



MEXICO'S 2021 DARK NETWORK ALLIANCE STRUCTURE: AN EXPLORATORY SOCIAL NETWORK ANALYSIS OF *LANTIA CONSULTORES*' ILLICIT NETWORK ALLIANCE AND SUBGROUP DATA

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Abstract

This paper assesses Mexico's organized crime alliance and subgroup network structures. Through social network analysis (SNA) of data from *Lantia Consultores*, a consulting firm in Mexico that specializes in the analysis of public policies, it demonstrates differential alliance structures within Mexico's bipolar illicit network system. The *Cártel de Jalisco Nueva Generación's* (CJNG) alliance structure is top-down and hierarchical, while the Sinaloa Cartel is denser, particularly in the broader Tierra Caliente region. Additionally, our analysis found a sparse overall network with many isolates (organized criminal groups with no relations to other groups) and disconnected components. Further, we identified organized crime networks that might fill future power vacuums based on their network positions, following state or rival high-value targeting of major cartels. The implications of these findings are discussed, and policy recommendations are provided.

Introduction

In assessing Mexico's illicit network alliance structures, this paper demonstrates, as consulting firm *Lantia Consultores* has described and previous scholars have assessed, that Mexico is once again in a bipolar cartel structure in terms of the illicit networks operating in Mexico. Whereas that bipolarity was once split between the Sinaloa Cartel and *Los Zetas* (2000s), today the primary poles of power are between the Sinaloa Cartel and the *Cártel de Jalisco Nueva Generación* (CJNG).¹ While that much is well known, the visualization of *Lantia Consultores'* data on organized crime networks provides key new insights.

The visualizations bring out in stark relief the nature of the alliance and subgroup structures within groups allied to the Sinaloa Cartel and the CJNG. The CJNG has what would be considered a hierarchical, centralized, internal alliance structure with almost none of its affiliates allying with each other. Nearly all connections are routed directly through the CJNG. The Sinaloa Cartel alliance structure is fundamentally different, particularly in the Tierra Caliente conflict zone, where its allies and subgroups have denser connections to other Sinaloa Cartel allies and subgroups. Ego network analysis (networks of connections based on those with ties to a single node) have allowed us to visually represent and convey these findings in an intuitive fashion.²

These varying alliance structures have important implications for many policy-related questions, such as what will happen if the leadership of the CJNG is removed via death or arrest? What will happen if fragmentation of the Sinaloa Cartel increases due to deepening conflict between Mayo Zambada and Chapo Guzman's sons (*Los Chapitos*)? What groups are well positioned in terms of existing alliances to supplant the other two if conditions are ripe? Through a series of ego-nets and other social network analyses, combined with qualitative background research, possible answers to these questions are explored.

This paper is broken into four sections: (1) a literature review on illicit network alliance structures and social network analysis; (2) a discussion of the social network analysis methods employed and the *Lantia Consultores* data utilized; (3) a presentation of the data analysis with visualizations; and (4) a conclusion with policy recommendations, an overview of the limitations of the study, and a discussion of avenues for further research.

Literature Review

Similar to states in the international system, criminal groups often form alliances with other criminal networks, with few criminal entities remaining unaligned throughout their lifetimes. According to Chindea, a criminal group's alignment with other criminal entities can take place under various circumstances, with the presence of threats external to the organization or changes in relative distribution of power in the underworld representing some of the main drivers behind illicit network alliance behavior.³ When a criminal group faces threats from another criminal organization, it can decide to either engage in "bandwagoning" behavior by aligning itself with the source of the danger, or it can balance against the respective threat by forming alliances with other groups or illicit networks.⁴ Akin to the alliance behavior that takes place in the international system, in the underworld balancing behavior is usually more prevalent than bandwagoning.⁵ For instance, in 2010, when *Los Zetas* was on the rise and carrying out gruesome acts of violence in Mexico against both rival organizations and innocent civilians, the Gulf Cartel temporarily allied with the Sinaloa Cartel as a way to balance against the threat *Los Zetas* posed.⁶

Furthermore, government crackdown on illicit networks usually results in shifts in the relative distribution of power in the underworld, ultimately leading to a reconfiguration of existing alliances among criminal groups. Because arrests and targeted killings weaken criminal entities, hierarchically organized criminal groups tend to fractionalize when key leaders succumb to government decapitation operations. The resulting entities, often referred to as "*cartelitos*" or "small cartels," are more likely to become targets of powerful illicit organizations, unless they enter balancing or bandwagoning alliances with other criminal groups on the ground.⁷

The Sinaloa Federation itself was born in the context of the Mexican government's successful decapitation strategy that in 1989 resulted in the arrest of Félix Gallardo and the dismemberment of the so-called Guadalajara Cartel. Some of the smaller resulting entities aligned themselves into what became known as the Sinaloa Federation to oppose the rising and extremely violent Arellano Felix Organization.⁸ Throughout its over 30 years of history, the Sinaloa Cartel relied on balancing behavior as a mechanism to survive, rise to power, maintain power, and continue to survive in the face of rising splinter illicit networks such as the CJNG. The aggressive crackdown and decapitation strategies that the Calderón administration undertook against major criminal organizations operating in Mexico from 2006 to 2012, resulted in a fragmented underworld and rapid shifts in alliances on the ground as established organizations like the Sinaloa Cartel were weakened, and new ones, like the CJNG, came into being.⁹ As this paper hypothesizes, some of the alliance behavior associated with the Sinaloa Cartel in recent years has been rooted in Sinaloa's modus

operandi since its inception as a networked criminal entity, while simultaneously being representative of the changing power dynamics on the ground. The analysis presented in this paper demonstrates the presence of extensive balancing behavior occurring in illicit networks, as earlier work by Chindea posited.

Illicit Networks and Non-traditional Alliances

Scholars such as Sullivan have pointed to complex networked alliances among illicit networks in Mexico.¹⁰ For example, nontraditional alliances have been seen between transnational drug trafficking organizations (criminal cartels) and transnational gangs. One notorious case is the alliance/links between *Los Zetas* and *Mara Salvatrucha* (MS-13). This “alliance” relationship has been inaccurately characterized as a “merger.” That portrayal is an exaggeration, but minimizing those links is also inaccurate.

