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CHAPTER

24 Gang Ecological Diversity in the Hollenbeck Area of Los Angeles, 1978–2012

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Abstract

Criminal street gangs are paradoxically both ephemeral and durable social forms. Unique gangs might emerge to only disappear a short while later, while others may persist for decades. These dynamics raise questions about the ecological diversity of gangs over time and space. This chapter examines gang diversity in an area of Los Angeles over a 35-year period. It looks to annual counts of the number of uniquely named gang cliques identified in gang-related homicides. The chapter finds that gang diversity fluctuates over time from a minimum of 8 to a maximum of 34 unique cliques. Homicide is concentrated among a small number of unique cliques; one uniquely named clique is tied to 86 homicides over this period. Most cliques are around for a very short period of time—the median lifespan of a clique is seven years, and 41% of all cliques appear for just one year. While the homicides per clique is relatively stable over time, it is clear that more cliques on the landscape is associated with more homicides per clique; there were 63% more homicides with 34 unique cliques on the ground compared to when there were just 4. Overall, the chapter estimates that this area of Los Angeles could support as many as 40 unique cliques at any one time. It considers several explanations for the observed patterns and discuss how gang diversity offers a unique window into the challenges communities with chronic gang problems face.

Keywords: gangs, murder, ecological diversity, richness, East Los Angeles

Subject: Organised Crime, Violent Crime, Policing, Criminology and Criminal Justice

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Criminal street gangs are flexible social forms (Ayling 2011; Densley 2013; Valasik and Phillips 2017). There is considerable evidence that individuals find few barriers to joining gangs (Pyrooz and Sweeten 2015),

seamlessly “code switch” between gang and non-gang social roles while active (Patillo-McCoy 1999; Bolden 2020), and readily desist from gang life when it suits them (Esbensen and Osgood 1999). With individuals coming and going, it stands to reason that gangs as group-scale entities are seen to coalesce and fragment over time, and ultimately disappear (Aspholm 2020; Stuart 2020).

Paradoxically perhaps, gangs are also durable social forms (Brantingham, Valasik, and Tita 2019; Klein and Maxson 2006). Gangs adopt unique names and distinctive “signs or symbols,” which collectively mark group identity (Bolden 2018; Lopez-Aguado and Walker 2021). The markers of gang identity are often associated with well-defined geographic territories (Brantingham et al. 2012) or key activity nodes (Tita and Ridgeway 2007), giving them permanence that transcends the involvement of individual members (Valasik and Tita 2018). Individual crimes, or periods of violence, can also be potent markers connected to a specific gang, time, and place (Bichler, Norris, and Ibarra 2020). In the short term, such markers can rally the community for or against the gang as a group (e.g., “anti-violence marches”) (Montejano 2010; Spergel and Grossman 1997; Torres-Harding et al. 2018; Zatz and Portillos 2000). Over the long term, such events may create recurrent behavioral patterns that support gang persistence (e.g., crime anniversaries, “hood days”) (Aspholm and Mattaini 2017; Horowitz 1987).

p. 519 Conflict within and between gangs may contribute to either the stability or instability of gangs (Valasik et al. 2018). Conflict within gangs most likely contributes to (or is a symptom of) weak internal organization (Decker and Curry 2002; Papachristos and Kirk 2015; Randle and Bichler 2017). Such gangs may easily fragment if violence happens to remove a key player from the street (see Aspholm 2020; Vargas 2014). Violent attacks from without may also be serious enough to fragment a gang, but it may also make gangs more resilient if their *raison d'être* is to offer protection (Hughes 2013; McGloin and Collins 2015). Or violence may make existing gangs more attractive for those looking to join for protection (Gravel et al. 2018), strengthening large gangs while weakening small ones. Similar logic applies if the principal utility of gangs is in the “reputational economy” (Cloward and Ohlin 1960; Descormiers and Morselli 2011). Forming a new gang may offer a shorter path to the top of a local reputational hierarchy than joining an existing gang (Densley 2014), a process that encourages more gangs to form. The reputational heights in large existing gangs may be greater, however, which encourages the persistence of fewer large gangs (Felson 2006; Van Gemert 2001).

The tension between group stability and instability raises several important questions about gang diversity over time. While the actual mechanisms are certainly complex and worthy of investigation (see Gravel et al. 2018; Brantingham et al. 2012; Brantingham et al. 2019), we also believe it is important to establish some baseline empirical evidence that goes beyond the anecdotal. Here we examine the diversity of gang cliques in an area of Los Angeles over a 35-year period (1978–2012) (see also Barton et al. 2020; Brantingham et al. 2019; Valasik and Phillips 2017). Specifically, using detailed data on homicides, we record the names of gangs participating in a homicide (as suspect or victim). We then count the number of unique gang names—the clique richness—present each year. We track the temporal evolution of clique richness and seek to understand how richness is related to homicide trends. We offer several conceptual observations for the observed patterns, but do not seek to test any specific model of gang diversity.

Defining Gangs and Gang Crime

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An enduring artifact of street gang scholarship is the inability for researchers, criminal justice actors, and policymakers to agree on a common definition of what constitutes a street gang, who is a gang member, or when a crime should be designated a gang-related event (Curry 2015). Many definitions offered over the years share a few elements in common, such as the centrality of youth (Sheldon 1898, 428; Puffer 1912; Klein 1971), group-level structure (Klein and Crawford 1967), territoriality (Thrasher 1927), and often the importance of group-marking symbols and some form of membership requirement (Hughes, Schaible, and Kephart 2022). The problems surrounding the use of crime and delinquency measures as defining characteristics of gangs are well known. Miller (1992), for example, regarded gangs as “a self-formed association of peers, bound together by mutual interests, with identifiable leadership, well-developed lines of authority, and other organizational features who act in concert to achieve a specific purpose or purposes, which generally include the conduct of illegal activity and control over a particular territory, facility, or type of enterprise” (21; see also Klein 1971, 13). Criminal code and policy definitions hinge on this connection between gangs and crime and delinquency. The California state law, for example, defines a gang as “any organization, association or group of 3 or more persons whether formal or informal, which (1) has continuity of purpose, (2) seeks a group identity, and (3) has members who individually or collectively engage in or have engaged in a pattern of criminal activity” (Section 186.22(f) of the California Penal Code). Katz and Jackson-Jacobs (2004), by contrast, point out that to include crime and delinquency as part of the definition of gangs is circular: A group of youth that engages in crime is classed as a gang, and yet we turn around and are surprised that gangs commit so much crime (see also Curry 2015). Despite these concerns, crime and delinquency remain central to how gangs are defined, studied, and policed.

