

**“A Tale of Twinned Cities”: A Comparative Analysis
to Predict Potential Twinning on the US-Mexico
Border**

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Abstract:

Twinning is an official agreement between two cities separated by an international boundary which share cultural or economic ties. Scholarship on twinning primarily focuses on European cases of cross-border integration. Twinning involves a set of border related policies which aim to reduce the physical impact of the border and integrated communities economically, culturally, and socially. The potential for twinning on the US-Mexico border remains an understudied, yet contested question. Some researchers argue US and Mexican cities developed separately and cannot officially integrate. However, this research is limited, as no data set exists allowing for broader analysis. This paper asks where and under what conditions could official twinned relationships emerge on the US-Mexico border? I build a novel data set of European twinned cities and potential twinned cities on the US-Mexico border. I then determine key characteristics associated with the economic, cultural, and political conditions that are conducive to engaging in official twinned relationships. I then estimate the likelihood of twinned relationships at different locations on the US-Mexico borders.

“The U.S.-Mexican border es una herida abierta where the Third World grates against the first and bleeds. And before a scab forms it hemorrhages again, the lifeblood of two worlds merging to form a third country – a border culture.”

– Gloria E. Anzaldúa, Borderlands/La Frontera: The New Mestiza

Introduction:

Since the adoption of the Treaty of Westphalia, international borders have been integral to a global understanding of sovereignty, allowing states to maintain control over their territory. The Westphalian notion of sovereignty may have reduced conflict, but it clearly separated insiders from outsiders and formed the bases of regional political organization. However, geographical borders, like those established by the Treaty of Westphalia are often ignorant to the social and cultural connections that may exist across physical borders (Rudolph, 2005). As globalization evolves and dominates our global culture, perceptions of borders and sovereignty have shifted, and people are becoming increasingly interconnected across international spaces. This process has not abolished the need for borders, but it has led to their reconfiguration (Deleixhe, 2019). One result of border reconfiguration is the emergence of unique spaces referred to as twinned cities, border twin towns, connected cities, sister cities, or countless other similar terms (Jańczak, 2017). Twinned cities, as they will be referred to in this paper, represent border communities which are connected economically, culturally, and institutionally. Twinned cities exist in a wide variety of contexts throughout Europe, but have only recently become the subject of academic research. Thus, it remains unclear what, if any, unifying or necessary conditions must exist within border communities for them to become formally twinned. The debate surrounding twinned cities also expands beyond Europe as many argue that the potential exists for twinning to occur on the US-Mexico border. Others believe that cities on each side of the US-Mexico border developed separately and thus cannot officially integrate. Regardless, the potential for twinning on the US-Mexico border has not been sufficiently studied and a generalized understanding of the twinning process may reveal insights which could unveil the path to twinning in the American Southwest. Twinning promises an interesting solution to the divisive border policy that has been developed and enforced in the US over the last three decades. Cities which historically had been well integrated along the US-Mexico border, such as El Paso, TX and Ciudad Juarez, Chihuahua or Ambos Nogales in Arizona and Sonora, MX, are not divided by an obtrusive physical border wall and often hours long wait to cross the border. However, is this division irreparable? Twinning involves border related policies which call for the formal integration of border communities in order to reduce the divisive impact of the border and improve economic, social, and cultural connections. If twinning could emerge along the US-Mexico border, it has the potential to dramatically change and improve the way of life for border residents.

This paper develops a deeper understanding of twinning in the European context and ultimately attempts to determine its applicability to the context on the US-Mexico border. I begin by creating a dataset of European border city-pairs, including twinned and non-twinned cities. Utilizing the Collective Efficacy Theory (CET), I identify four key conditions in communities which enable them to achieve a common goal, such as cross-border integration. I begin by operationalizing these variables and creating a coding system that assesses the included independent variables which may lead to twinning. Finally, I will evaluate the potential for twinning on the US-Mexico border based on the presence of relevant characteristics. Through this research, a more complex understanding of twinning and its potential in varied contexts will be developed.

Literature Review:

Borders and their impact

The understanding of the purpose and role of international borders has evolved in the last three decades, however it is clear to most scholars today that borders are far more than simply a geographical line on a map. The study of borders has developed beyond the physical concept to include aspects of psychology and culture. However, for the purpose of this study, a “border” will be understood in a physical sense, as an internationally recognized boundary. Borders are vital in indicating a nation’s sovereignty, as well as for establishing a collective identity. With an increase in globalization, borders are seen by many as divisive and obsolete (Deleixhe, 2019). Although, as the study of borders and borderlands developed, it has been argued that the bordering process impacts daily life far more than the border itself (Newman, 2006). It is unlikely that we will see a borderless world in the near future, but borders have adapted to a changing geopolitical context through a process of re-bordering and de-bordering.

Re-bordering most often refers to the way in which a state places an emphasis on securing its border, through border walls, stringent immigration policies, additional policing, etc. Re-bordering is not only the physical process of emphasizing the geographical marker, but also involves a social process of “othering” or singling out immigrants in order to preserve a national identity (Deleixhe, 2019). Re-bordering has significant effects on the social, cultural, economic, and political relations between border communities. In communities with previously permeable borders, increased security ruptures the rich social connections that had been established and disrupts daily life (Orsini, 2017).

Alternatively, some states, particularly in Europe, engage in de-bordering, a unique process which promotes cross-border integration. The close proximity of cities within borderlands provides the opportunity for residents to interact, often bridging national, ethnic, or linguistic divides, and improving everyday life (Markuszevska, 2016). According to some researchers, borderlands are not established due to a geographical boundary, but are the result of interactions between people within the same space (Brunet-Jailly, 2011). For this reason, an individual’s perception of and connection to the border near which they live, impacts the way the border is understood. Just as borders can be divisive and delineate ‘insiders’ from ‘outsiders’, borders can be designed to invite integration and collaboration. This change in the relationship between border cities, due to altering perception, policy change, or national effort, is referred to as de-bordering. According to many, de-bordering as a formal process occurs principally at the institutional level, where economic and political policies are instituted which incentivize integration. However, the “mental” de-bordering which must follow, is a far more arduous process. Even as local governments decide to integrate, linguistic and cultural barriers may continue to obstruct true integration between citizens. (Markusevska, 2016).

Town twinning

One way that de-bordering manifests itself is through border twinning. Border twinning, although it lacks a broadly agreed upon definition, is often used to refer to a cooperative agreement between cities, towns, or countries in order to promote economic and cultural relations (Joenniemi, 2017). Border twinning results in unique border spaces referred to as twinned cities. Twinned cities, as they are understood in this context, are two towns located on an international border, directly neighboring each other.¹ The goal of twinning is to “create one

¹ It is important to note that occasionally two cities in countries that do not share a border will also enter into “twinning” agreements or become sister cities. While the ultimate goal of this process is also to foster cultural and

joint urban structure and the interests of the locals is to build friendly mutual relationships between the two nations on either side of the border” (Markusewska, 2016, 108). Twinning provides many benefits to border communities including “improving service delivery and problem solving,” “economic and business development,” “promoting tolerance and increasing understanding,” and “promoting community wellbeing” (Handley, 2006).

The official process of border twinning has undeniable roots in Europe. Following World War II, the consensus emerged that international cooperation would be key to preventing future conflicts. For this reason, the EU was established in the 1950’s. By 1985, the Schengen Agreement was adopted, which began to allow citizens of the EU to travel among EU nations without a passport. Currently 26 countries are in the “Schengen area” (European Union). The creation of the EU and the Schengen area paved the way for cross-border integration throughout the continent. Integral to the context of border twinning in Europe is the collective European identity. Given the prevalence of the European Union, many twinned cities in Europe claim to be Euro-cities, “emphasizing their European rather than national identity” (Jańczak, 2018). Pride in a broader, European identity impacts the way in which a twinned city is formed. In the European context, a number of characteristics of twinned cities have been identified, although it has not been determined if any of these characteristics are the cause of twinning, effect of twinning, or necessary for the twinning process at all. Some of these characteristics include, small combined population, proximity to a river, open borders, and institutionalization of cross-border cooperation (Schultz, 2002).

Twinning manifests itself in a variety of ways, from informal connections to formal, institutional agreements and resource sharing (Joenniemi, 2017). Across the literature, two modes of twinning have been identified: a top-down process and a bottom-up process. In the top-down model of twinning, national support is the prime driver of relations across borders. In this scenario, international pressure may be relevant. For example, pressure from the EU to integrate across borders and lift restrictions would constitute a top-down process. The bottom-up process emerges out of local pressure, from local authorities, residents, and non-governmental organizations (Jańczak, 2017). Within these two processes, formal or non-formal twinning can occur. The key attribute of formal twinning is an official agreement between two cities with support from their national government. Alternatively, informal twinning is a term used to describe any border cities which share certain characteristics or are determined to be connected. This form of twinning lacks any agreed upon features and globally, there seems to be a trend shifting towards the importance of concrete agreements for successful twinning (Joenniemi, 2017). For the purposes of this paper, I focus on formal twinning.

The state of twinning on the US-Mexico border

The border between the US and Mexico emerged out of the 1846 Mexican-American war, in which President James K. Polk argued that Mexican troops had attacked Americans north of the Rio-Grande, which was disputed territory between the new nations (US Senate). After Mexican defeat, an official border was drawn in the 1890s, in which Mexico lost nearly one-third of its territory. In many ways, the US-Mexico border can be viewed as a prime example of re-bordering. From the early 1900s onward, the US instituted a series of policies which fortified the newly drawn border. The policies, including the more recent development of a border wall, have reinforced the concept of the “other,” and forced many migrants into violent situations (Longo,

economic collaboration, this relationship is different from twinning as it is defined in this study and will not be discussed further.

2019). Despite the conflict-ridden history of the US-Mexico border, cities on each side of the border remain interconnected culturally and economically (Arreola, 1993; Dear, 2003). However, no formal twinning relationships have emerged on the border. Some argue this is because cities along the southwest border developed separately and thus can never officially merge. According to Nugent (2012), the history of conflict on the US-Mexico border makes border cities unfit for twinning. He additionally argues that inequality between Mexican and US border cities leads to an adversarial relationship and opposite goals. Alternative arguments point to September 11th and the subsequent emphasis on national security as the turning point away from any hope of cross-border collaboration (Kramsch, 2011). Debate also surrounds the importance of economic integration, where some argue that a primarily economic relationship cannot constitute twinning, but others argue that economic integration is a stepping stone in the de-bordering process (Mendoza, 2020). Despite these obstacles, twinning has never been fully considered on the US border, especially in any broad sense. The majority of studies focus on the singular case of Tijuana-San Diego, the largest co-urban space on the US-Mexico border. Additionally, it is not certain that history of conflict prevents the twinning process, as a number of twinned cities in Europe emerged out of conflict.

However, within the literature, two key conclusions have been drawn which seek to explain the path to twinning on the US-Mexico border. First, some academics believe the lack of twinning is primarily due to the lack of federal support for twinning from either the US or Mexican governments. According to Ganster (2016), “explicit support by the national state is an essential ingredient for twinning to occur.” He further argues that although informal coalitions may work towards twinning, their activities have yet to be institutionalized. A second theory argues that these informal coalitions may be an early form of twinning and with the “muddling through” process, institutionalization can occur incrementally. “Muddling through” is a decision-making process in which each new decision builds incrementally off the last, gradually changing the status quo (Peña, 2007). In theory, this process can continue, ultimately resulting in cross-border integration. Nevertheless, it is clear that US-Mexico border cities may be a long way from officially integrating.