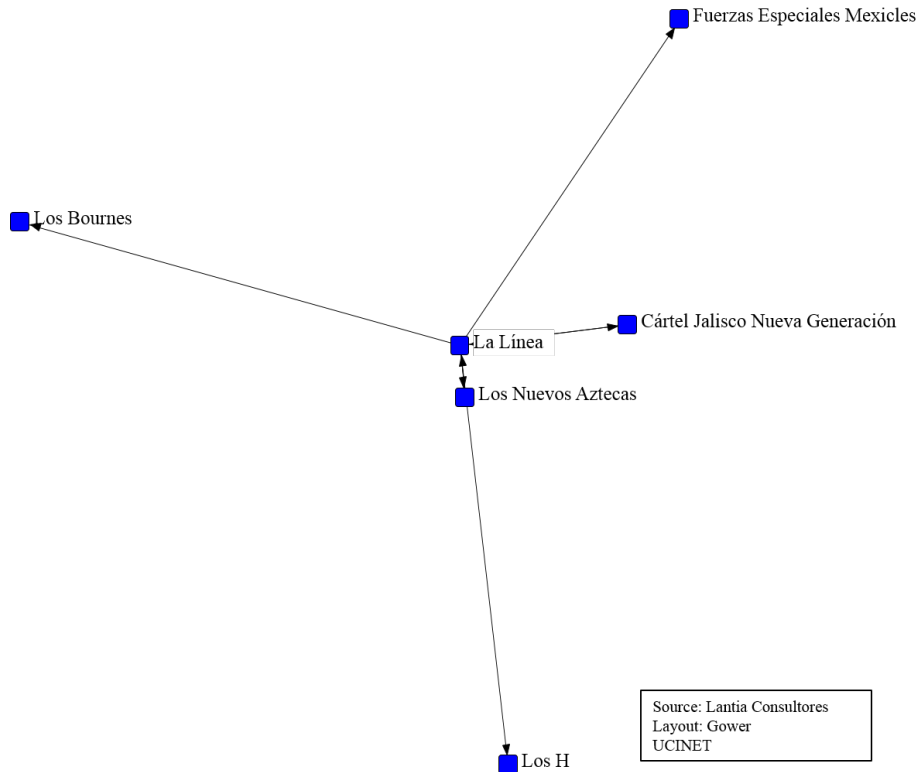
Los Zetas, a now largely defunct organization, began as an enforcer network for the Gulf Cartel. Members of *Los Zetas* were essentially mercenaries that had once been trained—and in some cases part of—the *Grupos Aeromoviles de Fuerzas Especiales* (GAFES), or Mexican Special Forces. *Los Zetas*, a hierarchical organization with centralized leadership, brought military skill sets to bear in the lucrative drug trade and eventually broke away from the Gulf Cartel to operate as an independent enterprise. At the height of their strength, they operated from the U.S.-Mexico border along the Rio Grande in Texas to Central America. *Los Zetas* were known for their infantry tactics and barbarization. Their operational approach mobilized terror and intimidation to control their criminal portfolio, which ranged from narcotrafficking to selling counterfeit goods and *huachicoleo* (petroleum theft).

MS-13, on the other hand, was—and remains—a decentralized, networked gang. The MS-13 network ranges from Los Angeles, where it was founded, to New York, Washington, D.C., and Central America, including El Salvador, Guatemala, and Honduras. MS-13 has a distributed, networked organization defined by individual “*clicas*” or cliques. These cliques share a common identity and ethos and interact through “networks of influence.”¹¹ Respect and loyalty are the currency of influence within MS-13. A “hierarchy of respect” is expressed through social relationships within and across individual cliques in the network. Leadership is distributed within cliques with a *primera palabra* (“first word”) and *segunda palabra* (“second word”) setting priorities for the clique, with the *segunda palabra* from large powerful *clicas* often exerting influence over smaller, subordinate cliques. This relationship is driven by fealty in a neo-feudal arrangement. The leadership collects “taxes” or tribute from the subordinate cliques and in turn offers protection. Each individual clique retains a high degree of autonomy, and localized leadership arrangements have evolved in various geographic regions. This is especially true on the U.S. East Coast¹² and in El Salvador where the cliques have evolved into super-cells or programs.¹³ Fealty is enforced through influence and violence—as expressed in the gang’s informal motto “*mata, controla, viola*” (kill, control, rape). MS-13’s modular structure allows it to adapt to local circumstances and criminal markets. In Los Angeles it traditionally has ties to *La Eme* (the Mexican mafia).¹⁴ Outside Los Angeles it is free to forge local alliances or act as contractors for other criminal enterprises or cartels.

The MS-13-*Los Zetas* alliance was not a formalized “treaty-based” endeavor; rather it was a loose cooperative agreement arranged at local clique levels. Local alliances are tolerated as long as they don’t compete with the overall network capacity to operate. Of course, *Los Zetas* are now largely out of business and have morphed into new enterprises, including the *Grupo Bravo* and *Zetas Vieja Escuela*, aligned with the Gulf Cartel against another Zeta faction, the *Cártel del Noreste* (CDN). Corruption and violence persist, and the various factions maintain a variable degree of interaction (and interpenetration) with corrupt government officials.¹⁵ These arrangements vary in time and space.

Another networked organization is *La Línea*, an enforcer gang found in the Juárez *plaza* (Ciudad Juárez and environs adjacent to El Paso). *La Línea* functioned as a mercenary, protective entity for the Juárez Cartel or Vicente Carrillo Fuentes Organization. It was comprised of *sicarios*, or drug dealers, and corrupt police officials (highlighting the importance of corruption and collusion). It was (and remains) a hybrid linked to *Barrio Azteca* (a prison-street gang complex in El Paso) and *Los Aztecas*, their affiliate in Ciudad Juárez (See Figure 1).¹⁶

Figure 1. *La Línea* Ego Network



La Línea is an example of a variant third-generation street gang providing specialized services and para-political influence for its cartel partners.¹⁷ Like *Los Zetas* of a previous decade, which became independent, *La Línea* now works with the CJNG and partners with *Barrio Azteca's* rebranded *Los Nuevos Aztecas*.

Illicit networks come in many shapes and sizes. They include mixes of criminal enterprises in shifting alliances for profit and power. They also often include subgroups or cliques that are part of the larger umbrella organization, and they form alliances to further their goals on the streets, in prisons, and across borders. These illicit networks contain real criminal and political power and can influence state actions—including their solvency and sovereignty.¹⁸ The relationships are akin to joint ventures and alliances. These range from serving as foot soldiers—i.e., enforcers and distributors for street-level drug sales—to brokers of political and criminal influence. Social network analysis (SNA) is one effective means of determining the nature and strength of the various network connections.

Social Network Analysis

Social network analysis is a perspective that uses several approaches to produce a broad strategy for investigating complex social structures.¹⁹ As Renée van der Hulst explains, “In addition to visualizations of network graphs, SNA is an arithmetical technique that analyzes relational patterns of nodes (actors) and connections (ties) based on mathematical computations.”²⁰ It can map organized criminal networks as it focuses on ever-evolving interactions and relationships among individuals or groups and empirically determine social structures.²¹ Further, SNA can help identify and analyze the major structural, communicational, and interactional features of a criminal group, allowing researchers to evaluate the most effective methods for disrupting such groups.²² Scholars have used SNA to study a wide range of criminal groups, from terrorist cells involved in the 2002 Bali bombings to criminal groups engaged in an extensive series of convenience store robberies in Richmond, Virginia.²³

The use of SNA by law enforcement is growing around the world. For example, the Australian state law enforcement agency has used SNA to support its investigations, and analysts were able to identify individuals that detectives had not been aware of or had paid little attention to.²⁴ SNA was also indispensable in unravelling a cannabis cultivation network in the Netherlands known as Blackbird by allowing Dutch police to identify intelligence gaps and potential informants.²⁵ Criminal network analysis is most useful when used with a mixed methodology to place the quantitative results in the necessary context. For example, in the Blackbird case, quantitative data was able to identify women as central actors, even though detectives had paid them minimal attention before the use of SNA. Detectives also applied a qualitative methodology to understand why women occupied those central positions, providing a deeper understanding of the mechanisms associated with this criminal network.²⁶

Valuable applications of mixed-method SNA have been recently used to analyze drug trafficking organizations.²⁷ Researchers used a specific example of this type of analysis to uncover the unintended consequences of the kingpin strategy on the Fernando Sanchez Organization (Tijuana Cartel).²⁸ Economist Melissa Dell also used SNA-mixed methods to examine the direct and spillover effects of the Mexican government's policy to combat drug trafficking organizations. Dell was able to identify how newly elected mayors associated with the *Partido Acción Nacional* (a conservative political party in Mexico) caused more violence when they attempted to crack down on incumbent criminals.²⁹ Dell observed that violence increased as the crackdowns diverted existing drug routes into other municipalities and created opportunities for rival gangs.³⁰ Scholars have even applied social network analysis to Mexican organized crime's social media presence.³¹

Methodology and Data

Lantia Consultores provided the data set for this analysis in two files in the spring of 2021. The first data set included organized crime alliances in Mexico, and the second file contained subgroups. These data sets were combined for a more accurate and comprehensive picture of Mexican organized crime relationships.