Astutely, Papachristos (2005) notes that this definitional ambiguity has little value to law enforcement officers, victims of gang-related violence, or gang members themselves. Individuals involved in street gangs are uninterested in the legal definitions or scholarly semantics that determine if their group is labeled a street gang. Papachristos (2005), adapting Everett C. Hughes (1948) definition of an ethnic group, argues that street gangs do not exist because of an observable or measurable variation differentiating them from other groups. Instead, street gangs exist because those individuals who are part of the group and those who are not part of the group act, socialize, feel, and believe that the group is a gang. That is, “gangs take their meaning instead from their function and from the consequences of their actions” (Papachristos 2005, 644). Street gangs are thus dynamic, adapting and evolving, and amorphous as a group’s boundaries shift with the fluid movement of members joining and leaving the group (Ayling 2011; Densley 2013; Klein and Crawford 1967). We hew closely to this perspective in what follows.

The challenges with defining gangs extends to the definition of gang-related crimes. There is little question that gang crime exists. Rather, the debate has centered on the criteria necessary to identify whether a given crime is gang related or not (Esbensen et al. 2001; Klein and Maxson 2006). A gang-affiliated crime is one where the suspects or victims are known gang associates. A gang-motivated crime is tied to gang activity that directly or indirectly supports the goals of the gang (e.g., territoriality, retaliation, recruitment) (Rosenfeld, Bray, and Egly 1999). Traditionally, the Los Angeles Police Department (LAPD) has been positioned as an example of the gang-affiliated approach to labeling gang-related crime (Klein and Maxson 2006), while the Chicago Police Department has been positioned as an example of the gang-motivated approach (Howell and Griffiths 2018).

It is also important from a methodological standpoint to highlight that gang-affiliated and gang-motivated definitions can result in different subsamples of crime. Gang-motivated crimes often represent a smaller subsample of all crimes where those crimes are committed by people who just happen to be gang members, but the crimes are not motivated by the goals of the gang (e.g., domestic violence; Papachristos 2009). However, gang-affiliated crimes might also represent a smaller subsample of all crimes in situations where

crimes have all the hallmarks of gang-motivated violence but suspects or victims are lacking or uncooperative (e.g., drive-by shootings). In practice, police likely rely on the detailed circumstances surrounding individual crimes to determine if they are gang related or not, displaying far more flexibility than this simple distinction between gang-affiliated and gang-motivated approaches allows (Brantingham, Yuan, and Herz 2020). In any case, both the gang-affiliated and gang-motivated definitions are able to statistically differentiate gang-related from non-gang-related crimes with few other substantive differences between member- and motive-based approaches (Klein and Maxson 2006).

Recognizing Unique Gangs in Gang-Related Crimes

An important distinction in our analysis below is whether a reported crime is associated with a named gang. Given the range of criteria used in labeling gang-related crimes, it is possible for some crime to be deemed gang related but simultaneously provide insufficient information to identify which specific gangs might be involved. A drive-by shooting, for example, is a hallmark of gang violence and is usually sufficient to label the crime as gang related. Yet the gang responsible for the shooting and the gang targeted may not be known unless witnesses are willing to come forward (Pyrooz, Wolfe, and Spohn 2011). A different drive-by shooting, however, may have involved the perpetrators calling out the name of their gang just prior to the shooting, while the victim may be from a known gang because they were willing to self-identify. In general, we recognize that there are three unique patterns by which gang-related crimes may be associated with named gangs: (1) the suspect and victim gangs are known; (2) the suspect gang is known, but the victim gang is not; or (3) the suspect gang is not known, but the victim gang is. In addition, we recognize that the suspect and victim gangs associated with an individual crime may be the same or different. If the suspect and victim are from the same gang this is *intra-gang* violence; if they are from different gangs this is *intergang* violence.

As discussed above, defining gangs is a challenging task. Naming conventions for gangs are equally complicated (Pyrooz and Decker 2019). For instance, law enforcement may develop their own set of rules for naming gangs separate from life on the street (Scott 2020). Following Papachristos (2005), we assume that gangs have the freedom to adopt names that are socially relevant to them and that law enforcement reports mostly follow what they hear. At times the social relevance of a gang name is relatively easy to spot. Geographic landmarks such as street or neighborhood names feature in a chosen name (Valasik and Tita 2018). For example, several distinct “Fruit Town” gangs in Los Angeles claim territories encompassing streets with the names of fruit trees. In other instances, names may derive from events or places of historical, cultural, or social significance that are opaque, or at least not obvious to outsiders (Rymes 1996). For example, White Fence, a gang in the Boyle Heights neighborhood of east Los Angeles, with roots stretching back well before 1940 (Ranker 1957), reportedly derives its name from a “white fence” that surrounded the La Purisima Church. The church is still located in White Fence territory today, but the eponymous fence is long gone. Gang names also sometimes hint at hierarchical relationships. It is not uncommon for gangs to be organized by age, with an older age cohort using one name and one or more younger age cohorts using the same name but appended to mark the segments of the “next generation” (Rymes 1996).

Less obvious are the relationships among gangs that share similar names but are clearly competitors rather than hierarchically related. Names such as Crips, Bloods, Mara Salvatrucha (MS-13), and Mexican Mafia, among others, are used repeatedly by gangs in the same area, but with modifiers to distinguish themselves from one another. In Los Angeles, for example, there may be 8–10 different *sets* that use the name East Coast Crips, but distinguish themselves (and claim specific territory) by appending a street number. East Coast Crips are but a few of the hundreds of *sets* in Los Angeles that use Crips in their name. While it is tempting to group gangs that share common name elements together into some type of multiscale or

segmentary social order, it is not clear when (or even if) this is warranted. For example, one might seek to group the 118 East Coast Crips with the 68 East Coast Crips (and the other similarly named sets) into a higher-order group called East Coast Crips, group the East Coast Crips with other higher-order groups such as Gangster Crips (which includes at least 15 uniquely named sets) to form a grouping called Crips, and then do the same thing for various Bloods, MS-13, Mexican Mafia, and so on. Yet gangs with similar names seem as likely to be enemies as allies (Decker 1996; Randle and Bichler 2017). We side step these issues in what follows by assuming that each uniquely named gang represents a socially distinct entity at the time the name was recorded.

