

# Philanthropy in the Western Balkans: A Network Analysis Report on Giving in the Region

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## Abstract

Cross-country philanthropy research is problematic because of cultural, economic and political differences. The paper proposes an alternative approach of cross-country comparison by looking at the networks formed by donors and beneficiaries. Data on giving from local sources in Serbia, Croatia, Bosnia and Herzegovina, Albania, Macedonia, Kosovo and Montenegro gathered from media sources in the period between 2015 and 2019 was used to construct philanthropy networks. The analysis revealed unique features of each country's philanthropy ecosystem: Croatia's network is centralized and Serbia's distributed. Montenegro's network seems to be the most stable, while Albania's network is the most unstable and Kosovo's the most fractured. Network analysis can provide a unique macro perspective on a philanthropy landscape but also provide us with the micro-level knowledge, helping us ascertain positions of specific actors in the network. Growing data availability means that we could employ similar analysis more widely in the future.

## Keywords

Nonprofit; Donations; SNA; Yugoslavia; Cross-country

## Introduction

Assessing philanthropy in most countries is difficult and problematic. There are many factors that make it so. Lack of official data and government statistics across the globe makes us rely on polling to get some data on giving. Even when we do get data through polls or other means, and we account for a necessary country-specific forms of giving (Radovanovic 2018), we are still left with different giving ecosystem challenges which make a reliable and clear-cut cross-country comparisons next to impossible. Therefore, much of the philanthropy data has a necessary *qualitative crutch*, which has proven useful, but there is still a great need for the hard and reliable data. The wider public yearns for a general shorthand measure in form of single number, econometric type measure. Having one number or an index which boils down the entire philanthropy context of a country could never tell the entire story, even if the data behind it were 100% accurate. Giving just looks different in societies with different traditions, religions, political, social and economic makeup (Bekkers 2016). This is certainly true globally, but even if we were to zoom in on one part of the globe, such as the Balkans, we would discover differences and country specific idiosyncrasies of their respective philanthropy ecosystems.

In this paper we use a novel data driven approach, based on graphs and network analysis, to shed some light on the philanthropy circumstance in 7 countries of the Western Balkans. The data used in this paper doesn't rely on surveys or government statistics but is collected by a philanthropy support organization that operates in all the 7 countries called Catalyst Balkans. They record locally sourced donations instances that appear in media and curate the GivingBalkans database where all such donations that appear in the newspapers, broadcast and internet media are recorded. This recorded philanthropy data represents only the visible philanthropy and doesn't cover all those instances of giving that aren't publicized. This approach gives us much more detail and reliability as donations can be verified. The major advantage of tracking philanthropy in this way is that the coding is done by the professional analysts who code and classify instances of giving from media, while in surveys self-reporting is ubiquitous and leaves a lot of room for bias and wrong classification. Where surveys are based on samples, recorded philanthropy data-set employed in this paper is more similar to census data-set, since it encompasses every single instance of giving that appears in media.

The detailed census type data-set enables us to look at more than just averages and estimates. It enables us to actually explore the connections between entities—donors and beneficiaries. To look into these connections (and the wider network they form) we use social network analysis tools and way of thinking. At the macro level this enables us to truly see the entire philanthropy ecosystem of a country if not in a single number, then in a single image.

### **The Western Balkans context and the importance of locally sourced philanthropy**

All seven countries examined in this paper are post-socialist, middle-income countries with a lot of similarities. All except Albania were once part of Yugoslavia, and four of them (Montenegro, Bosnia and Herzegovina, Croatia, and Serbia) even share the same language. Macedonian, also a South Slavic language differs slightly. Kosovo and Albania differ in this regard from the rest of the countries of the Western Balkans, but nonetheless have many things in common. Especially, Kosovo, which used to be part of Yugoslavia, and wasn't isolated like Albania was during the Hoxha regime. Former Yugoslavia had its own flavor of communism and was relatively open compared to the other former communist countries.

The reliance on the state to take care of everything is a hallmark of post-socialist countries (Grødeland 2006; Wiepking and Handy 2015). The vast majority of respondents to a recent survey in Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia chose the state as the most responsible for the common good (Trag Foundation 2019). The same survey by Trag Foundation (2019) showed that the people in all five countries distrust that money will be used for right purposes as a second major barrier to donating for common good, right after lack of money/means. In this environment nonprofits do not tend to rely on locally sourced philanthropy, which enlarges the clout of foreign donors. Big foreign donors are the main funder of the nonprofit sector in the region, making the sector accountable primarily to them and not citizens (Puljek-Shank 2018). This makes public image of the CSOs in the region even worse, considering that they are not held in high regard. There are other side effects as well. Big foreign donors' interventions can

skew the needs of the philanthropy market, and in that way stunt the development of the sector (Daly 2011). Big foreign donors tend to work with big established organizations, casting a big shadow over smaller local organizations, sucking up the activist human resources. Having CSOs rely on those donors drives competition in the sector, reducing their readiness to share expertise and form coalitions around shared causes (Wunsch 2015). All countries in the Balkans have a problem with dependence on big foreign donors, but Bosnia and Herzegovina, as a country that was devastated the most during the Yugoslav wars, perhaps stands out in this dependence because of aid they received during and after the wars (Selimović 2011). While on the one hand we have the big foreign donors, on the other we have governments as the important donors in the region. The government financing of the nonprofit sector can be a good thing, but it can have the same distortion effect on the philanthropy market pushing local philanthropy away to other fields that are receiving less support from the government (Sokolowski 2013). Recent appearance of GONGOs (government-organized non-governmental organization) (Meyer et al. 2019), also negatively impacts the nonprofit sector. This all means that the way forward with development of nonprofit sector hinges on bolstering and harnessing local, homegrown resources (Mikuš 2015). Do these resources include diaspora? Certainly, as part of the homegrown resources, these donors are much more connected to the recipients than the regular foreign donors, and it's seen as a strong potential that could help economic and social development in their countries of origin (Flanigan 2017). Diaspora is an important resource to be tapped especially in the Western Balkans context, with a large diaspora.

Shedding light on locally sourced philanthropy in the Western Balkans represents not only an interesting research topic but also serves a very practical purpose. As foreign donors are pulling away from the region healthy philanthropy ecosystem that yet needs to be developed is of paramount importance for the future of the nonprofits and the democracy in the region.

