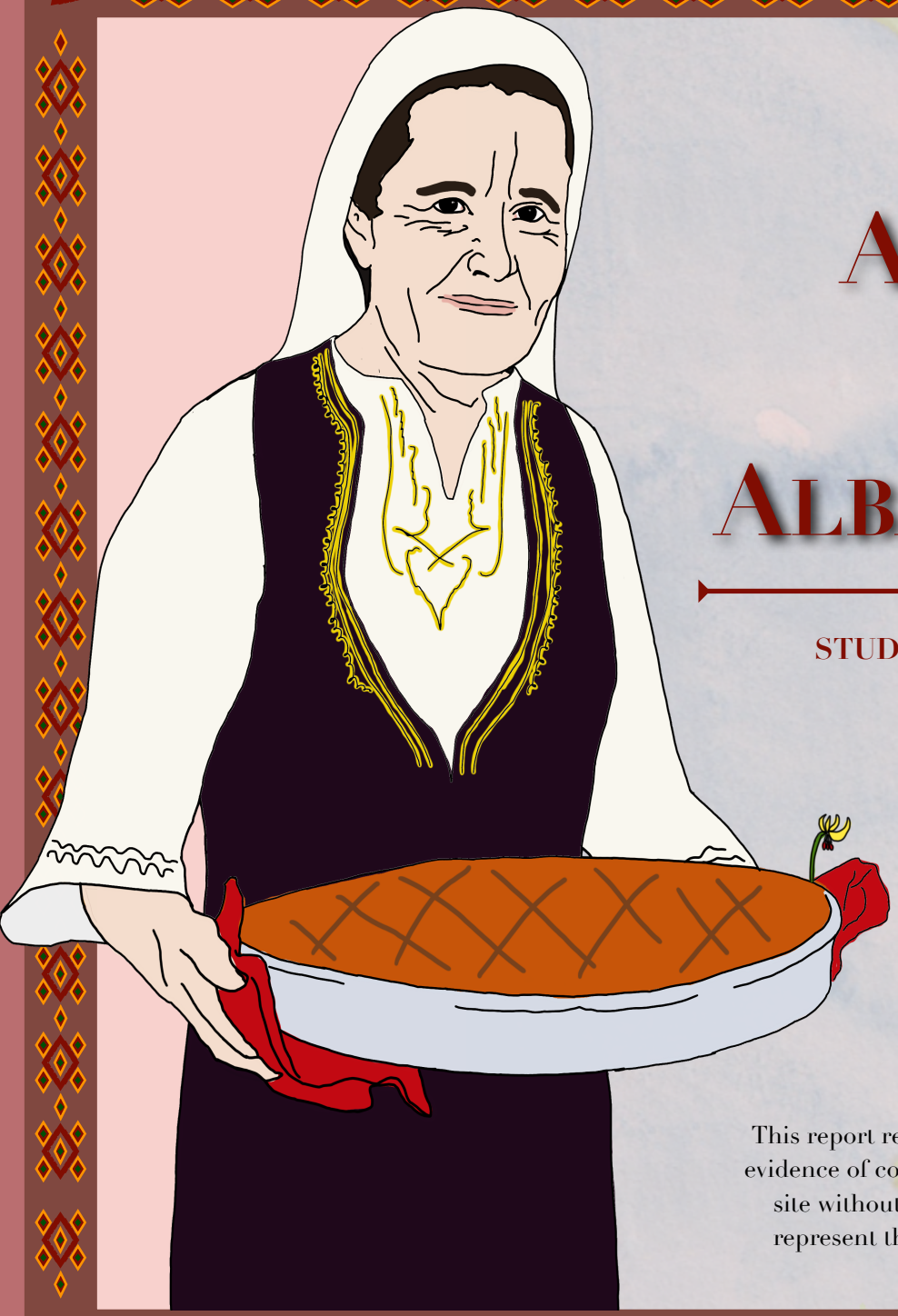

Culinary Mapping

A New Narrative For Albanian Gastronomy

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Interactive Qualifying Project

Abstract

Working with RRNO, an Albanian gastronomic organization, this project delved into the development and presentation of stories involving the gastronomy and culture of rural Albanian villages. The team used a GIS to organize data RRNO collects which includes notes on villages and their gastronomy, researched storytelling elements, investigated practices regarding story structure and archetype, and analyzed display and exhibition of stories through multimedia elements using the Esri suite. Through the study, the team provided manuals detailing the technical aspects of the project, alongside recommendations and strategies for future data collection and story construction involved in RRNO's Albanian Gastronomic Expedition and future projects.

Acknowledgement

We would like to thank Professor Robert Hersh and Professor Leslie Dodson of Worcester Polytechnic Institute for advising and guiding the team throughout this Interactive Qualifying Project. We would like to thank RRNO, particularly Mr. Nikolin Kola, for sponsoring this project and for his expertise and suggestions regarding Albanian gastronomic tourism.

Executive Summary

Introduction

What began as a culinary mapping project in which we focused on creating a database and developing a culinary itinerary for food tourism expanded into the expression of RRNO's story and the stories of Albania's rural villages alongside research into best practices when creating digital stories. We assisted RRNO in its mission to preserve, develop, and promote Albanian cuisine by developing story maps regarding gastronomic traditions and their relationship to local food systems and livelihoods in rural Albania. The goal of our project was to develop the infrastructure for a database and to provide RRNO with a strategy for storytelling using maps, current resources, and materials RRNO could gather on future expeditions. The underlying structure of Albania's rural economy and the role of rural tourism in developing that rural economy informed our background research and context for the project.

Background

After the collapse of communism in the nineties, more than one million people, many from rural areas, migrated to cities in Albania and abroad (Çaro and Van Wissen, 2007). Villages emptied and rural livelihoods diminished. Widespread emigration affected rural villages in many ways: families were separated, agricultural productivity diminished, and elderly villagers became ever more dependent on remittances from abroad.

Many rural areas of Europe have turned to tourism as an alternative strategy instead of solely relying on the agricultural production system (Kneafsey, 2000). Rural tourism depends on unique local traditions to bring in foreign travellers, such as local cuisine. The combination of gastronomy and rural tourism uses food, ingredients, and cooking techniques to promote a regions' identity. According to the World Tourism Organization (2012, p. 5) "gastronomy represents an opportunity to revitalize and diversify tourism, promotes local economic development, [and] involves different professional sectors [such as] producers, chefs, markets, etc."

Methods and Findings

To address these concerns regarding the rural villages described above and the potential solution that gastronomic tourism offers, we focused on highlighting the relationships between local food systems, culinary traditions, and the rural economy. This approach was framed by three main deliverables. These are, in order of importance:

1. Story maps

2. A database
3. A manual and guide

The story maps are the most important because the goal of our research was to explore the creation of story maps in service of RRNO's mission, as well as present to them the elements that pertain to creating effective story maps. Nevertheless, the database was the first step of the project, and it informed the creation of the story maps and manual.

The database consists of an infrastructure that RRNO can populate with pre-existing data found through Esri's open source online network. In short, the database is set up as a series of attribute tables and layers that RRNO can populate with information they gather, and they can attach files and pictures to the tables if they require. ArcMap, the GIS software we used to create the infrastructure, has a learning curve and is extremely challenging to work with if given no instruction. Through the Esri tutorials, we were able to not only set up the infrastructure for the database, but also find other open source data provided by the public through Esri's online network.

These data, represented as layers in the software, were developed as parts of stories, or themes that would inform stories, for the second step of this project. For example, one layer included some of the notable sights in Albania. This later helped us develop a story about the statue of Idriz Sulli in Nivica. The villages throughout Albania are shown on the map in **Figure 1**. The infrastructure for the database consists mostly of attribute tables. Text, numbers, and images can be included in the attribute tables. These allow RRNO to

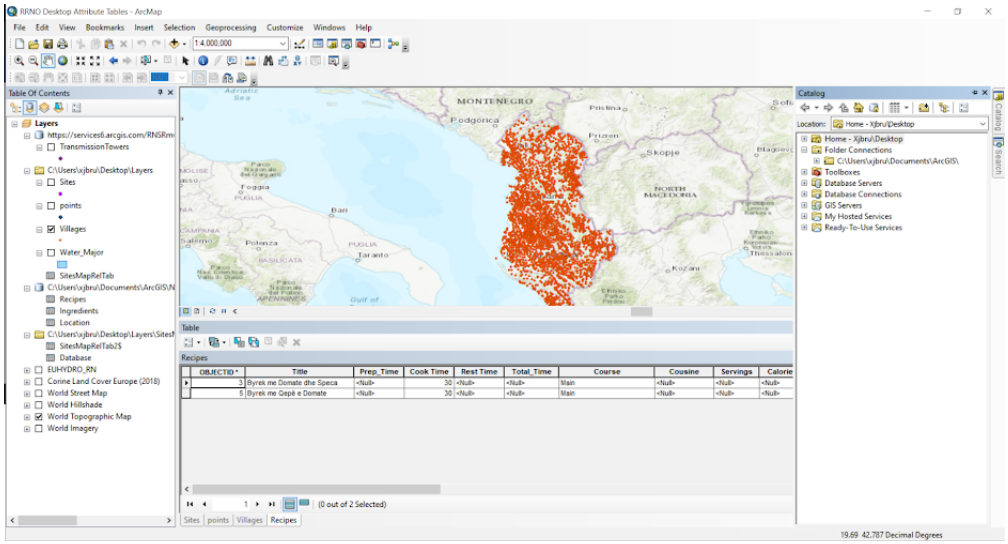


Figure 1. Image of the ArcMap program. This image shows the infrastructure of the database we created.

organize the lists of data it has collected, as well as the addition of important identifiers that correspond to the data, including geolocational data, which can be used to link textual information to points on the map.

Our StoryMaps are multimedia stories composed of maps, photos, videos, and recipes. They include interactive elements such as a sidecar as shown in **Figure 2**. In developing stories for a story map, we chose to start with making lists of information, or elements, pertaining to the three unique villages of a future project. We found that organizing these elements into storyboards was an effective way to proceed (see **Figure 3**). The storyboard provided a logical transition from numerous elements to three story maps. The technique allowed us to visualize relationships between the elements and form possible narrative arcs (including cause and effect, divergence, etc.). Of the possible arcs, we chose to use linear narratives, as seen in **Figure 4**, to convey the stories, as this was convenient to convey in one ArcGIS StoryMap, due to the fact that the viewer scrolls through the StoryMap to get to the next section.

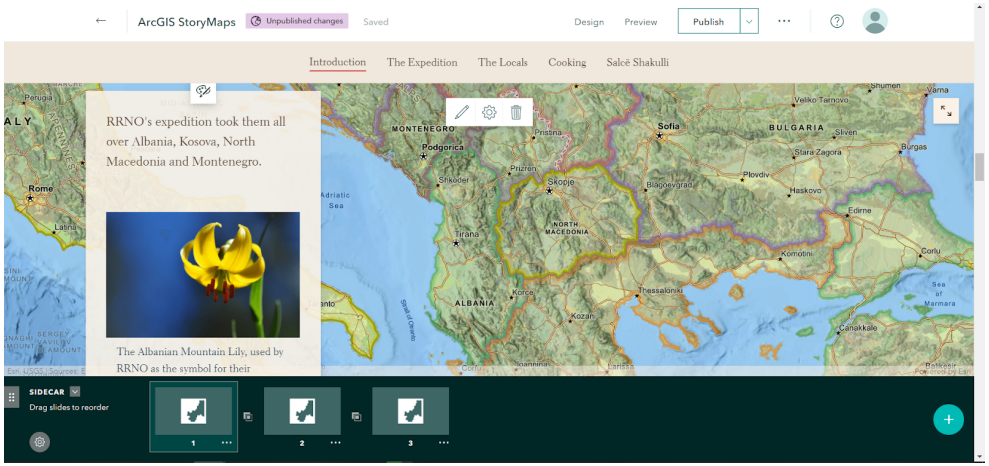


Figure 2. Sidecar in the Tragjas ArcGIS StoryMap. Sidecars can be used to show multiple maps or images as the user scrolls, alongside a box for images and text.

Background research led us to important stories that we have incorporated into our StoryMaps. These were chosen based on their significance in promoting RRNO's future project. Many of these stories were also chosen based on the particular village they were associated with and the theme for the story of that village. For the village of Lepushë, we focused on a day in the life of a rural villager. In the Tragjas map, we concentrated on the story of the village and the area around it, with particular detail surrounding

larger issues faced by many rural villages including migration and economic instability. Rejuvenation was the theme for the village of Nivica. This was shown through images and description of ancient traditions being celebrated in the modern-day combined with an emphasis on return migration.

The StoryMap platform was developed from a geographical information system (GIS) that promotes RRNO's future projects on gastronomic tourism. We have the ability to tell location-based stories through maps by geocoding many of the photos and recipes that RRNO collected and readily available geography data, such as terrain, hydrology, and land use.

The final deliverable is the manual and guide, which assists RRNO in carrying on its work. The manual consists of two sections: one for the GIS database and one for the StoryMap site. The manuals were written in a way that shows RRNO the step-by-step process we followed to create these deliverables. They are based on our personal experience with the software as well as exercises and instruction created by Esri foreach software. The guide is likewise a step-by-step process for creating stories to be used in the story maps.

Figure 3. A display of the story elements for the Nivica. Here they are shown before organization.

