
Environmental Determinants of Racial Attitudes Redux: The Critical Decisions Related to Operationalizing Context

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Abstract

Although scholars have long been interested in how context shapes racial attitudes, research in this area has fallen short of a consensus. Instead, the results span a wide range, with some studies finding that racial understanding is promoted by intergroup contact whereas others claim that racial and ethnic outgroups are perceived as a threat to economic and political interests. These varying results arise from research rooted in different conceptualizations of context. Our analysis is unique in the attention we pay to the measure of context for our particular data set. Employing a sociodemographic definition of neighborhood social context, we find that contextual socioeconomic status plays a critical role in mediating the effects of intergroup contact on racial attitudes. These contacts are more likely to produce racial harmony in high-status neighborhoods than in neighborhoods marked by low income and low levels of education.

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Introduction

The importance of racial integration in promoting racial understanding and healing was underscored nearly four decades ago when the Kerner Commission warned that our nation was “moving toward two societies, one black, one white—separate and unequal.” For blacks, the intervening decades have inched away from racial isolation and segregation and moved toward greater societal integration (Iceland et al, 2002). At the same time, Asians and Latinos have tended to live in increasingly segregated patterns since 1980. Stability is not the norm, however. Instead, the morphology of residential patterns in the United States is in a state of flux, and how these various patterns affect racial attitudes is difficult to grasp. Does an increasingly heterogeneous racial context improve racial understanding or does it serve to exacerbate tensions associated with competition for economic and political resources?

Scholars of racial politics have long been interested in the role of context on political behavior and specifically in understanding how one's environment or context affects one's racial attitudes. A key component to this ongoing debate is how the size of outgroups affects prejudice. Specifically, do larger outgroup populations reduce or increase prejudice toward these groups? Those who hold to the contact hypothesis posit that larger outgroup populations result in more positive attitudes toward these outgroups because the larger numbers facilitate increased cross-group interpersonal interactions, which in turn dispel stereotypes developed in the absence of these interactions (Allport, 1954; Oliver & Wong, 2003; Welch et al., 2001). Others who hold to the threat hypothesis claim that as the outgroup population increases, so do negative attitudes toward these groups because of the increasing economic, political, and social threats to the interests of a superordinate group (Blalock, 1967; Giles & Buckner, 1993; Taylor, 1998; Key, 1949). As the debate has evolved, evidence has fallen positively on both sides of the debate.

There does not appear to be much discourse about *whether* racial context affects racial attitudes. Indeed, both the threat and contact schools of thought begin from the premise that the racial makeup of contextual environments is a critical determinant of individuals' attitudes toward racial and ethnic outgroups.

The complication arises when one attempts to determine *how* racial context shapes and influences racial attitudes. Part of the difficulty may be that “environment” is multifaceted. In addition to the racial dimension, income and education are defining and influential components of our environment. Indeed, scholars have found that socioeconomic conditions and economic disparities mediate how various social contexts translate into prejudicial attitudes (Branton & Jones, 2005; Gay, 2006; Huckfeldt, 1986; Oliver & Mendelberg, 2000). In a related argument, Allport (1954) posits that perceptions of interdependence, shared goals, and coequal status between racial and ethnic groups make it more likely that intergroup contacts will promote cross-group understanding (see Taylor, 1998). Since high levels of education and income (and decreased educational and income disparities) promote these perceptions of interdependence, shared goals, and coequal status, we might expect that the beneficial effects of contact will be most prominent in higher status contexts.¹ Another facet of the complication in unraveling the relationship between racial context and attitudes is that the proper scale for studying environmental influences on racial attitudes is not clear (see, for example, Baybeck, 2006). That is, if there were a link between racial context and racial attitudes, would that link be manifested at the city, neighborhood, zip code, census tract, metropolitan area, some other geographic unit, or at all levels of geography?

In this article, we revisit the question of how social context affects racial attitudes with special attention to how this environment is conceptualized. We begin by reviewing the literature that has addressed the environmental determinants of racial attitudes. Next, we discuss the relevance of the choice of the contextual unit, highlighting insights gleaned from geographers working on similar research questions. Third, we embark on an analysis of how environment affects racial attitudes in Los Angeles county. Finally, we conclude with a discussion of social context, its impact on the formation of racial attitudes, and the unique difficulties posed by questions involving geography.