### **Research Questions**

While the importance of social networks is being increasingly recognized (Castillo et al. 2014; Herzog and Yang 2018; Hustinx et al. 2013; Ostrander 2007; Saxton and Wang 2014; Xu and Saxton 2019), at least at the level of individuals, the lack of data prevented larger scale studies. This paper, however, looks at the macro level. It employs a novel method of philanthropy analysis, one based on networks, which is made possible when the transactional data between entities are available. We investigate what we can glean, not from a handful of particular connections, but from the overarching interconnected structure of the entire network formed by the donors, beneficiaries and intermediaries in each of the countries of the region. The study uses network analysis concepts like graph density, centralization, assortativity to look at each country's local philanthropic network. Using these techniques we try to answer the main research question of this paper: a) How do the topologies of philanthropic networks of the 7 countries of the Western Balkans differ?; b) Which network analysis metrics can be used to differentiate the countries?; c) What are the advantages and disadvantages of network analysis approach over the conventional metrics?

### **Data and methodology**

#### **Data**

The scope of this study is defined by the availability of the data. The data comes from the GivingBalkans philanthropy database that tracks philanthropy from seven countries of the Western Balkans: Serbia, Croatia, Bosnia and Herzegovina, Albania, Macedonia, Kosovo and Montenegro (Catalyst Balkans 2019b). They track only locally sourced philanthropy. This includes the foreign companies that operate in the countries and each country's diaspora. Foreign donations aren't tracked by the database. The reason for this is not that the foreign donors aren't important; on the contrary. Often local philanthropy is overshadowed by the donations coming from the big foreign donors that can have the distorting effect on the entire ecosystem. They, as external influence, do not represent a reliable and sustainable source of philanthropy the nonprofits from the countries of Western Balkans can rely, or should rely on. For these reason curators of the GivingBalkans do not include the data from foreign donors, with diaspora being an exception as it can be regarded as a local resource.

The data are collected from print, broadcast and electronic media—coded and classified in the database and then verified. (Figure 1). The database contains recorded donations from press clipping and therefore the data can be regarded as representing the visible philanthropy. Although, Catalyst Balkans, the regional philanthropy support organization who curates the database, verifies the data collected from media by

directly contacting donors and beneficiaries the data-set is not perfect nor complete. For example, there are many instances where a donor wishes to stay anonymous, or where the donated sum was never disclosed to media and neither party wants to verify it. In-kind donations are also tracked, with the estimated worth of donations being recorded in the database. The database contains data from 2015 to 2019. It has more than 34000 donation instances between more than 11000 unique entities.

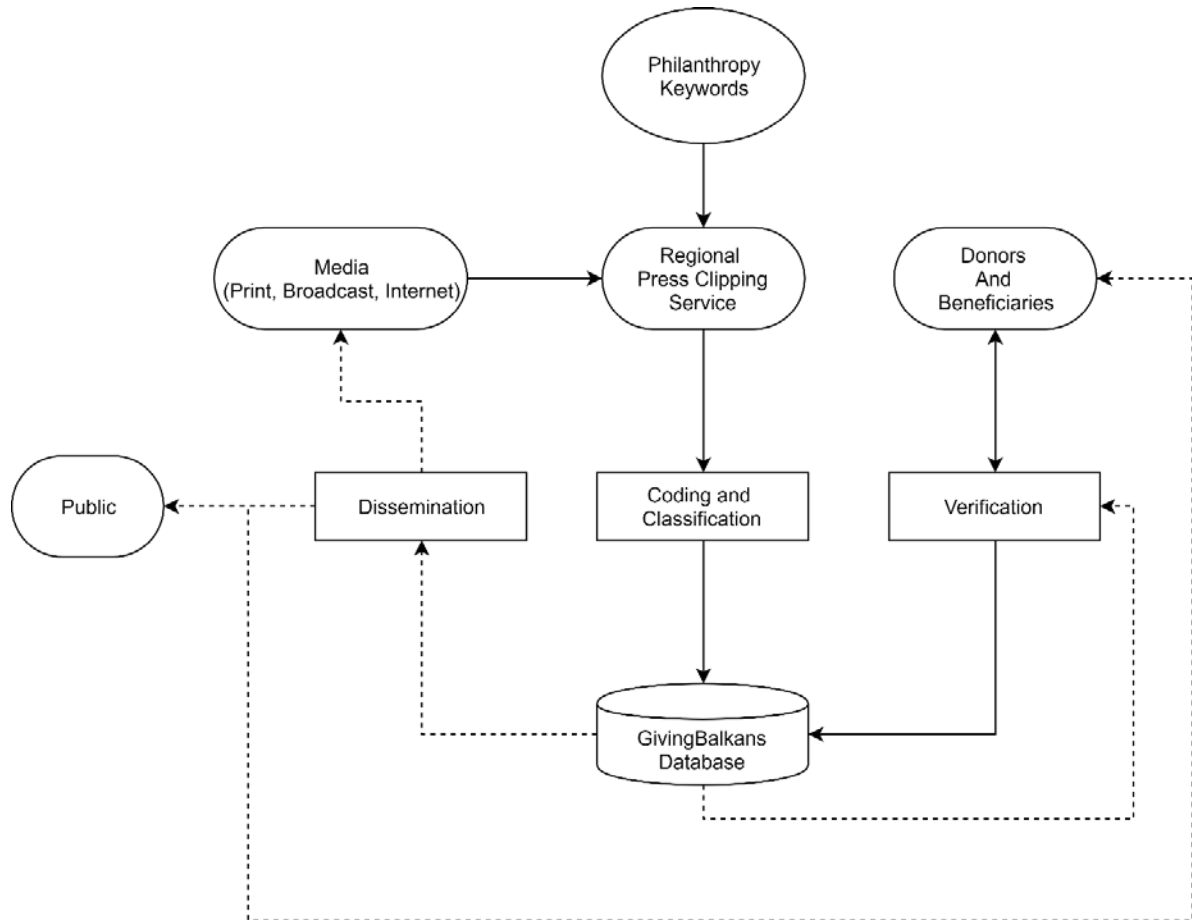


Fig. 1 The process of data collection for GivingBalkans database curated by Catalyst Balkans

### Graph Abstraction

The raw data from the database needs to be abstracted, i.e. transformed into a graph. This can be done in many ways depending on the quality of the data and on what we want to investigate. In the graphs constructed in this paper the entities from the data-set are represented by vertices (nodes). The edges that connect those vertices represent donation instances. The donations where only one party is known (usually beneficiary when the donor was anonymous) were excluded from the abstraction. There are three types of vertices: donors, beneficiaries and intermediates. In this graph donors can't donate to other donors, and beneficiaries can only receive donations, while intermediaries can both give and receive money. This makes for a complex direct graph, which would in fact be bipartite (Jackson 2008) if there weren't intermediary organizations. This basic structure is bolstered with additional data attached to vertices and edges. Attributes that were added to vertices include: a) beneficiary type (individuals/families, institutions, local/national governments, nonprofits and other) for beneficiaries; b) geographical region of each vertex (actually a district of NUTS3 classification), except for the donors from the diaspora who lack this attribute, c) sum of all the donations donor has given, beneficiary has received or intermediary has given and received. When it comes to edges, they have been weighted by the amount associated with the donation they represent.

