

Armenian State University of Economics, Yeghegnadzor Branch

A Spatial Analysis of Tourist Destinations in Vayots Dzor Region of Armenia

Developed by Nathaniel Ferraro

Abstract

By all measures, tourism is on the rise globally, and it can be a key driver of economic expansion for developing countries. As Armenia transitions from Soviet nation to democratic republic, its people—particularly those in rural regions outside the capital—are struggling to create revenue streams from limited natural resources and an industrial sector decimated by the collapse of the USSR. Fortunately, many such regions are blessed with a unique combination of historical sites, cultural attractions, and rugged natural beauty—no region more so than Vayots Dzor, which is situated in the southern-central area of Armenia. However, in order to assess the potential of developing the tourism industry here, it is necessary to first address the lack of reliable data and analysis thereof. This study consolidation and analysis of a points of interest in Vayots Dzor, employing Geographic Information Systems (GIS) buffers of 1km, 3km, and 5km to examine correlations between tourist draws (cultural sites and festivals) and tourism infrastructure (shelters and eateries). Analysis of the resultant data made it possible to identify communities (such as Jermuk and Areni) that already have much of what is needed in order to support increased tourism, as well as areas (primarily the town and valley of Yeghegis) that are rich in tourist draws, but lack adequate infrastructure. Studies like this one can help ensure that resources are allocated to maximize efficiency and return on investment.

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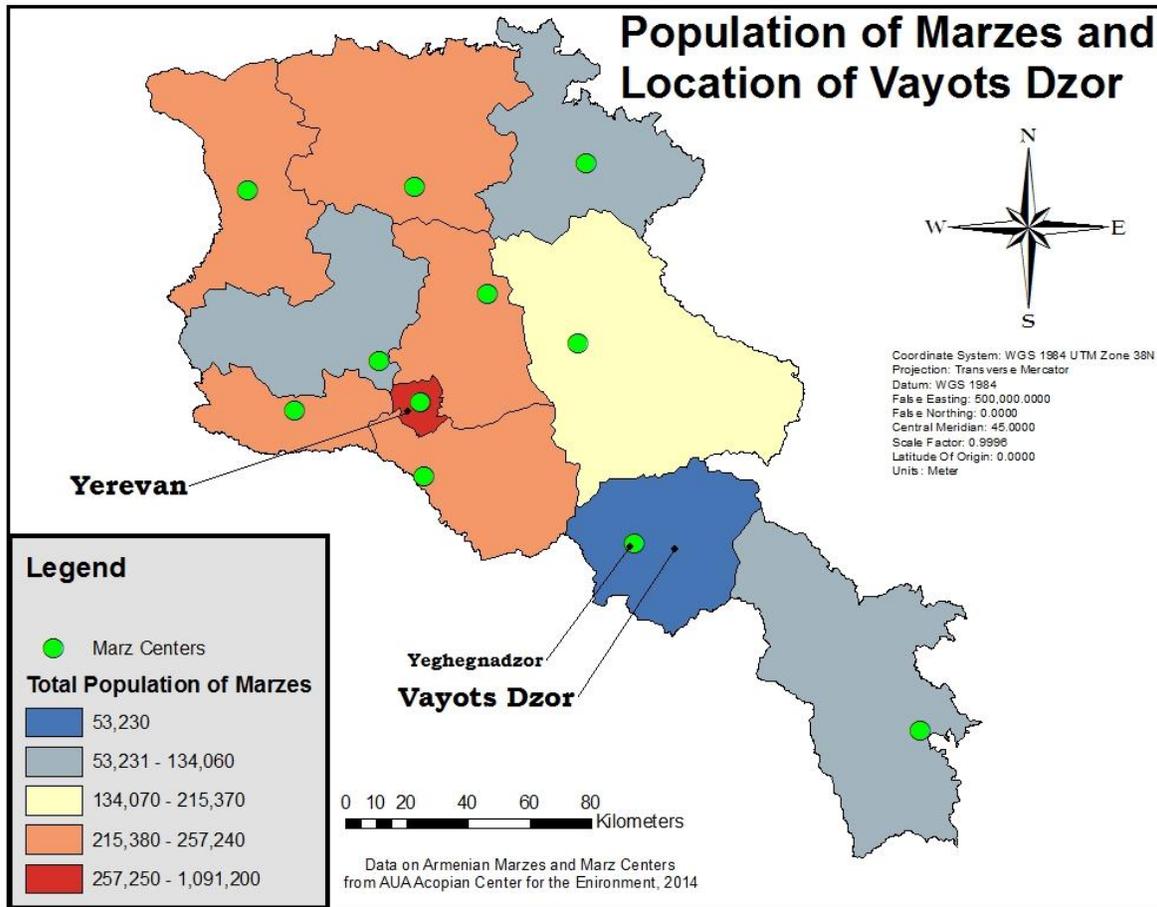
Introduction

International tourism is on the rise in 2015; 1.184 billion tourists traveled and stayed overnight in international regions—an increase of 4.4% from the previous year (United Nations World Tourism Organization, 2016). Despite recent geopolitical instability in Georgia and the unresolved issues between several countries in and around the region, the Caucasus region drew 8,748,000 international tourists during 2014 (The World Bank Group, 2014). Among the countries of the region, Armenia presents a unique combination of advantageous geography, untapped historical and religious attractions, scenic and agro-tourism sites, political stability, highly literate workforce, and basic infrastructure—making Armenia a prime candidate for future tourism development. Many international organizations, including the Smithsonian Institution, have taken note of these factors and launched large-scale tourism development projects in the country.

Recent World Bank data indicates growth in Armenia’s tourism sector (from 758,000 in 2011 to 1.084 million in 2013) as the country transitions from Soviet republic to democracy (The World Bank Group, 2016). Deteriorating stability in the Near and Middle East could drive tourists away from traditionally strong markets such as Israel, Jordan, and Turkey, creating an opportunity for the comparatively untraveled Caucasus tourism markets. While Yerevan already boasts a developed tourism sector, regions outside the capital have significant untapped potential. One such region, or “marz”, is Vayots Dzor, which features a wealth of historical, religious, and scenic sites. The ancient Silk Road runs through the heart of this mountainous region, which contains 55 separate settlements of various sizes.

