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CHANGES IN WINE TOURISM AND THE TRANSFORMATION OF WINE TOURISM PRODUCTS THROUGH THE EXAMPLE OF THE BEREHOVE DISTRICT IN TRANSCARPATHIA

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Abstract: Tourism, especially wine and rural tourism, makes an important economic contribution to local communities in Transcarpathia. The wine sector is increasingly shaped by global challenges such as climate change, sustainability expectations, and the spread of digital tools. Despite these difficulties, the wine industry in the region remains an essential guardian of local traditions and cultural values. Wine festivals and wine routes have long played a central role in tourism development, although their importance has decreased significantly due to the war. The Bereg region, one of Transcarpathia's leading wine areas, is also famous for its thermal waters, cultural heritage, and unique wine culture. The area has centuries-old winemaking traditions, and the favorable local climate is ideal for quality viticulture. Historically, the wine region has been divided and reorganized several times, but since the early 2000s it has been developing steadily. Our research was based on both secondary (literature analysis) and primary (structured interviews with winemakers) data collection methods. The questionnaire included 30 closed-ended questions, and the responses were processed using statistical methods, including averages, correlations, and cross-tabulations. Microsoft programs, QGIS, and SPSS software supported the data processing, with results presented in tables and charts. Key findings show that the majority of winemakers surveyed in the Beregvidék region are men aged between 30 and 39 with higher education, whose primary income comes from winemaking. The average vineyard size is 14.2 hectares, with a predominance of white grape varieties, mainly of Hungarian and Ukrainian origin. The impacts of COVID-19 and the war have radically transformed the region's tourism and wine sales channels. While festivals and large events have disappeared, wine tastings and courier-based deliveries have become dominant. Larger estates proved more resilient in adapting to wartime conditions. Development priorities also differed by the age of wineries: younger wineries focused on infrastructure improvements and marketing, while older businesses prioritized value preservation and automation.

Keywords: wine tourism, changing product offerings, crisis management strategies, Transcarpathia

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INTRODUCTION

The development of the tourism sector in various countries has become one of the priorities of national development sectors (Sutiadiningsih et al., 2023). Tourism, a rapidly growing global sector, significantly boosts the economy, particularly in rural areas, by creating jobs and increasing local incomes. It also fosters local goods production and infrastructure that benefits the local population (Dancsokné et al., 2023:186). At the same time, tourism can be called one of the biggest victims of the COVID-19 pandemic, with the once successful sector having to record an unprecedented decline in traffic and revenue (Jáki et al., 2024). European examples also show that gastrotourism is gradually becoming an independent form of tourism, with wine routes and thematic routes being created (Kovács & Horeczki, 2024).

Wine tourism, a form of rural tourism, is a notable contributor to local economies (Kastenholz et al., 2022), with wine's cultural significance making it integral to many tourism experiences (Bene, 2019:7). Rural tourists turn out to be relaxed and hedonistic, they primarily seek facilitated consumption experiences and privacy (Darabos et al., 2024). Among tourists, the quiet, peaceful environment and the proximity to nature that helps with regeneration often feature prominently in their motivation for choosing a destination (Kinczel & Müller, 2023). The wine industry faces challenges from globalization and the rise of New World wine regions, yet it continues to diversify the global market (Morrison & Rabellotti, 2017; Kaur et al., 2019; Ljavic et al., 2023; Dudić et al., 2024). Wineries must adapt to global competition and environmental sustainability (Faria et al., 2021), as prestige is shaped by complex social, cultural, and spatial factors (Cerdá et al., 2024).

Tourism products increasingly focus on uniqueness, diversity, value for money, and personalized services (Molnár & Remenyik, 2015). Health tourism now includes vinotherapy (Molnár, 2012 – cited by Molnár & Remenyik, 2015), and

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digital tools enable personalized experiences (Happ et al., 2020, Qesja & Bastian, 2023). Tourism sector is influenced and shaped by new technologies like never before. Easy and comfortable access to new tools such as chatbots, virtual assistants, online reservations, virtual tours, personalized recommendations or digitization are reshaping customer behavior (Mura & Stehlíková, 2025). Sustainable tourism, emphasizing eco-friendly and socially responsible practices, is growing (Interreg-CEETO 2018). Changing demographics and a heightened demand for safety also shape tourism services (Kiss & Kovács, 2018; Michalkó et al., 2023). Wine tourism involves visits to vineyards, wineries, festivals, and exhibitions, where wine tasting and regional experiences are central (Hall et al., 2000). It enhances a destination's image and combines rural landscapes, cultural heritage, festivals, gastronomy, and wine education (Sarkadi et al., 2000; Getz & Brown, 2006; Alebaki & Iakovidou, 2011). Environmental responsibility is key, with eco-efficient production methods gaining traction (Hofmeister et al., 2013; Bene, 2019). Direct interactions with customers via digital channels support wine tourism growth (Dudić et al., 2024).

Emerging wine regions and large consumer markets, such as China, have reshaped the global wine trade (Tessényi & Katona, 2023:213). Despite stagnating global wine consumption since 2008, the premium wine trade has grown (del Rey & Loose, 2023). The global wine trade experienced a decline in volume and value in 2023 due to reduced real incomes, post-pandemic overstocking, and shifting consumer preferences (Mueller Loose & del Rey, 2024).

