Longitudinal Changes in Interracial Hate Crimes in the USA, 1990–2014: Does Racial Composition Matter?

Mathijs Kros[1] · Eva Jaspers[1] · Frank van Tubergen[1,2]

Abstract

Studies on the relationship between racial composition and interracial hate crimes are largely cross-sectional, while little is known about longitudinal developments. This paper examines the impact of longitudinal changes in the racial composition of regions on interracial hate crimes in the USA. We use official statistics on 120,000 White on Black hate crimes that were committed across 3500 regions in the period between 1990 and 2014. Applying longitudinal multi-level modelling, we find that during this period there was an overall decline in interracial hate crimes. Furthermore, our results reveal that the decline was more pronounced in regions that witnessed a significant reduction in the share of Whites. Despite concerns that increasing racial diversity may lead to more interracial animosity and hate crimes, our study suggests the opposite. As the numerical predominance of White people in USA erodes, the number of White on Black hate crimes decreases.

Introduction

There is a large body of research on the relationship between racial and ethnic diversity in geographical areas and intergroup outcomes, such as trust (Putnam, 2000), and prejudice (Pottie-Sherman & Wilkes, 2017). However, a common shortcoming of this type of research is that it too often focuses on people's attitudes and beliefs, rather than their actions and behaviour (Green & Spry, 2014). Scholars have therefore started to examine hate crimes as well, which are

✉ Mathijs Kros
  M.Kros@uu.nl

1   Department of Sociology, Utrecht University, Utrecht, Padualaan 14, 3584 CH Utrecht, the Netherlands

2   Netherlands Interdisciplinary Demographic Institute (NIDI), The Hague, the Netherlands

behavioural manifestations of racial or ethnic prejudice. They are defined as criminal offences motivated by hostility towards the victim's racial or ethnic group.

Studies from USA, which focus on racial rather than ethnic group differences, show that the most common racial hate crimes are intimidation, simple assault and aggravated assault (FBI, 2014). Racial hate crimes often have far-reaching, adverse effects for victims and communities alike. Direct victims of hate crimes generally report extreme emotional distress, even more so than victims of similar offences that are not motivated by hate (Levin & McDevitt, 2002). What is more, the psychological effects of hate crimes, such as fear and anxiety, also extend to other people who were not directly victimized or involved (Green & Rich, 1998; Perry & Alvi, 2012). Hate crimes are often symbolic and ultimately directed at groups, not individuals. This is also apparent in research showing that hate crimes can prevent people from creating a neighbourhood that protects against intergroup violence and welcomes diversity (Benier, 2017; Keel et al., 2021). Instead, hate crimes, especially when bystanders do not intervene or speak up, can encourage intergroup intolerance and prejudice (Iganski, 2020; Keel et al., 2021). Studying the relationship between racial composition and hate crime occurrence thus has important ramifications for our understanding of intergroup relations.

Research on the role of racial composition for hate crimes is relatively rare. Most research has been done in USA (Gladfelter et al., 2017; Green et al., 1998; Grattet, 2009; Lyons, 2007, 2008). In their seminal study on neighbourhoods in New York, Green and colleagues (1998) showed that hate crimes were more prevalent in predominantly White neighbourhoods that experienced in-migration of other racial groups. Similarly, a study on Sacramento, California, found rates of racial hate crimes to be higher in racially homogenous neighbourhoods that witnessed a substantial increase in non-White residents (Grattet, 2009). Lyons (2007) arrived at the same conclusion for neighbourhoods and Chicago, and further showed that anti-Black crimes were more likely in neighbourhoods with more informal social control. That said, recent studies in Australia did not find a correlation between the proportion of non-English-speaking residents and numbers of self-reported hate crime victimization in the neighbourhood (Benier, 2019; Benier et al., 2016). Although inconsistencies remain, most research conducted in USA is in support of the defended turf theory. The core argument is that White Americans who live in racially homogenous places feel threatened by other in-migrating racial groups and resort to hate crimes to defend 'their' turf against members of other racial groups who do not belong there (Green et al., 1998; Lyons, 2007).

Previous studies on racial or ethnic composition and hate crimes are not only rare; they also rely on cross-sectional analyses. This is unfortunate because in USA in particular, the numerical predominance of White people has been eroding for decades (United States Census Bureau, 2010). While it is true that levels of segregation in USA are high (Massey et al., 2009), and that the proportional decline in White people is not equally dispersed throughout the country, nearly all American municipalities and cities have become more racially diverse (United States Census Bureau, 2010). Understanding how this trend has affected White on Black hate crimes is the central aim of this paper. This is important for several reasons.

The first reason is substantive: scientific and political concerns about interracial conflict and prejudice often revolve around consequences of changes over time in racial composition, observed in many places in USA. However, most research is cross-sectional in nature and is therefore not apt at testing whether such demographic changes result in more or less hate crimes (Fairbrother, 2013).

Second, research on the effect of changes within places in racial composition on changes in the number hate crimes requires fewer assumptions about unobserved differences between places (Giesselmann & Schmidt-Catran, 2018; Te Grotenhuis et al., 2015). The generally accepted advantage of such longitudinal multilevel models is that controlling for unobserved heterogeneity between places helps to validate that the relationship between racial composition and hate crime is not merely correlational, and potentially spurious, but causal (Gangl, 2010). In the specific case of hate crimes, there is an additional advantage of longitudinal multilevel models. They can help circumvent some of the concerns surrounding the quality of the available crime statistics (Loftin & McDowall, 2010). Not only do official statistics underreport the number of hate crimes that occur in places (Sandholtz et al., 2013); there is also reason to assume that the extent of underreporting varies systematically with other characteristics of those places. For instance, previous studies show that anti-Black hate crimes committed in USA are less likely to be reported in places with a history of lynching (King et al., 2009), and are more likely to be reported in places with resourceful civil rights organizations (McVeigh et al., 2003). We control for these confounding differences between places by focusing on changes within places over time.

In short, we aim to extend previous research by making use of longitudinal multilevel models, thereby addressing concerns related to the correlational nature of cross-sectional research generally, as well as the unobserved yet systematic heterogeneity between places in hate crime statistics specifically. Using data from the FBI and the US Census Bureau, 25 years (1990 to 2014) and 3570 places, we estimated multilevel models with within-place differences between years (level 1), nested in places as clusters (level 2). These models allowed us to test the effect of changes over time in racial composition on changes in White on Black hate crime occurrence, while controlling for unobserved differences between places (Fairbrother, 2013). Ultimately, we contribute to the literature on racial diversity and intergroup relations by studying hate crimes and answering the following research question: How did changes over time in racial composition, due to the percentage of White people generally decreasing and the percentage of Black people generally increasing, affect the number of hate crimes committed by White people against Black people in the USA?

