

April 2024

Geographic Research on Hate Crimes and Incidents: Approaches for Advancing Inclusive Practices

Hyejin Yoon

University of Wisconsin-Milwaukee, yoon3@uwm.edu

Hyowon Ban

California State University, Long Beach, hyowon.ban@csulb.edu

Jessie Jungeun Hong-Dwyer

The Ray Highway, jessiehongdwyer@gmail.com

Follow this and additional works at: <https://dc.uwm.edu/ijger>



Part of the [Geography Commons](#), [Psychology Commons](#), [Race, Ethnicity and Post-Colonial Studies Commons](#), and the [Social Justice Commons](#)

Recommended Citation

Yoon, Hyejin; Ban, Hyowon; and Hong-Dwyer, Jessie Jungeun (2024) "Geographic Research on Hate Crimes and Incidents: Approaches for Advancing Inclusive Practices," *International Journal of Geospatial and Environmental Research*: Vol. 11: No. 1, Article 2.

Available at: <https://dc.uwm.edu/ijger/vol11/iss1/2>

This Review Article is brought to you for free and open access by UWM Digital Commons. It has been accepted for inclusion in International Journal of Geospatial and Environmental Research by an authorized administrator of UWM Digital Commons. For more information, please contact scholarlycommunicationteam-group@uwm.edu.

Geographic Research on Hate Crimes and Incidents: Approaches for Advancing Inclusive Practices

Abstract

COVID-19, originally reported in China, has brought an increase in anti-Asian and Asian American hate incidents and crimes in the United States. However, research on hate incidents and crimes are relatively new in the field of geography. To provide better ways to investigate hate crime incidents against Asians and Asian Americans during COVID-19, this article draws on various research methods from existing studies on hate crimes. Geographers have focused attention on minority groups linked to different geographic scales, and non-geographic studies have focused mainly on psychological symptoms and impacts on health. Even though existing studies have helped broaden the knowledge of the subject, the geographic aspects of the issue require further examination. This article suggests that geographers should pay more attention to four aspects of research in hate crimes and incidents for future research: avoiding oversimplified concepts, reconsidering relational aspects within the local community, identifying intersectionality and everydayness of people, and engaging more with the practice of the law enforcement and the local communities.

Keywords

COVID-19, Hate incidents, Hate crimes, geography, research methods

Acknowledgements

We appreciate the editor's guidelines and the feedback from the anonymous reviewers on this article. Furthermore, the authors express their gratitude for the support of this research, which was provided by the Title VI NRC Global Studies Research Fellowship at the University of Wisconsin-Milwaukee in the fall of 2023.

1 INTRODUCTION

The spread of coronavirus disease (COVID-19), which was first reported in Wuhan, China in January 2020, has increased anti-Asian incidents. COVID-19 is referred to as the “Wuhan virus” or “China virus,” specifically by conservative political party members and the former president of the United States under the assumption that China is the source of the disease (Reny and Barreto 2022). Moreover, the recent political and trade tensions between the United States and China contributed to the politicization of COVID-19 (Perry et al. 2021). The pandemic has also revealed their hostility toward mostly Asians, manifested in verbal or nonverbal harassment and physical attacks (Reny and Barreto 2022). Political strategies to stigmatize these groups brought an increase in anti-Asian incidents and xenophobia through “othering” where conservative political groups treat Asians and Asian Americans as the source of the disease (Reny and Barreto 2022; Li and Nicholson Jr. 2021).

Since 2020, the number of anti-Asian incidents reported in the United States has increased. Overall, it is difficult to find data about anti-Asian incidents, but reported anti-Asian hate crimes increased from 33 to 133 cases between 2020 and 2021 in New York City, a 313% increase (Jeung et al. 2021). In addition, other large American cities, such as San Francisco and Los Angeles, reported a higher number of anti-Asian hate crimes in the same period than other cities (ibid.). The victims of the reported anti-Asian incidents were mainly from vulnerable groups (i.e., women [63.3%] and seniors [7.1%]) (Jeung et al. 2021).

Asians have experienced various hate incidents in public spaces such as streets and subway stations in large metropolitan areas in the United States as well as online (Jeung et al. 2021). Perpetrators can easily target Asians because of their appearance, regardless of their nationality or ethnic identity (Pan et al. 2021). Many Asians have expressed anxiety about being a victim of an anti-Asian incident during the pandemic (Lee and Waters 2021; Tessler et al. 2020). In many cases, Asians who reported the hate incidents revealed that they occurred in public spaces (Jeung et al. 2021), and certainly, this has changed the majority of Asians and Asian Americans’ emotions and feelings about places, such as streets and campuses, where their everyday lives occur (ibid.).

Despite the rise in hate crimes and incidents (HCI) in the United States after COVID-19, limited geographic research has addressed this topic (Harwood et al. 2018). Thus, we introduce how geographic research methods on hate crimes have changed over the years and have contributed to widening our knowledge of the geography of HCI. Furthermore, we explain how geographic studies of HCI are understood in geographic concepts and how data on HCI have affected three research methods, quantitative, qualitative, and mixed methods of studies on HCI in this article. First, we address what aspects of HCI have been investigated and what methods have been widely used for HCI studies. Secondly, we explore how geographic studies have evolved and how geospatial technology has widened our understanding of geographic research on HCI. Lastly, we suggest new directions of research on HCI against Asians and Asian Americans in the United States in the era of a long-term COVID-19 pandemic.

2 HATE CRIMES AND INCIDENTS STUDIES

In this section, we examine how different approaches, including qualitative, quantitative, and mixed methodologies were used in studies of HCI in multiple disciplines, such as criminology and psychology. Some of the trends in the recent studies on HCI are widening the research scope from the physical space to online space, investigating the process of spread of misinformation, and the victims' emotions (Lyu et al. 2023; Rowe et al. 2021; Uyheng and Carley 2021; Velásquez et al. 2020; Ziems et al. 2020).

2.1 Quantitative Research Methods

Data availability and analysis are crucial for quantitative methods in HCI research. With the development of information and technology, much research has dealt with various analytic methods of large data collected from social media (refer to Appendix 1 for references). Among studies on HCI, one of the recent trends is identifying the relationship between HCI and social media use (Lyu et al. 2023; Rowe et al. 2021; Uyheng and Carley 2021; Velásquez et al. 2020; Ziems et al. 2020). Krackhardt and Stern (1988, as cited in Mohar 1989) argued that there were potentially shared structural conditions among hate clusters for the effective spread of hate in online communities, for example, the cluster size of hate communities and patterns of hierarchical connection between agents in the cluster (Mohar 1989).