A node, also known as an actor (visually depicted as a square), is in this case an organized crime group or subgroup in Mexico. A tie/edge is a relationship between them—either an alliance or subgroup relationship—depicted with a line. The lines sometimes have arrows to denote the direction of the relationship (e.g., a large group would have a line with an arrow pointing from it to a subordinate group, but the arrow may not point back toward the larger group). As Everton points out, it can be difficult to assess a large network. Ego network analysis is one assessment strategy that focuses on a single node and its ties to other nodes. The ego is the single node the analyst has chosen to focus on (in this case, we focus on the two largest cartels in Mexico—the Sinaloa Cartel and the CJNG). The ego has alters, which are other nodes with ties to the ego. An ego network thus contains the ego, alters, and the ties between them.

For our study, all analysis was conducted on the combined alliance and subgroup data set. It should be noted that the alliance data was symmetrical, with ties or edges between groups moving in both directions between actors. The subgroup data, on the other hand, revealed that larger groups held power over smaller groups. To combine these networks, we converted the data sets into edge lists and imported the network into the SNA program UCINET, which converted the edge lists into an adjacency matrix.³²

The visualizations were created in Netdraw, a subprogram of UCINET, with a focus on ego networks related to the bipolar cartel structure. Ego network analysis allows researchers to rapidly make sense of large data sets by focusing on the ties or edges of individual “focal” actors.³³ Social network exploratory analysis is best conducted with significant background knowledge of the network in mind.³⁴

Visualizations and Analysis

The overall network of organized crime alliances and subgroups in Mexico is relatively sparse with a concentration around two main poles of power, the Sinaloa Cartel and the CJNG. Exploratory analysis reveals pockets of network density in specific regions (e.g., the conflict zones of the Tierra Caliente and Guanajuato).

Figure 2. Overall Mexico Alliance and Subgroup Network

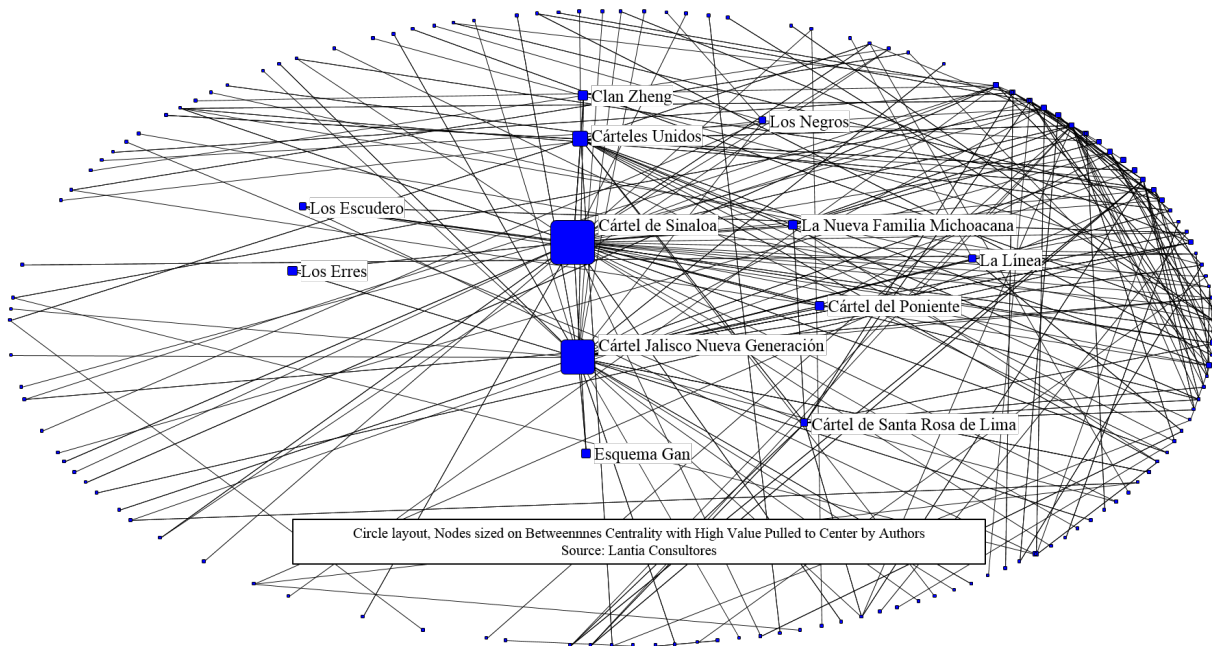


Figure 2 is a visualization of the entire alliance and subgroup organized crime network in Mexico with isolates (unconnected actors) removed. The layout is circular with roughly 390 groups (nodes) depicted in the *Lantia Consultores* data. The nodes or groups are sized on betweenness centrality with the highest degree nodes brought to the center. Betweenness centrality is a common centrality metric and, generally speaking, is also a brokerage metric.³⁵ Nodes with high betweenness centrality lie on “the shortest paths between all pairs of actors” and represent nodes in key brokerage positions within the network based on this position.³⁶ Thus, the nodes with the highest betweenness centrality are the Sinaloa Cartel and the *Cártel de Jalisco Nueva Generación*.

Other nodes such as *Esquema Gan*, *Clan Zheng*, *Cártel del Poniente*, and *Los Erres* are located between the Sinaloa Cartel and the CJNG, giving them higher betweenness centrality. This means the two rival cartels share four allied groups in common. This will be depicted in more depth later.

Table 1. Whole Network Topography Measures.³⁷

Combined Network Topography	
Avg Degree	0.87948716
Indeg H-Index	6
Deg Centralization	0.09850131
Out-Central	0.09824809
In-Central	0.04670204
Density	0.00226089
Components	290
Component Ratio	0.74293059
Connectedness	0.08584141
Fragmentation	0.91415858
Closure	0.05405406
Avg Distance	4.27942848
SD Distance	1.65597022
Diameter	10
Wiener Index	55731
Dependency Sum	42708
Breadth	0.97548372
Compactness	0.02451628
Mutuals	0.00152923
Asymmetrics	0.00146332
Nulls	0.99700743
Arc Reciprocity	0.67638487
Dyad Reciprocity	0.51101321

Table 1 provides network topography measures for the whole alliance and subgroup network. We see a sparse network in terms of density (a ratio of number of ties to possible ties) of .0002. We also see a low average degree (the average number of ties an actor has) of .879, or less than one tie each. This is, however, deceptive as a small number of cartels are hubs and have many ties such as the Sinaloa Cartel and the CJNG.³⁸ Nonetheless, the network's diameter is 10, which means the shortest path between the two most distant nodes is across 10 other actors. Further, the network has many isolates—organized criminal groups with no connection to any other groups. There are a significant number of disconnected components that will be discussed further in Figure 11. For now, our analysis shifts to the two largest hubs with an analysis of their ego networks in Figure 3.