Theory

We consider three theoretical approaches to the possible consequences of increasing racial diversity in USA for the number of White on Black hate crimes. These theories are defended turf theory, ethnic conflict theory, and intergroup contact theory. Based on the former two approaches, it can be expected that increasing diversity

and, in particular, the growing presence of Black Americans has resulted in an increase of White on Black hate crimes. Defended turf theory differs from conflict theory by drawing attention to the importance of the places that Black Americans move into, arguing that the in-migration of Black people mostly results in hostility in places that are otherwise predominantly inhabited by White people. Third, and conversely, based on contact theory it can be expected that racial diversity results in more interracial contact, less prejudice, and ultimately fewer White on Black hate crimes.

Defended Turf and Interracial Conflict

First of all, the decline in numerical predominance of White people could result in a 'White fight': an increase in violent defensive reactions against racial minorities moving into areas previously dominated by White people (Meyer, 2001). These expectations fit the idea, more broadly carried in the public debate, that some White people in USA feel that their political and economic power is increasingly challenged by racial minorities, leaving them with an aggrieved sense of entitlement. This has, for example, also been used to explain the violent protests in Charlottesville (Gillon, 2017).

These ideas are incorporated in the defended turf theory (Green et al., 1998). It is argued that people commit hate crimes to fend off the perceived threat of racial outgroups to their community's identity and way of life (Suttles, 1972). Two aspects underlie this argument. The first is that racial groups may claim a territory to be theirs, linking it to a collective racial identity (Horowitz, 2000). Such a claim is more often made in places that are predominantly inhabited by people of one racial group, because the 'community identity' is more likely to be rooted in ideals of longstanding racial homogeneity (Lyons, 2007). Committing a racial hate crime is seen as a way to defend this claim to territory against people who belong to a different racial group. Further, it has been suggested that, at least in USA, White people are most likely to feel entitled to such defensive reactions (Grattet, 2009). All in all, it can be expected that White on Black hate crimes are less likely in places where the percentage of White people has been decreasing, and where the numerical predominance of White people has become less pronounced.

> Hypothesis 1: A decrease over time in the percentage of White people living in a place is related to fewer anti-Black hate crimes committed by White people.

The second aspect of the defended turf theory postulates that defensive acts of violence are especially likely when people of a different racial background appear to threaten one group's claim to soil (Lyons, 2008). When members of racial minorities start to move into a place otherwise predominantly inhabited by White people, their in-migration is believed to challenge the racial homogeneity, resulting in more hate crimes (Green et al., 1998). In other words, an increase over time in the percentage of Black Americans in a place that is traditionally inhabited by a relatively high percentage of White people could result in a 'White fight': an increase in violence

committed by White inhabitants against Black people moving in, in order to defend their claim to territory (Grattet, 2009; Meyer, 2001).

Hypothesis 2: An increase over time in the percentage of Black people in a place is related to more White on Black hate crimes, and this relationship is stronger in places with a relatively high percentage of White inhabitants.

Slightly different from to the contention that hate crimes are driven by an increase in the presence of racial minorities in predominantly White places, conflict theory is usually concerned with the direct consequences of the presence of racial minorities. According to conflict theory, the presence of racial minorities implies a competition between racial groups over scarce resources, both material and immaterial, such as jobs, housing, and power (Olzak, 2013). This competition over economic and political resources consequently results in hostility and animosity between groups (Blalock, 1967), including racial violence (Bonacich, 1972). In contrast to the defended turf theory described in Hypothesis 2, conflict theory does not stipulate that the relationship between an increase in the percentage of Black people and the level of hostility amongst White people should depend on the percentage of White people already living in that place. Stated in statistical terms, while defended turf theory describes an interaction between the influx of Black people and the percentage of White people already living somewhere, conflict theory is concerned with a direct effect of the percentage of Black people on interracial conflict and hate crimes.

Hypothesis 3: An increase in the percentage of Black people in a place is related to more anti-Black hate crimes committed by White people.

Interracial Contact

On the other hand, there are reasons to expect that the number of hate crimes committed against Black Americans has decreased over time, mirroring the downward trend in anti-black prejudice amongst White people since the early 1990s (Bobo et al., 2012). Based on contact theory (Allport, 1954), it could be argued that a relatively high percentage of racial minority group members results in more interracial contact for White people. An increase in the size of the Black populations also increases the opportunity for White people to meet Black people (Blau et al., 1982). Such opportunity effects have for instance been shown in relation to interracial marriages (Kalmijn, 1998), interracial friendships (De Souza Briggs, 2007; Mouw & Entwisle, 2006) and positive but not negative intergroup contact in general (Kros & Hewstone, 2020).

Subsequently, positive interracial contact alleviates perceptions of racial threat and competition (Schlueter & Wagner, 2008), promotes interethnic tolerance and trust, results in more positive norms about interracial contact (De Tezanos-Pinto et al., 2010; Christ et al., 2014) and reduces hostility and prejudice towards people of a different racial background (Pettigrew, 2008). Prejudiced people are, in turn, more likely to commit actual violent acts against the people they are prejudiced

against (Parrot & Peterson, 2008). Further, people who have relatively little interracial contact have also been shown to have a relatively strong tendency towards interracial aggression (Schmid et al., 2013). In short, an increase in the amount of interracial contact on the micro-level may result in lower levels of prejudice and fewer hate crimes. This would in turn translate into fewer racial hate crimes aggregated to the macro-level.

> Hypothesis 4: An increase in the percentage of Black people in a place is negatively related to the number of White on Black hate crimes in that place.

Methods

Data

Hate crime data was taken from the Uniform Crime Reporting (UCR) program of the FBI (FBI, 2014). Every year, this program collects incident reports from around 18,000 agencies. The current study looked at the incident reports from 1991 to 2014. Whether an incident constitutes a hate crime was decided based on a two-tier process (Uniform Crime Reporting Program, 2015). First, the law enforcement officer determined whether there was any indication that the offender was motivated by bias towards the victim's racial group. Second, either a local officer trained in hate crime matters or a local special hate crime unit reviewed the facts of the incident and determined whether the incident indeed constituted a hate crime. If so, the incident was reported as such to the FBI, using uniform offence and bias definitions, for instance stipulating that a crime was committed because of a racial prejudice. By using data that was collected by one institute, which uses a standardized collection methodology, we sought to reduce the impact of jurisdictional differences in reporting hate crimes (Jenness & Grattet, 2005).