Several studies on HCI investigated the patterns and dynamics of online clusters in HCI by analyzing large-scale data using statistical methods (Lyu et al. 2023; Rowe et al. 2021; Uyheng and Carley 2021; Velásquez et al. 2020; Ziems et al. 2020). For example, Uyheng and Carley (2021) compared characteristics of the HCI among online clusters of different countries using Twitter posts during COVID-19. The study developed community-level hate metrics and proposed a dynamic network framework using cluster and identity target analysis. The dispersion of HCI in online communities is associated with the number, sizes, and structure of the clusters. As a result, higher levels of HCI were consistently associated with smaller, more isolated, and highly hierarchical network clusters of tweets. Lyu et al. (2023) analyzed public opinion toward the #StopAsianHate Movement using logistic regression analysis of Twitter data in 2021. The research found the movement attracts more participation from women, younger adults, Asian, and Black communities. Public opinion varied across user characteristics, including demographic and socio-economic status. Rowe et al. (2021) measured changes in public sentiment opinion about migration during the COVID-19 pandemic in five countries in Europe and North America. The study demonstrated that migration-related tweets increased in the study areas, showing social polarization of high concentrations of strongly positive and strongly negative sentiments on migration.

Second, another trend of HCI research has focused on the mechanisms of diffusion of online hate (Müller and Schwarz 2023; Velásquez et al. 2020; Ziems et al. 2020). Müller and Schwarz (2023) revealed that higher Twitter use was positively related to an increase in anti-minorities hate crimes after the 2016 U.S. presidential primaries. The study measured the diffusion of Twitter and the relationship between hate groups using multiple approaches such as a proxy measure, panel regressions, and

first-difference modeling by county and visualized the distribution of hate crimes and Twitter usage on maps. Velásquez et al. (2020) showed that online hate, such as hate speech, disinformation, and misinformation regarding COVID-19, spread beyond the control of any individual social media platform. The study used mathematical models to analyze multiple data networks of several social media, such as Facebook and Instagram. In addition, Ziems et al. (2020) used machine-learning analysis of Twitter data to investigate how hateful and counter-hate users interact and engage. Both hate messages and counter-hate messages were identified and classified into either hate, counter-hate, or neutral categories using machine-learning models and logistic regression classifiers. The study revealed that the hate messages were generally more engaged with anti-Asian tweets and that counter-hate messages could discourage users from turning hateful in general. In this sense, analysis of the large data set using quantitative research methods also provides effective ways to prevent and lower the spread of hate statements online.

Third, other studies on HCI have examined the impact of individual variables at different levels of data on the analysis of HCI (Zhang et al. 2022; McCann and Boateng 2021; McNeeley and Overstreet 2018; Benier et al. 2016; Van Kesteren 2016). For instance, Zhang et al. (2022) used the multilevel logistic regression models to compare the nature and characteristics of HCI against Asian Americans with those against African Americans and Hispanics. The study adopted a multilevel approach to control the social contextual variations across counties at individual and county levels because HCI was nested in the counties of the study areas. At the individual level, variables explaining the characteristics of individuals, such as age, race, gender, residential status, location, time, and injury were analyzed. At the county level, variables were analyzed, including total population, race, and economic factors such as unemployment rate, median income, and region (Zhang et al. 2022). Studies found that significant differences existed in the characteristics of hate crimes against race, community, country, and socio-economic context (Zhang et al. 2022; Stacey et al. 2011; Benier et al. 2016). For example, using multilevel logistic regression models, Benier et al. (2016) analyzed HCI in a multiethnic context in Australia from self-reported HCI data. The models were developed to determine the household-level characteristics (e.g., rental status, income, indigenous identity, languages spoken, and time) and the neighborhood-level characteristics (e.g., place, median income, average indigenous identity, average languages spoken, and mobility) that are more likely to lead to HCI victimization.

Further, Zhang et al. (2022) found all victim-related and most offender-related variables showed similarities in hate crime between the two groups. However, the study also found that offenders' race and all incident-related variables of hate crimes against Asian Americans were significantly different from those of hate crimes against African Americans and Hispanics. In addition, Stacey et al. (2011) found positive relationships between Hispanic population changes and anti-Hispanic hate crimes using statistical analysis.

In summary, the research about HCI has focused on various topics such as online clusters of HCI and their diffusion (Müller and Schwarz 2023; Uyheng and Carley 2021; Velásquez et al. 2020; Ziems et al. 2020), public sentiment on HCI (Lyu et al. 2023; Rowe et al. 2021), interactions between individual users of social media (Müller and Schwarz 2023; Velásquez et al. 2020; Ziems et al. 2020), and differences among characteristics

of HCI (Zhang et al. 2022; McCann and Boateng 2021; McNeeley and Overstreet 2018; Benier et al. 2016; Van Kesteren 2016). However, most of the works mentioned in this section do not detail the spatial characteristics of HCI and interactions among individuals or groups. Moreover, collecting and analyzing the large data set resulted in the dehumanization and disembodiment of victims (Clayton et al. 2016). In Section 3, this study introduces other HCI literature that uses geospatial approaches.

2.2 Quantitative Research Methods

Researchers often choose qualitative research methods to understand individual's experiences, perspectives, and behaviors because qualitative methods are helpful in finding answers to the questions of what, how, and why (Creswell 2012). Despite many qualitative research methods, we would like to focus on interviews (Museus et al. 2016), focus groups (Vergani et al. 2022; Asquith 2017), and art-based methods (Burch 2022; Tarr et al. 2018) in qualitative research on HCI in this section.

One hate-related research example using interviews as a main method was a study by Museus et al. (2016) analyzing multiracial college students' experiences with prejudice and discrimination. The authors first conducted two focus groups with 12 mixed-race college students as a pilot study to generate initial codes and improve the main study design. Then the authors interviewed 22 students individually. By analyzing the interview responses, the research team identified how the multiracial students experienced prejudice and discrimination in college (e.g., reducing their multiracial identity into one race category, rejecting their self-selected identities, excluding them from a certain racial group, questioning their racial authenticity, exoticizing their mixed-race status, and presuming their struggle included emotional imbalance).

Second, in addition to interviews, some researchers have conducted their qualitative inquiries through texts without directly interacting with the victims (Vergani et al. 2022; Asquith 2017). They often use the textual analysis method to better understand their topic by analyzing the content, purpose, and underlying meanings of texts (McKee 2003). This approach helps researchers examine and interpret any hidden or subconscious political and cultural beliefs in texts—understanding how persons make sense of the world through texts. Social media, such as Facebook (Awan 2016), Twitter (Lingiardi et al. 2020), and YouTube (Murthy and Sharma 2019) have been useful data sources for textual analysis. In social media, individuals express and share their experiences, beliefs, and ideas, but individuals utilize social media to bully a specific group based on race, gender, religion, or disability; and they are also used as storage space for online violence (Chetty and Alathur 2018).