Map 1 illustrates that Vayots Dzor, with 53,230 inhabitants, has the smallest population of Armenia’s eleven marzes. The mountains provide great scenic beauty but create challenges in terms of infrastructure (particularly road building and maintenance), which in turn creates challenges in terms of attracting tourists.

Map 1: Population of Armenia by Marzes



In order to realize the tourism potential of Armenia, public and private sector institutions must have proper data-oriented research. To that end, this study employs ESRI's Geographic Information Systems (Arc-GIS) to analyze key data for tourism development in Vayots Dzor marz. Arc-GIS is a mapping program that is adapted for spatial analysis of data shapes and points. It combines various layers of data into a map, which can then be manipulated and processed for in-depth analysis. This study was conducted at the newly established research department of Armenian State University of Economics in Yeghegnadzor, the capital city of Vayots Dzor, in conjunction with United State Corps and supported by USAID. In addition to the data and analysis outcomes outlined above and detailed below, this study served as a pilot GIS project for the university and as a hands-on educational experience for its faculty and students. This literature review comprises the second section, followed by data acquisition and methodology, results and analysis, and the conclusion, respectively.

Literature Review

GIS has become a crucial tool in the study of tourism development, thanks to its flexibility and versatility. GIS can use a plethora of tools to analyze a variety of problems that come from developing and sustaining a tourism industry. Armenia, in particular Vayots Dzor, with its challenging terrain would benefit greatly from its adoption.

The software program can be employed to track tourism resource inventories, location stability of tourism areas, measuring/monitoring tourism impacts, visitor management, analyzing relationships associated with resource uses, tourism marketing, assessing potential impacts of tourism development, and community involvement and participation (Poulicos & Yianna, 2010). The main emphasis of this study will concentrate on analysis of relationships with resource uses, marketing, impacts of tourism development, and community development. Most importantly visual impact analysis can be engaged to focus on 'scenic or high aesthetic value' areas (Poulicos & Yianna, 2010).

Bukenya (2012) implemented GIS to assist with a decision making structure that ranked the best parks for further investment in ecotourism. The focus of the decision making procedure fell into four main categories: wildlife management potential, ecological value, susceptibility to encroachment and degradation, and revenue generation. Conclusions of the study established that GIS could be utilized in a multiple objective problem where rankings are involved to establish the optimal results. (Bukenya, 2012)

Dondo, Bhunu, & Rivett (2002) analyzed the Zimbabwe's government tourism sector and its use of GIS to adapt to current and future challenges. The tourism industry drives a major sector of the economy and of large interest to the government and citizens in the region. The authors discuss the way that GIS data can be managed to cut down on costs associated with information dispersal and time saving in conveying facts to visitors as fast as possible. The production of a database facilitates the dispersal of information with GIS is quicker and more efficiently than traditional means. (Dondo, Bhunu, & Rivett, 2002)

Ghangosar & Haghyghy (2011) employed an analytical hierarchy process to look at GIS and tourism in Iran. This process involved expert opinions to inform weighting of various layers in the map to determine an optimal outcome. The optimal outcome resulted in a defined outcome in the region where tourism could be best expanded in the future (Ghangosar & Haghyghy, 2011).

Al-Ramadan & Aina (2004) emphasized the use of GIS as a way to measure suitable places for tourist development in the state of Texas. The factors of accessibility, crime rate, proximity to amenities, proximity to airport, proximity to water body, proximity to urbanize area, and size were used to locate optimal sites along the coast of Texas, while showing the applicability of GIS to similar studies (Al-ramadan & Aina, 2004).

Kushwada, Chatterjee, & Mandal (2011) considered the possibility of GIS on heritage and tourism in India. The writers implemented maps of local heritage and tourist sites to analyze the optimal tourist routes in the surrounding region. Outcome of the optimization created two

distinct routes which maximized tourist exposure to heritage and tourist areas (Kushwaha, Chatterjee, & Mandal, 2011).

Study Area

Vayots Dzor marz is a good example of Armenia's underdeveloped tourism industry and untapped potential. The region contains a number historical sites, scenic beauty, and rich agriculture. Stated objectives indicate the need to identify settlements or areas where investment in tourism development would yield the highest returns. For this study, basic tourism needs are defined as shelter, food, transportation, and entertainment/attractions, which are referred to collectively as "Points of Interest". The aim of this short study is to identify hotspots that offer as many of these basic needs as possible, thereby identifying settlements or areas that are best prepared to capitalize on an increase in tourism in the immediate future.

Vayots Dzor marz has an area of 2,297 square kilometers and a population of 53,230. The major cities in Vayots Dzor are Yeghegnadzor, Vayk, and Jermuk, with populations of 7,724, 5,458, and 5,146 respectively (American University Armenia, 2014). The primary road of the region connects the more heavily populated northern half of the country (which includes Yerevan, 2 hours by car from the Vayots Dzor border) with the large but sparsely populated southern marz of Syunik and beyond that Iran. This road is heavily trafficked by tourists, locals, and commercial trucks from Iran.