Climate change affects sustainable grape cultivation (Navia-Osorio et al., 2023), with demand for low-alcohol and alcohol-free wines rising (Totth, 2021). The alcohol-free wine market is expected to grow 10% annually from 2023 to 2033 (Kucherenko & Uspalenko, 2023). Wine tourism is expanding as wine culture grows and global consumption trends evolve (Harsányi et al., 2014; Tessényi & Katona, 2023:213). Climate change is reshaping wine production, with new regions like the UK's Sussex gaining prominence (Jones et al., 2005; Admin, 2007; Hall & Sharples, 2008). Tourists, particularly Generations Y and Z, seek experiences beyond wine tasting, such as harvest opportunities and gastronomic pairings (Szmirkó, 2019). Sustainability is increasingly important, with organic farming gaining popularity (Michalkó, 2012; Dressler, 2023). Social media influences wineries to offer "Instagrammable" experiences (Harsányi et al., 2022), and virtual wine tastings have expanded reach (Lease et al., 2023). Family-friendly services and educational wine experiences are broadening the target audience (Getz & Brown, 2006; Santini et al., 2024). Transcarpathia's unique climate and landscape make it ideal for viticulture, and its position bordering four countries enhances its tourism and economic potential. Before the war, increased tourism boosted demand for local products, including wine (Kudla & Hamkalo, 2019). Small-scale producers in the region's districts (Berehovo, Irshava, Mukachevo, Vynohradiv, and Uzhhorod) focus on local economic development and preserving traditional winemaking (Kudla & Hamkalo, 2019).

The region offers significant potential for thematic wine tours, with private wineries producing wine using traditional methods (Basyuk & Muzychka, 2018). Attractions include the historic wine cellars of Serednie village, considered among Europe's best and listed by UNESCO (Basyuk & Muzychka, 2018). The Chizay winery, established in 1995 in Berehovo, produces highly demanded wines and features a tasting room and Wine and Viticulture Museum (Basyuk & Muzychka, 2018). Transcarpathia also has a wine route, developed by the Transcarpathian Private Vineyards and Winemakers Association and Uzhhorod National University (Basyuk & Muzychka, 2018). Before the war, there were several wine festivals in the region, which attracted more than 100 000 tourists a year, either on their own or as part of the gastronomic festivals (Karmacsi & Sass, 2023).

Objectives

The main objectives of our research were:

- to present the current state of grape and wine production in Ukraine, with a focus on Transcarpathia;
- to assess whether wineries in the Bereg region produce unique, distinctive products;
- to examine the effects of COVID-19 and the Russian-Ukrainian war on wine tourism in Transcarpathia and the Bereg region;
- to analyze how local winemakers responded to these challenges;
- to identify the key factors currently influencing wine tourism in the Bereg region.

MATERIAL AND METHOD

1. Presentation of the sample area

The study area – Bereg region – is located in the Berehovo district, the center of which is Berehovo, the seat of the former Bereg county (Figure 1). The main tourist attractions of the region are: thermal water, built and cultural heritage, and grape and wine culture. In Beregvidék, grape and wine production and the preservation of traditions can be a breakthrough point for tourism (Tarpai, 2013). Transcarpathia, located at the northern boundary of viticulture, has a long history of wine production. The region's climate, with 2025 hours of sunlight annually and 650-750 mm of precipitation, supports high-quality grape cultivation. The first written record of viticulture dates back to 1247. By the mid-18th century, Polish Jews dominated the wine trade in Transcarpathia. Indigenous grape varieties included Zöldboros, Furmint, and Járdavány (Lehoczky, 1881). The phylloxera plague in the late 19th century significantly reduced vineyard areas, which recovered by 1910 (Horváth, 2000). The Hungarian Ministry of Agriculture created a wine region classification in 1893, defining regions like Serednye-Vynna and Munkács-Nagyszőlős (Lehoczky, 1881). Today, these are known as the Serednye and Berehovo wine regions. The region is now divided into 12 districts, with the Bereg district being one of them (Ukraine's Vineyards Register, 2010). After the Trianon Peace Treaty of 1920, Transcarpathia was annexed from Hungary, marking the end of its first golden age. The Podkarpatska Viticulture Association was founded in the 1930s to represent producers (Horváth, 2000). Soviet rule after World War II led to a decline in viticulture, which did not recover until the 1960s. The vineyard area peaked in 1965 at 17,200 hectares, but excessive chemical use and anti-alcohol laws in the 1980s caused further decline. Post-Soviet transitions saw a slow recovery, with the Berehovo Wine Region Association forming in 2001 and the establishment of the Transcarpathian Tourism Wine Route in 2008 (Sass & Bártfai, 2016).