Figure 3. CJNG and Sinaloa Cartel Combined Ego Networks

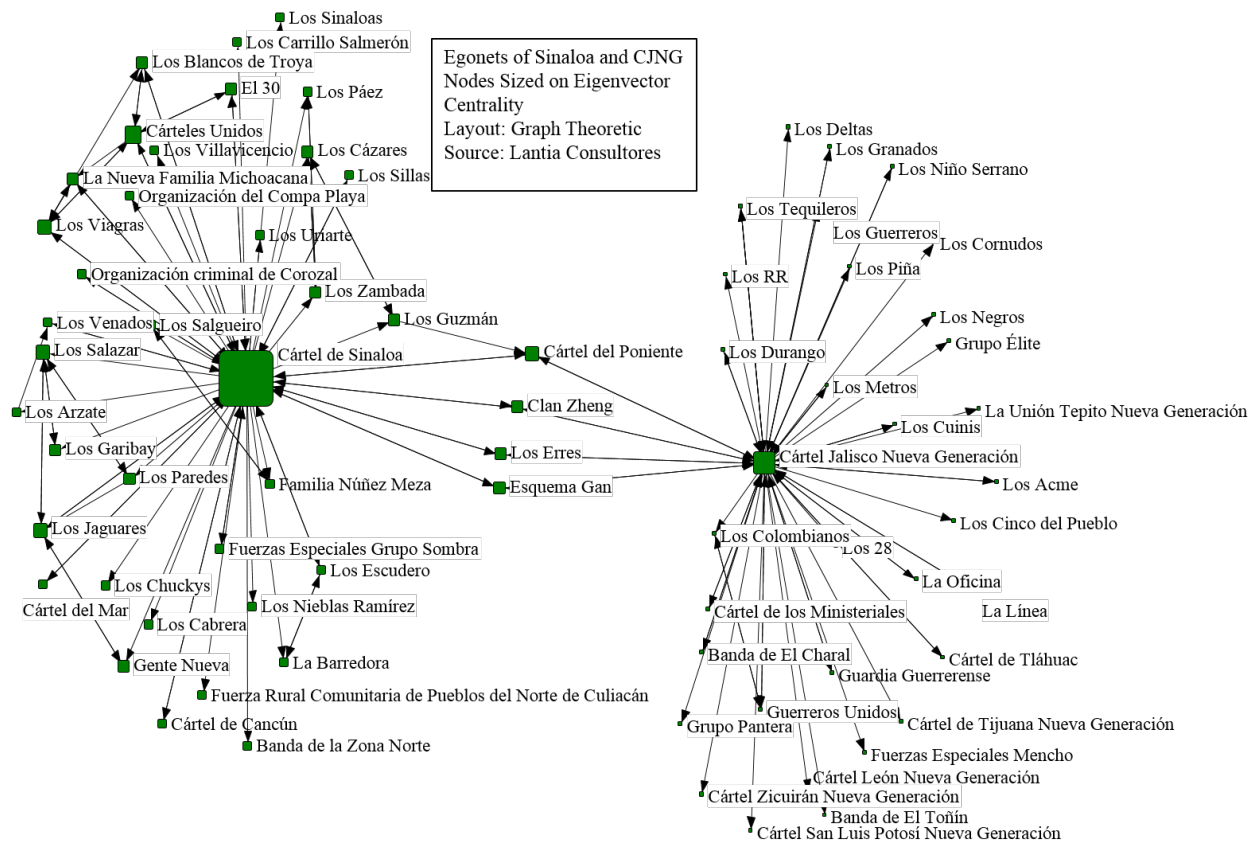


Figure 3 strips away actors unconnected to the CJNG and the Sinaloa Cartel to give us our first glimpse into the alliance structures of the two most central actors. Figure 3 is the combined ego networks of the Sinaloa Cartel and the *Cártel de Jalisco Nueva Generación*. The nodes are sized on eigenvector centrality (which considers the actor's ties to other important actors). By focusing on the CJNG and the Sinaloa Cartel exclusively, we can visually observe important structural features of the network. First, the Sinaloa Cartel network alliance pole has significantly more interconnectivity than the CJNG alliance pole, a key finding of this paper. Second, there are four nodes that connect to both the Sinaloa Cartel and the CJNG. *Clan Zheng* specifically is a money laundering and fentanyl trafficking group, which suggests there may be capacity for money laundering groups to work with both poles of power. Notice the ties between alters (nodes connected to the ego or focal node) within the Sinaloa alliance. This contrasts with the CJNG alliance structure. Figures 4 and 5 will clarify this further.

While the centralization of control by the CJNG creates vulnerability for the overall function of the network, it holds significant advantage for the network in terms of control. For example, the Sinaloa Cartel has learned painful lessons about allowing too much centralization within their network. In the bloody split between the Beltran Leyva Organization (BLO) and the Sinaloa Cartel in the 2007-2008 period, this was an acknowledged lesson.⁴⁵ The debriefing of a former Sinaloa Cartel affiliate leader known as “El Tomate” in the 2010s revealed that after the BLO split, the Sinaloa Cartel compartmentalized cells operating under its umbrella in Tijuana and kept them in competition with each other lest they turn on their former masters.⁴⁶

Table 2. Ego Network Centralization Scores

EGO-Net	Out-Centralization	In-Centralization
Sinaloa	0.254437864	0.096646942
CJNG	0.252921849	0.121073775
CU	0.236882716	0.119598769
CSRL	0.2483	0.2257
Overall Network (Non Ego)	0.0258	0.0116

The CJNG strategy prevents internal conflict by minimizing the sub-alliances the groups have within its ego network. The centralized structure of the CJNG ego-net is demonstrated by its in-centralization score of .12 as compared to .096 for the Sinaloa Cartel, depicted in Table 2.