Clique Diversity

One way in which to measure the scope and scale of the gang problem is to consider the diversity of gangs present in a city. It is commonplace in ecological studies to think of the diversity of life in a place as somehow reflecting the “ecological health” or “resiliency” of that place. More ecological variety equates to greater ecological health. In the case of crime, the opposite assumption has been suggested (Brantingham 2016). The greater the variety of crime types found in a place, the more complex and severe the problems faced by that place. It seems plausible that a similar situation holds for gang diversity. To wit, the greater the number of unique gangs found in a particular place, the more challenging the gang problem is likely to be. While there is much to be debated about this conjecture, a first critical step is simply to document patterns of gang diversity. This is the task of the remainder of this chapter.

What do we mean by “gang diversity”? To avoid confusion stemming from questions of group size and scale implied by the terms “gang” and “set,” we will use the term “clique” to refer to any uniquely named gang that appears in the empirical record (Papachristos 2006). Gang studies consider a clique to be an aggregation of members that form a cohesive subgroup where all individuals are strongly connected to each other and participate in a variety of activities on a regular basis. We take gang names at face value and treat even slight variations as representing uniquely named cliques. For example, if three different crimes recorded victims affiliated with (crime 1) the 118 East Coast Crips, (crime 2) the East Coast Crips, and (crime 3) the Crips, these would be considered three unique cliques. We assume that names are used to signify social distinctions that were important to the situation of that specific crime such that *socially* the gang involved in the first crime was different than the one involved in the second and the one involved in the third. A similar argument was made about crime event diversity where, for example, a robbery + car theft is an ecologically distinct “crime type” from a robbery or car theft that occurs alone (Brantingham 2016). The approach may overestimate true gang diversity, but we judge it to be preferable to clumsy systematics that risk getting the relevant social relationships all wrong (see De Queiroz 1988). It is important to note that we rely on clique names as identified by police in association with homicides. We consider police officers, particularly anti-gang units, as one type of subject matter expert that is well practiced in identifying and recording evidence associated with criminal events (see Katz, Webb, and Shaefer 2000). More is said on this issue in the discussion that follows.

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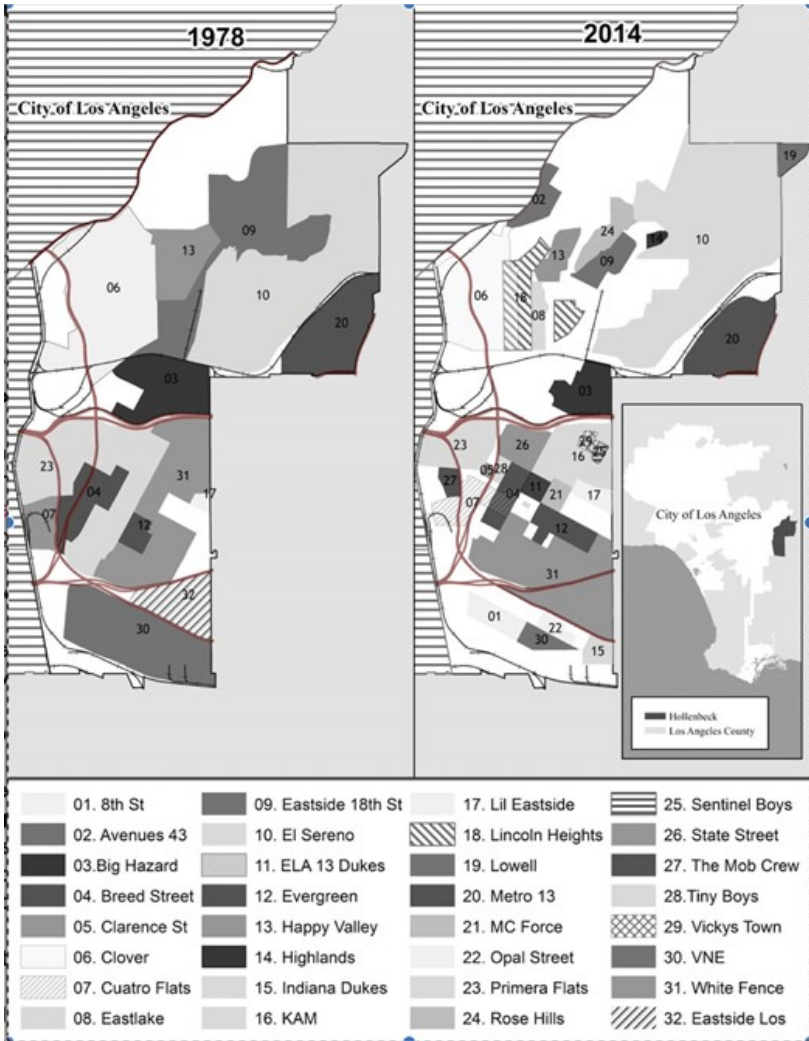
Gang diversity is then simply a count of the number of uniquely named cliques recognized in a bounded area over a particular interval of time. In the ecological literature, this type of diversity is often referred to as (species) richness and is distinguished from (species) evenness, which takes into account both the number of unique entities (species) and the proportion of individuals (or biomass) within those entities. As discussed in more detail below, we only consider cliques that are known through the homicides in which they are involved. This approach is similar to that taken by Papachristos (2009) in his work on gang homicide networks. Other data sources, such as territory maps (Brantingham et al. 2019) or field interview cards (Valasik, Reid, and Phillips 2016) may record a different number of unique gangs (typically more). However, not all of these gangs may be involved in the most serious crimes, and static sources of

information such as territory maps may not reflect the dynamic reality of gangs on the ground (e.g., gangs coming into and out of existence). It is well known that ecological diversity increases with the size of the area sampled (Magurran 2004), and a similar phenomenon has been documented with crime diversity (Brantingham 2016; Lentz 2018). Here we focus on a single area and do not examine how clique diversity changes with changing area size.

Data and Analytical Approach

The present research examines patterns in gang clique diversity over time in the LAPD Hollenbeck policing division. Hollenbeck is located on the eastern edge of the City of Los Angeles (Figure 24.1). In the 2010 census, Hollenbeck had a resident population of approximately 187,000 people living in a 15.2-square-mile area. At the time, a quarter of the residents were living below the poverty line (25.2%) and about a third were living in owner-occupied residences (30.5%). The majority population is Hispanic (84.1%), with most individuals tracing their ancestry to Mexico.