The data-set has a time dimension as well (accurate to a date) which was omitted in the graph abstraction. We are interested in the general philanthropy landscape of the region and individual countries, and not year-to-year transversal comparisons we are used to. Although, it would be interesting to see how the networks evolved continuously through time, that kind of analysis is beyond the scope of this paper.

## Metrics

There are many metrics that can be computed for purposes of network analysis, however for them to be meaningful the type of network that was abstracted must be kept in mind. Many metrics can only be computed for undirected networks and in such cases the described graph was transformed to undirected graph. All the computed metrics with their definitions are given in Table I. There are three types of metrics that were computed. Descriptive metrics which are relatively straightforward, metrics of centralization – an overall graph tendency to centralize by degree (Diestel 2006) and betweenness (Brandes 2001; Freeman 1977), and those by which we explore homophily in form of degree assortativity coefficient and nominal assortativity coefficients (Newman 2002, 2003).

Table I Network metrics defined in the context of philanthropy network. The formal names of the network metrics used is presented, along with a suggested common name

Network metric	Common name	Definition
Vertex count	Donor and beneficiaries	Number of actors that make up the philanthropy ecosystem: donors, beneficiaries and intermediaries.
Edge count	Donor-beneficiary relationships	Number of interactions between the actors in the philanthropy ecosystem.
Edge density	Relationships density	Proportion of the number of donor-beneficiary relationships and the number of possible donor-beneficiary relationships. (range: 0,1)
Leaves percentage	End points	Percentage of donors or beneficiaries that have a relationship with only one other beneficiary or donor among all donors and beneficiaries. There may be one or repeated donations in this relationship. (range: 0%, 100%)
Isolated percentage	Donors and beneficiaries disconnected from the most important part of the ecosystem	Percentage of donors or beneficiaries that aren't connected to the biggest structure in the network. (range: 0%, 100%)
Degree centralization	Inequality in number of relationships	A measure of how centralized the network is based on each vertex's degree centrality, which is calculated as a proportion of total number of vertex's relationships and number of possible relationships. (range: 0,1)
Betweenness centralization	Inequality in importance to the network structure	A measure of how centralized the network is based on each vertex's betweenness centrality, calculated for a single vertex as number of shortest paths for each two pairs of vertices that go through that vertex. The vertex with the highest betweenness is the most crucial to the topology of a network, i.e. its removal would result in most other vertices to become disconnected. High betweenness centralization means that the network structure is dependent on few vertices with very high betweenness. (0,1)
Assortativity by degree	Preference for relationships with those with similar number of relationships	A measure of homophily, a tendency for donors with many relationships to donate to beneficiaries who have a relationship with many different donors. It is calculated as the Pearson correlation coefficient of number of relationships between pairs of connected vertices. (range: -1,1)

Assortativity by region	Preference for relationships with those from the same district	Tendency that donors from one geographic region of the country to donate to beneficiaries from the same region of the country. Highest value of 1 would indicate that donations occur only within regions, and the lowest value that donors never donate within their own regions. (range: -1,1)
Associativity by sum	Preference for relationships with those with similar sum of money they gave or received.	Tendency that rich donors (in terms of money they donate) donate to rich beneficiaries (segmented by quartiles). For this metrics vertices isolated from the biggest component (range: -1,1)

### Visualizations

One of the great aspects of network analysis is the ability to visualize graphs and to intuitively comprehend them. However, there is a problem when visualizing big networks and retaining the ability to see distinct features. For the visualization representing the entire network force directed, distributed recursive layout was used (Martin et al. 2008). For visualizing individual graphs of each country the Fruchterman–Reingold algorithm was used (Fruchterman and Reingold 1991).

### Code and reproducibility

The data-set used in this paper and all the code used to generate graphs, compute metrics and create visualizations is available in the supplementary materials (<https://osf.io/sa72d>). R programming language (Ihaka and Gentleman 1996), and igraph package (Csardi and Nepusz 2006) were used for network analysis.

### Results

What can thinking-in-networks bring to the table when it comes to analysis of philanthropy in the region? The immediate boon of the approach is apparent when we visualize the abstracted data. Network constructed from the available data, using abstraction described in the methodology appears naturally broken up countries (Figure 2). The algorithm for positioning the vertices is country agnostic, i.e. country attribute wasn't used to group the vertices. Yet the positioning of vertices shows that all countries have separate philanthropy ecosystems. However, there is still some interconnectedness between those discrete ecosystems. Another thing that is immediately apparent is that there is a high number of leaves – vertices that are connected only one other vertex. Some of these are in fact isolated components, 1:1 donor-beneficiary dyads - one-off donations recorded between a donor and beneficiary who never interact (philanthropically) with other entities. In visualizations of big networks, it's sometimes hard to discern individual vertices, so the what appears to be a single dot might in fact be a small cluster. The giant components (the biggest structure made up of connected vertices) of each country differ in size and complexity, however what's interesting is that Serbia has two apparent big components. They are connected between themselves and are not strictly discreet components, but are interesting nonetheless. Serbia's *smaller giant component* is positioned between Croatia and Bosnia and Herzegovina. This isn't surprising considering that there are big Serb minorities in both Bosnia and Herzegovina and Croatia. There is also a considerable Serb minority in Kosovo, but those interactions aren't not as pronounced on the Figure 2. They are present in a form of blue circle dotted around Serbia's giant component, but not close to Kosovo's giant component from which they are isolated, i.e. beneficiaries from Kosovo who receive donations from Serbia, are disconnected from the rest of the Kosovo's network. Visualization, especially a low resolution one looking at the all 7 ecosystems like Figure 2, can only take us so far and is there to merely guide our intuitions. For the highest resolution look, we must look into metrics.

