Community-Based Urban Violence Mapping

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Abstract. Urban regions exhibit a heightened susceptibility to conflict as a result of escalating population growth, migratory patterns, ethnic frictions, the erosion of institutional structures, and the deterioration of urban services**.** This study aims to contribute lack of conflict studies in urban community setting by exploring and mapping conflict and violence in the urban area. The study was conducted in City of Makassar as an Indonesian metropolitan city as a case study. The research applies a mixed-method approach, combining surveys and focused group discussions. Community-based urban violence mapping helps to document various forms of violence, especially in slum areas inhabited by poor and unemployed residents. The study unveils a strong correlation between poverty and conflict. Despite COVID-19, communal conflicts remain unmitigated, highlighting the inefficacy of government policies and pandemic-related dangers in curbing violence. The economic downturn and widespread layoffs during the pandemic have intensified conflicts. The study suggests for the establishment of a community-based conflict monitoring and resolution system, emphasizing community participation in resolving urban conflicts and promoting resilience. This approach is crucial for building stronger, more peaceful urban communities, particularly in the post COVID-19 pandemic.

Keywords: Community-Based Mapping, Urban Violence, Conflict Management, Violence Mapping, COVID-19, Makassar City.

1 Introduction

The 2023 Global Peace Index states there has been a decline in the overall quality of global peace, as evidenced by a significant increase of 96% in conflict-related fatalities compared to the preceding year [1]. The number of fatalities resulting from conflicts has reached its peak in the current century. In 2023, Indonesia was ranked 53 out of 163 countries surveyed and experienced a decline from the previous 41 [1]. Urban conflict and violence in Indonesia have been persistent issues for decades, reflecting the nation's rich cultural diversity, complex political landscape, and socioeconomic disparities. As the world's fourth-most populous country, Indonesia's urban areas are often hotbeds of tension and unrest. A previous study on conflict in Indonesia revealed a clear and constructive relationship between local conflict and socio-economic factors such as unemployment, wealth and income disparities, occurrences of natural disasters, and shifts in sources of livelihoods [2].

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Urban places are susceptible to conflict and violence. Urban communities, in comparison to other locations, frequently encounter conflicts of diverse kind, including but not limited to conflicts involving adolescents, territorial disputes, and clashes related to identity [3]–[6]. According to Sampaio [5], the occurrence of conflicts in urban areas can be attributed to various factors, including the increase in population, migration patterns, ethnic tensions, the deterioration of institutional structures, and the weakening of urban services.

In light of the limited research available on urban conflicts [7], particularly in the context of post-pandemic settings, this study aims to address this gap by focusing on the case of City of Makassar in Indonesia. City of Makassar, the provincial capital of South Sulawesi in Indonesia, is a vibrant urban center with a considerably fast-growing infrastructure development and has population density of 8,148 individuals per square kilometer [8]. However, like many urban areas across the country, Makassar faces its share of urban conflict and violence, driven by a complex interplay of historical, socioeconomic, and political factors [9], [10]. As a city with a highly heterogeneous population of around 1,5 million dispersed in 15 sub-districts[8], Makassar has been struggling with urban violent conflict as one of its major problems for more than three decades. As the COVID-19 pandemic struck lives and livelihoods worldwide in 2020, City of Makassar was not exempt from its impacts. In addition to the health crisis, the pandemic has exacerbated existing urban conflicts and violence in the city.

This study delves into the unique dynamics of urban conflict and violence in City of Makassar during the COVID-19 pandemic by using community-based urban violence mapping to examine following research questions: what are types and characteristics of violent conflicts and where is prone conflict areas in City of Makassar?; what are root causes of violent conflicts in Makassar?; and what are possible avenues for resolution by assessing the roles of the community involvement in preventing destructive social conflicts?.

In the next section, we elaborate literature review related to conflict mapping as a tool in managing conflict-prone areas. Following by the research method which explain method used in collecting, processing and analyzing data. At the end we address research questions by presenting a conflict map of City of Makassar.