Awan (2016) used content analysis to examine the content and patterns of online anti-Muslim hate speech posted on Facebook in 2013 and 2014. Content analysis is a textual analysis approach that focuses on occurrences of particular messages in texts (Frey et al. 2000). How Muslims are stereotyped and harassed on the internet is especially important because online hate speech can directly affect a Muslim's life, and the internet can also be used to provoke horrific violence against them. Using 494 instances collected from 100 Facebook pages, posts, and comments, the author identified frequently occurring words (e.g., dirty, extremists, bomb, and rapists) and characteristics of haters (e.g., opportunists who want to incite violence, deceivers who

distribute false information, and producers who create anti-Muslim images and videos). The author also discovered major themes in the content. The haters often described Muslims as terrorists and rapists and Muslim women as a security threat because of the hijabs they are wearing. The haters also often talked about a potential war possibly caused by Muslims and supported deportation orders for Muslims.

Third, another useful qualitative research method for hate studies is art-based. Participating in art-based activities provides an opportunity for participants to engage in the meaning-making process, reflect on their own experiences, and express their experiences and emotions freely in a safe space (Tarr et al. 2018). This approach can be effective in exploring victimization experiences, which are mostly personal, emotional, and sensitive stories. Burch (2022) adopted art-based methods for her disability hate crime study. Seventy-one disabled persons participated in art-based workshops in which participants created their mood boards using magazines, newspapers, pens and pencils, and hate-crime-related materials like posters. Because there was no particular format for creating mood boards, participants expressed their thoughts freely, which might have been difficult if writing were the only available medium. During the workshops, the author conducted interviews with some of the participants to examine the hate crime experiences in their daily lives. Through this method, participants were able to process their understanding, open their minds, and discuss sensitive topics with others. Therefore, this approach could be a powerful research tool to help hate-crime victims share their experiences and understanding openly in a nonintimidating space. However, the inability to conduct comparative studies was hampered by a few obstacles, such as nations and organizations defining HCI differently and the varying methods used to obtain data from victims in each study (Vergani et al. 2022).

2.3 Mixed Methods

There are researchers in hate studies who use both quantitative and qualitative research methods and data for their studies to reduce bias in data collection and analysis. By triangulating data sources (i.e., using multiple types of data), researchers can increase data validity (Creswell and Creswell 2018).

For example, an exploratory sequential mixed method began with a survey about hate crime victimization to investigate hate crime victimization and was followed by semi-structured interviews to reveal the complicated experiences of the victims (Williams and Tregidga 2014; Guerra et al. 2011). In addition to descriptive statistics, the study adapted survey data to measure how the respondents perceived the effects of hate victimization differently using statistical models, for example, ordinary least squares regression models. The study discovered that among the seven categories of victims—disability, age, gender, sexual orientation, religion or views, race or ethnicity, and transgender status or gender identity—HCI has the greatest negative impact on the transgender group. (Williams and Tregidga 2014).

After the quantitative research method, such as the survey, the mixed methods researchers also adopted the qualitative method, interviews in this case, as a follow-up approach to explaining the narratives (Mullany and Trickett 2020; Kwan and Ding 2008). The mixed-method research (Williams and Tregida 2014) was careful about protecting research participants' identities while the authors conducted interviews.

The study used various characteristics of hate incidents: 1) victim variables, including the characteristics of the victims such as gender and age; 2) classifications of crime variables, including violence, property, threats, and hate incidents; 3) perpetrator variables, including types of perpetrators, such as a stranger; 4) criminal justice variables, including crime reporting by police or a third party. They found that the impacts of the hate incidents were not homogenous and varied by victims' identities and the geographic locations of the incidents. In this regard, qualitative and quantitative research methods are complementary and enrich our understanding of hate incidents. However, there are challenges associated with generalizing findings to different levels of analysis, including state and local levels, when employing mixed methods (Holder 2022).

3 GEOSPATIAL APPROACH TO HATE INCIDENTS AND CRIME STUDIES

Research on hate in the discipline of geography is relatively new (Jendryke and McClure 2019; Iganski 2008; Flint 2004). The discipline of geography has contributed to studies on crimes by applying geographic concepts and methodologies, such as distance decay and spatial analysis, to investigate where crimes occurred by mapping to prevent them (LeBeau and Leitner 2011). Nevertheless, in contrast to crimes, HCI must address characteristics of a region, especially territoriality, carefully including historical, cultural, political, and social contexts at various geographic scales. The dominant group of people defines the characteristics of a place and then they determine who belongs or does not belong within a place based on differences: race (Nelson et al. 2016), sexual orientation (Legg and Nottingham Citizens 2021), disability (Hall et al. 2021), political affiliation (Flint 2004), and economic status (Lopez et al. 2023; Medina et al. 2018). Thus, HCI reflects socially constructed relations that are embedded in a geographic territory (refer to Appendix 1 for references).

3.1 Hate Crimes and Incidents in Geography

HCI is hard to define in general. HCI is a type of crime motivated by bias or prejudice against individuals based on their differences (Schweppe 2021). Most crimes, for example, property crime or violence, result in actual damage to someone's property or body, but HCI is more symbolic, subjective, and complicated than other types of crimes (Jendryke and McClure 2019). HCI includes actors, both the perpetrators and the victims, motivations with purposes, and distinctions between "us" and "them" who is welcomed and who belongs to a geographic area (Vergani et al. 2022). In this regard, complex socio-economic relationships between different groups living in a region emerge, and the perpetrators express their anonymity to socially and economically marginalized persons within a territory (Hall 2014; Chakraborti 2009; Perry and Blazak 2009; Flint 2004). Therefore, HCI can be defined as a series of reactions expressed by the prevailing group of individuals as they defend their territory against intruders (Hall 2014) via exclusions and hostility (Perry and Blazak 2009; Flint 2004). The geographers have emphasized the following.

First, geographers investigate how regions change and reshape their territories. The dominant group continuously shapes and evaluates the characteristics of a region. While doing so, the boundaries of a territory are established in response to demographic changes, such as the entrance of new immigrants in neighborhoods, local areas, and states. As a result, a geographic area becomes a dynamic entity that provides a sense of belonging or non-belonging (England and Simon 2010; Perry and Blazak 2009). Many geographers question who are the members of a geographic area and how the dominant group defines the characteristics of a region (England and Simon 2010; Flint 2004). For example, the dominant groups usually assume that new immigrants from developing countries replace them at their work and benefit from social welfare, especially during times of economic difficulties, and revel in their hostility toward them (Ryan and Leeson 2011; England and Simon 2010; Perry and Blazak 2009). As a result of the ongoing process of Othering, spaces of segregation or imaginary boundaries are created by the dominant group (England and Simmons 2010; Perry and Blazak 2009).