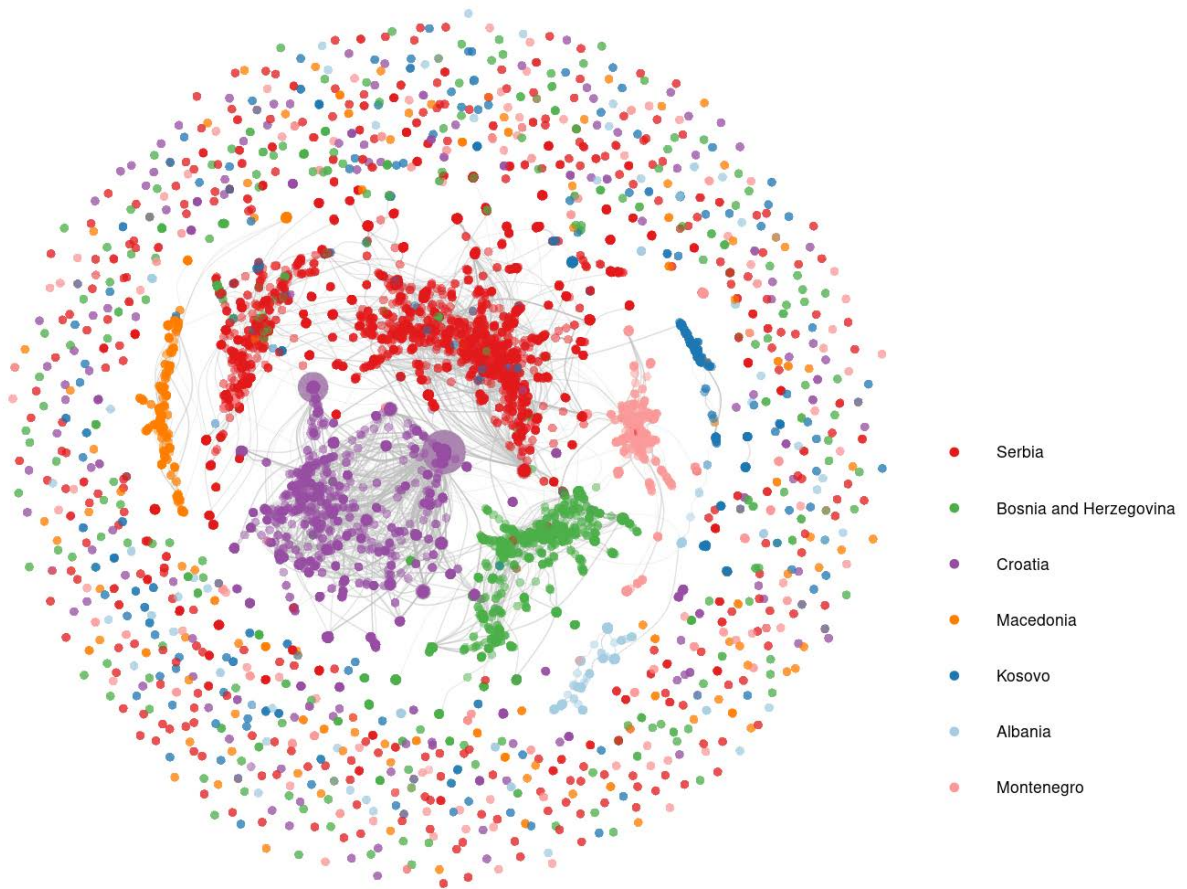


Fig. 2 The entire Western Balkans philanthropy network with colored vertices by country

Metrics computed for each country (as well as for the entire network) show that there are big differences not only in the size of each country's network (which is to be expected), but also in their structure (Table II). Edge density is lowest in Serbia and highest in Albania and Kosovo. Albania and Kosovo also have the highest percentage of leaves, which together with higher density means that those donors and beneficiaries that have more than 1 connection must be well connected with others. The percentage of leaves appears to be a good metric of how well the network is structured. The worst-case scenario for a network would be to have 100% of leaves, not forming any component with more than 2 vertices. In that scenario every beneficiary would have only one donor to relay on. The opposite scenario, a network with 0 leaves, would mean that each beneficiary could have at least 2 donors to relay on (and vice versa). On this continuum, less leaves makes for a more vibrant network. It's interesting to see that this same pattern exists in both Kosovo and Albania, and the sizes of their respective networks differ (Kosovo's network is almost 2.5 times bigger). This is reflected in the centralization of networks. Albania's and Kosovo's networks are very centralized compared to others especially when it comes to betweenness centralization. This shows that these networks are structurally weaker, i.e. that removal of few vertices that are structurally very important would disconnect a lot of other vertices. Percentage of vertices that are not connected to the main component is important in diagnosing a fractured network. Kosovo has the most fractured network, much more so than Albania (with the second highest disconnected percentage).

Table II Graph metrics for individual countries

Country	Western Balkans	Serbia	Croatia	Bosnia and Herzegovina	Montenegro	Kosovo	Macedonia	Albania
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Vertices	12996	4418	3634	2060	1171	822	640	338
Edges	16691	5787	5376	2311	1450	734	645	312
Edge density	0.0004	0.0012	0.0021	0.0022	0.0041	0.0043	0.0063	0.0123
Leaves (%)	71.71	70.71	70.91	75.05	66.18	79.08	74.06	81.66
Disconnected (%)	23.95	23.60	11.58	28.15	30.31	68.61	38.90	40.82
Degree centralization	0.0423	0.0227	0.1512	0.0658	0.0242	0.0513	0.0407	0.0731
Betweenness Centralization	<0.0001	0.0002	0.0004	0.00009	0.00002	0.00012	0.00001	0.00006
Assortativity by degree	-0.0766	-0.0970	-0.2314	-0.1866	-0.1210	-0.2428	-0.1987	-0.2934
Assortativity by region	0.8276	0.3224	0.3328	0.4880	0.4116	0.2109	0.4239	0.0562
Assortativity by sum	0.0283	0.1241	-0.0728	0.0779	0.0722	0.0056	0.0452	0.0505

Croatia's network has a very high degree centralization as its defining feature. Croatia also has much higher edge density than Serbia, which is counteractive. You would expect for a heavily centralized network to have lower edge density, since vertices tend to be connected with big hubs and not among each other. The main culprit for this feature of Croatia's network is a single big donor - the national power company (Hrvatska elektroprivreda), which has touched over 1100 (around 20%) of other entities with its philanthropy in Croatia. This kind of donor just doesn't exist in other countries (Bosnia and Herzegovina's highest degree donor has 273 and Serbia's 203 connections). If we would to remove this huge outlier from Croatia's network, to see how that would affect the network, we would discover that Croatia's degree centralization drops down significantly. However, it would still have the highest centralization in the region (at around 0.0915), which indicates that this is not just a single disturbance, but its defining feature. This indicates robustness to outliers of the approach.