Theoretical Framework

One particular challenge in understanding border twinning is navigating the diversity of context in which twinned cities emerge. A consensus on the determinants of twinning has not been clearly specified and twinning is typically studied on a case by case basis. It remains rather unclear what conditions must exist in a community prior to twinning, which enable it to occur. However, convincing evidence points to the value of the bottom up process in de-bordering. This process is led by the community, where community members shape the border “in accordance with their respective values, interests, and needs” (Hatley, 2018). While institutional support would assuredly ease along the twinning process on the US-Mexico border, given the prevalence of the bottom-up process, the current lack of federal support does not preclude the possibility of twinning. However, the question remains -- in the bottom-up process of twinning, what conditions enable a community to advocate for integration? One possible answer is found within the Collective Efficacy Theory (CET), developed by Robert Sampson (2004). CET contains seven aspects of which serve as a “framework for examining the process by which communities engage, negotiate, and change as a response to a negative stimulus,” such as border securitization (Hatley & Mason, 2018, 438). In utilizing CET, one can begin to understand the variables which encourage a community to advocate for and sustain successful twinning.

Based on analysis from Hately (2018), these seven aspects include:

- 1. Existing social and cultural networks:** Networks refers to the composition of a community which allows for increased collaboration. These existing networks have connected community members on each side of the border for generations, through linguistic, religious, ethnic, and cultural similarities. Additionally, migration patterns which have led to informal integration contribute to the establishment of social networks.
- 2. Supportive Institutions:** Supportive institutions promote cross-border integration by reinforcing a strong sense of community. These institutions can exist at any level of government and can refer to non-governmental organizations, such as churches, community centers, universities, or public libraries. Institutions can also provide financial resources or coordinate the sharing of community resources (such as utilities, hospitals, etc.) to promote collaboration.
- 3. Supportive Leadership:** While supportive leadership can influence the actions of institution, leadership refers directly to the actions of community or national leaders which promote cross-border integration.
- 4. A Spatial Dynamic:** The spatial dynamic in cross-border integration refers to the geographical relation between border cities. Close proximity to one other, transportation infrastructure, or bodies of water which separate the cities all impact the “nature of a community’s separation” (Hately, 2018).
- 5. Rapid Change:** Rapid change refers to historical and contemporary changes along the border which may have altered the dynamic between border communities. In the United States, 9/11 is a prime example of such an event, as it had significant effects on US border security policy. Additionally, a conflict laden border will experience many of these changes. Conflict may refer to inter-state conflict between bordering nations, which impacts demarcation or criminal conflict, making the border an unsafe region and impacting border culture. Historical conflict is also important to consider as it impacts the context through which a twinned city may emerge.
- 6. Organizational Capacity:** Organizational capacity is the community’s ability to act on their preferences and to engage in action. Organizational capacity is increased by many of the same characteristics already described above, such as political and linguistic similarity, supportive institutions, and geographical proximity.
- 7. Associated Economic Costs:** Economic costs or benefits associated with changes in border policy may encourage or dissuade community members from advocating for or against cross-border integration.

Through Collective Efficacy, local communities are empowered to counteract securitization, which may increase the possibility of twinning (Hately & Mason, 2018). However ‘community’ is an ambiguous term, which can be understood narrowly or widely. Community can refer to the local or the national (Hately 2018). While this paper focuses on the community in

a local sense, it does not discount the power of national action and thus includes national policy in its analysis as indicative of supportive institutions.

This study focuses on five key aspects of the Collective Efficacy Theory, due to their explanatory power and ability to be incorporated in a quantitative study. The aspects of the CET included in this study are: social and cultural networks, supportive institutions, supportive leadership, spatial dynamics, and economic costs. Operationalizing economic costs proves to quite a challenge due to a lack of data on cross border spending across Europe, especially on a regional level. For this reason, the characteristic has been simplified to capture economic similarity, instead of trying to quantify the costs or benefits associated with twinning. “Rapid Change” may reveal insights unto the context through which the twinned city emerged, however previous research finds this variable to be ineffectual (Hatley & Mason, 2018). Additionally, for the purpose of this study, organizational capacity is viewed as the effect of social and cultural networks, spatial dynamics, and supportive institutions and leaders. For this reason, organizational capacity will not be considered as its own characteristic.

The Collective Efficacy Theory aids in explaining the function of the bottom-up model of twinning. In understanding the bottom-up model, I hypothesize that the official twinning agreement is a dependent variable, while the factors, existing social and cultural networks, supportive institutions and leadership, spatial dynamic, and economic similarity are independent variables which will increase the likelihood that a community may advocate for twinning. When twinning is understood as the dependent variable, it is possible to assess the possibility for twinning to occur along borders where it does not currently exist, such as the US-Mexico border.

Methodology

Defining Twinning

In this study, twinned cities are defined as two cities located within 30 miles of an international border, which have expressed a concerted effort in cross-border integration, carried out through the adoption of a non-symbolic official twinning agreement, the establishment of a joint governing board, or the establishment of a transfrontier region. Still, a nuanced approach is necessary in determining whether city pairs should be considered twins. For example, the specification of a non-symbolic twinning agreement is necessary to ensure that the cities have outlined specific policy goals and objectives, instead of making an empty symbolic gesture. Additionally, the establishment of a transfrontier region qualifies as twinning only in some cases. The transfrontier region is a unique distinction given by the EU and these regions can vary widely in size. Some transfrontier regions span over multiple countries and their purpose is to improve cross border collaboration on a broad scale. However, other transfrontier regions are rather small and cross border efforts are led specifically by the two countries included in this study. In these cases, the establishment of a transfrontier region qualifies as twinning.

In many instances, all three forms of arrangements are made between twinned cities. However, for the purpose of this study, the start of official twinning will be identified as the date of the first agreement made. While aspects such as similar culture, open borders, and linguistic similarity have been identified as characteristics of border cities, it is not clear in the literature that they are necessary conditions for twinning. For this reason, the operational definition in this study avoids including such conditions. By defining twinned cities based solely on proximal location and

formal agreement, cities where the possibility of twinning has not been fully explored, such as cities along the US-Mexico border, will not be excluded from consideration as potential pairs.

Building a Novel Dataset

While the majority of research on twinning utilizes a qualitative approach, typically case studies, a quantitative approach would allow for greater generalization. However, limited data exists on twinned cities and no data set has been established which includes a wide array of cases or compares twinned and non-twinned cases. For this reason, I begin by establishing a dataset of nine twinned city pairs. Each city will be coded separately in order to determine if the conditions considered exist on both sides of the border.

Table 1: Twinned City Pairs Included in Data Set

City Names	International Border
<i>Frankfurt (Oder) and Słubice</i>	Germany/Poland
<i>Komarom and Komarno</i>	Hungary/Slovakia
<i>Haparanda and Tornio</i>	Sweden/Finland
<i>Ruse and Giurgiu</i>	Bulgaria/Romania
<i>Baarle Nassau and Baarle Hertog</i>	Netherlands/Belgium
<i>Kerkrade and Herzogenrath</i>	Germany/Netherlands
<i>Gorizia and Nova Gorica</i>	Italy/Slovenia
<i>Narva and Ivangorod</i>	Estonia/Russia
<i>Valga and Valka</i>	Estonia/Latvia

These cities are considered cross-border conurbations by the Transfrontier Operational Mission (MOT). Additionally, sufficient data and information exist on these cities. Finally, these cities have been cross-referenced with previous research on twinned cities.

Four city pairs that do not currently have an official twinning agreement are also included in this data set. However, cities that are presumed to have no twinning agreement are much smaller and thus easily accessible data is severely limited. Additionally, language barriers prevent accessing local newspapers which may provide greater detail as to the nature of the relationship between the city pairs. Due to these two large barriers, it is difficult to verify that the proposed city pairs *do not* have an official twinning agreement. Regardless, there was a concerted effort to ensure that the included city pairs have no such agreement.

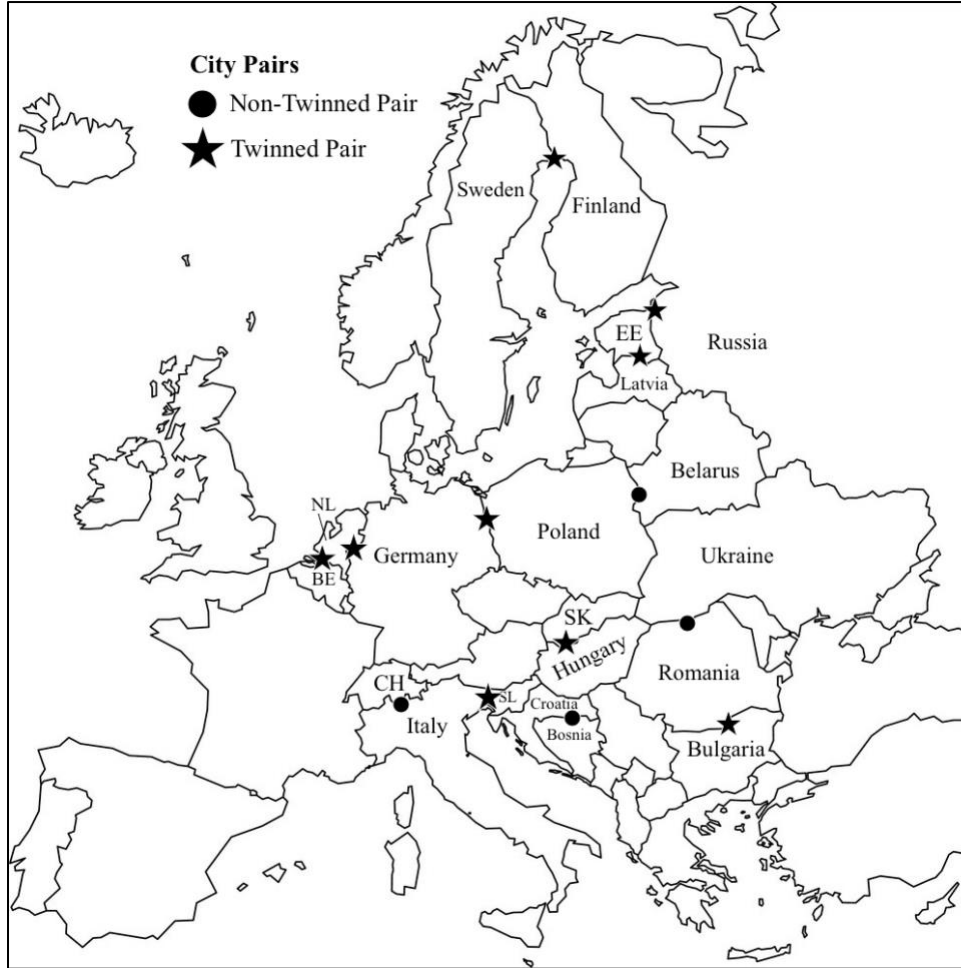
Table 2: Non-Twinned City Pairs included in Data Set

City Names	International Border
<i>Brest and Terespol</i>	Belarus/Poland
<i>Lavena Ponte Tresa and Ponte Tresa</i>	Italy/Switzerland
<i>Slavonski Brod and Brod</i>	Croatia/Bosnia and Herzegovina
<i>Sighetu and Solotvyno</i>	Romania/Ukraine

An attempt was made to include cities from across Europe. Included twinned cities are evenly distributed between Western and Eastern Europe. Currently, all twinned cities are located within the EU, except for Ivangorod, which is located in Russia. However, at the time of twinning, membership in the EU varies across this sample. There is however, a bias towards Eastern

Europe among the included non-twinning cases. Additionally, none of the non-twinning cases are located within an internal EU border. This is not to say that non-twinning cases do not exist within the EU, but it is much harder to verify that those city pairs were not officially twinned.