Second, geographers focus on two main geographic features: spatial distribution and mapping the location of HCI (Lopez et al. 2023; Hall and Bates 2019; Jendryke and McClure 2019). For example, concentrations of HCI are often found in large metropolitan areas (Jendryke and McClure 2019; Nelson et al. 2016); thus, cluster analysis of HCI is meaningful (Lopez et al. 2023). Larger metropolitan areas with greater demographic diversity are more likely to encounter distinct groups of individuals than less dense rural areas (Nelson et al 2016; Valentine 2013). In addition to locations of HCI, a time variable, such as important geopolitical event (e.g., 9/11), result in higher chances of HCI in cities (Nelson 2016; Valentine 2013). However, due to a paucity of national-level data in the United States, most research on HCI relies on self-reporting or victim surveys (Kim et al. 2023; Harwood et al 2018). Thus, predicting the geographic locations of prospective HCI sites is challenging to investigate.

Third, geographers explore everyday geographies in different locations, including public spaces and neighborhoods, where victims meet with both strangers and neighbors (Hall 2022; Hall and Bates 2019). The concept of HCI includes both criminal and non-criminal aspects of human behaviors toward different people (Kim et al. 2023), so the spatiality of a place and its territoriality, where power relations and societal hierarchy are embedded, assumes critical importance. Victims encounter either strangers or neighbors in their everyday places, making it difficult for them to escape and avoid the perpetrators in their everyday geography (Clayton et al 2022; Hall and Bates 2019). Furthermore, (im)mobility of the victims in HCI is another term that should be understood spatially, given the nature of geographic characteristics of HCI. Fourthly, geographers use a variety of research methods to examine how individuals feel in different parts of the city (Steger et al. 2021; Larsen et al. 2015). For example, Hall and Bates (2019) examined how disabled persons perceive their emotions about the city where they live. Using mixed methods, walking interviews, and focus groups, the participants identified places where they felt safe/welcomed and unsafe/anxious using colored pens on a map and shared their experiences. Geographers also examined how people develop their strategies to cope with such situations.

3.2 Spatial Analysis of Hate Crimes and Incidents in Geography

Because of these limitations, research on HCI that uses spatial data requires a different methodology than that which uses a generic regression model. Even though using spatial data has enabled scholars to explain the criminality of sites between nearby places, this violates one of the major assumptions: the independence of the event (Radil 2016; Bernasco and Elffers 2010). According to Tobler's First Law of Geography, "Everything is related to everything else, but near things are more related than distant things" (Tobler 1970, p. 236). Within a certain distance, each geographical unit of analysis is not independent, and one unit may affect the characteristics of other units and vice versa. Thus, the results of quantitative analysis of HCI data may be biased if spatial interdependency of areal units is not considered (Bernasco and Elffers 2010). To avoid such problems, small geographic units should be considered for studies on HCI and a more cautious approach to test these spatial autocorrelations can be used (Groff et al. 2009; Townsley 2009).

Investigation of the relationship between variables of HCI and locational impact on HCI research becomes important (Lee and Waters 2021; Medina et al. 2021; Herbert 2020; Jendryke and McClure 2019; Bernasco and Elffers 2010; Wei et al. 2010). For instance, Jendryke and McClure (2019) identified causal relations in HCI while focusing on spatial aspects of HCI using quantitative methods. The study found that spatial dependency existed in the United States in the presence of hate groups and hate crimes regardless of the size of the areal units. The work used a geographically weighted regression to account for the sparseness and overdispersion of the datasets by exploring the association between dependent and independent spatial variables.

Another method, the spatial lag model, revealed the detailed spatial association between hate groups and hate crimes per spatial unit by including spatial weights on the distance between the hate groups and the hate crimes (Hendryke and McClure 2019). The study visualized the results on colocation maps to show the positive spatial correlation between hate groups and hate crimes. Furthermore, Herbert (2020) demonstrated correlations among variables using statistical analyses and mapping of FBI hate crime data. The maps revealed the spatial unevenness that reflected social inequities in applying legal practices regarding hate crimes. In addition, Medina et al. (2021) analyzed the socioeconomic and ideological drivers of HCI with correlations in the United States by using spatial statistics and mapping. The study visualized distributions of the coefficients for socioeconomic and ideological variable effects on HCI per county on maps. Results of the study indicated that the correlations among the socio-economic variables were more substantial as the distance from the Northeastern United States increased, and the Northeast and Midwest regions showed the strongest correlations among the variables (Medina et al. 2021).

There are other recent works that have focused on racial discrimination (Lee and Waters 2021; Wei et al. 2010). Wei et al. (2010) demonstrated how individual/collective and dispositional/situation-specific coping strengthened the relationships among Asian Americans based on a survey in a Midwestern state university in the United States. The study used hierarchical regression analysis to examine relations between a dependent variable, such as depressive symptoms, and

an independent variable such as racial discrimination stress. Results from the hierarchical regression analysis illustrated that racial discrimination stress significantly predicted depressive symptoms beyond perceived general stress and perceived racial discrimination.

Another study by Lee and Waters (2021) employed convergent mixed methods to analyze the racial discrimination experiences of Asians and Asian Americans living in the United States during the COVID-19 pandemic. The authors surveyed 410 participants using multiple survey questionnaires previously developed for investigating the impact of COVID-19: racial discrimination, social support, and mental, physical, and sleep health. They analyzed data using descriptive statistics, correlations, and regression analysis. The authors also asked one open-ended question regarding the participants' specific discrimination experiences due to the COVID-19 pandemic and analyzed the responses using content analysis. The results showed that about 33% of the participants experienced more racial discrimination during the pandemic and that it negatively affected their health. The qualitative analysis revealed that the participants had personally experienced discrimination, including microaggressions and overt racial discrimination. They also reported that racially diverse communities and social distancing helped some participants avoid exposure to discrimination.

In addition, a group of studies has emphasized spatiotemporal aspects of HCI research (Hall et al. 2021; Wenger and Lantz 2021; Bernasco and Elffers 2010). For example, Hall et al. (2021) argued that research on the spatiotemporal aspects of COVID-19-affected groups could help enhance the public health response to the pandemic. The study reported racial discrimination related to the pandemic, including anti-Asian and anti-Chinese racism and systemic barriers in the care and safety that members of various minority groups experienced. In addition, Wenger and Lantz (2021) examined the spatiotemporal concentration and consistency of HCI in Washington, D.C., by testing spatial point patterns of HCI using a local similarity index (S-index) and a global S-index. The local S-index measured the changes in HCI in each geographic unit, and the global S-index measured the temporal characteristics of HCI for larger geographic units. The study revealed a spatial concentration of hate crimes by pairwise comparisons of the S-indices. For instance, hate crimes in Washington, D.C., from 2012 through 2018, occurred at only about 4% of street segments and intersections of the city. The study demonstrated that hate crimes were spatially stable, and most of the locations of HCI concentrations showed commonalities of having already experienced hate crimes (Wenger and Lantz 2021).