Data Acquisition

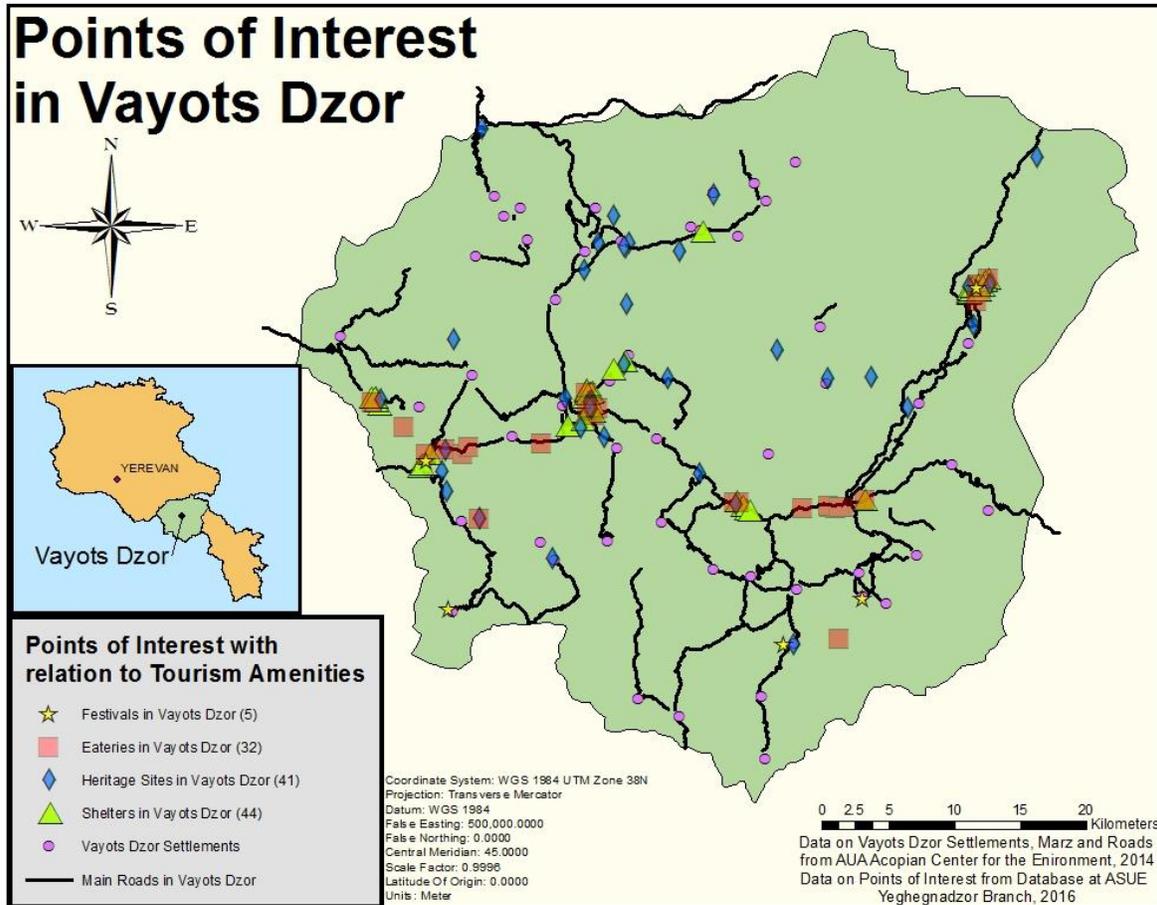
Data was retrieved from a variety of sources. The base maps and infrastructure originated from the American University of Armenia (AUA) and the Acopian Center for the Environment (American University Armenia, 2014). Data on hotels/hostels, eateries, tourist attractions, historical and culture monuments, and natural scenery were gathered from a variety of tourist and cultural sites (Black Sea-Silk Road Corridor, 2016). The names of Points of Interest were gathered with the help of tourist websites and local lists (Booking.am, 2016; Syunik-Development NGO, 2016). Google maps was then utilized to find the longitude and latitude in decimal degrees. The points include five festivals, forty-four hotels and bed & breakfasts (B&Bs), thirty-two eateries, and forty-one heritage sites of cultural and/or natural significance. Data gathering created 122 separate data points to be spatially analyzed based upon their proximity to settlements and other points (Ferraro, 2016).

The data assembled from the list of amenities with the help of google was constructed with as little variation as possible. If addresses or exact locations could be found using google, those were the coordinates recorded. However, due to the lack of street mapping data, the location of some points were estimated. If an address could not be located employing google maps or other mapping software, the center of the point's settlement was enacted as a place holder. Of the 122 data points, only six heritage sites, one shelter, and three eateries necessitated the use of this estimation method.

Map 2 outlines the position and number of points of interest for the Vayots Dzor region based upon the spreadsheet compiled for this study. The yellow stars indicate annual festivals, red squares are eateries (restaurants, wineries, tea rooms), blue diamonds correspond to heritage

sites (man-made and scenic), and the green triangles are shelters (hotels and B&B's). Most remain proximally positioned to roads and settlements, as would be expected.

Map 2: Points of Interest in Vayots Dzor



Maps 2 **Error! Reference source not found.** outlines the various data collected and used for manipulation and analysis throughout the project. The data frame properties in which the manipulation and analysis took place are as follows:

Coordinate System: WGS 1984 UTM Zone 38N
 Projection: Transverse Mercator
 Datum: WGS 1984
 Units: Meters

These properties were considered optimal to elicit the best results given the data at our disposal. The data below in **Error! Reference source not found.** was all adjusted to fit the above parameters.