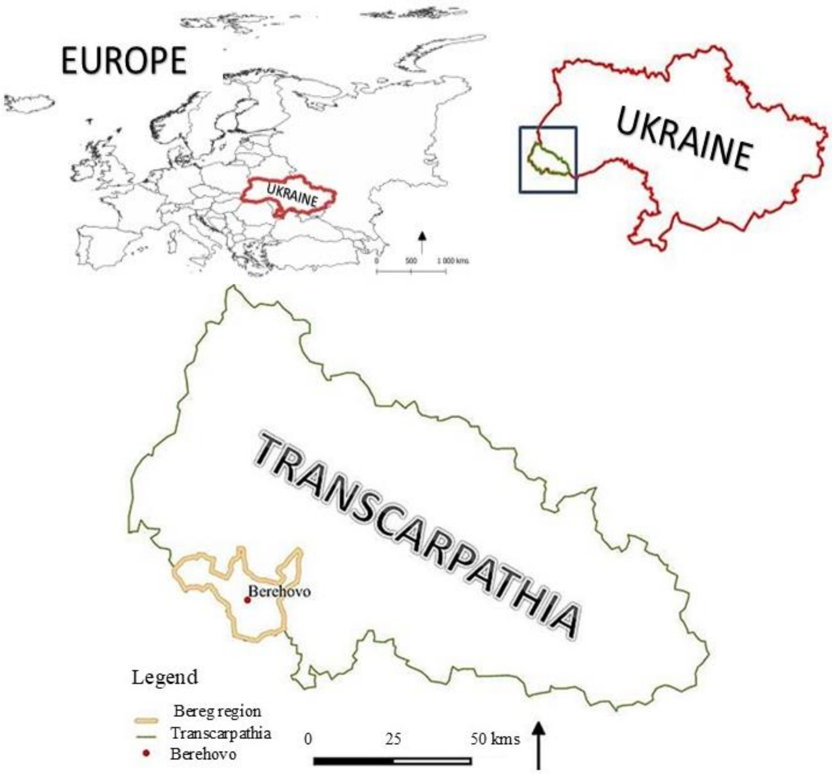

Figure 1. Presentation of the sample area (Source: Own editing)

2. Methods

The research process is illustrated in Figure 2. We used secondary and primary research methods to conduct the research. As secondary methods, the collection, study, and analysis of written sources, professional books, and scientific articles were used. As primary research, we contacted local winemakers from the fall of 2023, with whom we conducted structured interviews. Currently, there are 11 winemakers and 2 wineries in the Bereg tourism region, and our research focused on local winemakers, and the sample included 11 winemakers. The questions mainly included standardized answer options (closed questions), thus making our research method suitable for quantitative research. The pre-established structure of the questions reduces the differences that occur during the interviews, thus avoiding the risk of subjectivity, while at the same time allowing us to record useful information in the form of marginal notes. The limitation of the method lies in the fact that it is not suitable for deeper exploration of the topic. We asked 30 questions in the structured interview.

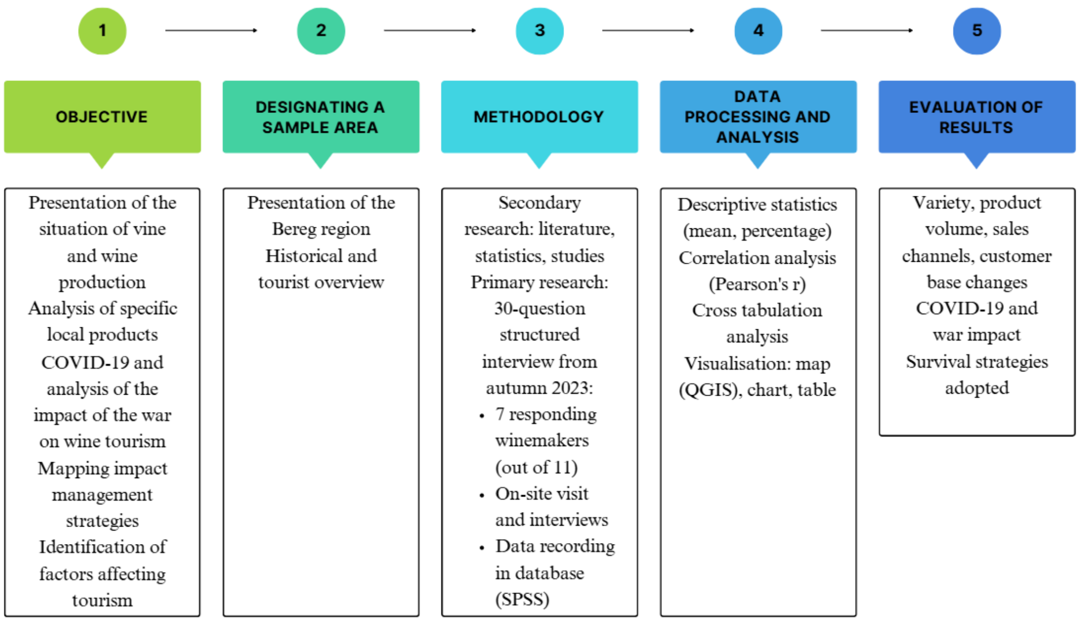

Figure 2. Study flow chart (Source: Own editing)

Our questionnaire can be divided into the following groups of questions: general socio-demographic indicators, data related to winemaking, topics of tourism and sales before and after the COVID-19 pandemic and the wartime period, the territorial distribution of visitors, and directions for development. The questions of the structured interview were organized into a database and cleaned for a more precise examination of the scientific results. To analyze the results and evaluate the data, in addition to descriptive statistics (mean, percentage distributions), we performed a correlation analysis to explore the relationships between different variables, using the Pearson correlation coefficient, and the p-value to check significance, and we also performed cross-tabulation analyses on our data. The results are presented with visual elements (tables, diagrams, maps). During the research, we used the Microsoft program package, QGIS 3.2, and IBM SPSS Statistics 20 software.