Figure 1: Distribution of City Pairs Across Europe



Operationalizing the Collective Efficacy Theory

Once the data set has been established, the next challenge is operationalizing the variables in the Collective Efficacy Theory. A coding system was designed which attempts to quantify each included variable: social and cultural networks, supportive institutions and leadership, spatial dynamic, and economic similarity (Appx. 1). Following an extensive literature review, specific characteristics were included in order to measure each of the broader variables of the CET. The goal of the coding process is to understand the pre-conditions to twinning. According to the Collective Efficacy theory, a community with strong social and cultural networks, supportive institutions and leadership, and limited separation (assessed through spatial dynamics) is enabled to promote official twinning through the bottom-up process. For this reason, the city pairs will be coded one to three years before the official twinning agreement took place. Cities with no current twinning agreement will be coded as they exist today. Most characteristics within the three variables are coded as dichotomous variable, where a score of [0] represents the absence of that particular characteristic and a score of [1] represents the presence of the characteristic.

The variable social and cultural network includes four characteristics: language, political culture, religion, and age of the border. Language, political culture, and religion all represent cultural characteristics which may be shared between border communities. Quantifying social networks is much more cumbersome, as data on daily migration or family connection between countries is not gathered, or at least released publicly, by the EU. However, previous research reveals that recently formed borders occur most often between countries with a history of conflict and that collaboration is least likely to occur along borders that emerged out of conflict (Jańczak, 2017). This is likely due to any animosity generated during inter-state conflict which may trickle down into a lack of social networks between communities. Along an older, more established border however, social networks may flourish because any conflict generated over demarcation of the border is not lingering in the recent memory of border residents. For this reason, the age of the border was included as a measure of social networks.

The supportive institutions and leadership variable captures the level of support on the community and national level for twinning. The characteristics included in this variable gauge what steps have been taken to promote community integration on the local level. This variable is broken into three categories; formal arrangements, community organizations, and supportive leadership. "Formal arrangements" is assessed through the presence of formal agreements between each national government related to collaborative border policy, agreements to share resources or public services, the presence of a joint name between the communities, and membership in the EU. Community organizations refers to community spaces which are available to members of both international cities. This is classified through the presence of a public or private university located within the border city, as well as the presence of a community center, public library, or church, that serves both cities. Supportive leadership is more difficult to quantify; however it is important to consider. In this study, supportive leadership is characterized by presidential visits to the border community with the purpose of promoting integration. Local support from mayors and community leaders is also important to consider. Developing direct measures of this local leadership support would require more intensive archival research in local news sources, instead I rely on the presence of a joint governing board and community organizations as indirect evidence that local community leaders are supportive of integration efforts.

The spatial dynamic variable measures the amount of physical separation between the two communities. A community is more likely to engage in integration efforts if it is relatively easy to commute between each side of the border. The spatial dynamic is measured through proximity to a river or body of water, proximity to a significant transit corridor, the presence of border security checkpoints, and migration rates. Migration is included under spatial dynamics instead of social and cultural networks because data on migration is only available at the national level and high rates of migration is more indicative of border security policies than social connections at the local level. The raw number of individuals who migrated from Country A to Country B and vice versa was calculated, followed by calculating what percentage of the population of Country A or Country B was made up by the migrants. For example, in 1997, 110,786 individuals migrated from the Netherlands to Germany. 110,786 makes up 0.69% of the Dutch population.

Finally, economic similarity is measured using regional GDP per capita and regional unemployment rates. Some city pairs are not included in this variable due to a lack of data prior to 2000.

Data Collection

Data for each city pair was collected from a wide array of sources. As previously stated, no dataset currently exists which summarizes the characteristics of current twinned cities. Most data came primarily from case studies on the included city pairs and from governmental agencies. I also thoroughly reviewed websites from each city, including city histories, press releases, and any city documents that were available in English or could be easily translated. Migration data was gathered from the UN² and compared to population data from the World Bank.³ Data on regional GDP and unemployment was gathered from the EU statistics agency, EuroStat⁴.

Scoring City Pairs

After coding each city pair, a score out of ten was assigned to each pair for every variable. First, certain characteristics were dropped entirely due to unreliability or irrelevance, including community organizations, proximity to a river/body of water, and proximity to transit corridor. A numerical value was given for each characteristic and city pairs would earn “points” depending on how many characteristics were coded as a “1.” The assigned value for each characteristic was determined based on relevance according to previous literature and reliability. It is important to note that values should not be compared between characteristics. For example, similar regional GDP is not necessarily 5 times more important than a presidential visit. Each variable is worth a total of ten points, so values were assigned to ensure that a city pair could not earn a maximum of more or less than ten points. Within the Supportive Institutions and Leadership variable and the Spatial Dynamic variable, I employed a weighting system to reflect the reliability and causal power of each characteristic. Within Support Institutions and Leadership, the characteristic for shared name is only worth one point because it is unlikely that sharing a name has any causal relationship with twinning, but it is occasionally cited in the literature as an interesting feature of twinned cities. The presidential visit characteristic is only worth one point instead of two because this data was based on a search of news reports and government press releases, but due to language barriers the likelihood of error when coding this characteristic was higher compared to others in the variable. A similar situation occurs within the spatial dynamic variable. While migration is a good measure of the porosity of a border, the migration data used in this study is at the national level and thus is not the most accurate representation of the security of the border between included city pairs. For this reason, the presence of a border security check point was weighted much higher.

The full scoring system is outlined below.

² https://population.un.org/unmigration/migrantstockbyorigintimeseries_sql.aspx

³ <https://data.worldbank.org/indicator/SP.POP.TOTL>

⁴

https://ec.europa.eu/eurostat/web/main/data/database?p_p_id=NavTreeportletprod_WAR_NavTreeportletprod_INSTANCE_nPqeVbPXRmWQ&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view

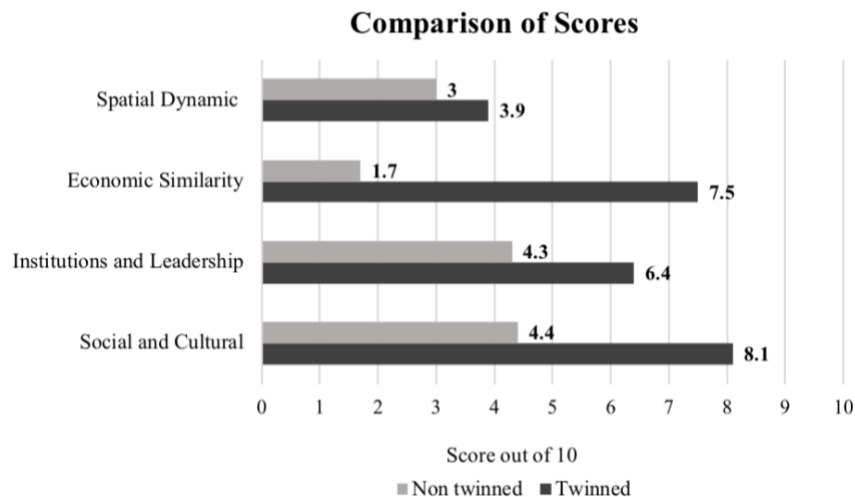
Table 3: Scoring system

Social and Cultural Networks	Assigned Value
Shared Language	2.5 pts if (1)
Similar Political Culture	2.5 pts if (1)
Shared Religion	2.5 pts if (1)
Age of Border (older than 50 years)	2.5 pts if (1)
Supportive Institutions and Leadership	Assigned Value
Formal Arrangement between Nations	2 pts if (1)
EU Membership	2 pts if both cities (1), 1 pts if one city (1)
Shared Resources/Utilities	2 pts if (1)
Shared Name	1 pts if (1)
Border University	2 pts if both cities (1), 1 pts if one city (1)
Presidential Visit	1 pts if (1)
Economic Similarity	Assigned Value
Similar Regional GDP per Capita	5 pts if (1)
Similar Regional Unemployment Rate	5 pts if (1)
Spatial Dynamic	Assigned Value
Migration rate greater than 0.5%	3 pts if (1)
Border Security Check	7 pts if (0)

Results

The average score for each variable was taken and compared between twinned and non-twinned cities. The largest difference between scores is found in the economic similarity variable, in which non-twinned cities scored a 1.7 and twinned cities received a score of 7.5. It is important to note however that this variable included only three non-twinned cases and four twinned cases. The next largest difference is between the scores in the social and cultural variable, followed by institutions and leadership. Finally, the smallest difference is found in the spatial dynamic variable, where non-twinned cases scored a 3 and twinned cases scored a 3.9.

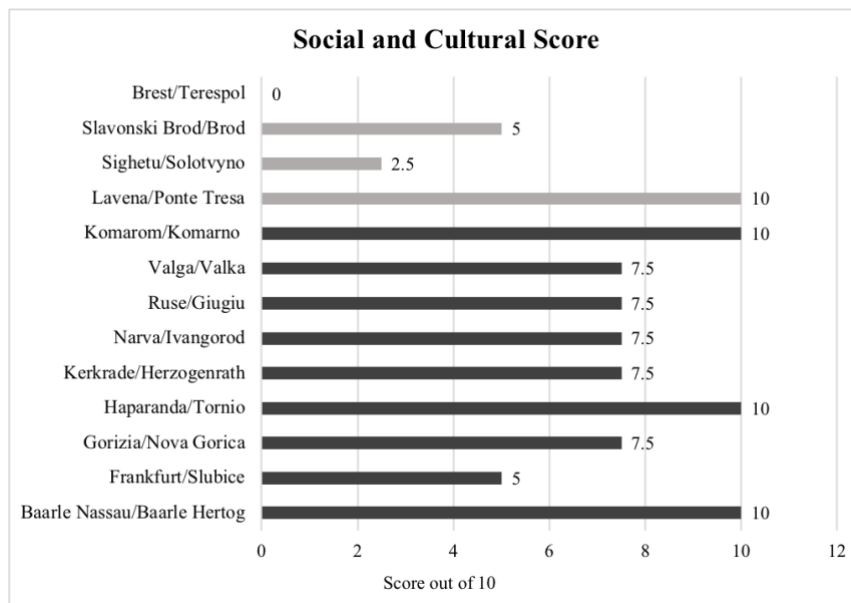
Figure 2: Comparison of variable scores between twinned and non-twinned cities