Table 1: Data Used

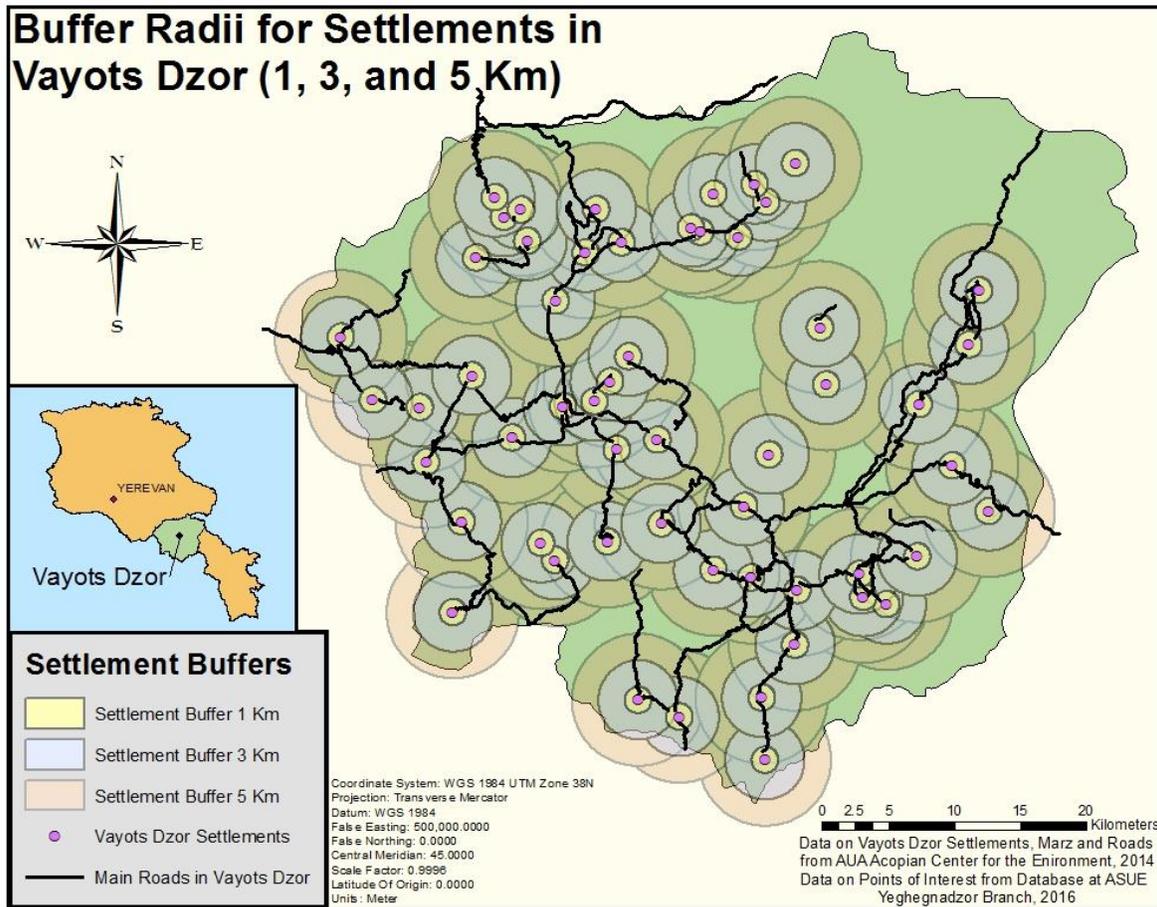
Name	Description	Type	Source
Vayots Dzor Marz	Outline of the Marz	Shapefile Feature Class: Polygon	AUA
Armenian Marzes	Marzes boundaries	Shapefile Feature Class: Polygon	AUA
Main Roads	Main Roads in Armenia	Shapefile Feature Class: Line	AUA
Festivals Vayots Dzor	List of Festival and Location	Shapefile Feature Class: Point	ASUE Tourism Dataset
Shelter Vayots Dzor	List of Hotels/B&B's and Location	Shapefile Feature Class: Point	ASUE Tourism Dataset
Heritage Sites Vayots Dzor	List of Heritage Sites and Location	Shapefile Feature Class: Point	ASUE Tourism Dataset
Eateries Vayots Dzor	List of Eateries and Location	Shapefile Feature Class: Point	ASUE Tourism Dataset
Vayots Dzor Settlements	List of all 55 Settlements and Location	Shapefile Feature Class: Point	AUA

Methodology

A buffer was implemented to assess areas in Vayots Dzor where all four of the amenities are present. This buffer tool creates a new shape polygon, the sides of which are equal to a given distance away from the original point or shape; thus creating a larger area around the initial point in a uniform and orderly manner. The designated sizes of the buffer areas are 1km, 3km, and 5km. These values were thought to allow the optimal approximation of the immediate and surrounding areas for the settlements. The middle point of each settlement is based on data from American University of Armenia, which encompasses all settlements in the Vayots Dzor region. A table of the settlements with the largest and most diverse points of interest was constructed. A 10km buffer was discussed, however the terrain and road systems in Vayots Dzor did not lend themselves to earnest results from such a large buffer area.

Map 3 demonstrates the buffers of settlements and the high degree of overlap possible in particular areas. The buffers also indicate that a large portion of Vayots Dzor is within a 5km radius of settlement. Settlements which are not located near main roads can be easily identified.

Map 3: Buffer Radii around Settlements



The various data was analyzed with a buffer tool to indicate how many points of interest lie within a set distance from a Vayots Dzor settlement. Analysis depicts the best current locations for tourism and potential sites for future tourism development. The Points of Interest include heritage sites, eateries, shelters, and festivals. Proximity to festivals and heritage sites should be considered by public and private sector organizations when making resource allocation decisions. Several settlements near heritage sites currently lack adequate facilities (eateries and shelters), which could point to areas for future development.

The Hawth's Tool is a method for counting points within polygons (Beyer, 2004). Hawth's Tool was utilized to analyze how many of the points of interest reside within the varying buffered distances from the settlement centers. These compiled amounts are then linked to the Vayots Dzor settlement list to allow for comparisons and analysis using the Join Field tool, with the settlement's ObjectID being the linking factor.

Analysis and Results

The results section entails the buffer zones of 1, 3, and 5 kilometers as they are most relevant to the to the 55 settlements.

