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CONTENT

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GASTRONOMY TRENDS AS A STRATEGIC FACTOR IN CUSTOMER SATISFACTION MANAGEMENT

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Abstract

The paper aims to describe specific, significantly heterogeneous trends in Czech and world gastronomy and to identify the differences and influence of selected educational levels in relation to customer experience and satisfaction with specific gastronomy trends. Research based on a positivist approach, quantitative nature of data, descriptive, explanatory, cross-sectional studies using the method of abduction, a questionnaire survey technique with Likert scale. Kolmogorov-Smirnov and Shapiro-Wilk tests are used to assess the normality of the data. Kruskal-Wallis and Dunn-Bonferroni post-hoc test verifies or falsifies the existence of statistically significant differences between customers' experience and satisfaction with gastronomy trends according to customers' education levels. From the analysis of the nature of the Czech customer's consumption behaviours, a more open attitude towards trends of intelligent opportunism can be observed at a higher level of education, while a customer with a lower level of education tends to lean towards trends of Czech tradition and conservatism. Differentiation of customers according to their educational level leads to functional management of customer satisfaction for specific gastronomy trends in relation to the management of strategic initiatives of the enterprise.

Key words

Gastronomy trends, Customer satisfaction, Customer experience, Customer education, Food & beverage industry, Strategic management

INTRODUCTION

The "Food & Beverage" industry is characterised by a highly saturated competitive environment in the battle for customers. In order to win and maintain long-term customer relationships, it is recommended that companies implement activities and tools that reflect the tools and principles of strategic management. Specifically, the principles of leveraging existing competitive advantages (Ketchen et al., 2007),

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aggregate thinking, the creative approach (Mumford et al., 2012), or the element of intelligent opportunism (Pattinson, 2016) as a challenge for introducing gastronomic trends into the offer as one of the driving factors in managing customer satisfaction. One of these tools is CRM for customer relationship management (Yim et al., 2004; Sin et al., 2005) in the hospitality segment (Lin and Su, 2003; Olsen et al., 2008; Sota et al., 2020), with customer value as a key driver (Mahajan, 2020) as a prerequisite to create conditions for customer satisfaction management. Successful implementation of CRM has positive impacts on gaining and maintaining customer satisfaction (Mithas et al., 2005; Alduwailah, 2018) and loyalty as an essential part of strategic business management (Kaplan and Norton, 2008; Rigby and Bilodeau, 2018). As for negative effects, they can be observed mainly due to significant changes in customers' lifestyles and consumption preferences (Hwang and Lockwood, 2006) as it is increasingly difficult to anticipate needs and preferences in relation to consumption and product satisfaction (Chathoth, Olsen, 2007). For competing firms, to survive in the competition for customers, it is necessary to think about the choice of action steps of a strategic nature (Kaplan and Norton, 2008), because of the possibility not only to gain customer satisfaction, but also to get their loyalty and allegiance (Özgener and İraz, 2006; Wu and Lu, 2012; Gharibpoor et al., 2012). However, at the same time, there is the question of the need for closeness and strong bonding of this relationship, which is a prerequisite for long- term sustainability of customer satisfaction, from which it can be assumed to gain long-term customer loyalty (Jiang and Zhang, 2016; (Abdullah et al., 2022). To retain the customer to induce a repeat purchase decision, it is essential to achieve high customer satisfaction and loyalty, which are the key performance indicators of CRM (Kumar and Reinartz, 2012; Matsuoka, 2022).

To increase the relationship between the customer and companies (Laidin et al., 2021), the customer satisfaction management should be built on a long-term strategic perspective (Kaplan and Norton, 2008). The strategic nature of this relationship is based on maximising sustainable customer satisfaction, which is a prerequisite for building customer loyalty. A long-term satisfied and long-term loyal customer fulfils Berry's (1995) premise that 20% of satisfied and loyal customers generate up to 80% of a company's revenue. The goal of strategic CRM is to gain long-term competitive advantage (Castellanos-Verdugo et al., 2009) by optimally delivering value and satisfaction to the customer (Kumar, Reinartz 2012). As mentioned above, it can be concluded that customer satisfaction can be related to strategic management of the business.

THEORETICAL FRAMEWORK

Implication of a strategic perspective at the level of customer satisfaction management on gastronomy trends

The strategic direction of the business can be understood as means in synergy with gastronomy trends, and so this is at the level of preserving traditional gastronomy and food as a cultural heritage, tasting local specialities to promote regional gastronomy, or the emergence of new, previously untested gastronomy trends with the goal to achieve a memorable experience (Young et al., 2007; Zarei and Jamali Paghaleh, 2011). The success of a strategy consisting of the implementation of gastronomy trends in enterprises is compromised when the enterprise is not able to react in time not only to threats from the external environment, but especially when there is no space to adapt activities, to openness change and new challenges (Chen and Chen, 2002), new, inventive, and innovative products and services, or new gastronomy trends (Chathoth and Olsen, 2007). Investing in new gastronomy trends can also be considered a significant key competitive advantage at a certain time and place (Olsen et al., 2008; Kumar and Reinartz, 2012), whereby a competitive advantage built in this way provides a prerequisite for gaining and consolidating customer satisfaction, trust and ultimately loyalty.

Zablah et al. (2004) define the following four dimensions that reflect the impact of strategic management on customer satisfaction management, completes Rajeh (2014). When applied to gastronomy trends, they can be defined as follows: capabilities (selecting the right gastronomy trends effectively and efficiently), strategy (choosing a long-term or short-term approach to managing gastronomy trends), philosophy (choosing gastronomy trends that will be adaptable in synergy with the corporate image), and technology (selecting the appropriate information and technological practises for their implementation).

Customer satisfaction is defined by Claver-Cortés et al. (2007), Slotegraaf and Dickson (2004), Wu and Lu (2012) as one of the key strategic variables for performance measurement and as a success factor. Ok and Lim (2021) point out that in the catering industry, products, and services of appropriate quality targeted at relevant markets, can also be considered success factors, that in the form of expressing their needs and expectations will fulfil one of the main objectives of the business, which is to maximise customer satisfaction. Kabir and Hasin (2011) add that the product should be personalised, of proper quality (Suh et al., 2015), the appropriate mode of provision (Snyder et al., 2016) and secure (Linghart, 2021). The focus on sales and product uniqueness as a success factor was also discussed by Gursoy and Swanger (2007). All these product characteristics are also fulfilled by trends in gastronomy, which, together with traditional gastronomy products, are taking the level of gastronomy offerings to a higher level. The introduction of gastronomy trends into the offer of an enterprise can be described as one of the key competitive advantages, enhancing the added value of the enterprise as stated by Olsen et al. (2008). This added value, within a customer perspective, can ideally be expressed as a way of maximising customer satisfaction or minimising customer dissatisfaction.

Customer satisfaction, customer experience (positive or negative), perceived and expected quality, or emotional reactions to consumption of a product or service, i.e., gastronomy trends, are further discussed by Cochran (2003), Oliver (2009), and Cengiz (2010). Evanschitzky et al. (2011) and Al Kurdi et al. (2020), who aptly state that gaining and maintaining customer satisfaction and loyalty cannot be achieved without the synergy of satisfied and loyal employees. Furthermore, they demonstrated that the higher the employee satisfaction, the higher the customer satisfaction. It is this satisfied customer who creates a high prerequisite for attracting new customers (Castellanos- Verdugo et al., 2009).

Description of selected gastronomy trends

Three levels of gastronomy trends can be observed (Sri Susilo and Soeroso, 2014). As a first perspective, trends can be characterised by a significant impact on the rate of decline in households' consumption expenditure around catering. These are ready-to-eat meals and beverages that are the primary meals that provide basic physiological needs with high nutritional value (De Thomas et al., 2019), consumed outside of the customer's home environment. The Barcelona Field Study Centre (2013) includes functional meals, gourmet specialities that provide health benefits and advantages to the customer (gluten-free, glucose-free meals, etc.) among these types of trends, that is, the direction of gastronomy toward the promotion of good nutritional status, the standard of living of the population (Mauriz et al., 2019), and public health (Mutlu and Dogan, 2021). The health benefit for the customer is a balanced diet, a trend also referred to as rational eating, with optimal daily intake and sufficient nutrients, micronutrients, and macronutrients, so that proper function of body organs would be maintained (Aguilera, 2022).

As a second perspective, we can see the connection of trends with a multicultural environment, where individual trends are offered and targeted to a specific type of customer (their social role, status, identity, image, education, age, gender, etc.). Today's customers are becoming more informed, demanding, and hedonic (Lopez Ojeda et al., 2017). These trends consider the everyday life of the consumer, which is influenced by globalisation or internationalisation tendencies. Gastronomy tourism, the clash of different cultures and the change in the consumption habits of Czech consumers have caused food and beverages from foreign, international or even exotic cuisines to frequently increase in food and beverage consumption. This includes, for example, the consumption of insects, notes Simion et al. (2019).

As a third perspective, in the search for harmony between the chef and the opinions of locals and tourists (Sri Susilo and Soeroso, 2014), where based on their collaboration and on the basis of existing and new experiences, as well as on the creation of friendly encounters and relationships, new, often unplanned, unconventional combinations and creations of food and beverages can be observed, with a departure from traditional recipes (Alvarez-Falcon and Serra Majem, 2019), on the basis of experiential gastronomy. Therefore, the gastronomy experience influences customer satisfaction, leading to customer loyalty, as aptly pointed out by Berbel-Pineda et al. (2019).

The unusual pairing of ingredients and foods, a trend known as Food Pairing, can be thought of as the pairing of flavours and aromas. This pairing presupposes a very high level of expertise (Kandampully, 2012) on the part of the chef, intuitively creating suitable combinations or achieving suitable combinations in a random way, notes Coucquyt et al. (2020). With conventional consumer behaviour, a customer might pair traditional cheese with wine or chocolate with strawberries. For an unusual, even exotic pairing, oysters can be combined with kiwi or balsamic vinegar with ice cream. Unusual food and drink pairings can be complemented with edible flowers, which Shantamma et al. (2021) discuss.

Slow Food, as opposed to the Fast Food trend, focusses primarily on the enjoyment of eating and drinking. Williams et al. (2015) points out the philosophy of this trend, which is to build menus according to well-defined principles, such as the use of artisanal techniques in food preparation, with an emphasis on sustainable farming and the processing of indigenous traditional ingredients. Hayes-Conroy (2010) notes that Slow Food also reflects eating food associated with the perception of flavour and aromas, paying attention to buying local and honest ingredients from local farmers, seeking the pleasure of cooking and the enjoyment of eating, as well as discovering new approaches, practises, and trends in gastronomy. Hall et al. (2003) point to an increased interest in local products and foods.

Jones (2017) described the Raw Food menu as a trend toward eating mostly or entirely raw or unprocessed foods, using plant-based ingredients that have not been pasteurised or refined with pesticides. Offiah et al. (2019) also point to the use of waste parts resulting from processing such as pressing, juicing, extrusion, or mixing, which often has a higher nutritional value than the primary product. This avoids food waste and disposal, as Zborowski and Mikulec (2022) point out.

Today, fermented products are highly sought after and are enjoying a renaissance. Zannou et al. (2022) aptly point out that the preparation and consumption of food from fermented products are based on historical and geographical assumptions. Connections can also be sought with the social, cultural and ethnic background of the population. The importance of fermented products such as Tempeh is described by Romulo and Surya (2021).

The popularity of superfoods is growing, mainly due to their antioxidant effect and their high nutritional value. Superfoods and their significant impact on health are reviewed by Liu et al. (2021). Purple foods such as aubergine, blackberries, blueberries, currants, purple potatoes, cauliflower, or asparagus can be considered superfoods. In the Czech Republic, millet, buckwheat, chickpeas, or spelt can be considered forgotten food types, as well as Funk (2015) points out that specific types of forgotten foods differ according to geographical definitions and cultural and ethnic practises. The trend of new gastronomy from seaweeds (phycogastronomy), called sea vegetables (Mouritsen et al., 2019).

With technological progress, the development of new preparation techniques, the discovery of new flavour combinations, and the increasing consumer preferences for mixed drinks in response to new trends and innovations in mixology, the cocktail scene is also changing. Cocktails focused on gastronomy mixology are dominating, with an ever-growing trend for nonalcoholic drinks such as mocktails. Nonalcoholic mixed drinks are enjoying popularity due to the growing healthy lifestyle of consumers (Advanced Mixology, 2021).

The emergence of new foods and beverages can be traced back to the substitution of traditional local ingredients for new foreign ingredients and the introduction of new technological processes in their preparation, states Régnier (2006). Internationalisation trends in gastronomy, such as the penetration of culinary tourism and the migration flow of raw materials, as well as changes in customers' eating habits, have a major impact on the establishment of new products on the domestic market (Pellešová and Vacha, 2022). A product is not considered new until it is sufficiently assimilated into mainstream, mass-consumed products and until the consumer overcomes his fear of the unfamiliar. In gastronomy, pumpkin butter, pasta made from alternative flours, sweet potato syrup, fizzy drinks containing hops, but also forgotten foods such as chickpeas, spelt, millet, or buckwheat can be considered new products. The trend of tasting new products, coffee tasting is also linked to the growing trend of local coffee roasters, where we observe a departure conventional coffee habit (Bučeková et al., 2022).

Despite considerable internationalisation and globalisation, the constant emergence of new gastronomy trends and fashionable fluctuations in gastronomy, the Czech Republic has always had a very distinctive domestic traditional cuisine. The importance of preserving traditional cuisines is highlighted by Lopez Ojeda (2017). Classic, traditional, and home-made dishes can include beef and chicken broth with homemade pasta, cabbage, peas, and garlic soup. Sauces such as cream, dill, mushroom, and tomato sauces play an indispensable role. Main dishes include fried pork schnitzel, roast pork belly, kettle goulash, liverwurst, or drowned pork. There are also ducat buns, rice pudding, or stuffed fruit buns. Regional specialities such as 'Olomoucké tvarůžky', 'Štramberské uši' or 'Valašské frgále' have their place in the Czech gastronomy scene. Home-made and seasonal food and drinks and their preparation are based on the acceptance of the principle of locality or hyperlocality, the use of indigenous varieties, and the processing of local and common ingredients. The importance of localism in gastronomy is further discussed by Carvache-Franco et al. (2021). The locality of the ingredients is desired and in the preparation of traditional and regional specialities, thus reviving and preserving the Czech culinary heritage (Pellešová and Vacha, 2022). The local identity aspect (Križan et al., 2022) proves to be a principal factor in building customer satisfaction.

DATA AND METHODS

Research context

The research problem of this study stems from the significant atomisation and differentiation of global and local gastronomy trends and the lack of understanding of the influence of individual educational groups on customer experience and satisfaction with gastronomy trends. The objective of the research is to identify the impact of education on customer experience and satisfaction with selected trends in gastronomy. The purpose of the investigation is to highlight differences in customer experience and satisfaction with gastronomy trends according to the educational status of customers. A secondary purpose is also to draw attention to the importance of customer satisfaction with gastronomy trends as a phenomenon that fundamentally influences the strategic management of companies in the "Food & Beverage" industry. The research question is defined as follows: What impact do the various levels of customer education have on customer experience and satisfaction with selected gastronomy trends?

Research sample

The study assumes the use of primary data obtained by conducting primary research, using the method of enquiry with the questionnaire survey technique. 505 Czech Republic respondents were contacted with a relevant and valid sample set of 400 respondents. The empirical calculation for the sample size is the reliability coefficient for the correctness of the obtained statements at the level of 95.4%; with a maximum allowable error of 5%. The data collection period was spring 2022. We explore: which of the trends in world gastronomy have you tried, and which would you like to try? 2 cardinal statistical features are observed, namely: 1) customer education, i.e., an independent statistical feature measured on a nominal rating scale with 4 categories, namely - primary education, vocational certificate, secondary education, and university education; 2) customer experience and satisfaction with gastronomy trends, i.e., the dependent statistical characteristic measured on an interval rating, ordinal five-point Likert scale with 5 categories (1=very satisfied; 2=satisfied, 3=neutral; 4=dissatisfied; 5=very dissatisfied). The following 22 selected gastronomy trends are discussed, namely parameters such as

Days of Foreign Cuisine, Exotic Dishes, Czech Traditional Cuisine, Regional Cuisine, Beetles on a Plate, Edible Flowers, Menu by Slow Food, Rational Menu, Pairing Food with Wine, Menu by Raw Food, Unknown and Fermented Foods, Fusion Cuisine, Unusual Food Pairing, Forgotten and Superfoods, Game Feast, Slaughterhouse Feast, Mixed Drinks, Homemade Seasonal Dishes, Wine or Beer Tasting, New Types of Drinks, Tea and Coffee Tasting, Tasting of New Products.

Research methods

The choice of the relevant statistical test, the correct choice of which presupposes finding out whether the data are worked to meet the normality assumption. The null hypothesis H0 is defined: There is an assumption of a normal distribution of the data. And the alternative hypothesis H1: There is no assumption of a normal distribution of the data. The Kolmogorov-Smirnov test with its variant Lilliefors correction and the Shapiro-Wilk test are used to verify or falsify the hypotheses. The results of all tests for the parameters under study showed that the values of the significance coefficient 'Sig' were less than the significance level ($\alpha<0.05$). We can conclude that we reject H0. This means that with a probability of 95% it is proven that the data do not have a normal distribution, and nonparametric types of tests can be used in further testing. Based on the character of the data, the Kruskal-Wallis test is chosen to verify or falsify the existence of statistically significant differences between customer experience and customer satisfaction with the selected dining trends according to customers' education levels. For the parameters, i.e., gastronomy trends, for which a positive dependence is demonstrated, a Dunn-Bonferroni post hoc test is then performed to approximate the specific dependencies between the independent statistical features, i.e., between specific customer education levels, and to confirm or adjust the original p-value by pairwise comparison of the individual independent variables, i.e., by comparing the individual customer education levels.

RESULTS

Figure 1 reflects the answer to the main research question: How do various levels of customer education influence customer experience and satisfaction with selected dining trends? The following hypotheses are established. H0: There is no statistically significant difference between customer experience and satisfaction with selected gastronomy trends by customer education. H1: There is a statistically significant difference between customer experience and customer satisfaction with selected gastronomy trends by customer education. For values of the coefficients "Sig." (p-value), less than the significance level ($\alpha<0.05$), it can be concluded that with a probability of 95%, the dependence between the individual levels of customer education and customer experience and satisfaction with the selected gastronomy trends is demonstrated for the following 4 parameters: Tasting of New Products

(Asymp.Sig.=0,000); Days of Traditional Cuisine (Asymp.Sig=0,000); Tea and Coffee Tasting (Asymp.Sig.=0,001) and Slaughterhouse Feast (Asymp.Sig.=0,006). This suggests a differential influence according to the educational attainment of the customers on their experience and satisfaction with the trends of gastronomy. For the other parameters examined, the p-value is higher than the 0.05 significance level, namely: Beetles on a Plate (Sig.=0,065); Mixed Drinks (Sig.=0,117); Fusion Cuisine (Sig.=0,121); Homemade Seasonal Dishes (Sig.=0,150); Forgotten and Superfoods (Sig.=0,187); Menu by Raw Food (Sig.=0,197); Game Feast (Sig.=0,228); Wine or Beer Tasting (Sig.=0,248); Pairing of food with wine (Sig.=0,270); Czech Traditional Cuisine (Sig.=0,292); Edible Flowers (Sig.=0,295); Menu by Slow Food (Sig.=0,307); Unknown and Fermented Foods (Sig.=0,382); Exotic Dishes (Sig.=0,414); Regional Cuisine (Sig.=0,549); Unusual Food Pairing (Sig.=0,796); New Types of Drinks (Sig.=0,810); Rational Menu (Sig.=0,960). It can be remarked that the higher the level of the p-value, the less statistically significant a given the trend of gastronomy is.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
4	The distribution of Tasting of New Products is the same across categories of Education.	Independent-Samples Kruskal-Wallis Test	,000	Reject the null hypothesis.
1	The distribution of Days of Traditional Cuisine is the same across categories of Education.	Independent-Samples Kruskal-Wallis Test	,000	Reject the null hypothesis.
3	The distribution of Tea and Coffee Tasting is the same across categories of Education.	Independent-Samples Kruskal-Wallis Test	,001	Reject the null hypothesis.
2	The distribution of Slaughterhouse Feast is the same across categories of Education.	Independent-Samples Kruskal-Wallis Test	,006	Reject the null hypothesis.

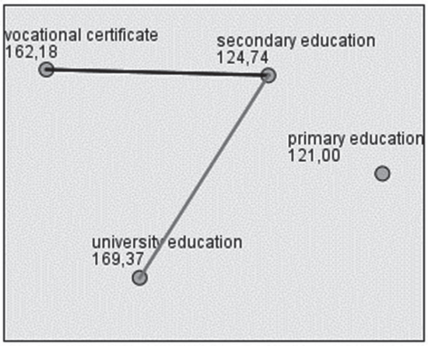
Asymptotic significances are displayed. The significance level is ,05.

Fig. 1 Gastronomy trends with statistically significant influence between education levels and customer experience and satisfaction.

Source: own research

Figure 2 reflects the answer to research question 1: What are the differences in specific levels of customer education in terms of customer experience and satisfaction on Days of Traditional Cuisine? H0: Customer experience and satisfaction with the Days of Traditional Cuisine are the same across all levels of customer education. H1: Customer experience and satisfaction with the Days of Traditional Cuisine are not the same at all levels of customer education. At the significance level (α<0.05), it can be concluded that H0 is rejected. With a probability of 95%, a statistically significant dependence or very strong evidence of dependence exists between at least two levels of customer education to experience and customer satisfaction with the gastronomy trend "Days of Traditional Cuisine". The relationship in the observed parameters can be observed between secondary education and vocational certificate (Sig.=0.009) and between secondary education and university education (Sig.=0.000). Dunn's post-hoc test confirmed only one statistically significant difference between the two levels of education, namely, secondary education and university education (Adj.Sig.=0.000).

Pairwise Comparisons of Education



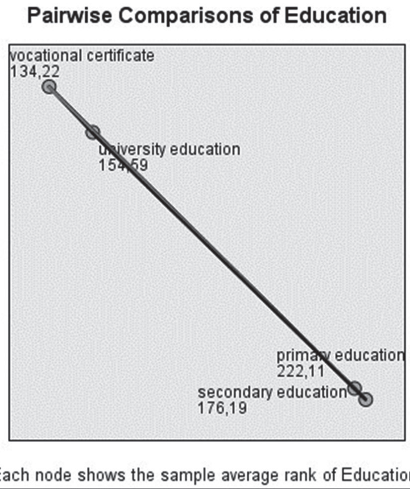
Each node shows the sample average rank of Education.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
primary education-secondary education	-3,739	35,602	-,105	,916	1,000
primary education-vocational certificate	-41,176	37,342	-1,103	,270	1,000
primary education-university education	-48,366	36,053	-1,342	,180	1,000
secondary education-vocational certificate	37,437	14,322	2,614	,009	,054
secondary education-university education	-44,627	10,514	-4,245	,000	,000
vocational certificate-university education	-7,191	15,408	-,467	,641	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Fig. 2 Pairwise comparison of selected customer education levels by customer satisfaction and customer experience on Days of Traditional Cuisine.
Source: own research

Figure 3 reflects the answer to Research Question 2: What are the differences in specific levels of customer education in terms of customer experience and satisfaction with the Slaughterhouse Feast? H0: Customer experience and satisfaction with the Slaughterhouse Feast is the same at all levels of customer education. H1: Customer experience and satisfaction with the Slaughterhouse Feast are not the same at all levels of customer education. The dependence in the observed parameters can be observed between the vocational certificate and primary education (Sig.=0.009) and between the vocational certificate and secondary education (Sig.=0.007). After conducting Dunn's posthoc test, there is



Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
vocational certificate-university education	-20,377	16,728	-1,218	,223	1,000
vocational certificate-secondary education	-41,979	15,478	-2,712	,007	,040
vocational certificate-primary education	87,895	33,670	2,610	,009	,054
university education-secondary education	21,602	11,592	1,863	,062	,374
university education-primary education	67,518	32,070	2,105	,035	,212
secondary education-primary education	45,917	31,436	1,461	,144	,865

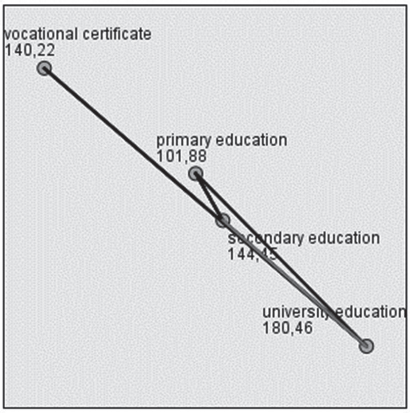
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Fig. 3 Pairwise comparison of selected customer education levels by customer satisfaction and customer experience with the Slaughterhouse Feast.
Source: own research

only one statistically significant difference between the two levels of education, vocational certificate and secondary education (Adj.Sig.=0.040); H0 is rejected. It can be observed how Dunn's post hoc correction has adjusted the original value of Sig.=0.007 to the new value of Adj.Sig.=0.040, therefore, minimising the significance of this association.

Figure 4 reflects the answer to Research Question 3: What are the differences in specific levels of customer education in terms of customer experience and satisfaction with Tea and Coffee Tasting? H0: Customer experience and satisfaction

Pairwise Comparisons of Education



Each node shows the sample average rank of Education.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
primary education-vocational certificate	-38,346	32,545	-1,178	,239	1,000
primary education-secondary education	-42,573	29,992	-1,419	,156	,935
primary education-university education	-78,582	30,387	-2,586	,010	,058
vocational certificate-secondary education	-4,227	15,615	-,271	,787	1,000
vocational certificate-university education	-40,236	16,362	-2,459	,014	,084
secondary education-university education	-36,009	10,394	-3,464	,001	,003

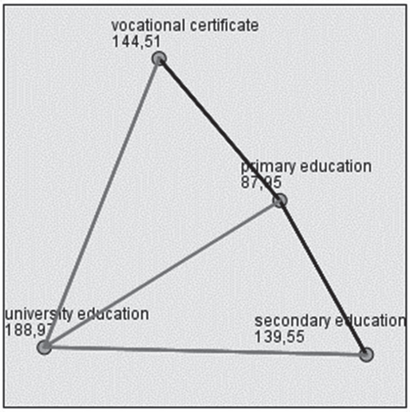
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Fig. 4 Pairwise comparisons of selected customer education levels by customer satisfaction and customer experience with Tea and Coffee Tasting.
Source: own research

with the of Tea and Coffee Tasting are the same at all levels of customer education. H1: Customer experience and satisfaction with the of Tea and Coffee Tasting are not the same across all levels of customer education. H0 is rejected. In Dunn's post hoc test, there is only one statistically significant difference between the two levels of education, secondary education, and university education (Adj.Sig.=0.003).

Figure 5 reflects the answer to research question 4: What are the differences in specific levels of customer education in terms of customer experience and satisfaction with the Tasting of New Products? H0: Customer experience and

Pairwise Comparisons of Education



Each node shows the sample average rank of Education.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
primary education-secondary education	-51,598	26,859	-1,921	,055	,328
primary education-vocational certificate	-56,562	29,098	-1,944	,052	,311
primary education-university education	-101,015	27,564	-3,665	,000	,001
secondary education-vocational certificate	4,964	14,380	,345	,730	1,000
secondary education-university education	-49,417	10,950	-4,513	,000	,000
vocational certificate-university education	-44,453	15,658	-2,839	,005	,027

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Fig. 5 Pairwise comparison of selected customer education levels by customer satisfaction and customer experience with the Tasting of New Products.
Source: own research

satisfaction with the Tasting of New Products is the same across all levels of customer education. H1: Customer experience and satisfaction with the Tasting of New Products is not the same at all levels of customer education. H0 is rejected. After conducting Dunn's posthoc test, all 3 observed pairwise comparisons remained statistically significant on the order of Adj.Sig=0.027 for vocational certificate and university education; Adj.Sig=0.001 for primary education and university education; Adj.Sig=0.000 for secondary education and university education.

DISCUSSION

The research revealed that there is a statistically significant dependence and relationship between the different levels of customer education and customer attitudes in the form of customer experience and satisfaction with selected gastronomy trends. The dependence between customer education and customer experience and satisfaction was shown for the following 4 parameters; Tasting of New Products (Asymp.Sig.=0.000); Days of Traditional Cuisine (Asymp.Sig=0.000); Tea and Coffee Tasting (Asymp.Sig.=0.001); Slaughterhouse Feast (Asymp. Sig.=0.006). Customers with university education have the most experience with the Tasting of New Products and have the highest satisfaction rates. This is followed by customers with vocational certificate, secondary education, and primary education. This is illustrated by the mean rank values as follows: university education=188.97; vocational certificate=144.51; secondary education=139.55 and primary education=87.95. Similarly, customers with university education also have the most experience in showing the highest satisfaction for the Tea and Coffee Tasting trend (mean rank=180.46) and Days of Traditional Cuisine (mean rank=169.7); than customers with secondary education (mean rank=144.45 and mean rank=124.74).

A notable finding for the Tea and Coffee Tasting and Days of Traditional Cuisine is the lack of satisfaction with this trend among customers with less than secondary education (specifically vocational certificate and primary education) that emerges as statistically significant. In the case of the Tea and Coffee Tasting trend, it can be assumed that customers with a lower level of education are not interested (Meena and Sahu, 2021) in trying this trend because of the increasing technological demands on their preparation, the continuous emergence of new types and names of teas and coffees, the preference for traditional and proven types and procedures of tea and coffee preparation, distrust and fear of new tastes and aromas and often exotic and foreign ingredients for the Czech consumer. Another reason may be that customers with lower levels of education consume coffee and tea strictly for the purpose of energising, rather than for the purpose of enjoying these products and taking pleasure from them with the creation of a long-term relationship. They regard their consumption as an obligatory and conventional event, repeated in regular cycles throughout the day. With the trend of Days of Traditional Cuisine, one can only surmise the reasons why these same customers have not positively expressed their experience and satisfaction, as the popularity of Czech traditional and classic cuisine in general is strongly associated across all segments of the Czech population. For the gastronomy trend of the Slaughterhouse Feast, customers with secondary education (mean rank=176.19) and vocational certificate (mean rank=134.22) showed the highest experience and satisfaction with this trend. The question arises as to why customers with university or primary education did not express their positive attitudes towards this trend. One of the reasons may be the urbanisation factor, that is, the formation and development of urban lifestyles and the increasing concentration of customers with university education in predominantly urban regions and agglomerations where more than 70% of the population lives. It is a fact that the customs and traditions associated with the Slaughterhouse Feast, historically associated with predominantly rural regions, are among the so- called folk food, which in the past was dominant, especially for groups of people who had no education and were poor. The products produced by Slaughterhouse Feast are characterised by lower quality attributes, which can negatively affect consumer preferences and purchasing decisions of university-educated customers. To some extent, the low association of customers with university education and the Slaughterhouse Feast trend is also based on the hypothesis that university-educated customers do not want to degrade their social status, image, and reputation by consuming this trend, i.e., they are concerned about the loss of an individual's status in the community hierarchy due to the low prestige of this trend and its products.

In the context of the influence of different levels of customer education on customer experience and satisfaction with gastronomy trends, it can be inferred and assumed that customers with university education show significantly higher levels of satisfaction with Days of Traditional Cuisine, Tasting of New Products, and Tea and Coffee Tasting gastronomy trends than customers with lower levels of education (Meena and Sahu, 2021). On the contrary, customers with primary education and vocational certificates are less satisfied, for example, with the Slaughterhouse Feast, suggesting that the lower the level of education, the lower the customer satisfaction. At the same time, however, it can be argued that the less satisfied a customer is, the less loyal they are and the motivation to make a repeat purchase decision is minimised. A fundamental finding can be made, namely the significant influence of the degree of customer education in identifying their experience and satisfaction with gastronomy trends, with the nature and character of a particular gastronomy trend playing a significant role.

Interestingly, the higher the level of education a customer has, the more they express their experience in the form of satisfaction with the Tasting of New Products and Tea and Coffee Tasting. This reflects the relationship between customer satisfaction and the strategic principle of intelligent opportunism, that is, open to new challenges. The following question arises. Can it be assumed that the lower the customer's education, the less willing he or she is to try new products? Can this customer be considered conservative, compared to a customer whose knowledge and expertise are extensive and can be considered an expressive customer? It can be assumed that the differentiation of customers according to the level of customer education leads to functional management of customer satisfaction following the management of the strategic initiatives and perspectives of the company. Certainly, a change in the educational level of customers predicts significant long-term changes in their consumption behaviour - different expectations, attitudes, preferences, and buying habits (Bloom, 1976).

CONCLUSIONS

Customer satisfaction, as a strategic management tool (Berisha Qehaja et al., 2017; Rigby and Bilodeau, 2018) especially in the "Food & Beverage" industry, is an important prerequisite in achieving competitive advantage, despite the rapidly changing and increasingly difficult to anticipate market threats (Chathoth and Olsen, 2007), arising from the external micro and macro environment. Such a unique competitive advantage and valuable activity (Porter, 1998), for a company operating in the catering sector, can undoubtedly be the introduction of gastronomy trends into the company's offer to maximise differentiation from competitors and to diversify the product portfolio. One of the significant strategic objectives in the field of culinary arts, culinary science, and the ever-expanding gastronomy trends is to identify the educational level of existing and potential customers (Sarioğlan et al., 2021). The premise is to consider the definition of a trend as long-term, enduring, usable at a strategic level (Campos and Wolf, 2018).

Identifying the specific educational level of the customer, their educational status helps to establish not only a good relationship with the company itself but also to create a space for building satisfaction and trust with subsequent satisfaction for long-lasting loyalty (Eisingerich and Bell, 2008). The different levels of education of the customer, their knowledge and understanding of food science, food technology, food consumption, and applications, in implication to gastronomy trends, primarily determine experience and satisfaction from the consumption of the trend, in addition, to the assumption of rational consumer behaviour, the determination of the willingness to spend money on the trend, and the influence on the actual choice of a particular trend in defining the demanding qualitative characteristics and quantitative requirements. Higham (2009) considers trends (and not only in gastronomy) as drivers of consumer behaviour, with the rate of change of the trend depending on the rate of change of consumer behaviour. The impact on changing consumer behaviour or the implementation of a customer's buying decision is due to a lack of information (Bloom, 1976; Oumlil and Williams, 2000) or if the customer does not possess the knowledge and skills important in navigating an increasingly saturated market environment (Ward, 1974), where the "Food & Beverage" industry belongs.

Creating, maintaining, and maximising customer satisfaction significantly determines the retention of existing customers and attraction of new customers, repeat visits to a foodservice establishment (Matsuoka, 2022) and business success not only in the short term, but especially in the long term (Enz, 2009). The hypothesis of the intention to repeat visits associated with satisfaction with food service establishments and trends is supported by Stone et al. (2019). The implementation of purposeful strategic business management (Elbana, 2009; Wright et al., 2013) with the acceptance of success factors such as the provision and sale of personalised, quality products (Kabir and Hasin, 2011) and services at the level of the implementation of gastronomic trends in the offer of the business based on a holistic approach (Phillips and Louvieris, 2005) of product portfolio analysis and, on the other hand, the management of customer satisfaction (Meena and Sahu, 2021), associated with the consumption of these products and services in the form of utility that reflects not only customer satisfaction but also, naturally, customer dissatisfaction.

The results of the research showed the significance of different levels of customer education in relation to customer experience and satisfaction with the mentioned gastronomy trends. Opportunities for further research are very evident. The potential for extending the research can be found, for example, in exploring the influence of the territorial factor (rural areas, towns and suburbs, cities) in relation to customer attitudes characterised by experience and satisfaction with gastronomy trends. The idea of using the endogenous potential of a microregion in the context of the development of local gastronomy as a specific strategic objective based on local traditions is supported by Klamár and Čermáková (2012). However, Bujdosó et al. (2019) pointed out the untapped potential of tourism (including gastronomy tourism) as a cardinal factor of the long-term development strategy. This approach to the evaluation of tourism resources is also considered a strategic tool by Dehoorne et al. (2019). The importance of building food outlets and anchoring them geographically with a close commute distance with a primary focus on, for example, the trend of the lunch menu is highlighted by Mocák et al. (2022). The increasing importance of these food outlets in the future is noted by Stone et al. (2019), also by the influence of gastronomy tourism, but also by the implementation of gastronomy trends. Another challenge is to measure customer attitudes towards gastronomy trends such as Street Food, Front Cooking, Fast Food, Food Truck, Coffee/Food to Go, within food outlets such as restaurants, cafes, pubs, alcohol pump rooms, beer gardens, food corners with mobile gastronomy as a night economy and night tourism phenomenon, highlighted by Pawlusiński (2023).

IMPLICATIONS FOR GASTRONOMY

The theoretical contribution lies in the definition of selected gastronomy trends as a significant tool of the product portfolio of companies in the gastronomy sector, which significantly affects customer satisfaction as one of the attributes in building loyalty and long-term strategic-orientated customer relationships. In practical terms, it is a significant change in the educational level of the customer, which determines the change in his consumer behaviour, which is identified by his attitudes, experience and satisfaction with selected gastronomy trends on the territory of the Czech Republic. A key factor in this change in consumer behaviour is the type and nature of a specific trend in gastronomy. The hypothesis was confirmed that the Czech customer, with a lower level of education, is conservative regarding expressing attitudes to new trends and, on the contrary, as the educational status increases, the Czech customer is following the principle of intelligent opportunism. It can be assumed that differentiation of customers according to the educational level of the customers leads to the functional management of customer satisfaction after customer relationship management and customer loyalty as one of the strategic perspectives of the company.