Social and Cultural Networks

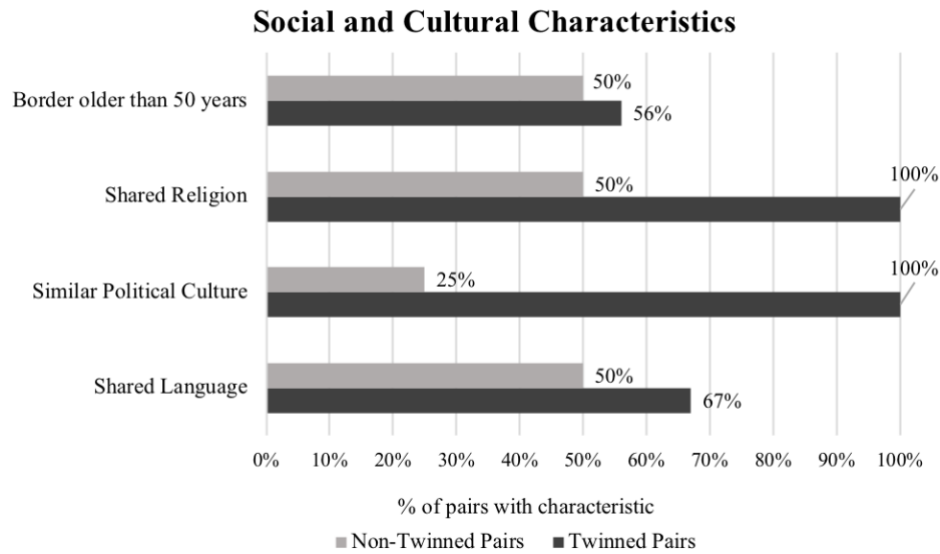
Taking a closer look at the scores for each city pair in the social and cultural variable, a clear trend emerges. Twinned cases generally achieve a much higher score in this category. One outlier however, among non-twinned cases is Lavena Ponte Tresa, Italy and Ponte Tresa, Switzerland, which received a score of ten. While Switzerland is not an EU member, both cities are located in Western Europe and the EU has a number of bilateral agreements with Switzerland. Switzerland is also part of the Schengen area, allowing for the free movement of people along its borders. The lowest scoring twinned case is Frankfurt Oder, Germany and Slubice, Poland. This city pair received a score of zero for similar language and age of border. At the time of their twinning, Poland was not an EU member and the border had only recently been demarcated following the reunification of Germany.

Figure 3: Social and Cultural Scores for each City-Pair



Among each characteristic, the largest difference between twinned and non-twinned cases is whether or not there is a shared religion and similar political culture. Every twinned city pair shared a religion and received the same, or a very similar, scores on political rights and civil liberties from *Freedom House*. Surprisingly, there were a fair number of twinned cases in which the city pairs did not share a language, or demonstrate a strong command of the neighboring language. Finally, roughly half of all twinned and non-twinned cases were located along borders older than 50 years old. Generally, the cases in Eastern Europe were located on the youngest borders, as would be expected. What is interesting however, is that contrary to prior research, these cases still scored very high in the social and cultural variable, despite being located in a “conflict area.”

Figure 4: Percentage of City Pairs with each Social and Cultural Characteristic

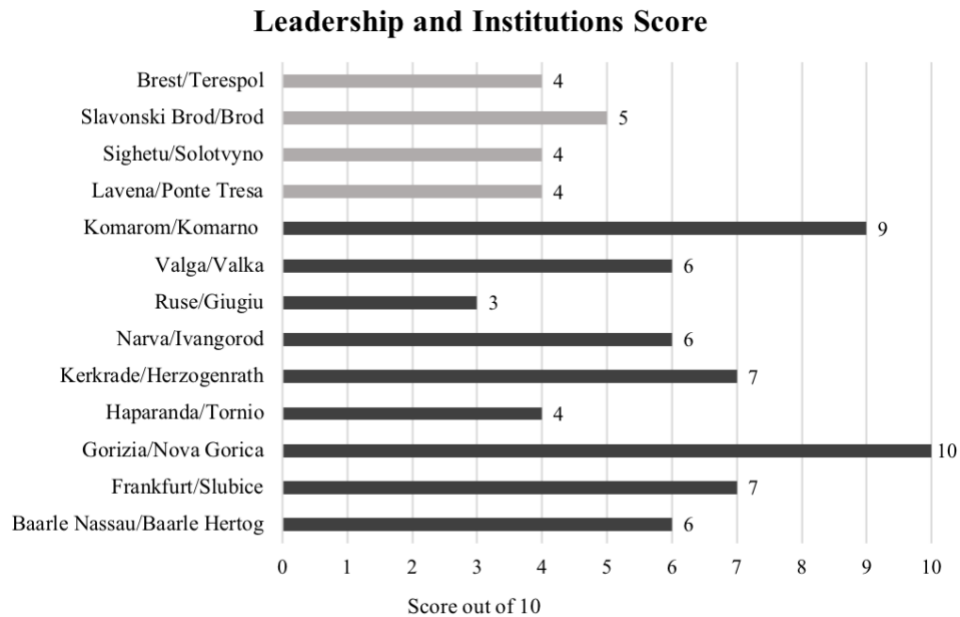


This data reveals that cross-border social connections do not fit a specific standard. Although it would certainly improve social networks, seeing that only two-thirds of twinned cases share a language demonstrates that this characteristic is not necessary for twinning to occur. However, shared religion and political culture may be associated with shared community spaces and political ideology. Nearly all cases in this study had a majority religion of either Catholicism or Orthodoxy, however the significance of this trend is unclear. While there is most likely no causal link between shared religion or a similar political culture with twinning, these characteristics may promote a cultural environment, which is harder to quantify, in which twinning can emerge.

Supportive Institutions and Leadership

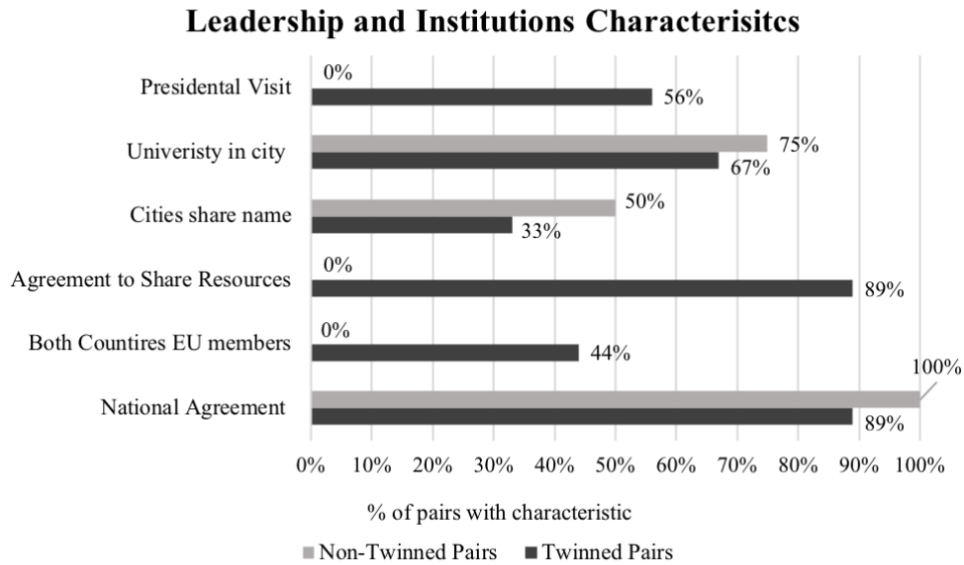
There is less obvious differentiation between twinned and non-twinned cases in the supportive leadership and institutions variable. With two of the lowest scoring twinned pairs, Ruse, Bulgaria and Giurgiu, Romania and Haparanda, Sweden and Tornio, Finland, neither nation was an EU member prior to twinning. Additionally, Ruse and Giurgiu was the only twinned case in which the creation of a transfrontier region was the first national formal agreement between Romania and Bulgaria with relation to border collaboration. For that reason, this city pair earned a score of 0 for “formal arrangements” and thus scored very low. Surprisingly, the highest scoring city pair is Gorizia, Italy and Nova Gorica, Slovenia. After Slovenia joined the EU in 2004, the pair quickly began engaging in other formal agreements, earning them a perfect score.

Figure 5: Supportive Leadership and Institutions Score for each City-Pair



When comparing the percentage of cases with each characteristic, some form of national support and an agreement to share resources on the local level appear to be most vital for twinning to occur. Nearly all of the twinned cases had arranged to shared resources, either a sewage system, public transportation, emergency services, or water, prior to twinning This may be an important and practical first step in building a formal relationship between communities. None of the non-twinned cases were engaged in such an agreement. Additionally, a president or prime minister from one or both of the nations visited the border city to promote collaboration in more than half of the twinned cases, but none of the non-twinned cases. Interestingly, in all of the non-twinned cases, the neighboring nations were engaged in a formal agreement relating to collaborative border policy. In most of these cases, the agreement was a transfrontier region that was either too expansive to constitute local twinning or a transfrontier region that did not include the city pair. This may indicate that even though the nation is actively collaborating with its neighbor, that sense of collaboration does not always trickle down to the local level. The disparity in this characteristic between twinned and non-twinned cities is due to Ruse and Giurgiu, which became twinned due to the creation of a transfrontier region, as discussed previously.

Figure 6: Percentage of City Pairs with each Leadership and Institutions Characteristic



The geographical distribution of EU membership, prior to twinning, is rather varied. Interestingly, the only three city-pairs in which neither city was located in an EU member country are twinned cases. All of the non-twinned cases exist on an external EU border, a border where at least one nation is an EU member country. The only cases in which both countries are EU members are twinned cases.

Figure 7: Geographical Distribution of EU membership

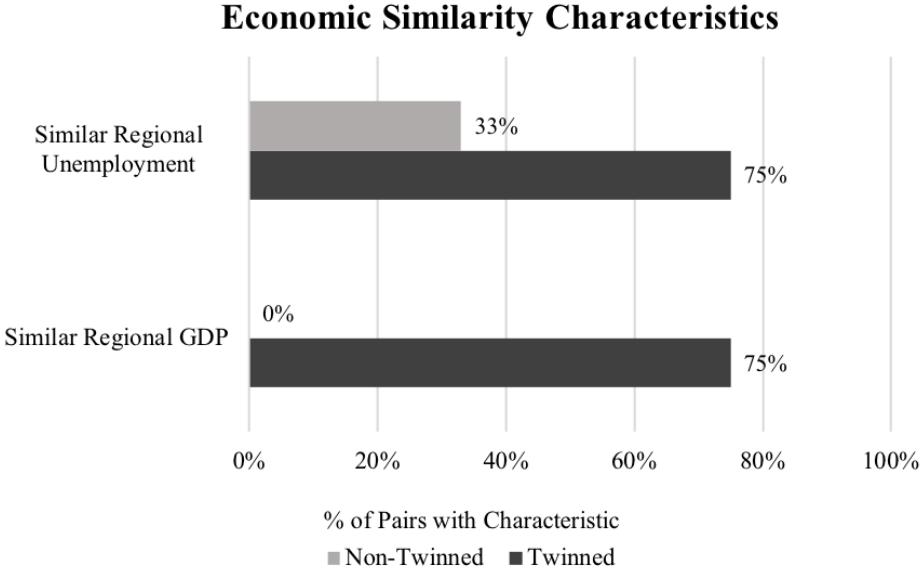


Overall, local agreements to share resources may be the strongest precursor to twinning out of the characteristics studied in this variable. However, it is possible that these local decisions develop into twinning only following national support, either in the form of a presidential visit or with the signing of a national agreement regarding border policy. What is clear however, is that the EU is not fully responsible for twinning, as less than half of twinned cases occurred where both countries nations were EU members. This statistic is a good sign for the possibility of twinning outside of the EU. Although, even outside of the purview of an international organization, such as the EU, it is clear that national governments must put forth some effort in collaborating with their bordering nation prior to twinning, a characteristic which does not currently exist along the US-Mexico border.