2 Literature review

Conflict mapping is a valuable instrument for examining intricate and ever-changing scenarios characterized by the presence of several stakeholders, diverse interests, multifaceted issues, and a range of emotions. This tool facilitates the identification of key components within a conflict, enables the visualization of their interconnections, and enhances comprehension of the fundamental causes and dynamics at play in the given situation. Conflict studies researchers have employed conflict mapping as a valuable tool for comprehending the contextual intricacies of regional dynamics and the probable occurrence of conflicts. Halawa et al. [11] conducted a study that used a geographical strategy, specifically a spatial approach, to map probable social conflicts in Indonesia. The study utilizes spatial interaction analysis as a methodological tool. Spatial

approaches encompass several methodologies, such as human activity approaches, theme approaches, and territorial approaches.
Furthermore, the study conducted by Brown and Raymond [12] incorporates the integration of place values and land use preferences as a means to conceptualize land use conflict. This approach is then applied to assess the possible conflict that may arise in the context of housing and industrial growth within the Lower Hunter region of Australia. Hausner et al. [13] conducted a study in Norway to quantify the magnitude of possible land-use conflicts. The researchers employed place-value maps and land-use preferences as tools to evaluate if the presence of conflicts varied depending on land tenure.

The utilization of conflict mapping can aid in comprehending the intricacies of a conflict, as suggested by Hjortsø et al. [14] and Karimi & Brown [15]. This observation elucidates the dynamic characteristics of conflicts, the parties engaged in them, their respective motivations, and the interrelationships among them. These findings are of great value in understanding the evolution of conflicts throughout time.

The use of conflict mapping plays a significant role in the advancement of early warning systems. The prompt highlights the significance of promptly recognizing possible conflict escalation as a means to implement preventive measures and mitigate the likelihood of prolonged violence and human suffering. As study of Suwandono et al. [16] suggests that conflict mapping can serve as an effective early warning system. Conflict mapping enables decision-makers to systematically analyze and comprehend the intricate dynamics of religious social conflict behavior. It facilitates the identification and tracking of the underlying causes of conflicts, hence empowering decision-makers to implement proactive measures for intervention and prevention.

In summary, conflict mapping is a crucial instrument within the field of conflict studies. This tool provides researchers, policymakers, and practitioners with the ability to effectively recognize, examine, and address conflicts, so making a valuable contribution to the promotion of peace, stability, and human development in regions affected by conflict.

3 Research Methods

The data collection and analysis are conducted through a sequential mixed method employing surveys (questionnaires) and focused group discussion (FGD). This study approach involves the collection, analysis, and visualization of data related to various forms of violence, including physical violence, domestic violence, property-related conflicts, and communal tensions. Surveys were conducted in 15 subdistricts in City of Makassar, and initial data were obtained from questionnaires given to 626 respondents. Once collected, the data is analyzed to identify patterns, trends, and potential hotspots of violence. Geospatial analysis tool (GIS) is used to visualize this information on maps. The next step is conducting FGD to analyze the root causes and potential interventions for the problems. The FGD involves community representatives from the hotspot areas such as community leaders (chief of neighborhood and community units) and community prominent persons (religious land ethnos leader), as well as government

representatives such as government officials and law enforcement (police officer or *Bakamtibmas* and army officer or *Babinsa* in village levels). The data analysis method used in survey data is descriptive statistics based on answers from questionnaires. The data from interviews and FGDs were analyzed using interpretive methods.

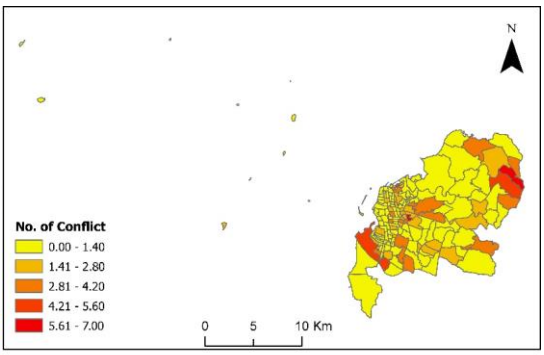
4 Results

Community-based urban violence mapping is a grassroots approach that empowers local residents to actively engage in documenting and analyzing incidents of violence within their neighborhoods. Amid the pandemic's disruptions and social strains in City of Makassar in 2020, community-based mapping has emerged as a critical tool to understand and address conflicts and violence within the city, and reveals several findings as the following:

4.1 Conflict and Poverty Nexus

During the COVID-19 pandemic, City of Makassar has witnessed a conspicuous and compelling correlation between conflict and poverty. This nexus has been particularly evident in the prevalence of social conflicts, which tend to be concentrated within the city's slum areas as can be seen in the following figure and table.