Table 2: Settlement Summations Based upon Buffer Counts

Name of Settlement	Festival Within 1 Km	Shelter Within 1 Km	Heritage Site Within 1 Km	Eatery Within 1 Km	Festival Within 3 Km	Shelter Within 3 Km	Heritage Site Within 3 Km	Eatery Within 3 Km	Festival Within 5 Km	Shelter Within 5 Km	Heritage Site Within 5 Km	Eatery Within 5 Km
Agarakadzor	0	0	0	0	0	0	1	0	0	14	8	9
Aghavnadzor	0	0	0	0	0	0	1	0	0	0	1	0
Aghndjadzor	0	0	0	0	0	0	0	0	0	0	0	0
Akhta	0	0	0	0	1	0	0	0	1	0	0	0
Amaghu	0	0	0	0	0	0	3	1	0	0	4	1
Arates	0	0	1	0	0	1	1	0	0	1	1	0
Areni	1	3	0	1	1	3	3	3	1	3	3	5
Arin	0	0	0	0	0	0	0	0	0	4	1	3
Arpi	0	0	0	0	0	0	0	1	0	1	1	3
Artabuynk	0	0	0	0	0	0	4	0	0	0	6	0
Artavan	0	0	0	0	0	0	0	0	0	0	0	0
Azatek	0	0	0	0	0	0	0	0	0	0	0	0
Bardzruni	0	0	0	0	0	0	0	0	0	0	0	0
Boloraberd	0	0	0	0	0	0	0	0	0	0	1	0
Chiva	0	5	1	1	0	5	1	1	0	5	1	2
Getap	0	0	1	0	0	14	8	9	0	15	9	10
Getikvank	0	0	0	0	0	0	0	0	0	0	0	0
Gladzor	0	1	0	0	0	14	7	9	0	16	11	9
Gndevaz	0	0	1	0	0	0	1	0	0	0	2	0
Gnishik	0	0	1	0	0	0	1	0	0	0	1	0
Goghtanik	0	0	0	0	0	1	0	0	0	1	2	0
Gomq	1	0	0	0	1	0	0	0	1	0	0	1
Herher	0	0	1	0	0	0	1	0	0	0	3	0
Hermon	0	1	0	0	0	1	2	0	0	1	2	0
Horbategh	0	0	0	0	0	0	2	0	0	0	6	0
Hors	0	0	0	0	0	0	0	0	0	0	0	0
Jermuk	1	13	3	4	1	14	4	5	1	14	4	5
Kalasar	0	0	0	0	0	1	2	0	0	1	3	0
Kapuyt	0	0	0	0	1	0	0	0	1	0	0	1
Karaglukh	0	0	0	0	0	0	0	0	0	0	0	0

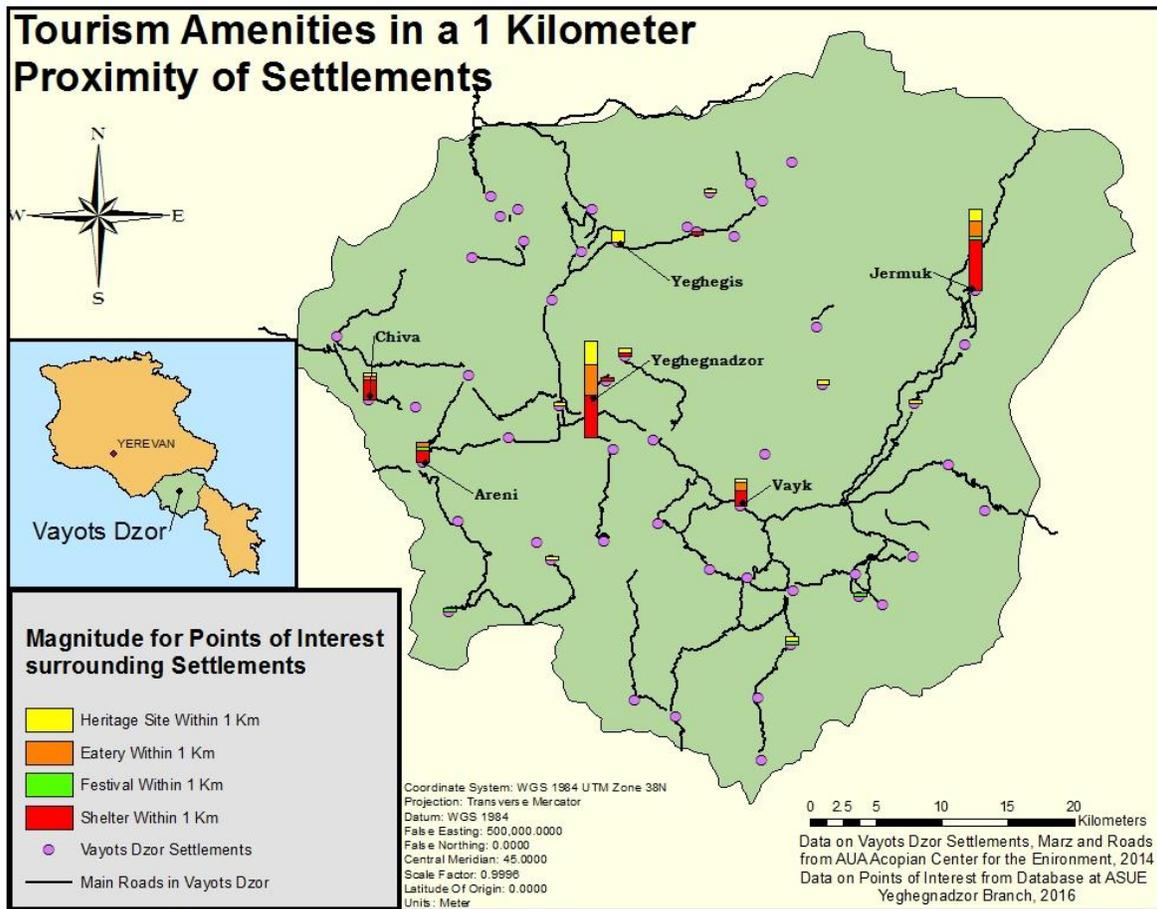
Name of Settlement	Festival Within 1 Km	Shelter Within 1 Km	Heritage Site Within 1 Km	Eatery Within 1 Km	Festival Within 3 Km	Shelter Within 3 Km	Heritage Site Within 3 Km	Eatery Within 3 Km	Festival Within 5 Km	Shelter Within 5 Km	Heritage Site Within 5 Km	Eatery Within 5 Km
Karmrashen	0	0	0	0	0	0	0	0	0	0	2	0
Kechut	0	0	0	0	0	0	1	0	1	13	4	4
Khachik	1	0	0	0	1	0	0	0	1	0	0	0
Khndzorut	0	0	0	0	0	0	0	0	0	0	0	0
Malishka	0	0	0	0	0	0	0	0	0	0	3	0
Martiros	1	0	1	0	1	0	1	0	1	0	1	1
Mozrov	0	0	0	0	0	0	1	0	0	0	2	1
Nor Znaberd	0	0	0	0	0	0	0	0	0	0	0	0
Por	0	0	0	0	0	0	0	0	0	0	0	0
Rind	0	0	0	0	0	0	1	1	1	8	2	6
Salli	0	0	0	0	0	0	0	0	0	0	1	0
Saravan	0	0	0	0	0	0	0	0	0	0	0	0
Sers	0	0	0	0	0	0	0	0	1	0	1	0
Sevazhayr	0	0	0	0	0	0	0	0	0	0	1	0
Shatin	0	0	0	0	0	0	0	0	0	0	1	0
Taratumb	0	0	0	0	0	0	0	0	0	0	0	0
Ughedzor	0	0	0	0	0	0	0	0	0	0	0	0
Vardahovit	0	0	0	0	0	0	0	0	0	0	1	0
Vayk	0	4	1	2	0	4	1	2	0	4	2	3
Vernashen	0	1	1	0	0	2	1	0	0	13	9	8
Yeghegis	0	0	3	0	0	0	5	0	0	0	8	0
Yeghegnadzor	0	11	6	8	0	15	9	9	0	16	10	9
Yelpin	0	0	0	0	0	0	0	0	0	0	0	0
Zaritap	0	0	0	0	0	0	0	0	1	0	1	1
Zedea	0	0	0	0	0	0	0	0	0	0	1	0