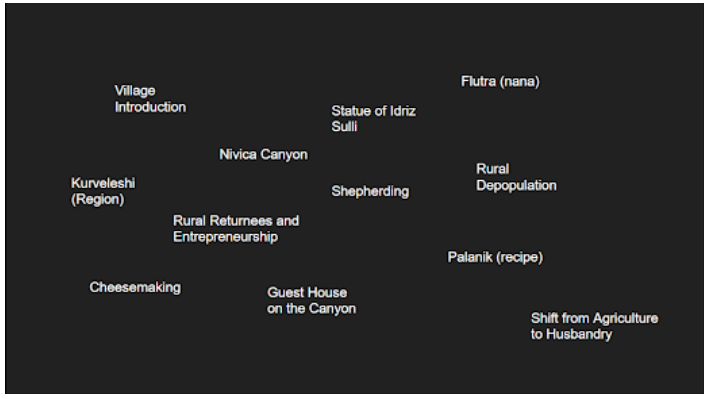
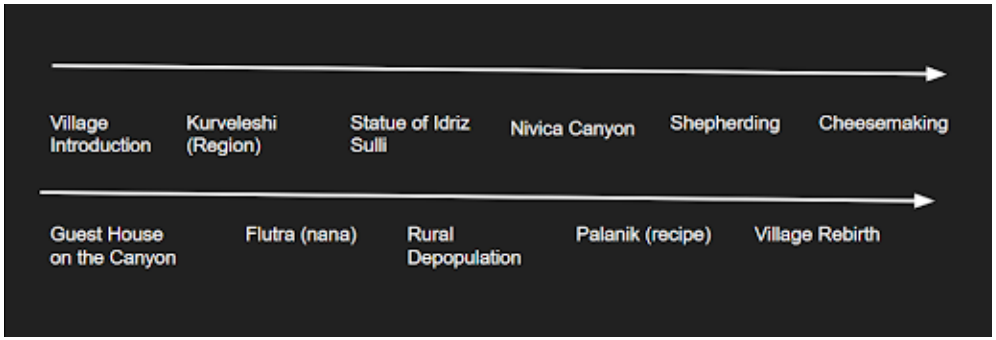


Figure 4. Linear Storyboard Display. The linear scheme details story elements after organization.



Recommendations

Our first recommendation for RRNO is to look into using the Mobile GIS Data Collection on their upcoming expedition. This is a mobile app that Esri provides to collect data while in the field. This data can be imported into the other software provided within the Esri suite to be further analyzed and developed. Forms can be built within the app that allow users in the field to acquire and submit data within the software. These forms can be customized based on the desired information that is being accumulated and can incorporate pictures, location data, and notes. The GIS Data Collection app works offline and once an internet connection is reestablished, it will upload all data gathered (ArcGIS Collector).

We would next like to recommend a few suggestions for incorporating stories into RRNO's website and social media. Including the stories on multiple platforms helps reach a broader audience. Avoid repeating stories between two different types of media. Tell one piece of the story on a social account and the rest on a website, then direct people from one to the other. Doing so builds intrigue and generates traffic between the variety of platforms. As the stories are mostly longer in length, it would be feasible to include parts of the stories or main themes from them so as to not overwhelm the reader and allow the reader to explore more if they are interested. A link to the StoryMap in question would be helpful to include (Mallon, 2020).

We considered a network approach in our methods, but due to time constraints, we would like to offer it instead as a recommendation. The network would be a series of many story maps, instead of only forming one or two for every village. The maps would cover a variety of subjects and link to one another so users can explore whichever story maps they please in any order at their leisure. A network connection can be formed when two StoryMaps share a storyboard element in common, such as a region that two villages are in. The creator can make this connection by including a hyperlink in the form of a button on a StoryMap that will link to another Storyboard that contains the similar storyboard element. This allows for more user interaction, increasing the likelihood that users learn or retain knowledge from the network. The network approach helps spread out stories, instead of bogging down one page with lots of information (Thöny, 2018)

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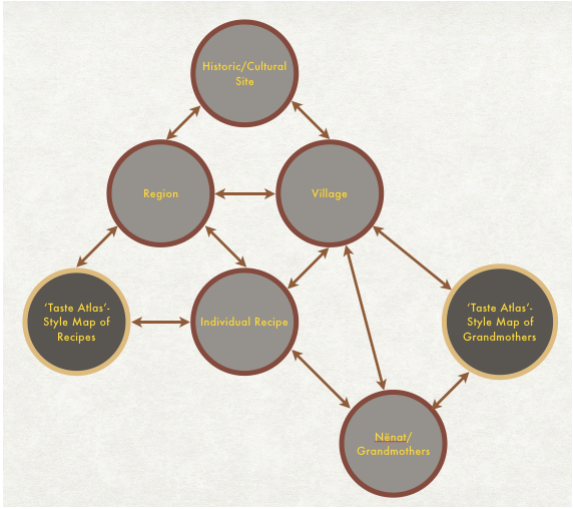

Figure 5. The network schematic. The network approach helps to connect similar StoryMaps by providing links within similar StoryMaps.

Conclusion

With the research and deliverables we have completed, RRNO can better integrate the many

resources it collected on the expedition. The database can be used to organize and visualize data; the story maps are means by which it can exhibit stories especially in context of the future project; the manuals give RRNO basic instruction and help the RRNO staff begin learning the software; the guide describes best practices for storytelling and contains a list of important story elements that RRNO can use when it collects information on future exhibitions. We hope our work will help RRNO in its future endeavors, and possibly encourage new future projects in the Albanian project center.

Authorship

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Executive Summary	Helena Petroff
Introduction	Lazi Danga, Helena Petroff, Jared Santerre
Background	Lazi Danga, Helena Petroff, Jared Santerre
Methodology	Lazi Danga, Helena Petroff, Jared Santerre
Findings	Lazi Danga, Helena Petroff, Jared Santerre
Recommendations	Lazi Danga, Helena Petroff, Jared Santerre
Conclusion	Helena Petroff, Jared Santerre

All members contributed to the editing and completion of the project. Formatting and artwork done by Lazi Danga.

Story Map	created by
Nivica	Lazi Danga
Lepushë	Helena Petroff
Tragjas	Jared Santerre

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Meet the Team

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Lazi Danga (left) (Class of 2022 Chemical Engineering)
Helena Petroff (center) (Class of 2022 Mechanical Engineering)
Jared Santerre (right) (Class of 2022 Chemical Engineering)

Introduction

> *"No weddings taking place in the village. Only 10 funerals have occurred over the last three years . . . We are all going to leave."*
>
> *- Suzanna, 76*

Suzanna, one of the last remaining elders in her all but extinct village outside of Vlora, Albania, laments of "no weddings taking place in the village. Only 10 funerals have occurred over the last three years . . . We are all going to leave" (De Soto et al, 2002, p. 46). Since the collapse of communism in the early nineties, more than 1,000,000 people have migrated both domestically and internationally (Çaro and Van Wissen, 2007), resulting in rapid city growth. However, the villages emptied and rural livelihoods diminished. In southern Albania, international emigration accounted for depopulation of roughly a third of the rural population, in some areas exceeding 40% of the population (Pojani, 2009). Meanwhile, in the north of Albania, the general emigration trends pointed to a mass migration towards cities within Albania, not a mass exodus away from the nation. Widespread emigration affected rural villages in many ways: families were separated, agricultural productivity diminished, and elderly villagers became ever more dependent on remittances from abroad.

Many rural areas of Europe have turned to tourism as an alternative strategy instead of solely relying on the agricultural production system (Kneafsey, 2000). Rural tourism depends on unique local traditions to bring in foreign travellers, such as local cuisine. The combination of gastronomy and rural tourism uses food, ingredients, and cooking techniques to promote a regions' identity. According to the World Tourism Organization (2012, p. 5) "gastronomy represents an opportunity to revitalize and diversify tourism, promotes local economic development, [and] involves different professional sectors [such as]

producers, chefs, markets, etc."

A non-profit gastronomic organization in Albania, the RRNO Foundation, is looking to revitalize traditional Albanian cuisine and rural livelihoods by promoting rural food tourism and targeting members of the Albanian diaspora who are interested in experiencing Albania's rich cultural and culinary practices at the local level. RRNO has embarked on a lengthy expedition to collect information about traditional Albanian gastronomy. The RRNO team visited nearly 400 villages, where they cooked alongside grandmothers and recorded 250 recipes, 10,000 photos, and one and a half hours of actionable footage of the natural landscape, notable sites, and most importantly, the people, their homes, and their food. RRNO would also like to display this media to promote its future projects by telling a new story about Albanian cuisine that highlights the distinguished and complex nature of Albanian gastronomy (RRNO, 2020).

The goal of our project was to provide RRNO with a strategy for developing stories from geospatial data which highlight the relationship between local food systems, culinary traditions, regional culture, and the rural economy. We used the StoryMap platform, developed by ESRI, a company which also develops geographical information systems (GIS) to tell location-based stories through maps alongside the geocoded photos and recipes that RRNO collected. We have created a GIS database and several story maps to serve as model stories which RRNO can apply towards its next expedition, as well as manuals and a guide that RRNO will use to further develop the database and the story maps.

Figure 1.1. RRNO exploring Albanian Gastronomy. Pictured here are members of RRNO interviewing local Albanian's about their culinary traditions (RRNO, 2019)

Background

The project's goal was to assist RRNO, an Albanian gastronomic non-profit organization, by examining the ways in which a geographical information system (GIS) can be used to develop stories for prospective culinary tourists from the Albanian diaspora to re-engage with their heritage. In this chapter, we examine the underlying structure of Albania's rural economy, both before and after the collapse of communism, and the role of rural tourism in developing the rural economy. We then discuss gastronomy and the emergence and aims of food tourism. Finally, we discuss the role of mapmaking and and storytelling to encourage food tourism.

Figure 2.1. Landscape of an Albanian village. Understanding the rural economy was pivotal context for this project.

2.1. Rural Tourism and Promoting Rural Economic Development in Albania

Rural Albania under Communism

Following the tail-end of the Second World War, communist partisans won control of the country and, led by Enver Hoxha, founded the People's Republic of Albania in 1946 (later renamed the People's Socialist Republic of Albania from 1976 until its collapse in 1991.) (King and Vullnetari, 2016) As it was prior to communism, "agricultural production remained the mainstay of the population's livelihood" in Socialist Albania to the point of "near-autarky," meaning that the agricultural sector was completely self-sufficient and divorced from international markets (King and Vullnetari, 2016 and Kaser, 2001). Immediately, the communist regime collectivized rural land and gave authority to large state-run cooperative farms to administer the state's agricultural policy. A large rural population needed to be maintained to support these large cooperative farms. From 65% to 70% of the population of Albania lived in the rural regions (King and Vullnetari, 2016). The government, via a policy known as "rural retention", made it exceptionally difficult for people to leave the villages (King and Vullnetari, 2016 and Hashorva et al, 2011). The policy required Albanian citizens "to carry a domestic passport or identity card, to keep people in the countryside" (Sjoberg, 1994). However, the government's policy of rural retention could not properly support the collectivized farms, such that by the 1980s, people were no longer adequately fed and supplied, as shortages became ever-present to the daily economic experience of the Albanian people (King and Vullnetari, 2016).

Economic Collapse in Post-Communist Albania

Domestic pressure, coinciding with international trends, caused the communist state to finally collapse in 1991. The collapse of communism saw radical demographic changes which became the central determining factor for almost every aspect of Albanian life, whether civic, economic, social, or even cultural (Çaro and Van Wissen, 2007). Nearly half a century of "rural retention"

imploded as more than 1,000,000 people migrated, both domestically and internationally (Çaro and Van Wissen, 2007). As a result of the migration, Tirana doubled in population and became a behemoth that was home to over a third of the entire population of the country (Pojani, 2009). However, as the cities grew with people seeking opportunity, villages emptied at an alarming rate. In southern Albania, international emigration accounted for depopulation of roughly a third of the rural population, in some areas exceeding 40% of the population. Meanwhile, in the north of Albania, the general emigration trends pointed to a mass migration towards cities within Albania, not a mass exodus away from the nation (Agorastakis et al. 2007). This phenomenon is evidenced in **Figure 2.2**, which shows greater levels of international emigration in the south in contrast to the greater levels of internal emigration in the north. Unsurprisingly, Tirana shows the highest levels of internal immigration, most of whom come from the north.

Rural Albania under Communism

Post-communist agrarian reforms resulted in the collapse of large-scale state run collective farms and the rapid proliferation of

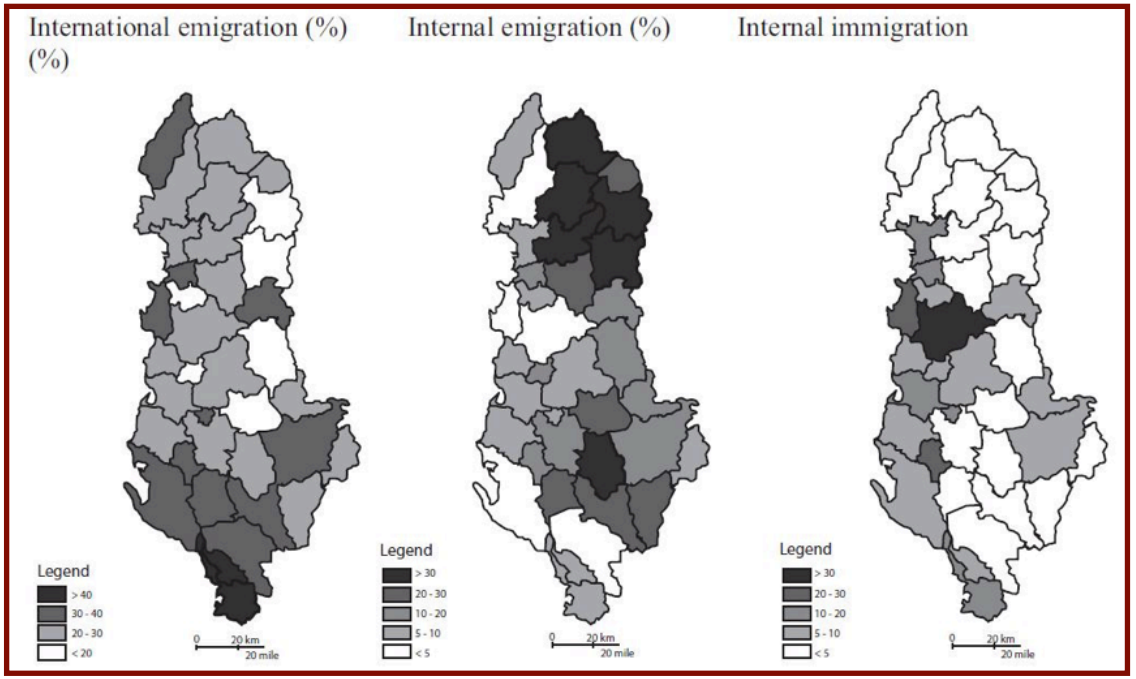


Figure 2.2. Relative internal and international emigration and internal immigration by district (in % of 1989 population), 1989 2001 (Agorastakis et al, 2007)

individual farms. By the end of the nineties, individual farms occupied almost three quarters of total agricultural land in Balkan countries as opposed to a third of that land when the reforms were initially imposed. Albania in particular saw its agrarian sector revert almost entirely to small individual farms, which is an extreme result even among post-communist nations (Swinnen, 2009; Lerman et al., 2004). From 1990 to 1994, the number of farm units increased from 622 to 445,000, the average size of farms decreased from 1,065 ha to 1.2 ha (Zhllima and Guri, 2013).