Figure 24.1



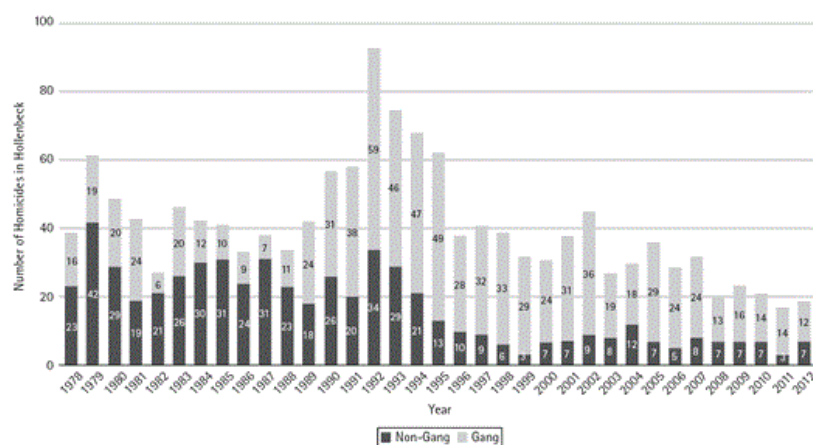
Map of LAPD's Hollenbeck Policing Division with Named Gang Territories Recorded in 1978 and 2014

Hollenbeck's gangs have a long and well-documented history stretching back more than 70 years (Ranker 1957). Some of the gangs first documented back in the 1940s are present today using the same names. This

image of stability is mixed with other evidence of considerable change in gang numbers and territorial coverage (see Figure 24.1). For example, of 14 distinct gang territories recognized in Hollenbeck in 1978, at least one territory was no longer recognized in 2014. In addition, the total number of recognized gang territories had grown to 31 in 2014.

Here we examine gang cliques identified in connection with homicides occurring in Hollenbeck between 1978–2012 (Valasik et al. 2017; see Figure 24.2). A total of 1,425 homicides occurred in Hollenbeck over this period. Homicides in Hollenbeck first peaked in the late 1970s, with 61 total occurring in 1979. Incidents then declined through the bulk of the 1980s, reaching a minimum of 27 in 1982. Homicides rose sharply in the early 1990s, peaking in 1992 with 93 in total (a 52% increase over the prior peak in 1979). Homicides then generally declined through the late 1990s and 2010s. Our primary interest is in gang-related homicides. We therefore drop non-gang homicides from further consideration. In Los Angeles, as noted above, the usual assumption is that gang-related designation of a homicide follows from the victim or suspect being gang affiliated in some way. Notably, Hollenbeck homicides were majority non-gang prior to 1988. In each year after 1988, homicides were majority gang related.

Figure 24.2



Homicides in Hollenbeck, 1978–2012

Gang-related homicide files were reviewed to identify the names of gang cliques connected to the crime (see also Valasik et al. 2017). Clique names were recorded as reported by LAPD investigators. We did not attempt to infer clique names from contextual information (e.g., location of the crime in a known gang territory). We recorded clique names associated with victims and suspects separately. We recorded the clique as “unknown” if the homicide was deemed gang related by the LAPD but there was no specific gang affiliation contained in the file. If both suspect and victim gang are unknown, the homicide is dropped from further analysis. Clique names were then scrubbed to correct spelling errors and other minor sources of misalignment (e.g., translation *Calle Ocho* versus 8th St.; abbreviation 8th St. versus 8th Street). We then assume that any difference between names after scrubbing represents a unique clique (e.g., Avenues 43 versus Avenues). The number of unique cliques is then tabulated by year, providing a measure of clique diversity or richness over time. We include all gangs active in the area, even if their nominal territory is outside of Hollenbeck. For example, one homicide in Hollenbeck involved a clique going by the name Pasadena Latin Kings, pointing to an area outside Hollenbeck. Nevertheless, because the crime itself occurred within Hollenbeck we count this gang as part of the diversity of cliques active in the area. Table 24.1 reports the results of this data scrubbing process. The 1,425 homicides that occurred in Hollenbeck between 1978–2012 were associated with 105 uniquely named gangs. A total of 79 uniquely named cliques appear as victims and 78 as suspects. Only around half of all uniquely named cliques ($n = 52$) are recorded in both

victim and suspect roles in homicides over this period. Thus, the other half ($n = 53$) appear exclusively either as victims ($n = 27$) or suspects ($n = 26$).

Table 24.1 Descriptive Statistics

Number of homicides 1978–2012	1,425
Number of gang-related homicides	638
Number of homicides with named victim clique	524
Number of homicides with named suspect clique	489
Number of uniquely named victim cliques	79
Number of uniquely named suspect cliques	78
Number of uniquely named cliques	105

Using these data we now examine a series of patterns in gang diversity, including (1) the temporal trends in clique diversity from 1978–2012; (2) variation in the share of homicides attributed to cliques (homicide concentration); (3) the stability of cliques over time, measured as the maximum number of consecutive years in which a clique is identified; (4) homicides per clique, or a clique standardized homicide rate; and (5) the relationship between clique diversity and homicides per clique. We also use an accumulation curve to estimate the maximum number of cliques that could be supported by the Hollenbeck area. Accumulation (and rarefaction) curves are used in ecology to estimate taxonomic richness (e.g., number of unique species) as a function of sample size (Colwell et al. 2012). Here the number of homicides constrains observable clique diversity in a way similar to how sample size constrains observed species diversity in an ecological field study.