Figure 6. Ego Network for *Cárteles Unidos*

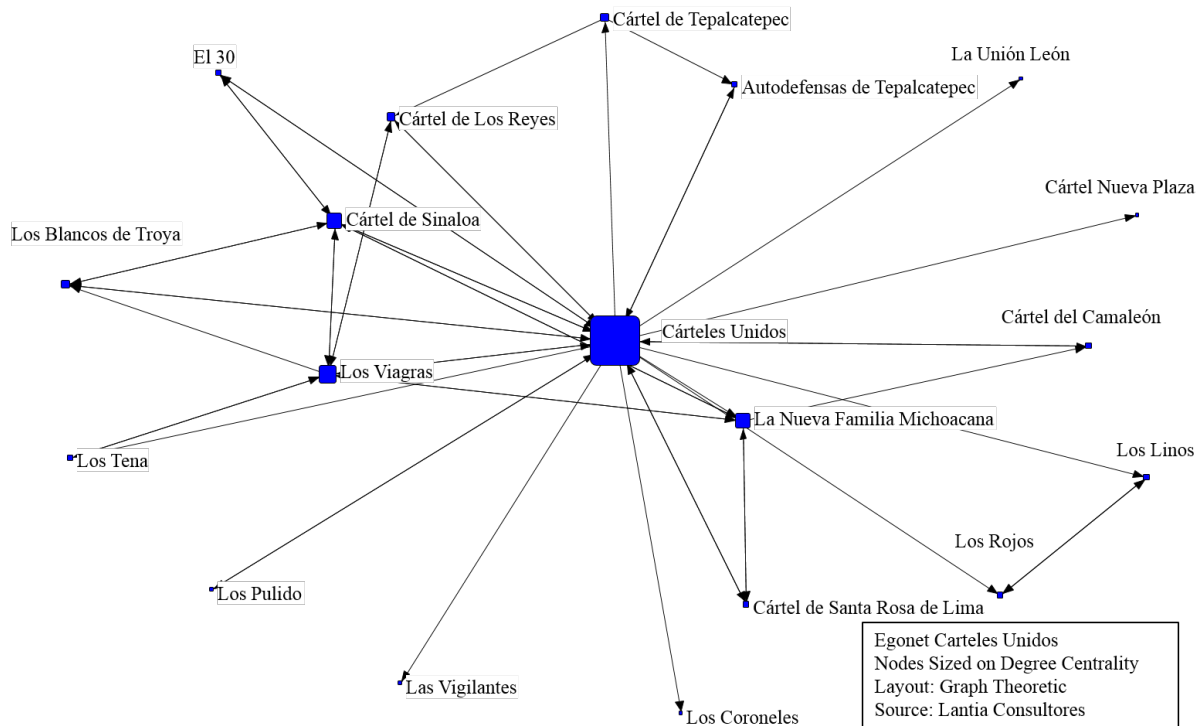


Figure 6 is an ego network for the *Cárteles Unidos* group that allies with the Sinaloa Cartel and is considered an alliance of groups combatting the CJNG in the Michoacán area. The *Cárteles Unidos* is highly central within the dense network of Sinaloa Cartel alliances in Tierra Caliente as it battles the CJNG. However, as InSight Crime describes, it is “a strategic alliance in itself, counting on cooperation between the groups that form it.”⁴⁷ Led by *El Abuelo*, it is, in reality, not a group but an alliance of groups. However, over time this alliance of groups, which formed to battle the CJNG and has been coherent since 2020, may morph into its own power with a dominant network position.

Could *Cárteles Unidos* be a power player in the event of Sinaloa Cartel and CJNG fragmentation? Or is it simply an umbrella group operating with the backing of the Sinaloa Cartel? Several factors suggest that Michoacán could become a site where new major cartels expand in the wake of weakening and fragmentation of other groups. These include the sheer number of groups operating in the Michoacán region; the expansion of these groups into legal sectors like mining, logging, and the avocado industry; and their control over the Port of Lázaro Cárdenas. If this is the case, groups such as *Cárteles Unidos* and the *Cártel de Santa Rosa de Lima* (CSRL) are well positioned through their networks. However, there are countervailing trends. Uniting the groups in the Tierra Caliente region is difficult given their histories of animosity, conflict, and the difficulty of the terrain, which has long made governance problematic.⁴⁸ It should be noted that Nacho Coronel of the Sinaloa Cartel formed a “*Cárteles Unidos*” to counter *Los Zetas* in 2010, but when that threat diminished, the groups fragmented and fought.⁴⁹

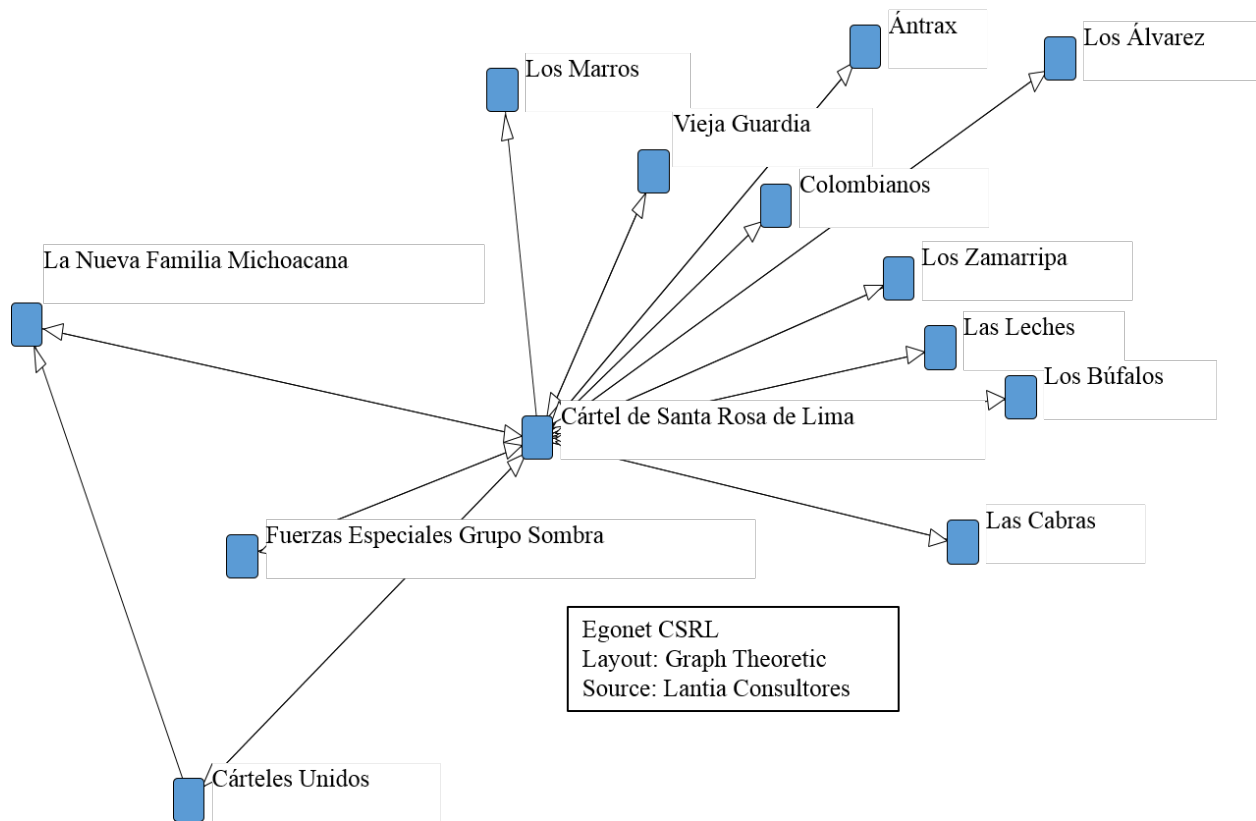
For better or for worse, cartel fragmentation appears unlikely to happen under Mexican President Andrés Manuel López Obrador’s administration, despite some notable successes (e.g., the arrest of the head of the CSRL, *El Marro*).⁵⁰ The López Obrador administration appears intent on avoiding the fragmentation of major organized crime groups through high-value targeting.⁵¹ This is likely due to a desire to avoid major bloodshed in large-scale confrontations, as happened in October 2019 in Culiacán when the government released Ovidio Guzmán following a bloody siege in response to his capture.⁵²

More recent reports have indicated that the Mexican government is using its new National Guard to effectively reify the battle lines between cartels and prevent conflict. In this sense the National Guard is patrolling the spaces between organized crime groups—not removing them.⁵³ This strategy suggests there will be limited fragmentation of organized crime groups for the duration of this administration, and when it does occur, it will likely be the result of internecine and inter-cartel conflict and less the result of government action. This assumes current trends continue.