However, there are some limitations to this type of hate crime data that need to be considered in interpreting the results of this study. First, official statistics often underreport on hate crime (Sandholtz et al., 2013). This could be because it can be quite difficult to identify the bias motivation that is necessary in order to label an incident as a hate crime (Sullaway, 2004), and because incidents might not be reported to the police or other governmental institutions. There is research that suggests that such a 'dark figure' in hate crimes, or a discrepancy between the number of reported and recorded hate crimes and the number of actual hate crimes, is not problematically large. For example, there is a positive relationship between the number of incidents that get reported and the extent to which people perceive hate crime to be a problem in their locality (Wickes et al., 2016). Simulation studies also suggest that "the statistician who chooses to ignore the underrecording problem completely would not be misled to any important degree" (Pudney et al., 2000, p.96; also see Myers, 1980). However, other studies on racial hate crimes in USA show that underreporting varies systematically with certain characteristics of places, like history of lynching (King et al., 2009), and the strength of local civil rights movements (McVeigh et al., 2003). In order to control for the influence of such systematic

heterogeneity between places, we estimated longitudinal multilevel models and focused on changes within places over time.

Demographic and economic measures were taken from the US census data as well as the American Community Survey (ACS) (United States Census Bureau, 2017). First, the decennial census data from 1990, 2000, and 2010 were used for 100% population profiles in terms of race. Further, the sample survey included in the decennial census data from 2000 was also used to measure residential instability, poverty, age profiles, and the percentage of male inhabitants. From 2000 onwards, the decennial census no longer included the so-called long questionnaire, which contained indicators of residential instability, poverty, age profiles, and the percentage of male inhabitants. Instead, these measures became part of a separate data collection program run by the US census bureau called the American Community Survey. We used this survey to measure residential instability, poverty, age profiles, and the percentage of male inhabitants for the period after 2000. Specifically, the 5-year estimates from the ACS 2006–2010 and 2011–2015 were used because these datasets included the most geographical places, including those that have relatively low numbers of inhabitants (i.e. below 20.000).

The current study only included the geographical places that are measured at any point during the period between 1990 and 2014 in each of the three datasets: UCR, US Census, and ACS. Ultimately, this resulted in a sample of $N = 3570$ unique geographical places. Places were defined by the FIPS codes for places (United States Census Bureau, 2017), and refer to municipalities or county subdivisions.[1] Our final sample includes places from 49 states, excluding Hawaii and the District of Columbia. Averaged across the period from 1990 until 2014, these places range in population size from 43 to 7.8 million inhabitants (mean = 38,004, SD = 173,662).

Measures

Dependent Variables

The dependent variable is the number of racially motivated hate crimes committed by White people against Black people. From 1991 until 2014, the FBI recorded a total of 122,382 unique hate crime incidents in the 3570 places included in this study. Of these incidents, 65.259 (53.3%) were motivated by race.[2] Within this subset of hate crimes, several incidents were subsequently excluded. First, only incidents committed by White people were selected. Second, incidents were excluded if the racial group of the victim could not be precisely identified as Black. These

---

[1] Datasets on crime often use different identifiers of geographical locations than, for instance, the US census data. Matching the UCR and Census bureau data was made possible by making use of the Law Enforcement Agency Identifiers Crosswalk (LEAIC) data (United States Department of Justice, 2012), which includes the identifiers common to both census and crime datasets.

[2] The three other most common bias motivations are sexuality, with a total of 21.558 (17.6%) incidents of which 14,309 were against male homosexuals, and religion, with a total of 19,362 (15.8%) incidents of which 13,536 were against Jewish people, and ethnicity, with a total of 15,487 (12.7%) incidents of which 8487 were against Hispanics.

selections were made because we are only interested in hate crimes committed by White people against Black people. Ultimately, these selections resulted in a total of 24,436 White on Black hate crimes. The dependent variable in this study is a count variable, capturing the number of White on Black hate crimes in a place and year.

It is important to note that while the UCR data does treat anti-Hispanic crime as a separate category of hate crime incidents, motivated by ethnicity rather than race, they do not consider Hispanics as a separate racial group in identifying the race of the perpetrator. Instead, a Hispanic perpetrator was either coded as belonging to an unknown racial group or as being White.[3] The crimes committed by people whose race was unknown were already excluded as part of the selections described earlier. That being said, some caution is warranted with regard to hate crimes committed by Whites against Blacks, as they might include incidents committed by people who are racially White but ethnically Hispanic. This limitation in the UCR dataset was dealt with by accurately defining the racial groups in the US census data, and by controlling for the number of residents in each location who are racially White yet ethnically Hispanic. A similar approach has been adopted in previous research on interracial friendships and racial segregation in USA (De Souza Briggs, 2007), as well as in research on hate crimes (Lyons, 2008).

Independent Variables

Based on the decennial census data, we calculated the percentage of people that was racially White and Black, yet not ethnically Hispanic. In order to explain the number of White on Black hate crimes, two percentages were included as main predictors: the percentage of non-Hispanic White people and the percentage of non-Hispanic Black people.

Control Variables

Racial composition is not the only possible explanation for the geographical variation in hate crime. We therefore control for the influence of residential instability, poverty, age profile, and the percentage of male inhabitants.

First, residential instability was measured as the percentage of people that did not live in the same housing unit 1 year ago. Residential instability is often used as an indicator of social cohesion in research on crime in general (Sampson et al., 1997) and in research on racial hate crimes in USA specifically (Gladfelter et al., 2017). In particular, places with relatively high residential instability have a population that constantly changes. This turnover limits the social cohesiveness of a place as it hinders stable community organizations, and undermines a sense of solidarity and strong relationships amongst inhabitants. Although it is commonly agreed that social cohesion is lower in areas that are residentially instable (Sampson et al., 1997), it is still a topic of debate how social cohesion may affect the number of racial hate crimes. On the one hand, based on criminological research on violent

---

[3] Personal correspondence with the FBI, 13 April, 2017.

crimes, it has been shown that areas that are less cohesive are less effective at prohibiting and sanctioning criminal behaviour (Shaw & McKay, 1942). On the other hand, when it coincides with racial homogeneity, social cohesion can encourage violence against people of another racial background, rather than prohibit violent behaviour in general (Lyons, 2007). In short, residential instability is associated with less social cohesion, which may in turn be associated with either more or less hate crimes. Second, poverty was measured as the percentage of people who lived in poverty in the past 12 months. Poverty is included as an indicator of economic deprivation. Economically deprived areas could be less effective at prohibiting and sanctioning delinquent behaviour (Sampson et al., 1997), thereby resulting in more hate crimes. Third, the percentage of inhabitants aged 15–34 was controlled for, as this age group is more likely to commit hate crimes (McVeigh et al., 2003). Fourth, the percentage of male inhabitants was controlled for, as men are more likely to commit violent crimes than women (Kanazawa & Still, 2000). Finally, following previous research on hate crime that used Poisson models (e.g. Gladfelter et al., 2017), the natural logarithm of population size was controlled for in all analyses. We use the natural logarithm to take into account that estimates of crime rates, or the number of crimes per the number of inhabitants in a place, become more precise with larger populations. In other words, the error variance is not homogenous. To illustrate, one additional crime in a town of 2000 people amounts to an increase in the crime rate of 0.5 crimes per 1000 inhabitants. However, that same additional crime in a town of 20,000 people increases the crime rate by 0.001 crime per 1000 inhabitants. By controlling for the natural logarithm of population size, we can analyse a crime rate that is standardized for the size of the population (also see Osgood, 2000).