RESULT

The authors personally visited the well-known winemakers of the Beregvidék region: 7 out of 11 winemakers answered the questions posed (Figure 3 shows which settlements we were allowed to conduct our survey in). Three wineries are located in Bene (Parászka Winery, Urszta Winery, Varga Family Vineyard-Wine Cellar), two of our respondents were from Nagymuzsalyi (Bereczky Winery, Erika Winery), and one winery each was from Berehovo (Huszár Family Winery) and Kígyós (Sass Winery). The majority of the winemakers surveyed are male (71.4%), with a minimum of 11 and a maximum of 25 years of professional experience. The majority of respondents (57.1%) are between the ages of 30 and 39. 85.7% have a higher education, and winemaking is their main source of income (71.4%). This value is not surprising, since 85.7% of our respondents were owners of the facility, and there was only one respondent who summarized his answers to our questions as a winegrower. The main source of income in Ukraine, currently the poorest European country (Cherevko, 2024), provides them with an average living wage (71.4%). (The average cost of living in Ukraine, per month, average: 2022 H1: 2393 hryvnia - UAH; 2022 H2: 2508 UAH; 2023: 2589 UAH; after 1 Jan. 2024: 2920 UAH; forecast for 2024: 2972 UAH [Riabinina, 2024:8].) (1000 UAH = 9380 HUF, at the exchange rate of 28.02.2025). During the survey, we also asked whether they were engaged in other grape-related activities besides wine grape production. 85.7% of the responding wineries were engaged in table grape production in addition to wine grape production, but some were engaged in table grape sales (42.8%), grafting (42.8%), grape seed meal production (14.3%), and distillate and sparkling wine production (14.3%) (Figure 4).

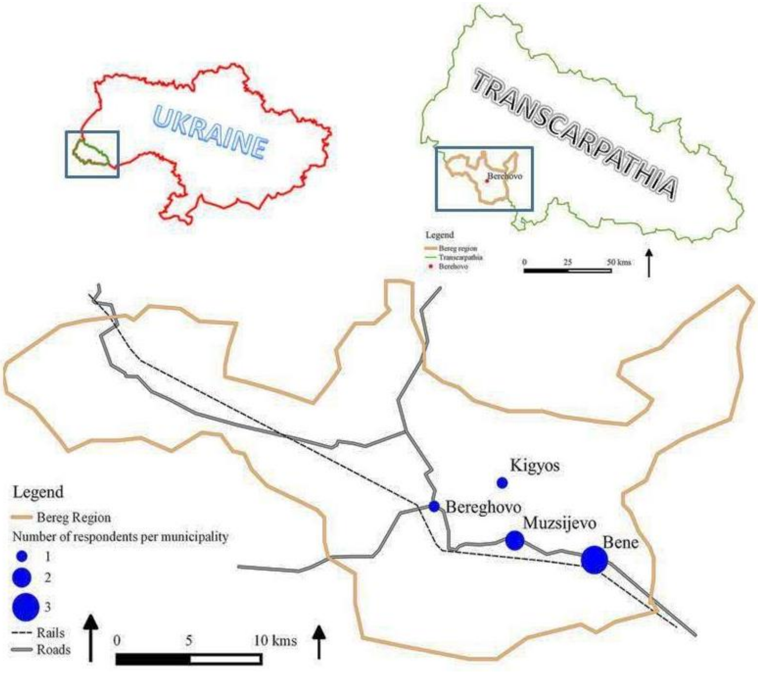

Figure 3. Territorial location of respondents (Source: Own editing)

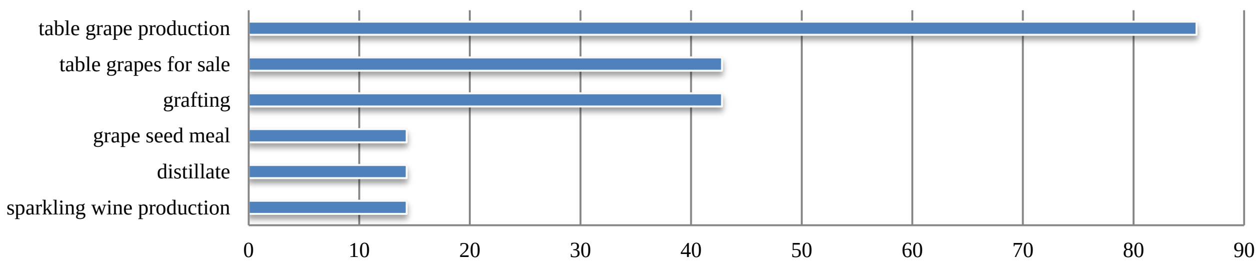

Figure 4. Other activities of winemakers besides wine grape production (%) (Source: Own editing)

The size of the wineries varies, ranging from 1.2 hectares (ha) to 25 ha; the average size is 14.2 ha, and the respondents farm a total of 99.2 ha. We looked for a correlation between the size of the estate and the activities carried out on it. There is a weak-medium correlation between the variables (r=0.403), but the relationship is not significant (p=0.370). Based on the results, it is not possible to draw a clear conclusion that there is a real relationship between the area of the winery and the engagement in other activities. On average, farmers deal with 23 types of grapes, some with only 2 varieties and some with 75 varieties. We asked the farmers to name 3 wine and table grapes, of which they produce the largest quantities. The information collected on the vineyards is included in Table 1.

