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Banning the biker gangs: Estimating the effects of civil bans on outlaw motorcycle gang members' co-offending network

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Abstract

In an effort to combat cooperative criminal behavior by members of outlaw motorcycle gangs (OMCGs) Dutch law enforcement has successfully requested civil bans for six of the Netherlands most notorious OMCGs. While the civil bans are heralded as a triumph in the battle against OMCG crime, the effectiveness of these bans in disrupting co-offending among OMCG members has yet to be ascertained. In this study we use police registered co-offending data on 4,780 Dutch OMCG members to estimate the disruptive effect of the civil bans on Dutch OMCG members' co-offending networks. To do so, we use nonparametric bootstrap hypothesis testing and sample 1,098 co-offending networks from the pre-ban period to gauge pre-ban co-offending network connectivity. Observed post-ban network connectivity is then compared to these bootstrapped mean values and confidence intervals to test whether the civil bans had a disruptive effect of OMCG members' co-offending network. We find that compared to the co-offending networks distilled from the pre-civil ban period, the post-civil ban network was smaller, and more fragmented, suggesting a disruptive effect of the civil ban. Caveats to the data and analysis, and ramifications for policy are addressed.

Key words: outlaw bikers, Hells Angels, whole-of-government approach, organized crime

Introduction

In many jurisdictions, outlaw motorcycle gangs (OMCGs) have become synonymous with violence and organized crime (Blokland, Von Lampe and Van Deuren, 2024). Though the extent to which OMCGs actively orchestrate the criminal behavior of their membership is still a matter of academic debate, and may differ across countries, clubs, and chapters, consensus is that most OMCGs at least offer a social structure that is favorable to crime (Von Lampe and Blokland, 2020). Not only do OMCGs attract a membership that is disproportionately engaged in serious and organized crime (Van Deuren, Blokland and Kleemans, 2022; Voce, Morgan and Dowling, 2021) – creating a pool of potential co-offenders and a moral climate highly conducive to crime -, the secretive nature of OMCG clubhouses and the subcultural code of silence and noncooperation with law enforcement, make OMCGs a setting in which crime can be plotted, prepared and perpetrated with limited risk of apprehension (Huisman and Jansen, 2012). OMCGs have accordingly been characterized as offender convergence settings (Felson, 2006); places where motivated offenders meet, criminal behavior is learned, and criminal collaborations are formed.

The Netherlands is not exempt from this, and since the turn of the century Dutch OMCGs are increasingly regarded as hotbeds for violence and organized crime (Blokland, Van Hout, Van Leest and Soudijn, 2019; Van Ruitenburg, 2020). Therefore, in 2012, after a failed attempt to have the court designate the Dutch Hells Angels as a criminal organization, a whole-of-government approach was introduced in which the Dutch National Police joined forces with municipal authorities and the Tax Department to raise barriers against OMCG crime (Van Ruitenburg and Blokland, 2022). This whole-of-government approach entailed a zero-tolerance policy to any legal transgressions, a strict application of local licensing conditions and zoning plans, and a focus on OMCG members with no apparent source of legal income. Under the whole-of-government approach, many OMCG members were prosecuted, OMCG parties and events were prohibited, clubhouses were foreclosed, and members' illegal earnings were seized (Van Ruitenburg, Van Nimwegen, Ceulen and Spapens, 2024). At present, the apex of the whole-of-government approach was

the irrevocable banning of six of the most notorious Dutch OMCGs – Bandidos MC, Satudarah MC, Hells Angels MC, No Surrender MC, Caloh Wagoh MC, and Hardliners MC - by the civil court starting 2020. These civil bans declared the legal entities underlying these OMCGs prohibited, effectively making the continuation of their workings, for instance by jointly wearing club attire or organizing club activities, punishable under criminal law. Banned OMCGs are also precluded from owning or renting property, leading to the foreclosure of their remaining clubhouses and forfeiture of any other assets (Koornstra, Roorda, Vols and Brouwer, 2019). It was assumed by the state authorities involved that, beyond their obvious symbolic value as a demonstration of state power, by frustrating the OMCGs' social and physical infrastructure, the civil bans would reduce the extent of criminal collaboration among OMCG members, and, consequently, the prevalence of violence and organized crime in the OMCG membership population.

Prior empirical studies find that OMCG members disproportionately engage in serious and organized crime (Blokland et al., 2019; Blokland, Van der Leest and Soudijn, 2020; Klement, 2016; Morgan, Dowling and Voce, 2020; Rostami and Mondani, 2019, Tremblay et al., 1989). Furthermore, when they do, they often do this in collaboration with others. In the Netherlands and elsewhere well over half of the crimes OMCG members are registered for pertain to criminal incidents with more than one perpetrator, with registered co-offending rates for organized (drug)crime being even higher (Bright et al., 2022; Mondani & Rostami, 2022; Van Deuren, Kleemans, & Blokland, 2022). Though criminal collaborations of OMCG members are not strictly limited to their fellow club members, or even to individuals within the outlaw biker scene as a whole (Bright et al., 2024; Coutinho, Diviák, Bright, and Koskinen, 2020; Mondani & Rostami, 2022), OMCG members do tend to find their criminal collaborators among those fellow bikers with whom they share chapter and/or club membership (Mondani & Rostami, 2022; Van Deuren, Diviak & Blokland, 2025). To the extent that the convergence of fellow club or chapter members underlies members' co-offending, frustrating their social interactions in these settings by removing the infrastructure facilitating them – i.e. club houses, parties, ride outs - , the whole-of-government approach, and especially the civil bans, were expected to hinder the formation of co-offending ties, and, by extension, the rate of serious and organized crime in the affected part of the outlaw biker population (Van Ruitenburg, 2020).