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REFERENCES

ABDULLAH, O., SUFI, T., KUMAR, S. (2022). Service Quality and its Influence on Customer Satisfaction and Customer Loyalty in Restaurants of Five-Star Hotels. *African Journal of Hospitality, Tourism and Leisure.* 11(6), 2173-2189. https://doi.org/10.46222/ajhtl.19770720.349.

ADVANCED MIXOLOGY. (2022). The 15 Hottest Cocktail Trends in 2023. Retrieved from: https://advancedmixology.com/blogs/art-of-mixology/cocktail-trends. Accessed on 15 October 2022.

AGUILERA, J.M. (2022). Rational food design and food microstructure. *Trends in Food Science & Technology,* 122, 256-264. https://doi.org/10.1016/j.tifs.2022.02.006.

AL KURDI, B., ALSHURIDEH, M., ALNASER, A. (2020). The impact of employee satisfaction on customer satisfaction: Theoretical and empirical underpinning. *Management Science Letters,* 10(15), 3561-3570. https://doi.org/10.5267/j.msl.2020.6.038.

ALDUWAILAH, F.J. (2018). *Impact of CRM resources and capabilities on business performance in the mobile telecommunications industry: A resource-based view*. PhD. thesis. London: Brunel University.

ALTINAY, L., ALTINAY, R. (2003). How will growth be financed by the international hotel companies? *International Journal of Contemporary Hospitality Management,* 15(5), 274- 282. https://doi.org/10.1108/09596110310482191.

ALVAREZ-FALCON, A.L., SERRA MAJEM, L. (2019). Nutrition and gastronomy in Canarias. *Nutricion Hospitalaria,* 36, 130-134. https://doi.org/10.20960/nh.02727.

BARCELONA FIELD STUDY CENTRE. (2013). Food or Gastronomic Tourism and Rural Development. Retrieved from: http://geographyfieldwork.com/FoodTourism.html. Accessed on 20 September 2022.

BERBEL-PINEDA, J.M., PALACIOS-FLORENCIO, B., RAMÍREZ-HURTADO, J.M., SANTOS-ROLDÁN, L. (2019). Gastronomic experience as a factor of motivation in the tourist movements. *International Journal of Gastronomy and Food Science,* 18, 100171. https://doi.org/ 10.1016/j.ijgfs.2019.100171.

BERISHA QEHAJA, A., KUTLLOVCI, E., SHIROKA PULA, J. (2017). Strategic Management Tools and Techniques Usage: A Qualitative Review. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis,* 65(2), 585-600. https://doi.org/10.11118/actaun201765020585.

BERRY, L.L. (1995). Relationship marketing of services – growing interest, emerging perspectives. *Journal of the Academy of Marketing,* 23(4), 236-245.
https://doi.org/10.1177/009207039502300402.

BLOOM, P.N. (1976). How Will Consumer Education Affect Consumer Behavior? *Advances in Consumer Research,* 3(1), 208-212.
https://www.acrwebsite.org/volumes/9199/volumes/v03/NA-03/full.

BUČEKOVÁ, N., BUČEKOVÁ, I., BAČÍK, V. (2022). The new developments in coffee consumption in Slovakia with emphasis on small coffee roasters. *Folia Geographica,* 64(1), 49–68. ISSN 2454-1001.

BUJDOSÓ, Z., GYURKÓ, A., BENKŐ B. (2019). Tourism development in Hungary on the example of the northern Hungary region. *Folia Geographica,* 61(2), 86–103. ISSN 2454-1001.

CAMPOS, A.Q., WOLF, B. (2018). The Concept of Fashion Trend: meaning, history, connotation. *Estudos de Tendências e Branding de Moda,* 11(22), 31-47.
https://doi.org/10.5965/1982615x11222018011.

CARVACHE-FRANCO, M., ORDEN-MEJÍA, M., CARVACHE-FRANCO, W., ZAMBRANO-CONFORME, D., CARVACHE-FRANCO, O. (2021). Attributes of the service that influence and predict satisfaction in typical gastronomy. *International Journal of Gastronomy and Food Science,* 24, 100356.
https://doi.org/10.1016/j.ijgfs.2021.100356.

CASTELLANOS-VERDUGO, M., DE LOS ÁNGELES OVIEDO- GARCÍA, M., ROLDÁN, J.L., VEERAPERMAL, N. (2009). The employee-customer relationship quality: Antecedents and consequences in the hotel industry. *International Journal of Contemporary Hospitality Management,* 21(3), 251-274.
https://doi.org/10.1108/09596110910948288.

CENGIZ, E. (2010). Measuring Customer Satisfaction: Must or Not. *Journal of Naval Science and Engineering,* 6(2), 76-88. https://www.coursehero.com/file/32423876/measuring- customer-satisfaction-must-orpdf/.

CLAVER-CORTÉS, E., MOLINA-AZORÍN, J.F., PEREIRA-MOLINER, J. (2007). The impact of strategic behaviours on hotel performance. *International Journal of Contemporary Hospitality Management,* 19(1), 6-20. https://doi.org/10.1108/09596110710724125.

COCHRAN, C. (2003). *Customer Satisfaction: Tools, Techniques, and Formulas for Success*. California: Paton Professional.

COSTA, J., TEARE, R. (2000). Developing an environmental scanning process in the hotel sector. *International Journal of Hospitality Management,* 12(3), 156-169. https://doi.org/10.1108/09596110010320652.

COUCQUYT, P., LAHOUSSE, B., LANGENBICK, J. (2020). *The Art and Science of Foodpairing: 10,000 flavour matches that will transform the way you eat*. New York: Firefly Books.

DE TOMAS, I., CUADRADO, C., BELTRAN, B. (2019). Culinary nutrition in gastronomic sciences. A review. *International Journal of Gastronomy and Food Science,* 25, 100406. https://doi.org/10.1016/j.ijgfs.2021.100406.

DEHOORNE, O., MIHAELA OLĂU, V., TUDOR, C. (2019). Tourist resources assesement in Pădurea Craiului mountains. *Folia Geographica,* 61(2), 163–171. ISSN 2454-1001.

EISINGERICH, A.B., BELL, S.J. (2008). Customer Education Increases Trust. In Electronic *MIT Sloan management review* [online]. vol. 50, no. 1 [accessed on 20 November 2022]. Retrieved from: https://sloanreview.mit.edu/article/customer-education-increases-trust/.

ELBANA, S. (2009). Determinants of strategic planning effectiveness: extension of earlier work. *Journal of Strategy and Management,* 2(2), 175-187. https://doi.org/10.1108/17554250910965326.

ENZ, C.A. (2009). *Hospitality Strategic Management: Concepts and Cases*. New Jersey: John Wiley & Sons.

EVANSCHITZKY, H., GROENING, CH., MITTAL, V., WUNDERLICH, M. (2011). How Employer and Employee Satisfaction Affect Customer Satisfaction: An Application to Franchise Services. *Journal of Service Research,* 14(2) 136-148. https://doi.org/10.1177/1094670510390202.

FUNK, A. (2015). Revisiting Forgotten Foods: A Case Study from California. *RCC Perspectives,* 1, 25-28. https://www.jstor.org/stable/26241303.

GHARIBPOOR, M., KOUCHEKIAN, M., JAMSHIDI, S. (2012). Developing a Measurement Model for Evaluating CRM Effectiveness (In service-based industries). *Journal of American Science*, 8(7), 270-276.

GAYTÁN, M.S. (2004). Globalizing Resistance: Slow Food and New Local Imaginaries. *Food, Culture & Society,* 7(2), 97-116. https://doi.org/10.2752/155280104786577842.

GURSOY, D., SWANGER, N. (2007). Performance-enhancing internal strategic factors and competencies: impacts on financial success. *International Journal of Hospitality Management,* 26(1), 213-227. https://doi.org/10.1016/j.ijhm.2006.01.004.

HALL, C.M., SHARPLES, M., MITCHELL, R., MACIONIS, N., CAMBOURNE, M. (2003). In: LOCHMAN, J., VÁGNER, J. (2022). The impact on environmental sustainability of catering facilities for tourists. *Folia Geographica,* 64(1), 5-26. ISSN 2454-1001.

HAYES-CONROY, A. (2010). Feeling Slow Food: Visceral fieldwork and empathetic research relations in the alternative food movement. *Geoforum,* 41(5), 734-742. https://doi.org/10.1016/j.geoforum.2010.04.005.

HIGHAM, W. (2009). *The Next Big Thing: Spotting and Forecasting Consumer Trends for Profit*. London: Kogan Page.

HWANG, L.J., LOCKWOOD, A. (2006). Understanding the challenges of implementing best practices in hospitality and tourism SMEs. Benchmarking: *An International Journal,* 13(3), 337-354. https://doi.org/10.1108/14635770610668820.

CHATHOTH, P.K., OLSEN, M.D. (2007). The effect of environment risk, corporate strategy, and capital structure on firm performance: an empirical investigation of restaurant firms. *International Journal of Hospitality Management,* 26(3), 502-516. https://doi.org/10.1016/j.ijhm.2006.03.007.

CHEN, Q., CHEN, H.M. (2004). Exploring the success factors of eCRM strategies in practice. *Database Marketing & Customer Strategy Management,* 11(4), 333-343. https://doi.org/10.1057/palgrave.dbm.3240232.

JIANG, H., ZHANG, Y. (2016). An investigation of service quality, customer satisfaction and loyalty in China's airline market. *Journal of Air Transport Management,* 57, 80-88. https://doi.org/10.1016/j.jairtraman.2016.07.008.

JONES, T. (2017). The Raw Food Diet: A Beginner's Guide and Review. Retrieved from: https://www.healthline.com/nutrition/raw-food-diet. Accessed on 15 October 2022.

KABIR, G., HASIN, M.A.A. (2011). Evaluation of customer-oriented success factors in mobile commerce using fuzzy AHP. *Journal of Industrial Engineering and Management,* 4(2), 361- 386. https://doi.org/10.3926/jiem..v4n2.p361-386.

KANDAMPULLY, J. (2012). *Service Management: The New Paradigm in Retailing*. New York: Springer.

KAPLAN, R.S., NORTON, D.P. (2008). *The Execution Premium: Linking Strategy to Operations for Competitive Advantage.* Boston: Harvard Business Review Press.

KETCHEN, D.J., IRELAND, R.D., SNOW, Ch.C. (2007). Strategic entrepreteurship, collaborative innovation and wealth creation. *Strategic Entrepreneurship Journal,* 1(3-4), 371-385. https://doi.org/10.1002/sej.20.

KLAMÁR, R., ČERMÁKOVÁ, L. (2012). Stratégia rozvoja vidieckeho mikroregiónu Hornád. *FOLIA GEOGRAPHICA,* 19(54), 75-92. ISSN 1336-6157.

KRIŽAN, F., HENCELOVÁ, P., BILKOVÁ, K. (2022). Are you looking for better quality, cheaper, local food directly from the producers? Visit the farmers' market. *FOLIA GEOGRAPHICA,* 64(2), 5– 20. ISSN 2454-1001.

KUMAR, V., REINARTZ, W. (2012). *Customer Relationship Management: Concept, Strategy, and Tools.* Berlin: Springer.

KUMAR, V., REINARTZ, W. (2012). *Relationship Marketing and the Concept of Customer Value.* Berlin: Springer.

LAIDIN, L.CH., ALBATTAT A., PHUOC, J.CH. (2021). Inflight Meals Service Attributes to Customer Satisfaction and Loyalty in Commercial Airline Industry. In *Advances in Managing Tourism Across Continents. Vol. 1.* Florida: University of South Florida, pp. 54-70. https://www.doi.org/10.5038/9781955833004.

LIGTHART, R.M. (2021). *Open innovation in services in private and public sector organisations*. PhD. thesis. United Kingdom: University of Cambridge.

LIM, S.E., OK, CH.M. (2021). A meta-analytic review of antecedents of hospitality and tourism firms' performance: A cross-cultural comparison. *Tourism Management,* 86(1), 1-12. https://doi.org/10.1016/j.tourman.2021.104325.

LIN, Y., SU, H.Y. (2003). Strategic analysis of customer relationship management a field study on hotel enterprises. *Total Quality Management & Business Excellence,* 14(6), 715-731. https://doi.org/10.1080/1478336032000053843.

LIU, H., MENG-LEWIS, Y., IBRAHIM, F., ZHU, X. (2021). Superfoods, super healthy: Myth or reality? Examining consumers' repurchase and WOM intention regarding superfoods: A theory of consumption values perspective. *Journal of Business Research,* 137, 69-88. https://doi.org/10.1016/j.jbusres.2021.08.018.

LOPEZ OJEDA, A., PEREZ CAMACHO, C., GUZMAN HERNANDEZ, C., HERNANDEZ LOPEZ, R. (2017). Characterization of the main trends of Mexican gastronomy in the framework of new social scenarios. *Teoria Y Praxis,* 13(21), 91-113. https://www.webofscience.com/wos/woscc/full- record/WOS:000404763400006.

MAHAJAN, G. (2020). What Is Customer Value and How Can You Create It? *Journal of Creating Value,* 6(1), 119-121. https://doi.org/10.1177/2394964320903557.

MATSUOKA, K. (2022). Effects of revenue management on perceived value, customer satisfaction, and customer loyalty. *Journal of Business Research,* 148(1), 131-148. https://doi.org/10.1016/j.jbusres.2022.04.052.

MAURIZ, E., GONZALEZ FERNANDEZ, M.J., GARCIA FERNANDEZ, M.C. (2019). Nutrition, gastronomy and health in the community of Castilla y Leon. *Nutricion Hospitalaria,* 36, 54-64. https://doi.org/10.20960/nh.02696.

MEENA, P., SAHU, P. (2021). Customer Relationship Management Research from 2000 to 2020: An Academic Literature Review and Classification. *Vision,* 25(2), 136-158. https://doi.org/10.1177/0972262920984550.

MITHAS, S., KRISHNAN, M., FORNELL, C. (2005). Why Do Customer Relationship Management Applications Affect Customer Satisfaction? *Journal of Marketing,* 69(4), 201-209. https://doi.org/10.1509/jmkg.2005.69.4.201.

MOCÁK, P., MATLOVIČOVÁ, K., MATLOVIČ, R., PÉNZES, J., PACHURA, P., MISHRA, P.K., KOSTILNÍKOVÁ, K., DEMKOVÁ, M. (2022). 15-minute city concept as a sustainable urban development alternative: a brief outline of conceptual frameworks and Slovak cities as a case. *FOLIA GEOGRAPHICA,* 64(1), 69-89. ISSN 2454-1001.

MOURITSEN, O.G., RHATIGAN, P., LUCAS PEREZ-LLORENS, J. (2019). The rise of seaweed gastronomy: phycogastronomy. *Botanica Marina,* 62(3), 195-209. https://doi.org/10.1515/bot-2018-0041.

MUMFORD, M.D., MEDEIROS, K.E., PARTLOW, P.J. (2012). Creative Thinking: Processes, Strategies, and Knowledge. *The Journal of Creative Behavior,* 46(1), 30-47. https://doi.org/10.1002/jocb.003.

MUTLU, H., DOGAN, M. (2021). A new trend in gastronomy: Culinary medicine chef. *International Journal of Gastronomy and Food Science,* 24, 100328. https://doi.org/10.1016/j.ijgfs.2021.100328.

NASUTION, H.N., MAVONDO, F.T. (2008). Organisational capabilities: antecedents and implications for customer value. *European Journal of Marketing,* 42(3/4), 477-501. https://doi.org/10.1108/03090560810853020.

OFFIAH, V., KONTOGIORGO V., FALADE, K.O. (2019). Extrusion processing of raw food materials and by-products: A review. *Critical Reviews in Food Science and Nutrition,* 59(18), 2979- 2998. https://doi.org/10.1080/10408398.2018.1480007.

OKUMUS, F. (2003). A framework to implement strategies in organizations. *Management Decision,* 41(9), 871-882. https://doi.org/10.1016/j.ijhm.2018.01.020.

OLIVER, R.L. (2009). Satisfaction: *A Behavioral Perspective on the Consumer*. New York: McGraw- Hill.

OLSEN, M.D., WEST J.J., TSE, E.C.Y. (2008). *Strategic Management in the Hospitality Industry.* New Jersey: Pearson Prentice-Hall.

OUMLIL, A.B., WILLIAMS, A.J. (2000). Consumer education programs for mature consumers. *Journal of Services Marketing,* 14(3), 1-11. https://doi.org/10.1108/08876040010327239.

ÖZGENER, S., İRAZ, R. (2006). Customer relationship management in small–medium enterprises: the case of Turkish tourism industry. *Tourism Management,* 27(6), 1356-1363. https://doi.org/10.1016/j.tourman.2005.06.011.

PATTINSON, S. (2016). Strategic Thinking: Intelligent Opportunism and Emergent Strategy – The Case of Strategic Engineering Services. *The International Journal of Entrepreneurship and Innovation,* 17(1), 65-70. https://doi.org/10.5367/ijei.2015.0212.

PAWLUSIŃSKI, R. (2023). Managing of the night-time economy: challenges for a sustainable urban policy. *Folia Geographica,* 65(1), 5-20. ISSN 2454-1001.

PELLEŠOVÁ, P., VACHA, J. (2022). Attitudes of Customers to Selected Gastronomic Trends. In *10th International Conference Proceedings – Current Trends in Spa, Hospitality and Tourism Industry*. Prague: Institute of Hospitality Management and Economics, pp. 200-209.

PHILLIPS, P., LOUVIERIS, P. (2005). Performance Measurement Systems in Tourism, Hospitality, and Leisure Small Medium-Sized Enterprises: A Balanced Scorecard Perspective. *Journal of Travel Research,* 44(1), 201-211. https://doi.org/10.1177/0047287505278992.

PORTER, M.E. (1998). *Competitive Advantage: Creating and Sustaining Superior Performance.* New York: Free Press.

RAJEH, F.T. (2014). *Impact of software project management methodology on customer satisfaction in the West Bank*. PhD. thesis. Palestine: An-Najah National University.

RÉGNIER, F. (2006). How can we consume new products? The example of exotic foods (1930-2000). *Strengthening Global Food Science and Technology for Humanity*, 1161-1172. https://doi.org/10.1016/j.ijgfs.2021.100413.

RIGBY, D., BILODEAU, B. (2018). Management Tools & Trends. Bain & Company, New York. [online]. [accessed on 10 November 2022]. Retrieved from https://www.bain.com/contentassets/f8361c5cd99e4f40bbbf83c17d6a91b9/bain_brief-management_tools_and_trends.pdf.

ROMULO, A., SURYA, R. (2021). Tempe: A traditional fermented food of Indonesia and its health benefits. *International Journal of Gastronomy and Food Science,* 26, 100413. https://doi.org/10.1016/j.ijgfs.2021.100413.

SARIOĞLAN, M., AVCIKURT C., DEVECI, B. (2021). A study on the applicability of in-service hybrid education in food and beverage businesses (The example of culinary trends). *Journal of Educational Technology and Online Learning,* 4(4), 688-701. https://doi.org/10.31681/jetol.1015981.

SHANTAMMA, S., VASIKARAN, M.E., WAGHMARE, R., NIMBKAR, S., MOSES, J.A., ANANDHARAMAKRISHNAN, C. (2021). Emerging techniques for the processing and preservation of edible flowers. *Future Foods,* 4, 100094. https://doi.org/10.1016/j.fufo.2021.100094.

SIMION, V., BUCEA-MANEA-TONIS, R., ADRIANA, A., MARTINS, O., SEKOVSKA, B., DIJMĂRESCU, I. (2019). Entomofagy – A Viable Solution for Supporting Food Security. *Amfiteatru Economic,* 21(51) 462-479. https://doi.org/10.24818/EA/2019/51/462.

SIN, L.Y.M., TSE, A.C.B., YIM, F.H.K. (2005). CRM: conceptualization and scale development. *European Journal of Marketing,* 39(11/12), 1264-1290. https://doi.org/10.1108/03090560510623253.

SLOTEGRAAF, R.J., DICKSON, P.R. (2004). The paradox of a marketing planning capability. *Journal of the Academy of Marketing Science,* 32(4), 371-385. https://doi.org/10.1177/0092070304265217.

SNYDER, H., WITELL, L., GUSTAFSSON, A., FOMBELLE, P., KRISTENSSON, P. (2016). Identifying categories of service innovation: A review and synthesis of the literature. *Journal of Business Research,* 69(7), 2401-2408. https://doi.org/10.1016/j.jbusres.2016.01.009.

SOTA, S., CHAUDHRY, H., SRIVASTAVA, M.K. (2020). Customer relationship management research in hospitality industry: a review and classification. *Journal of Hospitality Marketing & Management,* 29(1), 39-64. https://doi.org/10.1080/19368623.2019.1595255.

SRI SUSILO, Y., SOEROSO, A. (2014). Traditional indonesian gastronomy as a cultural tourism attraction. *Journal of Applied Economics in Developing Countries,* 1(1), 45-59.

STEDT, K., TRIGO, J. P., STEINHAGEN, S., NYLUND, G. M., FORGHANI, H., PAVIA, H., UNDELAND, I. (2022). Cultivation of seaweeds in food production process waters: Evaluation of growth and crude protein content. *Algal Research,* 63, 102647. https://doi.org/10.1016/j.algal.2022.102647.

STONE, M.J., MIGACZ, S., WOLF, E. (2019). Beyond the journey: the lasting impact of culinary tourism activities. *Current Issues in Tourism,* 22(2), 147-152. In: LOCHMAN, J., VÁGNER, J. (2022). The impact on environmental sustainability of catering facilities for tourists. *FOLIA GEOGRAPHICA,* 64(1), 5-26. ISSN 2454-1001.

SUH, M., GREENE, H., ISRAILOV, B., RHO, T. (2015). The Impact of Customer Education on Customer Loyalty Through Service Quality. *Services Marketing Quarterly,* 36(3), 261-280. https://doi.org/10.1080/15332969.2015.1046776.

TIWANA, A. (2001). *The Essential Guide to Knowledge Management*. New Jersey: Prentice Hall PTR. WARD, S. (1974). Consumer Socialization. *Journal of Consumer Research,* 1(2), 1-14. https://doi.org/10.10,86/208584.

WILLIAMS, L.T., GERMOV, J., FULLER, S., FREIJ, M. (2015). A taste of ethical consumption at a slow food festival. *Appetite,* 91(1) 321-328. https://doi.org/10.1016/j.appet.2015.04.066.

WRIGHT, R.P., PAROUTIS, S.E., BLETTNER, D.P. (2013). How Useful are The Strategic Tools We Teach in Business Schools? *Journal of Management Studies,* 50(1), 92-125. https://doi.org/10.1111/j.1467-6486.2012.01082.x.

WU, S.I., LU, CH.L. (2012). The relationship between CRM, RM, and business performance: A study of the hotel industry in Taiwan Tourism Management. International *Journal of Hospitality Management,* 31(1), 276-285. https://doi.org/10.1016/j.ijhm.2011.06.012.

YIM, F.H.K., ANDERSON, R.E., SWAMINATHAN, S. (2004). Customer Relationship Management: Its Dimensions and Effect on Customer Outcomes. *Journal of Personal Selling & Sales Management,* 24(4), 263-278. https://www.jstor.org/stable/40471969.

YOUNG, CH.A., CORSUN, D.L., BALOGLU, S. (2007). A taxonomy of hosts visiting friends and relatives. *Annals of Tourism Research,* 34(2), 497-516. https://doi.org/10.1016/j.annals.2006.12.003.

ZABLAH, A.R., BELLENGER, D.N., JOHNSTON, W.J. (2004). An evaluation of divergent perspectives on customer relationship management: Towards a common understanding of an emerging phenomenon. *Industrial Marketing Management,* 33(6), 475-489. https://doi.org/10.1016/j.indmarman.2004.01.006.

ZANNOU, O., AGOSSOU, D.J., MIASSI, Y., AGANI, O.B., DARINO AISSO, M., CHABI, I. B., EULOGE KPOCLOU, Y., AZOKPOTA, P., KOCA, I. (2022). Traditional fermented foods and beverages: Indigenous practices of food processing in Benin Republic. International *Journal of Gastronomy and Food Science,* 27(1), 100450. https://doi.org/10.1016/j.ijgfs.2021.100450.

ZAREI, I., PAGHALEH, M.J. (2011). Strategic Management of Business in Food Industry: By an Integrated Deployment of AHP and Freeman Model. *Business Management Dynamics,* 1(3), 47-52. https://www.proquest.com/docview/2134091770.

ZBOROWSKI, M., MIKULEC, A. (2022). Dietary Catering: The Perfect Solution for Rational Food Management in Households. *Sustainability,* 14(15), 9174. https://doi.org/10.3390/su14159174.

THE IMPACT OF THE WAR BETWEEN RUSSIA AND UKRAINE ON THE ATTITUDES OF THE INHABITANTS REGARDING TOURIST TRIPS: THE CASE OF BOSNIA AND HERZEGOVINA

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Abstract
With the first days of the war, the first consequences of the war events in Ukraine on tourism and all other trips in Europe, Asia, and the whole world began to appear. The purpose of this study is to investigate the impact of the war between Russia and Ukraine on the attitudes of the inhabitants of Bosnia and Herzegovina regarding travel, i.e., it will be analyzed whether socio-demographic factors have an impact on the intention to travel in 2022, which tourist destinations do the inhabitants of Bosnia and Herzegovina perceived as safer, where they intend to travel and by which means of transport. The convenience sample included 265 respondents (residents of Bosnia and Herzegovina). The research was conducted from March 2nd, 2022 until May 17th, 2022. To collect primary data, an online questionnaire using Google Forms was used, the link of which was distributed electronically, via e-mail, and through the Facebook social network.

Key words
War, Tourist trips, Attitudes, Russian Federation, Ukraine

INTRODUCTION

With the first days of the war, the first consequences of the war events in Ukraine on tourism and all other trips in Europe, Asia, and the whole world began to appear. At the beginning of the war, air traffic to and from Ukraine was disrupted, and then completely stopped. A large number of Western countries have imposed numerous sanctions on the Russian Federation in terms of its economic, traffic, financial, and trade blockade. So far, thirty-six countries have banned the landing and overflight of Russian planes, covering all of Central and Western Europe, Great Britain, New Zealand, Canada, and the United States. As a countermeasure, Russia introduced the same bans for flights of airlines from those parts of the world to Russia. From the above, it can be concluded that in the coming period, Russia and Ukraine will not function as emitting, but also as receptive tourist markets. Most tourists in Europe

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use cars as a means of transport for tourist trips, and it is evident that car destinations have an absolute advantage over air destinations. In addition to insecurity, the war in Ukraine has brought about an increase in the cost of living. Inflationary trends are under great pressure, and food and energy prices are constantly rising. Cost rates rise above the increase in income rates. This is an unfavorable situation, both for tourists and providers of tourist services. The estimates in June 2022 showed that inflation in Bosnia and Herzegovina amounted to 14% (Aljazeera, 2023).

OBJECTIVES

In the context of the current situation of the war between Russia and Ukraine, this article will analyze whether socio-demographic factors have an impact on the intention to travel in 2022, which tourist destinations the inhabitants of Bosnia and Herzegovina consider safe, where they intend to travel and by which means of transport.

THEORETICAL FRAMEWORK

Security has generally posed a challenge to those who have attempted to reach an ideal, comprehensive and encompassing definition of the concept. Orthodox perspectives have mainly focused on the state as a "harbinger" of security that defends its territory and citizens against external enemies through the acquisition of military grade weapons. Neorealist theorist, Stephen Walt defines security as "the study of threat, use, and control of military force". Since security is a seemingly selfexplanatory concept, it has also been rather underdeveloped to the point that International Relations theorist Barry Buzan argues that before the '80s, "conceptual literature on security" was rather neglected if not, a sorely absent field of inquiry. Buzan himself, along with Ole Wæver and Jaap de Wilde, proposed a new research agenda for security as evidenced in the book: "Security: A New Framework for Analysis". These authors are regarded as the main representatives of what today we refer to as the Copenhagen School of Security Studies (Filimon, 2016:47).

Safety is one of the basic human needs all over the world. After creating the conditions for fulfilling the existential needs, this is our most important need according to accepted human norms (Maslow, 1943). Tourism represents an important economic component that is constantly developing (Nurković and Rewucki, 2018; Dehoorne, Mihaela Olau and Tudor, 2019). So it is very important that the destination is perceived as safe (Herman et al., 2022; Michalek, 2022). Today, tourism is increasingly controlled and under the influence of security reasons. Travelers consider it important that the chosen destination, the target country or area, the roads leading there, as well as the means of travel are safe. Although the security issue of tourism is not a new social challenge because tourism has always assumed some kind of risk factor (Michalkó, 2004; Bujdosó and Györki, 2011), the terrorist acts and armed conflicts are becoming more frequent nowadays, so this issue is of utmost importance for everyday life to solve in both the developed and underdeveloped countries. Today, communication means allow us to immediately receive such news, which usually causes fear, anxiety, and indecision not only among the local population but also among a much wider audience (Sass, 2020).

After the tragic terrorist attacks of September 11th, a group of researchers began to study security problems; moreover, these problems have become a special field of research in tourism (Kővári and Zimányi, 2011, Sass, 2020). Sobotova, Havlicek and Klingorova (2019) analyzed the causes of the fear of Islam and explain Islamophobia in two socially and geographically distinct contexts: in Czechia and in Spain. Several articles have examined the impact of terrorism on tourism (Dávid et al., 2007; Varga and Bagdi, 2011; Gaydukevich, 2017). Gaydukevich (2017) claims that these events have an extremely negative impact both on the economy of the affected countries and on the tourism industry throughout the world (Sass, 2020).

Sass (2020) believes that the following factors make the events unique: the country where the terrorist attack took place, a political, geopolitical conflict, or a war that lasts for years. Events that assume a security risk causes an immediate reaction from travelers as most tourists in the territory to decide to return home, and this can cause a wave of canceling the previously booked trips (Dávid et al., 2007).

There are many studies related to the relationship between tourism and terrorism in different countries or regions (Pizam, 1999; Goodrich, 2002; Pizam and Fleischer, 2002; Chu, 2008).

Terrorist disasters affect world travel, while bombings in many places have an immediate impact on tourism, although most destinations eventually recover lost trade over time. Perceptions of travel may change as a result of the frequency and perceived scale of terrorist attacks reported in the media. Some destinations may be associated with greater travel risks than others, such as; the events in the USA since September 11th, 2001, the Bali bombings in 2002 and 2005, the Madrid bombings in 2004, the incidents in Turkey and Egypt in 2005 and the attacks on London's transportation system in 2005. All of these led to a perceived increased risk of terrorism in the international tourism scene and led to short-term cancellations by travelers with high-risk sensitivity (Ingram, Tabari and Watthanakhomprathip, 2013). The armed civil conflict that took place on the island of Sri Lanka from 1983 to 2009 certainly led to a drop in tourist arrivals, especially in the later stages when certain countries issued a warning to citizens not to travel to that country (Buultjens, Ratnayake, and Gnanapala, 2015). It is also the same case with Lebanon, where political instability affects the planning and development of tourism (Issa and Altinay, 2006).

Goodrich (2002) used the 9/11 terrorist attack as a case study and analyzed its impact on the US tourism industry. Pizam and Fleischer (2002), as well as Pizam (1999), concluded that terrorism resulted in a high frequency of attacks, but regardless of the degree of severity, it had a much greater negative impact on tourism demand than high severity, but low frequency. If terrorist attacks happen frequently and no matter how serious they are, tourism demand will gradually decline and eventually enter an era of stagnation. This is the result of data on tourism demand in Israel between May 1991 and May 2001 (Mao, 2019). Chu (2008) attempted to forecast tourism demand using the fractionally integrated ARMA model and the Asian financial crisis as well as the 9/11 terrorist attack as examples of economic and political shocks. Athanasopoulos and Hyndman (2008) used a regression framework to identify the impact of the 2000 Sydney Olympics and the 2002 Bali bombings on domestic tourism demand in Australia. They found that the Sydney Olympics promoted immediate demand for business travel, while the number of visitors meeting friends and relatives increased significantly after the Bali explosion (Mao, 2019).

Richter and Waugh (1986) were the first to explore the relationship between the two and believed that tourism and terrorism were logical companions. The economic and political impact of terrorism on tourism was assessed, including the sensitivity of the tourism industry to general political conflicts and the vulnerability of travelers and tourist facilities to terrorist activities (Mao, 2019). Some researchers believe that there is a long-term relationship between them (Gil-Alana et al., 2015). Gil-Alan et al. (2015) found that there is a lasting impact of crisis events on most Croatian coastal towns using both parametric and semi-parametric approaches to fractional integration (Mao, 2019).

There is extensive literature that deals with different types of political shocks and their impacts on the tourism and hospitality sector. Hall and O'Sullivan (1996) note that perceptions of political instability and security serve as a precondition for tourists' decisions to travel or not to travel to a given destination. One of the most famous and influential is Neumayer's (2004) research, which showed that tourism arrivals decline due to a number of different unattractive political factors (human rights violations, conflicts, etc., as well as political/violent events). These findings confirm what many would expect, namely that tourists avoid unpleasant political situations. Llorca-Vivero (2008) in their research that included over 130 tourist destinations found support for Neumayer's (2004) research. In addition, Edgell et al. (2008) claim that if there is no security at the destination, business, and all other travel will be negatively affected. An example is the terrorist bombings in Bali in 2005, which dramatically affected tourism revenues in the short term. All in all, the aforementioned studies (Neumayer, 2004; Llorca-Vivero, 2008) empirically illustrate that destinations that are unattractive due to their political attributes will be largely avoided by travelers (Ivanov, Gavrilina, Webster and Ralko, 2017).

One of the direct consequences of the war is its effect on the sustainable development and stability of the country, and the automatic lack of these factors directly affects the tourism industry. Tourists are the first group to leave war zones before any other people, because when there is no safe place to live how can they be expected to stay in a dangerous and unsafe place. When a country has no tourists due to an armed conflict, many local businesses will disappear. Thus, armed conflicts always have direct and indirect destructive effects on the socio-economic situation of the countries involved in them (Sharifi Tarazkohi and Makan Sedaghat, 2014).

Experts believe that war is the most terrible poison for the tourism industry. The tourism industry itself brings sustainable development and stability. One of the key effective elements in modern armed conflicts is the significant time and resources spent on modernizing military weapons to control battlefields. Tourists never come to places that are covered with mines. Also, they never go to places that are at risk of aerial bombardment by warring parties (Sharifi Tarazkohi and Makan Sedaghat, 2014).

Sudden street protests, social unrest, civil war, acts of terrorism, visible violations of human rights, and even the very threat of such problems can cause tourists to change their travel plans (Tomczewska-Popowycz and Quirini-Popławski, 2021). The tourism sector is extremely dependent on stability, peace, and security (Al-Hamarneh and Steiner, 2004). Although the war, political instability, and tourism in Ukraine have been the subject of numerous studies, it is still not enough. Pandey and Kumar (2022) examined the impacts of the Russia-Ukraine war 2022 on the global tourism sector stocks. Levytska, Klymchuk, Shestakova and Biletska (2023) analyzed the tourist potential of Ukraine, that is, challenges and prospects of the post-war time. Ukraine and its tourism sector suffered the most in the war, and since the prospects for the end of the war are very uncertain, the question arises of preserving the country's tourist potential, finding ways for its faster recovery and post-war development.

In order to fill the gaps in the existing literature, this article explores the consequences of the war between Ukraine and Russia on the attitudes of the inhabitants of Bosnia and Herzegovina regarding tourist travel. An attempt will be made to find a connection between the war and the intention to travel, the means of transport for these purposes, and the respondents' attitudes about safe tourist destinations.

DATA AND METHODS

The subject of this article is the analysis of the impact of the war between Russia and Ukraine on the attitudes of the inhabitants of Bosnia and Herzegovina regarding tourist trips. The main research questions raised in the research are:

- Do socio-demographic factors influence the intention to travel in 2022 in the context of the current situation of the war between Russia and Ukraine?
- Which tourist destinations do the inhabitants of Bosnia and Herzegovina perceived as safer during the current war situation between Russia and Ukraine?

- Where do the people of Bosnia and Herzegovina intend to travel in the context of the current war situation between Russia and Ukraine?
- What means of transport will be used for tourist trips in the context of the current war situation between Russia and Ukraine?

The study used a quantitative approach to research that included data collection through a survey. To collect primary data, an online questionnaire using Google Forms was used, the link of which was distributed electronically, via e-mail, and through a social network (Facebook). The convenience sample included 265 respondents (residents of Bosnia and Herzegovina). The research was conducted from March 2nd, 2022 to May, 17th, 2022.

RESULTS AND DISCUSSION

Descriptive statistics and tests of statistical significance were used in the analysis and interpretation of the obtained data. Statistical tests are selected according to the type of data processed in the analysis. Descriptive statistics were used to describe the research results by variables and as a basis for statistical tests. The Mann-Whitney U test was chosen for the analysis because the data does not have a normal distribution; represents ordinal variables, to prove the relationship between two variables (Čaušević, Mirić, Drešković & Hrelja, 2020). Kruskal-Wallis is a non-parametric test that was chosen in the analysis because we have 3 or more independent samples and the test is based on rank.