Serbia has the biggest philanthropy network mainly because of its largest population size. If we were to look at the network size on per capita basis Serbia's network would be right in the middle, but here we're interested in properties of the network and not metrics such as donations per capita. Serbia has a much more decentralized network compared to Croatia but also compared to other countries. A more distributed network, means a more stable network. Montenegro's network is also distributed, which together with high edge density makes for a healthy philanthropy ecosystem.

Of the three tests of assortativity only the one based on geographical criteria showed a moderate level of assortativity. This kind of homophily is present in all countries except in Albania. Bosnia and Herzegovina has the highest regional assortativity. Kosovo has somewhat low regional assortativity, but not to the degree of Albania. The same measure for the entire region (where geographical assortativity was measured by the country attribute) showed a very high level of assortativity which is visible in the Figure 2 - this is a testament to the fact that the ecosystems are indeed discrete.



When it comes to degree assortativity national level networks have a negative degree assortativity, i.e. donors who give to many beneficiaries tend to give to beneficiaries who receive fewer donations (and vice versa). This is a universal feature across the networks, but its most pronounced in the more centralized networks – Croatia, and Albania. We cannot say that all networks are degree disassortative, since some of those are close to 0 (especially Serbia). This power dis-balance can be interpreted as somewhat healthy, because the reverse would be indicative of a cartel-like closed system. Together with absence of total amount assortativity, we can regard this as good news. Lack of total amount assortativity means that the ecosystems are generally democratized and that a small beneficiary can get a donation from a big donor and vice versa.

## **Discussion**

### **How do philanthropy networks compare?**

Philanthropy networks generated in this study share some of the same properties of other anthropogenic networks. The major one is sparseness. Real life networks are as a rule sparse, for example Facebook friendships density is about 0.12 and with offline friendships it's 0.36 (Hampton et al. 2012). The networks described in this paper are much sparser than that. While sparsity varies from county to county there seems to be a tendency for smaller networks to be denser. This can be a good thing, but also a bad thing in cases where there is high centralization. The country with highest degree centralization is Croatia, compared to Serbia it has a smaller, denser and (donor) centralized network (Appendix A). Centralization which represents a structural weakness in these kinds of networks may contribute to a general problem of lack of interconnectedness among the nonprofits in Croatia (Bezovan and Zrinscak 2007). Explanation for Serbia's more distributed network might lay in its higher reliance on informal community actions (Pavičić et al. 2017), which might be picked up by the media and therefore reflected on the data used in the analysis. Negative degree assortativity, i.e. disassortativity reflects the results of degree centralization, it means that big donors attract small beneficiaries (and vice versa), and it's apparent in Croatia, while Serbia's network isn't degree disassortative. Albania has the highest percentage of leaves which indicates the low level of philanthropy development in this country, corresponding with what we already know from conventional analyses (Catalyst Balkans and Partners Albania 2017; Indiana University Lilly Family School of Philanthropy 2018). This means that there is also a great potential to affect future growth of the philanthropy ecosystem, by not only growing it but also increasing the density of the network. Kosovo, with its fractured philanthropy ecosystem, could also benefit from further integration and development.

Geographical (regional) assortativity exists in all countries, but especially in Bosnia and Herzegovina which reflects the current political situation well (Belgioioso et al. 2018). Regional assortativity exists despite the economic and demographic centralization within the capital cities prevalent in the region. This would mean that many big donors are in the capital city and perform philanthropy thought the country, but the opposite is also true – big cities attract a lot of philanthropy too, which is certainly the case with Belgrade (Catalyst Balkans 2019a). Geographical assortativity might also be driven by the fact that the beneficiaries whose mission encompasses wider geographical area tend to get larger funds from fewer sources (von Schnurbein and Fritz 2017), usually from the big foreign donors, which leaves only beneficiaries of locally sourced philanthropy for us to see. Assortativity by total amount of money (given or received), just doesn't exist in any of countries of the region. This kind of lack of discrimination in the local philanthropy ecosystems is juxtaposed by the influence of big foreign donors, who tend to work only with established organizations that have higher administrative capacity.

Interesting distinct feature of Serbia are its two connected-giant-components. Figure 2 includes cross-country donations (i.e. donations from Serbia to other countries of the region and vice versa). However, the figure in the Appendix A, doesn't include the cross-country donations, only donations from donors in Serbia to beneficiaries in Serbia, and yet another giant component is visible. This component exists in Figure 2 as well but it's not as visible in a visualization of a much larger network. That second (or third) giant component consists of individual donors and individual beneficiaries and requires further investigation.

Montenegro's network exhibits two very desirable features, it is distributed, has high edge density and fewest leaves. This goes hand in hand with the fact that Montenegro has the highest Philanthropy Environment Index among the countries of the Western Balkans (Indiana University Lilly Family School of Philanthropy 2018).

### **What about the metrics?**

Almost all of the metrics that we looked at differentiate countries in some way. It isn't obvious that metrics that describe the size of the network such as a *number of vertices* and connections between them (edges) is telling, considering them in relation to the population size might be, though.

*Edge density* isn't a useful metric by itself. It helps us with analysis only in conjunction with other metrics. One potentially interesting approach would be to calculate this metric for subnetworks based on some criteria and comparing those subnetworks, as there might be some assortativity here which isn't obvious at the overview level. In other words, since edge density is a ratio of number of connections and a number of possible connections, there might be some vertices which would never connect with each other because of their assortativity based on some criteria – geography is one, purpose might be another.

*Percentage of leaves* and *percentage of disconnected vertices* in a network are important in three ways. They tell us much about the ecosystems, but also about the methodology used and finally it raises questions about the data itself. Ideally, we would want to see a philanthropy ecosystem with as few leaves as disconnected vertices as possible and these indicators can be used to diagnose problems within an ecosystem. That is if we can trust the data. Countries with the highest percentage of leaves and disconnected vertices are Albania and Kosovo. Does indicate poor media coverage of philanthropy or an undeveloped philanthropy ecosystem? Probably both, but to which degree it is uncertain.