Thus far, two studies have evaluated the effects of respectively the Dutch whole-of-government approach and the civil bans on the rate of OMCG crime. Based on conviction data of a sample of 1,617 OMCG members and 473 OMCG support club members, Klement and Blokland (2023) estimated several interrupted time series models to compare trends in registered crime levels three years before and after the initiation of the whole-of-government approach. They found that as the whole-of-government approach unfolded, the number of organized crimes registered for OMCG members gradually declined, whereas for support club members it did not. While, given the registered nature of the data, it remains a matter of speculation as to the explanation of these results, one possible account could be that, through forcing the foreclosure of clubhouses and prohibiting club events, the whole-of-government approach began to complicate the criminal collaboration needed to successfully partake in organized crime. The finding that a similar decrease was absent among the support club membership, however, may suggest that, rather than frustrating criminal collaboration, the increased scrutiny OMCG members were under during the start of the whole-of-government approach led OMCG members to delegate high-risks tasks to lower ranking members of support clubs. An important caveat to the Klement and Blokland (2023) study is that it used a sample of OMCG and support club members identified as such by the police between

2010 and 2015, and it had no information on whether these individuals actually remained OMCG members for the entire time window used for the analysis.

More recently, Van Deuren, Blokland, Van Ruitenburg, Van der Leest and Roks (2026), applying a similar quasi-experimental segmented regression design, focused primarily on the effect of the civil bans. Using data only on those who remained an OMCG member during the entire observation window, hence distinguishing potential effects of the civil ban on members' criminal careers from potential effects on individuals' joining and desisting an OMCG (Van Ruitenburg et al., 2026), these researchers found no significant change in the crime rate of those OMCG members affected by the bans compared to both members of unaffected OMCGs, and male motorcyclists unaffiliated to any OMCG. Though stronger in design than the Klement and Blokland (2023) study by using comparison groups, the registered nature of the data used likewise precluded definitive conclusions on the underlying mechanisms that could explain the absence of an effect. Did the civil bans have no effect at all on OMCG members' organized crime, or did it have an effect, but were OMCG members able to adapt to the newly created situation?

The current study also focuses on the potential effects of the civil bans on Dutch OMCGs, but rather than focusing on the overall crime rate, it investigates the potential effects of the civil bans on the social organization of organized crime among members of affected clubs, thus addressing one of the main mechanisms through which the civil bans were expected to sort an effect. More specifically, using registered co-offending data covering the pre- and post-civil ban period for five of the six banned OMCGs, the current study seeks to assess the extent to which the civil bans were successful in frustrating criminal collaboration among OMCG members. To do so, we apply a non-parametric bootstrap procedure to quantify changes in the co-offending network of members of the irrevocably banned OMCGs from the pre- to the post-civil ban period. We find less co-offending among OMCG members in the three-year post-civil ban period, leading to a smaller, more fragmented co-offending network.

Data and methods

Sample

The sample for the current study consists of all known members of one of the 54 outlaw motorcycle gangs active in the Netherlands during the period under study of which at least 10 members were known to the police. The police allocated OMCG membership based on men being observed wearing club apparel, participating in ride outs, frequenting other members-only club meetings and events, and verified self-identification. Police personnel had to confirm the individual's identity. Registration as an OMCG member did not necessarily entail the individual's involvement in a criminal event. Since the goal of the present research is to estimate the effect of the civil ban on the co-offending network of OMCG members, here we limit ourselves to the individuals who were registered as current OMCG members at the time they were suspected of a criminal offense. Given our current interest is in (co-)offending, our analysis pertains to those who were registered as a main suspect in a criminal incident in the 2014-2023 period at least once. This leaves 370 OMCG members in our analysis sample of which 337 were members of one of the five Dutch outlaw motorcycle gangs (Bandidos MC, Satudarah MC, Hells Angels MC, No Surrender MC, and Caloh Wagoh MC) that were subject to an irreversible civil ban between 2020 and 2023 – Hardlines MC was banned in 2024 -, and 33 who were registered as a member of one of the other Dutch OMCGs not subjected to a civil ban.

Co-offending data

Co-offending data is based on information gathered from Dutch National Police registries (BVH and Summ-IT). Together these registries cover a broad array of criminal acts of varying seriousness. Data gathered cover the period between 2014 and 2023. For each criminal case registered, these registries contain information on the timing and nature of the offense, as well as on the suspects involved. Here, we define co-offending as being registered together with others as main suspects in a particular criminal case. Main suspects are the focus of the criminal investigation and evidence against them typically is strongest. Nevertheless, their legal status remains that of 'suspect' so, like many previous studies on criminal collaboration, legally speaking we are analyzing co-suspicion rather than co-offending. We gathered information on all criminal cases in which at least one OMCG member was a main suspect. For each co-offender in the data, it was noted whether they were known OMCG members. Our data thus take the form of a two-mode or bi-partite network of suspects nested within criminal cases. These data were projected into a one-mode network with nodes representing individuals and ties between nodes representing instances of co-offending.