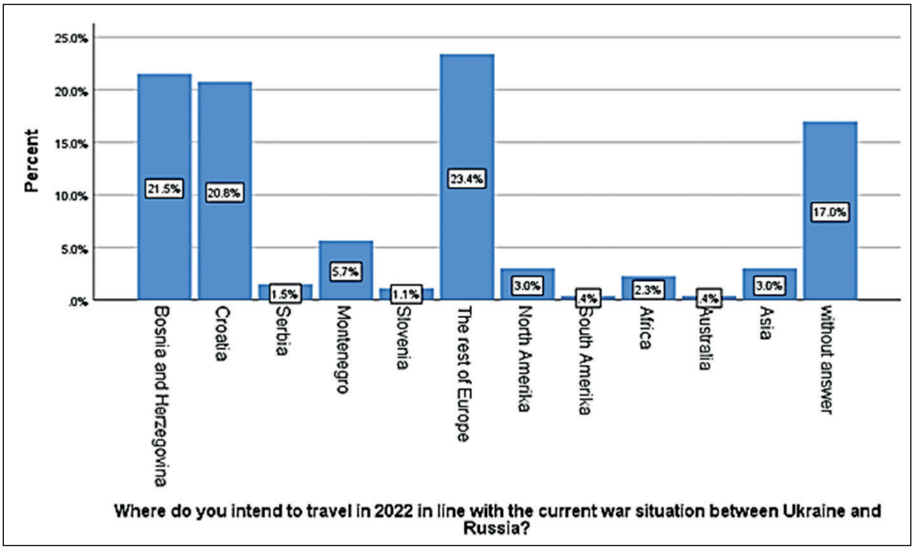

Fig. 1 Where do you intend to travel in 2022 in the context of the current war situation between Ukraine and Russia?

Source: Research results, 2022.

Fig. 1 shows that, during 2022, and in the context of the war in Ukraine, the largest percentage of respondents intend to travel throughout Europe (23.4%) and to Bosnia and Herzegovina (21.5%) and Croatia (20.8%).

The following figures show where the respondents intend to travel considering the war in Ukraine and different socio-demographic factors.

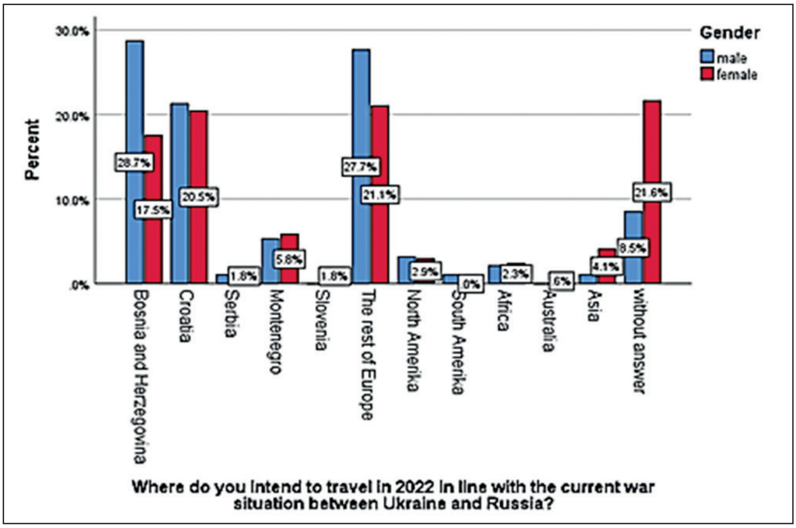

Fig. 2 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and gender as a sociodemographic factor

Source: Research results, 2022.

Fig. 2 shows that, in the context of the war in Ukraine, the largest percentage of men want to travel in Bosnia and Herzegovina (28.7%), Europe (27.7%), and Croatia (20.8%), while the largest percentage of women want to travel in Europe (21.1%), Croatia (20.5%) and Bosnia and Herzegovina (17.5%).

Fig. 3 shows that, in the context of the war in Ukraine, the largest percentage of respondents older than 50 years want to travel to Croatia, while the largest percentage of respondents aged 31-50 want to travel to Europe and Croatia, and the largest percentage of respondents aged 18 to 30 want to travel in Europe and Bosnia and Herzegovina.

Fig. 4 shows that, in the context of the war in Ukraine, the largest percentage of respondents with postgraduate studies want to travel to Croatia and Europe, while the largest percentage of respondents with a university degree want to travel to Europe, Croatia, and Bosnia and Herzegovina, and the largest percentage of respondents with high school education want to travel throughout Bosnia and Herzegovina, and Europe and Croatia.

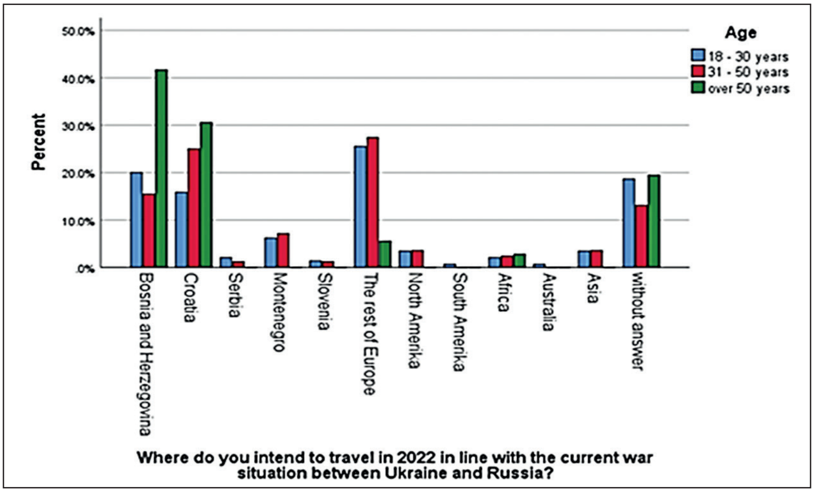

Fig. 3 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and age as a sociodemographic factor

Source: Research results, 2022.

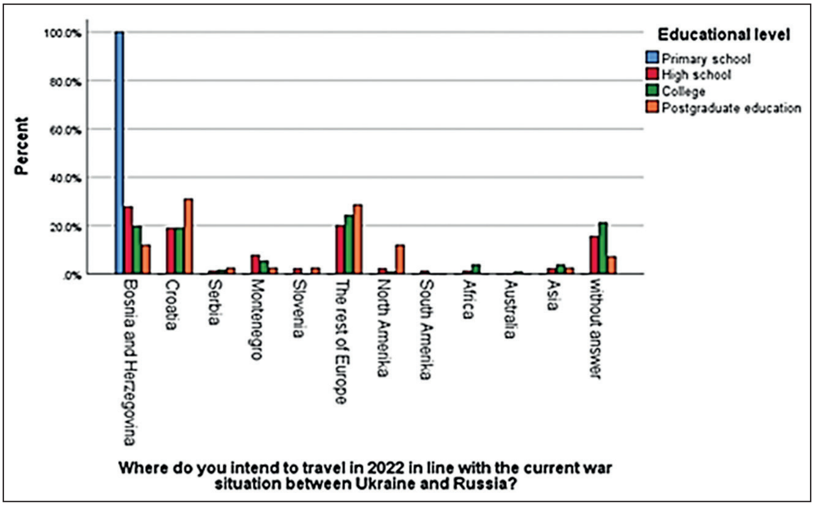

Fig. 4 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and level of education as a sociodemographic factor

Source: Research results, 2022.

Fig. 5 shows that, in the context of the war in Ukraine, the largest percentage of pensioners want to travel to Bosnia and Herzegovina, while the largest percentage of students want to travel to Europe, and the largest percentage of respondents who are employed want to travel in Europe, as well as in Croatia and Bosnia and Herzegovina.

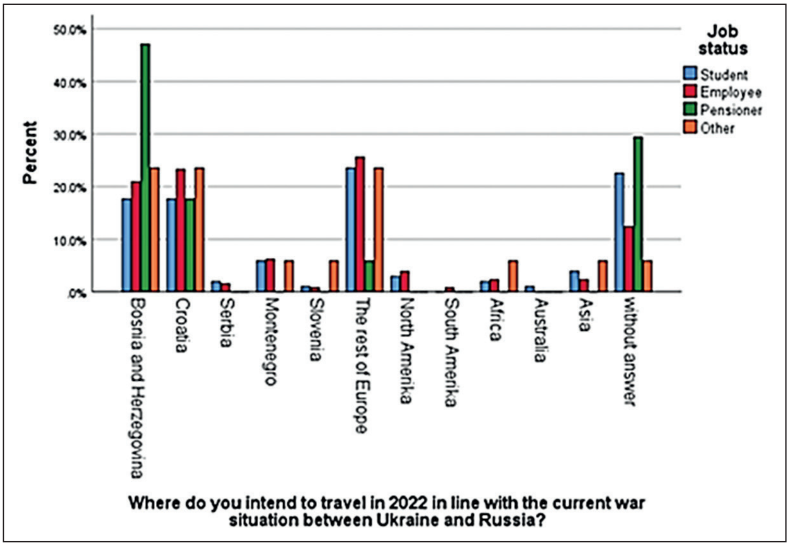

Fig. 5 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and employment status as a sociodemographic factor

Source: Research results, 2022.

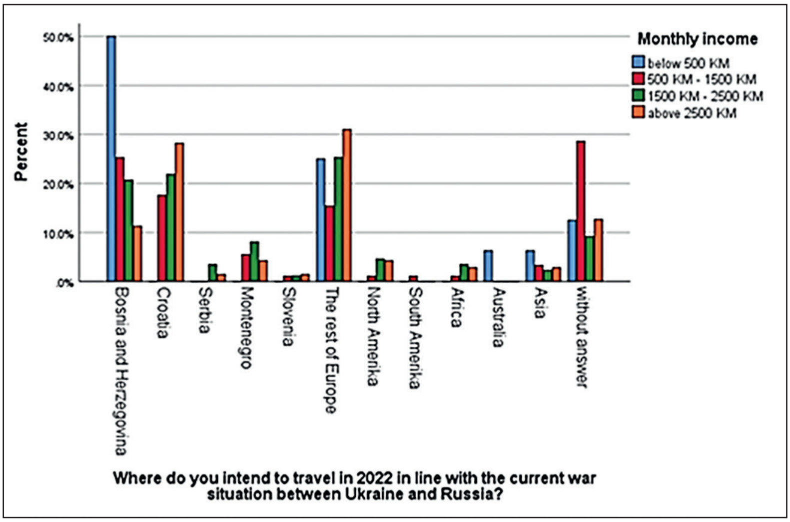

Fig. 6 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and a monthly income as a sociodemographic factor

Source: Research results, 2022.

Fig. 6 shows that, in the context of the war in Ukraine, the largest percentage of respondents with monthly incomes below 500 BAM (50.0%), and those with monthly incomes between 500 BAM and 1,500 BAM want to travel to Bosnia and

Herzegovina, while the largest percentage with monthly incomes of 1,500 BAM up to 2,500 BAM want to travel in Europe, and Croatia and Bosnia and Herzegovina, and the largest percentage of respondents with monthly incomes over 2,500 BAM want to travel in Europe and Croatia.

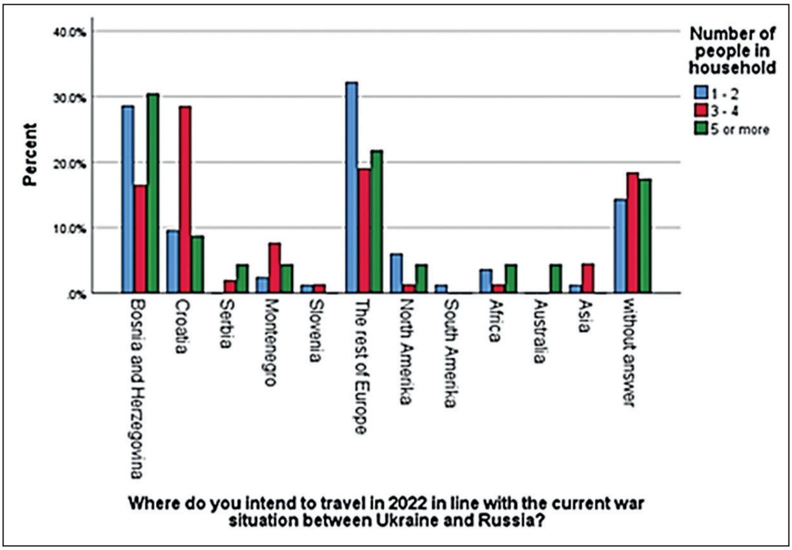

Fig. 7 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and the number of persons in the household as a sociodemographic factor

Source: Research results, 2022.

Fig. 7 shows that, concerning the war in Ukraine, the largest percentage of respondents who live in households with 1-2 members want to travel to Europe and Bosnia and Herzegovina, while the largest percentage of respondents who live in households with 1-2 members want to travel in Croatia and Bosnia and Herzegovina, and the largest percentage of respondents who live in households with 5 or more members want to travel around Bosnia and Herzegovina and Europe.

Fig. 8 shows that, considering the war in Ukraine, the largest percentage of respondents who own a car want to travel in Europe (26.7%) and Croatia (22.5%), while the largest percentage of respondents who do not have a car want to travel in Bosnia and Herzegovina (30.8%).

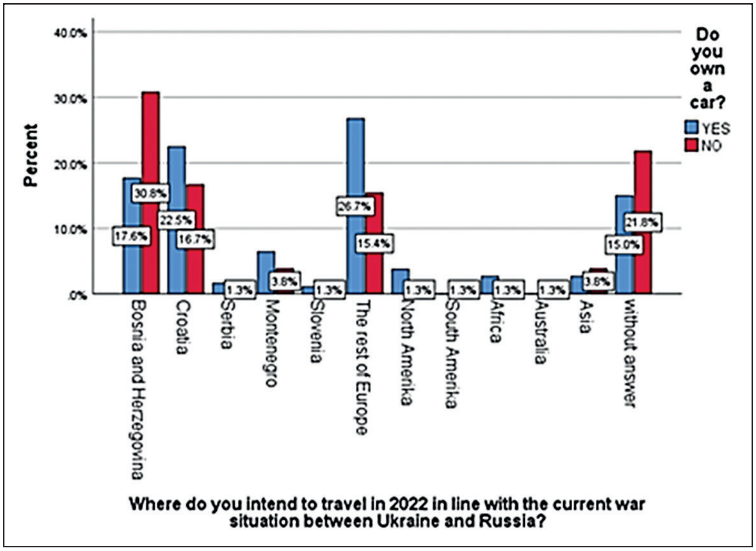

Fig. 8 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and car ownership as a sociodemographic factor

Source: Research results, 2022.

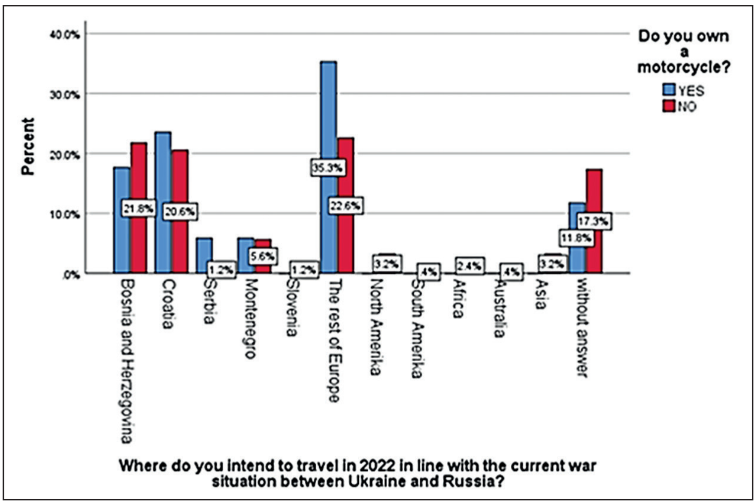

Fig. 9 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and owning a motorcycle as a sociodemographic factor

Source: Research results, 2022.

Fig. 9 shows that, considering the war in Ukraine, the largest percentage of respondents who own a motorcycle want to travel around Europe (35.3%), while the largest percentage of respondents who do not have a motorcycle almost

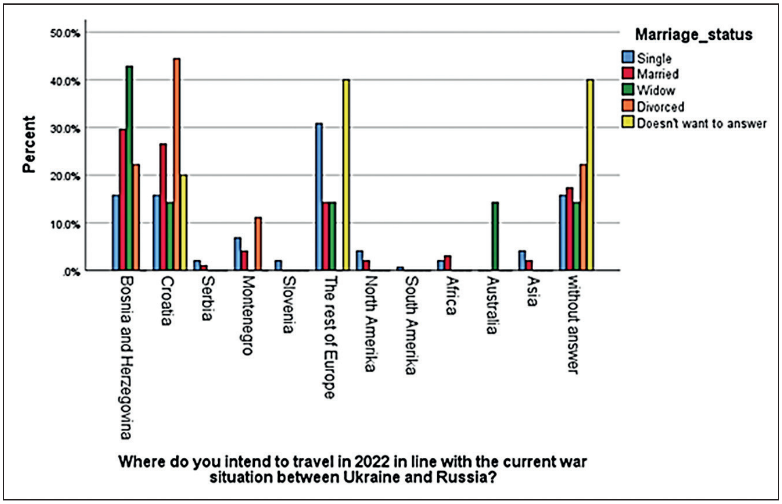

Fig. 10 Intention to travel in 2022 in the context of the current war situation between Ukraine and Russia and marital status as a sociodemographic factor

Source: Research results, 2022.

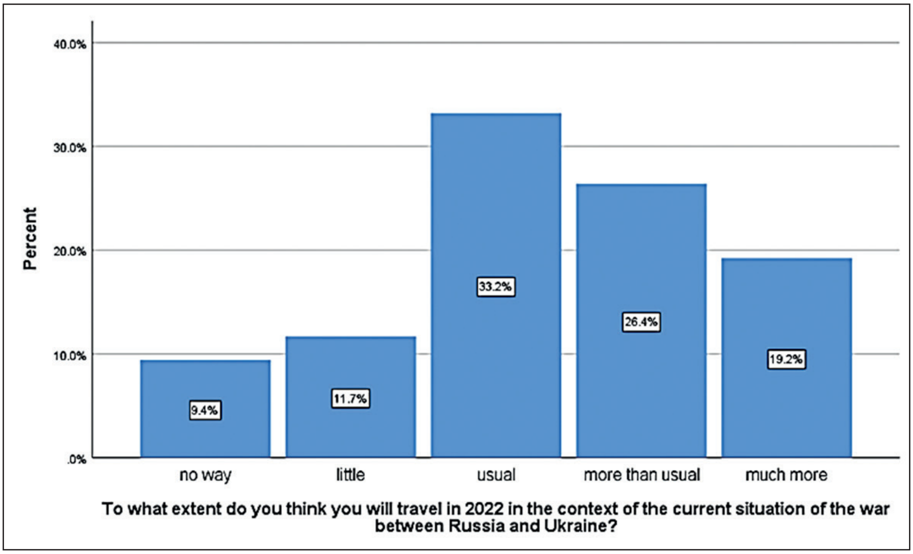

Fig. 11 The intention of taking tourist trips in 2022 in the context of the current situation of the war between Russia and Ukraine

Source: Research results, 2022.

equally want to travel around Europe (22.6%), Bosnia and Herzegovina (21.8%) and Croatia (20.6%).

Fig. 10 shows that, considering the war in Ukraine, the largest percentage of single respondents want to travel to Europe, married people want to travel to Bosnia and Herzegovina and Croatia, divorced people in Croatia, and widowed people in Bosnia and Herzegovina.

Fig. 11 shows that the war between Ukraine and Russia does not have a great impact on the respondents when it comes to tourist trips, because as many as 33.2% of the respondents intend to travel the same way, while 11.7% will travel less, and 9.4% will not travel at all in 2022, in the context of the current situation of the war between Russia and Ukraine.

The non-parametric Mann-Whitney test from Table 1 shows that:

- owning a car is a statistically significant factor ($z = -1.967$, $p < 0.05$) that determines the extent to which respondents will travel in 2022 in the context of the war between Russia and Ukraine, so those respondents who own a car ($M = 138{,}797$) consider that they will travel more in 2022 than respondents who do not own a car ($M = 119.13$),

owning a motorcycle is a statistically significant factor ($z = -2.449$, $p < 0.05$) that determines the extent to which respondents will travel in 2022 in the context of the war between Russia and Ukraine, so those respondents who own a motorcycle ($M = 175.59$) consider that they will travel more in 2022 than respondents who do not own a motorcycle ($M = 130.09$).

The non-parametric Kruskal-Wallis test shows that in the context of the war between Russia and Ukraine:

- respondents aged 31-50 years ($M = 150.27$) statistically significantly ($z = 12.301$, $p < 0.01$) believe that they will travel more in 2022 than the oldest respondents ($M = 98.76$),
- respondents who are employed ($M = 150.49$) statistically significantly ($z = 20.068$, $p < 0.01$) believe that they will travel more in 2022 than pensioners ($M = 75.03$),
- respondents who completed postgraduate studies ($M = 162.15$) statistically significantly ($z = 11.129$, $p < 0.05$) believe that they will travel more in 2022 than respondents who completed higher school or college ($M = 123.89$),
- respondents with a monthly income between 1,500 BAM and 2,500 BAM ($M = 153.67$) statistically significantly ($z = 12.778$, $p < 0.01$) believe that they will travel more in 2022 than respondents with monthly income of less than 500 BAM ($M = 100.72$).

Tab. 1 Group statistics of the influence of socio-demographic factors on the intention to travel in 2022, in the context of the current situation of the war between Russia and Ukraine

To what extent will you travel in 2022 in the context of the current war situation between Russia and Ukraine? Group		Mean Rank	Man-Whitney Kruskal-Wallis [b]	z	p
Sex	male	140.82	7301.500 [a]	-1.274	.203
	female	128.70			
Age	18 – 30	131.49	12.301 [b]		002
	31 – 50	150.27			
	Older than 50	98.76			
Education	Elementary School	13.00	11.129 [b]		.011
	High school	134.08			
	Associate degree or college	123.89			
	Postgraduate education	162.15			
Employment	Student	121.92	20.068 [b]		.000
	Employed	150.49			
	Pensioner	75.03			
	The rest	124.76			
Monthly household income (BAM)	Less than 500 BAM	100.72	12.778 [b]		.005
	500 BAM – 1,500 BAM	119.62			
	1,500 BAM – 2,500 BAM	153.67			
	More than 2,500 BAM	132.10			
Number of people in the household	1 - 2	145.12	3.721 [b]		.156
	3 - 4	128.76			
	5 and more	117.87			
Owning a car	YES	138.79	6211.000 [a]	-1.967	.049
	NO	119.13			
Owning a motorcycle	YES	175.59	1384.000 [a]	-2.449	.014
	NO	130.08			
Marital status	Single	135.66	1.725 [b]		.786
	Married	132.77			
	Widower/widow	105.50			
	Divorced	127.06			
	Doesn't want to answer	109.20			

Source: Research results, 2022.

Tab. 2 Which tourist destinations do you consider safer in the current war situation between Ukraine and Russia?

	Frequency	**Percent**
Bosnia and Herzegovina	86	32.5
Croatia	32	12.1
Serbia	2	.8
Montenegro	8	3.0
Slovenia	3	1.1
The rest of Europe	70	26.4
North America	16	6.0
South America	6	2.3
Africa	9	3.4
Australia	28	10.6
Asia	5	1.9
Total	**265**	**100.0**

Source: Research results, 2022.

From Table 2, it can be concluded that, concerning the war in Ukraine, the largest percentage of respondents believe that the safest tourist destinations are in Bosnia and Herzegovina (32.5%) and Europe (26.4%).

Tab. 3 Which means of transport will you use to travel in 2022?

	Frequency	**Percent**
Car	139	52.5
Bus	36	13.6
Plane	52	19.6
Boat	1	.4
I don't know/I don't want to answer	37	14.0
Total	**265**	**100.0**

Source: Research results, 2022.

Table 3 shows that the largest percentage of respondents intend to travel by car in 2022 (52.5%).

Several research questions were asked, that is, the purpose of this research.

Do socio-demographic factors influence the intention to travel in 2022 in the context of the current situation of the war between Russia and Ukraine?

From the conducted research, it can be concluded that the war between Ukraine and Russia does not have a great impact on the respondents when it comes to tourist trips, because as many as 33.2% of the respondents intend to travel as well. Aubert (2011) claims that the increase in the number of terrorist attacks, the inestimability of the international political situation, and the intensification of international conflicts only temporarily reduce tourist traffic. This conclusion was reached by Varga and Bagdi (2011) after studying the impact of attacks in various countries. This research confirms the stated results because, in 2022, the inhabitants of Bosnia and Herzegovina intend to travel to the greatest extent precisely in Europe, where the armed conflict is taking place. The study "Do socio-demographic characteristics influence destination attractiveness perceptions after political turmoil: the case of Zimbabwe?" by Woyo, Slabbert and Saayman is the first study that documented the influence of socio-demographic factors on the attractiveness of a destination in political turmoil. The most significant influential factors were the level of education and the continent of residence with four direct influences on the attractiveness of the chosen destination.

In this research, among the socio-demographic factors that influence the intention to travel in 2022, in the context of the current situation of the war between Russia and Ukraine, the following stand out as statistically significant: age, employment, education, and monthly household income. Respondents aged 31-50 believe that they will travel more in 2022 than the oldest respondents. Also, respondents who are employed believe that they will travel in 2022 more than pensioners. Education also stands out as statistically significant, because those respondents who have completed postgraduate studies believe that they will travel more in 2022 than respondents who have completed higher school or college. Respondents who have a monthly income between 1,500 BAM and 2,500 BAM believe that they will travel more in 2022 than respondents who have a monthly income of less than 500 BAM. Additionally, respondents who own a car or motorcycle will travel more in 2022 than the respondents who do not own a motorcycle or car. Numerous previous studies have confirmed that the mentioned socio-demographic factors influence the behavior of tourists (Richards, 1996; Suttikun, Chang, Acho, Ubi, Bicksler, Komolsevin and Chongsithiphol, 2018). More mobile people, who have higher monthly incomes, are employed, and have a higher level of education are more inclined to travel as tourists (Kastenholz, Carneiro and Eusébio, 2005; Wambani, Ogunjinmi, and Oladeji, 2020).

Which tourist destinations do the inhabitants of Bosnia and Herzegovina perceive as safer during the current war situation between Russia and Ukraine?

Sharifi Tarazkohi and Makan Sedaghat (2014) claim that armed conflicts can have destructive consequences on the development of countries, especially in the tourism industry. Wen, Lockyer and Zhang (2018) examined the relationship between the image of tourist destinations and the perception of political instability by surveying 17 Chinese tourists visiting Ukraine. The survey participants pointed to political instability and the language barrier as the main risks associated with their travel to Ukraine. In a surprising twist, some tourists were drawn to risk as an element of the travel experience. The study "Political Instability Equals the Collapse of Tourism in Ukraine?" by Tomczewska-Popowycz and Quirini-Popławski (2021) shows that tourism experts from cities without well-developed tourism sectors noted that political instability has not had a direct effect on their hometowns.

In the context of the current war situation between Russia and Ukraine, respondents in this study perceive Bosnia and Herzegovina as the safest tourist destination (32.5%), followed by the rest of Europe (26.4%), Croatia (12.1%), Australia (10.6%), North America (6.0%), Africa (3.4%) and Montenegro (3%). To a lesser extent, they consider the following destinations safe: Serbia (0.8%), Slovenia (1.1%), Asia (1.9%), and South America (2.3%). From the above, it can be concluded that the respondents still perceive Europe (as a continent) the safest tourist destination, as many as 75.9% of them, which is in agreement with the aforementioned research.

Where do the people of Bosnia and Herzegovina intend to travel in the context of the current war situation between Russia and Ukraine?

Tourists mostly find it unattractive and refuse to visit countries that have problems with terrorism or have recently suffered an armed or terrorist attack. The literature generally illustrates that terror is bad for the tourism business, although in a minority of cases the impact may be small (Wolff and Larsen, 2014). The results of research conducted by Mao (2019) show that terrorism in the United Kingdom has a negative impact on British tourism, while terrorism in Europe has a positive impact on it.

This study supports the results of Mao (2019) and shows that, during 2022, and considering the war in Ukraine, the largest percentage of respondents intend to travel throughout Europe (23.4%), Bosnia and Herzegovina (21.5%) and Croatia (20.8%). As with the previous research question, the largest number of respondents intend to travel to Europe (74%). No significant differences were observed in the socio-demographic factors of the respondents in the context of the intention to travel to certain destinations. However, it was noticed that respondents with primary and secondary school mostly intend to travel in Bosnia and Herzegovina, while respondents with college and post-graduate education in the rest of Europe and North America. In 2022, pensioners intend to travel mostly in Bosnia and Herzegovina, followed by Croatia, while students and employees intend to travel in Bosnia and Herzegovina, the region, and the rest of Europe. Respondents with monthly incomes below 500 BAM will travel to Bosnia and Herzegovina and the rest of Europe in 2022, while respondents with monthly incomes between 1,500-2,500

BAM will travel to Bosnia and Herzegovina, Croatia, Montenegro, Serbia, and the rest of Europe. In 2022, respondents with 5 members or more in the household will travel the most in Bosnia and Herzegovina and the rest of Europe, and those respondents with 1-2 members in the rest of Europe. Those respondents who own a car intend to travel to the rest of Europe and Croatia in 2022, while those respondents who do not own a car will travel to Bosnia and Herzegovina and Croatia. Respondents who own a motorcycle will, to the greatest extent, travel around the rest of Europe in the context of the current war situation between Russia and Ukraine. Married respondents plan to travel in Bosnia and Herzegovina and Croatia, widowed respondents mostly in Bosnia and Herzegovina, and divorced respondents in Croatia.

What means of transport will be used for tourist trips in the context of the current war situation between Russia and Ukraine?

It can be said that politics is a management mechanism, which has the power to ensure political stability. However, peace in the country depends on the political culture and economic power holders. For example, in 2005, anti-government demonstrators, known as "yellow vests", stormed the terminal building of Suvarnabhumi Airport in Thailand and a fight broke out with airport officials. In the interest of passenger safety, the authorities closed the airport. Thousands of airline passengers were stranded due to political instability (Ingram, Tabari and Watthanakhomprathip, 2013). Previously conducted research has shown that travelers in crises such as armed conflicts, terrorism, and the Covid-19 pandemic are more inclined to use a car as a means of transport for tourist trips (Habib and Anik, 2021; Hrelja and Rye, 2022).

In this study, over half of the respondents (52.5%) intend to travel by car in 2022 in the context of the current war situation between Russia and Ukraine. To a lesser extent, respondents plan to travel by plane (19.6%), 13.6% by bus, and only 0.4% of respondents plan to travel by boat in 2022.

CONCLUSIONS

Wars in different regions have different impacts on tourism. The reason for this may come from the different images of the continents. As a result, the impact of the armed conflict between Russia and Ukraine does not have a major impact on the demand for tourist destinations in Europe. The results of this research can be used as a theoretical basis for policy-making within Europe.

This research determines if there is a connection between war and tourism and if there is any relationship between them. In fact, many factors influence tourism, such as socio-demographic factors. Among the socio-demographic factors that influence the intention to travel in 2022, this research highlights the following: age, employment, education, and monthly household income. Research studies on the causal relationship between socio-demographic variables and destination attractiveness are limited to destinations with numerous political challenges, such as wars, terrorism, and political turmoil, and therefore further research is needed.

This study explains the hypothesized relationships only in a short period and in a certain period. In the future, studies related to tourism and armed conflict should collect data over a longitudinal period to observe changes in international tourism behavior.

The first limitation of the research is that it uses a convenience sample with 265 respondents. Another limitation of the research is that the results can only be applied to Bosnia and Herzegovina. Although Bosnia and Herzegovina is in Europe, it is quite geographically distant from Ukraine and the armed conflict with Russia.

Recommendations for further research are that this kind of research should be carried out in other European countries as well, as well as that other conflicts (wars, terrorist attacks, as well as other political conflicts in the world) should be included in the research, and not just one specific armed conflict, such as the war between Russia and Ukraine. It is also recommended that the sample be much larger because then the relevance of the results is greater. Future research could also focus on the effects of political instability on various forms of tourism in a regional sense.

REFERENCES

AL-HAMARNEH, A., STEINER, C. (2004). Islamic Tourism: Rethinking the Strategies of Tourism Development in the Arab World After September 11, 2001. *Comp. Stud. South Asia Afr. Middle East*, 24, 173-182.

ALJAZEERA, 2023. Prosječna godišnja inflacija u BiH 14 posto. Retrieved from: https://balkans.aljazeera.net/news/economy/2023/4/11/prosjecna-godisnja-inflacija-u-bih-14-posto. Accessed on 19 June 2023.

ATHANASOPOULOS, G., HYNDMAN, R. J. (2008). Modeling and Forecasting Australian Domestic Tourism. *Tourism Management*, 29, 19-31. https://doi.org/10.1016/j.tourman.2007.04.009

AUBERT, A. (2011). Turizmus trendek és térszerkezet Magyarországon [Tourism Trends and Configuration in Hungary]. *Publikon Kiadó, Pécs*, p. 143.

BUJDOSÓ, Z., GYÖRKI, M. (2011). A biztonság szerepe a turizmusfejlesztésben [The Role of Security in Developing Tourism]. *Acta Carolus Robertus*, 1, 2, 45-56.

BUULTJENS, J., RATNAYAKE, I., & GNANAPALA, A. (2015). Post-Conflict tourism development in Sri Lanka: implications for building resilience. *Current Issues in Tourism,* 19, 4, 1-18.

CHU, F. L. (2008). A Fractionally Integrated Autoregressive Moving Average Approach to Forecasting Tourism Demand. *Tourism Management*, 29, 79-88. https://doi.org/10.1016/j.tourman.2007.04.003

ČAUŠEVIĆ, A., MIRIĆ, R., DREŠKOVIĆ, N., HRELJA, E. (2020). First-time and repeat visitors to Sarajevo. *European Journal of Tourism, Hospitality and Recreation*, 10, 1, 14-27.

DÁVID, L., MOLNÁR, F., BUJDOSÓ, Z., DERESKEY, A. (2007). Biztonság, terrorizmus, turizmus [Security, Terrorism, Tourism]. *GAZDÁLKODÁS: Scientific Journal on Agricultural Economics*, 51, 20, 160-166.

DEHOORNE, O., MIHAELA OLĂU, V., TUDOR, C. (2019). Tourist Resources Assesement in Padurea Craiului Mountains. *Folia Geographica*, 61, 2, 163-171.

EDGELL, D.L. SR. (2008). Tourism Policy and Planning: Yesterday, Today and Tomorrow. Burlington: Butterworth-Heinemann.

FILIMON, L.M. (2016). An overview of the Copenhagen school's approach to security studies: constructing (in)security through performative power. *The Romanian Journal for Baltic and Nordic Studies,* 8, 2, 47-72.

GAYDUKEVICH, L.M. (2017). Security Problems in International Tourism. *Journal of the Belarusian State University. International Relations, BSU*, 1, 28-35.

GIL-ALANA, L. A., MERVAR, A., PAYNE, J. E. (2015). Measuring Persistence in Croatian Tourism: Evidence from the Adriatic Region. *Applied Economics*, 47, 4901-4917. https://doi.org/10.1080/00036846.2015.1037440

GOODRICH, J. N. (2002). September 11, 2001 Attack on America: A Record of the Immediate Impacts and Reactions in the USA Travel and Tourism Industry. *Tourism Management*, 23, 573-580. https://doi.org/10.1016/S0261-5177(02)00029-8

HABIB M.A., ANIK M.A.H. (2021). Impacts of COVID-19 on Transport Modes and Mobility Behavior: Analysis of Public Discourse in Twitter. *Transportation Research Record*, 1-14.

HALL, C.M., O'SULLIVAN, V. (1996). Tourism, political stability and violence. In *Tourism, Crime and International Security Issues*; Pizam, A., Mansfeld, Y., Eds.; John Wiley: New York, NY, USA, pp. 105–121.

HERMAN, G.V., BANTO, N., HERMAN, L.M., UNGUREANU, M., KOSTILNÍKOVÁ, K., JOSAN, I. (2022). Perception, Reality and Intent in Bihorean Tourism, Romania. *Folia Geographica*, 64, 2, 86-103.

HRELJA, R., RYE, T. (2022). Decreasing the share of travel by car. Strategies for implementing 'push' or 'pull' measures in a traditionally car-centric transport and land use planning. *International Journal of Sustainable Transportation*, 1-14.

INGRAM, H., TABARI, S., WATTHANAKHOMPRATHIP, W. (2013). The impact of political instability on tourism: case of Thailand. *Worldwide Hospitality and Tourism Themes*, 5, 1, 92-103.

ISSA, I.A., & ALTINAY, L. (2006). Impacts of Political Instability on Tourism Planning and Development: The Case of Lebanon. *Tourism Economics,* 12, 3, 361-381.

IVANOV, S., GAVRILINA, M., WEBSTER, C., RALKO, V. (2017). Impacts of political instability on the tourism industry in Ukraine. *Journal of Policy Research in Tourism, Leisure and Events*, 9, 1, 100-127.

KASTENHOLZ, E., CARNEIRO, M.J., EUSÉBIO, C. (2005). The impact of socio-demographics on tourist behavior – analyzing segments of cultural tourists visiting Coimbra. Conference: the International Conference ATE2005, *Advances in Tourism Economics*, At: Universidade de Évora/ Portugal.

KŐVÁRI, I., ZIMÁNYI, K. (2011). Safety and security in the age of global tourism: The changing role and conception of Safety and Security in Tourism. ABSTRACT - Applied Studies in Agribusiness and Commerce 5(3–4), 59-61, Agroinform Publishing House, Budapest.

LEVYTSKA, I., KLYMCHUK, A., SHESTAKOVA, A., & BILETSKA, N. (2023). Tourist Potential of Ukraine: Challenges and Prospects of the Post-War Time. *Journal of Environmental Management and Tourism,* 14, 2, 299 – 305.

LLORCA-VIVERO, R. (2008). Terrorism and international tourism: new evidence. *Defense and Peace Economics*, 19, 2, 169-188.

MAO, L. (2019). Impacts of Terrorism in the United Kingdom and Europe on Tourism in the United Kingdom. *Advances in Applied Sociology*, 9, 491-504.

MASLOW, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50, 370-396.

MICHALEK, A. (2022). An Aetiology of Crime in the Suburbs: The Case Study of Bratislava. *Folia Geographica,* 64, 1, 90-111.