*Centralization* metrics show us an important feature of the networks. This indicator too can be used to diagnose networks. Centralized networks are vulnerable and ideally, we would want to see a distributed network where few actors do not dominate the entire network. Concept of centralization can help us determine which actors are most important in the network in different ways. Betweenness can help us identify a vertex whose remove would disconnect the most other vertices and calculate how centralized a network is viewed this way. Networks with high betweenness centralization are vulnerable. In this study, all countries have networks with very low betweenness centralization, which is a consequence of a high percentage of disconnected vertices. Using this metric for a cross-country comparison makes little sense. That is not to say that the concept itself is flawed for these kinds of networks. At the micro-level the concept of betweenness can help us to identify weak points, but at a level of measuring centralization of the entire graph on its basis, it is pretty much useless.

*Assortativity* metrics offer a useful way to see what is going on in the ecosystem. The chief question is - which criteria should be used for assortativity metrics? – i.e. about which trait we should pose the question *do birds of a father flock together?* When it comes to degree assortativity, all networks are degree disassortative and to which degree seems to be reflected by centralization. This might not be universal for all philanthropy networks; which might be a trait of locally sourced philanthropy in the Balkans. In this context degree assortativity doesn't tell us much. The same is true about the assortativity based on amount of money. There is no real tendency for big donors and big beneficiaries to connect exclusively, which might be a reflection of data collection methodology. As this indicator is uniform, it gives us little when it comes to cross-country comparison. Geographical assortativity seems to exist in all the countries but not to the same degree.

### **Advantages and disadvantages**

The main advantage of the approach is that it gives us birdseye view of the entire ecosystems. This is especially true since the network can be visualized. Ability to compare networks of different sizes is another. In the analysis there were countries of different population sizes and at a different level of economic development (Croatia's Gross Domestic Product per capita is more than 3 times that of Kosovo). Robustness to outliers is also a big plus of the approach. This is especially important for smaller countries, where even one outlier can skew the numbers in a major way. Metrics examined give answers to questions conventional analysis could never give, and thinking in networks makes us pose question we would never think to ask using conventional analysis. This is true at both macro and micro-level. While this study was focused on the macro level, using this approach to identify important actors in the various philanthropy contexts could provide invaluable information.

The main disadvantage of the approach is that it requires an incredibly detailed data for the network abstraction. This kind of data can only be gathering from media at this point, at least this is the case in the Western Balkans. This carries with itself a lot of problems in its own right. Since it is only visible philanthropy,

it doesn't account for all the philanthropy that's happening and which is not publicized in the media. This is where cultural differences matter, and this must be kept in mind with any approach.

### Conclusion

Comparing philanthropy across different countries is problematic because of cultural, economic and political differences among them. Network analysis using detailed data on giving brings more insight into each country's philanthropy ecosystem, helping us identify potential problems and ultimately enabling us to compare them. The network analysis of the giving in countries the Western Balkans revealed that Croatia has the most centralized, while Serbia has the most distributed philanthropy ecosystem; Montenegro's network is the most developed with the least structural problems, while Albania's seems to be the most vulnerable and Kosovo's has the most potential for improvement. Network analysis also showed some features that all networks share such as and the fact that these ecosystems aren't very interconnected between themselves. The most useful metrics in the analysis turned out to be degree centralization and nominal assortativity metrics, but also percentage of leaves and disconnected vertices in the network. The chief advantage of the network analysis approach is the new perspective it brings to the debate, its robustness to outliers (an important feature when looking into small countries) and potential for extracting very practical knowledge which can be used to affect the ecosystem. One major disadvantage of the approach is that it requires detailed data, which is rarely available. The general trend of increasing data availability and the ability to process it means that there will be more philanthropy data available, and the opportunities to do this kind of analysis in the future.

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### References

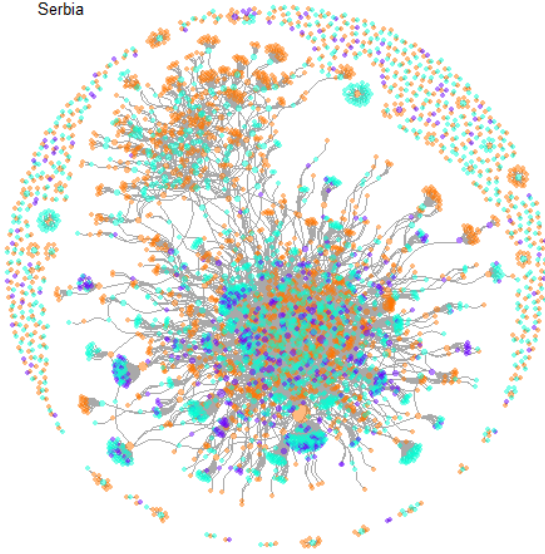
- Bekkers, R. (2016). Regional Differences in Philanthropy. In T. Jung, S. Phillips, & J. Harrow (Eds.), *The Routledge companion to philanthropy* (pp. 124–138). London ; New York: Routledge, Taylor & Francis Group.
- Belgioioso, M., Gleditsch, K. S., & Vidovic, D. (2018). A Tale of Two Governments? Government Responses and Perceived Influence in the 2014 Protests in Bosnia and Herzegovina. *Journal of Global Security Studies*, 3(3), 285–301. doi:10.1093/jogss/ogy008
- Bezovan, G., & Zrinscak, S. (2007). Is Civil Society in Croatia becoming a force for social change? *REVIJA ZA SOCIJALNU POLITIKU*, 14(1), 1–27. doi:10.3935/rsp.v14i1.680
- Brandes, U. (2001). A faster algorithm for betweenness centrality\*. *The Journal of Mathematical Sociology*, 25(2), 163–177. doi:10.1080/0022250X.2001.9990249
- Castillo, M., Petrie, R., & Wardell, C. (2014). Fundraising through online social networks: A field experiment on peer-to-peer solicitation. *Journal of Public Economics*, 114, 29–35. doi:10.1016/j.jpubeco.2014.01.002
- Catalyst Balkans. (2019a). *Giving Serbia 2018 – Annual Report on the State of Philanthropy*. Belgrade. <https://givingbalkans.org/sites/default/files/Giving%20Serbia%202018%20-%20report.pdf>
- Catalyst Balkans. (2019b, May 23). GivingBalkans database on philanthropy in the Western Balkans. <https://givingbalkans.org/>. Accessed 23 May 2019
- Catalyst Balkans, & Partners Albania. (2017). *Annual Report on the State of Philanthropy in Albania - Quick Facts*. Belgrade. <https://givingbalkans.org/sites/default/files/Quick%20Facts%20-%20Albania%20-%202016%20-%20Annual%20Report%20on%20the%20State%20of%20Philanthropy.pdf>
- Csardi, G., & Nepusz, T. (2006). The igraph software package for complex network research. *InterJournal, Complex Systems*, 1695.
- Daly, S. (2011). Philanthropy, the Big Society and Emerging Philanthropic Relationships in the UK. *Public Management Review*, 13(8), 1077–1094. doi:10.1080/14719037.2011.619063
- Diestel, R. (2006). *Graph theory* (3. ed.). Berlin: Springer.
- Flanigan, S. T. (2017). Crowdfunding and Diaspora Philanthropy: An Integration of the Literature and Major Concepts. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 28(2), 492–509. doi:10.1007/s11266-016-9755-7
- Freeman, L. C. (1977). A Set of Measures of Centrality Based on Betweenness. *Sociometry*, 40(1), 35. doi:10.2307/3033543