Returning once more to the topic of migration, the remittances sent by migrants back to their rural families was used to improve the livelihoods of rural inhabitants by improving housing conditions and by providing rural farmers an avenue to escape agriculture as their main source of income (Miluka et al., 2007). Additionally, some were transferring from growing crops towards livestock husbandry, as is evidenced by cropland abandonment and by an increase in the number of goats, particularly as measured in a case study on villages throughout Elbasan County (Müller and Sikor, 2006). According to Leonetti (2013), the period of transition after 1991 has effectively ended as production of crop exhibits growing or stabilizing trends. Notable exceptions include wheat, tobacco, and wood production, which exhibit production decline. This trend is evidenced by Albania's production index skyrocketing after 2007 as seen in **Figure 2.3** (Albania | World Bank Development Indicators,

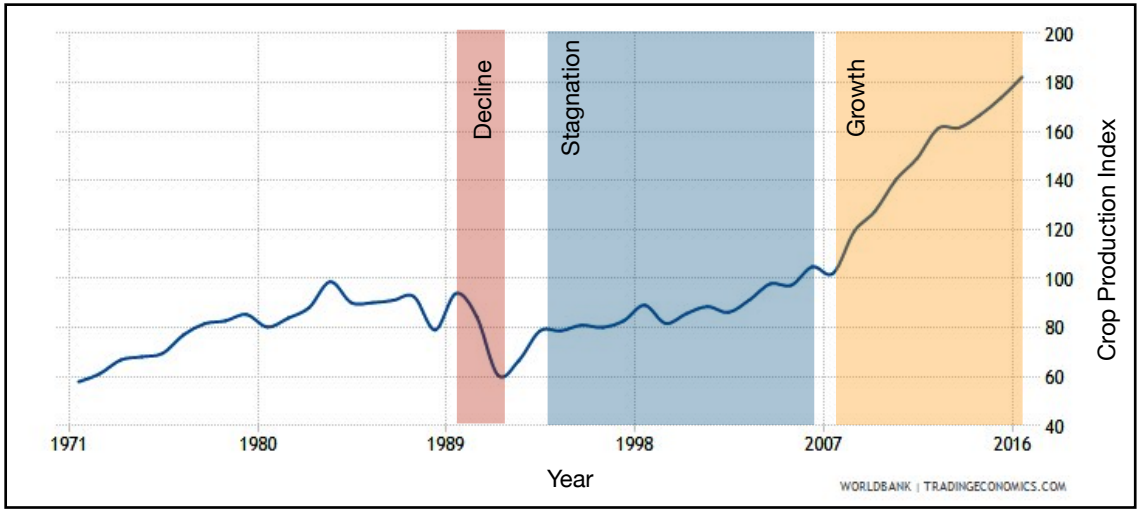


Figure 2.3. Crop Production Index in Albania from 1971 to 2016. Notable points are 1990-1991 which shows a marked drop in the index value, followed by stagnation throughout the late nineties and early 200s. Of special interest is the increasing rate of growth in the index following 2007 (Albania | World Bank Development Indicators, n.d.).

n.d.).

The trend in rural Albania in the twenty-first century, following a general decline in agricultural productivity, is a stabilization of agricultural production combined with a marked shift towards livestock husbandry, as evidenced by shifts in land use. As can be seen in **Figure 2.4**, employment in the agricultural sector has significantly decreased in the past two decades. This phenomena is partly explained by rural emigration, but also by the transition from tending crop-fields to animal husbandry (Albania | World Bank Development Indicators, n.d.). **Figure 2.5** demonstrates the shrinking cropland throughout Albania, particularly in areas with low to mid-level elevation. Particularly notable is the increase in shrub and grassland which corresponds to a greater investment among the remaining rural population in animal husbandry (Müller and Sikor, 2006).

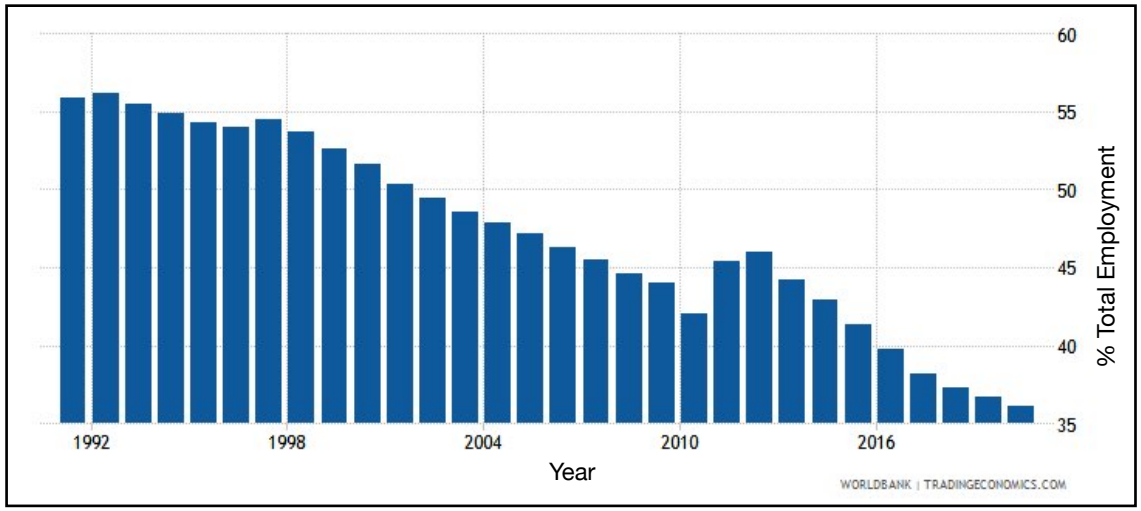


Figure 2.4. Employment within the agricultural sector as a percentage of total national employment from 1991 until the present. There is a significant downward trend in worker involvement within the agricultural sector (Albania | World Bank Development Indicators, n.d.).

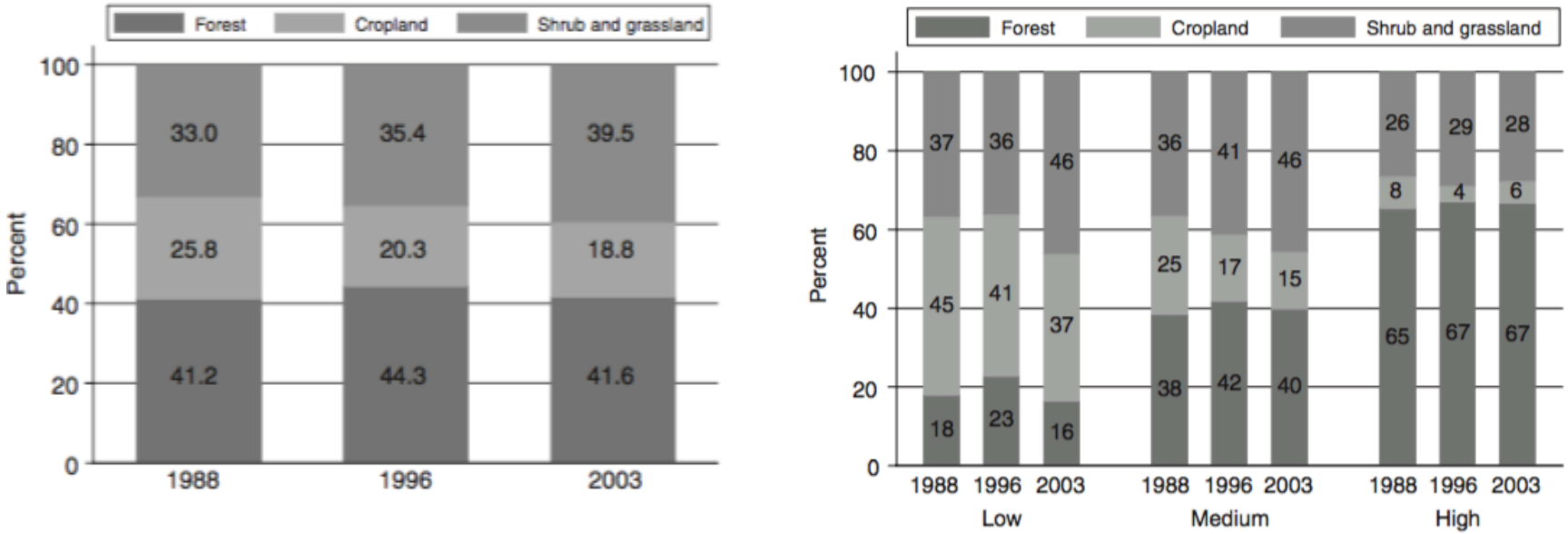


Figure 2.5. (a) Aggregated land-cover changes and (b) land-cover changes by tercile elevation as calculated from results of satellite image interpretation by Daniel Müller and Ylli Hoxha. As expected, areas of high elevation in Albania are not as suitable for croplands as areas of low to mid-level elevation, which, during Albania's period of transition in the nineties, exhibited a notable decrease in cropland (Müller and Sikor, 2006).

2.2. Tourism Development in Albania

Initiatives in Rural Tourism

The small village of Theth has witnessed a tremendous influx of tourists who wish to experience for themselves the serene isolation of this northern Albanian village (Wiegman et al, 2013 and Kruja and Gjyrezi, 2011). Valbona Valley National Park has also seen exponential growth in the number of guest houses, tourists, and profits from 2004 to 2013 as hikers seek out the beautiful and natural mountain scenery that the park has to offer (Kortoci and Kortoci, 2017).

As part of the Albanian Ministry of Tourism's 100 Villages Project, a group of Albanian and Dutch students and professionals chose the village of Nivica to be a prototype village to "develop a model for a sustainable and prosperous rural economy, with touristic potential". Beginning in 2018 village, Project Nivica began a new initiative in the Albanian village of Nivica by sending a team of architects, urban planners, archeologists, and historians, met to reconstruct the village of Nivica with locally sourced material by utilizing local building techniques. As can be seen in **Figure 2.6**, a large portion of the village was reconstructed in accordance with traditional and local architectural styles and techniques. The village's infrastructure is being built up to account for a new influx of international tourists (Nivica A model for rural development in southern Albania, n.d.).

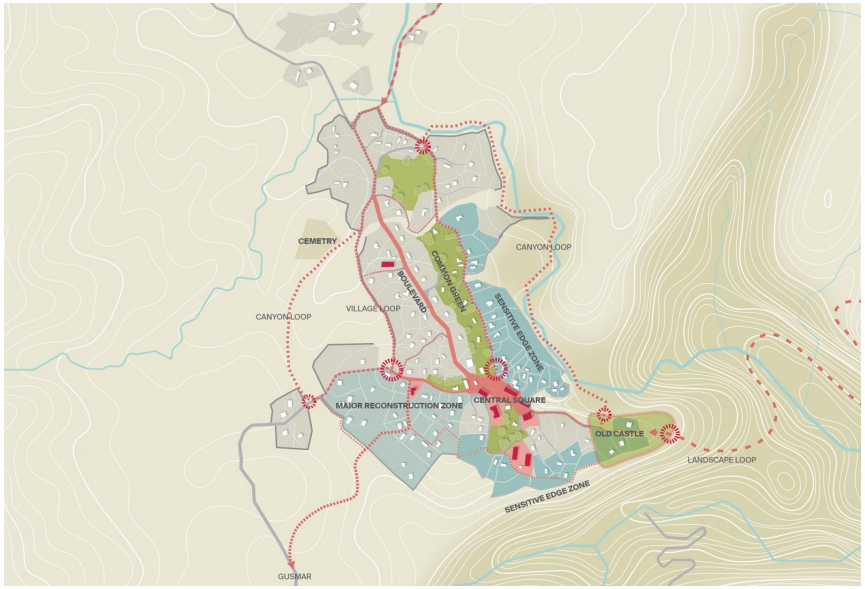


Figure 2.6. Nivica Project map of village reconstruction. This map exhibits the major reconstruction efforts and planning that went into rebuilding Nivica as a model village for international tourists (Nivica A model for rural development in southern Albania, n.d.).

Challenges and Opportunities for Rural Tourism in Albania

As mentioned earlier, one of the main challenges for rural tourism was that the government spotlighted the heavily urbanized coast. However, this challenge has weakened over time as some rural initiatives take underway, such as the *100 Villages For The Integrated Rural Development Program* (Berisha, 2018). This project evidences that 30 years after the collapse of communism, the Albanian government now takes rural development as seriously as it took coastal and urban development back then. Nonetheless, infrastructure, particularly in regards to transportation, is still in need of improvement to better interconnect isolated villages to incoming tourists. Likewise, running water and heating can at times be unreliable. Furthermore, owners of small farms have little experience in entrepreneurship, which is an important skill in developing rural tourism (Korsita and Cania, 2017).