Further, organized crime actors have entered legal industries, as evidenced by the recent (February 2022) threats against a U.S. Department of Agriculture inspector working on compliance in the avocado industry in Michoacán.⁵⁴ In response to the threats, the U.S. shut down all exports from Michoacán, the only state where avocado exports are authorized. As *Lantia Consultores* points out, this is in line with previous U.S. government responses to the targeting of U.S. law enforcement where the U.S. sought to establish a deterrent effect. This approach has so far succeeded in preventing violence against U.S. law enforcement in Mexico.⁵⁵

A bright spot for the López Obrador administration has been its focus on the financial resources of major trafficking groups. The Financial Investigations Unit (UIF) has become more high profile under the López Obrador administration and announced significant investigations and targeting of ill-gotten assets (e.g., Operation Blue Agave against the CJNG).⁵⁶ These money laundering investigations rely on network analysis to connect people to business entities and mirror the investigations conducted by the U.S. Treasury Department and its Office of Foreign Asset Control (OFAC). It is difficult to know how effective these have been, given the dark nature of the illicit market and its indeterminate size. Unfortunately, the head of the UIF was forced to resign in late 2021 as guests to his wedding in Guatemala carried large amounts of cash.⁵⁷

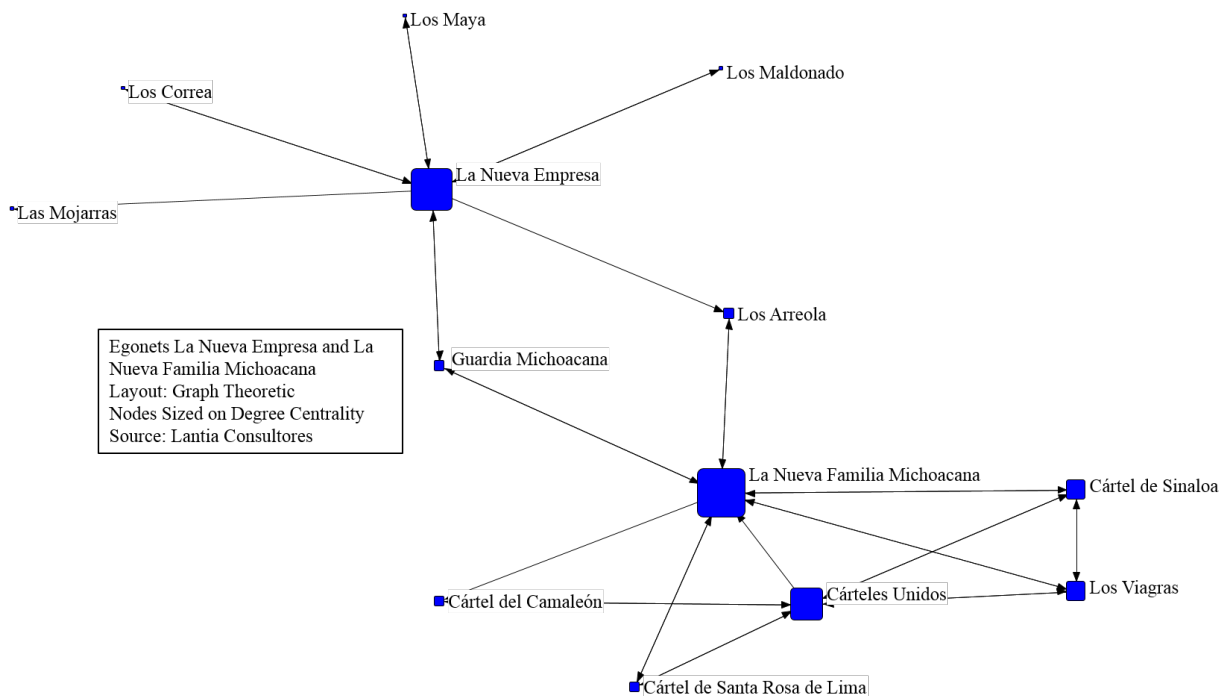
Figure 7. Ego-Net of *Cártel de Santa Rosa de Lima*



The *Cártel de Santa Rosa de Lima* (Figure 7) is one of the most densely connected actors in the Mexican cartel alliance structure despite its lack of a direct tie to the Sinaloa Cartel. This is also despite the arrest of its leader *El Marro* in 2020.⁵⁸ The CSRL is thus another group that may be increasingly resilient and capable of expanding its power through alliances with other groups.

Figure 8 depicts the combined ego-nets of *La Nueva Empresa* and *La Nueva Familia*, Michoacana groups in the Tierra Caliente region. *La Nueva Familia* is a subgroup of the *Cárteles Unidos*. *La Nueva Empresa* is in turn a subgroup of *La Nueva Familia*, and *Los Arreola* and *Guardia Michoacana* are in turn subgroups of *La Nueva Empresa*.

Figure 8. Combined Ego-Nets of *La Nueva Familia* and *La Nueva Empresa*



It should be noted that the CSRL is based out of Guanajuato, which is not in the Tierra Caliente region. However, it clearly allies with a significant number of groups from the Tierra Caliente region and, through these indirect ties, is allied with the Sinaloa Cartel. To address the increasing complexity of Mexican organized crime, analysts at Stratfor have generated maps that divide Mexico into three regions: the Gulf, the Northern Pacific (Sinaloa groups), and the Tierra Caliente (depicted broadly, beyond the subregion located in the states of Estado de Mexico, Guerrero, and Michoacán).⁵⁹ The alliance structures we see lend credence to this interpretation.