Co-offending network disruption

To operationalize co-offending disruption, we apply several network measures. Specifically, following prior research into criminal network disruption (e.g. Anastasiadis and Antoniou, 2024; Cavallaro et al., 2020; Diviák, van Nassau, Dijkstra and Snijders, 2022; Velasco, 2025), we use mean overall network size, average degree, network density, geodesic distance, average global efficiency, size of the largest connected component, and the total number of components in the network. Geodesic distance describes the length in terms of the number of edges of the shortest path between nodes in the network. Lower values of mean geodesic distance indicate that information can quickly reach all nodes in the network. Hence, higher values are taken to indicate higher levels of network disruption (Duxbury and Haynie, 2019). Relatedly, global efficiency indicates how quickly information is transmitted to the most peripheral node in the network and is defined as: $Global\ efficiency = \frac{N}{I \times D}$ where *N* is the total number of nodes in the network, *I* is the total number of ties in the network, and *D* is the diameter of the network (Latora & Marchiori, 2001). Both the size of the largest connected component (LCC) and the total number of components (TNC) serve as indicators of a network's level of connectedness. The smaller the (relative) size of the largest connected component, and the higher the number of components, the higher the disintegration of the network (Duxbury & Haynie, 2018; Latora & Marchiori, 2001).

Analytic strategy

To estimate the effects of the civil bans on outlaw motorcycle gang members' co-offending networks, we apply a non-parametric bootstrapping approach (see Smith, 2021), which is schematically represented in Figure 1. More specifically, starting at April 24th, 2014, we use a daily moving window to construct 1,098 overlapping 3-year co-offending networks from the period prior to the civil bans – final 3-year window ending on 23rd April 2020 - to obtain estimates of the mean measures of network connectivity and efficiency in the co-offending network – as defined above -, as well as the variance around those means. We then compare the observed scores for the co-offending network in the 3-year period during the civil bans (April 24th, 2020, to April 23rd, 2023) to the average scores during the pre-ban period. As visualized in Figure 1, when the observed mean is outside the 95 percent bootstrapped confidence interval, this suggests the civil bans affected co-offending networks of Dutch outlaw motorcycle gang members.