MICHALKÓ, G. (2004). A határ menti bűncselekmények turizmusföldrajzi aspektusai Magyarországon [Tourism Geography Aspects of Frontier Crimes in Hungary]. In: Hautzinger, Z. (ed.): Pécsi Határőr Tudományos Közlemények III. [Pécs Frontier Guard Scientific Publications III.] Magyar Hadtudományi Társaság Határőr Szakosztály Pécsi Szakcsoportja, Pécs, pp. 189-200.

NEUMAYER, E. (2004). The impact of political violence on tourism: dynamic cross-national estimation. *The Journal of Conflict Resolution*, 48, 2, 259-281.

NURKOVIĆ, R., REWUCKI, J. (2018). Economic Relations of Bosnia and Herzegovina and Islamic Countries. *Folia Geographica*, 60, 2, 49-61.

PANDEY, D.K., KUMAR, R. (2022). Russia-Ukraine War and the global tourism sector: A 13-day tale. *Current Issues in Tourism,* 26, 5, 692-700.

PIZAM, A. (1999). A Comprehensive Approach to Classifying Acts of Crime and Violence at Tourism Destinations. *Journal of Travel Research*, 38, 5-12. https://doi.org/10.1177/004728759903800103

PIZAM, A., FLEISCHER, A. (2002). Severity versus Frequency of Acts of Terrorism: Which Has a Larger Impact on Tourism Demand? *Journal of Travel Research*, 40, 337-339. https://doi.org/10.1177/0047287502040003011

RICHARDS, G. (1996). Cultural Tourism in Context, in Greg Richards (ed.) *Culture Tourism in Europe,* CAB INTERNATIONAL, Wallingford.

RICHTER, L. K., WAUGH, W. L. J. (1986). Terrorism and Tourism as Logical Companions. *Tourism Management*, 7, 230-238. https://doi.org/10.1016/0261-5177(86)90033-6

SASS, E. (2020). THE IMPACT OF EASTERN UKRAINIAN ARMED CONFLICT ON TOURISM IN UKRAINE. *GeoJournal of Tourism and Geosites*, 30, 2, 880–888. https://doi.org/10.30892/gtg.302spl14-518

SHARIFI TARAZKOHI, H., MAKAN SEDAGHAT, S. (2014). Impact of Modern Armed Conflicts on Tourism Industry. *Journal of Tourism & Hospitality Research*, 2, 4, 91-104.

SOBOTOVA, J., HAVLICEK, T., KLINGOROVA, K. (2019). How The Czechs and Spanish Perceive Islam: Islamophobia in the European Context. *Folia Geographica,* 61, 2, 5-24.

SUTTIKUN, C., CHANG, H. J., ACHO, C. S., UBI, M., BICKSLER, H., KOMOLSEVIN, R., CHONGSITHIPHOL, S. (2018). Sociodemographic and travel characteristics affecting the purpose of selecting Bangkok as a tourist destination. *Tourism and Hospitality Research*, 18, 2, 152–162.

TOMCZEWSKA-POPOWYCZ, N., QUIRINI-POPŁAWSKI, Ł. (2021). Political Instability Equals the Collapse of Tourism in Ukraine? *Sustainability*, 13, 4126.

VARGA H., BAGDI R. (2011). A terrorizmus hatása a nemzetközi idegenforgalomra [The effects of terrorism on international tourism]. *ACTA CAROLUS ROBERTUS*, 1, 2, 175-186.

WAMBANI, P.P, OGUNJINMI, A.A., OLADEJI, S.O. (2020). Socio-Demographic Determinants of Travel Motivation and Behaviour of Visitors in Nature-Based Destinations in Northern Nigeria. *J. Appl. Sci. Environ. Manage*, 24, 12, 2121-2129.

WEN, J., LOCKYER, T., ZHANG, H. (2018). Destination Image and Perceived Risk of Visiting Ukraine: An Exploratory Study of Chinese Male Outbound Tourists. *Int. J. Res. Tour. Hosp*, 4, 1-9.

WOLFF, K., LARSEN, S. (2014). Can terrorism make us feel safer? Risk perceptions and worries before and after the July 22nd attacks. *Annals of Tourism Research*, 44, 200–209.

WOYO, E., SLABBERT, E., SAAYMAN, M. (2019). Do socio-demographic characteristics influence destination attractiveness perceptions after political turmoil: the case of Zimbabwe? *African Journal of Hospitality, Tourism and Leisure*, 8, 3, 1-20.

MIXED-USE DEVELOPMENTS IN PHOENIX AND TEMPE, ARIZONA: SUSTAINABILITY CONCERNS AND CURRENT TRENDS

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Abstract
In parallel with the growing concerns of climate change, sustainability, and a perceived lack of urban vibrancy and vitality, an increased number of planning and design movements, policies, and incentives have emerged in the US during the last decades, criticizing urban sprawl and praising the idea of 15-minute, compact cities. However, the tools meant to achieve these, including transport-oriented and mixed-use developments were typically hampered by residential perceptions and demand, especially in the spread, auto-dependent urban regions of the western USA. The aim of the research was to explore current trends in the development of mixed-use projects and the extent to which these processes are stimulated by sustainability concerns in Phoenix and Tempe, Arizona, located in one of the most spread urban regions in the world. Interviews were conducted with planners and city representatives in the Phoenix Metropolitan Area, which are complemented by the review of municipal strategies and zoning ordinances, visualization and analysis of GIS data, and implementation of site visits. The findings show that the strategic aspirations towards mixed-use developments lack environmental considerations due to public perceptions being tied to other issues related to mixed-use developments, which can be traced primarily to Phoenix Downtown. As general difficulties, concerns aggravated by political, administrative, and funding problems. However, decoupled from sustainability, mixed-use developments are likely to proliferate in the Phoenix and Tempe areas due to political will and continuous gentrification processes.

Keywords
Urban planning, Phoenix MPA, Mixed-use developments, Sustainability, Trends, Interviews, GIS

INTRODUCTION

Urban sprawl, and the concept, and physical manifestations of the 15-minute cities became one of the prominent topics of geographical research and academic discussion (Ismael, 2021; Moreno et al. 2021). Indeed, the concept of 15-minute city is primarily built upon the research fields of the disciplines rooted in modern geography of the 20th century (Mocák et al. 2022). During the last decades the

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concept of 15-minute cities emerged globally, and in the urban development principles of European Union. Meanwhile, in North America in response to the growth of American suburbs and the decline of city centers, pioneers of the New Urbanism (NU) Movement and Smart Growth (SG) Network played a key role in encouraging more criticism of exclusionary zoning, which has contributed to urban sprawl (Knaap and Talen, 2005). NU and SG are flagship advocates of creating compact cities, vibrant neighborhoods, and walkable urban spaces in the United States: one of their common tools to achieve this desire is mixed-use developments. Due to these aspirations, principles of NU and SG have been attached to the concepts of sustainable urban development in general, promoting the virtues of mixed-use developments including the increase of walkability, and vibrance (Jepson and Edwards, 2010). Nevertheless, the popularity growth of mixed-use developments seems to be lagging, as it represents a radical contrast to the urban development of the past, which is compounded by several institutional issues (Grant and Perrott, 2011).

OBJECTIVES

This paper focuses on the Phoenix Metropolitan Area (PMA); an urban region that consists of one of the fastest-growing, sprawled, and auto-dependent cities in the United States (Gammage, 2016). The research sought answers to two main research questions: (1) To what extent increasing sustainability concerns are stimulating mixed-use developments in cities of Tempe and Phoenix, Arizona? (2) What planning and policy solutions could exist to overcome the barriers that impede the appearance of mixed-use developments in Tempe and Phoenix, Arizona, according to planners and city representatives?

THEORETICAL FRAMEWORK

During the 20th century, suburbanization and urban sprawl had crucial roles in shaping urban development in both Europe and the United States. Although, to some extent, urban sprawl has occurred during different periods and taken on diverse forms on the two continents (Duany et al. 2000; Bueno-Suárez and Coq-Huelva, 2020). Additionally, suburbanization processes have went through on different patterns after the second world war also in Europe, which is influenced highly by the specific goals and aspirations of communist regimes regarding economic and urban development in the CEE countries (Matlovič and Sedláková, 2007; Kocsis, 2015b; Kocsis and Kassay, 2018; Losonczy et al. 2022). For example, manifesting suburbanization patterns in an "intra-urban" form, within the boundaries of the administrative area of the cities (Hegedűs et al. 2023).

Reflecting on the consequences of urban sprawl and suburbanization, global awareness on the concept of 15-minute cites started to emerge, included in international, national, and city-level policy papers, guidelines, and incentives. Concerns related to urban sprawl highlight the issue of expanding land use and natural land loss, and the growing pressure on transportation infrastructure due to increased traffic. These processes not just cause higher environmental impact, but also have economic and social aftereffects. The concept of 15-minute city emerges in the urban realm as a compact form of urban fabric. Ultimately changing how people use the city, 15-minute cities indented to provide the essential amenities and services for its residency within a 15-minute distance of walk, cycling, or public transport (Bueno-Suárez and Coq-Huelva, 2020; Moreno et al. 2021; Mocák et al. 2022). Primarily in the North American context, discussion on 15-minute cities supplemented by the concepts of transit oriented, and mixed-use developments (Jepson and Edwards, 2010).

The geographical relevance of the topic discussed by this paper is essential. The topics of behavioral geography and time geography are strongly embedded in the visions of 15-minute city, as the main research fields of these disciplines includes how people behave in the urban realm, and how they react to physical changes in the urban space (Matlovič and Matlovičová, 2020; Mocák et al. 2022). Additionally, when 15-minutes cities are discussed, it is important noting the relevance and adequacy of chronourbanism, which focuses on proximities of basic services and travel times of residents, reflecting on the quality of life in the city (Moreno et al. 2021; Mocák et al. 2022).

Mixed-use developments and sustainability

Building upon the ideas of Jane Jacobs, NU and SG emerged as prominent advocates against urban sprawl, which has been facilitated by transportation development (Gurwitz, 2019) and further enabled by long-standing federal government policies (Glaeser, 2012) partially manifested in exclusionary zoning (Duany et al. 2000; Whittemore, 2021). With the support of NU and SG, mixed-use developments have gained prominence in the United States as a solution for the concept of 15-minute cities. These developments are seen as a quasi-alternative to the unsustainable urban sprawl and are perceived as a key factor in creating vibrant, pedestrian-friendly urban centers (Knaap and Talen, 2005). A mixed-use development (1) is a real estate project with planned integration of some combination of retail, office, residential, hotel, recreation, or other functions, including mixed apartment types and prices supporting social diversity; (2) is pedestrian-orientated and contains elements of a live-work-play environment; (3) maximizes space usage (Niemira 2007).

However, the definition of sustainable development presented in the 'Brundtland Report' 36 years ago (United Nations, 1987). Debates still presented on the relevance and adequacy of such definition, as well on the performance of linked indicators including Sustainable Development Goals (Moyer and Hedden, 2020; Ruggerio, 2021). During the last decades, three 'pillars' of sustainability have become acknowledged in policies and academic literature, namely environmental, social, and economic (Purvis et al. 2019; Clune and Zehnder, 2020). Based on Munasinghe (1993), Ruggerio (2021) described the possible concerns and topics of sustainability (Tab. 1). The different topics highlighted by Ruggerio (2021) are also supported by several academic articles (Hansmann et al. 2012; Purvis et al. 2019; Gomes Silva et al. 2022). Still, it seems debatable whether the aspirations linked to these pillars could be achieved simultaneously (Boussemart et al. 2020; Dalampira and Nastis, 2020; Gomes Silva et al. 2022).

Like sustainability, the meaning and the manifestation of sustainable urban development are still debatable (Næss, 2001). However, sustainability and the three pillars of it have become a fundamental principle of European urban planning, integrating them in policies and strategic documents (Kagan et al. 2018; Fioretti et al. 2020).

Taking into account the highly debatable nature of sustainability (Wilkinson et al. 2001; Owens, 2003; Johnston et al. 2007; Behrends et al. 2008; White, 2013; Moore et al. 2017; Ruggerio, 2021), as well as the concept of 'three pillars'(Boussemart et al. 2020; Dalampira and Nastis, 2020; Gomes Silva et al. 2022), it can be stated that the principles previously mentioned of New Urbanism, Smart Grow overlap with the understandings of environmental, social, and economic sustainability to some extent (Tab. 1).

As can be seen in Tab. 1, the principles of NU and SG can be related to the concerns of the three pillars of sustainability. Nevertheless, the experienced impacts of mixed-use developments, which are one of the common elements of NU and SG, are highly varied, concerning the environment, society and economy, and the related sustainability.

Mixed Use Developments Affecting Environmental Sustainability

The environmental consequences of neglecting infill and mixed-use developments and urban sprawl seem obvious; monofunctional, horizontally extensive suburban developments increase auto-dependency, and energy consumption thus elevating pollution and environmental impact (Kahn M. E. 2000; García-Palomares, 2010; Kovács et al. 2020; Hajilou et al. 2022). Additionally, greenfield developments generally contribute to the decrease of agricultural and natural areas (Frenkel A. 2004; Zhou X.-Wang Y. 2011).

Although, it is important to remark on other environmental implications related to mixed-use developments. It is indisputable that the development of mixed-use urban districts consequently creates higher densities, which is also inherent in Transit Oriented Developments on a neighborhood-scale (Renne, 2009; Nasri and Zhang, 2014; Yildirim and Arefi, 2021). It can be argued that the increased density of mixed-use areas contributes to the decrease in energy consumption and

Tab. 1 Principles of sustainability, New Urbanism, and Smart Growth

Concerns of sustainability [Ruggerio (2021) adapted from Munasinghe (1993)]		
Environmental sustainability	**Social sustainability**	**Economic sustainability**
• Biodiversity/Resilience • Natural Resources • Pollution	• Poverty • Empowerment • Culture	• Efficiency • Growth • Stability
Principles of New Urbanism (Congress for The New Urbanism, n.d.)		
• preservation of agrarian hinterland and natural landscapes near metropolitan regions, • encourage infill developments, • minimize auto dependency with a wide range of transportation alternatives, • encourage compact, pedestrian-friendly, and mixed-use neighborhoods, • embed civic, institutional, and commercial activity in neighborhoods, • encourage the creation of community gardens, • encourage natural methods of cooling and heating.	• encourage compact, safe, interesting, pedestrian-friendly, and mixed-use neighborhoods, • broad range of housing types and price levels to encourage affordable housing, • embed civic, institutional, and commercial activity in neighborhoods, • encourage the creation of community gardens, • encourage community and culture of democracy with appropriate civic buildings.	• metropolitan region referred to as a 'fundamental economic unit of the contemporary world, • share of revenues and resources more cooperatively among municipalities, • ration coordination of services, development, and infrastructure, • support economic development with adequate urban design codes, • encourage the creation of community gardens.
Principles of Smart Growth (Shrivastava and Sharma, 2012)		
• Mix land uses and provide a variety of transportation choices to minimize car dependency, • encourage compact design and infill development, • encourage walkable neighborhoods, • preserve open spaces and farmlands.	• mix land uses to improve public safety and vibrance, • create a broad range of housing for different social and financial status, • encourage walkable neighborhoods, • encourage attractive communities, • Provide a variety of transportation choices, • Support predictable, fair, and cost-effective development decisions, • Encourage collaboration between stakeholders and residents.	• Mix land uses to improve business, • Development within existing communities to save infrastructural expenditure and strengthen local tax bases, • Support predictable, fair, and cost-effective development decisions.

Source: Ruggerio, 2021; Munasinghe 1993; Congress for The New Urbanism, n.d.; Shrivastava and Sharma, 2012 environmental impact of infrastructural developments per household (Glaeser, 2012; Siemiatycki, 2015; Mualam et al. 2019).

Increased density occasionally increases local noise (Yildirim and Arefi, 2021), as well as air pollution (Frank and Engelke, 2005). However, services and functions selected wisely (Talen and Koschinsky, 2014; Tian et al. 2020), also convenient and abundant public transport options, contribute to decreasing car dependency and commute times (Boarnet and Crane, 1997; Tian et al. 2020). Hence, overall urban air pollution is likely to decrease (Frank and Engelke, 2005).

Mixed-Use Developments Affecting Social Sustainability

Compact, walkable, diverse neighborhoods containing mixed-use developments have a positive effect on urban residents concerning social relationships, health, crime, and safety. However, it is important to note that few studies have shown the negative effects of TOD developments on crime, access to employment, and school quality (Talen and Koschinsky, 2014).

Nonetheless, mixed-use developments have an indisputable role in forging urban districts more human, walkable, and vibrant (Jacobs, 1961; Gehl, 2010; Talen and Koschinsky, 2014), these are privileges that cannot be afforded by just anyone (Grant and Bohdanow, 2008; Moos et al. 2018). In several contexts, mixed-use developments are referred to as not just a mixture of retail and residential functions, but also as an integration of apartments for a broader range of residents with differentiated financial and social backgrounds (Coupland, 1996; Wardner, 2014). Hence, transit-oriented and mixed-use developments are intended to create diverse urban communities which support residential mobility, participation, and governance (Chaskin et al. 2012; Sennett and Sendra, 2020). It is important to point out that this is an aspiration which is achieved in some cases. Mixed-use or TOD neighborhoods with an abundant selection of services, stores, and recreational units close to residential areas emerging in downtowns generally stimulate gentrification, thus providing less affordable and less heterogeneous districts, thus encouraging segregation (Sander, 2002; Kenny and Zimmerman, 2004; Walks and Maaranen, 2008; Hanlon, 2010; Markley, 2018). Meanwhile, less well-off residents are usually excluded from redeveloped downtowns into older suburbs (Siemiatycki, 2015; Lee et al. 2017).

Higher densities within infill developments bear inevitable benefits compared to greenfield developments when it comes to environmental sustainability (Glaeser, 2012; Mualam et al. 2019). In contrast, academic literature agrees that higher densities generally undermine residential well-being, as well as a sense of security, considering especially children, for the reason of overcrowding, as well as increased traffic congestion, and air, also noise pollution (Jackson, 2003; Frank and Engelke, 2005; Talen and Koschinsky, 2014). However, referring to the previous chapters, these effects could be mitigated by cautious planning (Talen and Koschinsky, 2014; Tian et al. 2020).

Mixed-Use Developments Affecting Economical Sustainability

Vertically allocated mixed-use developments built in infill sites are generally linked to cost efficiency due to decreased infrastructural costs (Glaeser, 2012; Mualam et al. 2019). For this reason, higher aggregated but decreased infrastructural expenses per unit could be expected in terms of higher exploitation, as well as the occupancy ratio, including parking, enforcement, and security (Siemiatycki, 2015). Furthermore, less traffic reduces pressure on road infrastructure (Tian et al. 2020; Whittemore, 2021). Consequently, infill mixed-use developments in downtown have a positive impact on land prices, as well as the economic vitality of the neighborhood (Malizia and Song, 2016; Van Leuven, 2022); still the economic sustainability of mixed-use developments during operation is nuanced by a significant number of factors. Specifically, authorization and planning of mixed-use developments generally require greater expenditure and time consumption than their single-use counterparts, which is compounded by the fact that mixing functions demand broader and longer cooperation between stakeholders (Siemiatycki, 2015; Jackson, 2018; Trudeau, 2013).

Smaller-scale mixed-use developments concerning retail and services possess modest economic performance compared to auto-dependent big-box retail centers; to such an extent that the latter even endanger the vitality of smaller-scale retail (Gyourko and Rybczynski, 2000; Bartlett, 2003; Grant and Perrott, 2011). Although a smaller retail store requires fewer consumers to operate sustainably, the selection of goods offered is also smaller and the prices are unavoidably higher (Bartlett, 2003). Consequently, the typical American customer chooses large box retail centers instead of smaller stores due to the broader selection, the atmosphere, as well as the 'recreational' function of shopping, which is supported by the high car ownership rates and relatively cheap fuel (Handy and Clifton, 2001).

The debates and contradictions concerning the three pillars of sustainability are reflected in the advantages and drawbacks of mixed-use developments related to environmental, social, and economic aspects. However, the major advantages of mixed-use developments seem to culminate with regards their environmental consequences. However, these assets also have their shortcomings, including increased density and gentrification, which may cause social issues.

RESEARCH METHODS

The research was implemented between February and May 2023 in the PMA, Arizona, United States, supported by the facilities offered by the Arizona State University at Tempe. As the research question indicates that the work focused on two particular cities of the Metropolitan Region, namely Phoenix as the primate city, and Tempe, as a significant subcenter of the Metro Area. The research relied mainly on qualitative tools; however, GIS data visualization and analysis were also utilized. The applied method consists of the following five steps: (1) review of general plans and other strategies, including environmental and transportation plans of Phoenix and Tempe, focusing on the context and main purpose of mixed use developments; (2) assessment of zoning ordinance of the cities, centering on zoning districts related to mixed use developments, as well as on their characteristics; (3) mapping of zoning districts related to mixed use developments using GIS data achieved from municipal websites to explore the patterns of emergence, as well as their relations to other elements of urban fabric; (4) site visits implemented to explore the manifestation, nature, and characteristics of mixed use developments; (5) a sum of 10 interviews conducted with city representatives and planners working in the PMA. An interview section was strictly devoted to the topic discussed currently. The interviewees were recruited through email, public and non-public institutional databases. As a supplement to the interviews, a community meeting was held in a downtown district of Phoenix. The main topic of the meeting was mixed-use developments; therefore, different perceptions and opinions of residents were observed about the developments discussed, as well as the attitudes of city planners.

RESEARCH AREA

The PMA is one of the fastest-growing metropolitan areas in the United States. Several cities in the region, including Gilbert, Glendale, Scottsdale, Mesa, and Tempe, grew at a double-digit rate between 1970 and 2020 (Lang and LeFurgy, 2007). To provide an area for incoming residents, PMA annexed land of 82,6 km2 between 1990 and 1997 (Hostetler and Knowles-Yanez, 2003). As was discussed earlier, these high volumes possess a significant environmental impact, which, in the case of the PMA, culminated in natural land loss and increasing auto dependency. Furthermore, due to the geographical reasons, other environmental issues arise, including extreme heat during the late spring and summer months. Furthermore, as the effects of climate change are amplifying, water conservation problems may increase (Gammage, 2016). These problems, especially concerns regarding heat mitigation and water conservancy, are frequently discussed not only in academic literature, but also in municipal planning and strategic documents of Phoenix and Tempe (Wentz et al. 2014; Crewe et al. 2016; Sen et al. 2019; Wang et al. 2019; Meerow et al. 2021). Consequently, a significant proportion of municipal policies and projects are dedicated to these problems.

In contrast to the City of Phoenix, The City of Tempe is built out. Hence, there is no more annexable land available for the municipality, where new greenfield developments could emerge. Consequently, its General Plan focuses on the improve of the already-built urban area, implementing infill developments mainly in Downtown, supported by public transport services and convenient land use classification.

RESULTS AND DISCUSSION

Strategies of Tempe and Phoenix regarding sustainability and mixed-use developments

The General Plan represents the bedrock of the municipal planning, formulating visions for the economic, social, and environmental dimensions of the cities for the next 25 years. The most important instrument of planning is the Zoning Plan, which sets the legal and physical framework for the development patterns of the cities, in consistency with the General Plan (Cullingworth and Caves, 2014). Consequently, public hearings organized either by the Planning Department or the local neighbourhood councilmember of the municipality often have a strong influence on rezoning processes in the PMA.

In the case of the City of Phoenix, mixed-use developments in the General Plan are generally discussed within Transit Oriented Developments. The plan gives us the impression that the aspirations toward these developments are more restricted than in Tempe, as the term 'mixed use' is significantly rarer. Additionally, as in the case of Tempe, mixed-use developments often emerge as a potential increase in amenities, rather than a tool that aims to increase sustainability in both strategic documents and zoning ordinances.

The Zoning Ordinance of Tempe and Phoenix Mapped

A zoning ordinance is one of the main tools to control urban development and land use patterns, as it strictly regulates the physical and functional aspects of particular blocks. In the following table, codes, and ordinances of Tempe and Phoenix related to mixed-use developments are listed, highlighting their most important aspects (Tab. 2).

To shed light on Tempe and Phoenix's advance in the development of mixed-use blocks, as well as their forthcoming plans, it is important to map these zoning districts. Using GIS data, the manifestation of strategic plans and zoning codes can be traced and visualized.

Four types of mixed-use development codes are present in the zoning ordinance, which can be seen as mapped in Fig. 1. Mixed-Use Educational Districts are the most extensive in their area, which provide space for the properties of Arizona State University.

Tab. 2 Zoning ordinance of Tempe and Phoenix regarding mixed-use developments.

<table>
<tr><th>TEMPE</th><th>PHOENIX</th></tr>
<tr><th>City Center Code</th><th>Downtown Code</th></tr>
<tr><td colspan="2">Purpose
(1) Permit higher densities;
(2) Support walkability and vibrance with appropriate urban design and mixed-use developments with regulations sentenced in the zoning ordinance.</td></tr>
<tr><th>Transportation Overlay District</th><th>Transit-Oriented Development District</th></tr>
<tr><td colspan="2">Purpose
(1) Promote and develop livable and sustainable neighborhoods;
(2) promote and increase the use of alternative modes of transportation;
(3) encourage a mix of uses;
(4) provide facilities that create a safe, accessible, comfortable, and pleasant environment for people encourage walkability;
(5) mitigate pollution</td></tr>
<tr><td colspan="2">Tools</td></tr>
<tr><td>Regulations sentenced in the zoning ordinance:
(1) influence the underlying zoning districts;
(2) prohibit functions;
(3) regulate ground floor uses;
(4) decrease in parking lots;
(5) regulate street-facing façades;
(6) provide sitting spaces;
(7) require increased shading along pavements</td><td>Strategic incentives according to goals</td></tr>
<tr><td rowspan="3"></td><th>Planned Unit Development (PUD)</th></tr>
<tr><td>Purpose
To create an innovative and compatible built environment, in compliance with the character of the neighborhood, responding to environmental and urban challenges.</td></tr>
<tr><td>Tools
Regulations sentenced in the zoning ordinance. Any permitted use can be proposed; site plan required which approved by public hearing process.</td></tr>
<tr><td>Mixed-use codes
(1) Medium Density;
(2) Medium-High Density;
(3) High Density;
(4) Educational</td><td>Walkable Urban Code
(1) Low Intensity Residential District;
(2) Low Intensity Mixed Use District;
(3) Medium Intensity District;
(4) High Intensity District</td></tr>
<tr><td colspan="2">Tools
Regulations sentenced in the zoning ordinance
Regulate
(1) functions; (2) ground floor uses; (3) density;
(4) setbacks; (5) building height; (6) number of parking lots</td></tr>
</table>

Source: City of Tempe, 2022; City of Phoenix 2022a

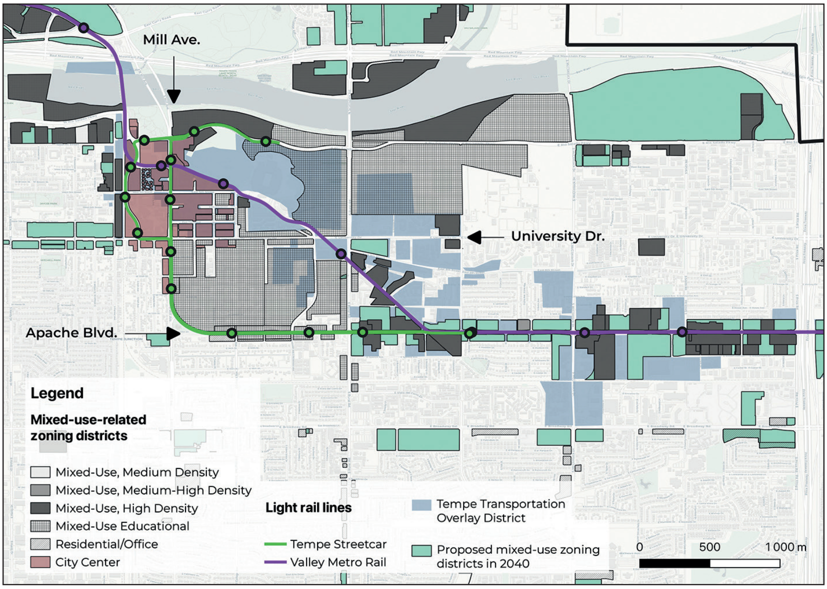

Fig. 1 Zoning districts, and other elements of the urban fabric-related mixed-use developments in downtown Tempe
Source: Own editing according to the data sets of City of Tempe, 2020; 2023a; b; Howard, 2021

The Valley Metro Rail, as well as Tempe Streetcar, represent the main public transport lines of Tempe, in addition to the city bus lines. Valley Metro Rail opened in 2008 and operates in an east-west direction between Phoenix and Mesa connected through Tempe. The Tempe Streetcar was opened in 2022, and circulates in Tempe Downtown, with a more restrained number of passengers compared to Valley Metro Rail. It can be stated that existing mixed-use developments, as well as the Transportation Overlay District, and main transportation lines, are followed by each other. For the future, proposed mixed-use developments until 2040 are also mapped, which also follow the already laid strategic and regulative paths. As Downtown Tempe is already exciting, being the heart of local business and nightlife, the current processes show the increasing role of Apache Boulevard in studentification and gentrification, which are supported by the aspirations of vibrant mixed-use developments and public transport services (Fig. 2). Although, achieving related goals could be made difficult by the relatively fragmented light rail stations and lower densities.

As mentioned above, Walkable Urban Code of Phoenix, which regulates the mixed-use development districts in the city, can be implemented solely in TOD districts. However, TOD districts continue towards the southern and eastern directions from Downtown, and mixed-use development lots are zoned in the northern and western TOD districts so far (Fig. 3).

Fig. 2 Mixed-use developments in Tempe.
(1) Medium-rise apartments with a supermarket on the ground floor in Downtown Tempe; (2) Mixed-use building in Downtown Tempe; (3) ASU student dorm on Apache Boulevard; (4) Medium-rise apartment with services on the ground floor on Apache Boulevard
Source: Own photographs

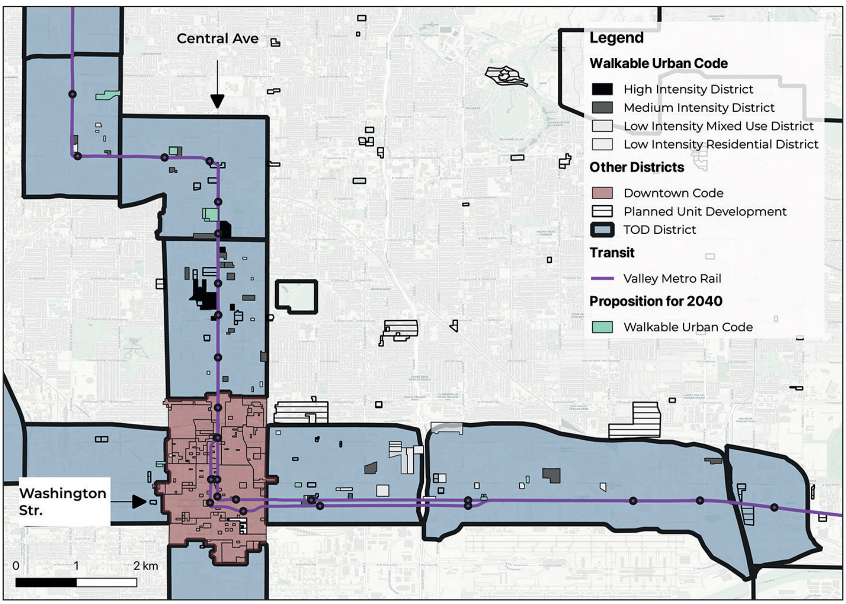

Fig. 3 Zoning districts and other elements of the urban fabric-related mixed-use developments in Downtown Phoenix
Source: Own editing according to the datasets of City of Phoenix, 2022b; c; d; Howard, 2021

Fig. 4 Mixed-use developments in Phoenix.
(1;2;3) Pubs in Downtown Phoenix, Roosevelt Street; (4) Empty lot zoned for mixed use on East Washington Street near a Valley Metro Rail station.
Source: Own photographs

Still, the developments in these districts are lagging due to the scarcity of light rail stations and low densities. Consequently, a considerable number of mixed-use developments are being implemented on Roosevelt Street in Downtown Phoenix, which local city representatives are the proudest of. However, the popularity of pubs and restaurants in Downtown Phoenix is less competitive than in Downtown Tempe until now (Fig. 4).

Concerns of Environmental Sustainability Attached to Mixed-Use Developments

The planners who participated in the interviews agree that the cities of PMA, including the primate city and Tempe, usually avoid the terms 'environmental sustainability' and 'sustainability' in the sections of General Plans that discuss mixed use developments. In fact, both Tempe and Phoenix have recently updated climate action plans, and the term 'mixed use developments' rarely appears. Although, slightly more emphasis could be observed on public transport, as well as on transit-oriented developments. These are, according to the reviewed plans, intended to reduce auto dependency and pollution. Nevertheless, in general, when it comes to environmental sustainability, the focus is on heat mitigation and water conservancy; on problems, which may have a more direct impact on residents.

Municipal General Plans are inevitable to 'sell' mixed-use developments and TODs as amenities with the provision of services within walking distance, as well as vibrant and vibrant urban neighborhoods. As some interviewees noted, it may be attributed to the fact that these might be the least debatable merits of mixed-use developments, which reflect the highly controversial nature of these projects in the context of the three pillars of sustainability discussed previously. As a planner commented, 'walkability and vibrance; this is what it does, right?' Consequently, when they hear 'environmental sustainability' a certain extent of the residents suggests the limitation of freedom as its supporters '*want to close them in a 15-minute bubble*'; '*they call them woke, which is kind of odd*' (a planner).

This is supported by the observations made at the community meeting: planners alongside city representatives argue on the side of mixed-use developments with the promise of elevated well-being and vibrant downtowns, not with a reduced environmental impact or stopping climate change. The experiences from the interviews supported the fact that planners must wrap mixed-use developments in these promises to make them popular because environmental sustainability still seems to be out of the spotlight of the average resident. As an interviewee noted '*there are just bigger things going on that people worried about when it comes to mixed-use developments*'. '*I do not think Tempe and other cities do a good job of wrapping it around a solution for sustainability*' (a planner). According to the interviewees, it is not just due to capacity problems of municipalities, but also due to political reasons: City representatives and councilors are usually under pressure from their voters who oppose mixed-use developments or have the concern that sustainability measures are meant to control human rights and freedom: '*Yeah, put more parks in the suburbs, just don't tell them it is good for the environment*' (a planner).

General and Unique Tendencies of Mixed-Use Developments in Phoenix and Tempe

It should be noted that the implementation of mixed-use developments and its pace are primarily driven by residential demand, concerns, and perceptions in Phoenix and Tempe, which ultimately influence the behavior of municipalities and real estate developers. In Downtown Tempe, where mixed-use developments are mature, residential aversion is not considered a major problem at present, as local communities already replaced by young professionals and the students of Arizona State University. Traced in Downtown Phoenix, residential opposition against mixed-use developments arises: by a significant part of the population, gentrification facilitated by downtown mixed-use developments is seen as the destruction of still, long-standing downtown communities; higher densities and public transport developments are quasi-equaled not just to noise and traffic, but also to the emergence of homeless people, drug addicts, and criminals. Furthermore, NIMBY-ism emerges when the municipality proposes the adjacent development of affordable housing, or when customers from other districts visit local restaurants, which are not adapted to the needs of the local population. Aforementioned are aggravated by funding issues and administrative burdens affecting both municipalities and real estate developers.

It is a commonly accepted statement that the PMA consists of development-friendly cities. This is because land is abundant and relatively cheap; additionally, cities generally seek new residents partially because a significant portion of their budget comes from land sales tax. Also, it shall be highlighted that zoning districts possess relatively flexible zoning codes, which indeed, provide advantages for real estate developers during municipal revision of compliance with design principles. The zoning ordinance seems flexible when rezoning is not needed, especially since in this case, there is little residents can do to impede a project. However, when a proposal cannot be implemented within the framework of the existing zoning district, rezone is needed. As mentioned previously, this is when difficulties start to accumulate. If rezoning is required, real estate developers must go through community meetings, residential hearings, and generally long-lasting consultations with the municipality's review board, which is often strict with their design requirements. To pass the rezoning process successfully, real estate developers must negotiate with residents and make concessions regarding design and functions to get approval, which also applies to the local government. However, mixed-use developments are well promoted in Downtown Phoenix by the municipality, administration, and real estate developers will continue to avoid single-family neighborhoods for political and administrative reasons.

Mixed-use developments are considered a highly controversial topic in Downtown Phoenix, where long-standing communities reside. Although the Municipality of Phoenix represented by councilors have great hope for mixed-use developments in downtown districts, they work relentlessly to persuade the public alongside planners. Consequently, as an interviewee noted, Phoenix is going to be '*the big one*' that is '*pushing hard*'. Furthermore, increasing gentrification processes can facilitate the implementation of mixed-use developments as young urban professionals arrive at PMA and require a vibrant downtown full of services, shops and restaurants, as well as reliable public transport services, placing increasing political pressure on the municipality.