In summary, geographers have addressed HCI by understanding territoriality and regional characteristics historically (Flint 2004). Spatial analytical research about HCI has focused on multiple topics such as spatial dependency (Medina et al. 2021; Jendryke and McClure 2019; Bernasco and Elffers 2010; Groff et al. 2009; Townsley 2009), interactions between variables on racial discrimination (Lee and Waters 2021; Wei et al. 2010), and spatiotemporal analysis and visualization of HCI data (Hall et al. 2021; Wenger and Lantz 2021; Bernasco and Elffers 2010).

4 DISCUSSION: TOWARD INCLUSIVE GEOGRAPHIC RESEARCH ON HATE CRIMES AND INCIDENTS

Overall, the research methods of geographies in HCI have relied on different factors, such as research questions and data availability. Particularly, the paucity of official crime data is a critical barrier to the researchers, and the unique characteristics of HCI need careful consideration.

First, geographic studies on HCI would avoid oversimplified concepts. To identify “criminality of space”, someone’s perceptions of “safe” and “unsafe” spaces (e.g., home and public spaces) are commonly used; however, this can result in a paradox of space. For example, one might simply think that HCI usually occurs in public spaces by strangers, but Hall and Bates (2019) argued that victims often experience HCI in their routine life, not by extremists in public spaces (see also Iganski 2008). For example, the place where the mass shooting against Asians at a spa in Atlanta, Georgia, occurred in 2020 shows different aspects of hate incidents. Even though the motivation of the perpetrator of the mass shooting was not clearly related to race-based hate, six of the eight victims were Asian. Most individuals consider a spa to be a private service place not a public space like the streets, where they feel vulnerable when encountering strangers. However, this spa became the target of an HCI.

Second, the complexity of differences based on individuals’ identities and relations within the local community should be considered. Even though recent geographic studies on HCI carefully examine identities and their intricate relations across space (Pain 2000), HCI is more relational than other types of crimes. Iganski (2008) argues that the perpetrators are more normal individuals that we might meet on the streets than extremists. If the perpetrators find an “easy target” in a proper place and time, the relationships between perpetrators and victims of HCI are changeable (Chakraborti and Garland 2012). In this regard, HCI can be committed from one minority person to another minority person. Space is relational, and the meaning of space continuously changes over time because of different factors, for example, people’s identity (Pain 2000), time of day, the life cycle of individuals, and their relationships (Valentine 1989).

In this context, HCI reflects more expressions of exclusion toward an individual or a group (Chakraborti and Garland 2012). Thus, we need to carefully approach people’s intersectionality and vulnerability; they may be situated differently in the local community and may be unreported in the official statistics.

Third, to convey the complicated intersectionality and everydayness of victims and perpetrators in HCI, different types of data and analyses should be considered. HCI not only includes physical violence toward a victim but also includes verbal or physical hate expression. In many cases, those HCI are not reported, because such microaggressions are less recognizable compared to physical violence and crimes. Moreover, the practice of law is likely to be biased toward socially marginalized victims. The victims are also afraid of being treated inappropriately because of their minority status in society when they reveal their identities (Nicolosi et al. 2020). To include the silence from marginalized groups in HCI, multiple geographic scales and inclusive research practices would be useful. In the recent cases of HCI during COVID-19 mentioned in this study, many Asians were vulnerable in the public space by their

appearances not by their social identities. Exclusion of community members from spaces does not occur primarily because of social identities and positioning (Tessler et al. 2020). The fear of spaces reflects power relations among differences and social exclusion: for example, who is welcome or not welcome in a place (Pain 2000).

Lastly, the practice of law enforcement and sharing knowledge with the communities should be reconsidered. As the importance of participatory research and community engagement has increased, geographers should be more careful about ensuring more inclusive studies on HCI (Legg and Nottingham Citizens 2021; Mertens 2012). Clayton et al. (2016) also argue that the process of collecting data about HCI should pay attention to the issues of inequality, social justice, and politics among different interest groups. According to their work, without efforts to reach out and engage marginalized communities in the data collection process, various forms of violence targeting the communities might not be captured in the data. In addition, Omrow (2020) criticized some existing mapping of COVID-19 that has provided biased data on the pandemic and “abyssal Othering” (p. 22), the exclusion and nonexistence of the Other that challenges the global social justice and global cognitive justice.

5 CONCLUSIONS

In this article, we have examined a few of the methodologies and data types that are widely used in research on HCI. Geographic research on HCI is intrinsically related to relations between the dominant group and others within various geographic scales. However, the official statistics of HCI should be taken cautiously due to the lack of self-reporting and geographers’ inconsistent interests in the criminal justice process. To bridge such gaps in geographic studies on HCI, the complexity of relations across space and within a local area becomes important. Thus, geographic studies on HCI pay more attention to identifying the intersectionality of minorities and more engagement with the local communities than binary concepts of “safe” and “unsafe” spaces. Furthermore, geographic studies on HCI need to focus more on the dynamics of relations among less privileged groups, in this case, Asians or Asian Americans during COVID-19. Therefore, geographic methods, including quantitative, qualitative, and mixed methods of investigating HCI during the pandemic, can be useful in exploring how the pandemic affected groups of people who were socially marginalized.

REFERENCES

- Asquith, N. (2017) Verbal and textual hostility in context. In *Hate Crime*, 99-123: Willan
- Awan, I. (2016) Islamophobia on social media: A qualitative analysis of Facebook’s walls of hate. *International Journal of Cyber Criminology*, 10(1), 1-20
- Benier, K., Wickes, R. and Higginson, A. (2016) Ethnic hate crime in Australia: Diversity and change in the neighborhood context. *British Journal of Criminology*, 56(3), 479-496
- Bernasco, W. and Elffers, H. (2010) Statistical analysis of spatial crime data. *Handbook of Quantitative Criminology*, 699-724