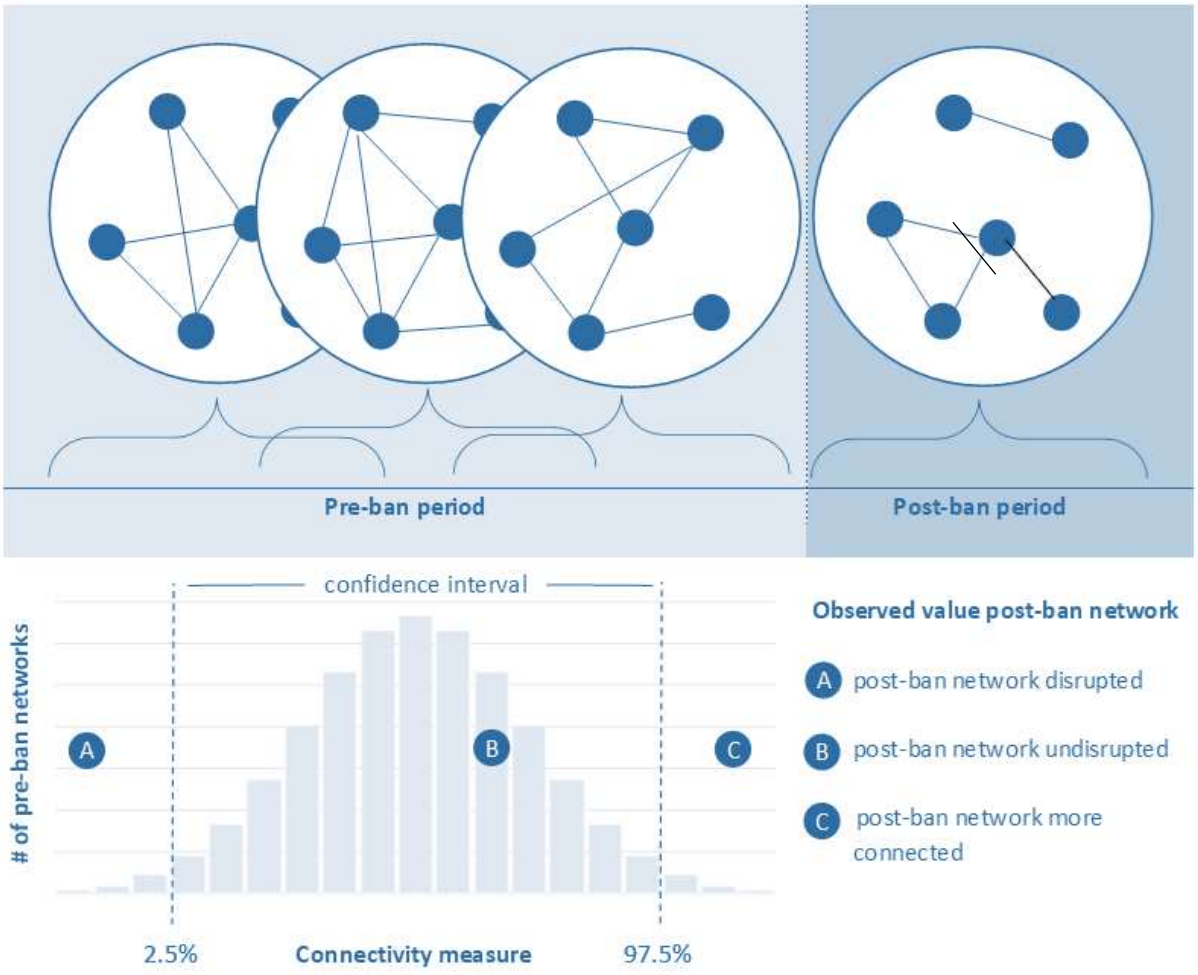


Figure 1. Schematic overview of the analytic strategy

Results

Descriptive statistics

During the 10-year observational period between 2014 and 2023, in total 397 criminal cases involving two or more suspects of which at least one was known as an active OMCG-member were registered by the police. Over the years, the number of registered cases ranges from 8 to 68 (Figure 2). The average number of suspects per case hovers around 6 during this period (range 2.5-8.7). Of the 397 co-offending cases registered, 31.5% were drug offenses, 21.2% were violent offenses, 12.3% pertained to extortion, and 10.1% were violations of the Weapons and Ammunition Act. Based on the nature and seriousness of the crime categories, 62.5% of all criminal cases can be categorized as organized crime (OC). As the current data do not allow us to distinguish, for instance, a bar fight from a violent dispute in the organized crime milieu – both would be categorized as a violent offense -, the percentage of organized crime related criminal cases is likely an underestimate.

Figure 3 depicts the average number of co-offenders as well as the average number of OMCG-members amongst those co-offenders, for each of the 397 co-offending cases by crime category. The average number of co-offenders is largest in money laundering cases (9.96), followed by drug offenses (7.18), and cases in which individuals are suspected of being part of a criminal organization (6.60) – an offense punishable under Article 140 of the Dutch Criminal Code. Regardless of the offense type, the average number of co-offending OMCG members varies between 1 and 1.86. These figures show that criminal collaboration between OMCG members and non-bikers is common, and that OMCG members are (also) suspected of being part of criminal organizations that include non-bikers. Proportionally, money-laundering cases involve the highest average share of non-OMCG members (86.61%), followed by drug cases (80.16%). The average proportion of fellow-OMCG members on the other hand, is highest in violations of the Weapons and Ammunition Act and in human-trafficking cases (38.83% and 38.46%, respectively).

Finally, the data cover co-offenses including members of all OMCGs, both banned and not-banned, active in the Netherlands, 94.3% of criminal cases registered however involved at least one individual who is a member of an OMCG that was affected by an irrevocable civil ban. This results from the size of the banned clubs, as well as from the registered crime rate among their members (Van Ruitenburg and Blokland, 2022).

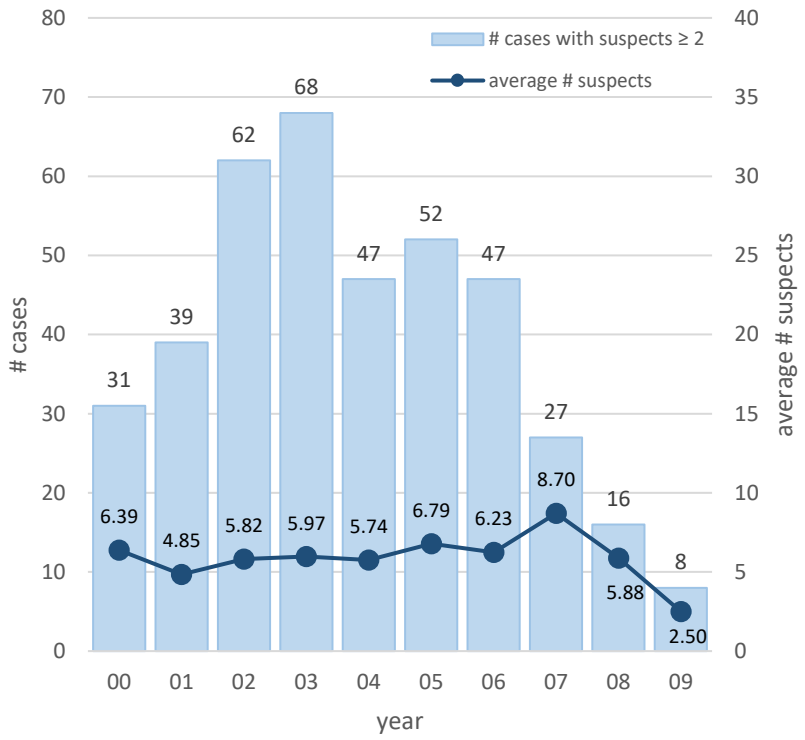


Figure 2. Number of criminal cases involving co-offending per year, and the average number of co-offenders per co-offending group per year.