Gang Diversity Patterns

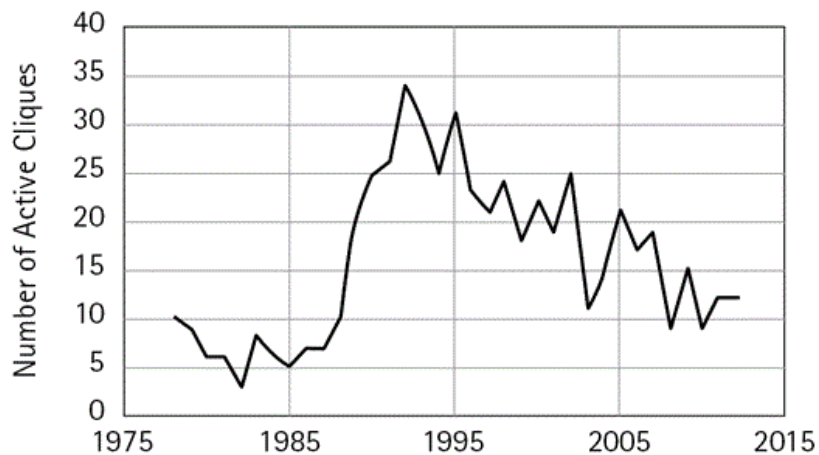
We first establish some general boundary conditions for gang diversity. Given the $N = 638$ gang-related homicides that occurred in Hollenbeck between 1978–2012, the maximum possible number of unique cliques is $2 \times N = 1,276$. This maximum diversity estimate would hold if every homicide had a unique clique represented as the victim and a unique clique as the suspect, and we assume that homicides never involve three or more unique cliques. The minimum possible diversity would be one unique clique, which would hold if one clique were present over the entire time period and all homicides were internal to that clique. Though extreme, these boundary conditions provide guidance on the magnitude of the observed clique diversity. For example, the observed number of uniquely named cliques ($N = 105$) in the dataset is just 8.2% of the maximum theoretically possible.

Temporal Trends

Figure 24.3 shows the number of uniquely named cliques involved in gang-related homicides per year in Hollenbeck. Ten unique cliques were recognized in 1978. This number declined through the early 1980s, reaching a minimum of three active cliques in 1982. The number of unique cliques rose sharply starting in 1985 and peaked in 1992 at 34. The number of unique cliques declined approximately linearly since then. Following the peak in 1992, a minimum of nine active cliques were observed in 2008 and again in 2010. The trend in gang diversity follows closely the broader trend for homicides in Hollenbeck (Figure 24.2), a point to which we return below. ↴

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Figure 24.3



Note: An active clique is defined as a named group with one or more homicides recorded in that year.

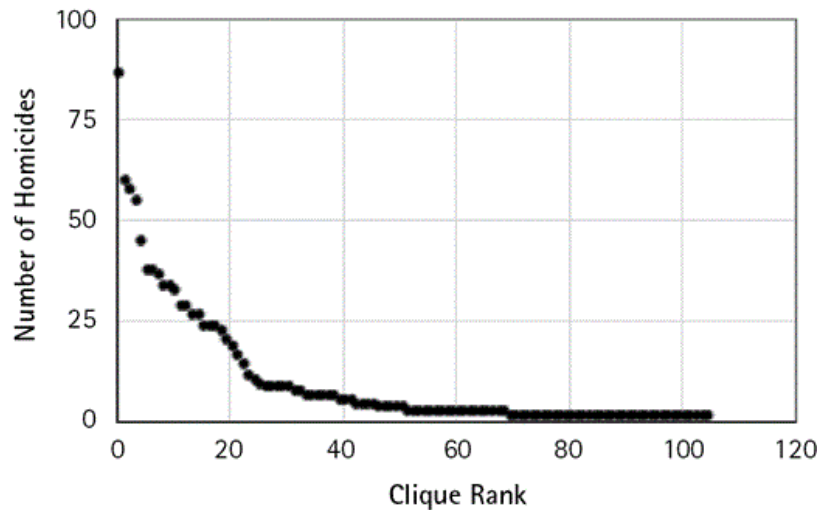
Number of Active Cliques per Year, 1978–2012

Homicide Concentration

Figure 24.4 shows a rank-abundance curve, or Whittaker plot, of the number of homicides connected to each uniquely named clique, sorted in descending rank order. The most active clique (Locke Street), combining roles as both suspect and victim, was connected to 86 homicides over the 35-year period from 1978–2012. This one clique was involved in 8.5% of all homicides with at least one named clique. The first 11 cliques (10.5% of all named cliques) were connected to 50.1% of all homicides as either suspect or victim. Thirty-six cliques (34% of all named cliques) were each involved in just one homicide over the 35-year period. The pattern is indicative of the “concentration of homicide” among just a handful of cliques. A few cliques are connected to the majority of homicides, but most of the diversity in gang homicides is attributable to “singleton” gangs that appeared just once. ↴

p. 528

Figure 24.4

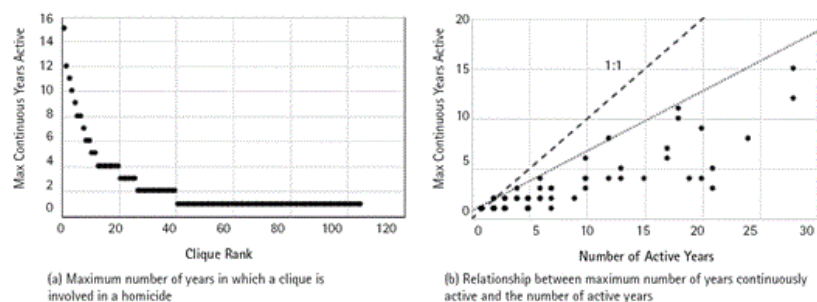


Number of Homicides Connected to each Named Clique, 1978–2012 (ranked in descending order)

Ecological Stability

Figure 24.5 provides two views of the stability of cliques over time. The first (part (a)) is a variant of a Whittaker plot showing the maximum number of years that a given clique was *continuously active*, sorted in descending rank order. For example, a clique that was involved in one or more homicides in each year between 1986–1990 (five years) and then again in 1993 and 1994 (two years) would be recorded as having a maximum of five years continuously active. As was the case for the concentration of homicides, here we see that just a few cliques have long stretches of continuous activity. Only four cliques display stretches of activity lasting 10 or more consecutive years. Just one clique was active over 15 consecutive years, representing just under half of the total observational window of 35 years. Sixty-five of the 105 uniquely identified cliques (61.9%) were continuously active for only single year at a time.