- Burch, L. (2022) 'We shouldn't be told to shut up, we should be told we can speak out': Reflections on using arts-based methods to research disability hate crime. *Qualitative Social Work*, 21(2), 393-412. <https://doi.org/10.1177/14733250211002888>
- Chakraborti, N. (2009) Crimes against the "other": Conceptual, operational, and empirical challenges for hate studies. *Journal of Hate Studies*, 8, 9-28
- Chakraborti, N. and Garland, J. (2012) Reconceptualizing hate crime victimization through the lens of vulnerability and 'difference'. *Theoretical Criminology*, 16(4), 499-514. <https://doi.org/10.1177/1362480612439432>
- Chetty, N. and Alathur, S. (2018) Hate speech review in the context of online social networks. *Aggression and Violent Behavior*, 40, 108-118. <https://doi.org/10.1016/j.avb.2018.05.003>
- Clayton, J., Donovan, C. and Macdonald, S.J. (2022) Living with hate relationships: Familiar encounters, enduring racisms and geographies of entrapment. *Environment and Planning D: Society and Space*, 40(1), 60-79. <https://doi.org/10.1177/02637758211049808>
- Clayton, J., Donovan, C. and Macdonald, S.J. (2016) A critical portrait of hate crime/incident reporting in North East England: The value of statistical data and the politics of recording in an age of austerity. *Geoforum*, 75, 64-74. <https://doi.org/10.1016/j.geoforum.2016.07.001>
- Creswell, J.W. (2012) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (3rd ed.). SAGE: Thousand Oaks, CA
- Creswell, J.W. and Creswell, J.D. (2018) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE: Thousand Oaks, CA
- England, M.R. and Simon, S. (2010) Scary cities: Urban geographies of fear, difference and belonging. *Social & Cultural Geography*, 11(3), 201-207. <https://doi.org/10.1080/14649361003650722>
- Flint, C. (2004) Introduction Spaces of Hate: Geographies of Discrimination and Intolerance in the USA. In *Spaces of Hate*, 1-20. Routledge: New York, New York. ISBN: 9780415935869
- Frey, L., Botan, C.H. and Kreps, G. (2000) *Investigating Communication*. Indiana University Press: Bloomington, IN. ISBN: 0205198260
- Groff, E., Weisburd, D. and Morris, N. A. (2009) Where the action is at places: Examining spatio-temporal patterns of juvenile crime at places using trajectory analysis and GIS. In *Putting Crime in its Place: Units of Analysis in Geographic Criminology*, 61-86. Springer: New York, New York
- Guerra, N.G., Williams, K.R. and Sadek, S. (2011) Understanding bullying and victimization during childhood and adolescence: A Mixed methods Study. *Child Development*, 82, 295-310. <https://doi.org/10.1111/j.1467-8624.2010.01556.x>
- Hall, E. and Bates, E. (2019) Hatescape? A relational geography of disability hate crime, exclusion and belonging in the city. *Geoforum*, 101, 100-110. <https://doi.org/10.1016/j.geoforum.2019.02.024>
- Hall, E. (2022) Rethinking responses to hate: towards a socio-ecological approach. In *Landscapes of Hate*, 217-237. Bristol University Press: Bristol, UK. <https://doi.org/10.51952/9781529215205.ch012>

- Hall, N. (2014) Understanding hate crimes 1: Perspectives from the wider social sciences. In *The Routledge International Handbook on Hate Crime*, 81-91. Routledge: New York, New York
- Hall, P.A., Sheeran, P., Fong, G.T., Cheah, C.S., Oremus, M., Liu-Ambrose, T., Sakib, M.N., Butt, Z.A., Ayaz, H., Jandu, N. and Morita, P.P. (2021) Biobehavioral aspects of the COVID-19 pandemic: a review. *Psychosomatic Medicine*, 83(4), 309-321. <https://doi.org/10.1097/PSY.0000000000000932>
- Harwood, S.A., Mendenhall, R., Lee, S.S., Riopelle, C. and Huntt, M.B. (2018) Everyday racism in integrated spaces: Mapping the experiences of students of color at a diversifying predominantly white institution. *Annals of the American Association of Geographers*, 108(5), 1245-1259. <https://doi.org/10.1080/24694452.2017.1419122>
- Herbert, L. (2020) *Visualizing the FBI's Hate Crime Data: Geographic Unevenness in Reporting and Legislation* (Order No. 28002012). Available from Carolina Digital Repository. <https://cdr.lib.unc.edu/concern/dissertations/9880vx57q>
- Holder, E. (2022) The convergence of Hate: An analysis of UCR–NCVS hate crime trends, 2003 to 2020. *Crime & Delinquency*, 70(6-7), 1864-1892. <https://doi.org/10.1177/001112872211310>
- Iganski, P. (2008) *Hate Crime and the City*. University of Bristol Press: Bristol, UK
- Jendryke, M. and McClure, S.C. (2019) Mapping crime—Hate crimes and hate groups in the USA: A spatial analysis with gridded data. *Applied Geography*, 111, 102072. <https://doi.org/10.1016/j.apgeog.2019.102072>
- Jeung, R., Yellow Horse, A., Popovic, T. and Lim, R. (2021) *Stop AAPI Hate National Report*. Stop AAPI Hate, 210316. <https://stopaapihate.org/wp-content/uploads/2021/05/Stop-AAPI-Hate-Report-National-210316.pdf>
- Kim, C., Lee, C.S., and Lim, H. (2023) Hate-motivated crime/incidents against Asians in the United States of America: A systematic review. *Race and Justice*, 13(1), 9-31. <https://doi.org/10.1177/21533687221117280>
- Krackhardt, D. and Stern, R.N. (1988) Informal networks and organizational crises: An experimental simulation. *Social Psychology Quarterly*, 51(2), 123-140
- Kwan, M.P. and Ding, G. (2008) Geo-narrative: Extending geographic information systems for narrative analysis in qualitative and mixed-method research. *The Professional Geographer*, 60(4), 443-465. <https://doi.org/10.1080/00330120802211752>
- Larsen, M.E., Boonstra, T.W., Batterham, P.J., O’Dea, B., Paris, C. and Christensen, H. (2015) We feel: mapping emotion on Twitter. *IEEE Journal of Biomedical and Health Informatics*, 19(4), 1246-1252. <https://doi.org/10.1109/JBHI.2015.2403839>
- LeBeau, J.L. and Leitner, M. (2011) Introduction: Progress in research on the geography of crime. *The Professional Geographer*, 63(2), 161-173. <https://doi.org/10.1080/00330124.2010.547147>
- Lee, S. and Waters, S.F. (2021) Asians and Asian Americans’ experiences of racial discrimination during the COVID-19 pandemic: Impacts on health outcomes and the buffering role of social support. *Stigma and Health*, 6(1), 70. <https://doi.org/10.1037/sah0000275>