Table 1. Summary table of the most produced wine and table grapes by winemakers (2023) (Source: Own editing)

Vine name	Variety	Colour	Origin	Where did it come from?	Average yield	What % of wine-growers produce
Afuz Ali	table grape	white	planted vineyard	Lebanese	13-15 t/ha	14.3
Arcadia	table grape	white	planted vineyard	Ukrainian	12-20 t/ha	28.6
White Bakator	wine grape	white	**autochthonous grape**	Hungarian	*	14.3
Cserszegi Fueszeres	wine grape	white	planted vineyard	Hungarian	9 t/ha	28.6
Furmint bianco	wine grape	white	**autochthonous grape**	Hungarian	6 t/ha	14.3
Gala	table grape	blue/red	planted vineyard	Ukrainian	*	14.3
Golubok	wine grape	blue/red	planted vineyard	Ukrainian	11,4 t/ha	28.6
Black Muscat of Alexandria	table grape	blue/red	planted vineyard	Uncertain origin	13,3 t/ha	14.3
Irsai Oliver	table and wine grapes	white	planted vineyard	Hungarian	*	14.3
Muscat Italia	table grape	white	planted vineyard	Italian	9-12 t/ha	14.3
Blaufränkisch	wine grape	blue/red	planted vineyard	Austrian	12 tonna/ha	28.6
Fetească regală	wine grape	white	planted vineyard	Romanian (Transylvanian)	10-14 t/ha	28.6
Citron Magarach	table grape	white	planted vineyard	Ukrainian	15-20 t/ha	14.3
Lora	table grape	white	planted vineyard	Ukrainian	13,8 t/ha	14.3
Moldova	table grape	blue/red	planted vineyard	Moldovan	15-16,5 t/ha	14.3
Muscat Blanc	wine grape	white	planted vineyard	French	10-14 t/ha	42.9
Nero	table grape	blue/red	planted vineyard	Hungarian	11-12 t/ha	14.3
Welschriesling	wine grape	white	planted vineyard	French	12-14 t/ha	42.9
Muscat Ottonel	table grape	white	planted vineyard	French	8-10 t/ha	28.6
Treasure of Pannonia	table grape	white	planted vineyard	Hungarian	10-14 t/ha	14.3
Pölöskei Muscat	table grape	white	planted vineyard	Hungarian	10-14 t/ha	28.6
Sauvignon blanc	wine grape	white	planted vineyard	French	11,6 t/ha	14.3
Gewürztraminer	wine grape	pink	planted vineyard	German	8-11 t/ha	14.3

* We couldn't find a reliable data source

The respondents named 23 grape varieties, 74% of which are white grapes. Among the varieties, only two can be considered indigenous to Transcarpathia: Bakator Muscat and Furmint were also indigenous to the area during the time of historical Hungary, which is why we consider them Hungarian and not Ukrainian. The prominently produced grapes were introduced from 8 different areas, 30% of which are Hungarian, while 22% come from Ukrainian territory. These percentages are a good indication of the geographical and historical situation of Transcarpathia since in this region Ukrainian and Hungarian influences also dominate in the field of viticulture.

Among the white wines, Királyleányka, Olaszrizling, Ottonel Muskotály, and pink Traminer can be considered as wines of Transcarpathia's region, among the red wines, Cabernet Sauvignon, which is listed as a world variety, or the recent discovery of the winemakers of Bereg, Golubok (Kovács, 2009). The distribution of the most produced grape varieties is shown in Figure 5, where we can see that the production of Muscat and Riesling is preferred in proportion.

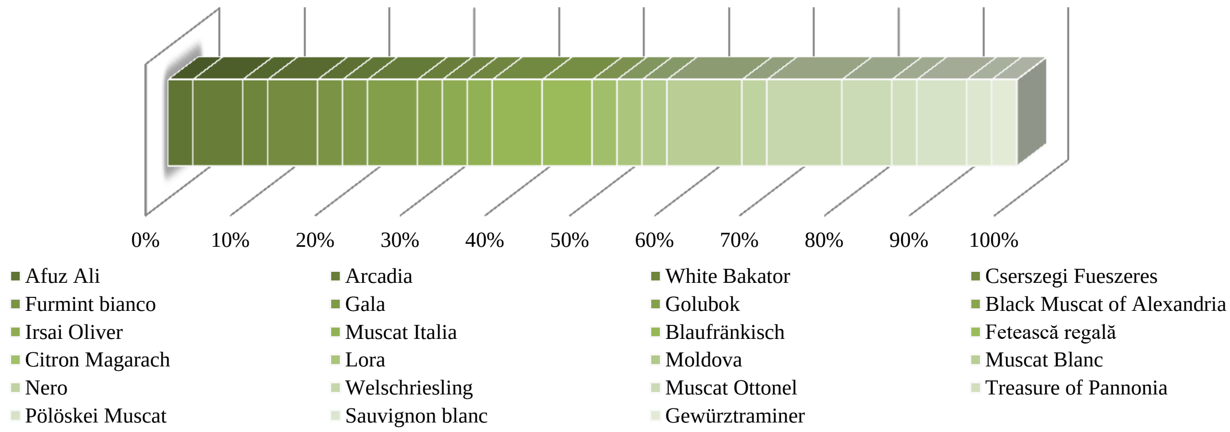

Figure 5. Distribution of the most produced grape varieties by winemakers (Source: Own editing)

The average yield of vineyards is 12 tons per hectare. Based on the average estate size and average yield, a farmer can harvest 170.4 tons of grapes, which together with the 7 respondents could mean 1192.8 tons of grapes per year.