- Fruchterman, T. M. J., & Reingold, E. M. (1991). Graph drawing by force-directed placement. *Software: Practice and Experience*, 21(11), 1129–1164. doi:10.1002/spe.4380211102
- Grødeland, Å. B. (2006). Public perceptions of non-governmental organisations in Serbia, Bosnia & Herzegovina, and Macedonia. *Communist and Post-Communist Studies*, 39(2), 221–246. doi:10.1016/j.postcomstud.2006.03.002
- Hampton, K. N., Goulet, L. S., Marlow, C., & Rainie, L. (2012). *Why most Facebook users get more than they give*. Pew Research Center's Internet & American Life Project. <http://www.pewinternet.org/2012/02/03/why-most-facebook-users-get-more-than-they-give/>. Accessed 12 January 2016
- Herzog, P. S., & Yang, S. (2018). Social Networks and Charitable Giving: Trusting, Doing, Asking, and Alter Primacy. *Nonprofit and Voluntary Sector Quarterly*, 47(2), 376–394. doi:10.1177/0899764017746021
- Hustinx, L., Van den Bosch, D., & Delcour, C. (2013). Money Makes the World Go Round: Voluntary Associations, Financial Support, and Social Capital in Belgium. *Nonprofit and Voluntary Sector Quarterly*, 42(6), 1176–1196. doi:10.1177/0899764012451662
- Ihaka, R., & Gentleman, R. (1996). R: A Language for Data Analysis and Graphics. *Journal of Computational and Graphical Statistics*, 5(3), 299. doi:10.2307/1390807
- Indiana University Lilly Family School of Philanthropy. (2018). *The Global Philanthropy Environment Index*. Indiana University Lilly Family School of Philanthropy. <http://efc.issueab.org/resources/31188/31188.pdf>
- Jackson, M. O. (2008). *Social and economic networks*. Princeton, NJ: Princeton Univ. Press.
- Martin, S. B., Brown, W. M., Klavans, R., & Boyack, K. W. (2008). DrL: Distributed Recursive (Graph) Layout. *Journal of Graph Algorithms and Applications*.
- Meyer, M., Moder, C., Neumayr, M., & Vandor, P. (2019). Civil Society and Its Institutional Context in CEE. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*. doi:10.1007/s11266-019-00106-7
- Mikuš, M. (2015). Indigenizing “civil society” in Serbia What local fund-raising reveals about class and trust. *Focaal*, 2015(71). doi:10.3167/fcl.2015.710105
- Newman, M. E. J. (2002). Assortative Mixing in Networks. *Physical Review Letters*, 89(20). doi:10.1103/PhysRevLett.89.208701
- Newman, M. E. J. (2003). Mixing patterns in networks. *Physical Review E*, 67(2). doi:10.1103/PhysRevE.67.026126
- Ostrander, S. A. (2007). The Growth of Donor Control: Revisiting the Social Relations of Philanthropy. *Nonprofit and Voluntary Sector Quarterly*, 36(2), 356–372. doi:10.1177/0899764007300386
- Pavičić, J., Alfirević, N., & Bežovan, G. (2017). Community Capacity, Sense of Community and Social Capital: The Sociological and Economic Dimensions in Croatia and Serbia. *Annales : anali za istrske in mediteranske študije = annali di Studi istriani e mediterranee = annals for Istrian and Mediterranean studies. Series historia et sociologia*, (27–3). doi:10.19233/ASHS.2017.39
- Puljek-Shank, R. (2018). Civic Agency in Governance: The Role of Legitimacy with Citizens vs. Donors. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 29(4), 870–883. doi:10.1007/s11266-018-0020-0
- Radovanovic, B. (2018). Individual Giving: Theoretical Discussions and the Evidence from Serbia and Canada Ethical Issues, Contextual and Individual Factors of Giving Time and Money to Organisations and People. doi:10.17863/cam.40215
- Saxton, G. D., & Wang, L. (2014). The Social Network Effect: The Determinants of Giving Through Social Media. *Nonprofit and Voluntary Sector Quarterly*, 43(5), 850–868. doi:10.1177/0899764013485159
- Selimović, I. (2011). A Note from Bosnia and Herzegovina: Leading a Displaced Life. *Human Rights Quarterly*, 33(2), 397–201. doi:10.1353/hrq.2011.0014
- Sokolowski, S. W. (2013). Effects of Government Support of Nonprofit Institutions on Aggregate Private Philanthropy: Evidence from 40 Countries. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 24(2), 359–381. doi:10.1007/s11266-011-9258-5
- Trag Foundation. (2019). *Survey on philanthropy in Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia (Unpublished Raw Data)*. Belgrade: Ipsos Public Affairs.
- von Schnurbein, G., & Fritz, T. M. (2017). Benefits and Drivers of Nonprofit Revenue Concentration. *Nonprofit and Voluntary Sector Quarterly*, 46(5), 922–943. doi:10.1177/0899764017713876
- Wiepking, P., & Handy, F. (Eds.). (2015). *The Palgrave Handbook of Global Philanthropy*. London: Palgrave Macmillan UK. doi:10.1057/9781137341532
- Wunsch, N. (2015). Beyond instrumentalisation: NGO monitoring coalitions in Croatia, Montenegro, and Serbia. *East European Politics*, 31(4), 452–467. doi:10.1080/21599165.2015.1085859