Sub-District	No. of Conflict	No. of RT/RW	Conf. Proportion
Kel. Laikang	7	12	0.58333
Kel. Karuwisi	6	10	0.6
Kel. Cambaya	5	6	0.83333
Kel. Macconi Sombala	5	9	0.55556
Kel. Balangbaru	5	9	0.55556
Kel. Sudiang Raya	5	8	0.625
Kel. Pampang	4	7	0.57143
Kel. Tammua	4	6	0.66667
Kel. Mangasa	4	9	0.44444
Kel. Bara Baraya Timur	4	4	1
Kel. Lariangbangi	4	4	1
Kel. Paccerakkang	4	5	0.8
Kel. Pattingalloang	3	4	0.75
Kel. Pannampu	3	4	0.75
Kel. Manggala	3	5	0.6
Kel. Pisang Selatan	3	3	1
Kel. Manuruki	3	5	0.6
Kel. Bara Baraya	3	2	1.5
Kel. Banta-bantaeng	3	9	0.33333
Kel. Sambungjawa	3	6	0.5
Kel. Panaikang	3	7	0.42857
Kel. Bulurokeng	3	8	0.375
Kel. Bakung	3	6	0.5



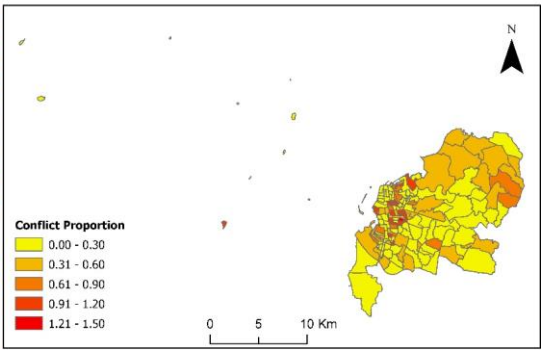


Fig. 1. Hotspots areas of communal violent conflict in City of Makassar in 2020 visualized using choropleth maps. The top right map showing the number of conflicts across village (*Kelurahan*) in Makassar, and the bottom right map showing number of conflict proportion relative to the number of RT/RW in each sub-district.

The areas in red or communal conflict hotspots are predominantly in districts that are inhabited by impoverished families and individuals grappling with unemployment. Village of Bara Baraya, located in Sub-district of Makassar, emerged as a prominent area of concern, exhibiting the highest conflict proportion of 1.5. This was closely shadowed by Village of Bulogading in Sub-district of. Ujung Pandang, Village of Lariangbangi in Sub-district of Makassar, Village of Bontoala Parang in Sub-district of Bontoala, and Village of Baraya in Sub-district of Bontoala, each recording a conflict proportion of 1.0. Furthermore, when considering the absolute number of conflict events, Village of Bara Baraya consistently stood out, marking it as a significant hotspot for conflicts within City of Makassar.