Economic Similarity

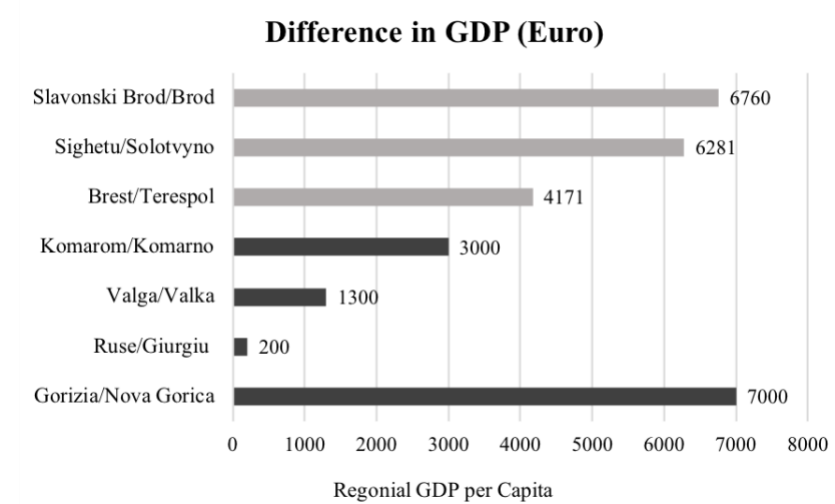
A broad comparison of the economic similarity of twinned and non-twinned cities reveals that on average twinned cities have a much closer GDP and regional unemployment rate compared to non-twinned cities. A threshold of a difference of 3,000 Euro GDP per capita or 4.0% unemployment was determined in order to differentiate city pairs which were deemed similar or not similar. However, it is important to note that this variable included a much smaller data set, which skews these averages. Still, a general trend emerges that should be considered in more detail.

Figure 7: Economic similarity between twinned and non-twinned cities



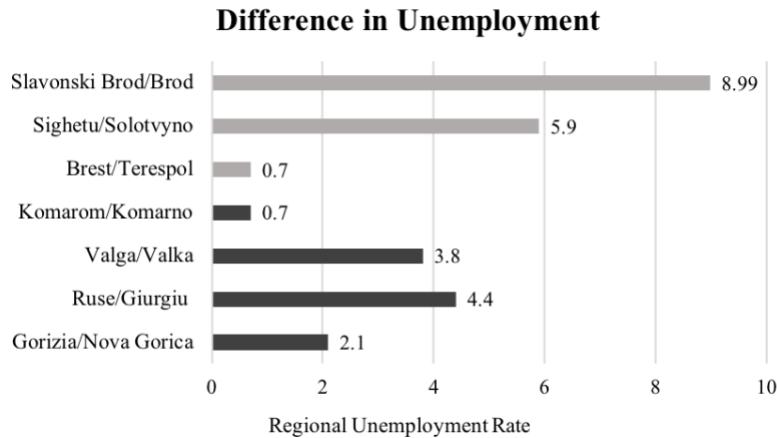
When analyzing difference in GDP between city pairs, a clear outlier emerges. Gorizia, Italy and Nova Gorica, Slovenia have the largest difference in GDP per capita between twinned and non-twinned pairs. This difference could be due to the fact that the NUTS 2 region that Gorizia is a part of in Italy is entirely coastal, which may contribute to regional revenues. Slovenia is entirely shut off from the coast, adding to this disparity. The city pair with the smallest GDP difference is Ruse, Bulgaria and Giurgiu, Romania.

Figure 8: Difference in GDP between twinned and non-twinned city pairs



Interestingly, there is not a clear connection between difference in GDP and differences in unemployment rate. In some cases, these data points move in opposite directions. Gorizia and Nova Gorica have one of the lowest differences in regional unemployment rate, while Ruse and Giurgiu have one of the highest, among twinned pairs. Additionally, among unemployment rates, another clear outlier exists. Brest, Belarus, and Terespol, Poland have one of the lowest differences in unemployment rate along with Komarom, Hungary and Komarno, Slovakia. Brest and Terespol are considered by some scholars as a twinned city, although they do not fit the definition outlined by this project between there is little to no administrative collaboration. However, economic similarities may explain why some consider this city pair to be twinned.

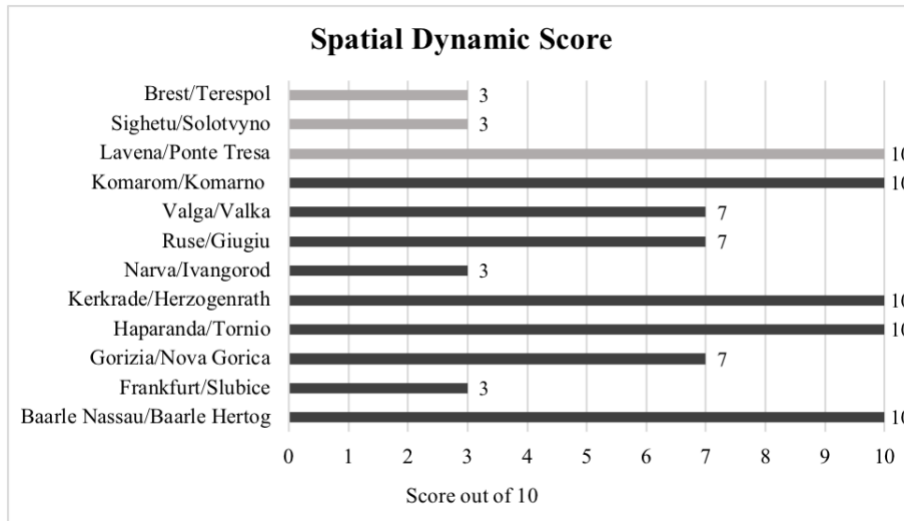
Figure 9: Difference in Unemployment Rate between twinned and non-twinned pairs



Spatial Dynamic

The spatial dynamic score is made up of national level migration data and border security policies. Looking only on the score between twinned and non-twinned cities, there appears to be no general trend. Migration data on Slavonski Brod and Brod was not available, making it difficult to draw many conclusions between twinned and non-twinned cases.

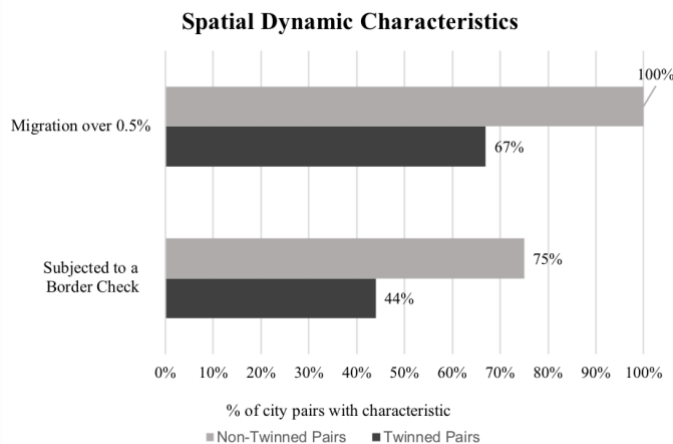
Figure 10: Spatial Dynamic Score for Each City Pair



Looking more specifically at the characteristics included in this variable, all of the non-twinned cases experience one-sided migration which made up more than 0.5% of the country of origin population. Around two-thirds of the twinned cases reached this threshold. Additionally, there is no correlation between city-pairs with no border security check and bordering nations with higher levels of migration. Furthermore, it is important to reemphasize that national rates of migration are not indicative of city-level relationships. For example, the city-pair with the highest level of migration is Narva, Estonia and Ivangorod, Russia. In 2006, nearly 5% of the Estonian population migrated to Russia. However, on the local level, Ivangorod is shrinking in population size and Narva is growing significantly (Higgins, 2017).

All of the non-twinned cases are subjected to a security check with crossing their border, with the exception of Lavena Ponte Tresa, Italy and Ponte Tresa, Switzerland. Switzerland, while not an official member of the EU is a member of the Schengen area, allowing free movement along its international borders with other Schengen area members. While less than half of the twinned pairs have required security checks along their border, four pairs do.

Figure 11: Percentage of City Pairs with each Spatial Dynamic Characteristic



There is an interesting geographical distribution of city pairs that still have border security checkpoints. There is clearly a high correlation between membership in the EU and membership in the Schengen Area. All of the city pairs in Western Europe do not have border checkpoints, while all of the city pairs in Eastern Europe do, regardless of whether they are twinned or not.

Figure 12: Geographical Distribution of City Pairs with Border Security Checkpoints



While border security would seem to be a limiting factor for twinning, nearly half of the twinned cases were subjected to some form of border control prior to twinning and still managed to engage in a positive relationship with their neighboring city. Like the EU statistic, this also offers a positive outlook for twinning in regions where border controls are more prevalent. What was not measured in this project however, was the severity of these border check points. A more militarized border may negatively alter the relationship between border communities.

Discussion

A comparison between twinned and non-twinned cases included in this study reveals that characteristics included within the social and cultural, economic, and leadership and institutions variables are the most important in differentiating the nature of the relationship between city pairs prior to twinning. Within the social and cultural variable, every twinned pair shared both a majority religion and political culture prior to officially twinning. This may indicate that these characteristics are necessary for twinning to occur, but not sufficient since some non-twinned cases also have these characteristics. While sharing a religious identity is indicative of cultural similarity, it may also imply that the city pairs can easily share community spaces. When two groups already share a religion, as is the case with all of the twinned-city pairs, it is easy for the

church to transform into a community center, where groups can form relationships and bond over their shared experiences (Appleby, 2011). These community centers and meeting spaces may be vital in allowing residents to form the intrapersonal connections needed for them to later be empowered to advocate jointly for policy change (Hatley, 2018). Ultimately, it appears that religious similarity may be an appropriate proxy that indicates cultural similarity and may increase the likelihood that social networks are present in the city-pair. A similar political culture is also present between every twinned pair. Just as political echo chambers form between individuals with a shared political ideology, nations which share ideals of civil freedoms and their residents are more likely to form connections. Interestingly, there is not an obvious relationship between having a similar political culture and having a formal agreement at the national level. Of the three non-twinned city pairs that do not have a similar political culture, all of them have a formal agreement relating to collaborative border policy on some scale. However, there may be a relationship between political culture and EU membership. While all of the cases that do not have a similar political culture have at least one EU member country, they are located along the EU's external border and the EU has declared that it will not admit the bordering nations, Bosnia and Herzegovina, Ukraine, and Belarus, until there are legitimate reforms made "in the areas of democracy/functionality, the rule of law, fundamental rights and public administration reform" (European Commission, n.d., European Council, n.d.).