CONCLUSIONS

According to the findings of the existing literature (Gyourko and Rybczynski, 2000; Bartlett, 2003; Grant and Perrott, 2011; Siemiatycki, 2015; Jackson, 2018; Mualam et al. 2019; Fischel, 2004; Lang and LeFurgy, 2007; Whittemore, 2021; Homsy and Warner, 2015; Boarnet and Crane, 1997; Handy and Clifton, 2001), residential resistance and lack of demand seem to remain as a main barrier implementing mixed-use development projects; these findings also reflect the controversial and obscure nature of mixed-use and transit oriented projects regarding the three pillars of sustainability. Consequently, the perceptions, fear, and controversial assessments of residents toward mixed-use developments make sustainability concerns so irrelevant that even strategic or environmental plans do not address mixed-use developments in the context of environmental sustainability. In line with that, planners, real estate developers, and city representatives rarely try to persuade residents with arguments that highlight mixed-use developments may decrease environmental impact, contributing to the fight against climate change. Consequently, mixed-use developments are 'sold' as an amenity for an elevated, modern, more interesting lifestyle regardless of whether municipalities and planners might have underlying motivations to act against climate change with the promotion of mixed-use developments. Slightly in contrast to the results of Grant and Perrot (2011), avoiding the term 'sustainability' appears to be the right strategy to convince doubting residents as significant public skepticism about climate change can still be observed. Among these residents, any measure, act or practice done for the sake of environmental sustainability is considered as the infringement of individual freedom, perceptions which are also highlighted by Capstick et al. (2015) and some aspects were mentioned in the theoretical framework of the 'conservative white male effect' by McCright and Dunlap (2013).

Nevertheless, the fact that mixed-use developments are not attached to sustainability concerns does not mean they will not materialize. Single-family neighborhoods seem to remain as no-go zones for mixed-use developments due to political reasons and significant residential opposition. However, planners of the PMA are becoming more optimistic, as Phoenix and Tempe municipalities have already started to encourage mixed-use developments in their downtown areas, although Phoenix is only at the beginning of this process. The promotion of mixed-use developments as amenities seems to work that is reinforced by the fact that PMA continues to face a heavy population influx, including young urban professionals who require vibrant downtowns and reliable public transport services. Nonetheless, gentrification is likely to stimulate mixed-use developments and may reinforce public tension, especially in the Phoenix downtown areas. Additionally, it is important to remark on external policy influences, of which the most notable is the Arizona State Groundwater Management Act of 1980, under which legislation residential developers are required to demonstrate that homeowners will have access to water in the next hundred years within the boundaries of designated Active Management Areas (Megdal, 2012).

As for the future, PMA will continue to face a significant population influx that may stimulate the implementation of mixed-use developments in the future. Although it contributes to gentrification and increased density, crowd and traffic. Since Downtown Tempe is already highly gentrified, this process is likely to exacerbate social tensions especially in Phoenix, where local communities with strong ties still reside.

The organically developed inner cities of historic European cities are relatively more conducive to improve walkability and vibrance than in the so-called auto-dependent cities of United States (Mocák et al. 2022). However, the change and recreation of intra-urban structures in order to fulfill such aspirations, could be problematic also in Europe. Specifically, some districts of inner-city cores shall be reconstructed and rehabilitated before making them viable (Kocsis, 2015b; Mocák et al. 2022). Additionally, one of the most prominent spatial consequences of post-socialist transition for cities in CEE countries were the decline of industrial areas, which is manifested in the emergence of brownfields in the urban fabric (Kocsis, 2015b). Policymakers and city leaders in Europe are dedicating significant resources to revitalizing brownfield areas with the creation of new local neighborhoods. However, developments are usually lagged by the possible presence residual contamination and by the lack of demand (Squires and Hutchison, 2021).

As in the U.S., the process of making suburbs walkable and vibrant can be lagging in case of CEE cities (Mocák et al. 2022), which highlights the problematic nature of recreate both social and physical realm of neighborhoods. Consequently, it is important to note that, as in the case of downtown Phoenix, the replacement of population in the suburbs of Budapest or Wroclaw causing many issues. This often culminates in conflicts between "indigenous" and "newcomer" residents over matters of governance, community development, identity, or varying service requirements (Kajdanek, 2014; Kocsis, 2015a; Kocsis, 2015b; Kocsis, 2023).

Nevertheless, strategies for creating, or recreating and restructuring intra-urban structures discussed in CEE context, could be adapted in the cities of the United States. Klimovský et al. (2016) are emphasizing the role of external assistance and broad involvement of stakeholders in order to solve internal social conflicts or problems. Additionally, smart city elements could have important role in making districts walkable, vibrant and viable, noted by Neumannová (2022). Consequently, smart city developments could build upon high quality local knowledge provided by Arizona State University.

Matlovičová et al. (2016) highlights the importance of place marketing as a vital element of urban planning, contributed by the wide cooperation of public and private sector. Related efforts shall be supported by the adequate provision of privacy, and information towards residents, highlighting the potential benefits. Specifically, as discussed earlier, in Phoenix, municipalities in cooperation with planners and real estate developers tend to use the same strategy for making mixed-use developments popular, which is often manifesting during public hearings.

REFERENCES

BARTLETT, R. (2003). Testing the "Popsicle Test": Realities of Retail Shopping in New "Traditional Neighbourhood Developments". *Urban Studies*, 40(8), 1471–1485. https://doi.org/10.1080/0042098032000094397.

BEHRENDS, S., LINDHOLM, M., WOXENIUS, J. (2008). The Impact of Urban Freight Transport: A Definition of Sustainability from an Actor's Perspective. *Transportation Planning and Technology*, 31(6), 693–713. https://doi.org/10.1080/03081060802493247.

BOARNET, M., CRANE, R. (1997). L.A. Story: A Reality Check for Transit-Based Housing. *Journal of the American Planning Association*, 63(2), 189–204. https://doi.org/10.1080/01944369708975914.

BOUSSEMART, J.-P., LELEU, H., SHEN, Z., VALDMANIS, V. (2020). Performance analysis for three pillars of sustainability. *Journal of Productivity Analysis*, 53(3), 305–320. https://doi.org/10.1007/s11123-020-00575-9.

BUENO-SUÁREZ, C., COQ-HUELVA, D. (2020). Sustaining What Is Unsustainable: A Review of Urban Sprawl and Urban Socio-Environmental Policies in North America and Western Europe. *Sustainability*, *12*(11), 4445. http://dx.doi.org/10.3390/su12114445.

CAPSTICK, S., WHITMARSH, L., POORTINGA, W., PIDGEON, N., UPHAM, P. (2015). International trends in public perceptions of climate change over the past quarter century. *WIREs Climate Change*, 6(1), 35–61. https://doi.org/10.1002/wcc.321.

CHASKIN, R., KHARE, A., JOSEPH, M. (2012). Participation, Deliberation, and Decision Making: The Dynamics of Inclusion and Exclusion in Mixed-Income Developments. *Urban Affairs Review*, 48(6), 863–906. https://doi.org/10.1177/1078087412450151.

CLUNE, W. H., ZEHNDER, A. J. B. (2020). The evolution of sustainability models, from descriptive, to strategic, to the three pillars framework for applied solutions. *Sustainability Science*, 15(3), 1001–1006. https://doi.org/10.1007/s11625-019-00776-8.

COUPLAND, A. (1996). *Reclaiming the City: Mixed use development*. London: Routledge

CREWE, K., BRAZEL, A., MIDDEL, A. (2016). Desert New Urbanism: Testing for comfort in downtown Tempe, Arizona. Journal of Urban Design, 21(6), 746–763. https://doi.org/10.1080/13574809.2016.1187558.

CULLINGWORTH, B., CAVES, R. W. (2014). Planning in the USA: Policies, issues, and processes. New York: Routledge.

DALAMPIRA, E.-S., NASTIS, S. A. (2020). Back to the future: Simplifying Sustainable Development Goals based on three pillars of sustainability. *International Journal of Sustainable Agricultural Management and Informatics*, 6(3), 226-240. https://www.inderscienceonline.com/doi/10.1504/IJSAMI.2020.112089

DUANY, A., PLATER-ZYBERK, E., SPECK, J. (2000). *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press.

FIORETTI, C., PERTOLDI, M., BUSTI, M., VAN HEERDEN, S. (2020). Handbook of Sustainable Urban Development Strategies, JRC Research Reports JRC118841, Joint Research Centre.

FISCHEL, W. A. (2004). An Economic History of Zoning and a Cure for its Exclusionary Effects. *Urban Studies*, 41(2), 317–340. https://doi.org/10.1080/0042098032000165271.

FRANK, L. D., ENGELKE, P. (2005). Multiple Impacts of the Built Environment on Public Health: Walkable Places and the Exposure to Air Pollution. *International Regional Science Review*, 28(2), 193–216. https://doi.org/10.1177/0160017604273853.

FRENKEL, A. (2004). The potential effect of national growth-management policy on urban sprawl and the depletion of open spaces and farmland. *Land Use Policy*, 21(4), 357-369.

GAMMAGE, G. (2016). *The Future of the Suburban City: Lessons from Sustaining Phoenix*. Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-624-0.

GARCÍA-PALOMARES, J. C. (2010). Urban sprawl and travel to work: the case of the metropolitan area of Madrid. *Journal of Transport Geography*, 18(2), 197-213.

GEHL, J. (2010). *Cities for People*. Island Press.

GLAESER, E. (2012). *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. Penguin Books.

GOMES SILVA, F. J., KIRYTOPOULOS, K., PINTO FERREIRA, L., SÁ, J. C., SANTOS, G., & CANCELA NOGUEIRA, M. C. (2022). The three pillars of sustainability and agile project management: How do they influence each other. *Corporate Social Responsibility and Environmental Management*, 29(5), 1495–1512. https://doi.org/10.1002/csr.2287.

GRANT, J. L., BOHDANOW, S. (2008). New urbanism developments in Canada: A survey. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 1(2), 109–127. https://doi.org/10.1080/17549170802221435.

GRANT, J., PERROTT, K. (2011). Where Is the Café? The Challenge of Making Retail Uses Viable in Mixed-use Suburban Developments. *Urban Studies*, 48(1), 177–195. https://doi.org/10.1177/0042098009360232.

GURWITZ, A. (2019). Atlantic Metropolis: An Economic History of New York City. New York: Palgrave Macmillan, Cham.

GYOURKO, J. E., RYBCZYNSKI, W. (2000). Financing New Urbanism projects: Obstacles and solutions. *Housing Policy Debate*, 11(3), 733–750. https://doi.org/10.1080/10511482.2000.9521384

•HAJILOU, M., MESHKINI, A., MIREHEI, M., GHAEDRAHMATI, S. (2022). Urban sprawl: Do its financial and economic benefits outweigh its costs for local governments? *GeoJournal*, 88, 2325-2342. https://doi.org/10.1007/s10708-022-10747-9.

HANDY, S. L., CLIFTON, K. J. (2001). Local shopping as a strategy for reducing automobile travel. *Transportation*, 28, 317-346.

HANLON, J. (2010). Success by Design: HOPE VI, New Urbanism, and the Neoliberal Transformation of Public Housing in the United States. *Environment and Planning A: Economy and Space*, 42(1), 80–98. https://doi.org/10.1068/a41278.

HANSMANN, R., MIEG, H. A., FRISCHKNECHT, P. (2012). Principal sustainability components: Empirical analysis of synergies between the three pillars of sustainability. *International Journal of Sustainable Development & World Ecology*, 19(5), 451–459. https://doi.org/10.1080/13504509.2012.696220.

HEGEDŰS, L. D., TÚRI, Z., APÁTI, N., PÉNZES, J. (2023). Analyisis of the Intra-Urban Suburbanization With GIS Methods: The case of Debrecen since the 1980s. *Folia Geographica*. 65(1), 23-39.

HIRT, S. (2007). The Devil Is in the Definitions: Contrasting American and German Approaches to Zoning. *Journal of the American Planning Association*, 73(4), 436–450. https://doi.org/10.1080/01944360708978524.

HOMSY, G. C., WARNER, M. E. (2015). Cities and Sustainability: Polycentric Action and Multilevel Governance. *Urban Affairs Review*, 51(1), 46–73. https://doi.org/10.1177/1078087414530545.

HOSTETLER, M., KNOWLES-YANEZ, K. (2003). Land use, scale, and bird distributions in the Phoenix metropolitan area. *Landscape and Urban Planning*, 62(2), 55–68. https://doi.org/10.1016/S0169-2046(02)00096-8.

ISMAEL, H.M. (2021). Urban form study: the sprawling city—review of methods of studying urban sprawl. *GeoJournal,* 86, 1785–1796. https://doi.org/10.1007/s10708-020-10157-9.

JACKSON, A. (2018). Barriers to Integrating New Urbanism in Mixed-Income Housing Plans in Chicago: Developer, Housing Official, and Consultant Perspectives. *Housing Policy Debate*, 1–32. https://doi.org/10.1080/10511482.2018.1433703.

JACKSON, L. E. (2003). The relationship of urban design to human health and condition. *Landscape and Urban Planning*, 64(4), 191–200. https://doi.org/10.1016/S0169-2046(02)00230-X.

JACOBS, J. (1961). The Death and Life of Great American Cities. New York: Random House.

JEPSON, E. J., EDWARDS, M. M. (2010). How Possible is Sustainable Urban Development? An Analysis of Planners' Perceptions about New Urbanism, Smart Growth and the Ecological City. *Planning Practice & Research*, 25(4), 417–437. https://doi.org/10.1080/02697459.2010.511016.

JOHNSTON, P., EVERARD, M., SANTILLO, D., ROBÈRT, K.-H. (2007). Reclaiming the definition of sustainability. *Environmental Science and Pollution Research International*, 14(1), 60–66. https://doi.org/10.1065/espr2007.01.375.

KAGAN, S., HAUERWAAS, A., HOLZ, V., WEDLER, P. (2018). Culture in sustainable urban development: Practices and policies for spaces of possibility and institutional innovations. *City, Culture and Society*, 13, 32–45. https://doi.org/10.1016/j.ccs.2017.09.005.

KAHN, M. E. (2000). The environmental impact of suburbanization. *Journal of Policy Analysis and Management*, 19(4) 569-586.

KAJDANEK, K. (2014). Newcomers vs. Old-Timers? Community, Cooperation and Conflict in the Post-Socialist Suburbs of Wrocław, Poland. In Watt, P., Smets, P., eds., *Mobilities and Neighbourhood Belonging in Cities and Suburbs*. London: Palgrave Macmillan. https://doi.org/10.1057/9781137003638_10.

KENNY, J. T., ZIMMERMAN, J. (2004). Constructing the 'Genuine American City': Neo-traditionalism, New Urbanism and neo-liberalism in the remaking of downtown Milwaukee. *Cultural Geographies*, 11(1), 74–98. https://doi.org/10.1191/1474474003eu294oa.

KLIMOVSKÝ, D., ZELENSKY, T., MATLOVIČOVÁ, K., MUŠINKA, A. (2016). Roma settlements and poverty in Slovakia: Different policy approaches of the state, local governments, and NGOs. *Anthropological Notebooks,* 22(1), 23-42.

KNAAP, G., TALEN, E. (2005). New urbanism and smart Growth: A few words from the Academy. *International Regional Science Review*, 28(2), 107-118.

KOCSIS, J. B. (2015a). A nagyváros útjában: A helyi társadalmak átalakulása Budapest délnyugati agglomerációjában. In Keszeri, A., Bögre, Zs., eds., *Hely, identitás, emlékezet*. Budapest: L'Harmattan Kiadó, pp. 163-184.

KOCSIS, J. B. (2015B). Patterns of urban development in Budapest after 1989. *Hungarian Studies,* 29(1-2). 3-20. https://doi.org/10.1556/044.2015.29.1-2.1.

KOCSIS, J. B. (2023). Recreating Locality: Recreating Locality: Community and Identity in Budapest Suburbs, 1995–2020. In Van Damme, I., McManus, R., Dehaene, M., eds., *Creativity from Suburban Nowheres: Rethinking Cultural and Creative Practices.* Toronto: Uniersity of Toronto Press. pp. 198-232.

KOCSIS, J. B., KASSAY, G. L. (2018). Urbanizációs folyamatok összehasonlítása Közép-Európában: Budapest, Bécs, Prága, Varsó várostérségi fejlődése. *FALU VÁROS RÉGIÓ*, 106-119.

KOVÁCS, Z., HARANGOZÓ, G., SZIGETI, C., KOPPÁNY, K., KONDOR, A. CS., SZABÓ B. (2020). Measuring the impacts of suburbanization with ecological footprint calculations. *Cities*, 101. 102715.

LANG, R. E., & LEFURGY, B. (2007). *BOOMBURBS: THE RISE OF AMERICA'S ACCIDENTAL CITIES.* James A. Johnson Metro Series. Brookings Institution Press.

LEE, J., HONG, S., PARK, Y. (2017). Predictable Surprise: The Spatial and Social Morphology of Aging Suburbs in the U.S. Metropolitan Areas. *Sustainability*, 9(3), 458. https://doi.org/10.3390/su9030458.

LOSONCZY, A. K., ORBÁN, A. BENKŐ, M. (2022). Contemporary Decentralized Development of a Centrally Planned Metropolis: The Case of Budapest. *Urban Planning,* 7(3), 144.-158. https://doi.org/10.17645/up.v7i3.5426.

MALIZIA, E., SONG, Y. (2016). Does downtown office property perform better in live–work–play centers? *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 9(4), 372–387. https://doi.org/10.1080/17549175.2015.1056212.

MATLOVICOVA, K., KOLESAROVA, J., MATLOVIC, R. (2016). Selected Theoretical Aspects of the Destination Marketing Based on Participation of Marginalized Communities. *Conference: 8th International Annual Scientific Conference on Hotel Services, Tourism and Education*. Prague, Czech Republic Oct. 19, 2016. 128-143.

MATLOVIC, R., MATLOVICOVA, K. (2020). First and Second Order Discontinuities in World Geographical Thought and Their Primary Reception in Slovak Geography. *Folia Geographica,* 62(1), 52-76.

MATLOVIC, R., SEDLAKOVA, A. (2007). The Impact of Suburbanisation in the Hinterland of Presov (Slovakia). *Moravian Geographical Reports*, 15(2), 22-31.

MCCRIGHT, A. M., & DUNLAP, R. E. (2013). Bringing ideology in: The conservative white male effect on worry about environmental problems in the USA. *Journal of Risk Research*, 16(2), 211–226. https://doi.org/10.1080/13669877.2012.726242.

MARKLEY, S. N. (2018). New urbanism and race: An analysis of neighborhood racial change in suburban Atlanta. *Journal of Urban Affairs*, 40(8), 1115–1131. https://doi.org/10.1080/07352166.2018.1454818.

MEEROW, S., HELMRICH, A. M., ANDRADE, R., LARSON, K. L. (2021). How do heat and flood risk drive residential green infrastructure implementation in Phoenix, Arizona? *Urban Ecosystems*, 24(5), 989–1000. https://doi.org/10.1007/s11252-020-01088-x.

MEGDAL, B. S. (2012). *The Water Report*. Arizona Groundwater Management. Envirotech Publications.

MOCAK, P., MATLOVICOVA, K., MATLOVIC, R. PENZES, R., PACHURA, P. MISHRA, P. K., KOSTILNIKOVA, K. DEMKOVA, M. (2022). 15-Minute City Concept as a Sustainable Urban Development Alternative: A Brief Outline of Conceptual Frameworks and Slovak Cities as a Case. *Folia Geographica*, 64(1), 69-89.

MOORE, J. E., MASCARENHAS, A., BAIN, J., STRAUS, S. E. (2017). Developing a comprehensive definition of sustainability. *Implementation Science*, 12(1), 110. https://doi.org/10.1186/s13012-017-0637-1.

MOOS, M., VINODRAI, T., REVINGTON, N., SEASONS, M. (2018). Planning for Mixed Use: Affordable for Whom? *Journal of the American Planning Association*, 84(1), 7–20. https://doi.org/10.1080/01944363.2017.1406315.

MORENO, C., ALLAM, Z., CHABAUD, D., GALL, C., PRATLONG, F. (2021). Introducing The “15-Minute City”: Sustainability, Resilience and Place Identity in Future

Post Pandemic Cities. *Smart Cities*, 4, 93-111. https://doi.org/10.3390/Smartcities4010006.

MOYER, J. D., HEDDEN, S. (2020). Are we on the right path to achieve the sustainable development goals? *World Development*, 127, 104749. https://doi.org/10.1016/j.worlddev.2019.104749.

MUALAM, N., SALINGER, E., & MAX, D. (2019). Increasing the urban mix through vertical allocations: Public floorspace in mixed use development. *Cities*, 87, 131–141. https://doi.org/10.1016/j.cities.2018.12.027.

MUNASINGHE, M. (1993). *Environmental Economics and Sustainable Development*. World Bank.

NÆSS, P. (2001). Urban Planning and Sustainable Development. *European Planning Studies*, 9(4), 503-524, DOI: 10.1080/713666490.

NASRI, A., ZHANG, L. (2014). The analysis of transit-oriented development (TOD) in Washington, D.C. and Baltimore metropolitan areas. *Transportation Policy*, 32. 172-179.

NEUMANNOVÁ M. (2022). Smart Districts: NewPhenomenon in Sustainable Urban Development. Case Study of Špitálka in Brno, Czech Republic. *Folia Geographica* 64(2), 27-48.

NIEMIRA, M. P. (2007). The Concept and Drivers of Mixed-Use Development: Insights from a Cross-Organizational Membership Survey. *Research Review*, 4(1) 54.

OWENS, S. (2003). Is there a meaningful definition of sustainability? *Plant Genetic Resources*, 1(1), 5–9. https://doi.org/10.1079/PGR20034.

PURVIS, B., MAO, Y., ROBINSON, D. (2019). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*, 14, 681–695. https://doi.org/10.1007/s11625-018-0627-5.

RENNE, J. L. (2009). From transit-adjacent to transit-oriented development. *The International Journal of Justice and Sustainability*, 14(1), 1-15.

RUGGERIO, C. A. (2021). Sustainability and sustainable development: A review of principles and definitions. *Science of The Total Environment*, 786, 147481. https://doi.org/10.1016/j.scitotenv.2021.147481.

SANDER, T. H. (2002). Social Capital and New Urbanism: Leading a Civic Horse to Water? *National Civic Review*, 91(3), 213–234. https://doi.org/10.1002/ncr.91302.

SEN, S., ROESLER, J., RUDDELL, B., MIDDEL, A. (2019). Cool Pavement Strategies for Urban Heat Island Mitigation in Suburban Phoenix, Arizona. *Sustainability*, 11(16), 4452. https://doi.org/10.3390/su11164452.

SENNETT, R., SENDRA, P. (2020). *Designing Disorder: Experiments and Disruptions in the City*. Verso.

SHRIVASTAVA, R., SHARMA, A. (2012). Smart Growth: A Modern Urban Principle. *Architecture Research*, 1, 8–11. https://doi.org/10.5923/j.arch.20110101.02.

SIEMIATYCKI, M. (2015). Mixing Public and Private Uses in the Same Building: Opportunities and Barriers. *Journal of Urban Design*, 20(2), 230–250. https://doi.org/10.1080/13574809.2015.1009012.

SQUIRES, G., HUTCHISON, N. (2021). Barriers to Affordable Housing On Brownfield Sites. *Land Use Policy*, 102, 105276. Https://Doi.Org/10.1016/J.Landusepol.2020.105276.

TALEN, E., KOSCHINSKY, J. (2014). Compact, Walkable, Diverse Neighborhoods: Assessing Effects on Residents. *Housing Policy Debate*, 24(4), 717–750. https://doi.org/10.1080/10511482.2014.900102.

TIAN, G., PARK, K., EWING, R., WATTEN, M., WALTERS, J. (2020). Traffic generated by mixed-use developments – A follow-up 31-region study. *Transportation Research Part D: Transport and Environment*, 78, 102205. https://doi.org/10.1016/j.trd.2019.102205.

TRUDEAU, D. (2013). A typology of New Urbanism neighborhoods. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 6(2), 113–138. https://doi.org/10.1080/17549175.2013.771695.

VAN LEUVEN, A. J. (2022). The Impact of Main Street Revitalization on the Economic Vitality of Small-Town Business Districts. *Economic Development Quarterly*, 36(3), 193–207. https://doi.org/10.1177/08912424211038060.

WALKS, R. A., MAARANEN, R. (2008). Gentrification, Social Mix, and Social Polarization: Testing the Linkages in Large Canadian Cities. *Urban Geography*, 29(4), 293–326. https://doi.org/10.2747/0272-3638.29.4.293.

WANG, Z.-H., VON GNECHTEN, R., SAMPSON, D. A., WHITE, D. D. (2019). Wastewater Reclamation Holds a Key for Water Sustainability in Future Urban Development of Phoenix Metropolitan Area. *Sustainability*, 11(13), 3537. https://doi.org/10.3390/su11133537.

WARDNER, P. (2014). Explaining mixed-use developments: a critical realist's perspective. In *Annual Pacific Rim Real Estate Society (PRRES) Conference: Resilient Communities: Providing for the Future.*

WENTZ, E. A., WILLS, A. J., KIM, W. K., MYINT, S. W., GOBER, P., BALLING, R. C. (2014). Factors Influencing Water Consumption in Multifamily Housing in Tempe, Arizona. *The Professional Geographer*, 66(3), 501–510. https://doi.org/10.1080/00330124.2013.805627.

WHITE, M. A. (2013). Sustainability: I know it when I see it. *Ecological Economics*, 86, 213–217. https://doi.org/10.1016/j.ecolecon.2012.12.020.

WHITTEMORE, A. H. (2021). Exclusionary Zoning: Origins, Open Suburbs, and Contemporary Debates. *Journal of the American Planning Association*, 87(2), 167–180. https://doi.org/10.1080/01944363.2020.1828146.

WILKINSON, A., HILL, M., GOLLAN, P. (2001). The sustainability debate. *International Journal of Operations & Production Management*, 21(12), 1492–1502. https://doi.org/10.1108/01443570110410865.

YILDIRIM, Y., AREFI, M. (2021). How does mixed-use urbanization affect noise? Empirical research on transit-oriented developments (TODs). *Habitat International*, 107, 102297. https://doi.org/10.1016/j.habitatint.2020.102297.

ZHOU X., WANG Y. (2011). Spatial–temporal dynamics of urban green space in response to rapid urbanization and greening policies. *Landscape and Urban Planning*, 100(3), 268-277.

Web References

CITY OF PHOENIX, 2022A. Phoenix Zoning Ordinance. Retrieved from: https://phoenix.municipal.codes/ZO. Accessed on 18 June 2023.

CITY OF TEMPE, 2022. Zoning and Development Code. Retrieved from: https://library.municode.com/az/tempe/codes/zoning_and_development_code. Accessed on 18 June 2023.

CONGRESS FOR THE NEW URBANISM, n.d. The Charter of the New Urbanism. Retrieved from: https://www.cnu.org/who-we-are/charter-new-urbanism. Accessed on 18 June 2023.

Datasets

City of Phoenix. (2022b). *Proposed Zoning*. [dataset] Retrieved from: https://mapping-phoenix.opendata.arcgis.com/datasets/Phoenix::proposed-zoning/explore?filters=eyJaT05JTkciOlsiV1UiXX0%3D&location=33.475532%2C-112.018330%2C12.82. Accessed on 18 June 23.

City of Phoenix. (2022c). *Zoning*. [dataset] Retrieved from: https://mapping-phoenix.opendata.arcgis.com/datasets/Phoenix::zoning/explore?location=33.591793%2C-112.111500%2C11.06. Accessed on 18 June 23.

City of Phoenix. (2022d). *Walkable Urban Code*. [dataset] https://mapping-phoenix.opendata.arcgis.com/datasets/Phoenix::walkable-urban-code/explore?location=33.294846%2C-112.205850%2C9.23. Accessed on 18 June 23.

City of Tempe. (2020). *Zoning District*. [dataset] Retrieved from: https://data.tempe.gov/datasets/tempegov::zoning-district/explore. Accessed on 18 June 2023.

City of Tempe. (2023a). *General Plan 2040 Data* [dataset] Retrieved from: https://data.tempe.gov/maps/general-plan-2040-data/about. Accessed on 18 June 2023.

City of Tempe. (2023b). *Zoning and Overlay Districts*. [dataset] Retrieved from: https://catalog.data.gov/dataset/zoning-and-overlay-districts-3ef0c. Accessed on 18 June 2023.

Howard, J. (2021). *Existing and Planned Light Rail in Maricopa County, Arizona*. [dataset] Maricopa Association of Governments. Retrieved from: https://geodata-azmag.opendata.arcgis.com/datasets/AZMAG::existing-and-planned-light-rail-in-maricopa-county-arizona/explore. Accessed on 18 June 2023.

SELF-REPORTED HEALTH OF UNIVERSITY STUDENTS IN SLOVAKIA DURING THE END PHASE OF THE COVID-19 PANDEMIC AND ITS IMPACT ON THE QUALITY OF LIFE

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Abstract

In the paper, we focused on the self-reported health of university students and its relationship to the quality of their life. Self-reported health is part of the growing interest in non-medical understanding of health. Two objectives and three research hypotheses are established. The first goal is to find out what the self-reported health of university students in Slovakia is during the period in the end of the COVID-19 pandemic. Before starting the measurement, the following research hypotheses were formulated: H1: Respondents will evaluate health on a scale of 0-10 with values of 8 and higher and H2: Differences in self-reported health evaluation of male and female students will be low. The second goal is to determine the impact of self-reported health on students' quality of life and which of the proposed variables are predictors of self-reported health. In connection with the second goal, the third research hypothesis H3 is formulated: The impact of self-reported health on the quality of life of students measured by the correlation coefficient reaches a value of 0.30 – 0.69, i.e. mean value. Self-reported health, quality of life and other variables are measured on a scale of 0-10. The Shapiro-Wilk test and the non-parametric Wilcoxon one-sample test are used in the measurements. The result is knowledge of high values of self-reported health of men and women, hypothesis H1 was fulfilled. The correlation between health and quality of life is higher than 0.3, self-reported health of men and women is a predictor of their quality of life. Hypothesis H3 was fulfilled.

Key words

Quality of life, self-reported health, non-medical understanding of health of university students, COVID-19 pandemic.

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INTRODUCTION

In the paper, we focused on several areas: health and its non-medical understanding; quality of life from geographical view; self-reported as a way of evaluating health in our case; university students; we also mention the COVID-19 pandemic (hereinafter referred to as the pandemic). Considering the age of university students and the resulting expected very good level of self-reported health, attention is focused not only on its value but also on its relationship with the quality of life. Health is one of the most important parts of our lives. The development of medicine in the developed countries in recent decades has brought health care at a first-class level, which is manifested in a wide spectrum from low infant mortality to the increasing of the average life expectancy. We deal with health as it is perceived by the individual, that is, from a non-medical point of view (Costa et al., 2020; Haimi, 2020). We examine such understood health in the form of self-reported health. The quality of life is a concept, on the one hand a complex multidimensional phenomenon, on the other hand an answer to a simple question: How are you doing? The term 'quality of life' immanently contains the question: What (is the quality of life)? When a person evaluates the quality of his or her life, he or she evaluates his or her own satisfaction with it, based on his or her individual idea of what a good life means for him or her. Some scientists equate the quality of life with well-being or happiness (López-Ruiz et al., 2021; Arrondo, Cárcaba, González, 2021), others reject it (Skevington, Böhnke, 2018; Murgaš et al., 2022). Terminological vagueness is not only typical for the research of the quality of life. According to Bieda et al. (2019) satisfaction with life or quality of life is interchangeable with positive mental health. In the paper we work with the term 'self-reported health', we understand it as an assessment of an individual's own health. In connection with health, the term 'self-related' is also used, especially in the term 'Health Related Quality of Life' (hereafter referred to as HRQoL) (Guyatt, Feeny, Patrick, 1993; de Wit, Hajos, 2014). From the point of view of the conventional division of indicators into subjective and objective, self-reported health belongs to subjective indicators. University students are relatively often represented in the investigation of the quality of life focused on individual age groups. The years of university studies are generally considered to be the most beautiful years in a person's life. In this spirit, Bean, Bradley (Bean, Bradley, 1986) define the quality of life of a university student as "a pleasurable emotional state resulting from a person's enactment of the role of being a student". For the value of the quality of life of university students, satisfaction with their teachers is the most influential (El-Hassan, 2014), on the contrary, according to Michalos, Orlando (2006) it is satisfaction with one's self-esteem. Emphasizing the importance of satisfaction with one's self-esteem for the quality of life supports the understanding of the contemporary Western society as a narcissistic society (Podzimek, 2019). We all live our lives not in a vacuum but in a specific physical space. Geographical approach to the quality of life means to its subjective dimension, meaning that the quality of life is a "psychological matter", we add an objective dimension with its characteristics. The quality of life is also a "geographical matter", that makes it holistic (Petrovič, Murgaš, 2020). The World Health Organization (hereinafter referred to as WHO) declared the respiratory disease that broke out in the spring months of 2020 and was named COVID-19. Governments reacted to its massive impact on the economy and health system of all countries of the world and the high number of deaths by closing borders, canceling classes at all types of schools, introducing the obligation to wear masks and lockdowns. The pandemic caused a global response among scientists dealing with the quality of life (Murgaš, Petrovič, 2020; Dale et al., 2022; Hansel, Saltzman, Melton et al. 2022; Mohsen, El-Masry, Ali et al., 2022). In the spring months of 2022, the last wave of the omikron pandemic died down and restrictive measures and bans were removed. Part of the patients developed persistent health problems, which was labeled "post-covid". Relief in society was expected, positively affecting the assessment of the quality of life.

OBJECTIVES AND METHODS

We have two goals in the paper. The first is to find out what the self-reported health of university students in Slovakia is. Before starting the measurement, we stated the following research hypotheses: H1: Respondents will rate health on a scale of 0-10 with values of 8 and above. H2: The differences in self-reported health evaluation of male and female students will be minimal (on a scale of 0-10, the difference in values will be less than 0.5). The second goal is to determine the impact of self-reported health on students' quality of life and which of the proposed variables are predictors of self-reported health. In connection with the second goal, a third research hypothesis is formulated: H3: The impact of self-reported health on students' quality of life measured by the correlation coefficient reaches a value of 0.30 – 0.69, i.e. mean value. Our goals are part of a significant increase in the use of individual and household population surveys over the past three decades. Self-reported health has become one of the most frequently used measures of health in social science research (Altman, Van Hook, Hillemeier, 2016; Baidin, Gerry, Kaneva, 2021). We verified the research hypotheses with a specific age and professional group, which consisted of students of selected universities in Slovakia. A questionnaire on the Internet is used to verify the research hypotheses, the answers to most of the questions were quantified by the students on the Cantril scale of 0-10. The questions are listed in the appendix of the paper. The research took place in the period March - June 2022, students (N=269) of bachelor's, master's and doctoral studies at Slovak universities participated in it. Attention is paid to researching the quality of life of university students (Kormi-Nouri, Farahani, Trost, 2013; Tkáčová et al., 2022; Kobylarek et al., 2022). University students in all cultural regions declare satisfaction with their lives (El-Hassan, 2014).

The quality of life of Brazilian medical students was investigated by Solis, Lotufo-Neto (2019). The result is the finding of a lower value of the quality of life index in connection with physical and mental health among female students compared to male students. The quality of life of students in Slovakia is investigated by Tkáčová et al. (2021). They came to the conclusion that social media is a significant predictor of well-being in Slovakia during the pandemic. In Slovakia, research into the quality of life is growing (Murgaš et al., 2022; Ira, Andráško, 2007; Michaeli, Ivanová, Solár, 2014; Džuka, Lačný, Babinčák, 2019; Coroničová Hurajová, Hajduová, 2021; Petrovič, Murgaš, 2020; Rutkowska et al., 2021; Petrovič, Maturkanič, 2022; Murgaš, Macků, Grežo, Petrovič, 2023), however, it did not become a part of the mainstream in any scientific discipline. However, it is possible that this situation will change in geography, because the Slovak geographical journals began to pay increased attention to the study of the quality of life, so we can talk about continuity (Rišová, Pouš, 2018; Uher, Ira, 2019; Mihincău, Ilieş, Wendt, Ilieş, Atasoy, Szabo-Alexi, Marcu, Albu, Herman, 2019; Petrovič, Murgaš, 2020; Szűcs, Koncz, 2020; Mousazadeh 2022, Murgaš, Petrovič, 2022).

LITERATURE REVIEW

Health

Health, both physical and mental, is a generally known phenomenon, every person knows whether he or she is healthy or not. In the notorious Maslow's five-level pyramid of needs, health belongs to the group of 'safety needs', which together with physiological needs form the 'basic needs'. Maslow (Maslow, 1970) later supplemented his pyramid of needs with cognitive, and aesthetic needs and transcendence needs, so his pyramid became eight-level. According to Diener et al. (2010), the strongest predictor of life satisfaction is the fulfillment of material desires, which can be classified as basic needs. Between 2005 and 2010, Maslow's theory was analyzed from the aspect of quality of life based on data from more than sixty thousand participants from 123 countries. Respondents answered questions about six needs comparable to the needs in Maslow's pyramid and three indicators of well-being. Two insights emerged from the analysis: (i) There are universal human needs regardless of cultural differences. (ii) Quality of life is not strictly hierarchical like the pyramid of needs. Needs affect the quality of life independent of each other (Tay, Diener, 2011). In connection with health, a medical and non-medical approach can be identified. The medical approach to health includes a spectrum of activities aimed at health promotion in the form of prevention, diagnosis and suppression of diseases. Objective data obtained by diagnostic methods are used for this. The result of the examination of an individual as a patient by the doctor is an objective diagnosis of his health condition. A non-medical approach to health does not mean alternative or any other medicine or self-treatment, but the assessment of one's own health by a lay individual. Self-related health is part of it. An example of a non-medical health assessment is the health question in our questionnaire. Although everyone has an idea of what health is, there is no universally accepted definition. WHO defines it as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO online). The determinants of health are: (a) the social and economic environment, (b) the physical environment, and (c) the person's individual characteristics and behaviours. These determinants represent a group of indicators: (i) Income and social status, (ii) Education, (iii) Physical environment including Employment and working conditions, (iv) Social support networks including Culture, (v) Genetics, (vi) Health services, and (vii) Gender (WHO, 2017). Quality of life and health are influenced by many variables, we consider those with a strong influence as predictors of the quality of life. Social relations, whether in the form of social capital (Requena, 2003; Bilajac, 2014), trust (Murgaš, Petrovič, Tirpáková, 2022) or neighborhood relations (Howley, O,Neill, Atkinson, 2015). In the paper, we identified (i) vaccination with a vaccine, (ii) the impact of the pandemic on the psyche, (iii) relationships with the relatives before the pandemic, (iv) expected relationships with the relatives after the pandemic, as variables with a potential impact on self-reported health, (v) trust, (vi) quality of life, (vii) happiness, (viii) quality of place and (ix) quality of environment.