All winemakers produce white and red wines, while six wineries produce rosé. The highest proportion of respondents' wines is dry and semi-dry wines (27%), semi-sweet (23%), sweet (18%) and the least popular category is siller, which accounts for only 5% of the wines produced. We used correlation calculations to examine whether there is a significant relationship between the length of winemaking experience and the number of grape varieties produced. The correlation was weak (r=0.126) and not statistically significant (p=0.787). Based on these results, we can conclude that there is no significant relationship between the length of winemaking experience and the number of grape varieties grown.

Next, we compared the relationship between estate size and the number of grape varieties grown. The correlation was moderately strong (r=0.541), but still not statistically significant (p=0.210). This suggests that while there is some tendency for larger estates to cultivate more grape varieties, this relationship has not been statistically proven.

Winemakers market their wines most extensively during the summer months (42%), with August being the most significant month (18%). Among the other months, December (13%) and May (13%) stand out with notable sales figures. The increased turnover during these months is likely related to winter holidays and long weekends.

According to responses regarding the clientele of wine producers, it can be observed that before the COVID-19 pandemic and the Russian-Ukrainian war, a significant portion of the visitors were domestic, with a smaller proportion of tourists from Hungary (13%) and other countries (2%). Domestic tourists usually came from Transcarpathia, Kyiv, Lviv, and Odesa regions, but they also welcomed guests from Rivne and Kharkiv regions (Figure 6).

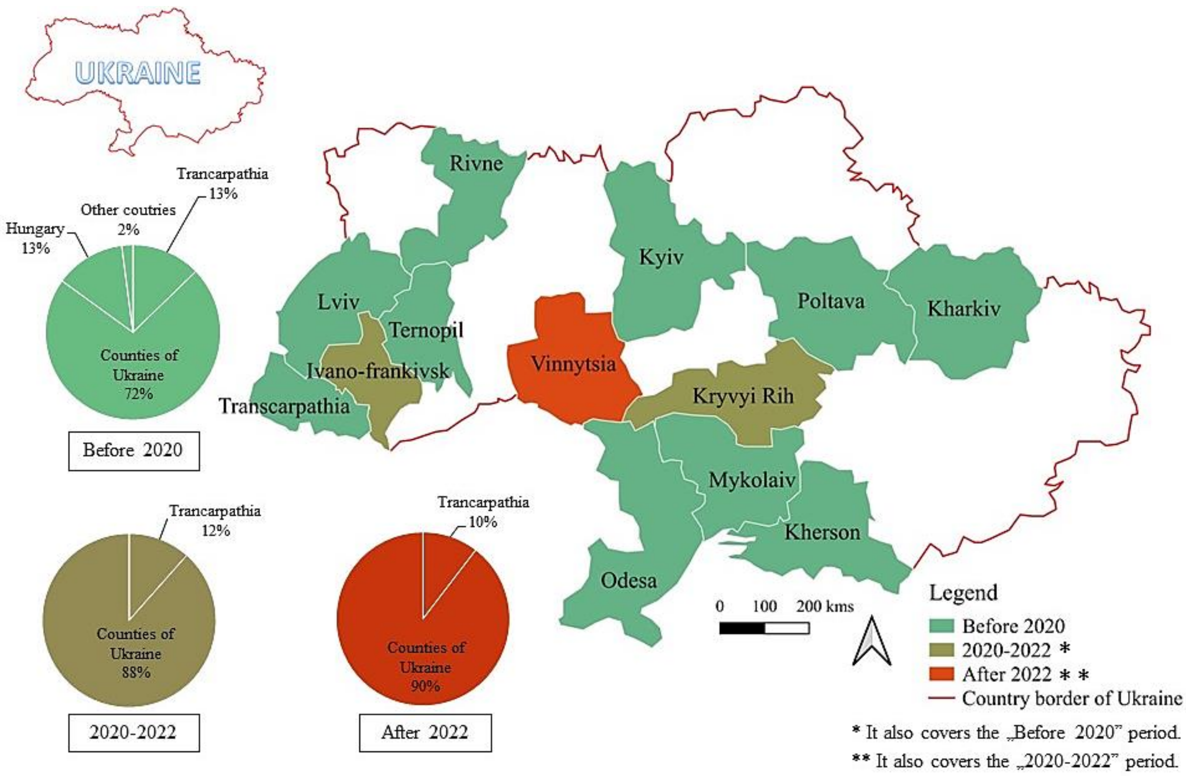

Figure 6. Change in the catchment area of the Beregvidék region, before 2020, between 2020-2022 and after 2022 (Source: Own editing)

We looked for a relationship between whether estate size affects how resilient wineries are to sudden shocks. The results of our correlation analysis show that the COVID-19 pandemic was not related to territorial size (r=-0.251; p=0.586). This was because the restrictive measures had a uniform effect on market segments. According to winemakers, tourist traffic almost completely stopped in the first months of the COVID-19 pandemic, which can be explained by the various restrictions. To prevent wineries from going bankrupt, winemakers sold their products through a parcel delivery service (NovaPosta). After the restrictions were eased, 100% of the clientele was domestic tourists, while the number of guests from Transcarpathia decreased slightly, falling by 1%. Transcarpathia attracted two new sending regions (Ivano-Frankivsk and Kryvyi Rih). We also asked the winemakers about where most of the guests came from after the events of February 2022, and how they survived the first months of the escalation of the Russian-Ukrainian conflict. When compiling the questionnaire, we assumed that the Russian attack in 2022 and the introduction of martial law had and still have a great influence on guest arrivals and their territorial composition. The respondents – with one exception – almost unanimously answered that there was a decline in traffic and a shortage of labor, and there were also winemakers who left the country for a few months. As for their clientele, the winemakers stated that only domestic tourists visit them, who are usually pensioners or women with children. Vinnytsia appeared on the map as a new sending area.