Within the supportive leadership and institutions variable, some form of national support, whether in the form of EU membership, formal arrangement, or presidential visit, and a local agreement to share resources differentiate twinned and non-twinned cases the most. While EU membership is clearly not necessary nor sufficient for twinning, the EU does provide incentives and makes it much easier for local government who wish to twin to do so. Through programs such as INTERREG, Euroregions, and Eurocities, cities are provided the funding to innovate and establish cross-border relations that may not have been possible or encouraged without EU membership. Nearly every nation included in this study is involved in some formal agreement relating to collaborative border policy, although many of these agreements are on a multi-national level and are not necessarily indicative of local level collaboration. This data does demonstrate however, that Europe as a region fosters a collaborative environment where nations are encouraged to minimize the impact of border, regardless of whether the nation is an EU member country or not. On the local level however, city-pairs agreeing to share resources may be the strongest metric included in this study. It has the widest margin between twinned and non-twinned cases out of all characteristics across variables. Only one twinned case, Narva and Ivangorod, did not have such an agreement, while no non-twinned cases exhibited this characteristic. This step demonstrates that local governments are capable and willing to integrate and collaborate beyond sharing social networks. It may also signal to the national government that those border communities have a positive relationship that shouldn't be interrupted by restrictive border controls or could prompt the national government to enter into their own agreements with bordering nations.

Finally, there may be a convincing argument that similar economic wealth on the local or regional level increases the likelihood of twinning. One of the aspects of the collective efficacy theory is economic cost, which refers to perceive economic cost or benefit associated with twinning. Cities may be more likely to engage in twinning when they believe they will mutually

benefit from a more open relationship. If only one side of the border is able to fund or maintain joint infrastructure or social projects, twinning may not be viewed as financially strategic.

Considering Twinning along the US-Mexico Border

After careful consideration of twinning data gathered from case studies across Europe, there is no uniquely European characteristic, such as membership in the EU, that proves to be necessary for twinning to occur. Thus, the potential for twinning to occur along the US-Mexico border is not precluded. Five potential twinned cities on the US-Mexico border are examined in greater depth in order to assess if these potential pairs have similar pre-twinning characteristics as the twinned pairs in Europe. The characteristics that will be specifically be considered in these cases include, shared religion, similar political culture, agreement to share resources, and similar economic conditions. These characteristics had the widest margin of difference between twinned and non-twinned cases. These cities were chosen primarily due to their size as well as available data.

The cities on the US-Mexico border include:

City Names	State Border (US-Mexico)
<i>San Diego and Tijuana</i>	California/Baja California
<i>El Paso and Ciudad Juarez</i>	Texas/Chihuahua
<i>Nogales and Nogales</i>	Arizona/Sonora

Case Study 1: San Diego and Tijuana

Although it is perhaps the most studied case along the US-Mexico border, scholars have yet to arrive at a consensus regarding twinning between San Diego and Tijuana. Some scholars, recognizing the growth and economic integration of the two cities believe this city-pair is perfectly primed for twinning, but lacks national and institutional support (Ganster & Collins, 2017). Others claim that economic integration is simply not sufficient for twinning to occur and these communities are not integrated on a social or cultural level (Sparrow, 2001). After further analysis, I believe aspects of both positions are true. San Diego and Tijuana are undeniably linked economically, leading to increased collaboration between their local governments. Additionally, as San Ysidro is the busiest border crossing in the Western Hemisphere, there is clearly more social integration than Sparrow (2001) gives the city-pair credit for. The true impediments to twinning between San Diego and Tijuana lie in obstructionist border policies, a lack of national support, and large population size.

San Diego and Tijuana is the largest border urban area on the US-Mexico border with a population over 5 million in total. The greater San Diego area has a population of 3.2 million while Tijuana has a population of 2.1 million (PopulationStat, n.d.). This is actually distinct for cities along the US-Mexico border, as typically the Mexican side hosts the largest city.

Sparrow (2001) claims that this city-pair is not sufficiently connected socially or culturally for twinning to occur. Prior analysis reveals that a shared religion and similar political culture are the most distinctive indicators in this variable. Comparing the freedom status between the US and Mexico based on *Freedom House* ratings, the US is ranked as Free with a Political Rights, Civil Liberties, and Freedom rating of 2, 1, and 1.5, respectively. Mexico however, is ranked as partly free with scores of 3, 3, and 3, respectively (Freedom House, 2018). While these scores not only indicate that a difference in values, reducing the likelihood of cultural connections between populations, it also may impact the likelihood that national governments

collaborate or entertain the idea of changing national border policies. In terms of shared religion, a 2014 Pew Research Survey found that 32% of Adults in San Diego identify as Catholic, the largest percentage reported. Throughout Mexico, over 80% of the population identifies as Catholic (Donso, 2014). The Catholic church is very active in both cities and masses are held in both English and Spanish (Mendoza, 2020). While specific data on church attendance cannot be obtained, since Catholicism is shared between each population, it is likely that residents may cross the border to attend church or visit community spaces that can be shared between Mexican and US residents.

Across cases in Europe, economic similarity was associated with twinning, perhaps because city-pairs viewed the relationship as mutually beneficial. However, San Diego and Tijuana, is distinctly characterized by economic dissimilarity. Although, it is for this reason, that some scholars believe this city pair has such a strong relationship. The GDP per capita (\$USD) in San Diego is nearly \$50,000 while in Tijuana the GDP per capita is only \$12,000. This is a massive disparity (Gerber, 2014). Interestingly however, the unemployment rate in San Diego is 4.3 while the rate in Tijuana is 3.7. Instead of economic equals, San Diego and Tijuana complement each other, as Tijuana provides low skill and manual labor while San Diego provides high-tech industries. It is likely that San Diego still views Tijuana as a valuable economic partnership, despite the vast difference in GDP. Additionally, with the passage of NAFTA, San Diego and Tijuana have become even further linked by trade, increasing their reliance on one another. Many of the factories in Tijuana receive raw materials from San Diego and the US to produce products that are slated to be re-exported back to the US (Mendoza & Dupeyron, 2020). Although San Diego and Tijuana are not economically similar, that metric was designed to gauge “associated economic cost.” Considering the high level of reliance and integration between these cities, it is reasonable to assume that industry leaders and leaders in city government view the relationship as economically beneficial and the disparity in wealth is not a hinderance to their cooperation.

One of the largest indicators for formal integration, was the presence of a local agreement to share resources. The mayors of San Diego and Tijuana have made their desire to improve relations very public, first in 2014 with the signing of a Memorandum of Understanding (MOU). The memo outlined plans to establish bi-annual joint meetings to discuss, “municipal and regional planning, economic development, police services, fire services, water and sewage systems, libraries, parks, technology, waste disposal and recycling, environmental protection and emergency management” (Cities of San Diego and Tijuana). In 2017, the San Diego Chamber of Commerce established a working group with leaders from both cities that would also meet bi-annually. The leaders aim to discuss policies to improve trade and the economy of the San Deigo-Tijuana region, but also ways to improve the lives of border residents (Guerrero, 2017). However, beyond plans and objectives, this city-pair does have an agreement to “train, collaborate, and inform” each other on issues related to emergency response and prevention. However, resources or personal cannot actually cross the border in order to provide support (Shanks, 2016). The EPA has also coordinated with many border cities, including San Diego and Tijuana to develop joint emergency response plans, an action supported by the US government. However, these plans only go into place if there is a disaster at the border that requires resources from both cities. It does not outline a plan for day to day collaboration (EPA, 2013).

Finally, an open border or limited border control is highly correlated with twinning across Europe, although it is not necessary. San Diego and Tijuana are connected via the San Ysidro and Otay Mesa border crossings. The San Ysidro port of entry is one of the busiest in the world

and the busiest in the Western Hemisphere. As this is being written (2pm on a weekday), the current wait time for a passenger vehicle entering the US at San Ysidro is 90 minutes. Additionally, 9/11 had a major impact on the strengthening of border controls between San Diego and Tijuana, which halted the majority of the progress the San Diego government had taken to initiate cross-border projects and dramatically increased wait times along the border (Ganster & Collins, 2017). Following 9/11, the advent of the Department of Homeland Security and the heightened focus on border security and militarization drove a wedge between border communities. Still, many people cross the border daily, allowing residents to build social connections on the other side of the border and further integrating economies. High income Mexicans have access to luxury shopping in San Diego while mid to low income residents of the US can easily cross the border into Tijuana for affordable groceries, clothes, and other necessities.

Ultimately, twinning remains a possibility between San Diego and Tijuana if their local governments are able to effectively organization despite the large population in the area. Trends from European cases reveal that most twinned cities are not large urban areas, but small or mid-sized communities. It could be true that San Diego and Tijuana are simply too large and developed separately for too long to officially integrate such a large urban area. However, there is no official data which suggests that a large area cannot twin. If this is the case, then the largest barriers to twinning between San Diego and Tijuana seem to be difference in political culture which may be associated with a lack of national cooperation or support and divisive border policies. The local governments have proven their desire to foster a strong working relationship, but still have not fully developed a resource sharing agreement. Additionally, with wait times over an hour or longer at the border, it becomes much more difficult for communities to truly integrate. Taken together, it seems unlikely that San Diego and Tijuana will ever officially twin, although the potential may exist. The cities are developing quickly and functioning well separately, there seems to be little incentive for the local governments to make a plea for national support for twinning. While the mayors recognize the importance of greater resource sharing, Tijuana and San Diego are large enough cities that each could handle an emergency on their own, without relying on resources from their neighbor. Even if the economic relationship between this city pair remains strong, but barring any major shift in border control policy or national support for twinning, it is unlikely that this type of relationship will develop between San Diego and Tijuana.

Case Study 2: El Paso and Ciudad Juarez

The second largest metropolitan region along the US-Mexico border is among the cities of El Paso, Texas and Ciudad Juarez, Chihuahua, with a combined population of around 2.5 million (PopulationStat, n.d.). This city pair has an over 400-year history of collaboration and integration; however they have failed to achieve what scholars refer to as full “interoperability,” or formal twinning.