Despite the challenges listed above, rural tourism in Albania has potential to grow into a much larger sector of the Albanian economy, and in doing so, to help preserve the native cultural traditions which are vital to thriving rural industry in tourism. In part, this is since rural tourism is multifaceted in terms of experiences by offering numerous special interest tours, such as cultural tourism, religious tourism, ecotourism, and culinary tourism, among many more. This specialized approach to tourism is beneficial to the rural economy, as it serves to highlight the unique characteristics of the villages that tourists will be visiting. Not every village can offer a generalized experience of Albania, but they can certainly advertise a unique story of their own place in Albania (Çetinkaya and Kaymaz, 2013). In addition, return migration has shown promising signs of entrepreneurial activities among returning families. In one study, 614 families (or 18% of the sample) had returned and begun private businesses. Most of these returnees had emigrated from the villages early on in the nineties and had built up their savings over the course of more than a decade. These returning immigrants are another lifeline to the rural economy that should be integrated into the rural tourism sector (Kilic et al., 2007).

2.3. Gastronomy to Promote Rural Tourism

Defining Gastronomy

Gastronomy is "the art or science of good eating" that ventures beyond the necessity of food as a basic function for life and concentrates on "culinary customs or style," that is, the social aspects of cuisine (Merriam-Webster, n.d.). There is a dynamic between the culinary experiences and interactions of the person who is enjoying a meal and the chef who is behind the creation of it. People use all of their senses to experience food. The gastronomic experience may include playing on diners' memories of previous tastes while introducing new and novel dining experiences. This experience allows the consumer to think deeper about the act of eating and even consider food preparation and presentation as an art (Myhrvold, 2011).

Gastronomy therefore makes a destination attraction out of places that serve food by focusing on the distinguished cooking experience. Food tourism, on the other hand, emphasizes the sustainability of the resources that are used to produce the food of a particular dish. Both gastronomy and food tourism ought to be utilized to relate the cuisine to a location. These allow for food systems to develop that play on the variety of elements involved in enjoying a meal, and they incorporate the people involved who prepare and present the food (Hall, 2020).

Mutually Beneficial Relationship Between Gastronomy and Tourism

Gastronomy is one of the many defining aspects of a local culture that promotes tourism to that area. Food is an integral aspect of the traveler's experience. By incorporating local traditions while being open to new developments, a well done gastronomic experience incorporates not only the flavors of the meal, but also its presentation and background information on the sources of local ingredients (Hjalager, 2002). This knowledge helps travelers who are experiencing a destination for the first time to better understand the culture of the place through its cuisine. Furthermore, gastronomy also allows the tourist to have a deeper appreciation for the location. The positive feelings surrounding food, especially delectable cuisine, are

driving factors for those looking to experience a new place more fully (Kivela, 2006).

The tourist experience is largely stimulated by the quality of the local gastronomy. Brokaj (2014, p. 249) identifies there are five interdisciplinary motivational factors behind local food consumption: "quality of taste, authentic experience, rural development, health concern, and knowledge". Food tourism is successful if these factors are taken into consideration when creating authentic gastronomic experiences of an area by those seeking to promote tourism to an area. Locals encourage tourism to their area, as well as preserve and promote their heritage, by providing tourists with the knowledge of the food they are consuming. This includes what locality the ingredients originate, the technique used in its preparation, and well as the process used to obtain the ingredients. For example, rural development may motivate a tourist to eat at a particular location if the food there was grown by an authentic family, and purchasing the food helps support the family (Brokaj, 2014). These factors, when well portrayed by businesses in the tourism industry whose goal is to draw tourists to an area, have much potential to promote the area's gastronomic traditions. These businesses include restaurants and wineries, as well as regional associations, which work to convey the local culture (Warde, 2014). The above factors are elements that motivate tourists to go on culinary tours.

Culinary tourists comprise a notable sector of the overall traveler market, which in a positive feedback loop promotes the expansion of gastronomic traditions (Kivela, 2006). Food tourism is successful if the tourist has an enjoyable and memorable experience of their meal that goes beyond just the taste, and if they eagerly share this experience with others, which will in term promote even more tourism to that area (Crouch and Richie, 1999). The subsequent positive impression of the local gastronomy causes the tourist to be more invested in the local cuisine, making them desire to spend more time in that location, try more diverse local foods, and thus support the locals, who seek to share their unique culinary traditions (Nam & Lee, 2011).

Researchers have found that tourists who enjoy learning about the culture of a destination through its food will desire to stay in that location for a longer period of time so as to experience more of the local gastronomy. The increase in length of stay also impacts other tourist necessities, such as lodging and transportation. These

accommodations subsequently benefit by having more business and attracting more popularity. Tourism in Albania is commonly promoted in rural areas to facilitate development and support small, locally owned businesses (Richards, 2002). The intent of these tourist policies is to support the local economy and preserve culinary traditions by providing the locals opportunities to preserve their customs (Kivela, 2006). Culinary tourism can be one of the primary means of vitalizing tourist destinations and experiences (Brulotte, 2014).

2.4. Albanian Gastronomic Tourism

Current Agrarian Trends Point Toward Gastronomic Tourism

Farming is a critical component of rural Albania that must be accounted for when focusing on encouraging gastronomic tourism. One-fifth of the gross domestic product in the country is provided by agriculture and a little less than half the total employment is related to agriculture. There are about 350,000 farms in Albania, and about 86% of those are less than 2 ha in size, the average being 1.2 ha. These are classified as small and very small, compared to large and very large farms, which can be up to 10 ha or more. Though women only head about 6.5% of Albanian farms, they comprise half of all those working in agriculture. Small farms, particularly those that are family run, are crucial to food security within the country and to reduction of rural poverty (FAO, 2019). Promoting small, family-run farms, particularly through tourism, could help revitalize rural agricultural regions as the following examples of Vlora demonstrates.

A notable case study was done in the Vlora Region of Albania to determine motivations for tourists' local food consumption (Brokaj, 2014). The study took place at a variety of restaurants across the Vlora Region, including those in a national park and by a lagoon. Tourists experienced the traditional way of Albanian cooking in these locations. The study consisted of a tourist survey, and it concluded that authentic experience was the primary factor that influenced travelers to choose local cuisine. From a tourists' viewpoint, food has a significant influence on attracting people to a destination. Ninety percent of those in the study wanted to experience cuisine that was particular to the Vlora region and were interested in background information pertaining to the food. About 85% of respondents expected restaurants to reflect the region's qualities. This kind of information allows tourists to be knowledgeable about the local area and thus, want to learn more about the authentic experience of the area that goes beyond just the cuisine (Richards, 2002).

Vlachos (2020) examined "the role of gastronomic tourism in constructing perceptions of Albania as a tourism destination" (Vlachos, 2020). He analyzed the relationships between rural tourism development, food narratives, and tourist

preconceptions of the rural areas examined. These connections were based on the responses of those who have previously travelled to or had an interest in the country of Albania. Specific regions were not analyzed. The study showed that travelers to the country were satisfied with their Albanian gastronomic experiences due to the affordability, rich traditions, and diversity of experiences. They especially enjoyed the traditions and freshness of the food, as well as how landscape and culture combined to construct a "mental map" of the destination (Vlachos, 2020, p. 3). These positive outcomes are especially relevant to out of the way rural areas.

Engaging Tourists Through Food

The authenticity of local food products enhances "the visitor experience by connecting consumers to the region and its perceived culture and heritage" (Sims, 2008, p. 1). The novelty of unique food products and techniques draw visitors to new destinations and experiences (Hage, 1997). Furthermore, rural tourism helps to create prosperous rural communities by strengthening the local culture and economy in a way that can best be enjoyed by visitors, particularly through food systems (Slow Food USA, 2008). Consistent gastronomic experiences contribute to a pleasurable tourist's experience. As noted above, authentic experience particularly motivates tourists to explore a location. This experience is effectively conveyed by the local people who are familiar with their cultural and gastronomic traditions that have been passed down from generation to generation.

If more and more tourists are visiting rural areas to learn about rural customs, those families will have more incentive to pass down their culinary traditions to future generations and dissuade the youth from seeking income elsewhere (King, 2003). Promoting entrepreneurship with tourism in rural areas, particularly that concerning gastronomic traditions, is a prime way to support those living the agrarian lifestyle while preserving and developing traditional culinary techniques. Business initiatives along these lines have the potential to encourage both international travellers as well as the diaspora to rediscover the rich Albanian gastronomic heritage.

An increase in rural development provides numerous opportunities for food tourism in Albania. A difficulty that the rural people face is the lack of organized

cooperation within the agricultural sector, including environmental services or landscape protection. Particularly the absence of tourism infrastructure in the region negatively impacts the initiation of local partnerships. Nevertheless, the varied natural landscape of Albania and proximity to the rest of Europe provides much potential for the development of the local tourism industry (Peterson, n.d.).

External expertise, particularly knowledgeable guides, can act as a liaison between a farming family and a group of tourists. Farm families would otherwise have more difficulty acquiring the necessary skills to successfully engage in the tourism industry, such as language ability or an understanding of tourists' interests. They would need training to develop new revenue streams. One such organization that provides programs which assist rural collaborators is GIZ. It works with the Albanian Ministry of Agriculture and the Ministry of Tourism and Environment to help with more efficient planning across the departments as well as putting effective strategies and programs into place. It furthermore implements vocational training for select market-orientated products and works to modernize agricultural processes (Peterson, n.d.).

Figure 2.7. Photograph of Fli. Fli or Palanik is a characteristic dish among the Albanian people with a history tracing back to the Solar Cult of ancient Illyrians (RRNO 2019).

2.5. RRNO and Gastronomic Tourism

As a gastronomic organization in Albania, RRNO is looking to promote rural gastronomic tourism in order to revitalize traditional Albanian cuisine, and help the rural economy through tourism. Çetinkaya and Kaymaz (2013) asserts "Potential tourism destinations . . . which enjoy rich natural and cultural resources should rely on external expertise . . . through donor projects, regional or national institutions. These supporting actors will help them make good use of their resources by starting to develop tourism." As one of these supporting actors, RRNO plans to present Albania's distinctive traditional cuisine to the contemporary world by displaying the unique food items of the rural regions of the country. To do this they take inspiration from other initiatives such as 100 Villages and GIZ to build their own strategies.

Through an interview with one of RRNO's co-founders, Mr. Nikolin Kola, the following

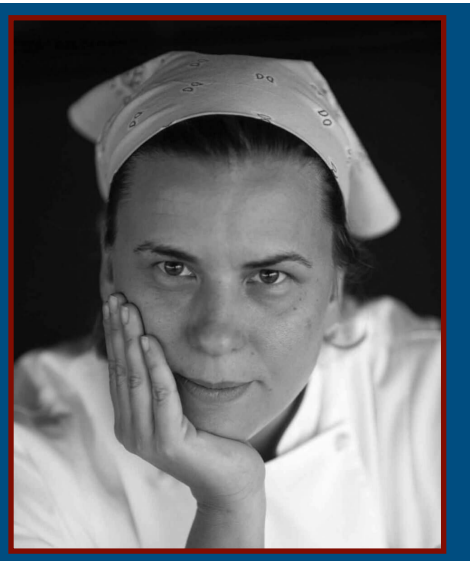
([Nikolin Kola], 2018)

([Bledar Kola], 2018)

Figure 2.8. RRNO co-founders. RRNO was founded by, from left to right, Nikolin Kola, Bledar Kola, Fejsal Demiraj, and Entiana Osmezeza

information about RRNO was obtained. RRNO was founded in 2018 by Mr. Kola and Mr. Beldar Kola, alongside Mr. Fejsal Demiraj and Ms. Entiana Osmezeza. The foundation was born from dissatisfaction with the Albanian gastronomic scene. Culinary schools in Albania all centered around the capital, Tirana, and boast about their Western style methods (ACA, 2020 and Neranxi, 2017). With mass emigration driving talented chefs away from the country, RRNO saw an opportunity to help the Albanian people on an international scale. The initiative began as an event created by the Kola brothers, in which twelve Albanian chefs were invited from abroad to come back to Albania. They were given one month with an Albanian grandmother to learn and reinvent one dish each.

([Fejsal Demiraj], 2018)



([Entiana Osmezeze], 2018)

Afterwards, a public event was held, called the New Albanian Cuisine Manifesto, in which the chefs presented what they had learned and done with the traditional recipes. Everyone was invited to the event, and it aired on several news broadcasts. The main audience of the event, however, was the Albanian youth, both in Albania and beyond. The event had brought together three generations of Albanians, the grandmothers, the chefs, and the youth. Seeing this, the organizers then built RRNO in hopes of continuing their work.

RRNO is currently engaged in the Albanian Gastronomy Expedition. Here they visited nearly 400 villages in search of unique foods, traditions, and people. The organization is using the data they collected to construct a greater understanding of traditional Albanian gastronomy and how they can bring it

to the people who left the country, also known as the diaspora. Through this expedition, they created a new project. In each of the villages they explored, they met with Albanian grandmothers who showed them recipe after recipe. What better way, they thought, to connect the Albanian diaspora with their heritage than to cook traditional foods with Albanian grandmothers in rural villages? They decided future projects were necessary to answer this question.

With this expedition came new challenges; how do you organize all the information they gathered, as described above and in the introduction? How do you visualize connections and stories within the data? And possibly the most important, how do you tell these stories in a way that not only promotes the traditional gastronomy of rural cultures in Albania, but also can be done for nearly 400 villages?

2.6. Storytelling Through Maps

ArcMap, the Desktop GIS

GIS, or a geographic information system, is a set of programs that allow the visualization and analysis of datasets through mapping. It is mostly used to map geocoded data by layers to show connections and similarities between each dataset, which can be seen in **Figure 2.9** and **Figure 2.10**. The usage of GIS to analyze and map gastronomic databases (i.e. recipes, ingredients, restaurants) and incorporate them into current map systems, as well as make them usable by the public, is feasible. Recent years have witnessed a burgeoning of applications of GIS (Dunn, 2007), including ArcMap. ArcMap is the desktop GIS software that we decided to use after careful examination of several contending softwares. After downloading the software onto a computer, ArcMap can be used alongside the online software found in the Esri Suite. This includes ArcGIS Online and ArcGIS StoryMaps. The community that uses the Esri suite, particularly ArcGIS Online, is quite active, and creates and publishes new maps each week on a variety of subjects. Each software provided a way to publish data and tell stories, be it through interactive experiences, projects, or maps. However ArcMap, and the Esri suite in general, provided a user friendly experience with guides and tutorials built into the software. It also provided linking between its many programs through accounts, which can be added to groups, and can exist in an organization. The program allows for organization and visualization of data.

