm.2020.04.027.

Khalid, U., Okafor, L. E., & Burzynska, K. (2021). Does the size of the tourism sector influence the economic policy response to the COVID-19 pandemic? *Current Issues in Tourism*, 24(19), 2801-2820. https://doi.org/10.1080/13683500.2021.1874311.

Kock, F., Nørfelt, A., Josiassen, A., Assaf, A. G., & Tsionas, M. G. (2020). Understanding the COVID-19 tourist psyche: The evolutionary tourism paradigm. *Annals of Tourism Research*, 85, 103053. https://doi.org/10.1016/j.annals.2020.103053.

Kozak, M., Crotts, J. C., & Law, R. (2007). The impact of the perception of risk on international travellers. *International Journal of Tourism Research*, *9*(4), 233-242. https://doi.org/10.1002/jtr.607.

Lam, T., & Hsu, C. H. (2006). Predicting behavioral intention of choosing a travel destination. *Tourism Management*, *27*(4), 589-599. https://doi.org/10.1016/j.tourman.2005.02.003.

Le, T. H., & Arcodia, C. (2018). Risk perceptions on cruise ships among young people: Concepts, approaches and directions. *International Journal of Hospitality Management*, *69*, 102-112. https://doi.org/10.1016/j.ijhm.2017.09.016.

Lee, C. K., Song, H. J., Bendle, L. J., Kim, M. J., & Han, H. (2012). The impact of non-pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: A model of goal-directed behavior. *Tourism Management*, *33*(1), 89-99. https://doi.org/10.1016/j.tourman.2011.02.006.

Lepp, A., & Gibson, H. (2003). Tourist roles, perceived risk and international tourism. *Annals of tourism research*, *30*(3), 606-624. https://doi.org/10.1016/S0160-7383(03)00024-0.

Liu, B., Schroeder, A., & Pennington-Gray, L. (2016). Empirically testing the influence of travel safety concerns: Examining alternative models. *Tourism Travel and Research Association.* Advancing Tourism Research Globally.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267.

Lowrance, W. W. (1976). Of *acceptable risk: Science and the determination of safety*. ERIC

Luo, J. M., & Lam, C. F. (2020). Travel Anxiety, Risk Attitude and Travel Intentions towards "Travel Bubble" Destinations in Hong Kong: Effect of the Fear of COVID-19. *International Journal of Environmental Research and Public Health*, *17*(21), 7859. https://doi.org/10.3390/ijerph17217859.

Matiza, T. (2020). Post-COVID-19 crisis travel behaviour: towards mitigating the effects of perceived risk. *Journal of Tourism Futures*, 8(1), 99-108. https://doi.org/10.1108/JTF-04-2020-0063.

Matiza, T., & Kruger, M. (2021). Ceding to their fears: a taxonomic analysis of the heterogeneity in COVID-19 associated perceived risk and intended travel behaviour. *Tourism Recreation Research*, 46/2ú, 158-174. https://doi.org/10.1080/02508281.2021.1889793.

McKercher, B., & Chon, K. (2004). The over-reaction to SARS and the collapse of Asian tourism. *Annals of Tourism Research*, *31*(3), 716-719. https://doi.org/10.1016/j.annals.2003.11.002.

Milićević, S., & Ervaćanin, V. (2016). Uticaj kriza na razvoj turizma u svetu, *Turističko poslovanje, 18*(1), 51-63. https://doi.org/10.5937/TurPos1618051M.

Neuburger, L., & Egger, R. (2020). Travel risk perception and travel behaviour during the COVID-19 pandemic 2020: a case study of the DACH region. *Current Issues in Tourism*, 24(7), 1003-1016. https://doi.org/10.1080/13683500.2020.1803807.

Oh, S. H., Lee, S. Y., & Han, C. (2020). The effects of social media use on preventive behaviors during infectious disease outbreaks: The mediating role of self-relevant emotions and public risk perception. *Health communication*, 36(8), 972-981. https://doi.org/10.1080/10410236.2020.1724639.

Our World in Data. (2021). *Coronavirus (COVID-19) Vaccination.* Retrieved from https://ourworldindata.org/covid-vaccinations.

Pennington-Gray, L., Schroeder, A., & Kaplanidou, K. (2011). Examining the influence of past travel experience, general web searching behaviors, and risk perceptions on future travel intentions. *International Journal of Safety and Security in Tourism/Hospitality*, 1(1), 64-92.

Perić, G., Dramićanin, S., & Conić, M. (2021). The impact of Serbian tourists' risk perception on their travel intentions during the COVID-19 pandemic. *European Journal of Tourism Research*, *27*, 2705. https://ejtr.vumk.eu/index.php/about/article/view/2125.

Pizam, A., Jeong, G. H., Reichel, A., Van Boemmel, H., Lusson, J. M., Steynberg, L., ... & Montmany, N. (2004). The relationship between risk-taking, sensation-seeking, and the tourist behavior of young adults: A cross-cultural study. *Journal of Travel Research*, *42*(3), 251-260. https://doi.org/10.1177%2F0047287503258837.

Pine, R., & McKercher, B. (2004). The impact of SARS on Hong Kong's tourism industry. *International Journal of Contemporary Hospitality Management*, *16*(2), 139-143. https://doi.org/10.1108/09596110410520034.

Quintal, V. A., Lee, J. A., & Soutar, G. N. (2010). Risk, uncertainty and the theory of planned behavior: A tourism example. *Tourism management*, *31*(6), 797-805. https://doi.org/10.1016/j.tourman.2009.08.006.

Reisinger, Y., & Mavondo, F. (2005). Travel anxiety and intentions to travel internationally: Implications of travel risk perception. *Journal of Travel Research*, *43*(3), 212-225. https://doi.org/10.1177%2F0047287504272017.