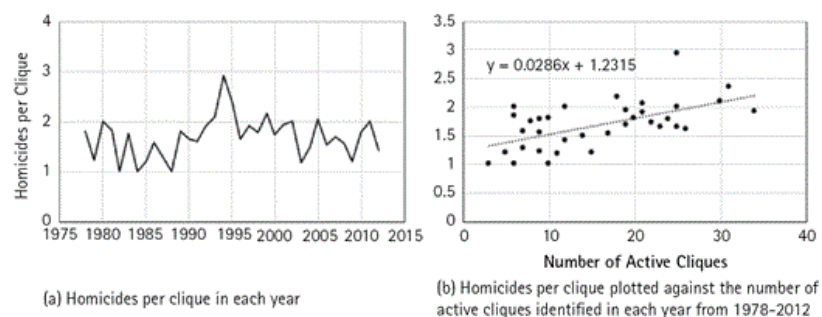
Part (b) of Figure 24.5 considers the relationship between the maximum number of years continuously active against the total years active. It is possible that some cliques were intensely active only over a short period of time, and then were not active again, while others were intermittently active over long stretches of time. The observed relationship between the maximum number of years continuously active and the total number of active years is wedge-shaped (e.g., Knight et al. 2014). A gang that is active in only one year of the 35 total years can only be continuously active for just one year. By contrast, a gang that is active for 10 years out of the 35 total can be active in consecutive years anywhere between 10 and 1 year in a single stretch. If active for 10 consecutive years, then there are no breaks in the appearance of the clique from its “first historical appearance” to its “last historical appearance” (Stephen 1998). If consecutively active for only one year at a time, then there can be one or more years between each time that a clique appears in the historical record. We see both patterns in Hollenbeck. In general, cliques that are active for more years in total also have longer stretches of time where they are continuously active. For example, one of the cliques tied for the most number of years active (28) was also the clique with the most number of years continuously active (15). However, this pattern is not universally true. For example, the three cliques that were tied for being active for a total of 10 years were continuously active at most for 3, 4, and 7 years in any one stretch.

Figure 24.5

Stability of Cliques over Time

p. 529 Homicides per Clique

While individual cliques may be unstable (i.e., prone to extinction), Figure 24.6 (a) suggests that the central tendency of the relationship between the number of cliques and number of homicides is relatively stable over time. The number of homicides per clique per year fluctuates between 1 and 2.92 with a mean of 1.7 (sd = 0.41). Interestingly, the number of homicides per clique peaks in 1994, two years after the peak in total homicides in Hollenbeck (see Figure 24.2). Figure 24.6 (b) plots the number of homicides per clique against the total number of cliques active per year. This latter visualization reveals that more cliques are generally associated with more homicides per clique ($t = 4.18$, $p < 0.001$, Adjusted R-squared = 0.326). For example, there were 63.8% more homicides per clique with 34 unique cliques on the ground in 1992 compared with the four cliques in 1982.

Figure 24.6

Stability of Number of Cliques and Number of Homicides over Time

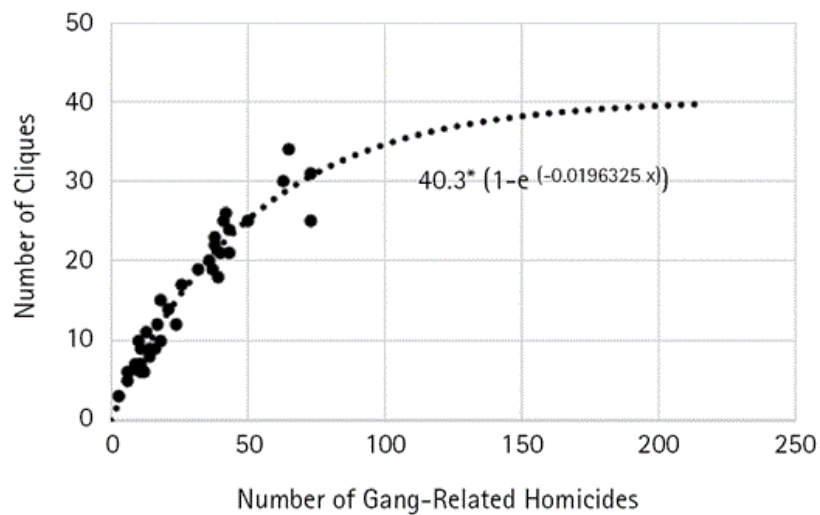
Estimating Maximum Gang Diversity

We now turn to one final question that can be addressed with the data presented here. While inspection of gang names sometimes makes it feel like every street block has a different resident gang, the substantive question is, How many unique gangs can an urban environment actually support? Clearly, it is many fewer than the total street segments in an area.

Figure 24.7 shows the number of unique cliques against the number of gang-related homicides recognized in each year. The data follow a regular pattern reminiscent of species accumulation curves (Flather 1996; Ugland, Gray, and Ellingsen 2003). Specifically, because we observe gangs through the homicides they are involved in, it is necessarily the case that the number of homicides in any given year places an upper limit on the number of unique gangs we can recognize in that year. For example, a year with only one gang-related homicide at most could reveal two unique gangs (i.e., one as suspect and the other as victim). A year with 10

gang-related homicides could produce observations of up to 20 unique gangs (i.e., each homicide has a unique gang as suspect and another unique gang as victim). Over many years with different numbers of homicides, we get a different sampling window in the diversity of gangs. If we assume that the diversity is stationary in time—which is not necessarily true—we can fit an accumulation curve to the observed data and estimate the number of gangs that we would expect to see given a sufficiently large number of homicides *to sample them all*. We fit a negative exponential distribution of the form $y = a(1 - e^{-bx})$, where y is the number of unique cliques and x is the number of homicides (Adjusted R-squared = 0.985). The parameter a gives the asymptotic number of unique gangs consistent with the data (Flather 1996), which in this case is 40.3 ± 4.2 gangs (95% CI = 31.8–48.9 gangs) ($t = 9.6, p < 0.001$). The observed maximum number of unique cliques at any one time was 34, observed in 1992, which is 84.3% of the expected maximum based on the accumulation curve, but is within the 95% confidence interval for the estimate. Hollenbeck is near full saturation for unique gangs. However, this number is well below the theoretical maximum that could exist given the amount of violent crime.

Figure 24.7



Note: The data are fit with a negative exponential distribution to estimate the asymptotic number of gangs that Hollenbeck could support (Flather, 1996).