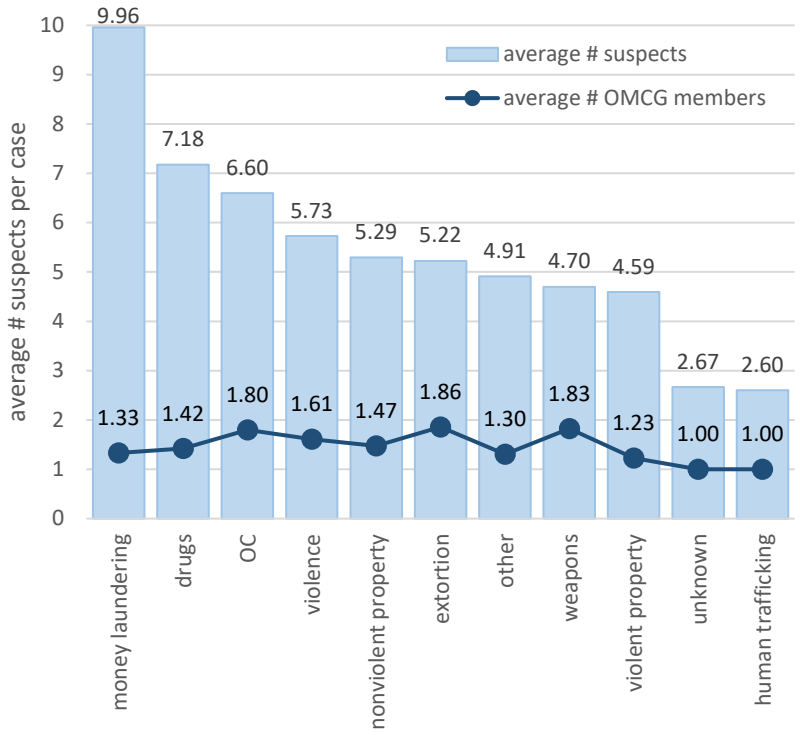


Figure 3. Average number of co-offenders per case per crime type, and the average number of co-offending OMCG members per case per crime type.

Changes in the co-offending network following the civil bans

We visualize changes in co-offending network characteristics following the civil bans in a series of density plots depicting the distribution of a particular network characteristic across the 1,098 networks sampled from the pre-ban period (Figure 4). Note that the red dashed vertical lines in each of the density plots mark the 2.5th and 97.5th percentile of the distribution, rather than values that are ±2 standard deviations from the mean to account for potential non-normality of the pre-ban distribution. Finally, the solid green vertical line depicts the observed value of the said network characteristic in the post-ban co-offending network. To the extent that the observed post-ban value is outside the range demarcated by the red dashed lines, it can be concluded that the post-ban value is significantly different from values observed in the pre-ban period, hence indicating change in the co-offending network following the civil bans.

The first panel in Figure 4 shows that in 95% of the 1,098 pre-ban co-offending networks, network size was between 665 and 938. The observed network size during the post-ban period is 516, which indicates that following the civil bans the co-offending network of Dutch OMCG members decreased significantly in size (p = .002). As co-offending network size is determined by both the number of cases and the number of suspects involved in these cases, the second and third panel in Figure 4 show the bootstrap distributions for the number of co-offending cases and the average number of co-offenders per case respectively. Whereas the average number of criminal cases across the 1,098 co-offending networks in the pre-ban period is 166.47, the post-ban network comprises only 80 criminal cases, indicating a significant decrease (p = .002). With regard to co-offending network size, the decrease in the number of cases is, however, partly offset by a significant increase in the average number of co-offenders per criminal case (p = .002). Whereas during the pre-ban period cases involve 5.83 co-offenders on average, during the post-ban

period the average number of co-offenders rises to an average of 6.75 co-offenders per case. Following the civil ban, OMCG members thus co-offend less, but when they do, they tend to do so in larger groups.

Both density and global efficiency are measures of network cohesion. Compared to the co-offending networks during the pre-ban period, the density of the co-offending network during the post-ban period is significantly higher (p = .002)(Figure 4, 4th panel). This indicates that, given the nodes in the networks, a larger percentage of the potential co-offending ties is actually observed. This is in line with the finding that during the post-ban period OMCG members tend to co-offend with more co-offenders per case. This increase in density however does not result in a significant improvement in the overall efficiency of the network; the observed value in the post-ban network falls well within the 95%-range of that observed in the pre-ban networks (p =.384)(Figure 4, 5th panel).

The 6th and 7th panel of Figure 4 respectively depict the sizes of the largest connected component (LCC) and the number of components in the pre- and post-ban co-offending networks. Both the size of the LCC and the total number of components in the co-offending network indicate the level of connectedness within the network. In co-offending networks a component represents a group of co-offenders that commit offenses in varying, yet overlapping, compositions. Separate components therefore indicate independent criminal groups whose members are not directly or indirectly linked through observed criminal collaborations. Network fragmentation, as measured by a decrease in the size of the LCC and an increase in the number of components, is taken as a sign of network disruption. We find that the size of the LCC is significantly smaller in the post-ban co-offending network than it is in the pre-ban networks (p = .027), while the number of components is significantly larger (p = .002).