Self-Related Health as a Non-Medical Assessment of Health

In the last decade, it has been shown that self-related health is an important outcome variable independent of medical outcomes. In 1996, the WHO recommended the use of self-assessment of health as the main tool for monitoring the health and quality of life of the population (Badin, Gerry, Kaneva, 2021). Altman et al. (2016) characterize self-related health as a single-item and verified indicator of the health status. The American government agency U.S. Food and Drug Administration (2009) (hereinafter referred to as FDA) refers to self-related health as Patient-Reported Outcome (PRO). An important step toward more structured and frequent use of PROs in the drug development is FDA guidance issued in 2006. This describes how the FDA evaluates PROs, including HRQoL, to be used as efficacy endpoints in clinical trials (FDA, 2006). Later, the FDA issued guidance for *"PRO instruments used to support claims in approved medical product labeling. A PRO instrument (i.e., a questionnaire plus the information and documentation that supports its use) is a means to capture PRO data used to measure treatment benefit or risk in medical product clinical trials"* (FDA, 2009). This results in a significant increase in the importance of non-medically understood health. Health has become a social phenomenon, we come across the terms 'social health' (Conrad, Leiter, 2003; Brown et al., 2011), but also 'environmental health' (Mei-Po, 2018), 'place-based health' (Dankwa-Mullan, Pérez-Stable, 2016). Therefore, a more appropriate designation than 'health as a social phenomenon' would be 'health as a geographical phenomenon', including, in addition to the social dimension of health, the spatial and environmental dimension. In self-related health reporting, cross-cultural differences and geographical disparities apply, resulting in data heterogeneity. Residents of Korea and Japan report relatively low values of self-related health compared to the USA despite a higher average life expectancy (Choi, Miyamoto, 2022). Differentiation of self-related health in China explore Dong, et al. (2010). 6.3% of participants rated their health as poor or very poor, the prevalence of poor or very poor health increased with age and decreased with education level. Women rated their health, both physical and mental, as bad or very bad more often than men. People in the west of the country rated their health worse than residents of the east of the country. It is noteworthy that illiterate people and people with the lowest education rated their physical health the worst, on the other hand, mental health was rated the worst by people with higher education. Dorélien, Xu (2020) dealt with three types of urban-rural disparities in self-related health in China. In all types, residents rated their health level 2-3% better in the rural environment compared to the urban one. Dowd, Zajacova (2007), based on the research on self-related health, state that the assessment of health in the USA is determined by education and level of income.

Quality of Life

"The quality of life is a concept by which people in the current period of late modernity cognitively and emotionally evaluate satisfaction with their lives" (Murgaš, Petrovič, 2020). The concept is based on the basic premise that every person is able to evaluate the quality of his or her life, when he or she evaluates it, he or she evaluates satisfaction with his or her life. Even a person with intellectual disabilities is able to evaluate the quality of their life (Salvador-Carulla et al., 2014). The result of the cognitive and emotional assessment of life satisfaction is a subjective data. A person lives his or her life in a physical environment, so when he or she evaluates the quality of his or her life, he or she also evaluates the environment, in terms of the conditions for living a good life. Even the evaluation of the environment in which a person lives his or her life is a subjective data. The environment can also be evaluated by a scientist investigating the quality of life in a given geographical unit, based on available statistical data. The result is an objective data. There is a low correlation between subjective and objective indicators (Camfield, Skevington, 2003). Murgaš et al. (2022) report a correlation between subjective indicators of quality of life and quality of place on the border between low and medium values of the correlation coefficient (0.33). Subjective and objective data enter into the measurement of the quality of life as its indicators. The answer to the question about the quality of life, obtained by measurement, is usually expressed by words on the five to seven-point Likert scale or numerical on the eleven-point Cantril scale from 0-10. The quality of life arises in the process of the child's ontogenesis, and ends with the death of the individual. Shalock et al. (1989) define the quality of life as "a multidimensional construct that has both subjective and objective components and is influenced by personal and environmental factors". Despite three decades since the formulation of this definition, it is still relevant today. Quality of life is strongly connected with the term 'good life', in this sense it is defined by Veenhoven (2014) in Encyclopedia Quality of Life and Well-Being Research: "The degree to which a life meets various standards of the good life". Research into the quality of life is experiencing a boom, new phenomena affecting the quality of life are emerging - sport (Szűcs, Koncz, 2020), food, exercise and lifestyle (Petrovič, Murgaš, Králik, 2023), religiosity (Murgaš, Podzimek, Petrovič, Tirpáková, Králik, 2023).

Impact of Health on the Quality of Life

Health is one of the most important values for a person, and therefore it is not surprising that health is an important part of the research of the quality of life. Camfield, Skevington (Camfield, Skevington, 2003) consider health psychology as a starting point for conceptualizing quality of life. "The assessment of well-being is a top priority in health sciences" (Salvador-Carulla et al., 2014). Together with marital status, employment and place of residence, it significantly differentiates the quality of life (Patrício et al., 2014). The knowledge about a better quality of life for healthy people and a worse one for unhealthy people applies [Patrício et al., 2014; Wahl, et al., 2004; Caron et al., 2019). According to a study by Tubergen et al. (2018), two thirds of patients consider health and quality of life to be similar. In 1946, with effect from 1948, the WHO was founded. Since its creation the WHO has declared the closeness of health and quality of life, as evidenced by the definition of health: *"WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns"*(WHO, 2022). Another manifestation of WHO's strong interest in the concept of quality of life is the establishment of the WHO Quality of Life Group (hereinafter referred to as WHOQOL) and its activities [WHOQOL, 1994; 1995. In 2006, this group included spirituality, religion and personal beliefs (WHOQOL, 2006) among the domains of the quality of life. In the research of the quality of life, a separate direction of health-oriented quality of life (Healthy Related Quality of Life, hereinafter referred to as (HRQoL) began to be established in the 1980s. The term HRQoL narrows QoL to aspects relevant to health (de Wit, Hajos, 2014). HRQoL is a multidimensional concept that, like other current concepts, does not have a fixed definition. It has an objective component expressing the measurable state of health of an individual and a subjective component expressing a subjective assessment of an objective state of health. People with the same objective health condition subjectively evaluate their condition often in a different way.

MEASUREMENT

The measurement of the quality of life, related phenomena of well-being, happiness and non-medical measurement of health is the output of the conceptualization of the measured variables. Diener, Inglehart, Tay, (2013) use attention, values, standards and top-down effects in their approach to measuring the quality of life. Scientists focused on measuring the quality of life generally prefer subjective or objective indicators, or both (Mackü et al., 2021; Guliyeva 2021). In the paper we measure the self-related health and quality of life as satisfaction with them which results into the fact that we understand them as subjective indicators. Data on self-rated health in the most developed countries of the world is contained in Health at a Glance 2021, published by the OECD (2021). The values of Slovakia and selected countries are mentioned in Table 1.

Tab. 1 Self-rated health in the most developed countries 2019 and 2020 (% of population aged 15 and over)

Self-rated health	Countries and average OECD in %			
	Best	**OECD**	**Slovakia**	**Worst**
Adults rating their own health as bad or very bad	Canada 88.8	68.5	65.1	Korea 33.7
Adults rating their own health as good or very good	Colombia 1.3	´8.6	´12.6	Latvia 15.4

Source: Modified according to OECD (2021)

Table 1 shows that Slovakia achieves below average values in both categories. Patrício et al. (2014) measured the quality of life and, within that, the health of Portuguese residents. 90.6% identified themselves as healthy and 9.4% as unhealthy. In the paper, health is not measured dichotomously as healthy - unhealthy, but on a scale of 0-10, on which university students expressed their level of health. We measure health, quality of life and other variables to confirm or refute hypotheses. In the measurement, basic statistical characteristics are first calculated for each question, namely the arithmetic mean (Means) and standard deviation (SD) (Table 2) for men and women together. The results are also illustrated graphically (Fig. 1).

In Table 2 and Fig. 1 we can see that the average value of the answers to the question "health" is greater than 8 which means that the obtained results of our research confirmed the validity of the research hypothesis H1: Respondents will evaluate health on a scale of 0-10 with values of 8 and higher. Sarbangoli et al. (2019) in their research concluded that students of Tehran University of Medical Sciences reported a partial overlap of self-reported health and quality of life. It was not clear whether these students distinguish between these two phenomena. As

Tab. 2 Basic statistical characteristics (Means and SD)

	Health	Vaccination with a vaccine	Impact on the psyche	Relationships before the pandemic	Trust
Men + Women	8.32±2.22	1.54±0.86	2.19±0.98	8.05±1.91	5.20±1.91

	Relationships after the pandemic	Quality of life	Happiness	Quality of place	Quality of environment
Men + Women	6.21±2.31	6.89±2.33	6.69±2.27	7.15±2.71	6.62±2.10

Source: Own research

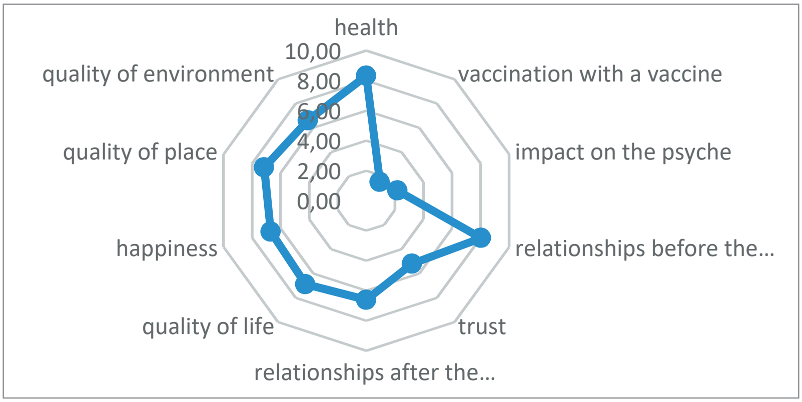

Fig. 1 Responses of respondents (acerage values)
Source: Own research

can be seen from the Table 2, in our research, which was not dominated by students of medical faculties, students strictly distinguished between the self-related health and the quality of life. Another goal of the research was to find out if there are differences between groups of respondents (groups are created according to gender). In other words, we verified the validity of the research hypothesis H2: The differences in the assessment of self-reported health of male and female students will be minimal. In the first step, we calculated the basic statistical characteristics for each variable, the arithmetic mean (Means) and standard deviation (SD) (Table 3) for both groups of respondents (women, men). The results are also illustrated graphically (Fig. 2).

Tab. 3 Basic statistical characteristics (Means and SD)

	Health	Vaccination with a vaccine	Impact on the psyche	Relationships before the pandemic	Trust	Relationships after the pandemic	Quality of life	Happiness	Quality of place	Quality of environment
Men	8.09±2.21	1.44±0.80	2.09±0.89	8.16±1.48	5.14±2.00	6.21±1.95	6.88±2.18	6.67±1.81	7.12±2.53	6.98±2.13
Women	8.47±2.23	1.61±0.90	2.25±1.04	7.97±2.16	5.23±2.10	6.88±2.50	6.89±2.44	6.70±2.55	7.17±2.84	6.38±2.07

Source: Own research

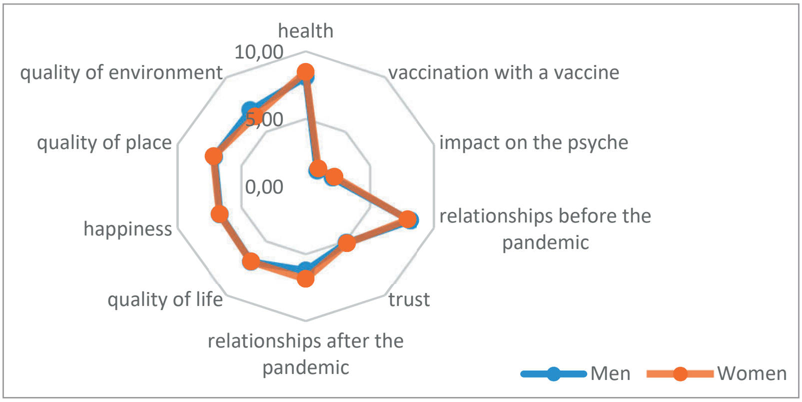

Fig. 2 Responses of respondents (average values)
Source: Own research

In Table 3 and Fig. 2 we can see that both groups of respondents answered the questions almost the same, the only differences were in the questions "relationships after the pandemic" (women rated higher than men) and the quality of the environment (men rated higher than women). Next, we were interested in whether there are connections between the monitored variables and health - and if so, whether these connections are the same in both groups (sample sets). I.e. whether women and men attribute the same importance to individual variables that affect health. When looking for a connection between the answers to individual questions, the correlation coefficient statistical method is used, specifically Spearman's rank correlation coefficient. And that's because the assumption about the normal distribution of the sample set was not met. In our research, the Shapiro-Wilk test (Markechová, Stehlíková, Tirpáková, 2011) is used to test the hypothesis of a normal distribution of both sample sets (women and men). In order to verify the normality of the distribution of the respective sample set of answers to individual questions, we will use the Shapiro-Wilk test to test the null hypothesis H0: the random sample comes from a normal distribution against the alternative hypothesis H1: the random sample does not come from a normal distribution. First, we used the Shapiro-Wilk test to verify the normality of the distribution of the sample set "Men" for the answers to the question "Indicate how healthy you feel on a scale of 0-10". The verification took place in the STATSTICA program. After entering the data, we calculated the Shapiro-Wilk test statistic value of W = 0.819 and the probability value of p = 0.000. We evaluated the test results using the (p) value. Since the probability value p in our case is less than 0.01, the tested hypothesis of a normal distribution of the values of the answers to the health question is rejected at the level of significance. This means that we cannot consider the distribution of the values of the answers to the health question to be normal. The distribution of the response values (frequency) to all questions (variables) for men and women together is also shown in Fig. 2.

We proceeded analogously when testing the hypothesis of a normal distribution of sample sets of answers to the other questions as well. Even in these cases, we used the Shapiro-Wilk test in the STATISTICA program to test the hypothesis of a normal distribution of the relevant sample set. After entering the data, we calculated the value of the Shapiro-Wilk test statistic and the probability p value for both Males and Females in all cases (Table 4).

Table 4 Results of Shapiro-Wilk test (files Men and Women)

Variables	Men		Women	
	W	p	W	p
1	0.82	0.00*	0.70	0.00*
2	0.56	0.00*	0.61	0.00*
3	0.82	0.00*	0.87	0.00*
4	0.90	0.00*	0.84	0.00*
5	0.94	0.02*	0.85	0.00*
6	0.91	0.00*	0.89	0.00*
7	0.86	0.00*	0.92	0.00*
8	0.90	0.00*	0.93	0.00*
9	0.90	0.00*	0.84	0.00*
10	0.86	0.00*	0.96	0.02*

** statistically important value*
Note: Numbering of variables 1- Health, 2 – Vaccination, 3 – Impact on the psyche, 4 - Relationships before the pandemic. 5 – Trust, 6 - Relationships after the pandemic, 7 – Quality of life, 8 – Happiness, 9 – Quality of place, 10 – Quality of the environment.
Source: Own research

Since the value of the probability p in all cases is less than 0.01, the tested hypothesis about the normal distribution of the values of the answers to each question, listed in Table 3 and Table 4 is rejected at the level of significance. This means that the distribution of the values of the answers to all questions in both sample sets "Men" and "Women", shown in Table 3 and 4 cannot be considered as normal. For illustration, a graphic representation of the frequency distribution of responses to the question "health" in the sets "Men" (Fig. 3) and "Women" is shown (Fig. 4).

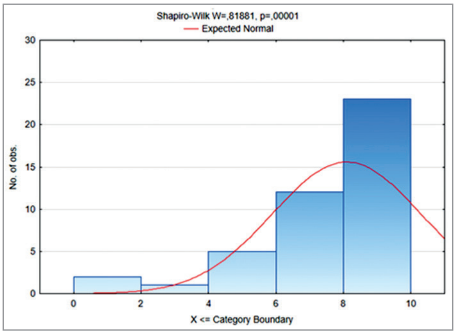

Fig. 3 Distribution of frequencies of responses to the question of "health" in the file "Men"
Source: Own research

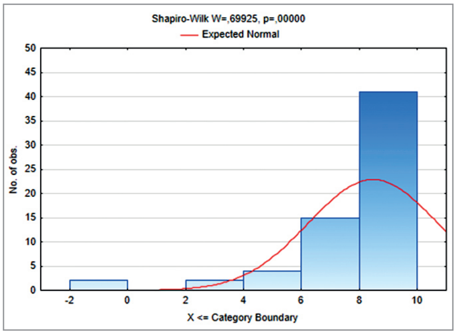

Fig. 4 Distribution of frequencies of responses to the question of "health" in the file "Women"
Source: Own research

Based on the results obtained by the Shapiro-Wilk test, when searching for a connection between individual questions both in the set of "Men" and in the set of "Women", the parametric statistical method Spearman's rank correlation coefficient is used, which expresses the degree of dependence between characteristics X and Y and is defined by the relationship:

$$R = 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n\left(n^2-1\right)} \qquad \text{where } d_i = x_i - y_i \text{, for } i = 1,2,\ldots,n.$$

The rank correlation coefficient R takes values from the interval. Other values of the correlation coefficient can be interpreted as follows (Markechová, Stehlíková, Tirpáková, 2011):

If <0,3, there is almost zero degree of association between X and Y.
If 0,3 ≤ < 0,5, there is a moderate degree of association between X and Y.
If 0,5 ≤ < 0,7, there is a significant degree of association between X and Y.
If 0,7 ≤ < 0,9, we are talking about a high degree of connection between X and Y.
If ≥ 0,9, there is a very close relationship between X and Y.

Another goal was to determine the impact of self-reported health on students' quality of life and which of the proposed variables are predictors of self-reported health. The following research hypothesis H3 was formulated to pursue the stated goal: Impact of self-reported health on students' quality of life, measured by the correlation coefficient, reaches a value of 0.30 - 0.69, i.e. mean value. The values of the Spearman rank correlation coefficient between the values of the students' answers to individual questions for both men and women are calculated in the STATISTICA program. The results are shown in Table 6 and Table 7.

Tab. 5 Spearman rank correlation coefficient values (men)

Variables	1	2	3	4	5	6	7	8	9	10
1	1	-0.36*	´-0.29*	0.18	0.06	0.18	0.34*	0.26	0.22	0.23
2		1	´0.11	´-0.00	-0.10	-0.23	-0.23	-0.21	-0.13	-0.07
3			1	-0.48*	0.04	-0.27	-0.39*	-0.52*	-0.19	-0.15
4				1	0.05	-0.05	0.27	0.39*	0.18	0.35*
5					1	0.11	0.24	0.30	0.28	0.43*
6						1	0.49*	0.34*	0.18	0.16
7							1	0.79*	0.67*	0.54*
8								1	0.55*	0.58*
9									1	0.52*
10										1

** statistically important value**
Note: Numbering of variables 1- Health, 2 – Vaccination, 3 – Impact on the psyche, 4 - Relationships before the pandemic. 5 – Trust, 6 - Relationships after the pandemic, 7 – Quality of life, 8 – Happiness, 9 – Quality of place, 10 – Quality of the environment.
Source: Own research

Unlike the previously calculated values of the correlation coefficient, its value between the answers to the question "happiness" and "impact on the psyche" there is a negative number (R = - 0.516), this means that as the values of answers to the question "happiness" increase, the values of men's answers to the question "impact on the psyche" decrease and vice versa (the correlation coefficient is symmetrical). This is illustrated by a graph showing the correlation coefficient (Fig. 5) between the responses "health" and "quality of life" in the set "Men".

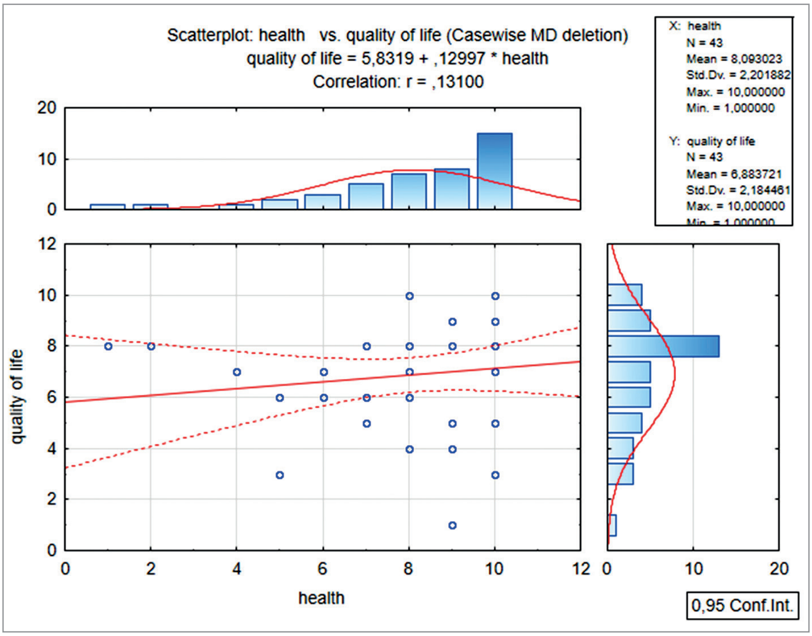

Fig. 5 Correlation coefficient health – quality of life (men)
Source: Own research

Tab. 6 Values of Spearman's rank correlation coefficient (Women)

Variables	1	2	3	4	5	6	7	8	9	10
1	1	0	-0.39*	0.33*	0.29	0.26	0.35*	0.35*	0.39*	0.30*
2		1	0.12	-0.18	-0.14	-0.15	-0.17	-0.23	-0.12	0.05
3			1	-0.35*	-0.14	-0.09	-0.45*	-0.56*	-0.28	-0.36*
4				1	0.25	0.09	0.56*	0.54*	0.30	0.27
5					1	0.11	0.28	0.28	0.42*	0.34*
6						1	0.14	0.20	0.06	-0.14
7							1	0.88*	0.45*	0.36*
8								1	0.50*	0.39*
9									1	0.42*
10										1

** statistically important value*
Note: Numbering of variables 1- Health, 2 – Vaccination, 3 – Impact on the psyche, 4 - Relationships before the pandemic. 5 – Trust, 6 - Relationships after the pandemic, 7 – Quality of life, 8 – Happiness, 9 – Quality of place, 10 – Quality of the environment.
Source: Own research

Unlike the previously calculated values of the correlation coefficient, the value of the coefficient between the answers to the question "quality of life" and "relationship before the pandemic" is a negative number (R = - 0.564), that means that with the growth of the values of the answers to the question "quality of life" the values of the answers of women to the question "relationship before the pandemic" are decreasing. Similarly, we can interpret the other calculated values of the correlation coefficient, shown in Table 4. For illustration, the graph of the correlation coefficient (Fig. 6) between the answers "health" and "quality of life" in "Women" file is shown.

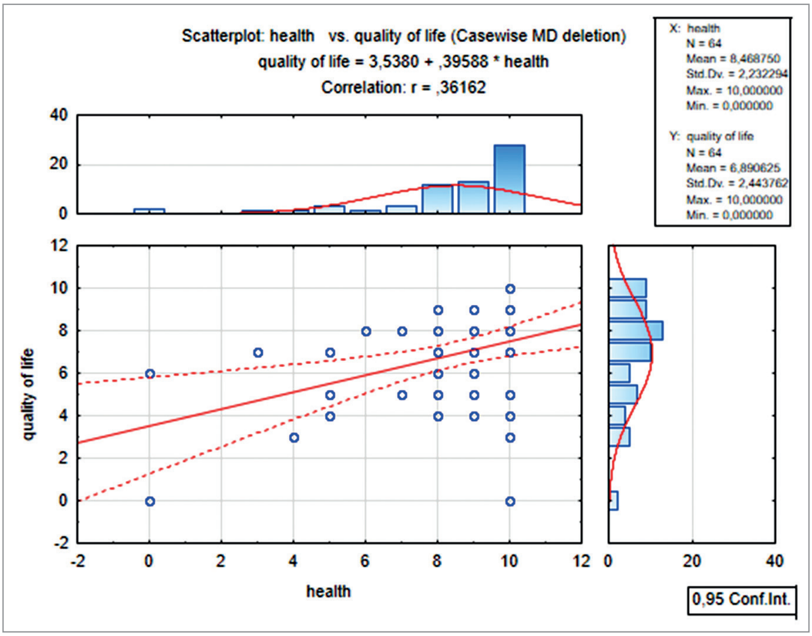

Fig. 6 Correlation coefficient health - quality of life (women)
Source: Own research

The object of another statistical analysis was to find out whether the relationships of students with their relatives differed statistically significantly before and after the pandemic or whether during the pandemic there were statistically significant changes in the relationships among students, in men or women. Since the assumption of a normal distribution of observed characteristics is not justified, to verify the statistical significance of differences on the level of observed characteristics, we used the non-parametric Wilcoxon one-sample test (Wilcoxon signed rank test), which is a non-parametric analogue of the paired parametric t-test. The observed characters will be the characters X, Y, where X is the relationship before the pandemic and Y is the relationship after the pandemic in men (women).

The hypothesis H0 was tested: the medians of characters X, Y are equal against the one-sided alternative hypothesis H1, that the median of character Y is greater. We implemented the test in the STATISTICA program. After entering the input data of the file "Men", we got the following results in the computer output: the value of the test criterion Z Wilcoxon one-sample test ($Z = 4.171$) and the probability value p ($p = 0.000$). We will evaluate the test using the p value. Since the calculated probability value p is a small number, the tested hypothesis H0 is rejected at the significance level $\alpha = 0.01$. This means that the attitude to the issue of health among students (in the "Men" set) changed significantly after the pandemic. An analogous procedure was followed in the "Women" file. After inputting the input data of the file "Women" from the output of the computer, the following value of the test criterion Z of the Wilcoxon one-sample test ($Z = 2.706$) and the probability value of p ($p = 0.007$) resulted. This means that the attitude to the issue of health changed significantly after the pandemic in the "Women" group as well. We illustrated both results in the following figures (Fig. 7 and Fig. 8):

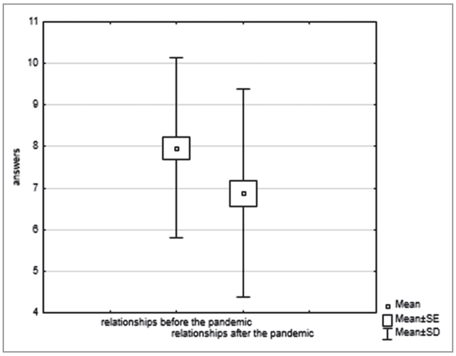

Fig. 7 Relationships before and after the pandemic (men)
Source: Own research

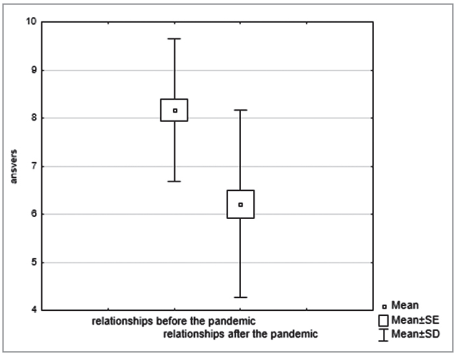

Fig. 8 Relationships before and after the pandemic (women)
Source: Own research

RESULTS AND DISCUSSION

The goals and hypotheses are formulated in the introduction of the paper. The first goal was to find out what the self-reported health of university students in Slovakia is. In hypothesis H1, students' evaluation of their health on a scale of 0-10 was expected to be 8 or higher. By measuring, we found the average value of self-reported health of men and women to be 8.32 (Table 2), the hypothesis was fulfilled. Hypothesis H2 predicted minimal differences in the self-reported health assessment of male and female students (on a scale of 0-10, the difference in values will be less than 0.5). The Shapiro-Wilk test is used in the calculation, the result is the self-reported value of men 8.09, the value of women 8.47 (Table 3, Fig. 3 and 4). Hypothesis H2 was fulfilled. Differences in self-reported health of men and women in New Zealand were addressed by Jatrana (2021). She stated that women have a better assessment of physical health than men, but a lower assessment and a worse assessment of psychological health. Our research confirmed a better evaluation of "health as a whole" by women than men, we did not deal with the division of health into physical and mental. On the other hand, Boerma et al. (2016) on the basis of the data from the World Health Surveys 2002–04 (Erickson, 2009), in which 59 countries participated, state that the health of women is significantly worse compared to men, in all health indicators. The second goal was to determine the impact of self-reported health on students' quality of life and which of the proposed variables are predictors of self-reported health. In order to reach the second goal, the research hypothesis H3 was formulated: Impact of self-reported health on students' quality of life, measured by the correlation coefficient, reaches a value of 0.30 - 0.69, i.e. mean value. Murgaš, Petrovič (2020) report the value of the Spearman correlation coefficient of health and quality of life in the Czech Republic as 0.38. From the values we measured, the correlation coefficient of self-reported health and quality of life for men is 0.34 and for women 0.34, hypothesis H3 was confirmed. The values of Spearman's rank correlation coefficient for men (Table 5) reveal several remarkable facts. (i) Self-reported health correlates with other variables low, the correlation of 0.34 with quality of life is the highest of those measured. The correlation of self-reported health and vaccination is negative -0.36. We can interpret it so that as self-reported health values increase, vaccination participation decreases and vice versa. (ii) Vaccination is the second measured variable related to health. At the time of the pandemic, it was an extremely strong phenomenon that significantly polarized society. It is surprising that, apart from the low correlation with the effect on the psyche, it was negatively correlated with the other variables. We can interpret it so that with the growth of vaccination, the values of the other variables decreased and vice versa. (iii) As expected, the very high degree of connection between quality of life and happiness is 0.79, the highest correlation measured. The high correlation values between quality of life, happiness, quality of place and quality of the environment are surprising. It means that the geographical space in which the university students lived their lives at the time of the pandemic was extremely important for them. The values of Spearman's rank correlation coefficient for women (Table 6) also reveal several facts worth paying attention to. (i) Health has a zero correlation with vaccination (it was negative for men) and a negative correlation with the effect on the psyche. (ii) The correlation of vaccination and the effect on the psyche with other variables is low and in many cases negative. (iii) The correlation between quality of life and happiness is 0.88, even higher than for men. The values of correlations between quality of life, happiness, quality of place and quality of environment are lower than for men. On the contrary, for women, in contrast to men, the correlation of relationships before the pandemic with the quality of life and happiness is a significant degree of association.

CONCLUSIONS

In the paper, we dealt with health, which is considered by scientists dealing with the quality of life to be a strong part of the quality of life. On the other hand, the quality of life has been considered by health scientists as a significant component since the establishment of the WHO. We approached health from the point of view of a non-medical approach, which includes self-reported health. With two exceptions, we measured health, quality of life and other variables on a scale of 0-10. The result of the measurements is the finding of self-reported health of men 8.09 and women 8.32, hypothesis H1: Respondents will evaluate health on a scale of 0-10 with values of 8 and higher was fulfilled. As well as hypothesis H2: The differences in the self-reported health evaluation of male and female students will be minimal (on a scale of 0-10, the difference in values will be less than 0.5). In addition to the values of self-reported health and its differentiation between men and women, attention was focused on the impact of health on the quality of life. The expected correlation value was 0.3 – 0.5, i.e. moderate degree of attachment (Markechová, Stehlíková, Tirpáková, 2011). Correlations between variables were calculated using Spearman's rank correlation coefficient. In men, the correlation of self-reported health and quality of life is 0.34, in women 0.35. Hypothesis H3: The impact of self-reported health on students' quality of life measured by the correlation coefficient reaches a value of 0.3–0.5 was also fulfilled. It can be interpreted that the self-reported health of university students is a predictor of the quality of their life. The values of Spearman's rank correlation coefficient for men (Table 5) reveal several remarkable facts. (i) Self-reported health correlates with other variables low, the correlation of 0.34 with quality of life is the highest of those measured. The correlation of self-reported health and vaccination is negative -0.36. It can be interpreted in the way that as self-reported health values increase, vaccination participation decreases and vice versa. (ii) Vaccination is the second measured variable related to health. At the time of the pandemic, it was an extremely strong phenomenon that significantly polarized society. It is surprising that, apart from the low correlation with the effect on the psyche, it was negatively correlated with the other variables. It can be interpreted as the fact that the values of the other variables decreased with the increase in vaccination and vice versa. (iii) As expected, the very high degree of association between quality of life and happiness is 0.79, the highest correlation measured. The high correlation values between quality of life, happiness, quality of place and quality of the environment are surprising. It means that the geographical space in which the university students lived their lives at the time of the pandemic was extremely important for them. The values of Spearman's rank correlation coefficient for women (Table 6) also reveal several facts worth paying attention to. (i) Health has a zero correlation with vaccination (it was negative for men) and a negative correlation with the effect on the psyche. (ii) The correlation of vaccination and the effect on the psyche with other variables is low and in many cases negative. (iii) The correlation between quality of life and happiness is 0.88, even higher than for men. The values of correlations between quality of life, happiness, quality of place and quality of environment are lower than for men. On the contrary, for women, the correlation of pre-pandemic relationships with the quality of life and happiness is a significant degree of attachment, in contrast to men.

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REFERENCES

ALTMAN, C. E., VAN HOOK, J., HILLEMEIER, M. (2016). What Does Self-rated Health Mean? Changes and Variations in the Association of Obesity with Objective and Subjective Components of Self-rated Health. *J Health Soc Behav,* 57, 1, 39-58. doi:10.1177/0022146515626218.

ARRONDO, R., CÁRCABA, A., GONZÁLEZ, E. (2021). Drivers of Subjective Well-Being under Different Economic Scenarios. *Frontiers in Psychology*. doi:10.3389/fpsyg.2021.696184.

BAIDIN, V., GERRY, C. J., KANEVA, M. (2021). How Self-Rated is Self-Rated Health? Exploring the Role of Individual and Institutional Factors in Reporting Heterogeneity in Russia. *Soc Indic Res*, 155, 675-696. doi:10.1007/s11205-020-02604-4.

BEAN, J. P., BRADLEY, R. K. (1986). Untangling the satisfaction-performance relationship for college students. *Journal of Higher Education*, 57, 393-412. doi:10.2307/1980994.

BIEDA, A., HIRSCHFELD, G., SCHÖNFELD, P., BRAILOVSKAIA, J., LIN, M., MARGRAF, J. (2019). Happiness, life satisfaction and positive mental health: Investigating reciprocal effects over four years in a Chinese student sample. *Journal of Research in Personality*, 78,198-209. doi:10.1016/j.jrp.2018.11.012.

BILAJAC, L., MARCHESI, V. V., TEŠIĆ, V., RUKAVINA, T. (2014). Life Satisfaction, Optimism and Social Capital as Predictors of Mental Health of the Recipients of Financial Welfare from the State. *Psychiatria Danubina*, 26, 3, 435-441.

BOERMA, T., HOSSEINPOOR, A. R., VERDES, E. ET AL. (2016). A global assessment of the gender gap in self-reported health with survey data from 59 countries. *BMC Public Health*, 16, 675. doi:10.1186/s12889-016-3352-y.

BROWN, S. J., YELLAND, J. S., SUTHERLAND, G. A. ET AL. (2011). Stressful life events, social health issues and low birthweight in an Australian population-based birth cohort: challenges and opportunities in antenatal care. *BMC Public Health,* 11, 196. doi:10.1186/1471-2458-11-196.

CAMFIELD, L., SKEVINGTON, S. M. (2003). On Subjective Well-being and Quality of Life. *Journal of Health Psychology,* 13, 764. doi:10.1177/13591053080938602008.

CARON, J., CARGO, M., DANIEL, M. ET AL. (2019). Predictors of Quality of Life in Montreal, Canada: A Longitudinal Study. *Community Ment Health J*, 55, 189-201. doi:10.1007/s10597-018-0340-y.

CONRAD, P., LEITER, V. (2003). Health and Health Care as Social Problems. Rowman & Littlefield Publishers, Washington.

COSTA, O. S, SALAM, T., DUHIG, A., PATEL, A. A., CAMERON, A., VOELKER, J., BOOKHART, B., COLEMAN, C. I. (2020). Specialist physician perspectives on non-medical switching of prescription medications. *Journal of Market Access & Health Policy,* 8, 1, 1738637. doi:10.1080/20016689.2020.1738637.

CORONIČOVÁ HURAJOVÁ, J., HAJDUOVÁ, Z. (2021). Multiple-Criteria Decision Analysis Using TOPSIS and WSA Method for Quality of Life: The Case of Slovakia Regions. *Mathematics*, 9, 2440. doi:10.3390/math9192440.

DALE, R., BUDIMIR, S., PROBST, T., HUMER, E., PIEH, C. (2022). Quality of life during the COVID-19 pandemic in Austria. *Front. Psychol,* doi:10.3389/fpsyg.2022.934253.

DANKWA-MULLAN, I., PÉREZ-STABLE, E. J. (2016). Addressing Health Disparities Is a Place-Based. *Am J Public Health*, 106, 4, 637-9. doi:10.2105/AJPH.2016.303077. 46

DE WIT, M., HAJOS, T. (2014). Health-Related Quality of Life. In: Michalos, A. C. (ed) *Encyclopedia of Quality of Life and Well-Being Research*. Springer, Dordrecht. 929-931.