Number of Unique Cliques against the Number of Gang-Related Homicides in Hollenbeck, 1978–2012

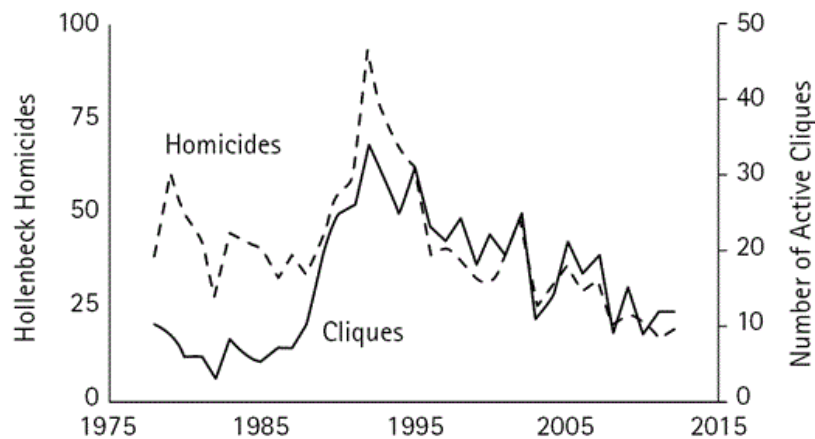
A follow-on observation concerns the number of homicides that would be needed to potentially observe the asymptotic number of unique gangs. In this case, Hollenbeck would need to experience at least 250 gang-related homicides in a single year to fully sample the 40 cliques predicted at saturation. This would be equivalent to Hollenbeck *alone* exhibiting nearly as many homicides (both gang and non-gang) as occurred city wide ($n = 295$) in 2012.

Discussion

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In this chapter we have tried to shed light on empirical patterns in gang clique diversity over time. Our approach relied on identifying uniquely named cliques connected to gang-related homicides that occurred in the Hollenbeck area of Los Angeles between 1978–2012. The data may suggest that clique diversity fluctuated over time, rising in the late 1980s to a peak in 1992 and then falling gradually over the next 20 years. Not surprisingly, the pattern tracks the overall homicide trend, but with one important distinction (Figure 24.8). Homicides in Hollenbeck peaked first in the early 1980s, dropped through the middle 1980s, and peaked again in the early 1990s before falling steadily to historically low levels by 2012. The number of homicides in 1992 was 44% higher than the number in 1988. The number of unique gang cliques was also low through the mid-1980s, but the late 1980s saw a massive surge. The number of cliques in 1992 was 240% higher than the number in 1988. This dramatic rise demands an explanation. Several possibilities are immediately obvious.

Figure 24.8



Homicide Counts in Hollenbeck (dashed line) and the Number of Unique Gang Cliques (solid line), 1978–2012

If we assume the observed pattern reflects real changes in clique diversity, then the first possibility points to a connection between street gangs and open-air drug dealing (Rengert 1996; Taniguchi, Ratcliffe, and Taylor 2011). The appearance of crack cocaine in the mid-1980s may have created entrepreneurial opportunities for gang organizations to thrive (Hagedorn 1994). Even if loosely organized, gangs may provide some corporate structure for controlling local drug markets. However, Klein, Maxson, and Cunningham (1991) argue that this was not the case in Los Angeles. Rather, gang-affiliated individuals increased their participation in drug market activity at about the same rate as non-gang individuals. A variant of the above argument would tie the rise of drug-related violence in the late 1980s to a greater reliance on gangs as a source of protection. This explanation relies *not* on street gangs as drug-dealing organizations, but rather that gangs offer protection via the threat (or actual use) of force to their members. Gang members may independently deal drugs but take the protection offered by their gangs as a beneficial byproduct. Alternatively, it is possible that the reputational economy took on a new level of importance in the late 1980s (Cloward and Ohlin 1960; Descormiers and Morselli 2011). While established gangs may have offered a sure route to establish street credibility (Van Gemert 2001), perhaps forming a new gang started to be seen as a faster route to the top (Densley 2014).

We also must consider the possibility that the observed gang diversity pattern is an artifact of some other non-causal process. For example, prior to the late 1980s, law enforcement agencies may have been less aware of criminal street gangs and therefore were less likely to look for gang connections in the homicides

they investigated. Some change in perception in the late 1980s, perhaps related to the war on drugs, led law enforcement to suddenly recognize cliques that were always there. If this were the case, clique diversity may have always comprised a fixed fraction of the number of homicides, as emerged to be the case after the 1992 peak. This diversity was simply not recognized until the late 1980s. This possibility seems less plausible given that the LAPD developed specialized gang units (CRASH) ↪ in the late 1970s (see Valasik and Brantingham, **Chapter 40** in this volume). Their ability to collect gang intelligence should have been well-developed long before the apparent rise in gang diversity in the late 1980s. In addition, it is hard to reconcile how the increase in gang diversity could arise as just an artifact of investigations given the simultaneous rise in workloads over that same period. Homicides in Hollenbeck peaked in 1992, which meant that clique diversity peaked at a point when detectives were carrying more cases than at any time before or since. One might expect clique diversity to be *lower* as workload increased because of the effort involved in trying to connect gang names to each crime. A variant of the above explanation might hold that gang cliques are a law enforcement fiction that asserted itself only in the late 1980s. That is, there are very few, if any, real gangs. Law enforcement invented the idea of gangs perhaps in response to increasing workload or to engage in punitive labeling of individuals as gang members as part of a broader pattern of repression (Katz, Maguire, and Roncek 2002). It is possible that different subject matter experts, such as civilian gang intervention workers, viewing these homicides might identify a different collection of uniquely named gang cliques. However, both the documented intervention work and numerous ethnographic accounts of gangs and gang members over the years suggest that punitive labeling cannot be the whole story (e.g., Mendoza-Denton 2014; Sanchez-Jankowski 1991; Venkatesh 1997; Stuart 2020).

The pattern observed in Figure 24.8 is consistent with the low prevalence of gang-related homicides noted by Rosenfeld et al. (1999) in St. Louis between 1985–1995. This leads us to suspect that the observed number of cliques is not an artifact of law enforcement behavior. Rather, it may reflect a true explosion of gang diversity at the time perhaps related to a sort of “cultural awakening” of gangs spawned by popular representations in media (Decker, Pyrooz, and Densley 2022). From around 1987 onwards, the number of unique gang cliques almost perfectly tracks the number of homicides in Hollenbeck. However, we also must be aware of how the data constrain our ability to measure clique diversity. Since we can only document gangs through homicides, when homicides are rare clique diversity will appear to be low, but when homicides are common clique diversity *may* appear to be higher. The extreme case would be that gang diversity is constant and only appears to shift due to differences in homicide sample sizes. We used this assumption to estimate the maximum number of gangs that Hollenbeck could support, which we take to be about 40 unique gangs. However, this view of the data is not entirely satisfying since it fails to recognize the substantial turnover in unique gangs over time. Specifically, while the maximum observed number of unique gangs present on the landscape in any one year was 34 (in 1992), the total number of unique gangs recognized over the 35-year period was 105. Thus, most gangs are either quiescent most of the time, or most did not survive for very long. The gang accumulation curve presented in Figure 24.7 provides no indication that the asymptotic number of gangs in the environment is anywhere near 105, so the ephemeral nature of most gangs must be closer to the truth (Klein and Maxson 2006).