- Legg, S. and Citizens, N. (2021) 'No place for hate': community-led research and the geographies of Nottingham citizens' hate crime commission. *Social & Cultural Geography*, 22(8), 1164-1186. <https://doi.org/10.1080/14649365.2019.1697460>
- Li, Y. and Nicholson Jr, H.L. (2021) When "model minorities" become "yellow peril"—Othering and the racialization of Asian Americans in the COVID-19 pandemic. *Sociology Compass*, 15: e12849. <https://doi.org/10.1111/soc4.12849>
- Lingiardi, V., Carone, N., Semeraro, G., Musto, C., D'Amico, M. and Brena, S. (2020) Mapping Twitter hate speech towards social and sexual minorities: a lexicon-based approach to semantic content analysis. *Behaviour & Information Technology*, 39(7), 711–721. <https://doi.org/10.1080/0144929X.2019.1607903>
- Lopez, J.J., Jang, W., Prew, P.A., Lepe, L. and Maitaitis, R. (2023) The Geography of Hate: Spatial Patterns of Bias-Motivated Crimes in Minnesota, 2015–18. *American Journal of Criminal Justice*, 48, 176-192. <https://doi.org/10.1007/s12103-021-09647-4>
- Lyu, H., Fan, Y., Xiong, Z., Komisarchik, M. and Luo, J. (2023) Understanding public opinion toward the #StopAsianHate Movement and the relation with racially motivated hate crimes in the US. *IEEE Transactions on Computational Social Systems*, 10(1), 335-346. <https://doi.org/10.1109/TCSS.2021.3136858>
- McCann, W.S. and Boateng, F.D. (2021) An analysis of hate crime victimization amongst immigrants. *American Journal of Criminal Justice*, 47, 795-817
- McKee, A. (2003) *Textual Analysis: A Beginner's Guide*. SAGE
- McNeeley, S. and Overstreet, S. (2018) Lifestyle-routine activities, neighborhood context, and ethnic hate crime victimization. *Violence and Victims*, 33(5), 932-948. <https://doi.org/10.1891/0886-6708.VV-D-17-00136>
- Medina, R.M., Nicolosi, E.A., Brewer, S. and Moore, E. (2021) A geographical analysis of socio-economic and ideological drivers of hate crime in the United States. *International Journal of Applied Geospatial Research*, 12(2), 39-56. <https://doi.org/10.4018/IJAGR.2021040103>
- Medina, R.M., Nicolosi, E., Brewer, S. and Linke, A.M. (2018) Geographies of organized hate in America: A regional analysis. *Annals of the American Association of Geographers*, 108(4), 1006-1021
- Mertens, D.M. (2012) Transformative mixed methods: Addressing Inequities. *American Behavioral Scientist*, 56(6), 802–813. <https://doi.org/10.1177/0002764211433797>
- Mohar, B. (1989) Isoperimetric numbers of graphs. *Journal of Combinatorial Theory, Series B*, 47(3), 274-291
- Mullany, L. and Trickett, L. (2020) The language of 'misogyny hate crime': politics, policy and policing. In *Professional Communication: Consultancy, Advocacy, Activism*, 249-272. Springer Nature.
- Müller, K. and Schwarz, C. (2023) From hashtag to hate crime: Twitter and antiminority sentiment. *American Economic Journal: Applied Economics*, 15(3), 270-312. <https://doi.org/10.1257/app.20210211>
- Murthy, D. and Sharma, S. (2019) Visualizing YouTube's comment space: online hostility as a networked phenomena. *New Media & Society*, 21(1), 191-213. <https://doi.org/10.1177/1461444818792393>

- Museus, S.D., Sariñana, S.A.L., Yee, A.L. and Robinson, T.E. (2016) A qualitative analysis of multiracial students' experiences with prejudice and discrimination in college. *Journal of College Student Development*, 57(6), 680-697. <https://doi.org/10.1353/csd.2016.0068>
- Nelson, M.S., Wooditch, A., Martin, F.A., Hummer, D. and Gabbidon, S.L. (2016) Hate crimes in post-9/11 Pennsylvania: Case characteristics and police response revisited. *Race and Justice*, 6(4), 303-324. <https://doi.org/10.1177/2153368715617812>
- Nicolosi, E., Medina, R., Riley, C. and McNeally, P. (2020) Crowdsourcing sensitive VGI: Constructing the hate incident reporting system. *Digital Geography and Society*, 1, 100003
- Omrow, D.A. (2020) A map of the World: Cognitive injustice and the Other. *Journal of Philosophy and Culture*, 8(2), 22-32. <https://doi.org/10.5897/JPC2020.0057>
- Pain, R. (2000) Place, social relations and the fear of crime: a review. *Progress in Human Geography*, 24(3), 365-387. <https://doi.org/10.1191/030913200701540474>
- Pan, S.W., Shen, G.C., Liu, C. and Hsi, J.H. (2021) Coronavirus stigmatization and psychological distress among Asians in the United States. *Ethnicity & Health*, 26(1), 110–125. <https://doi.org/10.1080/13557858.2020.1849570>
- Perry, B. and Blazak, R. (2009) Places for races: The white supremacist movement imagines US geography. *Journal of Hate Studies*, 8, 29
- Perry, S.L., Whitehead, A.L. and Grubbs, J.B. (2021) Prejudice and pandemic in the promised land: How White Christian nationalism shapes Americans' racist and xenophobic views of COVID-19. *Ethnic and Racial Studies*, 44(5), 759-772. <https://doi-org.ezproxy.lib.uwm.edu/10.1080/01419870.2020.1839114>
- Radil, S.M. (2016) Spatial Analysis of Crime, In *Handbook of Measurement Issues in Criminology and Criminal Justice*, 535-554. Wiley: West Sussex, UK. <https://doi.org/10.1002/9781118868799.ch24>
- Reny, T.T. and Barreto, M.A. (2022) Xenophobia in the time of pandemic: othering, anti-Asian attitudes, and COVID-19. *Politics, Groups, and Identities*, 10(2), 209-232
- Rowe, F., Mahony, M., Graells-Garrido, E., Rango, M. and Sievers, N. (2021) Using Twitter to track immigration sentiment during early stages of the COVID-19 pandemic. *Data & Policy*, 3, e36, <https://doi.org/10.1017/dap.2021.38>
- Ryan, M.E. and Leeson, P.T. (2011) Hate groups and hate crime. *International Review of Law and Economics*, 31(4), 256-262. <https://doi.org/10.1016/j.irle.2011.08.004>
- Schweppe, J. (2021) What is a hate crime? *Cogent Social Sciences*, 7(1), 1902643. <https://doi.org/10.1080/23311886.2021.1902643>
- Stacey, M., Carbone-López, K. and Rosenfeld, R. (2011) Demographic change and ethnically motivated crime: The impact of immigration on anti-Hispanic hate crime in the United States. *Journal of Contemporary Criminal Justice*, 27(3), 278-298. <https://doi.org/10.1177/1043986211412560>
- Steger, A., Evans, E. and Wee, B. (2021) Emotional cartography as a window into children's well-being: Visualizing the felt geographies of place. *Emotion, Space and Society*, 39, 100772. <https://doi.org/10.1016/j.emospa.2021.100772>