The results from Table 2 show the distribution of points of interest in Vayots Dzor. The highlighted boxes indicate the value represented in the top 10% of the field. The top 10% designate the highest values with relation to all other figures in the compiled subject column. Marking values thusly makes the data more accessible and trends begin to emerge. Yeghegnadzor and Jermuk consistently rate in the top 10% for Points of Interest values, no matter the distance. On the other hand, Vayk and Chiva initially rate in the top 10% but then fall away, which reflects their isolation relative to other settlements. Conversely, the settlements of Getap, Glazdor and Vernashen improve in their respective share of the top 10% as the distance increases. These increases appear to correlate to village centers that lie on the periphery of areas high in points of interest.

Maps 4, 5, and 6 display the number of Points of Interest around settlements via stacked bar graphs. A stacked bar graph represents the magnitude of fields in a particular area, in this case the number of points of interest corresponding to a buffer. A taller stacked bar graph indicates more points of interest in the area. The red portion of the bar graph indicates shelters, yellow are heritage sites, green correspond to festivals, and orange to eateries. The bar graphs allow for easy comparisons between various settlements.

Map 4 renders Points of Interest that lie within a one kilometer radius of a settlement center. The settlements of Chiva, Areni, Yeghegnadzor, Vayk, and Jermuk show the greatest abundance of shelters and eateries, based upon this stipulation. All of these, with the exception of Jermuk, are located on the North-South highway that connects the rest of the country to Syunik marz and the southern border. The other settlement of interest is Yeghegis, located in the north of Vayots Dzor. The Yeghegis buffer zone features a large concentration of heritage sites, compared to the rest of the marz. Only Yeghegnadzor possesses more heritage sites within 1 kilometer. Despite its rich cultural offerings, Yeghegis lacks the other basic needs for tourism, perhaps designating it as a prime site for development in the future.