The decrease in the size of the largest connected component and the increase in the number of separate components indicate fragmentation of the network. Yet, at the same time, increased density and unchanged global efficiency point to unchanged—or even increased—cohesion of the network. How can these seemingly contradictory results be reconciled? The answer to this question can be found in the 8th panel of Figure 4 that depicts the number of cliques in the co-offending network. Here, we define "cliques" as components of the network with a density of 1, that is, parts of the network where all individuals are directly connected to one another. In co-offending networks, cliques often result from a single offense involving multiple co-offenders, resulting in all co-offenders being directly tied to one another. If none of the co-offenders commits another offense, or if a subsequent offense is committed jointly with (some of) the individuals who were already involved in the earlier offense, these co-offenders form a separate component in the network with maximum density, which is not connected to other components in the network. When many such cliques are present in the co-offending network, a situation may arise in which both the density of the overall network and the number of separate components within the network increase. Given that the number of cliques in the post-ban co-offending network is significantly higher than that in the pre-ban co-offending networks (p = .002) and given the increased number of co-offenders per case (Figure 4, 3rd panel), this seems to be the case here.

A single offense with multiple co-offenders results in a clique with a density of 1. Conversely, a component with a density of less than 1 must include at least one individual suspected in two separate criminal cases (with non-completely overlapping co-offender groups) during the, in our case, 3-year period across which the co-offending network was aggregated. That is, only individuals involved in two or more cases can act as brokers between thus far unconnected offender groups. The 9th panel in Figure 4 therefore depicts the average number of cases per individual, while the 10th panel depicts the proportion of individuals

suspected of two or more offenses within the given observational window. In the three-year period following the civil bans, the average number of cases per suspect is lower than that during the pre-ban period (p = .002), as is the proportion of offenders in the co-offending network suspected in two or more cases. (p = .002) This decline in the number of brokers bridging separate co-offending groups helps explain the increase in the number of cliques in the post-ban co-offending network.

To assess whether the decline in the number of brokers – that is, the number of individuals suspected in more than one criminal case during a given 3-year window -, is best interpreted as a behavioral effect, or rather as resulting from a change in the composition of the individuals making up the co-offending network, using conviction data from an earlier study (Van Deuren et al., 2026), we compared the average conviction history of the OMCG members in the various co-offending networks. Results are depicted in the 11th panel of Figure 4. We find no significant difference in the average conviction history of OMCG-members involved in the co-offending network during the post-ban period, compared to those OMCG-members that are part of the co-offending networks during the pre-ban period (p = .744). Given that prior criminal behavior is typically a robust predictor of future criminal behavior, we interpret the decrease in the number of brokers in the post-ban network as a behavioral effect, rather than as a selection effect – i.e. the most criminal OMCG members increasingly ending up being incarcerated and therefore unable to contribute to the post-ban co-offending network.

Finally, the 12th panel of Figure 4 shows the average proportion of fellow OMCG-members among the co-offenders in each criminal case that makes up the co-offending network. We find that the proportion of fellow OMCG members among co-offenders is smaller during the post-ban period than in the years preceding the civil ban (p = .002). Hence, while OMCG members show an increase in the number of co-offenders per co-offense (Figure 4, 3rd panel), they seem to find these co-offenders predominantly outside of the outlaw biker subculture.

Changes in the types of crime registered following the civil bans

To assess whether the civil bans affected the types of crimes OMCG members were suspected of, we compared the distribution of the different crime types during the post-ban period with that of the pre-ban period using a Chi-Square test with a Monte Carlo p-value. In the years preceding the civil bans, OMCG members are suspected primarily of drug crimes (28.3%), violent crimes (23.8%), extortion (14.8%) and violations of the Weapons and Ammunition Act (10.3%). During the three years after the civil ban, however, the percentage of drug crimes increases to 40.0% of all registered offenses during this period. The percentage of violent crimes and violations of the Weapons and Ammunition Act remains largely the same, with 18.8% and 10.0% respectively. The percentage of extortions, however, drops from 14.8% during the pre-ban period, to 5.0% in the post-ban years.

Discussion

The current study set out to assess the effects of the civil bans on the social organization of crime among Dutch OMCG members. By preventing OMCG members from congregating in their clubhouses or at biker events, the civil bans were expected to complicate criminal collaboration and thereby reduce co-offending between OMCG members. Results indeed show a decrease in the number of co-offenses among OMCG members in the 3 years following the first civil ban. More so than prior to the civil bans, OMCG members who do co-offend are more likely to do so with co-offenders from outside the outlaw biker milieu. After

the civil bans, fewer OMCG members act as brokers connecting separate criminal groups resulting in the post-ban co-offending network to be more disintegrated.

Importantly, the above findings are based on the analysis of police registry data and therefore may reflect developments in the behavior of OMCG members, as well as overtime changes in police investigative priorities. In general, the data cover a period in which Dutch OMCGs and their members were under heightened police scrutiny.