Figure 9. Four Key Brokers in the Bipolar Structure

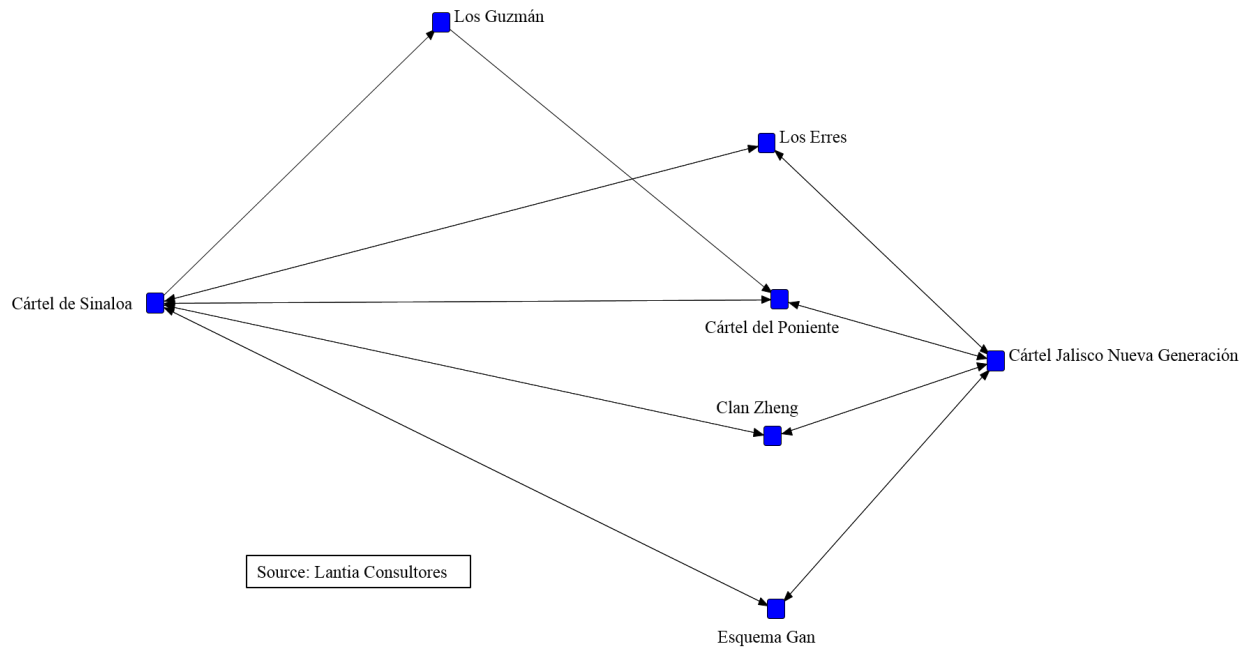


Figure 9 depicts the four key brokers with shared alliances with both the CJNG and the Sinaloa Cartel. The first is *Clan Zheng*, a money laundering organization with connections to China and specialized capacities such as fentanyl trafficking.⁶⁰ This may explain in part why it is permitted to work with both major cartels. It performs a critical function for both groups that may not be easily replaced. Thus, violence against this group by either group would hurt both. The second group is *Esquema Gan*. It is another money laundering group operating in Guadalajara, according to *Lantia Consultores*. Like *Clan Zheng*, their money laundering capacities may allow the group to remain neutral and work and ally with both the Sinaloa Cartel and the CJNG. The third group is the *Cártel de Poniente*. According to *Lantia Consultores*, it operates in Torreón and is a subgroup of *Los Guzmans*, participating in retail drug trafficking, arms/drug trafficking, and extortion. This may be an example of the “non-traditional” alliances observed and predicted by Sullivan and Elkus.⁶¹ *Los Erres* is an armed group operating in Tijuana that, according to the *Lantia Consultores* data platform, traffics drugs and arms. It is interesting to note that an armed group might have ties or alliances to both major poles within the bipolar system. The fact that this has occurred in Tijuana is worthy of discussion. The CJNG worked with the Sinaloa Cartel to enter the Tijuana trafficking corridor after weakening the *Cártel Arellano Félix*.⁶² The CJNG and Sinaloa Cartel ruptured at some point in roughly 2013.⁶³ Thus, it may be that some groups chose to remain neutral or were allowed to continue collaborating with both the CJNG and the Sinaloa Cartel during this conflict.

Figure 10. Network Main Component with Community Detection

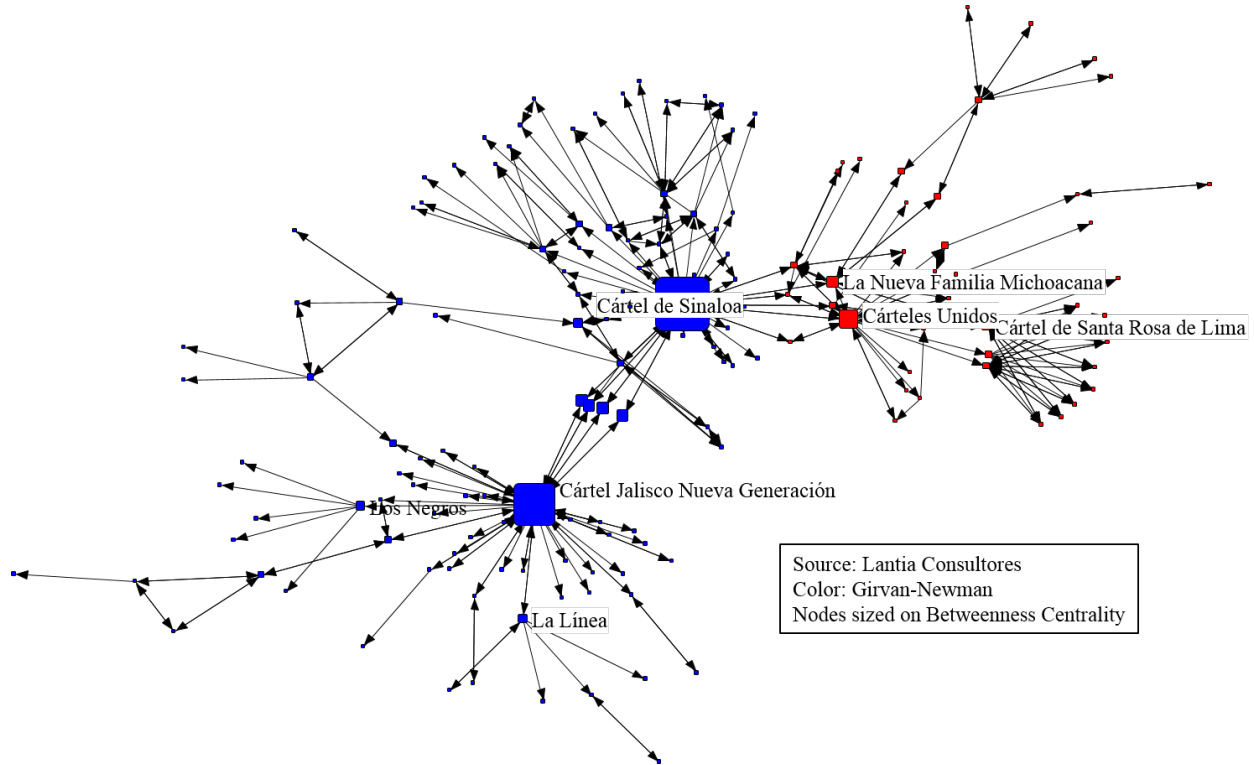


Figure 10 depicts the main component of the network with the Girvan-Newman community detection algorithm. Due to the shared brokers depicted in Figure 9, the CJNG and the Sinaloa Cartel are part of the same network component. Despite their war, they have so many connections that, mathematically speaking, they are part of the same component. Interestingly, it is the Tierra Caliente groups and those based in Guanajuato that are detected as a second subgroup. This is consistent with the ego network density depicted in Table 3.

Table 3. Density and Average Degree Scores

	Density	Total	St Dev	Average Weighted Degree
Sinaloa Cartel Ego-net	0.059	92	0.249	2.3
CJNG Ego-net	0.042	59	0.204	1.53
CU Ego-net	0.158	54	0.403	2.842
CSRL Ego-net	0.167	26	0.406	2
Overall Network	0.002	370	0.053	0.949

From Table 3, we can see that Tierra Caliente and Guanajuato connected ego networks, such as the *Cárteles Unidos* and the *Cártel de Santa Rosa de Lima*, have higher density scores than the overall network and the CJNG/Sinaloa Cartel.

Figure 11. Disconnected Network Components (No Isolates).