Culturally, El Paso and Ciudad Juarez are undeniably similar. Over 80% of El Paso Residents are of Latino origin (Eastaugh, 2017). This shared Hispanic identity carries over into a shared religion, where the majority of residents in both El Paso and Juarez are practicing or cultural Catholics (Aguilar, 2014). Although shared language was shown to not be necessary for twinning among European cases, it is important to point out that 70% of El Paso residents are bilingual, which can only be an asset as the two communities strive to form social and cultural connections (Crewdson, 1981). What makes El Paso and Juarez unique are their close

geographic proximity and long shared history. In the 1980s, a festival for the 400th anniversary of the “discovery” of El Paso was held. Core to these celebrations was the hope that El Paso and Juarez could reunite and form an international city, “at the mid-point of the Mexican-American border, owing allegiance to neither country” (Crewdson, 1981). During this period, the relationship between El Paso and Juarez was incredibly strong. The two communities shared a culture, language, religion, and space. One aspect key to social connections between El Paso and Juarez, which was not accounted for in my study, is violence. El Paso is regarded as one of the safest cities in the US, while Juarez was known for many years as the “murder capital of the world” (Holden, 2012). Many individuals fled to El Paso, abandoning their homes on the Mexican side of the border, and never returning (Tobar, 2011). This type of one-sided migratory flow may increase the Latinx population in El Paso, but does not benefit cross-cultural relationship between the two cities. While levels of violence have decreased slightly since the early 2000s, there were still 1,644 homicides just 2020 alone (Parker, 2021). High levels of continued violence in Juárez may be detrimental to this city pair ever formally integrating, although this characteristic was not analyzed among European cases. Additionally, still persistent, is the difference in political culture which exists at a national level and may have implications for both local connections and national willingness to collaborate.

The economic relationship between El Paso and Juarez is not as heavily discussed as it is between San Diego and Tijuana, but this city pair is similar in that there is a large disparity in GDP per capita between communities. The GDP per capita in 2010 for El Paso was \$32,559 and \$12,233 in Juárez (Gerber, 2014). Like Tijuana, the city economy of Ciudad Juárez is rooted in manufacturing. Also like Tijuana, there is a market for wealthier Mexicans in El Paso, where individuals can shop at larger grocery stores with more diversity, electronic stores, and more. There is market for lower-income Americans in Juárez, where they can access affordable medical care, gas, and groceries. Additionally, the El Paso-Juarez region is vital to North American trade. Factories in both El Paso and Juarez co-exist and rely on each other for growth, further establishing economic co-dependence (Shanks, 2016). The complementary nature of El Paso and Juarez’s economies bodes well for their ability to integrate in the future, even though they are not technically economically “similar” like European cases.

In terms of formal agreements, El Paso and Juárez are also involved in a sister city agreement which broadly states their intention to work together to “promote commerce, tourism, and industry.” While these are all economic goals, the establishment of a formal sister city agreement is a strong pre-cursor for twinning, although not equivalent to twinning. The current agreement, signed in 2018, was also a bit of a political statement and reaction to then US President, Donald Trump (Perez, 2018). This city pair does also have a resource sharing agreement, in conjunction with Sunland Park, NM and Ysleta del Sur Pueblo, TX, but also like the San Diego-Tijuana agreement, resources are not allowed to physically cross the border, even in the case of an emergency. The extent of the plan is “increased communication, coordination, and cooperation,” but it also calls for the creation of a joint task force and joint training protocols (“Binational Hazardous Material Emergency Plan,” 2009). Additionally, in Texas, which has the highest number of sister city and emergency response agreements, only one, El Paso and Juarez, does not allow resources to cross the border. This could be due to the large size, both geographically and in terms of population, of El Paso and Juarez, but the reason why resource deployment is banned is not officially stated. Another possible explanation is that Juárez is larger than El Paso and their emergency response teams are sufficiently developed to not require additional aid from El Paso (Shanks, 2016).

Finally, the level of border security between El Paso and Juarez has evolved since the 1990s, leading to stricter controls. There are 3 ports of entry between this city pair: Paso Del Norte, Zaragoza, and Stanton. Like the San Ysidro crossing, the border crossing between El Paso and Juarez is one of the busiest along the US-Mexico border. Before 9/11, the border along the Rio Grande was not an obtrusive barrier between the two communities. Even at the aforementioned 400th anniversary of El Paso, one attendee stated that the border between the cities was “kind of an artificial thing” (Crewdson, 1981). The border security at the time was relatively informal, allowing for heavy flows of traffic to cross between the two communities. Another attendee at the event remarked that the border was “a very open border, and the degree of abuse of that openness is remarkably small” (Crewdson, 1981). However, 9/11 had a dramatic impact on border communities, especially El Paso and Juárez. Most noticeably, wait times increased dramatically, even while fewer individuals crossed into El Paso for tasks that previously had been more common place, such as grocery shopping (Fullerton, 2007). Before 9/11 invoked stricter US border policies, it seems El Paso and Juárez were well on their way to forming official twinned cities. Now, with intense security checkpoints and hours long waits to cross the border, the border is not as “artificial” as it once was.

Overall, El Paso and Juárez are well poised to become twinned both economically, socially, and culturally. However, the city has placed limits on resource sharing agreements, preventing resources from crossing the border without official explanation. This may indicate that twinning will always exist in an informal manner between this city pair. Although border checkpoints do not prevent the creation of formal twinning in Europe, it appears in this case study that stricter border security drove a wedge between communities. Another potential barrier to twinning, although not officially investigated, is the large population of the El Paso-Juarez urban area, which may make it difficult for local government officials to easily and efficiently integrate their cities. However, considering the strong historic connection between this city pair, the high level of cultural similarity, and economic co-dependence, El Paso and Juarez seem to be a strong candidate for twinning. It is vital that their local governments fight for a more integrated resource sharing and emergency response agreement, which may prove to national leaders that collaborative border community relationships are possible.

Case Study 3: Ambos Nogales

The communities of Nogales, Arizona and Nogales, Sonora are distinct from their large metropolitan counterparts of El Paso/Juárez and San Diego/Tijuana. With a combined population of just over 250,000 this city pair is remarkably smaller and more isolated than the previous cases (Bradley, 2017). Known as Ambos Nogales, signifying “both,” these communities have a long history and developed originally as one community, even after the establishment of the US-Mexico border. The mayors of Ambos Nogales work together closely and the history, proximity, and small size of this city pair makes it an excellent site for twinning to occur.

A brief history of the communities of Ambos Nogales is warranted in order to fully explain the deep social connections that exist in this city pair. Nogales was developed as a railroad town on the US side of the border in the 1880s by Russian brothers Jacob and Isaac Isaacson. The border ran along the main street of the town, known as International Avenue. Without the Rio Grande river physically separating the two communities, Nogales easily spread into Mexico. In the 1918 however, a chain link fence was put up along International Avenue, following tensions after the Mexican Revolution. However, the border “fence” was not much of an obstruction to life in Nogales. During prohibition, many bars opened up on international

avenue, allowing residents along the US side of the border to cross the street easily for a legal drink. Eventually, the border fence became more fortified and a large steel fence replaced the chain link. To many, Ambos Nogales was never two cities, it is one city that was cut in half by a border wall (Ballí, 2018). This strong historical connection has trickled down into social and cultural connections relevant for twinning. Many individuals have family connections on the other side of the border and 85% of residents on the Arizonan side are Spanish speaking (Hillinger, 1986). In terms of religious similarity, specific statistics are not available, but considering the majority Hispanic population in Nogales, AZ, it can be assumed that Catholicism is widely practiced on both sides of the border (Data USA). Overall, the towns that make up Ambos Nogales are inextricably linked socially and culturally.

Ambos Nogales reflect a similar level of economic dissimilarity as the other case studies in this investigation, but they are not nearly as economically co-dependent. The GDP per capita for Nogales AZ was \$25,174 in 2010 and in Nogales, Sonora it was \$14,810 (Gerber, 2014). Like other Mexican border towns, Nogales, Sonora has also experienced growth as a factory town, focused in the electronic, aeronautical, and medical industries. Industry and development in Nogales, AZ however is declining. The Mexican side of the border has acquired many of the same retail stores that once attracted people to the US side of the border. This reduces or nearly eliminates the need for Mexican nationals to cross the border into the US, which is one of the many drivers in establishing strong social relationships and economic co-dependence (Bradley, 2017). In large part, this gap in growth is due heavy Mexican investment in Nogales, Sonora through the Border Industrialization Project (BIP). Job opportunities, albeit often low paying, provide opportunities for both Nogales residents and migrants, who decide to stay on the Mexican side of the border instead of attempting to enter the US (Dear, 2014). The economic growth of Nogales does not necessarily disrupt the process of twinning, but as Nogales, Sonora continues to grow and develop, city leaders may see less and less benefit from attempting to formally twin with the shrinking, economically struggling city on the other side of the border.

One aspect that is distinct about Ambos Nogales compared to the other case studies presented, is their exceptionally strong level of resource sharing and institutional collaboration. Whereas the agreements for both El Paso/Juárez and Tijuana/San Diego restrict emergency response resources from crossing the border, the agreement between Ambos Nogales does not. The cities have a Binational Emergency Planning Committee (BEPC) that is responsible for planning joint training activities and facilitating collaboration (Shanks, 2016). This collaboration is the strongest between fire departments. In the 1980s, the fire department in Nogales, Arizona would regularly respond to fires, but rising insurance liability costs changed this. In response, fire fighters would pass their water hoses through the fence to Mexican fire fighters on the other side, as long as the fire was close enough to the border. Alternatively, the fire department on the Arizona side would fill up Mexican water tanks that could be transported to the scene (Hillinger, 1986). As of 2005, when the most recent joint contingency plan was signed, the limit on transporting vehicles across the border was lifted. The cities also coordinate on sharing their water resources. Together, they ensure a sufficient water supply and water purity, while jointly educating factories on protocols to reduce pollution (Murphy, 2017). The original sister city agreement between Ambos Nogales was signed in 2011 and updated in 2016. The new agreement established 4 joint commissions, although they have no published or official policy goals (Pineda, 2016). Although emergency response teams are better integrated in Nogales than other notable cities along the US-Mexico border, they have not yet achieved full integration and the mayors of this city pair seem stuck in making only symbolic gestures.

Finally, the impact of the border wall is likely more strongly felt in Nogales than in other city pairs along the US-Mexico border. In Nogales, the border wall cuts right through residential communities and not marked by major interstates and multi-lane border security checkpoints. Instead, it is a quiet, but looming symbol of the division forced upon this town. The border wall has gone through many iterations. As previously mentioned, it was first a simple picket fence, then a chain link fence, before being developed in to the tall steel structure that exists today. Even in the last three years, razor wire was added to prevent individuals from climbing over (Venkataramanan, 2019). The construction of the present steel wall was vastly unpopular among residents of Ambos Nogales. Many complained that they could no longer see into Mexico or easily visit with family through the fence. Protests ensued, and at one point, individuals pushed a partially constructed section of the wall hard enough for it to fall down. Political art was spray painted on many panels, and the mayors spoke publicly against the US government regarding the border wall. As the number of undocumented immigrants entering the US rose, Customs and Border Patrol (CBP) agents also became a more significant presence in Ambos Nogales. Along with more CBP agents comes their intrusive technology, such as watch towers, infrared cameras, and floodlights (McGuire, 2013). To many, the border feels more like a militarized zone than simply geographic division between nations. In 2012, a young man, José Antonio Rodríguez was shot through the fence by a US border patrol agent. Rodríguez, who was 16 at the time, was throwing rocks over the fence in a supposed attempt to smuggle drugs. The patrol officer responses in lethal force, shooting Rodríguez 16 times. Rodríguez's murder became a rallying cry among residents of the Mexican side of the border, who were outraged at the increased security inflicted upon them by the US (Neuman, 2018). In Nogales, border security is personal. It is not simply long wait times on a highway. It is walking to school while US CBP officers watch from a few feet away. It is playing with friends too close to the fence and being deemed a threat. The presence of not only the fortified border wall, but also large numbers of roaming CBP officers changed the culture in Ambos Nogales, an impact which has worsened integration as a whole between these communities.