If we interpret these findings as resulting from a change in the criminal behavior of OMCG members, the obtained results seem to suggest that the civil bans were successful to a certain extent in frustrating criminal collaboration among OMCG members: Following the civil bans OMCG members co-offend less, and less often with each other. We also observe a shift away from extortion after the civil bans. While the former may signal the civil bans' disruptive effect on OMCGs as offender convergence settings and reduced access to criminal partners and opportunities (Felson, 2006; Huisman and Jansen, 2012), the latter may be explained by the civil bans limiting the 'power of the patch' – the intimidating appearance of the outlaw biker attire (Blokland and David, 2016). Not only do the civil bans render wearing club clothing in public a criminal offense, but the civil bans also undermined the OMCGs' reputation as untouchable. Both practically and symbolically, the civil bans may therefore have reduced the impact of threats made by OMCG members and empowered potential victims, making extortion a riskier and less profitable criminal enterprise.

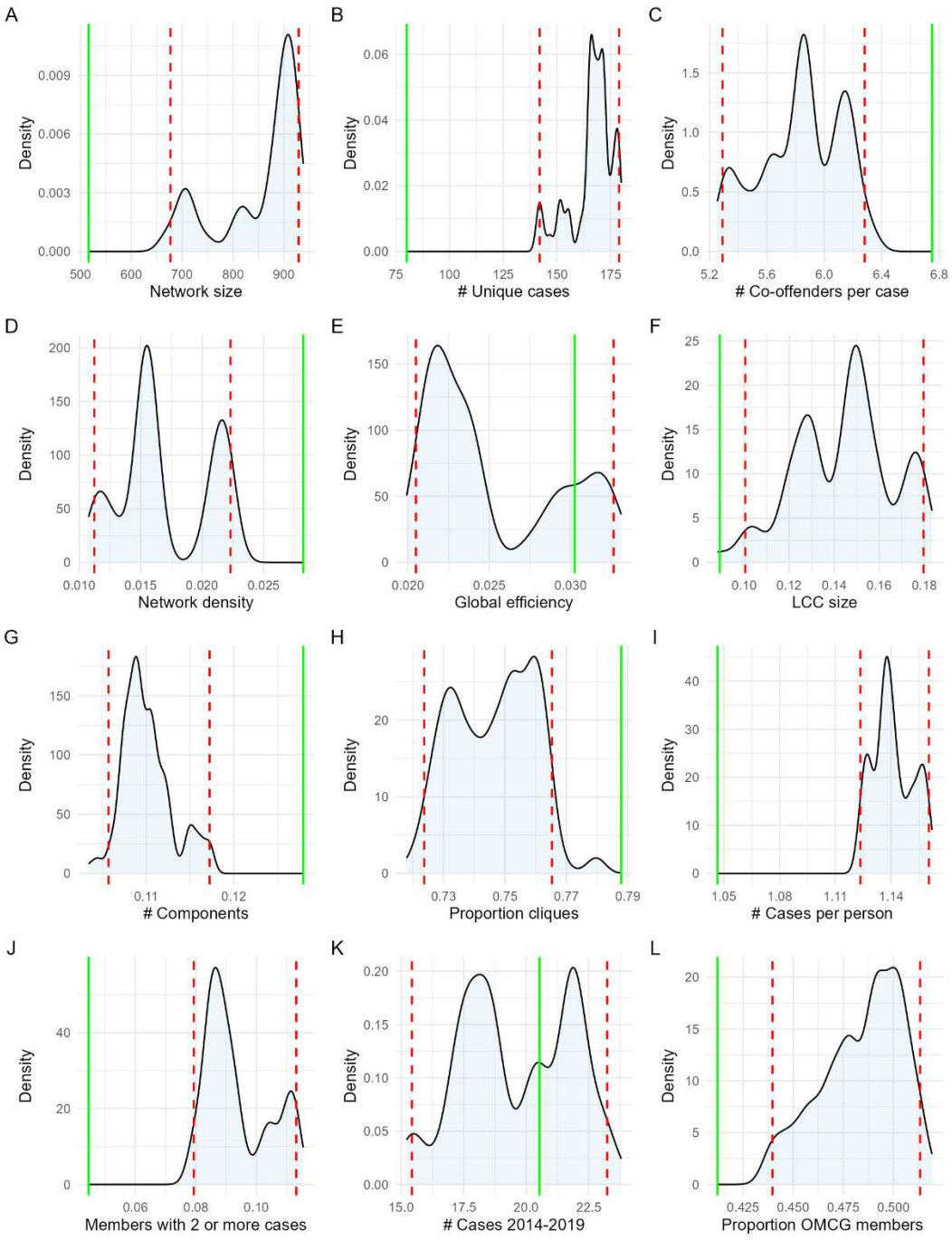


Figure 4. Density plots of the bootstrapped pre-ban co-offending network characteristics with red dotted vertical lines depicting the 2.5% and 97.5% distribution percentile, and the green vertical line depicting the observed post-ban network characteristic

OMCG members however also appear to adapt to the new circumstances to which the civil bans give rise. After the bans, OMCG members more often choose criminal collaborators from outside the outlaw biker milieu, and shift from extortion to drug crimes. Rather than suggesting the civil bans had no effect at all (Van Deuren et al., 2026), the current results indicate that the bans did disrupt OMCG members' co-offending networks, but that members were able to adapt to the new circumstances to which the civil bans give rise finding co-offenders elsewhere and changing their criminal repertoire. Given that the results of the study by Van Deuren et al. (2026) did not show a significant decrease in the total volume of registered crimes in the period following the civil bans, by implication the current results also suggest that the observed decrease in OMCG members' co-offending may, for an important part, be offset by a simultaneous increase in solo-offending. This, in turn, is in line with prior research finding that OMCG members act as independent criminal entrepreneurs rather than their offending being orchestrated by the club.