However, when the war broke out, farmers of different sizes had the opportunity to create different strategies that could help them survive, as there were no strict legal regulations for the sector. The correlation analysis shows that there is a strong positive correlation between the variables (r=0.763). This suggests that winemakers farming in larger areas probably managed the challenges of the first months of the war better. We consider the correlation significant (p=0.046).

Winemakers sold their wines in the largest quantities before 2022 at Transcarpathian festivals and fairs, as well as in the framework of wine tastings and through mail-order services (Sass & Bártfai, 2016) (Table 2), but this has changed today.

Table 2. Changes in wine sales before and after 2022 (Source: Own editing)

Before 2022	Sales	After 2022
57%	parcel service at festivals and fairs in Transcarpathia	0%
26%	parcel service	34%
43%	wine tasting	49%
5%	in local (Transcarpathian) restaurants	32%
0%	export	4%

Due to the events of 2022, various festivals and fairs were completely canceled, so the percentage distribution of sales has also changed. Most wines can be sold within the framework of wine tastings, but the number of guests has decreased significantly. Due to the war situation, the role of parcel delivery services has increased, and sales have become more prominent in local (Transcarpathian) restaurants. Export will also appear after 2022, but only one winemaker has the necessary license for this. If we look at the statistical characteristics of wine sales by wineries through different sales channels, they can be summarized as follows:

1. *Wine tasting:* six of the wineries surveyed sell through wine tasting, the sales rate ranges between 20% and 60%, and the average is 46.5%, so wine tasting plays a significant role in sales.

2. *Own cellar:* this channel is only included in the case of two wineries, and the sales rate also shows a large difference (5% and 33%). The average was 19%, but due to the large variance, we do not consider this a reliable indicator.

3. *Vinoteca:* also only two wineries use this sales channel, the rates range between 30% and 50%, and the average is 40%.

4. *Mail order sales:* six wineries use this method, the sales rate varies between 20% and 50%, and the average was 40%. This suggests that parcel delivery could be a popular alternative.

5. *Festivals:* only one respondent indicated festivals as a sales channel, where the sales rate is only 1%.

6. *Export:* one winery exports its wine, and the sales rate is 19%, only this one winery has the appropriate license for this.

7. *Restaurant sales:* two wineries indicated this sales channel, the sales rate is between 10% and 33%, and the average was 21.5%.

The statistical analysis shows that wine-tasting and mail-order sales appear to be the most popular sales methods, with both being used by six wineries. Festivals and export sales are currently less widespread sales channels in the sample examined. Wine shop and restaurant sales occur in fewer wineries, but where they are used, they have a significant share, with wine shop and restaurant sales together accounting for 60% of the total sales on average.

The prominent share of wine tasting is not surprising, as 85.7% of the service providers hold wine tastings, and among them, 83.3% do so at their wineries. Only one respondent has a separate facility for this purpose outside of their cellar. The facilities can accommodate a minimum of 50 and a maximum of 65 people. On average, nine different wines are offered for tasting, with the smallest selection available at Parászka Winery, where there are six types of wine, and in 2024, they charged 1000 HUF (107 UAH) for a tasting. The most diverse selection can be found at Sass Winery (here, the price for a tasting is 60-80 UAH per person, with a choice of 15 different wines, though the exact amount is not listed on their website). We examined whether there is a relationship between producing more grapes and offering more varieties of wine for tasting. The result showed that there is no significant correlation (p=0.709) between producing more grapes and offering a greater variety of wines for tasting to guests. The responses to the question regarding increasing the sustainability/competitiveness of wineries are interesting; we used a cross-tabulation analysis for this. We looked at the necessary developments for sustainability depending on how long the winemakers have been involved in viticulture.

Wineries that have been involved in viticulture for 11-15 years (4 cases) primarily emphasized the development of equipment, products, licenses, foreign cooperation opportunities, web development, as well as infrastructure developments (building cellars and tasting areas, expanding vineyards). They also expressed an interest in marketing development and highlighted the importance of human capital development. This broad range of development needs suggests that relatively new wineries still have extensive development needs, particularly in strengthening infrastructure and market presence.

Winemakers with 16-20 years of experience (1 case) see the only development direction in automation and cooperation with tourism professionals. This may indicate that, for a winery that has been in operation for a longer time, the focus is on automation and the development of tourism-related connections. In the sample, the two longest-operating service providers (20-25 years) emphasized quality preservation, highlighting the uniqueness of the wine region, parking, and other infrastructure developments, and obtaining licenses. It can be said that older wineries focus more on preserving value and developing existing infrastructure rather than expanding their product portfolio.