CHOI, H., MIYAMOTO, Y. (2022). Cultural Differences in Self-Rated Health: The Role of Influence and Adjustment. *Japanese Psychological Research*, 64, 2, 156-169. doi:10.1111/jpr.124052022.

DIENER, E., NG, W., HARTER, J., ARORA, R. (2010). Wealth and happiness across the world: material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *Journal of Personality and Social Psychology*, 99, 52-61. doi:10.1037/a0018066.

DIENER, E., INGLEHART, R., TAY, L. (2013). Theory and Validity of Life Satisfaction Scales. Soc Indic Res 112:497-527. doi:10.1007/s11205-012-0076-y.

DONG, W. L., LI, Y. C., WANG, Z. Q., JIANG, Y. Y., MAO, F., QI, L., DONG, J. Q., WANG, L. M. (2010). Self-rated health and health-related quality of life among Chinese residents, China. *Health Qual Life Outcomes*, 14, 5, doi:10.1186/s12955-016-0409-7.

DORÉLIEN, A., XU, H. (2020). Estimating rural–urban disparities in self-rated health in China: Impact of choice of urban definition. *Demographic Research*, 43, 49, 1430-1460. doi:10.4054/DemRes.2020.43.49.

DOWD, J. B., ZAJACOVA, A. (2007). Does the predictive power of self-rated health for subsequent mortality risk vary by socioeconomic status in the US? *International Journal of Epidemiology*, 36, 6, 1214-1221. doi:10.1093/ije/dym214.

DŽUKA, J., LAČNÝ, M., BABINČÁK, P. (2019). Subjective well-being and income below the 'at-risk-of-poverty threshold': analysis of Slovak EU-SILC data. *Studia Psychologica,* 61, 4, 213-229.

EL-HASSAN, K. (2014). Student Quality of Life. In: Michalos AC (eds) *Encyclopedia of Quality of Life and Well-Being Research*. Springer, Dordrecht. 6407-6411.

EARICKSON, R. (2009). Medical geography. In: Kitchin R, Thrift, N. (eds) *International Encyclopedia of Human Geography*. Elsevier, London.

GULIYEVA, A. (2021). Measuring quality of life: a system of indicators. *Economic and Political Studies,* 10, 4, 476-491. doi:10.1080/20954816.2021.1996939 65.

GUYATT, G. H., FEENY, D. H., PATRICK, D. L. (1993). Measuring health-related quality of life. *Ann Intern Med*, 118, 8, 622-9. doi:10.7326/0003-4819-118-8-199304150-00009.

HAIMI, M., BRAMMLI-GREENBERG, S., WAISMAN, Y., STEIN, N., BARON-EPEL, O. (2020). The role of non-medical factors in physicians' decision-making process in a pediatric telemedicine service. *Health Informatics Journal*, 26, 2, 1152-1176. doi:10.1177/1460458219870660.

HANSEL, T. C., SALTZMAN, L. Y., MELTON, P. A ET AL. (2022). COVID-19 behavioral health and quality of life. *Sci Rep*, 12, 961. doi: 10.1038/s41598-022-05042-z.

HOWLEY, P., O'NEILL, S., ATKINSON, R. (2015). Who needs good neighbors? *Environment and Planning A*, 47. 939-956. doi: 10.1068/a140214p.

IRA, V., ANDRÁŠKO, I. (2007). Quality of life in the perspective of human geography. *Geografický časopis /Geographical Journal*, 59, 2, 159-179.

JATRANA, S. (2021). Gender differences in self-reported health and psychological distress among New Zealand adults. *Demographic Research*, 45, 21, 693-726. doi:10.4054/DemRes.2021.45.21.

KOBYLAREK, A. ET AL. (2022). The Quality of Life among University of the Third Age Students in Poland, Ukraine and Belarus. *Sustainability*, 14, 4, 2049. doi:10.3390/su14042049.

KORMI-NOURI, R., FARAHANI, M. N., TROST, K. (2013). The role of positive and negative affect on well-being amongst Swedish and Iranian university students. *The Journal of Positive Psychology*, 8, 5, 435-443. doi:10.1080/17439760.2013.823511.

LÓPEZ-RUIZ, V. R., HUETE-ALCOCER, N., ALFARO-NAVARRO, J. L., NEVADO-PEÑA, D. (2021). The Relationship between happiness and quality of life: A model for Spanish society. *PLoS One,* 16, 11, e0259528. doi:10.1371/journal.pone.0259528.

MACKŮ, K., CAHA, J., PÁSZTO, V., TUCEK, P. (2021). Subjective or Objective? How Objective Measures Relate to Subjective Life Satisfaction in Europe, *International Journal of Geo-Information*, 9, 5, 320. doi:10.3390/ijgi9050320.

MASLOW, A. H. (1970). *Religions, values, and peak experiences*. Penguin, New York.

MARKECHOVÁ, D., STEHLIKOVA, B., TIRPÁKOVÁ, A. (2011). *Statistical methods and their applications*. FPV UKF v Nitre. Nitra.

MEI-PO, K. (2018). The Limits of the Neighborhood Effect: Contextual Uncertainties in Geographic, Environmental Health, and Social Science Research. *Annals of the*

American Association of Geographers, 108, 6, 1482-1490. doi:10.1080/24694452.2018.1453777.

MICHAELI, E., IVANOVÁ, M., SOLÁR, V. (2014). Specific Aspects of the Quality of Life of the Roma Ethnic Group in Selected Areas Under Study in the East of the Slovak Republic. *Acta Universitatis Palackianae Olomucensis – Geographica,* 45, 1, 37-47.

MICHALOS, A. C., ORLANDO, J. A. (2006). A Note on Student Quality of Life. *Soc Indic Res*, 79, 51-59. doi:10.1007/s11205-005-2404-y.

MIHINCĂU, D., ILIEȘ D.,C., WENDT J., ILIEȘ A., ATASOY E., SZABO- ALEXI, P., MARCU, F., ALBU, A.V., HERMAN, G.V., (2019). Investigations on Air Quality in a School. *Folia Geographica*, 61, 2, 190-204.

MOHSEN, S., EL-MASRY, R., ALI, O. F. ET AL. (2022). Quality of life during COVID-19 pandemic: a community-based study in Dakahlia governorate. *Egypt. glob health res policy*, 7, 1, 15. doi:10.1186/s41256-022-00246-2.

MOUSAZADEH, H. (2022). Investigating the sense of place attitudes to quality of life of urban communities nearby the river. *Folia Geographica*, 64, 2, 104–125.

MURGAŠ, F., PETROVIČ, F. (2020). Quality of Life and Quality of Environment in Czechia in the Period of the Covid-19 Pandemic. *Geografický časopis / Geographical Journal*, 72, 3, 261-274. doi:10.31577/geogrcas.2020.72.3.13.

MURGAŠ, F., PETROVIČ, F., MATURKANIČ, P., KRÁLIK, R. (2022). Happiness or Quality of Life? Or Both? *Journal of Education Culture and Society*, 13, 1, 17-36. doi:10.15503/jecs2022.1.17.36.

MURGAŠ, F., PETROVIČ, F., TIRPÁKOVÁ, A. (2022). Social Capital as a Predictor of Quality of Life: The Czech Experience. *Int J Environ Res Public Health,* 19, 10, 6185. doi:10.3390/ijerph19106185.

MURGAŠ, F., MACKŮ, K., GREŽO, H., PETROVIČ, F. (2023). The concept of quality of life and its application using the World Value Survey Wave 7: Slovak experience. *GeoJournal,* https://doi.org/10.1007/s10708-023-10969-5.

MURGAŠ F, PODZIMEK, M., PETROVIČ F., TIRPÁKOVÁ A., KRÁLIK, R. (2023). The impact of religiosity on quality of life. *Acta Missiologica*, 17, 2, 169-186.

OECD (2021) *Health at a Glance* 2021: OECD Indicators. OECD Publishing, Paris.

PATRÍCIO, B., JESUS, L. M., CRUICE, M., HALL, A. (2014). Quality of Life Predictors and Normative Data. *Social Indicators Research,* 119, 3, 1557-1570. doi:10.1007/s11205- 013-0559-5.

PETROVIČ, F., MURGAŠ, F. (2020a): Holistic and sustainable quality of life. Conceptualization and application. *Folia Geographica*, 62, 1, 2020, 77-94,

PETROVIČ, F., MURGAŠ, F. (2020b). Linking sustainability and happiness. What kind of happiness? *GeoScape,* 14, 1, 70-79. doi:10.2478/geosc-2020-0007.

PETROVIČ, F., MATURKANIČ, P. (2022). Urban-Rural Dichotomy of Quality of Life. *Sustainability*, 14, 8658. doi: 10.3390/su14148658.

PETROVIČ, F., MURGAŠ, F., KRÁLIK, R. (2023). Food, exercise and lifestyle are predictors of a hedonic or eudaimonic quality of life in university students? *Acta Missiologica,* 17, 2, 99-114.

PODZIMEK, M. (2019). Problems of Narcissism in Education: The Culture of Narcissism as a Dangerous Global Phenomenon for the Future. *Problems of Education in the 21st Century*, 77, 489-501. doi:10.33225/pec/19.77.489.

RUTKOWSKA, A., LISKA, D., CIEŚLIK, B., WRZECIONO, A., BROĎÁNI, J., BARCALOVÁ, M., GURÍN, D., REQUENA, F. (2003). Social Capital, Satisfaction and Quality of Life in the Workplace. *Social Indicators Research,* 61, 331-360. doi:10.1023/A:1021923520951.

RIŠOVÁ, K., POUŠ, R. (2018). Urban facilities in the quality of life research: a case study of Banská Bystrica city (Central Slovakia). *Geografický časopis / Geographical Journal*, 70, 2, 99-116. https://doi.org/10.31577/geogrcas.2018.70.2.06.

RUTKOWSKI, S. (2021). Stress Levels and Mental Well-Being among Slovak Students during e-Learning in the COVID-19 Pandemic. *Healthcare (Basel),* 9, 10, 1356. doi:10.3390/healthcare9101356.

SALVADOR-CARULLA, L., LUCAS, R., JOSÉ AYUSO-MATEOS, J. L., MIRET, M. (2014). Use of the terms "Wellbeing" and "Quality of Life" in health sciences: A conceptual framework. *Eur. J. Psychiat.,* 28, 1, 50-65.

SARBANGOLI, R. M., NEDJAT, S., YASERI, M., CHERAGH, Z. (2019). Are the quality of life and self-rated health the same construct from the perspective of students at Tehran university of medical sciences? *Arch Epid Prev Med,* 1. doi:10.15761/AEPH.1000101.

SCHALOCK, R. L., KEITH, K. D., HOFFMAN, K., KARAN, O. C. (1989) Quality of life: its measurement and use. *Ment Retard*, 27, 1, 25-31.

SKEVINGTON, S. M., BÖHNKE, J. R. (2018). How is subjective well-being related to quality of life? Do we need two concepts and both measures? *Social Science & Medicine*. doi:10.1016/j.socscimed.2018.04.005.

SOLIS, A. C., LOTUFO-NETO, F. (2019). Predictors of quality of life in Brazilian medical students: a systematic review and meta-analysis. *Braz. J. Psychiatry*, 41,6, 556-567. doi:10.1590/1516-4446-2018-0116.

SZŰCS, A., KONCZ, G. (2020). Sport, as an Influencing Factor of the Quality of Life, and Regional Competitiveness. The Case Study of Jászárokszállás (Hungary). *Folia Geographica*. 62, 1, 142-157.

TAY, L., DIENER, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology,* 101, 2, 354-356. doi:10.1037/a0023779.

TKÁČOVÁ, H., KRÁLIK, R., TVRDOŇ, M., JENISOVÁ, Z., GARCIA, M. J. (2022). Credibility and Involvement of Social Media in Education—Recommendations for Mitigating the Negative Effects of the Pandemic among High School Students. *International Journal of Environmental Research and Public Health*, 19, 5, 2767. doi:10.3390/ijerph19052767.

TKÁČOVÁ, H., PAVLÍKOVÁ, M., JENISOVÁ, Z., MATURKANIČ, P., KRÁLIK, R. (2021). Social Media and Students' Wellbeing: An Empirical Analysis during the Covid-19 Pandemic. *Sustainability*, 13, 10442. doi:10.3390/su131810442.

UHER, A., IRA, V. (2019). Life-paths of Serbs in the context of conflicts in former Yugoslavia. *Folia Geographica*, 61, 2, 25-44.

U.S FOOD AND DRUG ADMINISTRATION (2009). Guidance for industry - patient-reported outcome measures: Use in medical product development to support labeling claims. https://www.fda.gov/regulatory-information/search-fda-guidance-documents/patient-reported-outcome-measures-use-medical-product-development-support-labeling-claims. Accessed 23 Sept 2022.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, FDA Center for Drug Evaluation and Research; U.S. Department of Health and Human Services FDA Center for Biologics Evaluation and Research; U.S. Department of Health and Human Services FDA Center for Devices and Radiological Health (2006). Guidance for industry: patient-reported outcome measures: use in medical product development to support labeling claims: draft guidance. Health Qual Life Outcomes 4:79. doi:10.1186/1477-7525-4-79.

VAN TUBERGEN, A., GULPEN, A., LANDEWÉ, R., BOONEN, A. (2018). Are globals for health, well- being and quality of life interchangeable? A mixed methods study in ankylosing spondylitis patients and controls. *Rheumatology,* 57, 9, 1555-1562. doi:10.1093/rheumatology/key129.

VEENHOVEN, R. (2014). Quality of Life (Qol), An Overview. In: Michalos AC (ed) *Encyclopedia of Quality of Life and Well-Being Research.* Springer, Dordrecht, pp 5265-5269.

WAHL, A. K., RUSTØEN, T., HANESTAD, B. R., LERDAL, A., MOUM, T. (2004). Quality of life in the general Norwegian population, measured by the Quality of Life Scale (QOLS-N). *Quality of Life Research*, 13, 5, 1001-1009. doi:10.1023/B:QURE.0000025583.28948.5b.

WHO (2017). Determinants of health. https://www.who.int/news-room/questions-and-answers/item/determinants-of-health. Accessed 27 Sept 2022.

WHO (2022). WHOQOL: Measuring Quality of Life. https://www.who.int/tools/whoqol. Accessed 22 Sept 2022. 59.

WHOQOL GROUP (1994) Development of the WHOQOL: rationale and current status. *Int J Ment Health,* 23, 24-56.

WHOQOL GROUP (1995). The World Health Organization Quality of Life Assessment (WHOQOL): Position paper from the World Health Organization. *Social Science and Medicine*, 41, 10, 1403-1409.

WHOQOL SRPB GROUP (2006). A cross-cultural study of spirituality, religion, and personal beliefs as components of quality of life. *Soc Sci Med,* 62, 6, 1486-1497. doi:10.1016/j.socscimed.2005.08.001.

APPENDIX

Questions used in the questionnaire.

1. Self-reported health. On a scale of 0-10, indicate how healthy you feel. 0 means that you suffer from a life-threatening illness or the consequences of a very serious injury. 10 means you feel completely healthy.
2. Inoculation with a vaccine. Please choose one of the options: 1. I am vaccinated. 2. I am not vaccinated but I want to be vaccinated. 3. I am not vaccinated nor do I want to be vaccinated.
3. The impact of the pandemic on your psyche. Please choose one of the options: 1. Anxiety. 2. Depression. 3. Suicidal thoughts. 4. Suicide attempt. 5. No influence on the psyche.
4. Relationships with loved ones before the pandemic, parents and grandparents, siblings, boyfriend/girlfriend, husband/wife are considered loved ones. Please indicate on a scale of 0-10 what kind of relationships you had with your loved ones before the outbreak of the pandemic. 0 means you had very bad relationships, 10 means you had very good relationships.
5. Trust. Please indicate on a scale of 0-10 how much you trust other people. 0 means you trust no one, 10 means you trust everyone.
6. Expected relationships with loved ones after the pandemic. State on a scale of 0-10 how you expect relationships with your loved ones after the end of the pandemic. 0 means you expect very bad relationships, 10 means you expect very good relationships.
7. Quality of life. On a scale of 0-10, indicate how the quality of your life is these days. 0 means that your quality of life is very poor, 10 means that your quality of life is excellent.
8. Happiness. On a scale of 0-10, indicate how happy you are these days. 0 means you are very unhappy, 10 means you are very happy.
9. Quality of place. Indicate on a scale of 0-10 how satisfied you are with the city or village where you live permanently. 0 means that you are very dissatisfied, you would prefer to move away. 10 means that you are very satisfied with your city or village.
10. Quality of the environment. Please indicate on a scale of 0-10 how satisfied you are with the quality of the environment in the city or village where you live permanently. 0 means that you are very dissatisfied, 10 means that you are very satisfied.

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CENTER AND PERIPHERY IN BOSNIA AND HERZEGOVINA – SOCIAL AND SPATIAL INDICATORS OF REGIONAL DISPARITIES

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Abstract
Geographic research continues to be focused on multidimensional categories of center and periphery, as well as margins in the identification of development disparities, mainly in reaction to dynamic polycentric regional development. The detection of key factors that lead to the process of peripheralization is particularly significant for the territory of Bosnia and Herzegovina, as a European periphery with specific implications of such a status on the border regions. The statistical significance between the chosen peripheral (border) and central regions was analyzed using 50 specified criteria, divided into groups that represent various dimensions of peripheralization. Despite statistical limits, the results based on two-sample t-test reveal a certain degree of applicability in the use of specific statistical variables for determining peripheral areas. The relationship between the center and periphery in Bosnia and Herzegovina has never before been scientifically explored using a variety of spatial, economic, demographic, educational, cultural, and political indicators.

Key words
Bosnia and Herzegovina, center, periphery, border regions, socioeconomic development, spatial indicators, regional disparities

INTRODUCTION

The dynamic categories of center, periphery and margin have attracted increasing attention among scholars since the second half of 20th century (Pycia-Koščak, 2021). Within the geographic discourse, these terms and processes (peripheralization and marginalization) are primarily addressed as spatial response to the intense overall societal development of the past century (Matlovič and Matlovičova, 2020). In fact, these are specialized variations of various developmental components, such as economic, social, cultural and political advancement (Katunarić, 1992; Katunarić, 2006; Lošonc, 2015). Precise definition and conceptualization is challenging due to its multidimensional nature. Various definitions and interpretations exist, but

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they are greatly influenced by the scope of scientific field and type of conducted research (Marković, 1999). In the simplest sense, the periphery can be defined as the outer edge of a surface, object, or space, and it is most easily understood in relation to its opposite – the center or core (Anderson, 2000; Danson and de Souza, 2012). An example where this dichotomy is most evident is in the theory of center and periphery (Vanolo, 2008), and for a better understanding of these terms, it is necessary to delve into the essence and evolution of the theory that played a significant role in establishing generally clear patterns in the manifestation of these spatial variations (Martinus, 2022).

While polycentricity is a global trend in contemporary regional development, developmental patterns still indicate the presence of center-periphery dynamics (Penzes and Demeter, 2021), and existing disparities were further accentuated during the COVID-19 pandemic, especially in Europe (Barbero and Rodriguez-Crespo, 2022). Centers, in this sense, represent areas of diversified economic development, population concentration and a high standard of living (Pavlaković-Koči and Pejnović, 2005), while peripheries are distant, economically constrained regions with weakened intellectual and social capital (Lay, 1998; Görg and Ruane, 1999; Azaryahu, 2008; Scott and Storper, 2015). In the context of these spatial concepts, the main discussions pertain to their hierarchical relationship, where defining the inherent indicators of the periphery attracts significant interest within contemporary academic circles (Žafran and Radeljak Kaufmann, 2022). Although center-periphery spatial patterns are considered a traditional developmental paradigm, some authors are revitalizing the significance of these types of interrelations in interpreting and manifesting current global and regional issues, such as climate change (Knox-Hayes, 2022). It is crucial to note that the concept of margin/marginalization is frequently strongly related to periphery/peripheralization and implies a higher degree of functional than geographic isolation (Dery et al., 2012).

In the spatial definition of periphery, physical distance and transportation accessibility have long been perceived as key indicators. However, thanks to contemporary development concepts, a set of non-spatial indicators in defining peripheral areas has gained prominence, highlighting the necessity of embracing a multidimensional approach (Anđelković-Stoilković, 2018). As Nejašmić et al. (2018) emphasize, this includes demographic, social, technological, identity-related, institutional and political factors (Charron et al., 2014). Identification and measurement of intellectual capital is also a significant indicator of spatial inequalities, i.e. the periphery (Pachura et al, 2018). The heterogeneous concept of defining and perceiving the periphery has underscored the need for a holistic approach to understanding it. For example, within the 4D model, the periphery is considered in terms of distance (Arzeni et al., 2002; Fuduric, 2008), its dependency on the center, diversity, and the discourse of the periphery (Ferrau and Lopes, 2004). Different definitions and their multidimensional and nuanced nature have led to the emergence of various types of periphery: economic, political and cultural. In the latter case, creating a distinct identity at the periphery is a factor regardless of the first two.

Finding appropriate determination criteria for peripheral areas continues to be the focus of many research efforts. Since there are not any indicators of peripherality that are universally recognized, this paper will attempt to incorporate the most spatial and non-spatial criteria from earlier research. We will start with Keeble's model of gravitational relationships (Keeble et al., 1981), which includes a variety of spatial indicators that Copus (2001) refers to as "elements of conventional spatial concepts" such as transportation, travel expenses, distances from major centers, population density, etc. In addition to conventional indicators, the spatial scope also includes altitude as a crucial indicator of physical isolation, as considered in determining the ultra-peripheral regions of the European Union (Trujillano et al., 2005), urbanization rate, important in the context of development considering the spatial conditions and resources (Barrado et al., 2020; Keenan et al., 2022), the proportion of unutilized arable land (Chen et al., 2022) and the percentage of abandoned villages, as indicators of spatial transformation due to intense depopulation.

Non-spatial indicators of peripherality commonly focus on demographic and economic aspects of a region (Štambuk et al, 2002; Gatzweiler et al., 2011; Avdić et al., 2022). Apart from economic and demographic indicators, significant patterns in the center-periphery relationship also manifest in cultural-educational and political dimensions. Culture is often analyzed within the context of global trends, emphasizing that cultural production, the level of innovation, and the political involvement of the population diminish with increasing distance from the center (Dobreytsina, 2020). This can lead to the emergence of new identities in the periphery, often characterized by specific borderland identities (Zorko et al., 2012; Fuerst-Bjeliš, 2014; Fuerst-Bjeliš, 2020). Electoral volatility in recent studies (Bertus and Kovacs, 2022) reveals interesting spatial disparities and significant indications of processes of peripheralization and marginalization.

In the context of analysis of peripheral areas, significant number of authors from Southeast Europe (Lay, 1998; Pejnović, 2004; Lukić et al., 2009; Nejašmić et al., 2018; Zupanc, 2018; Stiperski et al., 2021; Žafran and Radeljak Kaufmann, 2022) highlight borderland zones – peripheral and problematic areas treated as economically, socially, and demographically disadvantaged (Van Houtum, 2000; Studzinska, 2023). Similar observations can be made for rural regions, particularly those at higher altitudes (Kubeš and Chvojkova, 2020; Banda et al., 2022; Sikorski, 2023). The significant contribution of authors from Central Europe is reflected in the analysis of peripheral regions after the political transition (Penzes and Demeter, 2021) using a different set of multivariate statistical methods, but also in specific studies devoted to revitalization measures for marginalized and spatially excluded social groups (Brunn et al, 2017; Matlovičová et al., 2022). Bosnia and Herzegovina is frequently left out of the international studies concerning socio-economic development and spatial demography (Newsham and Rowe, 2023). The research of center-periphery relations within this country is also underrepresented in academic discourse despite numerous authors emphasizing that this particular area should be considered significant in studying processes leading to peripheralization (Zorko, 2012; Malikova et al., 2015; Leutloff-Grandits, 2023).

In an attempt to define development axes in the geographic space of Bosnia and Herzegovina, Nurković (2006) identified peripheral regions, which include border areas. Stagnant and spatially differentiated demographic development, pronounced demographic polarization, ageing and its spatial differentiation, ethnic homogenization, disintegration of settlement system, social issues in urban areas are just some of the characteristics that mark peripheral areas. However, there is heightened interest today in studying the key factors leading to peripheralization, particularly with clear implications for its population, in light of contemporary development patterns in Bosnia and Herzegovina. This is of greater significance when the entire territory of Bosnia and Herzegovina, as a country in the process of economic transition, is viewed as a periphery in the European context, which has specific implications in border regions, especially towards neighboring Croatia, which recently became the external border of the European Union and the Schengen area. The primary goal of this research is to identify key indicators of peripheriality in particular borderland regions of Bosnia and Herzegovina. The applicability of the obtained results is reflected in the possibility of creating specific revitalization measures for local units with the highest degree of peripheralization, of which the importance of interlocal cooperation is particularly emphasized in the literature (Klamar et al., 2019). Such a bottom-up approach in overcoming development limitations is also recognized by the European Union, especially in development assistance activities (Jančovič et al, 2021).

TERRITORIAL SCOPE OF RESEARCH

Within Bosnia and Herzegovina, there are significant socio-demographic, economic, and general societal disparities between Federation of Bosnia and Herzegovina and Republika Srpska. Since noticeable differences in center-periphery pattern exist between these entities, this research exclusively focuses on larger entity – the Federation of Bosnia and Herzegovina, which is administratively divided into ten cantons. Their geographic and population size vary considerably (Tab. 1), primarily due to the ethnopolitical basis of this territorial structure. More than half (55%) of the population of the Federation of Bosnia and Herzegovina resides in three cantons – Tuzla, Sarajevo and Zenica-Doboj. The capital city is located in Sarajevo Canton, which also boasts the highest economic standard. The

Tuzla Canton has the largest population (2013 census) and, along with the Zenica-Doboj Canton, constitutes the core of mining and industrial production in Bosnia and Herzegovina. The Zenica-Doboj Canton also holds an exceptionally important position within national road network. Due to these facts, these three cantons can be considered a sort of economic, demographic and historical core of Federation of Bosnia and Herzegovina and even the entire country. All other cantons exhibit varying degrees of peripherality, although not necessarily across all aspects.

Based on the criterion of distance from the capital, the Una-Sana Canton has the most pronounced peripheral character. It encompasses the territory of eight local administrative units in the far northwest of Bosnia and Herzegovina: Bihać (administrative center), Cazin, Velika Kladuša, Bužim, Bosanska Krupa, Sanski Most, Ključ and Bosanski Petrovac. Covering an area of 4125 km^2 (the third-largest in Federation of Bosnia and Herzegovina), it was inhabited by cca 270 thousand people according to the 2013 census. Population density (66 people per km^2) is roughly the national average, but shows significant spatial variations primarily linked to environmental factors (Korjenić, 2012; Korjenić and Misilo, 2016). Notably, the Una River valley with the Cazin region in the west can be considered a generally densely populated area. The valley of Sana River in the east features moderate population density, while the southern and central areas with a mountainous and karstic character are quite sparsely populated. Depopulation trends have marked the demographic landscape of a large portion of the Una-Sana Canton since the second decade of the 21st century (Mehić and Gabeljić, 2018). Due to its specific geographic location, this canton has borne the heaviest burden of recent international migration crisis in Bosnia and Herzegovina since 2016 (Ramić, 2019; Helms, 2023).

Tab. 1 Area and population size of cantons in Federation of Bosnia and Herzegovina

Cantons	Area (km^2)	Population (2023)
Una-Sana	4.125	260.859
Posavina	325	39.629
Tuzla	2.649	430.571
Zenica-Doboj	3.344	350.778
Bosnian Podrinje	505	21.728
Central Bosnia	3.189	244.547
Herzegovina-Neretva	4.401	212.101
West Herzegovina	1.362	92.305
Sarajevo	1.277	420.287
Canton 10	4.934	77.249

Source: Federal Bureau of Statistics (2022); Agency for Statistics of Bosnia and Herzegovina (2016)

The spatial definition of the western periphery of Bosnia and Herzegovina also encompasses Canton 10 (also known as Herzeg-Bosnia County). This is the largest canton in terms of area within the Federation of Bosnia and Herzegovina (4934 km^2), with slightly over 80 thousand inhabitants in 2013. This area belongs to the physiognomic region of High Karst (Avdić et al., 2019), which results in a relatively low population density (17 people per km^2). More favorable conditions for settlement are provided by the local karst fields, primarily Livanjsko and Duvanjsko, where the majority of the population of this canton resides. Canton 10 comprises six local administrative units: Livno (administrative center), Tomislavgrad, Kupres, Glamoč, Bosansko Grahovo and Drvar. Despite its potential, especially in terms of forestry and tourism (Mirić et al., 2016), this canton is characterized by a generally low level of economic development (Hodžić, 2010), accompanied by intense depopulation (Pobrić and Avdić, 2020). These trends can largely be attributed to the consequences of the war between 1992 and 1995, the effects of which are still present in this area (Krevs et al., 2021).

In this research context, the Una-Sana Canton and Canton 10 have been identified as western peripheral areas of Bosnia and Herzegovina (Figure 1).

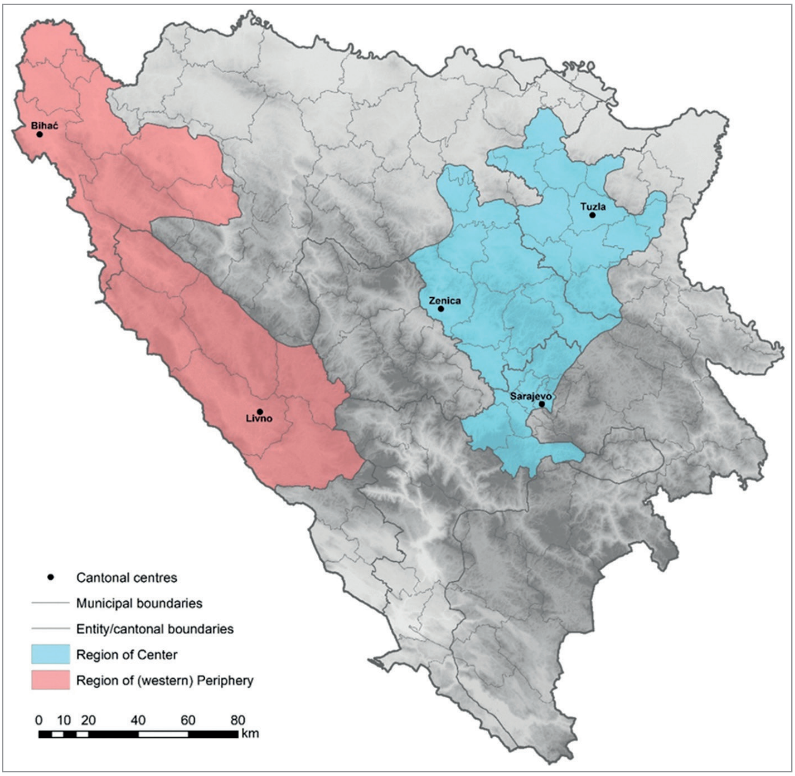

Fig. 1 Regions of Center and (western) Periphery in Bosnia and Herzegovina

Their status is reinforced by the fact that they spatially adjoin Croatian peripheral regions across the national border – Banovina (Banija), Kordun, Lika and Dalmatian Hinterland. The characterization of peripherality in this administratively defined area can be relatively easily confirmed through qualitative methods, but this study is focused on identifying relevant quantitative indicators at the cantonal and municipal levels. For this purpose, available data from latest population census (2013) and more recent statistical sources are utilized for statistical comparision with cantons that are designated as 'central.'

METHODOLOGY

Within this research, a total of 50 quantitative parameters were collected for the municipal/city-level in Federation of Bosnia and Herzegovina from official statistical publications or derived from other available sources. These selected parameters were then categorized into five groups for analytical purposes: demographic (9 parameters), economic (14 parameters), political (7 parameters), spatial (9 parameters) and educational/cultural (11 parameters). All these parameters are listed according to relevant group in Figure 2.

Within the demographic parameter group, data relevant to interpreting the demographic composition of population in selected regions and creating composite indices are used (Nejašmić, 2010; Marić et al., 2020). These parameters

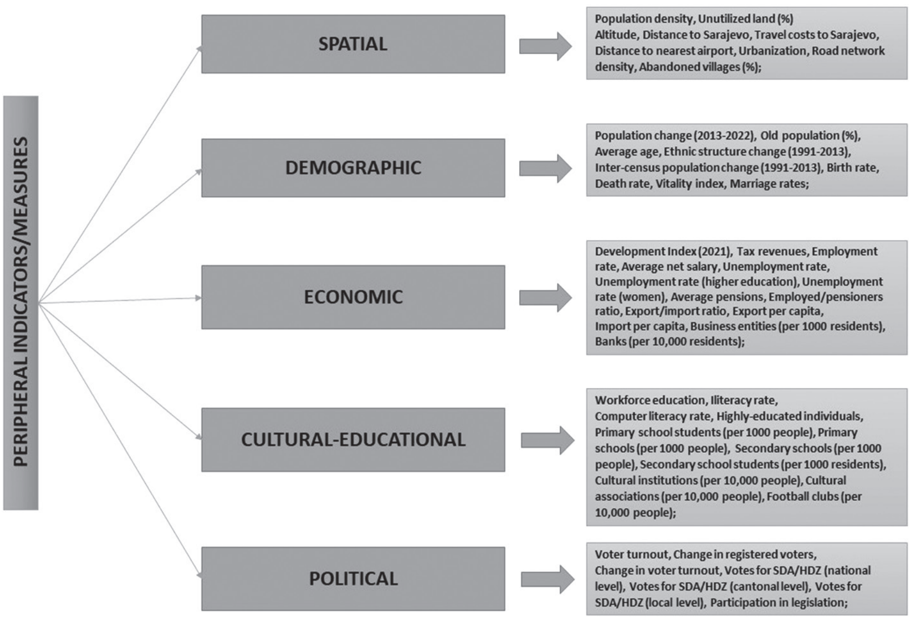

Fig. 2 Selected parameters/indicators of peripherality

include inter-census population movement, vital statistics and demographic ageing (Kačerova et al., 2022). The economic dimension is essential in peripherality analyses (Saberifar, Mishra, 2020; Blečić et al., 2023), and this group comprises the largest number of parameters. The index of development is the only composite indicator, while others mainly address employment and unemployment among specific population categories, trade dimensions (import and export), the number of business entities, as well as the number of banks, which are increasingly being analyzed in center-periphery patterns in terms of accessibility (Raagmaa, 2003). Group of cultural and education parameters include the number of cultural institutions and associations, as well as football clubs (the most significant indicator in the field of sports), along with educational parameters such as the number of school institutions, students, and educational structure of the population. For the analysis of the political aspect of spatial phenomena, parameters indicating changes in voter registration and turnout, participation in legislative authority, as well as the number of votes for leading national parties that have had a decades-long dominance in the political scene of the Federation of Bosnia and Herzegovina, were selected.

After collecting data at the local level for all selected parameters, the examination of differences between municipalities/cities belonging to peripheral cantons (14 in total) and those belonging to the three centrally positioned cantons (34 municipalities/cities) was undertaken. In order to determine whether statistically significant differences exist between the mentioned two groups of municipalities/cities, a two-sample t-test was utilized as a fundamental form of inferential statistical method, applied in the comparative analysis of all 50 indicators. Since the total number of municipalities/cities that entered the test analysis is relatively small (a total of 48), three levels of significance were defined: high ($\alpha < .01$), medium ($\alpha < .05$) and low ($\alpha < .10$). This way, not only the selection of significant indicators in defining the socio-geographic periphery of Bosnia and Herzegovina was obtained, but also their gradation based on significance.

RESULTS AND DISCUSSION

Given that in this study, the relationship between the national center and periphery is primarily observed from a geographical aspect, the first step was to test regional differences in spatial indicators between central and peripheral municipalities/cities covered in the analysis (Table 2). Among the nine tested indicators, a certain level of statistical significance was identified in six of them. As expected, the most significant differences were noted regarding the distance and travel costs to Sarajevo, the capital city ($p = .000$), which is understandable considering that Sarajevo municipalities themselves are included in the central region. Almost identical levels of statistical significance were found for the distance to the nearest international airport in Bosnia and Herzegovina. Two such airports

(Sarajevo and Tuzla) in central regions, while in the peripheral region, there are none – in most cases, the distance was calculated relative to the Banja Luka airport. A high significance level ($p = .009$) was also identified in terms of the percentage of uncultivated land, which is a clear indicator of rural depopulation and is much higher in the peripheral region.

A moderate level of statistical significance relates to population density ($p = .040$), which is understandable when considering the average population density in both regions – 168 people/km^2 in the central region compared to 39 people/km^2 in the peripheral region (in 2013). A lower level of statistical significance was found for the density of main roads and highways per unit area of 100 km^2 ($p = .058$), with no weighting applied in this case based on the rank or importance of the analyzed roadways. On the other hand, tested spatial indicators where no degree of statistical significance was identified include the altitude of municipal/city centers, the level of urbanization and the share of abandoned settlements.

Tab. 2 Spatial parameters as indicators of peripherality

Indicators	t	df	p	Significance
Population density	2,14	33	,040	**
Unutillized land (%)	-2,81	26	,009	***
Altitude	-1,51	16	,150	
Distance from Sarajevo	-8,21	21	,000	***
Travel costs to Sarajevo	-9,72	22	,000	***
Distance to nearest airport	-10,1	21	,000	***
Urbanization	-0,21	38	,836	
Density of road networks	1,95	40	,058	*
Abandoned villages (%)	-0,19	25	,853	

*Statistical significance levels: *** p < ,01; ** p < ,05; p < ,10*
Source: Agency for Statistics of Bosnia and Herzegovina (2016); Federal Institute for Development Programming (2022); Google Earth (2023); viamichelin.com (2023).