Analysis

The number of White on Black hate crimes is a count variable and counts the number of crimes in a specific place in a given year. Using count variables is common practice in hate crime research and requires dedicated statistical models (Green & Rich, 1998; Lyons, 2007, 2008). It is impossible for a count to be negative. Thus, count data always have a lower bound at zero, and there are often several extreme values. As a result, count data are typically not normally distributed. When the counted events are rare, as is the case with hate crimes, they can be analysed using a zero-inflated Poisson model (Hox, 2010).

The hierarchical nature of the data, with years nested in places, was taken into account by employing multilevel modelling. Following recent studies, we decomposed the macro-level variables into within- and between-level components (Fairbrother, 2013; Schmidt-Catran & Spies, 2016). For the between-level component, we calculated the means of the independent and control variables across years for each place. These coefficients capture enduring time-invariant differences between places. The within-level component is calculated by subtracting the time-variant scores in each year from the between-level means (Fairbrother, 2013). Our models are thus group mean centred, as has been advocated for in the case of longitudinal multilevel models (Fairbrother & Martin, 2013; Giesselmann & Schmidt-Catran,

2018; Moller et al., 2009). We further included a variable for time on the within level to control for the possibility of simultaneous but unrelated and spurious time trends in hate crimes and any of the independent variables (Fairbrother, 2013).

Table 1 shows the descriptive statistics, averaged across the years 1990–2014, of the main independent variables as well as the control variables. Two variables were non-normally distributed, as confirmed by skewness tests also reported in Table 1. Values between − 2 and 2 were considered evidence of sufficiently normal distributions (George & Mallery, 2003). This mixture of normally and non-normally distributed variables was taken into account by using the estimator MLR (Bryant & Satorra, 2012). Finally, all missing values were estimated using the full information maximum likelihood method (Asendorpf et al., 2014).

Results

Descriptive Results

Of the 24,436 hate crimes included in the analyses, the most common offenses were intimidation (41.0%), simple assault (27.3%), aggravated assault (19.4%) and vandalism (9.0%). Furthermore, most hate crimes occurred at a road/alley (30.6%), residence (27.5%), parking lot/garage (7.2%), school/college (6.8%), restaurant (2.7%) and bar/nightclub (2.7%).

The total number of White on Black hate crimes, aggregated over the period between 1991 and 2014, and controlled for population size, is broken down by state in the map of USA depicted in Fig. 1. The five states with the highest absolute number of hate crimes, divided by number of inhabitants, are Maine, Delaware, Massachusetts, New Jersey, and Oregon respectively. Of these states, Delaware is the only state that also ranks amongst the top ten states when looking at the number of violent crimes in general between 1991 and 2014, divided by the number of inhabitants (FBI, 2014). The other four states have comparatively more hate crimes than general violent crimes (ibid.). When zooming in, the five places with the most White

Table 1 Descriptive statistics of all the independent and control variables

	Number	Min	Max	Mean	SD	Skewness
1. % White	3570	1.10	99.13	75.49	20.47	− 1.27
2. % Black	3570	0.00	97.62	9.01	14.16	2.57
4. % Hispanic White	3570	0.00	79.47	5.28	7.58	3.67
5. Residential instability	3570	0.00	58.70	17.27	6.66	1.38
6. Poverty	3570	0.00	20.00	2.27	1.32	2.31
7. % Male	3570	2.56	97.91	37.33	12.84	0.18
8. % Age 15–34	3570	2.01	89.27	27.83	7.45	2.62

The percentages of Whites and Blacks only include people that are also ethnically non-Hispanic. All values are based on the mean aggregates across 1990–2014
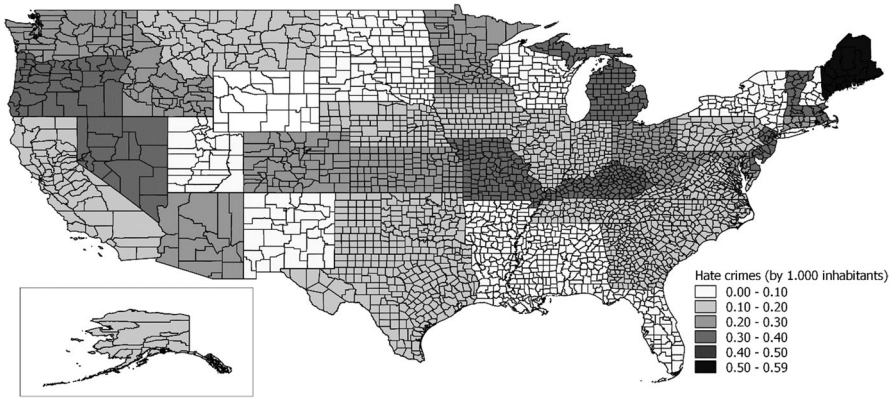
Fig. 1 Total number of White on Black hate crimes (by 1000 inhabitants) by state, 1991–2014. Note: Hawaii is not included in the data, and Alaska is depicted in the box in the bottom-left corner

on Black hate crimes between 1991 and 2014 were Los Angeles, Boston, Phoenix, New York City and San Francisco.

Figure 2 shows the number of White on Black hate crimes for each year from 1991 to 2014, controlled for population size. Overall, it can be said that the number of anti-Black hate crimes committed by White people has steadily declined from 1996 onwards. Moreover, this downward longitudinal trend does apply not only to the national level but also to hate crimes at the local level. Specifically, the number of White on Black hate crimes declined in about 90% of the places included in the current study. Although these trends are telling in and of itself, it remains to be seen whether they can be attributed to the changing racial composition of USA.