CONCLUSIONS AND DISCUSSION

The results of the study on the wineries in the Bereg Region allow for drawing relevant conclusions from several perspectives. The majority of the winemakers participating in the research are male, have higher education, and winemaking is their primary source of livelihood. The size of the estates shows significant variation, ranging from 1.2 hectares to 25 hectares, with an average vineyard area of 14.2 hectares. There has been no significant change in average estate sizes over the past century (Kovács, 2009). Although the correlation between estate size and other grape-related activities is not statistically significant, some trends suggest that those managing larger areas may engage in more diverse activities (which could provide greater crisis resilience by being more diversified). The weak to moderate correlation between estate size and different activities (such as growing table grapes, producing spirits, and sparkling wines) and its statistical insignificance (p=0.370) suggest that although there is some connection, larger estates do not necessarily lead to more activities or opportunities. This is in contrast to (Marks' 2011) study, which states that larger estates offer more opportunities, and investors prefer larger, relatively cost-effective estates. However, the literature also shows similar findings to our research, such as studies on the economic strategies of wineries, which suggest that smaller wineries can successfully implement diversification strategies if they can leverage favorable market conditions around them (such as digitalization tools) (Járdány & Duray, 2020). Furthermore, the results may also suggest that the efficiency of farming is more dependent on the business models applied, rather than just the size of the estate.

The diversity of grape varieties grown by winemakers well reflects the geographical and historical characteristics of the region. The 23 grape varieties presented in the study, most of which come from the region, are predominantly white, with 30% of them being of Hungarian origin and 22% of Ukrainian origin. Among the indigenous varieties, Bakator Muscat and Furmint are noteworthy, as these were present in the region during historical Hungary. These grape varieties were already mentioned in the recommendations of Act V of 1896 (Sass & Bártfai, 2016). The largest proportion of wines produced by winemakers is dry and semi-dry, while the production of rosé wines is minimal. The diversity of the grape and table grape varieties produced by the wineries also yielded interesting results. 74% of the responding winemakers grow white grape varieties, which aligns with global wine production trends, as the demand for white wines often exceeds that for red wines, particularly in Central and Eastern Europe (Mueller & Ray, 2024). The prominent role of Ukrainian and Hungarian-origin varieties, such as Olaszrizling and Furmint, reflects the historical and cultural influences of the region. The emphasis on indigenous varieties not only strengthens the identity of the wineries but can also ensure the sustainability of local wineries, as native varieties often adapt better to local climatic conditions (Winkler, 2019). The majority of winemakers hold higher education degrees (85.7%), and for most of them, winemaking is their primary source of income. Our findings are consistent with the literature, which highlights the importance of specialized education for success in winemaking and other agricultural sectors. The profitability and sustainability of wineries often depend on applying learned knowledge, especially in areas such as viticulture, winemaking technology, and market access strategies (Sedikova, 2017).

A significant finding of the research is that the COVID-19 pandemic and the Russian-Ukrainian war drastically reshaped the clientele and sales channels of wineries. In the initial phase of the pandemic, tourism significantly declined, while as a result of the war, the clientele shifted, and wineries were visited exclusively by domestic tourists, mostly retirees and family women. Based on the results of the correlation analysis, a significant positive relationship can be identified between estate size and the ability to react to war-related shocks, suggesting that those with larger estates were better able to adapt to the crisis. The impact of COVID-19 and the Russian-Ukrainian war on the clientele of wineries raises interesting socio-economic questions. Although service providers have adapted to crises to varying degrees, it is undeniable that the potential of tourism can play a significant role in the economic recovery and development of a region (Vasvári et al., 2025). The growing role of mail-order services and the limited export suggest that online and local sales channels have become the key to survival for wineries. The literature interprets this phenomenon as a rapid response to global economic shocks, and for small and medium-sized enterprises, flexibility and diversification provided a survival strategy (Pogácsás and Szepesi, 2023). Regarding the changes in wine sales channels, the most significant transformation was the cessation of festivals and fairs in Transcarpathia, which had previously accounted for the largest share of sales. In parallel, the role of wine tastings and mail-order services increased, and the sales in local restaurants also rose significantly. The emergence of exports is a small but notable trend. The increasing role of wine tastings and mail-order services and the absence of festivals highlight the strategic adaptation of Transcarpathian wineries to the changing economic environment.

The spread of mail orders and wine tastings emphasizes the role of modern technologies and direct market connections, while the absence of festivals and fairs suggests that wineries must develop their sales strategies toward online and local community engagement (Curtis et al., 2021). Overall, the research pointed out that the wineries of Bereg Region have been shaped by several external factors in recent years – the pandemic and the war – likely in an overall not-positive direction (although these events may, in the long run, have strengthened their resilience). The adaptation strategies of the farmers varied, but those managing larger areas exhibited greater resilience. The transformation of sales strategies and the change in clientele composition may have long-term effects on the wine industry's development and sustainability in the region.

Finally, we should also mention that our research has limitations. Only 7 wineries responded to the questionnaires during the data collection, a relatively small sample and it does not ensure that it reflects the views of the entire wine community. Furthermore, the research is limited to the Bereg region, so the experience and results obtained here may not apply to other wine regions in Ukraine or other countries. Furthermore, during data collection, the impact of the war and COVID-19 strongly influenced the operations of wineries (e.g. their market environment and its changes).

The data obtained may not be representative of the post-war period and therefore the results may not apply to future situations. Alternatively, subjectivity and respondent bias appear to be limiting factors, as the owners of the wineries provided the information in the survey and their opinions and interests may influence the data, especially the economic situation and the answers on sustainability.

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