However, given this study's reliance on police data it cannot be ruled out that following the civil bans the police shifted their - necessarily limited - attention to other socially perceived problems, resulting in minor cases involving OMCG members being noticed less often or being prioritized less frequently than in the period preceding the civil bans. To the extent that a zero-tolerance policy focusing on crime volume rather than crime seriousness was implemented to strengthen the incriminating evidence in the civil ban cases (Van Ruitenburg, 2020), such an approach is no longer necessary once the civil bans become irrevocable and police attention may have again shifted towards more complex and serious crimes. If so, this might not only explain the decline in the recorded frequency of co-offending among OMCG members, but also the shift towards (more complex) drug crimes and the increased proportion of non-OMCG members among co-offenders during the period following the civil ban.

It is important to note that the civil bans for the different OMCGs became effective at different time points between April 2020 and May 2022. We nevertheless chose to demarcate the post-ban period from April 2020 onward for two main reasons. First, in April 2020 the Dutch Supreme Court for the first time confirmed a civil ban of an OMCG issued by the lower and higher court, dispelling doubts whether an OMCG being irrevocably banned was even a realistic possible outcome of the legal proceedings initiated by the public prosecutor's office. Second, due to the sparse prior use of the procedure and the consequent legal ambiguities about what would constitute a criminally liable continuation of a banned association, and when, confirmation of the first ban by the Supreme Court reinforced both local governments and the National Police in their legal actions against members of OMCGs whose case was still under consideration, effectively anticipating more irrevocable bans. For these reasons, while not the legal reality for most OMCGs, we consider April 2020 as the practical start of the civil ban period.

Furthermore, we could not control for OMCG members increasingly ending up being incarcerated because of the increased investigative attention directed at OMCGs and OMCG members since the start of the whole-of-government approach. Subsequent co-offending networks were based on those OMCG members who were registered as suspects, and therefore at risk of offending at least for some part of the 3-year observational window on which a co-offending network was based. To the extent that in the run-up to the civil bans police and prosecutorial attention focused on getting as many criminal OMCG members convicted as possible, the reduction in co-offending network size and co-offending network connectivity could result from a forced rather than a voluntary behavioral change. However, given that the average extent of OMCG members' criminal histories in the post-ban co-offending network did not

differ from those in the pre-ban co-offending networks, incarceration did not seem to reach a level that caused the depletion of crime-prone OMCG members at risk of (co-)offending.

Finally, our analysis focused on changes in the OMCG population as a whole. This seems warranted as the whole-of-government approach of which the civil bans were part also addressed on the entire OMCG subculture. There are, however, notable differences between OMCGs in terms of their size, organizational dynamics, and the level of criminal involvement of their members (Blokland, van der Leest and Soudijn, 2024), and therefore it cannot be ruled out that members of different OMCGs reacted differently to the civil bans.

Conclusion

In the end, these observed changes in OMCG members' co-offending networks likely reflect changes in both OMCG member and police behavior, impeding us from drawing definitive conclusions on whether the civil bans were successful in frustrating criminal collaboration among OMCG members. What our findings do show however, is that already prior to the civil bans OMCG members co-offended with criminal partners outside of the outlaw biker subculture. This resonates with prior studies showing that OMCG members' criminal collaborations are not confined to fellow club members (Bright et al., 2024; Coutinho et al., 2020; Mondani and Rostami, 2022), even as members may prefer to find co-offenders within their own club when given the opportunity (Mondani and Rostami, 2022; Van Deuren et al., 2025); the post-ban decline in co-offending with fellow bikers suggests the civil bans shifted this balance further toward collaboration outside the club. This indicates that, while the civil bans may have limited the opportunity to interact with other outlaw bikers, OMCG members are able to find suitable co-offenders elsewhere in the criminal milieu. Disturbing OMCG-related offender convergence settings like club houses and biker events is therefore a priori unlikely to prevent OMCG members from criminal collaboration altogether. Furthermore, while the civil bans may have reduced the public visibility of OMCGs and OMCG members thwarting their capabilities to intimidate and extort non-initiated citizens, OMCG members' reputation in the criminal milieu is unlikely to have evaporated from one day to the next, leaving OMCG members attractive criminal collaborators even without the backing of a formal organization. Only time will tell whether, in the long run, the civil bans are successful in rendering former OMCG members less capable of finding criminal collaborators, and, as a result, in reducing their involvement in violent and organized crime.

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