Figure 3 shows longitudinal trends, from 1990 to 2010, in the average percentage of White and Black people in the places included in our study. First, there is a downward trend over time in the percentage of White inhabitants, dropping from 79 to 71.
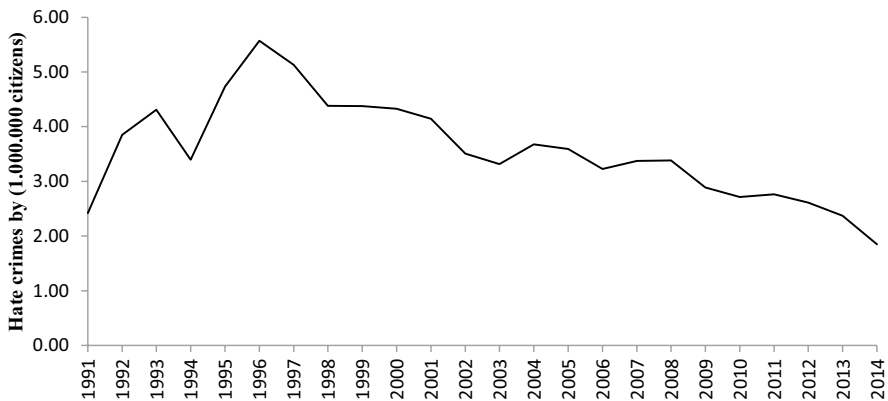

Fig. 2 Trends in White on Black hate crimes (by 1,000,000 citizens) in the USA, 1991–2014
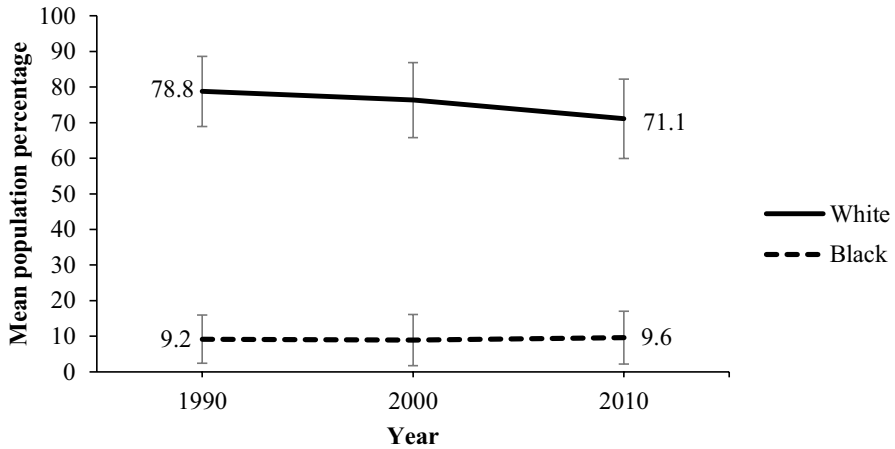
Fig. 3 Trends in the mean percentage of the population that is White or Black, 1990–2010. Note: standard deviations are shown as error bars

In fact, 99.5% of the places included in the current study witnessed a decrease in the percentage of White people between 1990 and 2010. Further, while in 1990 White people made up more than 80% of the population in 61.3% of the places, in 2010 this is only the case for 46.1 of the places. In other words, there are fewer and fewer places that can be considered predominantly White. Second, there is a slight overall increase in the percentage of Black people.

Explanatory Results

Table 2 shows the results of the multilevel regressions explaining White on Black hate crimes. Model 1 includes place-specific averages across years on the between level, to control for cross-sectional differences between places, and the time-variant deviations from those averages on the within-level, as well as a linear effect of time. This model analyses the influence of changes in the percentages of White and Black inhabitants on White on Black hate crimes, necessary to test Hypotheses 1, 3, and 4. Hypothesis 2 is tested by the cross-level interaction in model 2, where the effect of the percentage of Black inhabitants on White on Black hate crimes is allowed to vary across places, and is regressed on the average percentage across years of White people in a place.

First of all, a decline in the percentage of White people in a place is negatively related to White on Black hate crimes.[4] A one percent decrease over time in the percentage of White people in a place results in a decrease in White on Black hate

---

[4] To be clear, the coefficient in Table 2 is positive, but given the overall decline in the percentage of White inhabitants, it is more meaningful to interpret the coefficient in line with such a decrease. To reiterate, in only 0.5% of the places included in the current study was there an increase in the percentage of White people between 1990 and 2010.

Table 2 Results of the multilevel regressions explaining White on Black hate crimes. Unstandardized coefficients, standard errors and *p* values shown

	Model 1	Model 2: cross-level interaction	
	White on Black hate crimes	White on Black hate crimes	Random slope (White on Black hate crimes regressed on the within-level %Black)
	b (s.e.)	b (s.e.)	b (s.e.)
Within-level (longitudinal)			
Main variables			
% White	.055 (.014)***	063 (.007)***	
% Black	.023 (.017)		
Control variables			
Time	− .022 (.004)***	− .019 (.003)***	
Population (ln)	2.938 (.299)***	2.784 (.292)***	
Residential instability	− .107 (.030)***	− .102 (.017)***	
Poverty	− .001 (.002)	.005 (.002)*	
% Male	.015 (.045)	.037 (.027)	
% Age 15–34	.000 (.034)	− .021 (.017)	
% Hispanic White	− .117 (.022)***	− .039 (.025)	
Between-level (cross-sectional)			
Main variables			
% White (mean)	.011 (.004)**	.010 (.003)**	− .001 (.001)
% Black (mean)	.000 (.004)	− .001 (.004)	− .001 (.001)
Residential instability (mean)	− .032 (.013)*	− .031 (.010)**	
Control variables			
Population (ln) (mean)	.551 (.039)***	.525 (.031)***	
Poverty (mean)	.010 (.027)	.004 (.025)	
% Male (mean)	.017 (.005)**	.017 (.004)***	
% Age 15–34 (mean)	.011 (.010)	.010 (.008)	
% Hispanic White (mean)	− .003 (.006)	− .004 (.006)	.001 (.002)
Residual variance (σ^2)			.006 (.000)***

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

crimes, multiplied by $\exp(0.055) = 1.06$. For places that witnessed an average decrease over time in White people between 1990 and 2010 of approximately 8% (see Fig. 3), this would imply a decrease of 8.5 in the number of White on Black hate crimes (per year per location). This effect is quite sizeable given that, across all place-year combinations, the maximum number of White on Black hate crimes is 123, and the average number is $\frac{TotalWhiteonBlackhatecrimes}{Totalyears*Totalplaces} = \frac{24.436}{(25*3.570)} = 0.27$. These find-

ings suggest that a decrease in the percentage of White inhabitants results in fewer White on Black hate crimes, thereby supporting Hypothesis 1. Or, stated conversely and in line with defended turf theory (Green et al., 1998), White on Black hate crimes are most common in places that are still predominantly inhabited by White people.