Having outlined some of the limitations in our analysis, we want to conclude with some empirical observations that may be important for gang prevention and intervention work. First, homicides are clearly concentrated among some cliques more than others. The most active clique over the 35-year period in Hollenbeck was connected to 8.5% of all gang-related homicides where at least one gang was known. The top 10.5% of active cliques ($n = 11$) were responsible for 50.2% of all gang-related homicides. The top 20% of active cliques ($n = 21$) were responsible for 73.5% of all gang-related homicides. By contrast, the 36 cliques that ↪ were observed only once in the 35-year period (34.3% of all active cliques) were connected to just 3.5% of all gang-related homicides. These results are similar to evidence for the concentration of crime among offenders. For example, Spelman and Eck (1989) found that 10% of known offenders were responsible for around 55% of crime. Clarke and Eck (2005) go on to suggest that 20% of offenders are

responsible for 80% of the crime. In a recent meta-analysis of 27 studies, Martinez et al. (2017) found similar results that are consistent across different ages, genders, and jurisdictions. We suggest that a similar principle may hold for gang cliques and homicide. However, we do need to be aware that our measure of concentration, which aligns with the so-called *frequency* approach by Martinez et al. (2017), could also be a product of fluctuations in naming conventions, either by the gangs themselves or police. Gangs may seek to distinguish themselves at some times more than others, so a single gang at one point in time may “appear” to be two cliques at another point in time, even though there is no functional difference in how those gangs (and their individuals) behave. Similarly, changing priorities of police departments (e.g., anti-gang units, civil gang injunctions, civilian gang prevention programs) may lead police to sometimes use a finer-grained reification of gangs than at others. Our assumption has been, however, that specific names were recorded because they were salient at that time.

Second, most cliques are active for a very short period of time (for alt-right gangs, see Reid and Valasik 2020). This should not be a surprise as a short lifespan is a characteristic of both species (Marshall 2017) and companies (Daepf et al. 2015). It is widely recognized that a majority of terrorist groups do not survive their first year (Phillips 2019). One is tempted to suggest that a short “lifespan” of criminal groups should be law-like in its regularity (e.g., Felson 2006). Beyond this general pattern, however, we also see that different cliques are either continuously or intermittently active. While it is difficult to provide any concrete determination on what happened at the street level, we should consider the possibility that intermittently active cliques go through periods where there is strong collective action and periods when there is weak (or even non-existent) group organization (Petersen, Osmundsen, and Tooby 2021; Zefferman and Mathew 2015; Decker and Curry 2002). In effect, cliques may come into and out of existence with both ease and regularity. This would parallel, at a higher scale, what is observed for individuals moving into and out of gang social roles with ease.

Third, in spite of the variation in the number and stability of cliques over time, the number of homicides per clique on the whole remains *relatively* stable. It varies between a minimum of around one and three homicides per clique per year over the 35-year period. There are at least two possible explanations for this observed pattern. First, it might reflect a form of “resource partitioning” driven by increased competition (Roughgarden 1976). Broadly, group formation with active territorial defense is a common mechanism for reducing competition overall (see Brantingham et al. 2012). It is possible that the growth in drug markets in the late 1980s created conditions that encouraged greater partitioning of space into regions controlled by ever smaller cliques. Since crack cocaine can be dealt one “hit” at a time (Blumstein, Rivara, and Rosenfeld 2000), the market of users can be carved up into very fine spatial segments where competitive effects can be approximately balanced across cliques (see also Taniguchi et al. 2011). The general stability in homicides per clique over time masks more subtle variations, however. There is a positive relationship between clique diversity (i.e., number of unique cliques) and homicides per clique. In general, the addition of 10 new cliques to the system is worth about 0.3 more homicides per clique per year. In the end, clique diversity is not just an abstract proxy of ecological health, it has real consequences in terms of homicides.

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There are several obvious next steps in the study of gang diversity in Los Angeles and elsewhere. Extending the temporal coverage of the sample to include the past 10 years, from 2012–2022, might reveal how gang diversity changed alongside more recent swings in violent crime. Homicides in Los Angeles hit their lowest point in more than 50 years in 2013 ($n = 248$). Homicides rose steadily thereafter, reaching a peak nearly 60% higher in 2021 ($n = 396$). How gang diversity changed in relation to these shifts in violence will be important to evaluate. Extending the geographic coverage would also be welcome. Hollenbeck is home exclusively to Latino gangs. Establishing whether the general patterns in gang diversity over time observed in Hollenbeck also hold in other areas of Los Angeles (and other cities), with different racial-ethnic, socioeconomic, and built environments, will be necessary for generalized model building. It is conceivable that gang diversity adheres to a set of discernable ecological assembly rules common across all communities

(Diamond 1975). If true, then we would expect the number of uniquely named gangs to be regulated by intra- and intergang competition across all settings (Brantingham et al. 2012; Brantingham et al. 2019). Alternatively, it is possible that gang diversity is driven by stochastic processes (Connor and Simberloff 1979). In this case, competition would play little or no role, while randomness in the rate at which uniquely named gangs appear and disappear would serve as an explanatory model (see Hubbell 2001; Brantingham 2016). More work is needed to evaluate these two extreme approaches.

Finally, we put forward at the start of this chapter a bold conjecture that gang diversity somehow reflects the “health” or “function” of the community (Schulze and Mooney 2012). Our conjecture parallels thinking in conservation ecology, which posits that each unique species supplies an essential ecosystem service and that removal of those species (i.e., loss of biodiversity) harms the ecosystem. Here we posit that each unique gang performs some ecosystem service, and that changes in gang diversity over time (and space) may variously harm or help the community ecosystem. Framing the community role of gangs in terms of formal ecology may be unexpected, but the idea that gangs perform some type of community function should not be (Sanchez-Jankowski 1991; Decker et al. 2022). We must be careful, however, in seeking to identify exactly what the function (or functions) might be. The positive correlation between the number of unique gang cliques and the number of homicides per clique suggests that more gangs have a negative community impact. Whether this also entails degraded community function is an open question. As in community ecology (e.g., Genung, Fox, and Winfree 2020), intuitions about the relationship between gang diversity and community function may be hard to establish in fact. More work will be needed to map out these potential ecological functions and trace their relationships to individual and group-level processes.

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