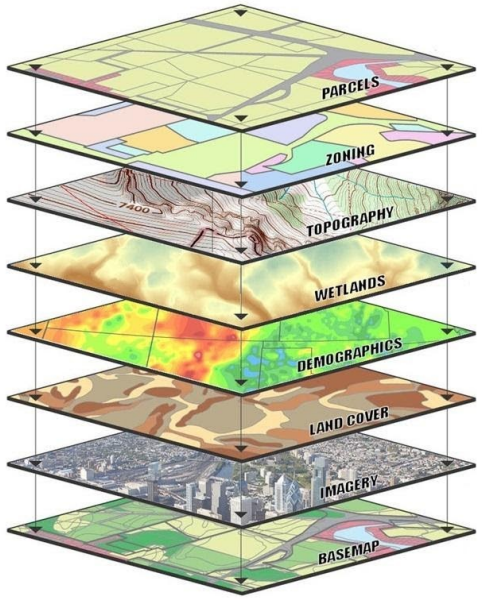


Figure 2.9. A representation of GIS layers. Each layer can be shown in any combination. (Kolio, 2017)

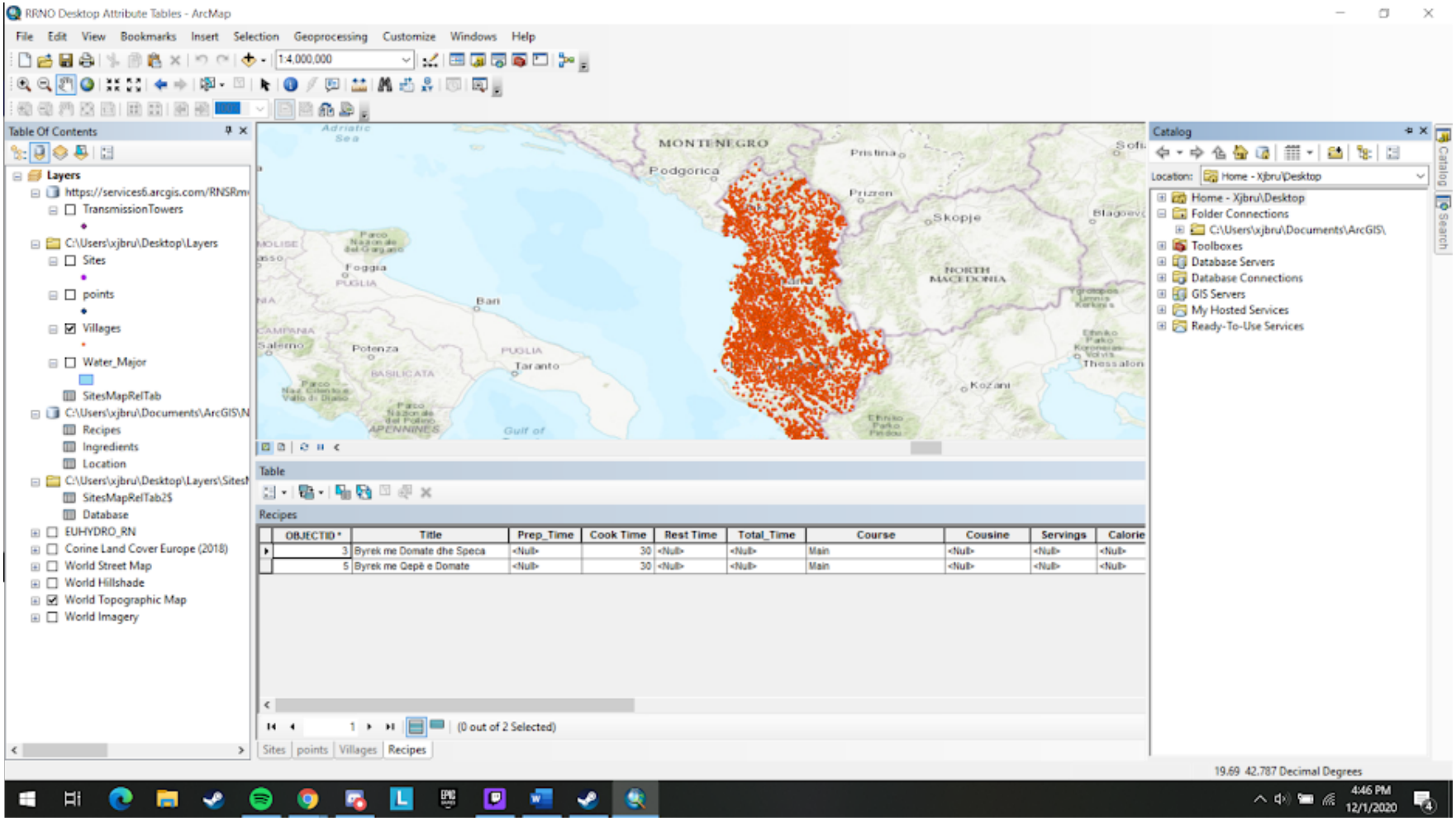


Figure 2.10. The ArcMap program. This image shows the infrastructure of the database we created.

Importance of Storytelling in Promoting Gastronomic Tourism

Stories are recognizable patterns, and in those patterns we find meaning (Caquard, 2013). We use stories to share knowledge and understanding of our world with others. It is with stories that RRNO intends to promote gastronomic tourism, specifically for the Nana Cooking project. Mapping is one way to clearly tell stories and share information, and the stories those maps tell both reflect and create reality (Caquard, 2013). The stories of rural Albania can also be promoted in a similar way. With GIS, these stories, such as the gathering of wild edible plants and the techniques used by grandmothers to make *tavë kosi*, can be shared with everyone through the use of a single platform.

What is represented in a map and how it is represented heavily influences a story. Not only what is shown is important, but the accuracy of what is shown, as well as what isn't shown, is crucial to the development of a story through a map. An example can be seen in **Figure 2.11**. From this

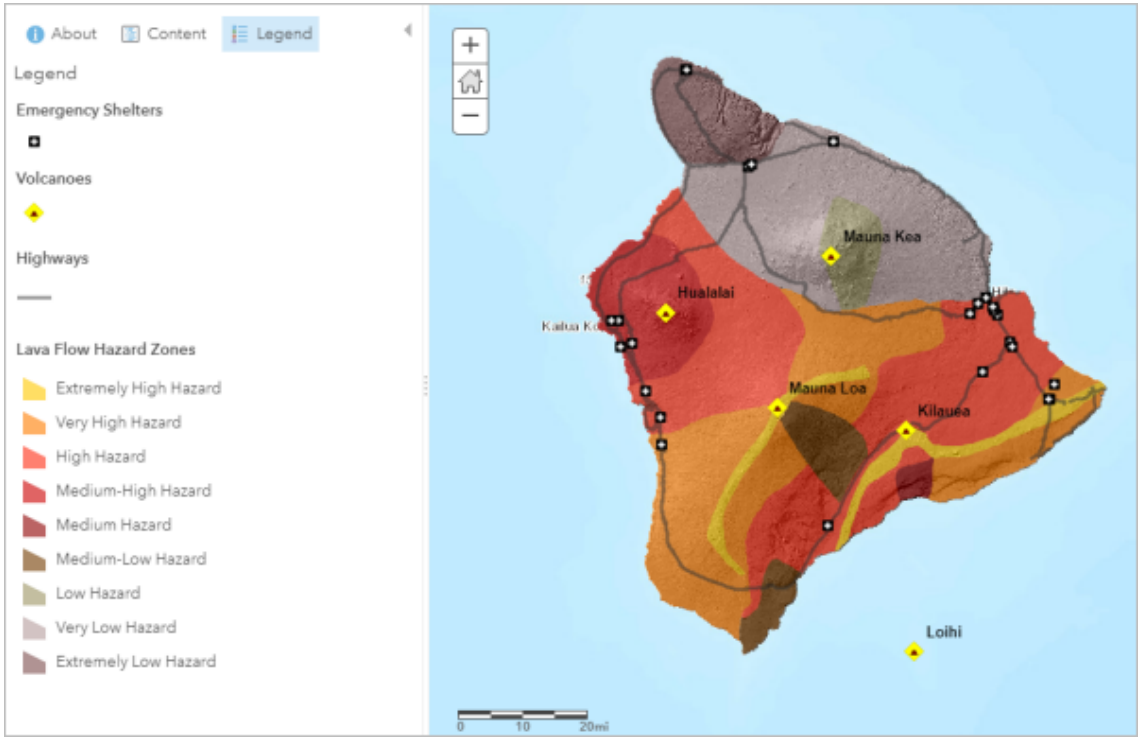


Figure 2.11. A map of Hawaii in the Esri Suite. The map shows the danger of possible lava flows (Esri, 2020)

map, safe areas can be identified, people can find the nearest shelter, and companies can decide where to build based on the likelihood of lava flow hazards. What is not shown are stores, climate, or any other distracting factors that may detract from the intended message the map is conveying. The insight of those who have experienced the physical place in question is critical to ensure that the area being depicted on the map is accurately represented (Caquard, 2013). The accuracy lends to the credibility of the story, which deepens the emotional connection of the user. This precision is also out of respect when conveying another's personal experience or memory (Tasker, 1999). Personal stories, such as one encountered by RRNO during their expedition, can be depicted through a story map including text, images, videos, and maps to give a better representation through the interlacing of local knowledge and spatial representation. A story focused on a local couple, Sofo and Dhurata, includes elements of larger issues involving regional or global events, such as migration and economic instability. In this case, their stories could be enriched through maps concerning migration, historical events, land use, and entrepreneurship. Understanding and conveying these critical events in a visible and tangible way helps others be empathetic towards those who experienced them, and all information shown alongside the stories needs to reflect this.

Through the mapping of data alongside oral, written, and audio-visual stories, visual-geospatial stories that capture the gastronomic culture of an area can be created. The process goes beyond simply showing the location where a narrative takes place. (Caquard, 2014). The data are not used solely for context of the stories, but to accentuate the stories so they can be perceived in hundreds of thousands of combinations to better appeal to a wide audience. The presentation of the data to the audience is nearly as important as the stories themselves.

ArcGIS StoryMaps

To solve the additional challenges posed by RRNO, we chose another program within the Esri Suite. ArcGIS StoryMaps is a program that acts similarly to a webpage development and design tool. It uses the maps and data from the other Esri software and presents it in a professional, accessible manner. Images, videos, text, and maps can be brought together to present stories and information. These StoryMaps allow users to share this media across a variety of platforms. A sample StoryMap created

for this project can be seen in **Figure 2.9** and **Figure 2.10.**

Through this software the stories are given form and brought to life. The mix of audio, visuals, text, and user interaction strives to form an experience RRNO's audience can fully immerse themselves in. The stories are created with a focus on learning about culture, tradition, and especially food. For example a story focused on a local couple, Sofo and Dhurata, includes elements of food and culture alongside larger issues involving economy and tourism. Their story is told through a mix of slideshows, text, and images to add interaction to the story map. It is the addition of interaction that improves learning and retention (Thöny et al., 2018). When the audience is given the opportunity to interact with the story, to move from one section to another at their own pace, it increases user engagement (Zhi et al., 2019). The challenge of creating an immersive, engaging user experience as well as a guide to important elements that should be included in the stories is also addressed by this project.

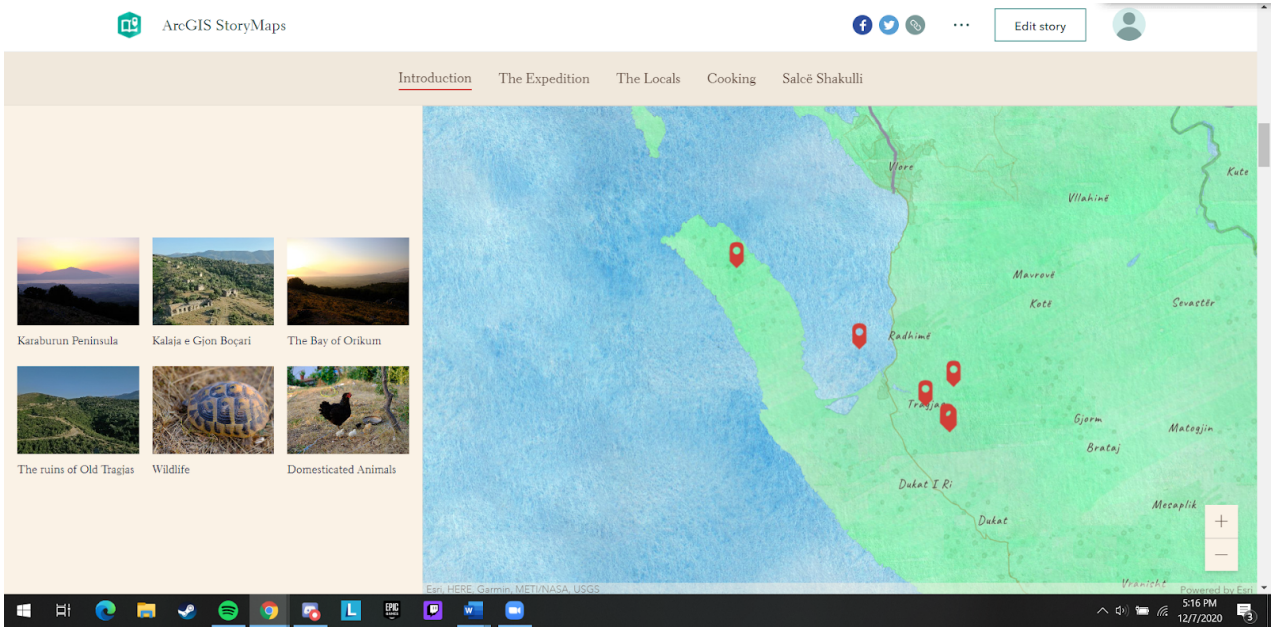


Figure 2.12. A map tour in the Tragjas StoryMap. An interactive map lets users learn through exploration.