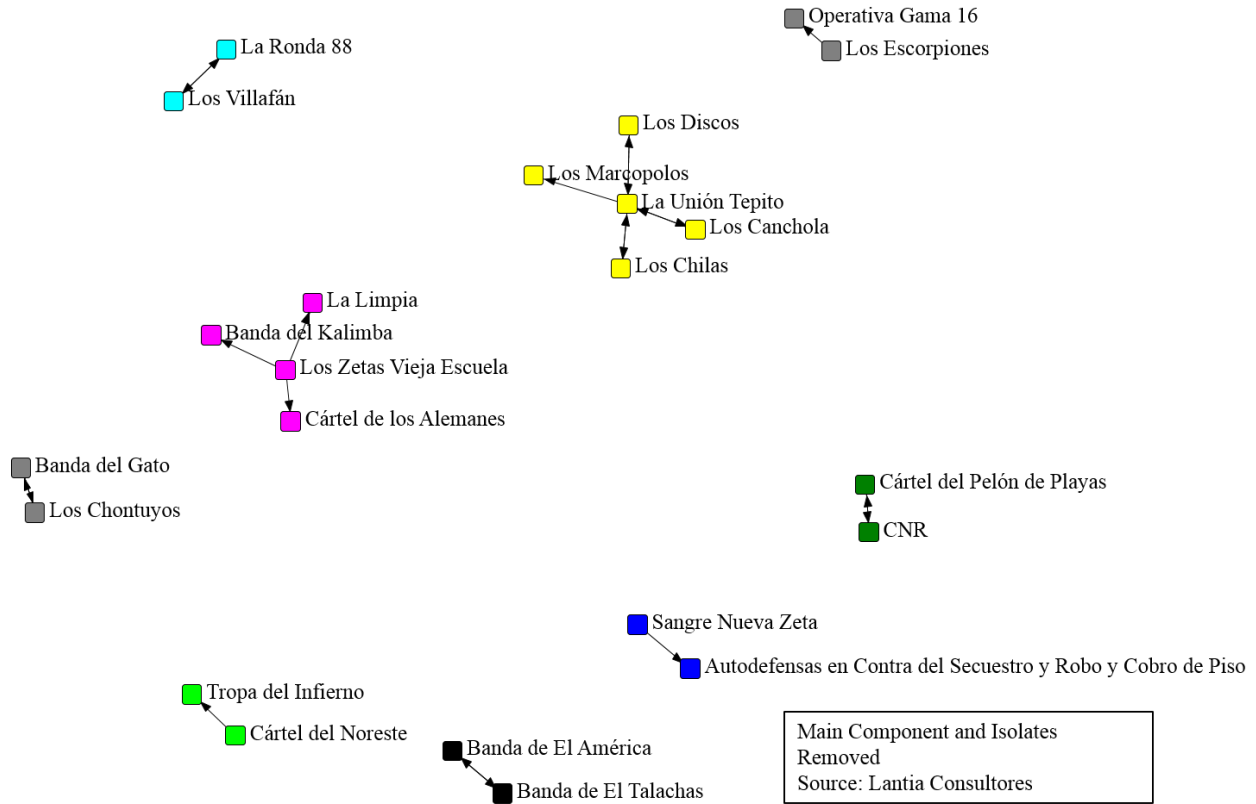


Figure 11 shows disconnected portions of the network and was achieved by removing the main component and isolate nodes. The *Cártel del Noreste* is disconnected from the main network component only connecting to its armed subgroup/armed wing, the *Tropa de Infierno*. This may be specious, however. Power in the world of Mexican organized crime is not just about connections to other armed groups and alliances, but profits. Any group such as the embattled CDN, which controls the lucrative Nuevo Laredo trafficking corridor, has the capability to project power beyond this limited *plaza*.⁶⁴ Thus, we should not ignore the roles of profit and strategic positioning, regardless of illicit network position.⁶⁵

Conclusions

Mexico has a bipolar alliance structure that is divided between the CJNG and the Sinaloa Cartel. The primary contribution of this paper is to demonstrate that the alliances have fundamentally different structures. The CJNG alliance is highly centralized with almost no subgroup ties. The CJNG thus appears to be a dominant, hierarchical, and critical node. This was visually demonstrated in figures and quantitatively presented in tables based upon the structure of the network. It strongly suggests the CJNG seeks control of the groups within its network as a monopoly. Many of the allies and subgroups have names with *Nueva Generación*, demonstrating an attempt to brand the groups as subgroups and affiliates. It also suggests that the removal of the CJNG via high-value targeting of leadership figures could be highly disruptive to the alliance and slow its seemingly inexorable territorial expansion.

Conversely, the Sinaloa Cartel pursues a denser alliance network strategy, inserting itself into existing alliances or fomenting alliances among its subgroups. There are two likely explanations for this. First, the Sinaloa Cartel alliance structure could be a sign of weakness in the face of the CJNG national expansion, and these alliances are a sign of realist balancing by non-state actors.⁶⁶ Second, the Sinaloa Cartel alliance structure could be a result of its *modus operandi* related to a transactional business model and a history of “federation” and networked alliances. In this scenario, it is simply the Sinaloa Cartel’s style to form alliances and federations with existing trafficking and organized crime groups. Both scenarios are equally likely, and the reality is that both may be contributing to the structure.

While the overall dark alliance structure was sparse and fragmented, the Tierra Caliente region had the densest alliance structures. The nearby state of Guanajuato, where the CJNG battles the CSRL, was also a dense subgroup.

What comes after the CJNG or the Sinaloa Cartel? Network analysis cannot provide concrete forecasts. However, there are two primary hypotheses based on network theory presented here. First, groups with significant alliances, such as the CSRL, the *Cárteles Unidos*, *La Nueva Familia Michoacana*, and *Guerreros Unidos*, may be well positioned to use those alliances to fill vacuums left by the removal of the Sinaloa Cartel or the CJNG from dominant positions. Conversely, the removal of dominant groups is not likely to be clean. Rather, fragments within those groups will retain significant infrastructure, resources, alliance connections, and other capacities that will allow them to fill vacuums. Thus, the second hypothesis is that a fragment of the Sinaloa Cartel or the CJNG will play a major role in the future of Mexican trafficking if those groups are removed. Given the internal alliance structure of the Sinaloa Cartel pole, it appears that in the event of the removal of the Sinaloa Cartel, its subgroups and allies would be more resilient and better positioned to form new replacement connections than those within the CJNG alliance structure in the event of the removal of the CJNG.

If the Mexican government returns to a high-tempo, high-value targeting approach, we are likely to see more disconnected cells and small groups that will achieve their ends in a networked fashion. Given weak rule of law, these groups will increasingly expand into legal markets and engage in predatory extortion and other criminal activities that are not low in profile or impact. They will increasingly challenge the state in “criminal enclaves” and “transform” the state more broadly—especially in the densest networked/conflict zones.⁶⁷

Limitations and Avenues for Future Research

This study has numerous limitations. It is primarily exploratory in nature. Future research could triangulate with high-level trafficker interviews to ascertain the strategies employed by the various trafficking groups in terms of their alliances and business models. Combining quantitative and qualitative methods could test the hypotheses presented here to establish causality in our empirical findings—that the Sinaloa Cartel and the CJNG pursue fundamentally different internal alliance structures—and establish causal mechanisms. Future research could also assess new possible resulting network structures in the event of the removal of the CJNG.

Policy Recommendations

Organized crime in Mexico can only be addressed through investments in rule of law institutions, including improved local police and stronger investigative capacity at all levels of government. Mexico needs institutional stability rather than fundamental government overhauls of all bureaucracies every six-year presidential term. The National Guard should expand and improve its investigative capacity so that it can target high-level organized crime actors and set standards for state and local law enforcement.⁶⁸ Improved tax collection is necessary to institutionalize better law enforcement and court systems.⁶⁹ Additionally, a focus on anti-corruption is needed and must be accompanied by political consensus on this matter across all political parties. Mexican intelligence should also use network analysis to plan for the aftereffects of high-value targeting by U.S. and Mexican law enforcement.

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⁶⁹ Jones, "The Strategic Implications of the Cártel de Jalisco Nueva Generación"; John Bailey, *The Politics of Crime in Mexico: Democratic Governance in a Security Trap* (Boulder: First Forum Press of Division of Lynne Reiner Publishers, Inc., 2014).