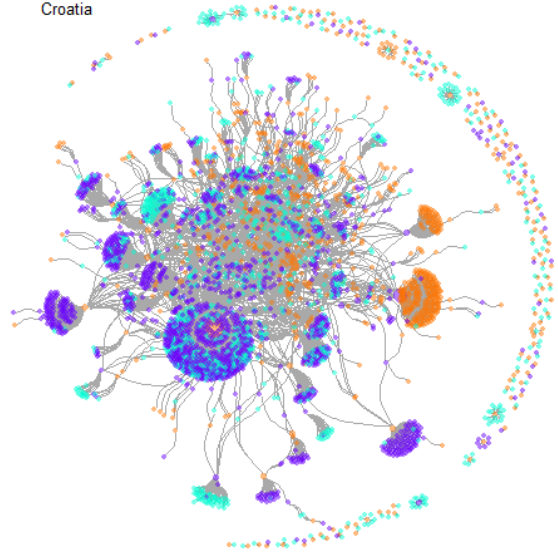
Xu, W. (Wayne), & Saxton, G. D. (2019). Does Stakeholder Engagement Pay Off on Social Media? A Social Capital Perspective. *Nonprofit and Voluntary Sector Quarterly*, 48(1), 28–49. doi:10.1177/0899764018791267

Appendix A. Individual countries' graphs with vertices differentiated in three groups: donors, beneficiaries and nonprofits (a subgroup of beneficiaries)

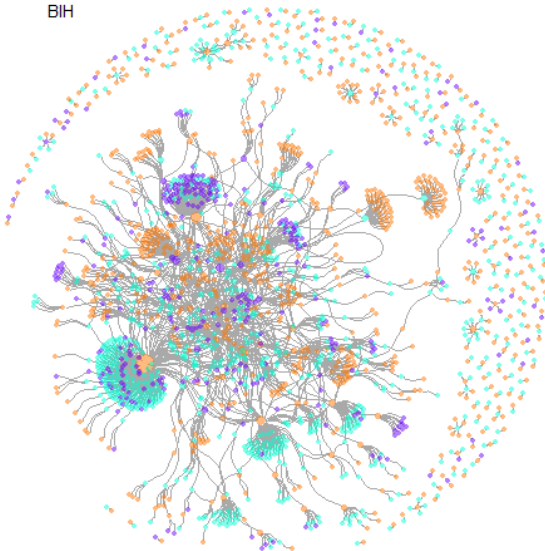
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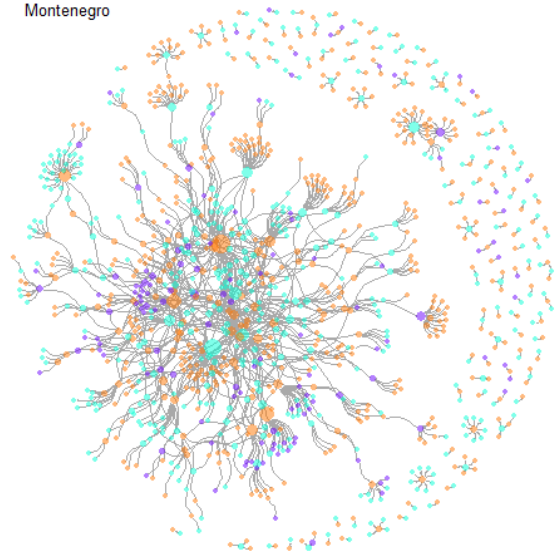
Croatia



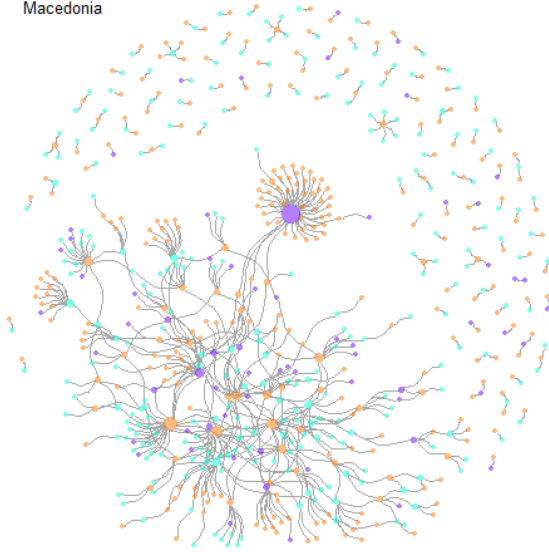
BIH



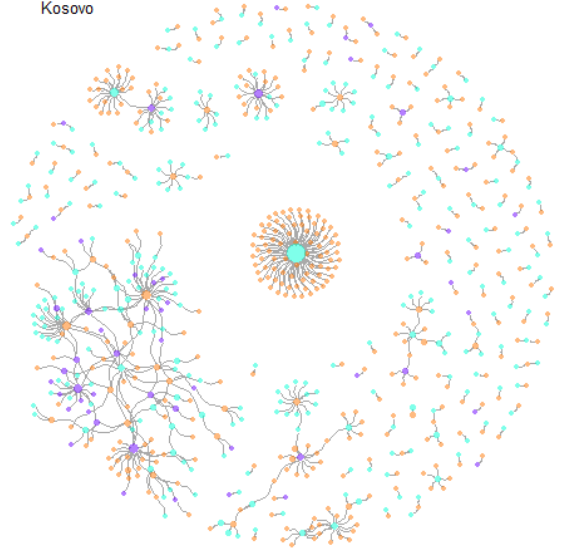
Montenegro



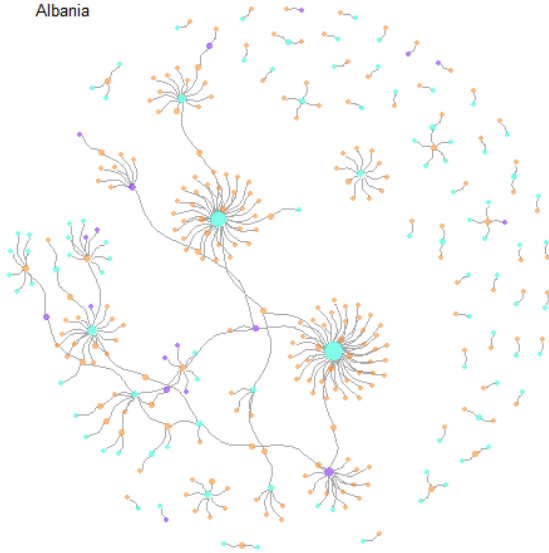
Macedonia



Kosovo



Albania



- Donors
- Beneficiaries
- Nonprofits