Second, and not in support of Hypothesis 2 also derived from defended turf theory, an increase over time in the percentage of Black inhabitants is not associated with a higher number of White on Black hate crimes in places that have a relatively high percentage of White people compared to places where this percentage is relatively low. This is evidenced by the insignificant cross-level interaction between the percentage of White people in a place, averaged across years, and the change over time in the percentage of Black inhabitants (see Table 2, model 2). This finding is not congruent with the idea that hate crimes, as defensive acts, are especially likely where Black people move into otherwise predominantly White places (Green et al., 1998).

In fact, and irrespective of the percentage of White people already living in a place, an increase over time in the percentage of Black people is not associated with the number of White on Black hate crimes (see Table 2, model 1). This finding does not support Hypothesis 3, derived from conflict theory, nor Hypothesis 4, derived from contact theory. One reason for this null finding could be that the theoretical mechanisms assumed to play a role at the micro-level — threat and contact — are not mutually exclusive but rather cancel each other out (Hooghe et al., 2009; Tolsma et al., 2009).

With regard to the control variables, it can generally be said that with time fewer White on Black hate crimes are committed, and that White on Black hate crimes occur more often in places inhabited by a relatively high percentage of male inhabitants. White on Black hate crimes are also more likely in bigger, more populous cities. Further, residential instability was negatively related to White on Black hate crimes, both when looking changes within places over time and when looking at differences between places. This is not in line with research on social disorganization theory and violent crimes (Sampson et al., 1997). Yet, this result was found in at least one earlier cross-sectional study on anti-Black violence in Chicago by Lyons (2007), who argued that a negative effect of residential instability on hate crime is in line with the defended turf theory. When it coincides with racial homogeneity, social cohesion can encourage violent behaviour against people not included in the racial ingroup, rather than prohibit violent behaviour in general. In such cases, social cohesion may not extent to racially others, and instead could facilitate exclusionism and violent outgroup antagonism (Putnam, 2000). Our results further extend on this line of research by showing that this negative association between residential instability and hate crimes is not unique to Chicago and also holds true when looking at differences within places over time. Finally, the number of White on Black hate crimes was not consistently affected by the percentage of inhabitants who live in poverty, nor by the percentage of inhabitants aged 15–34.

Discussion

The numerical predominance of White people in USA has been eroding and, conversely, racial diversity has been increasing. The current study examined the consequences of these longitudinal trends in racial composition for anti-Black hate crimes committed by White people. On the one hand, it was expected that the decline in the numerical predominance of White people could result in a 'White fight': an increase in an aggrieved sense of entitlement, resulting in more violent defensive reactions against Black Americans. On the other hand, the decline in numerical predominance and increase in racial diversity was expected to result in long-term integration, less prejudice and fewer hate crimes committed by White people.

In line with this latter expectation, a decrease in the percentage of White people over time was found to be related to fewer White on Black hate crimes. This relationship also holds when controlling for common correlates of social disorganization, the most prominent explanation for other types of violent crime. So although the downward trend in hate crimes is largely analogous to the decline in the rate of violent crimes in general (Blumstein & Wallman, 2006), explanations specific to intergroup relations appear to be important in explaining hate crimes specifically. With that in mind, it is also illustrative that the overall decline in White on Black hate crimes is in line with the downward trend in anti-Black prejudice amongst White people in USA since the early 1990s (Bobo et al., 2012).

By estimating longitudinal multilevel models, and focusing on changes within places over time, we have sought to address concerns related to the cross-sectional nature of hate crime research and the systematic underreporting in hate crime statistics. By controlling for unobserved heterogeneity between places, we have tested the relationship between racial composition of places and hate crimes in a more convincing manner (Te Grotenhuis et al., 2015). Encouragingly, our main findings are in line with previous cross-sectional research on the defended turf theory (Green et al., 1998; Lyons, 2007).

Future research could also consider other unexamined explanations for longitudinal variations in hate crimes, including the possibility that hate crimes are retaliatory, following the adage that hate begets hate. Or, as King (1967, p.67) famously put it: "Through violence you may murder the hater, but you do not murder hate. In fact, violence merely increases hate". For instance, White people could be more likely to commit hate crimes against Black people in retaliation to Black people committing hate crimes against White people, and vice versa (Lyons, 2008). The trend described in Fig. 2, with the number of hate crimes decreasing, would not support such a cascading effect. If anything, it suggests the opposite. Yet retaliation could still occur within smaller periods of time, like days or weeks.

Similarly, research suggests that short-term increases in hate crimes could also be triggered by certain events, like contentious criminal trials involving hate crimes (King & Sutton, 2013). In a similar vein, it has been suggested that hate crimes have recently increased again, triggered for instance by the violent protests in Charlottesville or Donald Trump being elected into office (Williams, 2018).

Whether such short-term peaks will also be discernible in a reversal of the overall downward trend in hate crimes across recent years remains to be seen.

One limitation of the current study is that, despite its relevance in USA, we could not take racial segregation into account (Massey et al., 2009). In order to calculate commonly used measures of segregation, like dissimilarity or exposure, we would need the racial profiles of geographical areas smaller than our main unit of analysis. Unfortunately, these racial profiles are not available for the number of years and places covered in our data. Future research could include segregation to get a more fleshed-out picture of the racial composition of geographical areas, appreciating that people from different racial groups may inhabit the same area without encountering each other, due to segregation. Taking this into account could also help to disentangle when the presence of a racial outgroup may imply interracial conflict, and when it may imply interracial contact. For instance, interracial contact is less likely in racially diverse areas that are also segregated (Lawrence, 2017).

Future research could also try to include more micro-level measures of the mechanisms that inform the hypotheses in this study. Our understanding of the occurrence of hate crimes would greatly benefit from studies that include more direct, micro-level measures of contact and conflict theory, such as perceived threat, intergroup anxiety and interracial friendships (Pettigrew & Tropp, 2006; Scheepers et al., 2002). Such research could also more accurately test whether the mechanisms described by contact and conflict theory are opposing but not mutually exclusive, as the presence of a racial outgroup could lead to both conflict and contact (Hooghe et al., 2009; Kros & Hewstone, 2020; Tolsma et al., 2009). If these two mechanisms indeed play a role at the same time, this could help explain why we did not find an overall effect of the percentage of Black inhabitants on White on Black hate crimes.