Methodology

We assisted RRNO in its mission to revitalize traditional Albanian cuisine and rural livelihoods by promoting rural food tourism and targeting members of the Albanian diaspora who are interested in experiencing Albania's rich cultural and culinary practices at the local level by telling place-based stories through maps alongside the geocoded photos and recipes that RRNO collected.The goal of our project was to develop both a database and to derive story maps in order to promote RRNO's future projects. We did this by:

- Developing the infrastructure of a GIS database for RRNO.
- Developing a set of three StoryMaps for future projects.
- Creating manuals to guide RRNO on how to operate programs within the Esri Suite.
- Creating a guide on how to develop stories for story maps.

3.1. Developing a Database

We employed a geographic information system (GIS) that incorporated the media provided by RRNO into a database. These have a visual cartographic interface made up of multiple layers (see figure 2.2 in the Introduction).

We developed the infrastructure for RRNO's geospatial database by using ArcMap, the desktop GIS software in the Esri suite. Since the ArcMap files are too large to be shared directly with our sponsor, we exported the files from ArcMap into ArcGIS Online, which is Esri's online portal for GIS, where layers can be shared between groups and published for anyone to see and use. Here the files were added to a group with our sponsor and shared with all of our group members. We used readily available geocoded databases from ArcGIS Online to design the map, including terrain, borders, and settlements. We then added additional layers available through the web to complement the data collected by RRNO with monuments, historical sites, topography, land use, and hydrography.

As part of the infrastructure, we made it possible to geocode each dataset provided by RRNO to this map of Albania once they populate the database. Each ingredient, recipe or other data point can be linked with latitude and longitude coordinates. This can be done in attribute tables (see **Figure 3.1**) that incorporate the data and are used in forming connections between them. For example, all the food items

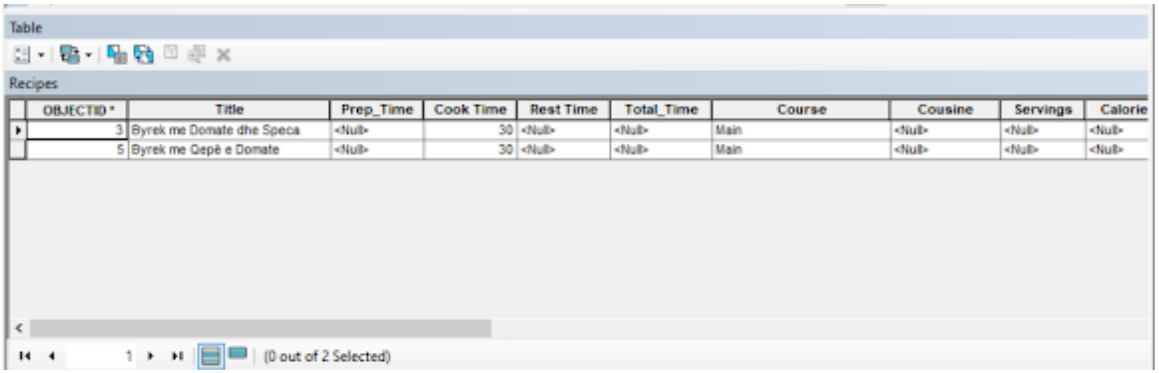


Figure 3.1. Attribute Table. The attribute tables in ArcMap allowed us to organize the data.

from a particular village will be in the attribute table for that village.

The attribute tables included many possible attributes belonging to the data, including ingredient names, recipe descriptions, brief cultural commentaries, and region of origin. A complete list can be found in Appendix A. The database along with the attribute tables and pre-existing layers were passed on to RRNO. These allow the foundation to further develop and add additional data as it continues its exploration to preserve, develop, and promote the cuisine of rural Albania.

3.2. Developing StoryMaps

Storyboard Stage

The goal of the story maps was to promote RRNO's latest cooking project by presenting this initiative in a way that offers an engaging user experience for prospective tourists who are interested in learning more about Albanian cuisine and culture. The final set of story maps were each focused on different locations that the project centered around, namely the villages of Lëpushë, Nivica, and Tragjas. We began with a storyboard approach which roughly organizes narrative "elements and story content into a sequence of visual panels" (Thöny, 2018). This allowed us to review the narrative elements we had, as described below, and prepare them to be incorporated into the StoryMaps, which provided an appealing visual and interactive setting for the text of the stories. We then organized the storyboard elements into a linear structure, which fits well the technological constraints of Esri's StoryMaps, as seen in **Figure 3.2** (**a**). The figure shows possible storyboard setups, in which elements are organized to create different narrative structures. The first possibility is a linear narrative, the second is a branched narrative with multiple ending points, the third shows a narrative that begins with multiple points and narrows down to one main idea, and the last is a single branched path with a shared beginning and end.

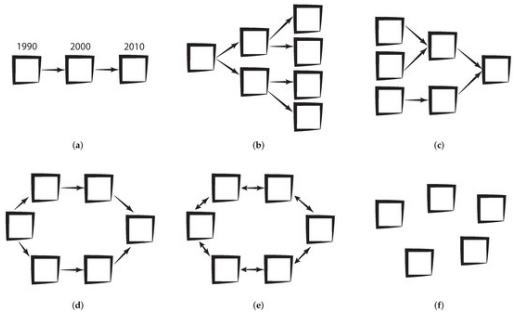


Figure 3.2. Story Flow Example. Storyboard structures show how story elements can be arranged (Thöny, 2018).

We used story creation workflow as prescribed by Thöny (2018), which is visualized in **Figure 3.3.** To do this we started with a wide variety of elements, or data, that were relevant to the individual locations. A storyboard element is a story about one unit, such as a specific chapter of

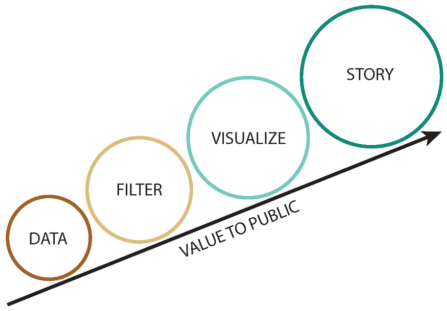


Figure 3.3. Story Creation Workflow. The graphic visualizes the process of story creation (Thöny, 2018).

a region's history, the story of a building or a kitchen, or the story of a specific person. Broad topics related to these villages, such as landmarks including statues and adventurous activities such as hiking, were incorporated. Elements also included stories about specific recipes or even individual ingredients. We researched the cultural background of the three locations we were looking into, as well as explored some historical elements of the areas. We examined the culture there, as well as background information on culinary techniques to aid in expressing the stories. Elements were chosen based on key features of a village and possibility of further development in a way that would be interesting to the reader.

We then organized the data by filtering out storyboard elements that are not related to the specific topic of discussion. For example, when filtering storyboard elements for village A, elements for Villages B, C, D, etc. are ignored. Likewise, storyboard elements about recipes, sites, cultural practices which are not found in this area are also ignored. Broader trends in Albanian society can be included since they also impact local life. Our background research helped guide the elements chosen and contextualize them into the story. At the conclusion of the filtering process, we displayed the remaining storyboard elements as seen in **Figure 3.4**.

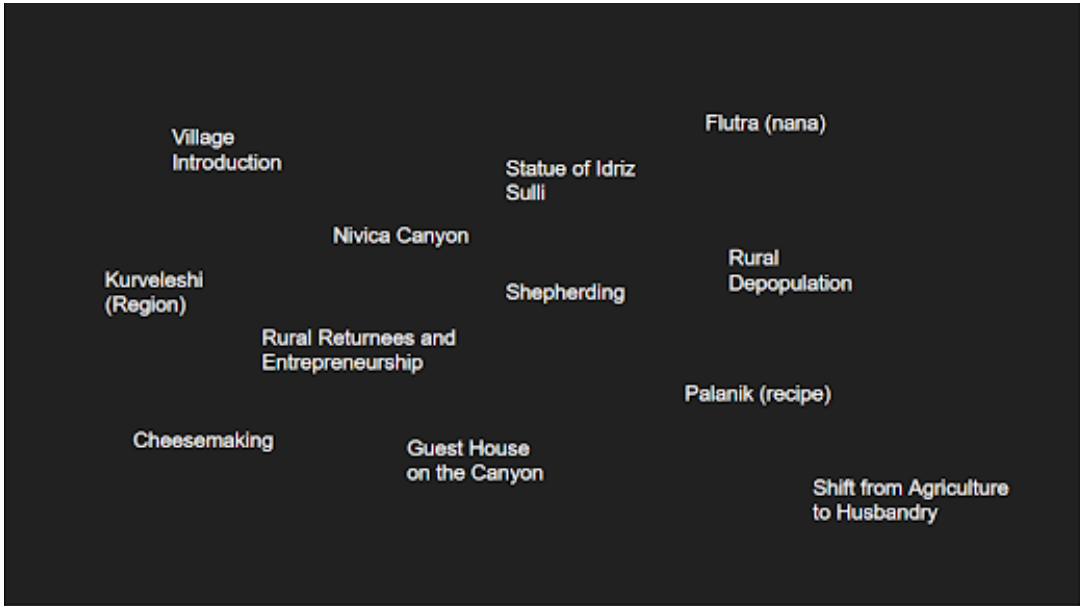


Figure 3.4. Nivica Story Elements. Here they are shown before organization.

Once the text of the stories was complete, we began the "visualize" stage by sourcing relevant media for each location of the cooking project. This included RRNO's resources, information from the database, and media found online. Specifically, we acquired photos, recipes, and videos. The media was chosen and arranged in a way that integrated into the storyboard organization and textual content.

Related elements were placed next to one another in the story. The transitions from one element to the next helped to expand the text. We incorporated storytelling techniques including narrative arcs. Examples of these are as follows:

- *Cause-and-effect* can be used to describe relationships between actions or processes.
- *Convergence* involves stories resulting towards a conclusion or outcome.
- *Divergence* involves one or more story elements deviating into a variety of resolutions.
- *Emergence* involves the maturation and development of story elements through realization.
- *Genesis* describes the phenomenon of addition, creation, or even establishment (Thöny, 2018).

One of the above narrative arcs was also utilized to determine the linear order of storyboard elements to convey the stories.

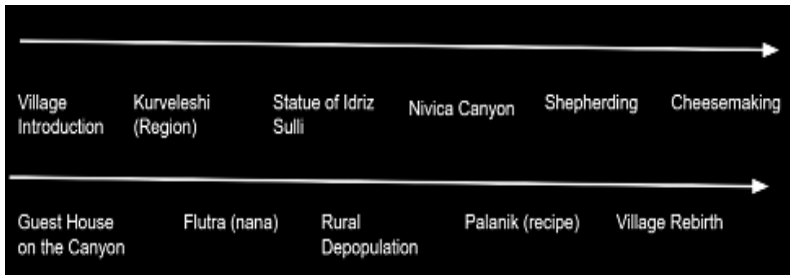


Figure 3.5. Linear Storyboard Display. The linear scheme details story elements after organization.

Story Map Layout

We used a highly interactive software similar to the basic structure of longform infographic, a specific

Figure 3.6. Longform Infographic. The basic structure of the longform infographic is similar to that of the StoryMaps (Roth 2020).

type of static visual story which "enforce[s] linearity through partitioning of the layout into frames" (**Figure 3.6**) in the context of an online ArcGIS StoryMap. This format enforced said linearity by ensuring that the story is read vertically, from top to bottom (Roth 2020), enabling the integration of the story onto either a desktop website or mobile app due to the possibility of browser scrolling. Furthermore, the online StoryMap had design elements already in place, the user just added the information. For example, we incorporated a map for each of the sites we focused on that had several pinned locations for points of interest. Photos and text particular to already in place, the user just added the information. For example, we incorporated a map for each of the sites we focused on that had several pinned locations for points of interest. Photos and text particular to that point were shown when the pin was selected. The linear focus was shown through these consecutive photos that the viewer could scroll through. The content of the StoryMaps consisted of text blocks, photos (especially those obtained from RRNO), videos and maps. that point were shown when the pin was selected. The linear focus was shown through these consecutive photos that the viewer could scroll through. The content of the StoryMaps consisted of text blocks, photos (especially those obtained from RRNO), videos and maps.

The audience has the ability to scroll through and interact with the stories at their own pace and in their own way. The content is not all on the screen at one time, which results in anticipation on the rest of the infographic on the part of the reader, adding an additional dramatic storytelling dimension. This progression of information helps the audience better grasp the linear aspect of the stories.

The maps and photos were the visual starting points that are the foundation for the action of the stories. Photos and maps help the viewer see the image in context and thus understand it better. The specific locations helped establish a common reference to the reader over the course of the stories. An example of mapped stories are those that convey personal testimonies while highlighting geographical locations that form the basis of memories or critical life experiences (Hauthal and Burghardt, 2013). This phenomenon can be seen incorporated in one of our story maps as seen in **Figure 3.7**.

Gastronomic tourists are primarily interested in authentic experience, background cultural information, and quality of taste (Brokaj, 2014). We chose data that

highlighted these aspects. We focused on the stories that tied together the physical location with social, cultural, gastronomical, and historical context. Additionally, we identified notable historical landmarks, recreational activities, or other relevant location based information that may interest travelers.

We passed onto RRNO the story maps and information that we obtained on the villages which focused on their future project. To do this, we assisted RRNO in setting up a non-profit Esri account and spoke with them about the types of business accounts available. They applied as a non-profit organization and received approval. RRNO purchased the basic desktop and online account bundle account with a discount. After showing the foundations how to navigate the software, the final stories were presented to RRNO at this project's conclusion. They provided insight into the variety of means by which they might promote their future project using story maps.