Previous Findings and Levels of Analysis

Curiously, studies of intergroup prejudice have employed a variety of areal units as measures of contextual environments. Various notable studies of racial attitudes have chosen to measure racial attitudes at the census block-group level (Gay, 2006; Baybeck, 2006), the census-tract level (Oliver & Wong, 2003), the zip-code level (Oliver & Mendelberg, 2000), the city level (Baybeck, 2006), the county level (Branton & Jones, 2005; Key, 1949), the metropolitan area (Oliver & Mendelberg, 2000; Taylor, 1998), the state level (Key, 1949), as well as to the country level (Quillian, 1995), among others.² Table 1 presents a set of studies that have employed a variety of contextual

Table 1. Context and Intergroup Relationships

Context(s)	Study	Results
Block groups and municipalities	Baybeck (2006)	Threat and contact
Census tracts	Oliver and Wong (2003)	Contact
	Wilson (1979)	Threat
Census tracts and individual survey data	Welch et al. (2001)	Contact
Zip codes	Gilliam et al. (2002)	Contact
Zip codes and individual survey data	Emerson et al. (2001)	Threat and contact
Precincts, boroughs	Carsey (1995)	Contact
Counties	Blalock (1957)	Threat
	Corzine et al. (1983)	Contact and threat
	Dixon (2006)	Contact and threat
	Eitle et al. (2002)	Threat
	Giles and Evans (1986)	Threat
	Glaser (1994)	Threat
	Key (1949)	Threat
	Morris (2000)	Contact
	Reed (1972)	Threat
	Wright (1976)	Threat
Counties and individual survey data	Stein et al. (2000)	Threat and contact
Housing projects	Ford (1973)	Contact
Parishes	Giles and Buckner (1993)	Threat
	Giles and Hertz (1994)	Threat
	Voss (1996)	Contact and threat
Metropolitan areas	Dixon (2006)	Contact and threat
	Fossett and Kiecolt (1989)	Threat
	Taylor (1998)	Threat
States	Arp et al. (1999)	Threat
	Jacobs and Carmichael (2001)	Threat
	Jacobs and Carmichael (2002)	Threat
Countries	Quillian (1995)	Threat
Prison cells	Trulson and Marquart (2002)	Contact
Individual survey data	Robinson (1980)	Contact
	Sigelman and Welch (1993)	Contact
	Surace and Seeman (1967)	Contact
	Yancey (1999)	Contact

units to examine the effects of outgroup population size on racial attitudes. It also highlights the evident lack of uniformity in the choice of areal unit.

It is difficult to conjecture why there has been such wide disparity in choices, but one is naturally led to wonder if these have been choices driven by convenience and data availability. If so, this rationale might explain why one would choose to measure racial context by, say, the “percent black in a census tract.” As census tracts are created as an accounting unit for the U.S. Census, not to reflect any underlying racial contours or neighborhoods, they are a convenient choice, but may not meaningfully measure conceptions of economic, educational, or racial context.

Conceptualizing Contextual Effects

Curiosity about how scale affects quantitative analyses has a long history with geographers. As a discipline, geography has grappled with the diversity in geographic inquiry, a diversity that is mirrored in our analysis of the impact of racial context on racial attitudes. Despite the great interest and inquisitiveness coupled with a good deal of effort directed toward the problem, researchers are far from being able to identify the appropriate informational content for various scales. Whereas we have realized that results are dependent on the particular areal units employed in geographic analysis, we have also failed to establish a means for identifying the operational scale of particular geographic phenomenon. The dependence of results on levels of aggregation is known in geography as the modifiable areal unit problem (MAUP) (Openshaw & Taylor, 1979), a relative of the ecological inference problem (Cho, 1998). Indeed, Openshaw and Taylor (1979) state that the choice of areal units could produce “a million or so [different] correlation coefficients.”³ Just as different areal units can produce different results in macro-level analyses, so also can the choice of geographic unit affect inferences drawn from multi-level analyses (Diez Roux, 2001; Manley et al., 2006; Soobader et al., 2006). As Wooldredge (2002, 686) notes, multi-level modeling results may differ across models with different areal units for two principal reasons. First, only certain contextual units may be relevant for particular behaviors, producing higher-level effects only in models employing these units. Second, even where higher-level effects are constant across different contextual units, micro-level effects may differ because the number of observations and the homogeneity of these observations vary across different conceptualizations of context.