Reisinger, Y., & Mavondo, F. (2006). Cultural differences in travel risk perception. *Journal of Travel & Tourism Marketing*, *20*(1), 13-31. https://doi.org/10.1300/J073v20n01_02.

Ritchie, B. W., Chien, P. M., & Sharifpour, M. (2017). Segmentation by travel related risks: An integrated approach. *Journal of Travel & Tourism Marketing*, *34*(2), 274-289. https://doi.org/10.1080/10548408.2016.1156616.

Roehl, W. S., & Fesenmaier, D. R. (1992). Risk perceptions and pleasure travel: An exploratory analysis. *Journal of Travel research*, *30*(4), 17-26. https://doi.org/10.1177%2F004728759203000403.

Sánchez-Cañizares, S. M., Cabeza-Ramírez, L. J., Muñoz-Fernández, G., & Fuentes-García, F. J. (2020). Impact of the perceived risk from Covid-19 on intention to travel. *Current Issues in Tourism*, 24(7), 970-984. https://doi.org/10.1080/13683500.2020.1829571.

Seddighi, H. R., Nuttall, M. W., & Theocharous, A. L. (2001). Does cultural background of tourists influence the destination choice? An empirical study with special reference to political instability. *Tourism Management*, 22(2), 181-191. https://doi.org/10.1016/S0261-5177(00)00046-7.

Seabra, C., Dolnicar, S., Abrantes, J. L., & Kastenholz, E. (2013). Heterogeneity in risk and safety perceptions of international tourists. *Tourism Management*, *36*, 502-510. https://doi.org/10.1016/j.tourman.2012.09.008.

Sönmez, S. F., & Graefe, A. R. (1998a). Influence of terrorism risk on foreign tourism decisions. *Annals of tourism research*, *25*(1), 112-144. https://doi.org/10.1016/S0160-7383(97)00072-8.

Sönmez, S. F., & Graefe, A. R. (1998b). Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of travel research*, *37*(2), 171-177. https://doi.org/10.1177%2F004728759803700209.

Statistical Office of the Republic of Serbia. (2021). Statistical release. *Catering and Tourism Statistics,* Number 24 - Year LXXI, 29.01.2021, 1-5.

Tsaur, S. H., Tzeng, G. H., & Wang, K. C. (1997). Evaluating tourist risks from fuzzy perspectives. *Annals of Tourism Research*, 4(24), 796-812. https://doi.org/10.1016/S0160-7383(97)00059-5.

Toanoglou, M., Chemli, S., & Valeri, M. (2022). The organizational impact of Covid-19 crisis on travel perceived risk across four continents. *Journal of Organizational Change Management*, 35(2), 293-307. https://doi.org/10.1108/JOCM-12-2020-0369.

Qi, C. X., Gibson, H. J., & Zhang, J. J. (2009). Perceptions of risk and travel intentions: The case of China and the Beijing Olympic Games. *Journal of Sport & Tourism*, 14(1), 43-67. https://doi.org/10.1080/14775080902847439.

UNWTO World Tourism Barometer and Statistical Annex. (2021). *UNWTO World Tourism Barometer and Statistical Annex, January 2021, 19*(1), 1–42. https://doi.org/10.18111/wtobarometereng.2021.19.1.1.

Villacé-Molinero, T., Fernández-Muñoz, J. J., Orea-Giner, A., & Fuentes-Moraleda, L. (2021). Understanding the new post-COVID-19 risk scenario: Outlooks and challenges for a new era of tourism. *Tourism Management*, 86, 104324. https://doi.org/10.1016/j.tourman.2021.104324.

Wolff, K., Larsen, S., & Øgaard, T. (2019). How to define and measure risk perceptions. *Annals of Tourism Research*, 79, 102759. https://doi.org/10.1016/j.annals.2019.102759.

Worldometer. (2021). *Coronavirus.* Retrieved from https://www.worldometers.info/coronavirus/.

Zhang, L., Kong, Y., & Chang, H. (2015). Media use and health behavior in H1N1 flu crisis: The mediating role of perceived knowledge and fear. *Atlantic Journal of Communication*, *23*(2), 67-80. https://doi.org/10.1080/15456870.2015.1013101.

Appendix

Questionnaire

Travel risk
TR1 I don't feel comfortable, if I have to travel now.
TR2 It is risky to travel now.
TR3 I will avoid traveling in organized groups, due to COVID-19.
TR4 I will use only my own transport for travel, due to COVID-19.
TR5 I will not use air transportation, due to COVID-19.
Destination risk
DR1 Travelling to natural areas like national parks is not risky.
DR2 Excursions to natural areas are not risky.
DR3 Visiting to museum and other tourist attractions is not risky.
DR4 Visiting to swimming pool and other water attraction is not risky.
DR5 Travelling near the place of residence is not risky.
Health and psychological risk
HPR1 Health safety is an important attribute that a destination can offer.
HPR2 I take care of hygiene in the accommodation facilities.
HPR3 Special attention should be paid to the health system when choosing a destination.
HPR4 I am worried that the epidemiological situation in the destination could worsen during the trip.
HPR5 When travelling, it is important to have good health (travel) insurance.
HPR6 I will wear disinfectants, masks and gloves on the trip.
HPR7 Virus COVID-19 is a very dangerous disease.
HPR8 I am worried about the appearance of a new virus.
Financial risk
FR1 I worry that the trip will affect my financial situation.
FR2 I worry that the trip will not provide the value for money.
FR3 I worry that the trip will also involve some unforeseen expenses.
FR4 I am worried that because of COVID-19 and the crisis it has caused, there will be higher costs for food and drinks.