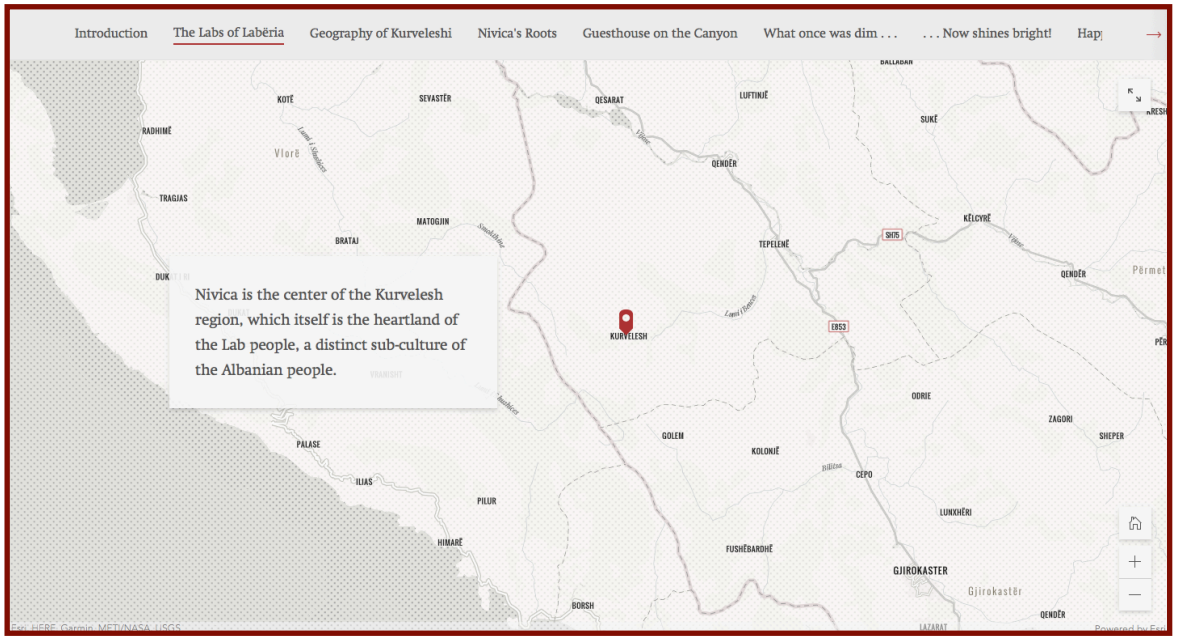


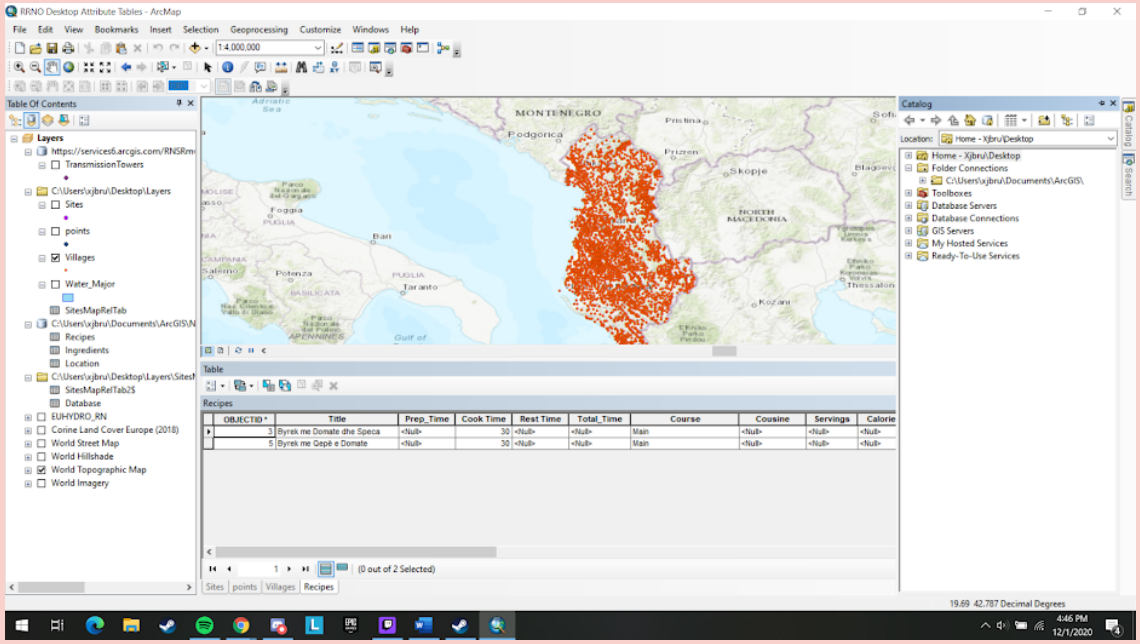
Figure 3.7. Embedded Map Example. A map of the region of Kurveleshi highlighting the village of Nivica within one of the story maps.

Findings

The project is framed by the three main deliverables. These are, in order of importance, story maps, a database, and a manual. The story maps are important because the point of our research was to explore the creation of story maps in service of RRNO's mission, as well as present to them the elements that pertain to creating effective story maps. We will begin by presenting the findings in regards to the database, as the database was the first step of the project, and it informed the creation of the story maps and manual.

The database consists of an infrastructure that RRNO can populate with pre-existing data found through Esri's open source online network. ArcMap, the GIS software we used to create the infrastructure, has a learning curve and is extremely challenging to work with if given no instruction. Through the Esri tutorials, we were able to not only set up the infrastructure for the database, but also find other open source data provided by the public through Esri's online network.

Figure 4.1. The ArcMap Program. One layer that can be included in the map of Albania is that of villages, as shown above.



This data, represented as layers in the software, was developed as parts of stories, or themes that would inform stories, for the second step of this project. For example, one layer included some of the notable sights in Albania. This later helped us develop a story about the statue of Idriz Sulli in Nivica. The infrastructure for the database

consists mostly of attribute tables. Text, numbers, and images can be included in the attribute tables. These allow RRNO to organize the lists of data it has collected, as well as the addition of important identifiers that correspond to the data, including geolocational data, which can be used to link textual information to points on the map. One setback that we encountered was that it requires credits to have the software automatically place markers for the geolocational data. The system would interpret longitude and latitude coordinates in the attribute tables as a shapefile on the map if the user has credits to pay with. If the user does not have credits, then the user would have to plot shape files on the map themselves and join it to the attribute tables. In the end, this credit system did not hold us back as our project did not involve actually populating the attribute tables, but merely setting up the infrastructure for RRNO to populate the database. As we are working with accounts tied to WPI, we did not have any credits to test this feature, however RRNO will be creating new accounts, and with it, they will be given 100 credits per account. It costs 40 credits to geocode 1000 items, an item being a single ingredient or recipe with a longitude and latitude, and they can purchase more credits as necessary.

A second limitation we encountered was with attribute tables in which an image cell is included. In this scenario, the text cells in the attribute table have a 255 character limit. To address the character limit, we have found that external files that are not within the Esri software can be attached to the database. These files not only include images, but pdf's, word and excel files, and many other file types. When the attribute table does not have an input for images, the text input cells can be modified to hold up to nearly two and a half million characters, much higher than the 255 limit.

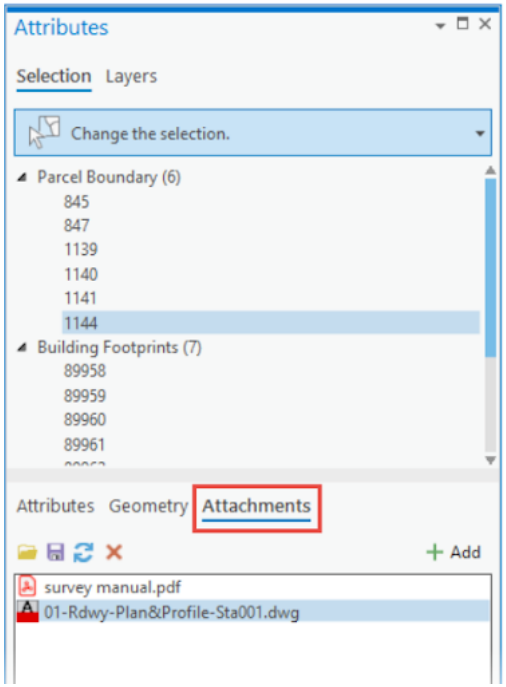


Figure 4.2. ArcGIS Attribute Table Attachments. Attachments to the attribute table in ArcGIS Pro (Add or Remove File Attachments ArcGIS Pro |

Thus, we have decided to not include any cells for RRNO's visual media (i.e. photos and videos). These media will be attached to the attribute table as a whole but not an individual cell. In order to determine what recipe the media is associated with, the title of the media file should begin with the same text as the title of the recipe. By adding the images and videos as external files to the attribute tables, the individual cells are no longer limited to a 255 word limit and can therefore include all the relevant information for the recipe.

Our next deliverable, the story maps, provide a multimedia representation of stories that aim to be engaging and immersive. The StoryMaps software used our online Esri accounts, which are not linked to an organization. Due to this, we faced difficulties in editing as a team. A limitation of StoryMaps is that we were unable to work together on the same story maps, both synchronously and non-synchronously. We consequently each chose our own topic, specifically a village that RRNO wanted us to focus on, and created our own StoryMaps. We shared the links for each StoryMap within our group so that the others could view them. Esri has begun work on this front, recently adding the ability for members of the same organization to share and edit story maps non-synchronously. RRNO's organization account solves this problem by allowing multiple users to modify the same StoryMap.

In developing stories for a story map, we chose to start with making lists of information, or elements, pertaining to the three unique villages of the future project in order to see through the diversity of media we included for each village so that it was all in one place. Our background research informed our decisions for the media chosen by guiding us to focus on those which related the cuisine to the culture and unique rural lifestyle. Additionally, our research led us to consider stories about rural development, change in rural lifestyle, common rural practices, broad trends in Albanian society such as demographic changes, linguistic and regional diversity, and history from communism onwards. We knew that we wanted to focus on at least one key dish from each village, as well as highlight a story about a particular person, specifically a grandmother, who lives in the village.

We found that telling stories about specific grandmothers was difficult as we lacked any biography or interview which could provide us with a more in-depth perspective to tell the grandmother's story. Generally, all that was available to us was numerous photos and a

name. While this lack of information proved challenging for us, we do not expect it to hinder RRNO's progress as they have and will continue to collect more data interviewing individual grandmothers.

We found that organizing these elements into storyboards was an effective way to proceed. The storyboard provided a logical transition from numerous elements to three story maps. The technique allowed us to visualize relationships between the elements and form possible narrative arcs (including cause and effect, divergence, etc.). Of the possible arcs, we chose to use linear narratives to convey the stories, as this was convenient to convey in one ArcGIS StoryMap due to the fact that the viewer scrolls through the StoryMap to get to the next section. We considered creating a network of story maps, each connected to one another through shared story elements, however repurposed the idea as a recommendation due to time constraints. The network format would better suit non-linear story arcs, and would allow users to explore content at their own pace, however, this requires more time to set up and execute.

Linearity transfers well to the StoryMap format, which is meant to be scrolled through from the top to the bottom of the page with explorable elements stacked above one another. Several examples of the elements that can be included are shown in **Figure 4.4** through **Figure**

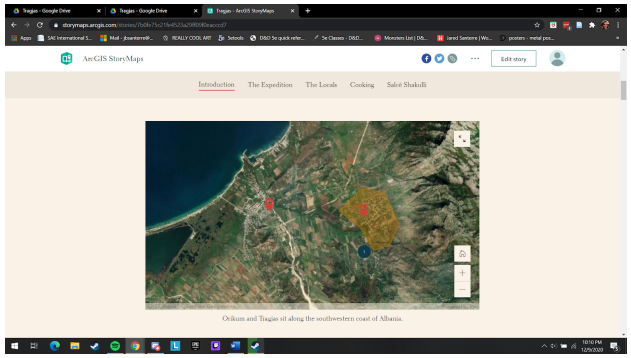


Figure 4.4. Points and Polygon Example. Not only can layers made through the rest of the Esri Suite be used, but new maps can be made with limited capabilities. This includes placing points and polygons.

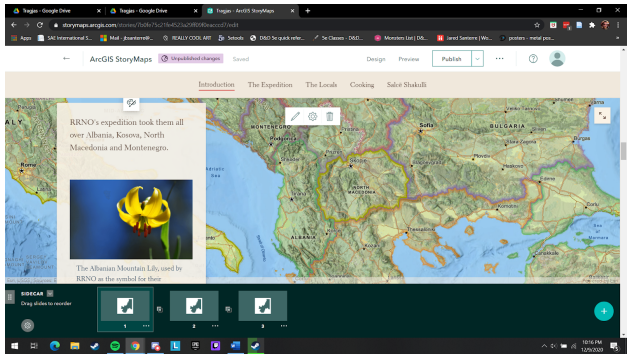


Figure 4.5. A sidecar in the Tragjas ArcGIS StoryMap. Sidecars can be used to show multiple maps or images as the user scrolls, alongside a box for images and text.

4.7. The headers are listed in the menu of the title slide from left to right to further enhance said linearity as seen in **Figure 4.3**. Background research led us to important stories that we have incorporated into our StoryMaps, such as the story of Sofo and Dhurata's restaurant, which were chosen based on their similarities to RRNO's future project and were elaborated on in the background. Many of these stories were also chosen based on the particular village they were associated with and the theme for the story of that village. The themes we used include:

- Historical significance of a location
- Cultural traditions (songs, linguistics, architecture, clothing, etc.)
- Rural life (growing own food for family, raising livestock)
- Cooking (technique, ingredients, customs)
- Land use (agricultural, urban, forestry)
- Natural setting/ landscape
- Festal traditions (food made on certain holidays)
- Personal stories/ accounts

This list was developed through consideration of what would be relevant to RRNO's future projects. We determined what was relevant based on common themes within our research about the history and present trends concerning Albania's rural economy and insights given to us through conversations with RRNO's co-founder Mr. Nikolin Kola concerning gastronomy in Albania.