All scales represent various levels of aggregation, and each level of aggregation encompasses different gradations of variance. For instance, at the census

block level, because there are many census blocks, there are many different observations of prejudicial attitudes. At the county level, if we are studying Los Angeles county, there is only one observation of the phenomenon in question and thus no variance. Perhaps then, the proper scale in an analysis is the scale at which racial attitudes exhibit the most spatial variation. However, the general consensus is that all levels are distinct from one another because the pattern of variances differs between distinct variables in the same data. Accordingly, the covariance between pairs of variables changes with different levels of aggregation, giving rise to a diversity of results. These dissimilarities underscore the importance of having a theoretical rationale for employing any particular level of aggregation. As Krupka (2007) notes, a false racial heterogeneity can be produced by aggregating smaller, racially homogeneous neighborhoods into larger, more racially heterogeneous combinations of neighborhoods for census zoning purposes. Particularly in studies concerned with group conflict, we must be conscious that the areal units chosen reflect some correspondence to citizens' actual neighborhoods, rather than being arbitrary combinations created for other purposes. We heed these admonitions and focus in this article on developing an understanding of how contextual measures are instrumental in interpreting research findings.

We will focus on racial attitudes. There are many dimensions of racial attitudes, and we do not wish to and could not hope to speak to all of them. Instead, we focus narrowly on black attitudes toward Latinos, an especially interesting facet given their often touted similarity in political preferences and in light of recent findings that despite similar preferences, these two groups are unlikely to form a lasting political coalition (Kaufmann, 2003). In our analysis, we pay particular attention to how the methodological choices regarding the operationalization of racial context transcend this analysis and generalize to other studies of racial attitudes. Indeed, the broad lessons gleaned here are applicable widely to any question where geographic units are a component in the analysis.

Data and Analysis

The data for our study come from the 1993 to 1994 Los Angeles Survey of Urban Inequality (LASUI). The LASUI data set includes the Los Angeles portion of the Multi-City Study of Urban Inequality data set (MCSUI), which also included data for Atlanta, Boston, and Detroit. We limit our study to Los Angeles because it was the only portion of the data set for which we were able to obtain geographic identifiers. The MCSUI data set, the product of an interdisciplinary team of over 40 research scholars at 15 U.S. colleges and

universities, is particularly well suited for studying the topic of environmental context on racial attitudes because it was designed to aid in understanding how racial attitudes, racial stereotypes, and racial residential segregation might contribute to urban inequality. Three survey instruments, a household survey, a telephone survey of employers, and face-to-face interviews with employers were used in each of the metropolitan areas. Adult respondents were interviewed in their homes by trained interviewers. These responses were matched to the employer data through the household instrument (protecting the confidentiality of the respondent).

Since we know that using different units to define context may change the substantive direction of the results, we now turn to whether and how these issues are revealed in the study of the environmental determinants of racial attitudes. Our point of departure is Oliver and Wong (2003), a study that used the same data to examine the same questions. To establish a baseline for analysis, we use the dependent variables used in the Oliver and Wong study, 4-point summary negative stereotype scores. These variables include perceptions of racial groups on four dimensions such as, intelligence, self-sufficiency versus welfare dependence, easy to get along with, and treats other groups equally. If a respondent has a positive perception on one of these dimensions, that perception was coded as 0. Negative perceptions were coded as 1. The scores on the four dimensions were summed to obtain a summary stereotype score. A higher value on the negative stereotype score indicates that an individual holds more negative stereotypes of a particular outgroup.