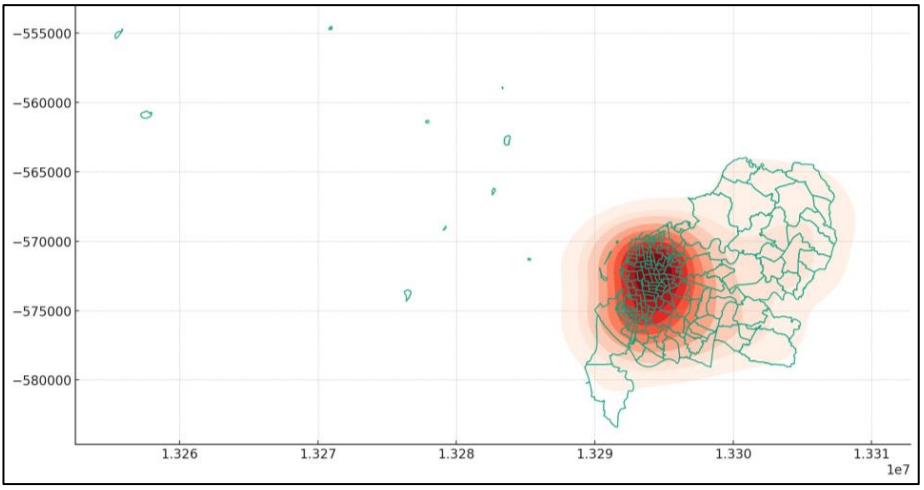


Fig. 2. Kernel Density Estimation of Conflict Events overlayed on Makassar's sub-district boundaries. The darker regions represent areas with a higher density of conflict events, indicating potential conflict "hotspots." Lighter regions signify areas with lower conflict event density.

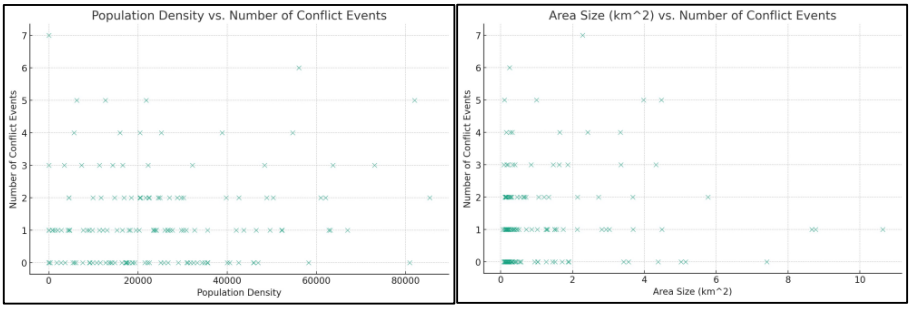


Fig. 3. Scatter plot of relationship between Population Density (left) and Area Size (right) against the number of conflict at sub-district level.

A geographical exploration of the city presented a diverse landscape of conflict proportions, with distinct areas demonstrating heightened conflict proportions relative to others. However, upon further scrutiny, particularly between population density and conflict events, the relationship did not appear linear. Although areas with denser populations might intuitively be expected to register more conflicts due to sheer numbers, our analysis yielded a weak positive correlation of $r \approx 0.136$. This indicates that densely populated regions in Makassar do not necessarily experience disproportionately high conflict events. An assessment of area size (in km^2) against conflict events aimed to discern if larger spatial expanses inherently experienced more violence. The findings, represented by a weak positive correlation of $r \approx 0.100$, indicate that the sheer size of an area is not a dominant factor in determining conflict intensity.

The pandemic has only served to exacerbate the pre-existing economic disparities, as economic activities have slowed down significantly, and a wave of layoffs and job

losses has swept across various sectors. Consequently, the majority of residents in City of Makassar's slum areas found themselves facing profound financial insecurity. In such circumstances, tensions escalate, and conflicts emerge as individuals and communities compete for increasingly scarce resources and opportunities. This strong connection between conflict and poverty underscores the urgent need for targeted interventions in these marginalized communities. Addressing both the immediate health concerns associated with COVID-19 and the underlying socioeconomic disparities is paramount to fostering stability, reducing conflicts, and creating a more equitable and resilient urban environment in City of Makassar.

4.2 Conflicts Increase despite the COVID-19

From the figures above it can be seen that despite the challenges posed by the COVID-19 pandemic, communal conflicts have not witnessed a decrease in their frequency and intensity. Government policies and public health measures, though designed to curb the spread of the virus, have not proven entirely effective in preventing individuals from engaging in violence and becoming embroiled in conflicts. During the pandemic, the City of Makassar government has imposed several regulations including lockdown, social distancing, and movement restrictions, but as the data above shows the violent conflicts in the city remained and their number has even increased.

This phenomenon underscores the complexity of addressing social tensions and disputes, even during a global health crisis. While the pandemic has necessitated restrictions on movement and public gatherings, it has not managed to eradicate the deep-rooted issues and underlying causes that often fuel communal conflicts. Moreover, the economic and psychological strains brought about by the pandemic may have exacerbated existing tensions in certain communities, making them more susceptible to conflicts.