A limitation in our methods due to lack of time is the absence of testing the StoryMaps for effectiveness with the target audience through interviews. Conducting interviews once the StoryMaps are completed could help RRNO accumulate knowledge on the audiences' preferences, the effectiveness of the story map layout, and the effectiveness of the story. The interviews should be conducted to get initial impressions and ideas of the stories before revising and redesigning them.

The depth of the interviews would help cement the details of the stories and discuss aspects that may have been overlooked, as well as obtain new and more in depth information about the layout of the stories. Before the presentation, the interviewees should be asked a set of

information gathering questions. These would be aimed at gathering data that can further enhance the stories by pinpointing exactly what the interviewees are interested in. The interviewees would then be shown the StoryMap. Finally, they would be asked a set of questions aimed at collecting impressions as well as improving the presentations. These questions would revolve around four main points: attraction to the visual representation, affect the story has, ability to identify with the story, and effectiveness of the stories to tell new information. Interviews should be recorded if possible, and transcribed for ease of analysis. If the interviewee does not wish to be recorded, the notes taken during the interview should be analysed for themes and ideas instead. The stories should then be modified based on the responses to the questions after each round of interviews.

The final deliverable is the manual, which assists RRNO in carrying on their work. This consists of two sections: one for the GIS database and one for the StoryMap site. The manuals were written in a way that shows RRNO the step-by-step process we followed to create these deliverables. They are based on our personal experience with the software as well as exercises and instruction created by Esri for each software.

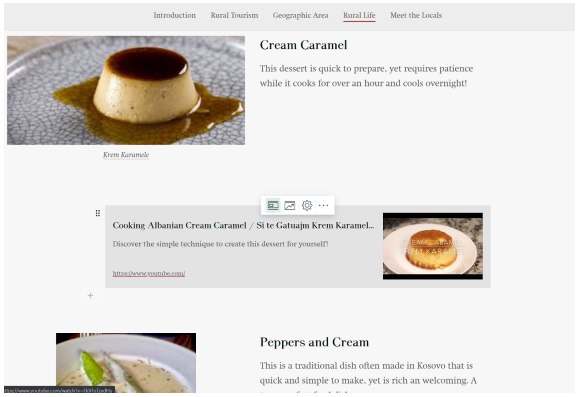


Figure 4.6. Links to external sites can be included within the StoryMap. Here are shown several traditional recipes that the reader can create for themselves.

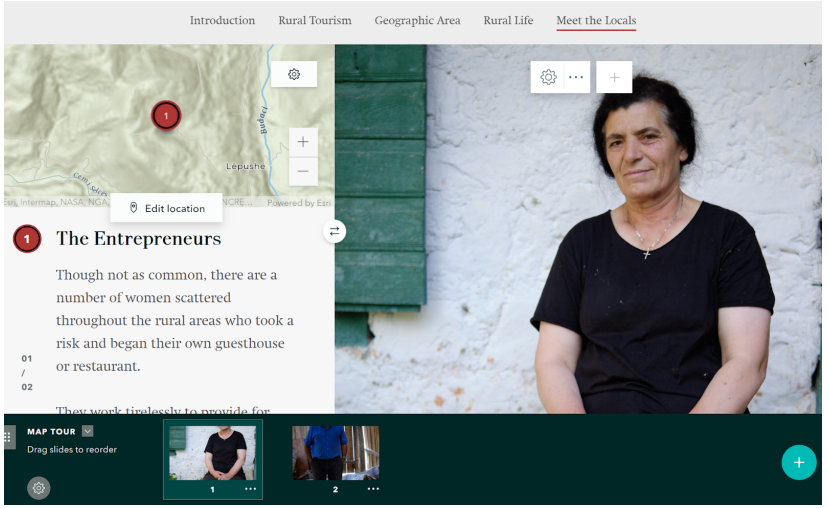


Figure 4.7. Map Tour is another to highlight particular locations alongside images. As the viewer scrolls through the site, the map will move to the next point on the tour.

Recommendations

Our first recommendation for RRNO is to look into using the Mobile GIS Data Collection on their upcoming expedition. This is a mobile app that Esri provides to collect data while in the field. This data can be imported into the other software provided within the Esri suite to be further analyzed and developed. Forms can be built within the app that allow users in the field to acquire and submit data within the software. These forms can be customized based on the desired information that is being accumulated and can incorporate pictures, location data, and notes. The GIS Data Collection app works offline and once an internet connection is reestablished, it will upload all data gathered (ArcGIS Collector, n.d.).

We would next like to recommend a few suggestions for incorporating stories into RRNO's website and social media. Including the stories on multiple platforms helps reach a broader audience. Avoid repeating stories between two different types of media platforms. Tell one piece of the story on a social account and the rest on a website, then direct people from one to the other. Doing so builds intrigue and generates traffic between the variety of platforms. As the stories are mostly longer in length, it would be feasible to include parts of the stories or main themes from them so as to not overwhelm the reader and allow the reader to explore more if they are interested. A link to the StoryMap in question would be helpful to include (Mallon, 2020).

We recommend that RRNO follows the storyboard process to organize their images, recipes, and other data. This will assist them in visualizing the possible ways to linearly structure a more developed story. A linear story is best suited for the StoryMaps. It is important to include multiple forms of media when telling the story. We recommend that RRNO tests any stories, itineraries, or other products before releasing the final version to the public. This allows for fresh eyes not attached to the projects to catch any errors and give actionable feedback to improve the products. Possible ways to test include interviews, focus groups, and surveys.

We considered a network approach in our methods, but due to time constraints, we would like to offer it instead as a recommendation. The network would be a series of many story maps, instead of only forming one or two for every village. The maps would cover a variety of subjects and link to one another so users can explore whichever story maps they please in any order at their leisure. A network connection can be formed when two StoryMaps share a

storyboard element in common, such as a region that two villages are in. The creator can make this connection by including a hyperlink in the form of a button on a StoryMap that will link to another Storyboard that contains the similar storyboard element. This allows for more user interaction, increasing the likelihood that users learn or retain knowledge from the network. The network approach helps spread out stories, instead of bogging down one page with lots of information (Thöny, 2018).

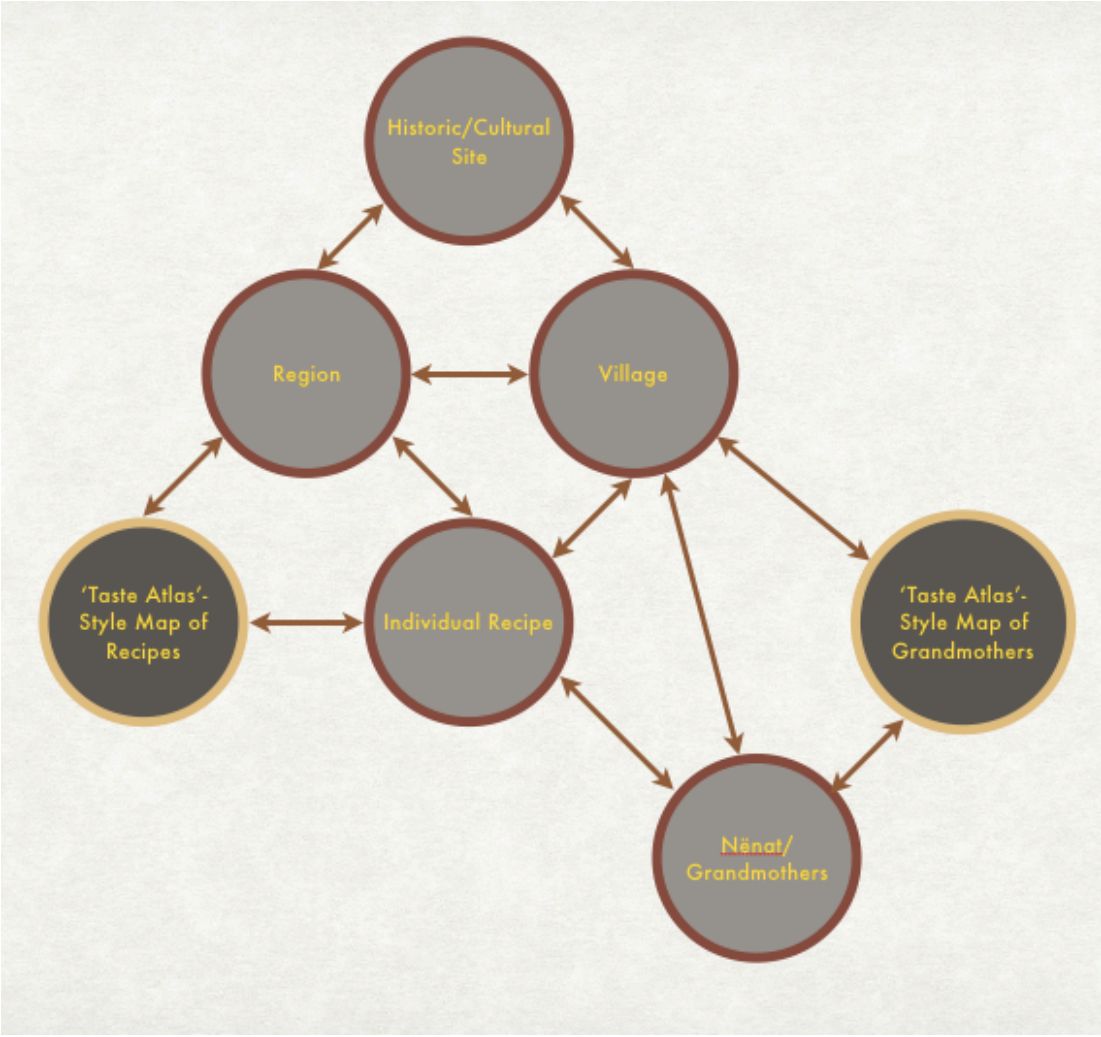


Figure 5.1. The network schematic. The network approach helps to connect similar StoryMaps by providing links within similar StoryMaps which encourages the user to explore the network and gain a deeper understanding of related stories for Albanian gastronomy

Conclusion

What began as a culinary mapping project in which we focused on creating a database and developing a culinary itinerary for food tourism expanded into the expression of RRNO's story and the stories of Albania's rural villages alongside research into best practices when creating digital stories. We assisted RRNO in its mission to preserve, develop, and promote Albanian cuisine by developing story maps regarding gastronomic traditions and their relationship to local food systems and livelihoods in rural Albania. The goal of our project was to develop the infrastructure for a database and to provide RRNO with a strategy for storytelling using maps, current resources, and materials RRNO could gather on future expeditions.

We completed several deliverables that were sent to our sponsor. The first was an ArcMap database, which consisted of attribute tables that incorporated data provided by RRNO, and provided an infrastructure for additional information from their future projects. We helped them establish their own business account to utilize the software. The next deliverable we provided were three StoryMaps that presented the three key locations of the Nana Cooking project in a way that is user-friendly and visually pleasing. Additionally, we decided to write out the process we took to create and modify the database and StoryMaps. We completed a guide that provided instruction on the best ways to create stories from the ground up. Our final deliverable was a two-fold manual. The first section described the database software installation and set up. The second was instructions for using the StoryMaps site.

The infrastructure of the database was created to allow RRNO to organize their data to present it in the best way possible through stories. As they embark on future expeditions and amass additional data on ingredients and villages, we hope they will find that having the infrastructure in place to organize large amounts of data will be very helpful. In order to best prepare the data to be displayed in a story, the organization of it in tables is a useful starting point. More thorough preparation allows for more enriched stories.

The stories began as a list of story elements, which involved researching history, culture, cuisine, monuments, and other identifications about a village. After the preliminary research, the elements were then storyboarded to create linear storylines. Once a storyline was established, depth was added to each

element, involving maps, images, and video to enrich the story. The criteria for these additions were inspired by our background research. With these enrichments, a story map was then created. The StoryMap software was intuitive and user friendly, which made creating the story maps quick and enjoyable. With options for both vertical and horizontal movements, and the ability to add interaction between the user and the data, the software was able to provide most of the functionality our research had shown to be important to the best practices when exhibiting stories.

The presentation of RRNO's expedition in the form of StoryMaps primarily contributes to the user experience of the viewer so that the foundation's experiences are thoroughly presented. The StoryMap base structure provides a diversity of multimedia and interactive elements that the user can exploit to display RRNO's information. Instead of the traditional text blocks of a story, users can now interact with the stories in a way that goes beyond the conventional experience. Interaction and engagement of the audience leads to increased learning and retention.

With the research and deliverables we have completed, RRNO can better integrate the many resources it collected on the expedition. The database can be used to organize and visual its data; the story maps are means by which it can exhibit stories especially in context of the future project; the manuals give RRNO basic instruction and help the RRNO staff begin learning the software; the guide describes best practices for storytelling and contains a list of important story elements that RRNO can use when it collects information on future exhibitions. We hope our work will help RRNO in its future endeavors, and possibly encourage new future projects in the Albanian project center.

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Appendix A

The attribute tables will be organized in the following manner:

Recipe:

- Growing Season
- Recipe Names
- Short Description of Recipe
- Prep Time
- Cook Time
- Rest Time
- Total Time
- Course
- Region of Origin
- Number of Servings
- Calories
- Recipe Difficulty
- Recipe Instructions
- Notes for Recipes
- Recipe Creator
- Image
- Videos

Ingredient:

- Ingredient Names
- Ingredient Uses
- Location Collected
- Country
- Village
- Latitude
- Longitude
- Color
- Aroma
- Size
- Growing SeasonTaste
- Recipes Used in
- Image
- Videos
- Additional Information

Contact:

- Contact Name
- Brief Bio
- Email
- Phone Number
- Address
- Additional Information

Location:

- Settlement Name
- Coordinates
- Status (Village or City)
- Administrative Unit
- Municipality
- County
- Country
- Latitude
- Longitude
- Ethnographic Region
- Climate
- Elevation
- Level of Precipitation
- Distance from County Seat
- Distance from Tirana

- Ethnic Composition
- Religious Composition
- Guest Houses
- Contacts
- Sites
- Photos
- Videos
- Additional Information