Notwithstanding these limitations, the current study provides crucial contributions to the literature on hate crimes. Using data that spans 25 years and over 3500 geographical places, we have shown that the number of anti-Black hate crimes committed by White people has declined, and that this trend can be explained by longitudinal changes in the racial composition of places in USA. By focusing on changes within places over time, we have controlled for unobserved and potentially confounding differences between places. We encourage researchers to continue down this road, as it may greatly advance our understanding about hate crime occurrence. This is important given the far-reaching, adverse effects of hate crimes for victims and communities alike.

Declarations

Conflict of Interest The authors declare no competing interests.

References

Allport, G. W. (1954). *The nature of prejudice*. Addison-Wesley.

Asendorpf, J. B., Van de Schoot, R., Denissen, J. J. A., & Hutteman, R. (2014). Reducing bias due to systematic attrition in longitudinal studies: The benefits of multiple imputation. *International Journal of Behavioral Development, 38*(5), 453–460.

Benier, K., Wickes, R., & Higginson, A. (2016). Ethnic hate crime in Australia: Diversity and change in the neighbourhood context. *The British Journal of Criminology, 56*(3), 479–496.

Benier, K. (2017). The harms of hate: Comparing the neighbouring practices and interactions of hate crime victims, non-hate crime victims and non-victims. *International Review of Victimology, 23*(2), 179–201.

Benier, K. (2019). The people or the place? An analysis of the protective factors of hate crime in multi-ethnic neighbourhoods in Australia. *Australian Journal of Social Issues, 54*(2), 157–172.

Blalock, H. M. (1967). *Toward a theory of minority-group relations*. Wiley.

Blau, P. M. (1964). *Exchange and power in social life*. Wiley.

Blau, P. M., Blum, T. C., & Schwartz, J. E. (1982). Heterogeneity and intermarriage. *American Sociological Review., 47*(1), 45–62.

Blumstein, A., & Wallman, J. (2006). *The crime drop in America*. Cambridge University Press.

Bobo, L.D., Charles, C.Z., Krysan, M. & Simmons, A.D. (2012). The real record on racial attitudes, in *Social trends in American life: Findings from the General Social Survey since 1972* by Marsden, P.V. (ed.). Princeton: Princeton University Press.

Bonacich, E. (1972). A theory of ethnic antagonism: The split labor market. *American Sociological Review, 37*, 547–559.

Bryant, F. B., & Satorra, A. (2012). Principles and practice of scaled difference chi-square testing. *Structural Equation Modeling: A Multidisciplinary Journal, 19*(3), 372–398.

Christ, O., Schmid, K., Lolliot, S., Swart, H., Stolle, D., Tausch, N., Al Ramiah, A., Wagner, U., Vertovec, S., & Hewstone, M. (2014). Contextual effect of positive intergroup contact on outgroup prejudice. *PNAS, 11*, 3996–4400.

De Souza Briggs, X. (2007). "Some of my best friends are…": Interracial friendships, class, and segregation in America. *City & Community, 6*(4), 263–290.

De Tezanos-Pinto, P., Bratt, C., & Brown, R. (2010). What will the others think? In-group norms as a mediator of the effects of intergroup contact. *British Journal of Social Psychology, 49*(3), 507–523.

Emerson, M. O., Chai, K. K., & Yancey, G. (2001). Does race matter in residential segregation? Exploring the preferences of White Americans. *American Sociological Review., 66*(6), 922–935.

Fairbrother, M. (2013). Two multilevel modeling techniques for analyzing comparative longitudinal survey datasets. *Political Science and Research Methods, 2*(1), 119–140.

Fairbrother, M., & Martin, I. W. (2013). Does inequality erode social trust? *Results from Multilevel Models of US States and Counties, Social Science Research, 42*(2), 347–360.

FBI (2014). *Uniform Crime Reporting*, 1991–2014.

Gangl, M. (2010). Causal inference in sociological research. *Annual Review of Sociology, 36*, 21–47.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A sample guide & reference*. Allyn & Bacon.

Giesselmann, M. & Schmidt-Catran, A.W. (2018). Getting the within estimator of cross-level interactions in multilevel models with pooled cross-sections: why country dummies (sometimes) do not do the job. *Sociological Methodology,* 1–30

Gillon, S.M. (2017, August 29). Why are so many white men so angry? The last half-century has eroded their advantages, leaving them fuming. *The Washington Post.*

Gladfelter, A. S., Lantz, B., & Ruback, R. (2017). The complexity of hate crime and bias activity: Variation across contexts and types of bias. *Justice Quarterly, 34*(1), 55–83.

Grattet, R. (2009). The urban ecology of bias crime: A study of disorganized and defended neighborhoods. *Social Problems, 56*, 132–150.

Green, D. P., & Rich, A. (1998). White supremacist activity and crossburnings in North Carolina. *Journal of Quantitative Criminology, 14*(3), 263–282.

Green, D. P., & Spry, A. D. (2014). Hate crime research: Design and measurement strategies for improving causal inference. *Journal of Contemporary Criminal Justice, 30*(3), 228–246.

Green, D. P., Strolovitch, D. Z., & Wong, J. S. (1998). Defended neighborhoods, integration, and racially motivated crime. *American Journal of Sociology, 104*, 372–403.

Hewstone, M. (2015). Consequences of diversity for social cohesion and prejudice: The missing dimension of intergroup contact. *Journal of Social Issues, 71*(2), 417–438.

Hooghe, M., Reeskens, T., Stolle, D., & Trappers, A. (2009). Ethnic diversity and generalized trust in Europe: A cross-national multilevel study. *Comparative Political Studies, 42*(2), 198–223.

Horowitz, D. L. (2000). *Ethnic groups in conflict*. University of California Press.

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications*. Routledge.

Iganski, P. (2020). Civil courage as a communicative act: Countering harms of hate crime. *Pragmatics and Society, 11*(2), 316–335.

Jenness, V., & Grattet, R. (2005). The law-in-between: The effects of organizational perviousness on the policing of hate crime. *Social Problems, 52*, 337–359.

Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual Review of Sociology, 42*, 395–421.

Kanazawa, S., & Still, M. C. (2000). Why men commit crimes (and why they desist). *Sociological Theory, 18*(3), 434–447.

Keel, C., Wickes, R., & Benier, K. (2021). The vicarious effects of hate: Inter-ethnic hate crime in the neighborhood and its consequences for exclusion and anticipated rejection. *Ethnic and Racial Studies*. https://doi.org/10.1080/01419870.2021.1930094

King, M. L., Jr. (1967). *Where do we go from here: Chaos or community*. Beacon Press.

King, R. D., & Sutton, G. M. (2013). High times for hate crimes: Explaining the temporal clustering of hate-motivated offending. *Criminology, 51*(4), 871–894.