In Makassar communities where social bonds and support networks are already fragile, social distancing and movement restrictions can exacerbate feelings of alienation and frustration among people. Individuals who feel disconnected from their communities or their extended families may be more susceptible to radicalization or involvement in violent activities. Prolonged exposure to crisis situations and isolation, lead people to crisis fatigue. This fatigue in turn results in reduced resilience, making people more difficult to address and resolve tensions peacefully [17] As such, it is clear that comprehensive strategies and interventions are needed to address both the immediate health crisis and the underlying social factors contributing to communal conflicts, with a focus on fostering resilience, promoting dialogue, and ensuring equitable access to resources and opportunities.

4.3 Slowing Economic Activities and Layoffs Increase Conflicts

In City if Makassar, as in many urban areas globally, the COVID-19 pandemic has played a significant role in escalating the intensity of violent conflicts. The primary driver behind this troubling trend is the substantial slowdown in economic activities coupled with a surge in layoffs. With the implementation of lockdowns and restrictions to mitigate the spread of the virus, businesses and industries faced severe disruptions.

As a consequence, economic activities ground to a halt, leaving many residents without a source of income. The subsequent wave of layoffs and job losses further exacerbated the already fragile economic situation, plunging numerous individuals and families into financial despair. This economic hardship has acted as a catalyst, intensifying existing tensions and conflicts within City of Makassar. Faced with limited opportunities and growing financial insecurity, some individuals have resorted to violence as a means of asserting their interests or accessing essential resources. To address this challenging issue, City of Makassar must not only focus on curbing the spread of COVID-19 but also implement comprehensive strategies to stimulate economic recovery, provide support to those in need, and strengthen conflict resolution mechanisms within the community. These efforts are vital to promote social stability and mitigate the increasing intensity of violent conflicts during these trying times.

4.4 Need for RT/RW-Based Conflict Monitoring and Resolution System

The study also reveals that it has become increasingly evident that there is a pressing need for the establishment of a community-based conflict monitoring and resolution system in Makassar City, particularly involving the active engagement of society members at the RT/RW (neighborhood and community units) level. Such a system holds the potential to address the growing complexities of urban conflicts, especially during challenging times like the COVID-19 pandemic. By decentralizing conflict monitoring and resolution to the grassroots level, this approach empowers local communities to take ownership of their security and well-being. It promotes a sense of shared responsibility and trust among residents, allowing them to identify and respond to emerging conflicts swiftly [18]. Community members at the RT/RW level possess an intimate knowledge of the unique dynamics within their areas. They can identify emerging conflicts, underlying causes, and potential solutions that might not be evident at higher administrative levels.

This system's effectiveness lies in its ability to harness local knowledge and networks, enabling timely interventions and tailored solutions that are sensitive to the unique dynamics of each neighborhood. By decentralizing conflict monitoring and resolution, City of Makassar can ensure that conflicts are detected at an early stage, and prompt intervention is critical to preventing the escalation of violence. In a diverse urban landscape like City of Makassar, where communal tensions and socioeconomic disparities may exacerbate conflicts, community-based conflict monitoring and resolution can serve as a vital tool for promoting social cohesion, preventing violence, and building resilient communities.

5 Conclusion

This study reveals that the correlation between conflict and poverty is striking, especially evident in the majority of social conflicts concentrated in City of Makassar's slum areas where predominantly inhabited by impoverished families and unemployed individuals. Despite the challenges posed by the COVID-19 pandemic, communal conflicts have not abated, as government policies and pandemic-related dangers have proven

insufficient to deter people from engaging in violence and disputes. In fact, the pandemic has exacerbated the intensity of violent conflicts, primarily due to the economic downturn stemming from slowing economic activities and widespread layoffs. To address these complex urban challenges effectively, there is an urgent need for the establishment of a community-based conflict monitoring and resolution system at the RT/RW level. This approach would actively involve society members, empowering communities to take ownership of their security and well-being, and fostering timely interventions tailored to the unique dynamics of each neighborhood. Such a system is essential for promoting social cohesion, preventing violence, and building resilient communities in City of Makassar, particularly in the face of the ongoing pandemic.

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