The demographic group consists of nine tested indicators (Table 3), of which four show a certain level of statistical significance in uncovering spatial disparities between the center and periphery. Among the indicators of vital statistics (birth rates, death rates, marriage rates and the vital index), a high level of statistical significance was found for birth rates ($p = .000$) and vital index ($p = .0028$), which is also strongly influenced by the number of births. However, there are no clear differences in the mentioned center-periphery relationship for the remaining rates. The analyzed change in population between the last two censuses demonstrates low significance ($p = .066$), while recent population trends (2013-2022) exhibit a moderate level of statistical significance ($p = .011$).

Tab. 3 Demographic parameters as indicators of peripherality

Indicators	t	df	p	Significance
Population change (2013-2022)	2,73	23	,011	**
Age dependancy ratio	-1,74	15	,102	
Average age	-1,20	16	,249	
Change in ethnic structure	-0,03	20	,975	
Inter-census population change	1,96	18	,066	*
Birth rate	6,35	39	,000	***
Death rate	0,76	18	,864	
Vitality index	2,59	26	,028	**
Marriage rate	1,03	15	,320	

*Statistical significance levels: *** p < ,01; ** p < ,05; p < ,10*
Source: Agency for Statistics of Bosnia and Herzegovina (2016); Federal Bureau of Statistics (2020, 2023); Federal Institute for Development Programming (2022).

Interestingly, indicators of demographic ageing, one of the most prominent demographic trends at the national level (share of elderly population and the average age) do not show significant differences in values between the central and western peripheral regions. This outcome is due to a certain number of highly vital municipalities in the Bosanska Krajina region within the examined western periphery, where the birth rates are among the highest in the country. This naturally affects the age structure of entire region, which, with a significant share of young population, is rather expansive in terms of Bosnian-Herzegovinian standards. Interestingly, in this study, the change in ethnic structure, often mentioned as a factor in demographic differences and changes, did not prove to be a significant indicator in uncovering the mentioned patterns.

In the economic group, the statistical significance of differences between the central and western peripheral regions was examined for 14 indicators, of which nine showed a certain significance level (Table 4). A special place in this analysis was reserved for the development index, a composite indicator created in 2021 by the Federal Institute for Development Programming. Five individual parameters were used to obtain this index, including two of an economic nature - income tax per capita and employment rate. A high level of statistical significance was found for both, the composite development index ($p = .000$) and its tested components ($p = .001$ for income tax and $p = .008$ for employment rate). Unlike employment, the unemployment rate did not indicate significance in the same context. However, unemployment as an indicator was also analyzed selectively, focusing on the female and highly educated populations. Interestingly, in both cases, a high degree of statistical significance was discovered regarding the observed differences ($p = .003$ for women and $p = .006$ for highly educated individuals).

Tab. 4 Economic parameters as indicators of peripherality

Indicators	t	df	p	Significance
Development index (2021)	4,21	46	,000	***
Tax revenues	3,62	42	,001	***
Employment rate	2,79	45	,008	***
Average net salary	0,71	39	,481	
Unemployment rate	-0,11	28	,914	
Unemployment rate (highly educated)	2,91	46	,006	***
Unemployment rate (women)	3,45	16	,003	***
Average pensions	3,24	26	,003	***
Employed/pensioners ratio	-2,30	23	,031	**
Export/import ratio	-1,09	13	,295	
Export per capita	2,04	42	,048	**
Import per capita	3,72	42	,000	***
Bussiness entities (per 1000 people)	0,78	39	,439	
Banks (per 10.000 people)	1,32	27	,199	

*Statistical significance levels: *** p < ,01; ** p < ,05; p < ,10*
Source: Federal Institute for Development Programming (2022); Federal Bureau of Statistics (2022).

Components of trade exchange for local administrative units were also considered, revealing that imports per capita are a highly significant indicator of difference (p = .000). Export value per capita, though slightly smaller, still demonstrated statistical significance (p = .048), while no level of statistical significance was identified for the import-export ratio. An important set of indicators regarding the economic standard of a specific area pertains to personal monthly income, i.e. wages and pensions. The average wage did not prove significant in the examined aspect, but the average pension amount exhibited the highest level of statistical significance (p = .003). Additionally, the number of employed individuals relative to the number of retirees had a moderate significance level in determining differences between the central and peripheral regions (p = .031). The analysis also included the number of business entities per 1000 inhabitants and, for the first time in research of this type, the number of banks per 10,000 inhabitants. However, no significant differences were found in these cases.

Analysis of educational and cultural indicators has yielded the fewest statistically significant results. Among the 11 examined indicators, only three showed differences between the central and peripheral regions with a certain degree of significance (Table 5). The number of primary school students relative to the total population (per 1000 inhabitants) is the only parameter that exhibited the highest level of statistical significance (p = .000), which correlates with certain demographic indicators such as the birth rate, since in both cases the central region has significantly higher values compared to the western periphery. A lower level of significance (p = .068) was observed in the ratio of the number of high school students to the total population. Only one other indicator related to computer literacy among the population fell within this category of statistically obtained results (p = .082).

Tab. 5 Cultural and education parameters as indicators of peripherality

Indicators	t	df	p	Significance
Education level of workforce	-2,75	15	,448	
Illiteracy rate	0,31	45	,757	
Computer literacy rate	1,80	31	,082	*
Highly-educated individuals (%)	0,91	44	,368	
Primary school students (per 1000 people)	4,43	23	,000	***
Primary schools (per 1000 people)	0,96	40	,341	
Secondary schools (per 1000 people)	-0,90	20	,378	
Secondary school students (per 1000 people)	1,87	46	,068	*
Cultural institutions (per 10.000 people)	-0,36	17	,672	
Cultural associations (per 10.000 people)	-1,58	16	,133	
Football clubs (per 10.000 people)	1,6	29	,121	

*Statistical significance levels: *** p < ,01; ** p < ,05; p < ,10*
Source: Federal Institute for Development Programming (2022); Agency for Statistics of Bosnia and Herzegovina (2016); Federal Bureau of Statistics (2023); Football Association of Bosnia and Herzegovina (2022).

None of the remaining cultural/education parameters indicated statistical significance in the center and periphery differences. The indicators closest to reaching statistical significance were the relative numbers of cultural associations and football clubs representing cultural and sports development in local communities. The lack of the sought-after significance is particularly pronounced in the case of the number of cultural institutions relative to the total population, although it is possible that available data for this indicator may be incomplete. The number of primary and secondary schools also did not prove significant in this context. The same can be said for the share of highly educated population, educational level of the workforce and the illiteracy rate.

Within the scope of this research, a set of political indicators was, for the first time, analytically considered in terms of the center-periphery relationship in Bosnia and Herzegovina. Among the seven individual indicators in this group, a higher significance level in differences between the central and peripheral regions was found in two cases and a lower level in two additional cases (Table 6). For a total of three political indicators, none of the three predefined levels of significance were established. One of the most interesting results in this context is the voter turnout rate, which is significantly higher in the central compared to the western peripheral region (p = .000). A lower level of significance (p = .056) was observed regarding differences in the trend or changes in voter turnout – a more pronounced decline was recorded in the peripheral region. A high level of significance in differences (p = .007) was identified in terms of the share of votes won by Party of Democratic Action (SDA) and Croatian Democratic Union (HDZ BiH), known as national parties and decades-long key players in the political landscape of the Federation of Bosnia and Herzegovina. These parties achieved significantly better recent election results on cantonal level in central than peripheral regions. A lower significance level of this nature (p = .085) was found in votes obtained in local (municipal/ city) elections. When it comes to voting for the state parliament, no significant differences between the center and periphery were observed, which certainly leads to interesting conclusions.

Tab. 6 Political parameters as indicators of peripherality

Indicators	t	df	p	Significance
Voter turnout	5,02	31	,000	***
Change in registered voters	-0,30	24	,768	
Change in voter turnout	2,00	27	,056	*
Votes for SDA/HDZ (national level)	0,34	31	,734	
Votes for SDA/HDZ (cantonal level)	2,87	37	,007	***
Votes for SDA/HDZ (local level)	1,78	30	,085	*
Participation in legislative authority	0,77	21	,451	

*Statistical significance levels: *** p < ,01; ** p < ,05; p < ,10*
Source: Central Electoral Commission Bosnia and Herzegovina (2012, 2014, 2020, 2022).

In terms of the territorial representation of delegates in legislative authorities at the national and entity levels, no significant level of differences was found, particularly influenced by the high value of this indicator for the city of Bihać, the most significant political center in the western periphery of the Federation of Bosnia and Herzegovina. The change in the number of registered voters is also an indicator that did not show statistical significance, although this was not unexpected considering certain established demographic trends.

CONCLUSIONS

This study has provided a certain number of arguments to consider the Una-Sana Canton and Canton 10, the far western parts of the Federation of Bosnia and Herzegovina, as peripheral regions within the national territory. This assessment primarily rests on their geographic distance from Sarajevo, the capital city, as well as other major regional centers and international airports. It is reflected through various spatial, socio-economic and demographic indicators. Identifying the periphery based on distance from the center is closely linked to geography and regional studies' contribution to the scholarly debate on this topic (Kolsut and Stryjakiewicz, 2021). This spatial pattern is analogous to many examples from other countries, including neighboring Croatia (Zupanc, 2018), it is possible to relate it to the phenomenon of double periphery. Beyond distance, these regions' spatial dimension of peripherality is also observed through lower population density, road network quality and the proportion of undeveloped land. While not the only region in Bosnia and Herzegovina showing signs of peripherality, its specific geographical position, encompassing a traditional borderland character and immediate proximity to the European Union in the contemporary context, offers significant potential for exploring broader effects of peripheralization and marginalization. Studying these effects in this context has the potential to reveal general principles associated with this phenomenon.

Spatial inequalities in the center-periphery relationship often manifest through regional and national economic development. Negative trends in economic criteria contribute to functional marginalization and overall deprivation, characterizing peripheral regions as areas requiring careful attention in regional development policies (Zorko, 2012; Popović and Radeljak Kaufmann, 2011). A significant number of the indicators in this analysis pertains to the economic dimension, with particular focus on the development index, the only composite indicator used for the socio-economic ranking of municipalities in the Federation of Bosnia and Herzegovina. Its values indicate weaker economic performances in peripheral regions compared to central areas. Considering its components (employment rate, income from taxes, and population movement), which also exhibit statistical significance, it becomes clear that this index is a reliable tool for identifying economic disparities. However, the asynchronous publication and methodological disparities among entity statistical institutions limit the use of this indicator for all local administrative units. In future analyses, using the development index for ranking all municipalities at the national level would be beneficial. Besides the composite index, specific economic indicators reveal unique phenomena. Selective unemployment analysis, focusing on specific population segments, such as women and highly educated individuals, indicates significant differences in the center-periphery divide (Hakim, 1990). Including women in all aspects of the labor market is a sign of sustainable economic development, aligned with contemporary global development narratives and practices. An interesting result is the significant difference in average pension values between observed spatial units, proving more informative than average salary levels. As a significant indicator of economic activity through import and export indicators, trade exchange also sheds light on these spatial patterns.

Among the selected demographic indicators, including total and natural population movements, vital statistics and age structure of the population, birth rates emerged as the most significant criterion for determination of peripherality. Their values should be interpreted in line with other indicators of the economic and socio-cultural dimesion, particularly taking into account that demographic challenges are considered consequences of general societal and economic processes (Pejnović, 2004; Penzes, 2016). However, a somewhat anomalous situation can be observed in the part of the Una-Sana Canton known as Cazinska Krajina, where birth rates are traditionally considerably higher than the national average. This phenomenon is often attributed to ethno-cultural factors (Avdić et al., 2022) and traditional family planning patterns. As characteristic of areas undergoing functional peripheralization processes, birth rate trends in both observed peripheral cantons are regressive due to the intensified ageing process. For interpreting these disparities, the vital index (the ratio of birth and death rates) is of some significance, with lower values in peripheral regions compared to central regions. The same applies to the net migration index, which indicates significant depopulation processes, especially pronounced in Canton 10, primarily associated with contemporary emigration waves of the workforce (Pobrić, 2002; Domazet et al., 2020). This reinforces the cumulative causality of demographic and economic trends in exacerbating regional disparities.

The group of education and cultural indicators, as significant criteria indicating spatial and functional periphery, plays a crucial role in deciphering similar patterns in the context of Bosnia and Herzegovina, particularly considering the proximity of the observed regions to the European economic and cultural space. Despite the growing literature on the topic of lower level of innovation, technological progress and education in peripheral regions (Eder, 2019), the prevailing principle remains that geographic distance and degree of economic development categorize peripheral regions as less innovative compared to centers (Howells and Bessant, 2012). Without more substantial indicators for these dimensions, the study tested indicators related to the educational and cultural dimensions. Indicators such as the level of computer literacy and number of students showed relevant levels of statistical significance in interpreting differences along the center-periphery line. The lower number of students and lower computer literacy rates in the western Bosnian-Herzegovinian periphery can be linked to the previously described demographic trends, as well as limited access to formal education, which has been confirmed on larger regional scales (Rasmussen, 2012). In these areas, the distance from schools, universities and educational hubs, due to pronounced transport isolation, leads to negative trends in the education structure. Attention should also be paid to the reorganization of the school network, which has been disrupted due to the closure of schools stemming from adverse demographic and economic trends, particularly in Canton 10.

Peripherality sometimes takes on its political manifestation when specific spatial, socio-economic and cultural conditions are met (Nettl, 1966; Boneta, 2004). Bosnia and Herzegovina is burdened with a ethno-political polarity, which is much more based on historical narratives than spatial identification. As a result, regionalisms that are typical for other European countries have yet to emerge in Bosnia and Herzegovina. However, the parameters used in this study also indicate conclusions about the existence of certain political differences between the observed center and periphery regions, independent of the ethnic context. This is primarily indicated by lower voter turnout in peripheral cantons, with an increasing discrepancy between the center and periphery in this regard over the past ten years. This could be a consequence of increased political indifference among the population of peripheral regions, as well as the demographic depopulation of these areas due to recent migrations (Bertus and Kovacs, 2022). Even more interesting conclusions have been drawn from analyzing the voting preferences structure over the past decade. It was noticed that the share of votes for Party of Democratic Action (SDA) and Croatian Democratic Union (HDZ BiH), as parties that traditionally (with rare exceptions) receive the most votes among Bosniaks and Croats in Bosnia and Herzegovina, does not significantly differ between center and periphery regions when it comes to higher levels of government, where intra-ethnic unity is still viewed as a matter of vital national interest. However, more recent elections for cantonal assemblies, and partially for municipal councils, have shown a significantly different pattern – with the emergence of parties of strong regional character, the influence of these mainstream parties weakens in peripheral regions, both in majority Bosniak and majority Croat communities. Given that the western part of the Federation of Bosnia and Herzegovina also includes several municipalities with a Serbian ethnic majority, this effect is even more pronounced.

Contrary to all the aforementioned parameters that have proven to be valuable indicators in detecting various dimensions of peripherality in Bosnia and Herzegovina, this study also considered numerous parameters for which the expected differences in the comparative relationship between the center and periphery were not identified. There are several reasons for this, ranging from the internal heterogeneity of the selected regions and spatial contradictions to insufficiently realistic statistical data and the methodological inability to adapt to all the considered phenomena. The most surprising aspect is the absence of statistical significance in many demographic parameters, especially those related to the ageing process (dependency ratio, average age and death rate). An explanation can be sought in the process that Nejašmić and Toskić (2013) referred to as the homogenization of ageing. Furthermore, among the frequently used economic indicators of development that have not proven relevant in the case of Bosnia and Herzegovina are unemployment rate and mean wage. In passive regions, the employable population often migrates massively to more promising environments or abroad (Domazet et al., 2020), keeping local unemployment rates relatively low. On the other hand, a higher share of industry in the overall economic activity often reduces the mean wage, which can falsely suggest a low degree of economic development (Development of Industrial Policy in FBiH, 2009). The same factor also negatively affects certain parameters about education, such as share of highly educated individuals and educational attainment of the workforce. Similar effects are observed in local communities that prioritize agricultural development. Spatial parameters such as elevation, urbanization rate and the percentage of abandoned settlements also fall into this category, primarily due to the mountainous terrain, which is also significantly present in central cantons.

Although a non-typical and contextually limited methodology was used for this type of research, the significance of this study is threefold. Firstly, it statistically confirmed the significant lag of cantons in the western periphery of the Federation of Bosnia and Herzegovina compared to cantons that are a priori labeled as center across various objective indicators. This is the first time that the relationship between the center and periphery has been empirically examined in Bosnia and Herzegovina through an array of spatial, economic, demographic, educational, cultural and political indicators. This lays the groundwork for positioning Bosnia and Herzegovina within the broader theoretical concept of center and periphery and for its comparison with neighboring and broader countries. Secondly, a selection of available indicators was made based on their relevance in determining the level of development of a geographic area, with a gradation from those that most clearly indicate peripherality to those that cannot be effectively used for this purpose. This is important for developing more suitable and specialized quantitative methodologies in future studies exploring regional disparities of this kind. Thirdly, the practical need for targeted implementation of regional policies at the level of Bosnia and Herzegovina and its entities has been emphasized and the selection of relevant parameters could help identify key challenges of peripheral areas of this country.

REFERENCES

AGENCY FOR STATISTICS OF BOSNIA AND HERZEGOVINA (2016). Census of population, households and apartments in Bosnia and Herzegovina, 2013.

ANĐELKOVIĆ-STOILKOVIĆ, M., DEVEDŽIĆ, M., VOJKOVIĆ, G. (2018). The border regions of Serbia: Peripheral or marginal areas. *Trames Journal of the Humanities and Social Sciences*, 22(2), 211. https://doi.org/10.3176/tr.2018.2.07

ARZENI, A., ESPOSTI, R., SOTTE, F. (2002). European Policy Experiences with Rural Development. Kiel: Wissenschaftsverlag Vauk.

AVDIĆ, A., AVDIĆ, B., ZUPANC, I. (2022). Socio-demographic analysis of border regions of Bosnia and Herzegovina. *Acta geographica Slovenica* 62(3), 7-19. https://doi.org/10.3986/AGS.10859

AVDIĆ, B., AVDIĆ, A., SIVAC, A. (2019). Depopulativni procesi u naseljima regije Visokog krša u Bosni i Hercegovini. 7. Hrvatski geografski kongres: Knjiga sažetaka (Čakovec), Hrvatsko geografsko društvo, 89-92.

AZARYAHU, M. (2008). Tel Aviv: center, periphery and the cultural geographies of an aspiring metropolis. *Social & Cultural Geography*, 9(3), 303-318. https://doi.org/10.1080/14649360801990512

BANDA, A., AVDIĆ, B., AVDIĆ, A., KORJENIĆ, A. (2022). Tourism and Depopulation in Mountain Regions of Bosnia and Herzegovina: Case Study of Bjelašnica and Vranica, *Journal of Tourism and Hospitality Management*, 8, 93-107. https://doi.org/10.35666/25662880.2022.8.93

BARBERO, J., RODRIGUEZ-CRESPO, E. (2022). Technological, institutional, and geographical peripheries: Regional development and risk of poverty in the European regions. *The Annals of Regional Science*, 69(3), 311-332. https://doi.org/10.1007/s00168-022-01127-9

BERTUS Z., KOVÁCS, Z. (2022). The geography of electoral volatility in Hungary: A core-periphery perspective. *Hungarian Geographical Bulletin*, 71(1), 67-81. https://doi.org/10.15201/hungeobull.71.1.5

BLEČIĆ, I., CECCHINI, A., MURONI, E., SAIU, V., SCANU, S., GIUSEPPE, A. T. (2023). Addressing Peripherality in Italy: A Critical Comparison between Inner Areas and Territorial Capital-Based Evaluations. *Land*, 12(2), 312. https://doi.org/10.3390/land12020312

BONETA, Ž. (2004). Politički identiteti periferija. *Revija za sociologiju*, 35(3-4), 143-158.

BRUNN, S., MATLOVIČOVÁ, K., MUSINKA A., MATLOVIČ, R. (2018). Policy implications of the vagaries in population estimates on the accuracy of sociographical mapping of contemporary Slovak Roma communities. *GeoJournal* 83(4), 853-869, https://doi.org/10.1007/s10708-017-9804-9

CENTRAL ELECTORAL COMMISSION BOSNIA AND HERZEGOVINA (2023). Election results – Archive (2012, 2014, 2018, 2022). Available at: https://www.izbori.ba

CHEN, L., MEADOWS, M. E., LIU, Y., LIN, Y. (2021). Examining pathways linking rural labour outflows to the abandonment of arable land in China. *Population, Space and Place*, 28(1), https://doi.org/10.1002/psp.2519.

COPUS, A. (2001). From core-periphery to polycentric development: Concepts of spatial and aspatial peripherality. *European Planning Studies*, 9(4), 539-552. https://doi.org/10.1080/09654310123647.

DANSON, M., DE SOUZA, P. (2012). Regional Development in Northern Europe: Peripherality, marginality and border issues. London: Routledge.

DERY, S., LEIMGRUBER, W., ZSILINCSAR, W. (2012). Understanding Marginality: Recent Insights from a Geographical Perspective. *Hrvatski geografski glasnik*, 74(1), 5-18. https://doi.org/10.21861/HGG.2012.74.01.01.

DOBREYTSINA, E. (2020). Culture at the Periphery: The Challenges and the Opportunities (The Case of Sverdlovsk Oblast). KnE Social Sciences / International Scientific Conference – "Man in the world of culture: problems of science and education", 187-191. https://doi.org/10.18502/kss.v4i5.6542.

DOMAZET, A., DOMLJAN, V., PEŠTEK, A., HADŽIĆ, F. (2020). Održivost emigracija iz Bosne i Hercegovine. Sarajevo: Friedrich-Ebert-Stiftung BiH.

EDER, J. (2019). Innovation in the Periphery: A Critical Survey and Research Agenda. International *Regional Science Review*, 42(2), 119–146. https://doi.org/10.1177/0160017618764279

FEDERAL BUREAU OF STATISTICS (2020). Statistical Yearbook 2019.

FEDERAL BUREAU OF STATISTICS (2023). Statistical Yearbook 2022.

FEDERAL INSTITUTE FOR DEVELOPMENT PROGRAMMING (2022). Socioekonomski pokazatelji po općinama FBiH 2021.

FERRAU, J., LOPES, R. (2004). Understanding peripheral rural areas as contexts for economic development. In Labrianidis L. (ed.), The Future of Europe's Rural Peripheries. Aldershot: Ashgate, pp. 31–61.

FUDURIC, N. (2008). Entrepreneurship in the Periphery: Geography and Resources. Aalborg: Institut for Samfundsudviklingog Planlægning, Aalborg Universitet.

FUERST-BJELIŠ, B. (2014). Cartography revealed: Multiculturality and regional identities of the Borderlands. *Revista Continentes (UFRRJ)*, 5(4), 8-22.

FUERST-BJELIŠ, B. (2020). Other and/or Marginal: Coexistence of Identities in the Historical Borderlands of Croatia. In Fuerts-Bjeliš, B., Leimgruber, W. (eds.), Globalization, Marginalization and Conflict: Political, Economic and Social Processes; Edition: Perspectives on Geographical Marginality. Cham: Springer Nature.

GATZWEILER, F., BAUMÜLLER, H., HUSMANN, C., VON BRAUN, J. (2011). Marginality: Addressing the Root Causes of Extreme Poverty. *ZEF Working Paper Series* 77. https://doi.org/10.2139/ssrn.2235654

GÖRG, H., RUANE, F. (1999). European Integration and Peripherality: Are There Lessons from Ireland. Trinity economic paper, 9910. Dublin: Trinity College, Department of Economics.

HAKIM, C. (1990). Core and Periphery in Employers' Workforce Strategies: Evidence from the 1987 E.L.U.S. Survey. Work, *Employment & Society*, 4(2), 157–188. https://doi.org/10.1177/095001709000400200

HELMS, E. (2023). Social Boundaries at the EU Border: Engaged Ethnography and Migrant Solidarity in Bihać, Bosnia–Herzegovina. *Journal of Borderlands Studies*, 38(2), 283-301. https://doi.org/10.1080/08865655.2022.2108109

HOWELLS, J., BESSANT, J. (2012) Introduction: Innovation and economic geography: a review and analysis. *Journal of Economic Geography*, 12(5), 929-942. https://doi.org/10.1093/jeg/lbs029

JANČOVIČ P., ZAGORŠEKOVÁ N., BALEHA A. (2021). Geography of the European Union Development Aid Allocation. *Folia Geographica*, 63(2), 5-18.

KAČEROVA, M., MLADEK, J., KUSENDOVA, D. (2022). Temporal and spatial analysis of population ageing and growing younger in Slovakia. *Folia Geographica*, 64(1), 112-130.

KATUNARIĆ, V. (1992). Centar, periferija i regionalizam: "Tvrda" europska postmoderna. *Društvena istraživanja*, 1(1), 5-12.

KATUNARIĆ, V. (2006). Kolonizirana misao: periferija bez razvojne perspektive? *Socijalna ekologija*, 15(1-2), 1-22.

KEEBLE, D., OWENS, P., THOMPSON, C. (1981). The Influence of Peripheral and Central Locations on the Relative Development of Regions: Final Report. Cambridge: Department of Geography, University of Cambridge.

KEENAN, K., KULU, H., COX, F. (2022). Social and spatial inequalities in health and mortality: The analysis of longitudinal register data from selected European countries. *Population, Space and Place* 28(3), e2411. https://doi.org/10.1002/psp.2411.

KLAMÁR, R., MATLOVIČ, R., IVANOVÁ, M., IŠTOK, R., KOZOŇ J. (2019). Local Action Group as a Tool of Inter-municipal Cooperation: Case Study of Slovakia. *Folia Geographica*, 61(1), 36-67.

KNOX-HAYES, J. (2022). Combating climate change: Dismantling the spatial and temporal assumptions of the core and periphery. *Geographical Research*, 60(2), 342-346. https://doi.org/10.1111/1745-5871.12537

KOŁSUT, B., STRYJAKIEWICZ, T. (2021). Do spatial differences in the personal car market reflect a centre-periphery structure? The case of Poland. *European Transport Research Review*, 13(40). https://doi.org/10.1186/s12544-021-00494-2.

KORJENIĆ, A. (2012). Climate as Spatial Planning Factor of the Una Sana Canton, Bosnia and Herzegovina. *Geographica Pannonica*, 16(4), 126-135. https://doi.org/10.5937/GeoPan1204126K

KORJENIĆ, A., MISILO, M. (2016). Morphological characteristics of the Una-Sana Canton relief as spatial planning factor. *Geographical Reviews* 37, 197-208.

KREVS, M., MIRIĆ, R., DREŠKOVIĆ, N. (2021). Hidden Geographical Contexts of a Visible Post-war Landscape: A Case Study in Bosnia and Herzegovina. In Krevs, M. (ed.), Hidden Geographies. Cham: Springer Nature.

KUBEŠ, J., CHVOJKOVÁ, A. (2020). Back to peripheries based on remoteness. Human capital in the peripheral municipalities of South Bohemia. *Journal of Rural Studies*, 79, 116-124. https://doi.org/10.1016/j.jrurstud.2020.08.045

LAY, V. (1998). Teorijske, društvene i političke neprilike s periferijom. In Rogić, I., Štambuk, M. (eds.), Duge sjene periferije: Prinos revitalizaciji hrvatskog ruba, Institut društvenih znanosti Ivo Pilar, 13-26.

LEUTLOFF-GRANDITS, C. (2023). "We are not Just the Border of Croatia; This is the Border of the European Union..." The Croatian Borderland as "Double Periphery", *Journal of Borderlands Studies*, 38(2), 265-282, https://doi.org/10.1080/08865655.2022.2104340.

LOŠONC, A. (2015). Stare/nove periferije Evrope. *Političke perspektive*, 5(3), 99-117.

LUKIĆ, A., OPAČIĆ, V. T., ZUPANC, I. (2009). The other side of the Zagreb - Rijeka motorway: Socio-geographic implications in the rural periphery of Croatia. *Društvena istraživanja*, 18, 153-173.

MALIKOVA, L., KLOBUČNÍK, M., BAČÍK, V., SPIŠIAK, P. (2015). Socio-economic changes in the borderlands of the Visegrad Group (V4) countries. *Moravian Geographical Reports*, 23(2). https://doi.org/10.1515/mgr-2015-0008

MARIĆ, I., MRĐEN, S., ŠILJEG, S. (2020). Izvođenje indeksa demografske depresije primjenom GIS analize – primjer Međimurske županije. *Stanovništvo*, 58(1), 63-87. https://doi.org/10.2298/STNV191225001M

MARKOVIĆ, I. (1999). Periferija vs. Provincija: U potrazi za starim/novim terminima. *Život umjetnosti*, 61/62(1), 66-69.

MARTINUS, K. (2022). Informal groups, disruptive innovations, and industry change in low-tech peripheries. *Geographical Research*, 60(2), 256-268, https://doi.org/10.1111/1745-5871.12515

MATLOVIČ, R., MATLOVIČOVÁ, K. (2020). First and second order discontinuities in world geographical thought and their primary reception in Slovak geography. *Folia Geographica*, 62(1), 52-76.

MATLOVIČOVÁ, K., KOLESAROVA, J., DEMKOVA, M., KOSTILNIKOVA, K., MOCAK, P., PACHURA, P., PAYNE, M. (2022). Stimulating poverty alleviation by developing tourism in marginalised Roma communities: A case study of the central Spiš region (Slovakia). *Land*, 11(10), 1689. https://doi.org/10.3390/land11101689

MEHIĆ, A., GABELJIĆ, S. (2018). Comparison of Determinants of Total Dynamics of Population of Unsko-Sanski and Canton Sarajevo in the Period Between 2008-2017. *Acta Geographica Bosniae et Herzegovinae*, 10, 161-173.

MIRIĆ, R., DREŠKOVIĆ, N., AVDIĆ, B. (2016). Diversification of Tourism Offer as a Means of Socio-economic Development of Peripheral Regions – Case Study of Kupres. *Revija za geografijo – Journal for Geography*, 11(1), 121-132.

NEJAŠMIĆ, I., MIŠETIĆ, R. (2010). Sintetični pokazatelj demografskih resursa: Doprinos tipologiji hrvatskog prostora. *Hrvatski geografski glasnik,* 72(1), 49-60. https://doi.org/10.21861/hgg.2010.72.03

NEJAŠMIĆ, I., TOSKIĆ, A. (2013). Ageing of the Population in Croatia – The Current Situation and Perspectives. *Hrvatski geografski glasnik*, 75(1), 89-110. https://doi.org/10.21861/HGG.2013.75.01.05

NEJAŠMIĆ, Š., RADELJAK KAUFMANN, P., LUKIĆ, A. (2018). Potentials of Croatian karst periphery from the point of view of students from the University of Zagreb. *Hrvatski geografski glasnik*, 80(2), 83-109. https://doi.org/10.21861/HGG.2018.80.02.04

NETTL, J. P. (1966). Center and Periphery in Social Science: The Problem of Political Culture. American Behavioral *Scientist*, 9(10), 39-46. https://doi.org/10.1177/000276426600901005

NEWSHAM, N., ROWE, F. (2023). Understanding trajectories of population decline across rural and urban Europe: A sequence analysis. Population, *Space and Place*, 29(3). https://doi.org/10.1002/psp.2630

NURKOVIĆ, S. (2006). Suvremeni socijalno-geografski problemi regionalnog razvoja Bosne i Hercegovine. *Annales: Series Historia et Sociologia*, 16(1), 203-212.

PACHURA, P., NITKIEWICZ, T., MATLOVIČOVÁ, K., MATLOVIČ, R. (2018). Identification of Intellectual Capital Performance Using Data Envelopment Analysis. In Stejskal, J., Hajek, P., Hudec, O. (eds.), *Knowledge Spillovers in Regional Innovation Systems.* Cham: Springer Nature, 115–130.

PAVLAKOVIĆ-KOČI, V., PEJNOVIĆ, D. (2005). Polarization of Regional Economic Development in Croatia: Trends and Challanges in a New Geographic Reality. *Hrvatski geografski glasnik,* 67(2), 5-19. https://doi.org/10.21861/HGG.2005.67.02.01

PEJNOVIĆ, D. (2004). Lika: Demographic Development under Peripheral Conditions. *Hrvatski geografski glasnik,* 66(2), 23-46. https://doi.org/10.21861/HGG.2004.66.02.02

PENZES, J., DEMETER, G. (2021). Peripheral areas and their distinctive characteristics: The case of Hungary. *Moravian Geographical Reports*, 29 (3), 217-230. https://doi.org/10.2478/mgr-2021-0016.

PENZES, J. (2016). Centre-Periphery Dichotomy and its Investigation by GIS Methods. *Landscape & Environment*, 10(3-4), 131-136. https://doi.org/10.21120/LE/10/3-4/5.

POBRIĆ, A. (2002). Osnovne značajke i posljedice migracijskih kretanja u Bosni i Hercegovini. *Migracijske i etničke teme*, 18(4), 349-364.

POBRIĆ, A., AVDIĆ, A. (2020): Depopulacija i starenje stanovništva u Kantonu 10 – Bosna i Hercegovina. Zbornik radova 5. kongresa geografa Bosne i Hercegovine (Sarajevo), Geografsko društvo u Federaciji Bosne i Hercegovine, 108-120.

POPOVIĆ, A., RADELJAK KAUFMANN, P. (2011). Razvojni problemi pograničnog pojasa Žumberka. *Hrvatski geografski glasnik*, 73 (2), 179-199.

PYCIA-KOŠĆAK, P. (2021). Periferija i margina – značenja i konteksti. In Bonkowski, R., Lukić, M, Mićanović, K., Pycia-Košćak, P., Zubčić, S. (eds.), *Periferno u hrvatskom jeziku, kulturi i društvu / Peryferie w języku chorwackim, kulturze i społeczeństwie*. Katovice: Wydawnictwo Uniwersytetu Śląskiego, 161-173.

RAAGMAA, G. (2003). Centre-periphery model explaining the regional development of the informational and transitional society. 43rd Congress of the European Regional Science Association: Peripheries, Centres, and Spatial Development in the New Europe (Jyväskylä), European Regional Science Association.

RAMIĆ, A. (2019). Imigracije u Unsko-sanskom kantonu i sigurnosni izazovi. *Društvene devijacije*, 4, 576-582.

RASMUSSEN, P. (2012): Education, Learning and Development in the Periphery. In Eikset, A. G., Dons. C. F., Garm, N. (eds.) Utdanning mellom styring og danning: Et nordisk panorama. Trondheim: Tapir Akademisk Forlag, 185-197.

SABERIFAR R., MISHRA, P. K. (2020). Analysis of National Development Using Labour Market Model: A Case Study of Khaf. *Folia Geographica*, 62(1), 5-20.

SCOTT, A., STORPER, M. (2015). The Nature of Cities: The Scope and Limits of Urban Theory. *International Journal of Urban and Regional Research*, 39(1). https://doi.org/10.1111/1468-2427.12134.

SIKORSKI, D., LATOCHA-WITES, A., TOMCZAK, P., SZMYTKIE, R., MIODONSKA, P., KAJDANEK, K. (2023). Changes in the services of general interest in mountainous areas in Poland over the period 1988–2020: Their types, dynamics and driving forces. *Moravian Geographical Reports*, 31(1), 39-49. https://doi.org/10.2478/mgr-2023-0004

STIPERSKI, Z., LONČAR, J., RAJTER, M. (2021). Recommendation for a typology of a cities and municipalities in Croatia according to development level. *Folia Geographica*, 63(1), 85-109.

STUDZINSKA, D. (2023). Borderlands in times of crisis: The possibility of de- marginalisation of the Polish border zone with Russia after the outbreak of war in Ukraine. *Moravian Geographical Reports*, 31(3), 120-128. https://doi.org/10.2478/mgr-2023-0011

ŠTAMBUK, M., ROGIĆ, I., MIŠETIĆ, A. (2002). Prostor iza: Kako modernizacija mijenja hrvatsko selo. Zagreb: Institut društvenih znanosti Ivo Pilar.

TRUJILLANO, C., FONT, M., JORBA, J. (2005). The Ultraperipheral Regions of the European Union: Indicators for the Characterisation of Ultraperipherality. The INTERREG III B Community Initiative Programme for the Promotion of Co-operation between European Union Regions during the Period 2000-2006. Barcelona: Mcrit.

VAN HOUTUM, H. (2000). An Overview of European Geographical Research on Borders and Border Regions. *Journal of Borderlands Studies*, 15(1). https://doi.org/10.1080/08865655.2000.9695542

VANOLO, A. (2008). The Image of the Creative City: Some Reflections on Urban Branding in Turin. *Cities*, 25(6) 370-382. https://doi.org/10.1016/j.cities.2008.08.001

ZORKO, M. (2012). Pojam granice u postmodernoj geopolitici. *Politička misao*, 49(2), 30-44.

ZORKO, M., ŠULC, I., KOVAČIĆ, M. (2012). Pogranične zajednice u Republici Hrvatskoj: istraživanje lokalnoga identiteta u pograničnom području Gorskoga kotara. *Sociologija i prostor*, 5(2), 165-181. https://doi.org/10.5673/sip.50.2.2

ZUPANC, I. (2018). Demogeografski razvoj hrvatskog pograničja 2001. – 2011. *Migracijske i etničke teme, 3*4(2), 113-142. https://doi.org/10.11567/met.34.2.1

ŽAFRAN, I., RADELJAK KAUFMANN, P. (2022). Tourism in a Peripheral Setting: A Case Study of Farm Tourism Development in Lika, Croatia. *European Countryside*, 14(1), 140-156. https://doi.org/10.2478/euco-2022-0008BALCOMBE, R.J., YORK, I.O. (1993). *The future of residential parking*. Project Report 22, Crowthorne: Transport Research Laboratory.

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