King, R. D., Messner, S. F., & Baller, R. D. (2009). Contemporary hate crimes, law enforcement, and the legacy of racial violence. *American Sociological Review, 74*(2), 291–315.

Kros, M., & Hewstone, M. (2020). Negative and positive interethnic contact and the association of ethnic neighbourhood composition with trust, cohesion, and prejudice. *European Sociological Review, 36*(6), 937–956.

Lawrence, J. (2017). Wider-community segregation and the effect of neighbourhood ethnic diversity on social capital: An investigation into intra-neighbourhood trust in Great Britain and London. *Sociology, 51*(5), 1011–1033.

Levin, J., & McDevitt, J. (2002). *Hate crimes revisited: America's war against those who are different*. Westview Press.

Loftin, C., & McDowall, D. (2010). The use of official records to measure crime and delinquency. *Journal of Quantitative Criminology, 26*, 527–532.

Lyons, C. J. (2007). Community (dis)organization and racially motivated crime. *American Journal of Sociology, 113*, 815–863.

Lyons, C. J. (2008). Defending turf: Racial demographics and hate crime against blacks and whites. *Social Forces, 87*, 357–385.

Massey, D. S., Rothwell, J., & Domina, T. (2009). The changing bases of segregation in the United States. *The ANNALS of the American Academy of Political and Social Science, 626*(1), 74–90.

McVeigh, R., Welch, M. R., & Bjarnason, T. (2003). Hate crime reporting as a successful social movement outcome. *American Sociological Review, 68*(6), 843–867.

Meyer, S. G. (2001). *As long as they don't move next door: Segregation and racial conflict in American neighbourhoods*. Rowman & Littlefield.

Moller, S., Alderson, A. S., & Nielsen, F. (2009). Changing patterns of income inequality in U.S. counties, 1970–2000. *American Journal of Sociology, 114*, 1037–1101.

Mouw, T., & Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology., 112*(2), 394–441.

Myers, S. L. (1980). Why are crimes underreported? What is the crime rate? Does it really matter? *Social Science Quarterly, 61*, 23–43.

Olzak, S. (2013). Competition theory of ethnic/racial conflict and protest, in *The Wiley-Blackwell Encyclopedia of Social and Political Movements* by Snow, Della Porta, Klandermans and McAdam (eds.). Blackwell Publishing.

Osgood, D. W. (2000). Poisson-based regression analysis of aggregate crime rates. *Journal of Quantitative Criminology, 16*, 21–43.

Parrot, D. J., & Peterson, J. L. (2008). What motivates hate crime based on sexual orientation? Mediating effects of anger and antigay aggression. *Aggressive Behavior, 34*, 306–318.

Perry, B., & Alvi, S. (2012). "We are all vulnerable" The in terrorem effects of hate crimes. *International Review of Victimology, 18*, 57–71.

Pettigrew, T. F. (2008). Future directions for intergroup contact theory and research. *International Journal of Intercultural Relations, 32*(3), 187–199.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Interpersonal Relations and Group Processes, 90*(5), 751–783.

Pottie-Sherman, Y., & Wilkes, R. (2017). Does size really matter? On the relationship between immigrant group size and anti-immigrant prejudice. *International Migration Review, 51*(1), 218–250.

Pudney, S., Deadman, D., & Pyle, D. (2000). The relationship between crime, punishment and economic conditions: Is reliable inference possible when crimes are underrecorded? *Journal of the Royal Statistical Society, 163*, 81–97.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon & Schuster.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*, 918–924.

Sandholtz, N., Langton, L., & Planty, M. (2013). *Hate crime victimization, 2003–2011: A special report. NCJ 241291*. Washington, DC: Bureau of Justice Statistics. Retrieved May 12, 2017, from http://www.bjs.gov/content/pub/pdf/hcv0311.pdf

Scheepers, P., Gijsberts, M., & Coenders, M. (2002). Ethnic exclusionism in European countries: Public opposition to civil rights for legal migrants as a response to perceived ethnic threat. *European Sociological Review, 18*(1), 17–34.

Schlueter, E., & Wagner, U. (2008). Regional differences matter examining the dual influence of the regional size of the immigrant population on derogation of immigrants in Europe. *International Journal of Comparative Sociology, 49*, 153–173.

Schmid, K., Hewstone, M., Küpper, B., Zick, A., & Tausch, N. (2013). Reducing aggressive intergroup action tendencies: Effects of intergroup contact via perceived intergroup threat. *Aggressive Behavior, 40*(3), 250–262.

Schmidt-Catran, A. W., & Spies, D. (2016). Immigration and welfare support in Germany. *American Sociological Review, 81*(2), 242–261.

Shaw, C., & McKay, H. (1942). *Juvenile delinquency and urban areas*. University of Chicago Press.

Steenbeek, W., & Hipp, J. R. (2011). A longitudinal test of social disorganization theory: Feedback effects among cohesion, social control, and disorder. *Criminology, 49*(3), 833–871.

Sullaway, M. (2004). Psychological perspectives on hate crime laws. *Psychology, Public Policy, and Law, 10*, 250–292.

Suttles, G. D. (1972). *The social construction of communities*. University of Chicago Press.

Te Grotenhuis, M., Scholte, M., De Graaf, N. D., & Pelzer, B. (2015). The between and within effects of social security on church attendance in Europe 1980–1998: The danger of testing hypotheses cross-nationally. *European Sociological Review, 31*(5), 643–654.

Tolsma, J., Van der Meer, T., & Gesthuizen, M. (2009). The impact of neighbourhood and municipality characteristics on social cohesion in the Netherlands. *Acta Politica, 44*, 286–313.

Uniform Crime Reporting Program. (2015). Hate crime data collection guidelines and training manual. Retrieved October 11, 2017, from https://ucr.fbi.gov/hate-crime-data-collection-guidelines-and-training-manual.pdf

United States Census Bureau (2010). *U.S. Census Data.*

United States Census Bureau (2017). *American Community Survey.*

United States Department of Justice. (2012). *Law enforcement agency identifier crosswalk.* Inter-university consortium for political and social research.

Van der Meer, T., & Tolsma, J. (2014). Ethnic diversity and its effects on social cohesion. *Annual Review of Sociology, 40*, 459–478.

Wickes, R., Sydes, M., Benier, K. & Higginson, A. (2016). "Seeing" hate crime in the community: Do resident perceptions of hate crime align with self-reported victimization? *Crime & Delinquency,* 1–22

Williams, A. (2018, March 23). Hate crimes rose the day after Trump was elected, FBI data show. *The Washington Post*.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.