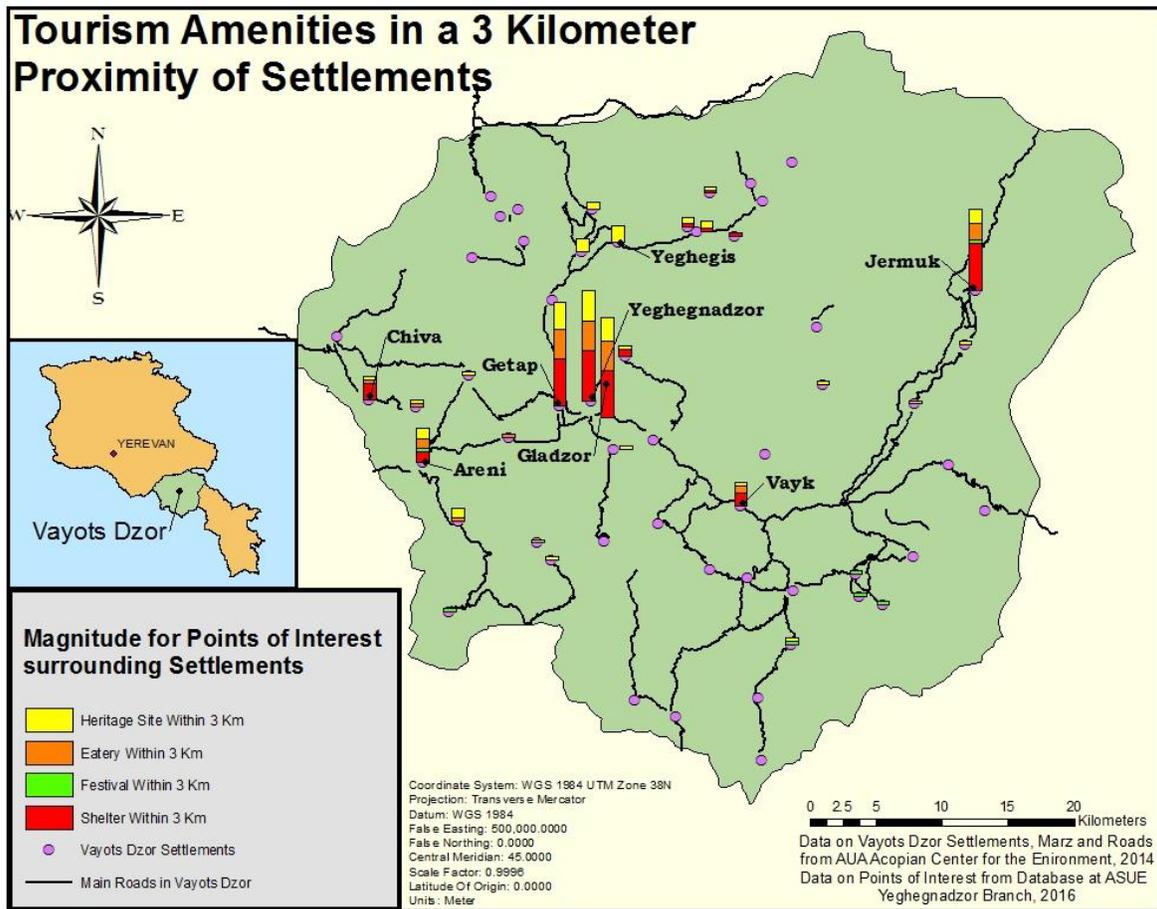
Map 4: 1 Kilometer Buffer Graphs



The bar graphs of Map 5 reflect Points of Interest that are within three kilometers of a settlement center. The bar graphs of the central region, consisting of Yeghegnadzor, Getap, and Gladzor, all show significant growth from the previous map, though some of this can be attributed to overlapping buffer zones. These three settlements illustrate the level of tourism development present around the Marz center of Yeghegnadzor.

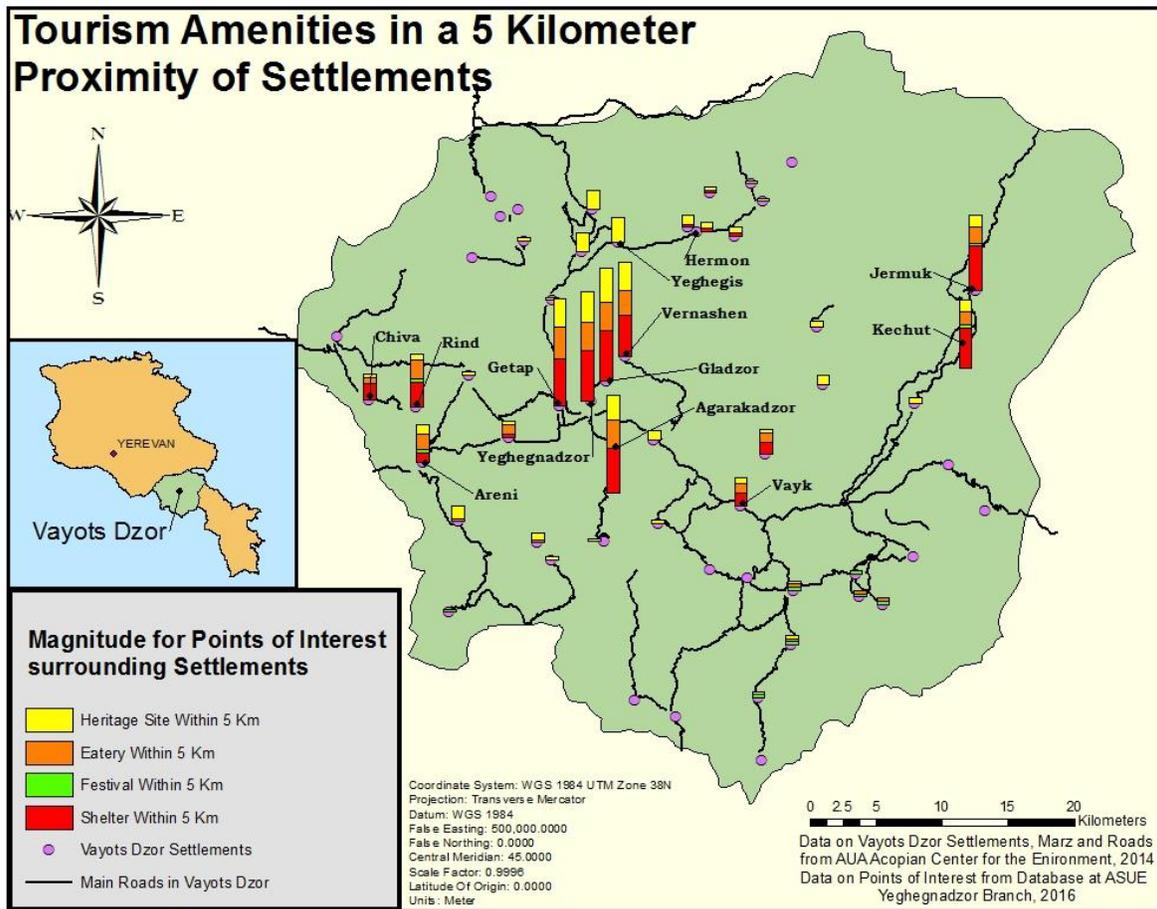
The bar graphs for Vayk, Chiva, Areni, and Jermuk show little change, which is a reflection of these settlements' relative isolation. Areni, which is a major wine producing center, increased Points of Interest, which would indicate a surrounding area rich in Points of Interest. North of Yeghegnadzor, a cluster of cultural and heritage settlements, headlined by Yeghegis, is beginning to emerge. The lack of tourist amenities is apparent from the map.

Map 5: 3 Kilometer Buffer Graphs



Map 6 illustrates that the central region exhibits great overlap, as does the area around Jermuk. Neither of these regions show further growth in terms of additional sites, only increases in the amount of overlapping territory. Central region expands to encompass Agarakadzor, as it is close to Yeghegnadzor. The only area that shows growth from Map 4 to Map 5 is the north, with an emphasis on heritage sites. Yeghegis and the surrounding region are clearly rich in heritage sites, but lack other tourism necessities. The area around Chiva and Areni is overlapped by the settlement of Rind, which contains no Points of Interest but is situated in-between the two towns.