Nogales does not face many of the same difficulties to twinning as El Paso/Juárez and San Diego/Tijuana face, making it an interesting case to analyze. The historical, social, cultural, and familiar connections in Ambos Nogales are undeniably strong. The fire department and many local institutions have made a conscious effort to integrate services and resources. As this is one of the strongest indicators of twinning among European cases, this may prove that Ambos Nogales has great potential to evolve into a twinned city. However, many economic and other factors stand in its way. Nogales, Sonora is growing in population while Nogales, AZ is shrinking. Beyond this, Industry is quickly developing on the Mexican side of the border while unemployment increases on the US-side. Residents in Sonora are finding fewer reasons to go through the hassle of crossing the border to enter the US when all the resources and goods they need can be found in Mexico. Overall, Nogales, AZ needs to reestablish itself as an economic asset for Nogales, Sonora in order to improve this relationship and increase the presumed economic benefits that might come with twinning. Finally, the intrusive nature of the border in Ambos Nogales does not bode well for integration. US Customs and Border Patrol have focused in on Nogales and the surrounding region, implementing military grade security measures. As the border becomes more and more divisive, the likelihood for twinning decreases. The border in Ambos Nogales does not just represent an inconvenience as it does in other cities along the US-Mexico border, it represents a statement that the US is not a welcoming place and has no interest in long term collaboration. It will require a formidable grassroots effort from residents on the US

side of Nogales to advocate for significant change in border policy. It may not be successful, but it is likely necessary for the future of the cross-border relationship in Ambos Nogales.

Conclusion

Twinning provides a unique opportunity for border communities to integrate, creating a shared urban space. Twinning improves access to resources and enhances the quality of life of residents of border communities. Europe has capitalized on these benefits, employing agencies such as the EU and agreements like the Schengen area to encourage twinning and ease the process. However, among the cases included in this study, twinning still occurred outside of the purview of EU member nations and along borders with border security and control policies. This implies that twinning is still possible along the US-Mexico border. Had these two characteristics been more closely associated with twinning in Europe, the probability that twinning could occur along the US-Mexico border would be extremely low.

As the Collective Efficacy Theory describes, communities have the capability to oppose policy which impacts them negatively. In the scope of border twinning, the advocacy power of a community is improved via strong social and cultural networks, supportive institutions and leadership, and a spatial dynamic which minimizes physical barriers. Although US-Mexico border cities face many obstacles, many of these communities already have historical social and cultural connections and an institutional commitment to working with their neighbor. All three of the case studies display a strong potential for twinning, with possible limiting factors being population size, lack of national support, and weak local resource sharing agreements. Taken together, in order for twinning to occur, residents of border communities must advocate for their local governments to engage in substantive resource sharing agreements with their neighboring city, must make a conscious effort to maintain and improve cross-border social and cultural networks, and should actively contribute to the local economy on the other side of the border.

Unfortunately, twinning remains an understudied phenomenon. It is clear that most twinning agreements are formed in large part due to specific local characteristics that cannot always be measured systematically. Nuance will continue being a necessary aspect of any study on twinning in the future. Additionally, with greater time and resources, more specific coding and data collection can be carried out, which would result in more accuracy regarding many variables included in this study which are not inherently quantitative. Still, this project broke the mold in attempting to draw broad conclusion regarding twinning and applying them to a region of the world where this type of border policy is desperately needed, in some form.

The US-Mexico border is evolving, but further damage is being inflicted upon this region as the US government continues to militarize the border. Border communities are constantly proving their resilience, fighting to maintain social connections and oppose policies which were never created by, or with, border communities and their residents in mind.

Appendix: 1

Border Twinning Coding Sheet

Border City Name:

Population:

City Pair Name:

[**POPU**] Population:

1. Are there any formal arrangements between the local government and the local government on the opposite side of the border that specifically relate to the collaboration of their two cities? (including joint governing board, official twinning “oath” with stated goals (not simply symbolic, Eurocity agreement)) [**TWINNED**]
Score: [0,1]

If Score [1], What year did official agreement occur: [**YEAR_AGR**]

Social and Cultural Networks

1. Ethnic make up

- a. Is the same language spoken in the border city as the nearest city across the international boundary line? [**LANG**]

Score: [0,1]

Citation:

2. Migration

- a. Number of individuals who migrated to country on the other side of the border, One year prior to twinning [**MIGRA**]

#:

% of total population:

Citation: United Nations, Department of Economic and Social Affairs. Population Division, International Migration Data.

https://population.un.org/unmigration/migrantstockbyorigintimeseries_sql.aspx

3. Political Culture

- a. Does this country have a roughly similar political culture as the country on the other side of the border? [**POLI_CUL**]

Score: [0,1]

Citation: “Freedom in the World .” Freedom House.

4. Wealth

- a. Do the two countries have a roughly similar (within 10% difference) GDP per capita? [**WEALTH**]

Score: [0,1]

Citation: World Bank, GDP per Capita

5. Income Inequality
 - a. GINI Coefficient of country
#:
Citation: World Bank, GINI Coefficient

6. Poverty
 - a. Percentage of Individuals in country living in poverty
%:
Citation: World Bank,

Supportive Institutions and Leadership

2. Formal arrangements
 - a. Are there any formal arrangements between the national government and the national government on the opposite side of the border specifically related to cross-border collaboration? (including agreements related to travel, national twinning “oath”, EGTC) [FORM_ARG]
Score: [0,1]
Citation:

 - b. Is the country an EU member country? [EU]
Score:
Notes:
Citation: European Union.

 - c. Does the border city share resources or public services with the city on the other side of the border? (Ex: Water service, sewage, utilities, a hospital) [SHAR_RES]
Score: [0,1]
Citation:

 - d. Does the city share a name with the town on the opposite side of the border? [SHAR_NAME]
Score: [0,1]
Citation:

3. Community Organizations
 - a. Is there a University located within the Border city? [UNI]
Score: [0,1]
Citation:

 - b. Does the city have a community organization that provides resources to both communities? (public library, community center, or church, student organizations, etc.) [COM_ORG]
Score: [0,1]
Citation:

4. Supportive Leadership

- a. Has the President of the country made any official visits to the border city with the purpose of promoting integration? [PRES_VIS]

Score: [0,1]

Citation:

Spatial Dynamic

1. Is the city located near a river or large body of water? [RIVER]

Score: [0,1]

Citation:

2. Is the city located near a significant transit corridor (train station, major highway/interstate, international bridge) that travels across an international boundary line? [TRANSIT]

Score: [0,1]

Citation:

3. Is an individual crossing the border subjected to a border check? [BOR_CHECK]

Score: [0,1]

Citation:

Appendix: 2

Border Twinning Coding Sheet (Example)

Border City Name: Haparanda, Sweden

Population: 10,000

City Pair Name: Tornio, Finland

Population: 22,000

5. Are there any formal arrangements between the local government and the local government on the opposite side of the border that specifically relate to the collaboration of their two cities? (including joint governing board, official twinning “oath” with stated goals (not simply symbolic))

Score: 1

Establishing a joint governing board

If Score [1], What year did official agreement occur: 1987

Social and Cultural Networks

7. Ethnic make up

- a. Is the same language spoken in the border city as the nearest city across the international boundary line? (More than 50% of individuals report they are proficient in the language) [LANG]

Score: 1

Citation: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/haparanda-tornio/haparanda-tornio-1/>

8. Migration

- a. Number of individuals who migrated to country on the other side of the border, One year prior to twinning

#: 4935

% of total population: 0.05

Citation: United Nations, Department of Economic and Social Affairs. Population Division, International Migration Data.

https://population.un.org/unmigration/migrantstockbyorigintimeseries_sql.aspx

9. Political Culture

- a. Does this country have a roughly similar political culture as the country on the other side of the border? (Use freedom house status)

Score: 1

Citation: “Freedom in the World 1984-1985.” Freedom House.

https://freedomhouse.org/sites/default/files/2020-02/Freedom_in_the_World_1984-1985_complete_book.pdf

10. Wealth

- a. Do the two countries have a roughly similar (within 10% difference) GDP per capita?
Score: 0
Citation: World Bank, GDP per Capita

Supportive Institutions and Leadership

6. Formal arrangements

- a. Are there any formal arrangements between the national government and the national government on the opposite side of the border? (including agreements related to travel, sharing of resources, national twinning “oath”, EGTC)
Score: 1
Notes: “The Nordic Council, formed in 1952, has certainly facilitated integration between the five countries (Denmark, Sweden, Finland, Norway, and Iceland), which maintain close economic, and social and cultural relations”
Citation: European Commission. (2015). “Territorial Cooperation in Europe: A Historical Perspective.”
https://ec.europa.eu/regional_policy/sources/information/pdf/brochures/interreg_25years_en.pdf
- b. Is the country an EU member country?
Score: 0
Notes: joined in 1995
Citation: European Union.
- c. Is the country engaged in a trade agreement with the country on the other side of the border?
Score: 1
Notes: Prior to joining the EU, both countries were members of the European Free Trade Association, which Sweden joined in 1960 and Finland joined in 1985
Citation:
https://en.wikipedia.org/wiki/European_Free_Trade_Association#Current_members
- d. Does the border city share resources or public services with the city on the other side of the border? (Ex: Water service, sewage, utilities, a hospital)
Score: 1
Notes: Before officially twinning in 1987, the two towns had combined wastewater treatment and waste management.
Citation: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/haparanda-tornio/haparando-tornio-2/>
- e. Does the city share a name with the town on the opposite side of the border?
Score: 0
Notes: They currently share a name, but did not prior to twinning
Citation: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/haparanda-tornio/haparando-tornio-2/>

7. Community Organizations

- a. Is there a University located within the Border city?

Score: 0

Citation: No evidence

- b. Does the city have a public library, community center, or church that serves members of both communities?

Score: 1

Notes: Established a joint swimming center in the 1960s

*Citation: Joenniemi, P., & Sergunin, A. (2011). "When Two Aspire to Become One: City-Twinning in Northern Europe." *Journal of Borderland Studies*, 26(2), 231-242.*

DOI: 10.1080/08865655/2011/641323

8. Supportive Leadership

- a. Has the President of the country made any official visits to border city with the purpose of promoting integration?

Score: 0

Citation: No evidence

Spatial Dynamic

4. Is the city located near a river or large body of water?

Score: 1

Citation: google maps

5. Is the city located near a significant transit corridor (train station, major highway/interstate, international bridge) that travels across an international boundary line?

Score: 1

Citation: <https://www.haparandatornio.com/en-home/good-to-know/getting-here/>

6. Is an individual crossing the border subjected to a border check?

Score: 0

Citation:

<https://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralPrint.do?step=0&print=true&treatyId=55>

7. Are Passports/visas required to cross the border?

Score: 0

Notes: In 1952, Denmark, Norway, Sweden, and Finland established the Nordic passport union which abolished passports for travel between their countries.

Citation:

<https://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralPrint.do?step=0&print=true&treatyId=55>

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