- Tarr, J., Gonzalez-Polledo, E. and Cornish, F. (2018) On liveness: using arts workshops as a research method. *Qualitative Research*, 18(1), 36-52. <https://doi.org/10.1177/1468794117694219>
- Tessler, H., Choi, M. and Kao, G. (2020) The anxiety of being Asian American: Hate crimes and negative biases during the COVID-19 pandemic. *American Journal of Criminal Justice*, 45(4), 636-646. <https://doi.org/10.1007/s12103-020-09541-5>
- Tobler, W.R. (1970) A computer movie simulating urban growth in the Detroit region. *Economic Geography*, 46(sup1), 234-240
- Townsley, M. (2009) Spatial Autocorrelation and Impacts on Criminology. *Geographical Analysis*, 41(4) 452-461. <https://doi.org/10.1111/j.1538-4632.2009.00775.x>
- Uyheng, J. and Carley, K.M. (2021) Characterizing network dynamics of online hate communities around the COVID-19 pandemic. *Applied Network Science*, 6(1), 1-21. <https://doi.org/10.1007/s41109-021-00362-x>
- Valentine, G. (2013) Living with difference: proximity and encounter in urban life. *Geography*, 98(1), 4-9. <https://doi.org/10.1080/00167487.2013.12094359>
- Valentine, G. (1989) The geography of women's fear. *Area*, 21(4), 385-390
- Van Kesteren, J. (2016) Assessing the risk and prevalence of hate crime victimization in Western Europe. *International Review of Victimology*, 22(2), 139-160. <https://doi.org/10.1177/0269758015627046>
- Velásquez, N., Leahy, R., Restrepo, N.J., Lupu, Y., Sear, R., Gabriel, N., Jha, O., Goldberg, B. and Johnson, N.F. (2020) Hate multiverse spreads malicious COVID-19 content online beyond individual platform control. *arXiv preprint arXiv:2004.00673*. <https://doi.org/10.48550/arXiv.2004.00673>
- Vergani, M., Perry, B., Freilich, J., Chermak, S., Scrivens, R. and Link, R. (2022) PROTOCOL: Mapping the scientific knowledge and approaches to defining and measuring hate crime, hate speech, and hate incidents. *Campbell Systematic Reviews*, 18(2), e1228. <https://doi.org/10.1002/cl2.1228>
- Wei, M., Heppner, P.P., Ku, T.Y. and Liao, K.Y.H. (2010) Racial discrimination stress, coping, and depressive symptoms among Asian Americans: A moderation analysis. *Asian American Journal of Psychology*, 1(2), 136-150. <https://doi.org/10.1037/a0020157>
- Wenger, M.R. and Lantz, B. (2021) Hate crime and place: The spatial and temporal concentration of bias-motivated crime in Washington, DC. *Journal of Interpersonal Violence*, 37(13-14), NP10683-NP10708. <https://doi.org/10.1177/0886260520987817>
- Williams, M.L. and Tregidga, J. (2014) Hate crime victimization in Wales: psychological and physical impacts across seven hate crime victim types. *British Journal of Criminology*, 54(5), 946-967. <https://doi.org/10.1093/bjc/azu043>
- Zhang, Y., Zhang, L. and Benton, F. (2022) Hate crimes against Asian Americans. *American Journal of Criminal Justice*, 47, 441-461. <https://doi.org/10.1007/s12103-020-09602-9>
- Ziems, C., Vigfusson, Y. and Morstatter, F. (2020) Aggressive, Repetitive, Intentional, Visible, and Imbalanced: Refining Representations for Cyberbullying Classification. *Proceedings of the International AAAI Conference on Web and Social Media*, 14(1), 808-819. <https://doi.org/10.1609/icwsm.v14i1.7345>

APPENDIX 1. CHARACTERISTICS OF METHODS OF HCI RESEARCH

Methods	Data	Focus	Strengths	Limitations
Quantitative (non-geospatial)	Reported official crime statistics, Big data (e.g., social media data)	Relationship between perpetrators' behavior, hate clusters, hot spots	Prediction and prevention	Missing unreported incidents, De-humanization
	References cited: Lyu et al. (2023); Müller and Schwarz (2023); Zhang et al. (2022); McCann and Boateng (2021); Rowe et al. (2021); Uyheng and Carley (2021); Velásquez et al. (2020); Ziems et al. (2020); McNeeley and Overstreet (2018); Benier et al. (2016); Van Kesteren (2016); Mohar (1989); Krackhardt and Stern (1988)			
Qualitative	Interviews, Focus group, Textual analysis, Art-based methods	Victims' perceptions and emotions	Including unreported incidents and cases	Difficulties in comparison and prevention
	References cited: Burch (2022); Hall and Bates (2019); Chetty and Alathur, 2018; Tarr et al. (2018); Awan (2016); Museus et al. (2016); Creswell (2012); McKee (2003); Frey et al. (2000)			
Mixed	Multiple types of data	People's perceptions and coping strategies	Increase in data validity	Difficulties in generalizations due to different geographic scales
	Holder (2022); Legg and Nottingham Citizens (2021); Lingardi et al. (2020); Mullany and Trickett, 2020; Creswell and Creswell (2018); Asquith (2017); Williams and Tregidga (2014); Guerra et al (2011); Kwan and Ding (2008)			
Geographic	Quantitative, Qualitative, Mixed	Characteristics of regions, Geographic scales	Perceptions about geographic areas, Spatiality, Territoriality	Difficulties in generalization and prevention
	References cited: Lopez et al. (2023); Clayton et al. (2022); Hall (2022); Legg and Nottingham Citizens (2021); Steger et al. (2021); Hall and Bates (2019); Jendryke and McClure (2019); Harwood et al. (2018); Medina et al. (2018); Clayton et al. (2016); Nelson et al. (2016); Hall (2014); Valentine (2013); England and Simon (2010); Perry and Blazak (2009); Iganski (2008); Flint (2004)			
Geospatial	Big data, Spatiotemporal data, Spatial data	Exploratory analysis, Mapping and visualization	Everyday geographies, Spatiality	Low community engagement/ de-humanization
	References cited: Hall et al. (2021); Lee and Waters (2021); Medina et al. (2021); Wenger and Lantz (2021); Herbert (2020); Hall and Bates (2019); Jendryke and McClure (2019); Radil (2016); Prestomon (2012); LeBeau and			

	Leitner (2011); Stacey et al. (2011); Bernasco and Elffers (2010); Wei et al. (2010); Groff et al. (2009); Townsley (2009); Tobler (1970)
--	---