Map 6: 5 Kilometer Buffer Graphs



Conclusion

The central region of the marz, around the settlements of Yeghegnadzor, Gladzor, Vernashen, and Getap, display the largest number of shelters and eateries. There remains modest overlap between these four cities, but the data indicates that there is a solid infrastructure in place for hosting tourists. In the northeast, Jermuk and Kechut feature festivals, shelters, eateries, and heritage sites, marking this area as tourist-ready as well. A large number of shelters and eateries are situated near the major roads of the region, which is to be expected. However, the wide dispersal of these establishments does not always correspond to needs of nearby settlements.

The northern region demonstrates the most promise for future development of tourism in Vayots Dzor. Yeghegis leads the settlements in this area due to its proximity to culture and heritage sites. However, these sites require the additions of shelters and eateries in order to cater to tourists, especially large groups. The construction of eateries and shelters around areas rich in heritage sites could lead to an increase in tourism in the region.

The lack of shelters and eateries around three of the five festival sites is concerning, as well. The settlements of Khackik, Martinos, and Gomq appear to offer no accommodations for

out-of-town tourists. While it is possible to arrange bus trips or other means of transportation from better equipped centers, the settlements hosting the festivals do not receive maximum return on their investment when tourists bus in, then bus out on the same day. In order for rural communities to reap the full benefits of hosting festivals, they should consider expanding the range of amenities offered.

In the short term, there is a solid foundation for tourism development in the areas around Yeghegnadzor and Jermuk. These areas offer the requisite shelters, eateries, and infrastructure to accommodate tourists. Longer term, Yeghegis valley offers a wealth of cultural and heritage sites, which have the potential to draw increased tourism if amenities and infrastructure are improved.

Limitations of this study include that actual database composition. The lists from which the data was gathered are not comprehensive in nature and could be buttressed by future information with regards to tourism. Other limitations include topography and terrain, which can lead to winding roads and longer-than-expected travel times, even within the 3- and 5-km buffer zones.

Future studies should look into the effectiveness of current marketing techniques on tourism, as well as the future of eco- and agri-tourism in the region. An analysis of the road network would also prove useful to future studies concerning time to various Points of Interest and understanding seasonal accessibility to sites. Another area for exploration would be how inter-municipal cooperation could lead to tourism development.

Works Cited:

- Al-ramadan, B., & Aina, Y. (2004). GIS Applications in Optimum Site Selection for Tourist Sites : Texas State as a Case Study. Retrieved from [http://faculty.kfupm.edu.sa/crp/bramadan/crp514/readings/GIS Applications in Optimum Site Selection for Tourist Sites - Final Version.pdf](http://faculty.kfupm.edu.sa/crp/bramadan/crp514/readings/GIS%20Applications%20in%20Optimum%20Site%20Selection%20for%20Tourist%20Sites%20-%20Final%20Version.pdf)
- American University Armenia. (2014). AUA Acopian Center for the Environment GIS Data. Retrieved from <http://ace.aua.am/aua-acopian-center-for-the-environment-gis-data/>
- Beyer, H. L. (2004). Hawth's Analysis Tools for ArcGIS. Retrieved from <http://www.spatial ecology.com/htools/download.php>
- Black Sea-Silk Road Corridor. (2016). Armenia: Black Sea-Silk Road Corridor. Retrieved from <http://hy.blackseasilkroad.com/en/#>
- Booking.am. (2016). Vayots Dzor Properties. Retrieved from http://www.booking.com/searchresults.html?aid=337603;sid=eb61dde0848bbd835c75f86db1b066d7;dcid=4;class_interval=1;dest_id=11;dest_type=country;dtdisc=0;group_adults=2;group_children=0;hlrd=0;hyb_red=0;inac=0;label_click=undef;nha_red=0;no_rooms=1;offset=0
- Bukenya, J. O. (2012). APPLICATION OF GIS IN ECOTOURISM DEVELOPMENT DECISIONS : Evidence from the Pearl of Africa James Obadiah Bukenya, (Mcdm), 1–30.
- Dondo, C., Bhunu, S. T., & Rivett, U. (2002). Gis in Tourism - a Zimbabwean Perspective Abstract : *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 44, 197–200.
- Ferraro, N. (2016). Vayots Dzor Points Of Interest. Yeghegnadzor: Armenian State University of Economics.
- Ghamgosar, M., & Haghyghy, M. (2011). Multicriteria decision making based on analytical hierarchy process (AHP) in GIS for tourism. *Middle-East Journal of ...*, 10(4), 501–507. Retrieved from [http://www.idosi.org/mejsr/mejsr10\(4\)11/14.pdf](http://www.idosi.org/mejsr/mejsr10(4)11/14.pdf)
- Kushwaha, A., Chatterjee, D., & Mandal, P. (2011). Potentials of Gis In Heritage & Tourism. *Geospatial World Forum*. Retrieved from <http://geospatialworldforum.org/2011/proceeding/pdf/Avantika.pdf>
- Poulicos, P., & Yianna, F. (2010). Gis Contribution for the Evaluation and Planning of Tourism : a Sustainable Tourism. *Sites The Journal Of 20Th Century Contemporary French Studies, n Proceedi*.
- Syunik-Development NGO. (2016). Visit Vayots Dzor. Retrieved from <http://visitvayotsdzor.weebly.com/>
- The World Bank Group. (2014). World Development Indicators: Travel and Tourism. Retrieved from <http://wdi.worldbank.org/table/6.14>
- The World Bank Group. (2016). International tourism, number of arrivals. Retrieved from <http://data.worldbank.org/indicator/ST.INT.ARVL>

United Nations World Tourism Organization. (2016). International tourist arrivals up 4% reach a record 1.2 billion in 2015. Retrieved from <http://media.unwto.org/press-release/2016-01-18/international-tourist-arrivals-4-reach-record-12-billion-2015>