Our analysis of the LASUI data does indeed show that conclusions about whether racial context affects racial attitudes depend on the geographic context under consideration. Consider the results of the ordinary least squares (OLS) analysis in Table 2.⁴ Here, we examine racial attitudes toward Latinos by black respondents. The dependent variable is the 4-point summary negative stereotype score for Latinos. To operationalize racial context, Oliver and Wong (2003) used a measure based on U.S. census tracts: the "percent of the respondents' own racial or ethnic group within the neighborhood (as defined by the census tract)" (p. 572). The results shown in column 1 of Table 2 use data at the census tract level. Each column in Table 2 shows the results obtained using data aggregated at a different level.⁵ The contextual variables measure racial proportions and education levels. That is, in the first column, the proportion Latino variable refers to the proportion of Latinos in an individual's census tract, and "Proportion High School" refers to the proportion with a high school degree in the individual's census tract. In column 2, the references are to the individual's zip code (i.e., proportion Latino in zip code and proportion with high school degree in zip code). The last two columns refer to similar variables but

Table 2. Racial Attitudes Toward Latinos by Blacks

	Tract	Zip code	Neighborhood	City
Intercept	2.3913* (0.3323)	2.1345* (0.4179)	1.8088* (0.4416)	-0.5670 (1.0786)
Proportion Latino	-0.8539* (0.3565)	-0.8519 (0.4360)	-0.1783 (0.4915)	2.0477* (0.9720)
Proportion high school Education	-0.9920* (0.3783)	-0.4669 (0.4588)	-0.3211 (0.4561)	2.0015 (1.1097)
Homeowner	-0.0433 (0.0401)	-0.0688 (0.0396)	-0.0625 (0.0398)	-0.0745 (0.0386)
Age	-0.0173 (0.0908)	-0.0410 (0.0904)	-0.0361 (0.0908)	-0.0144 (0.0919)
Length of residence	0.0024 (0.0026)	0.0026 (0.0026)	0.0026 (0.0026)	0.0024 (0.0026)
	-0.0389 (0.0342)	-0.0313 (0.0345)	-0.0304 (0.0345)	-0.0213 (0.0340)
R ²	0.01	0.01	0.01	0.01
N	1,049	1,049	1,049	1,049

Note: Dependent variable is Summary Negative Stereotype Score for Latinos. Standard errors in parentheses.

* $p < 0.05$.

in the individual's neighborhood and city.⁶ These data are individual-level data, so the other variables (education, homeowner, age, and length of residence) refer to individual values. As we can see from the table, the results change substantively and substantially as we move from one level of analysis to another. If one ran the analysis with racial context defined at the tract level, one would conclude that the contact hypothesis is correct. As the proportion of Latinos increases in a black respondent's census tract, negative views of Latinos by black diminish. However, if one were using a different conceptualization of racial context (based at the zip code or neighborhood level), one would *not* conclude that the contact hypothesis was correct. Instead, at these levels, outgroup size is not significantly (positively or negatively) related to racial attitudes toward outgroups. The coefficient for the zip code analysis is close to being significant, but the coefficient in the neighborhood analysis is quite far from significance. Strikingly, not only might the significance of the racial variable change, the sign *and* significance of the variable may change. If one examined this question using city level data, one would conclude that the threat hypothesis is correct! The wide disparity in results shown in Table 2 must give us pause in embracing any findings.

The differing results behoove one to explore why the results would not be consistent across different geographic levels and what the "proper" level of aggregation might be. Oliver and Mendelberg (2000) put forth one explanation for the contrasting estimates. Their claim is that racial context will be insignificant when it is measured at a geographic unit irrelevant to

racial neighborhoods. Under this reasoning, their interpretation of the results in Table 2 is that individuals conceptualize the racial makeup of their neighborhood at either the census tract or city level, as these contextual units achieve significance in our analysis, though which of these two aggregation levels is more appropriate is indeterminant under their logic. Whereas their train of thought seems reasonable a priori, it leaves us somewhat dissatisfied as an explanation for why census tracts or cities are somehow more able to capture racial neighborhoods than zip codes, neighborhoods, or many other geographic units. Logically, it makes sense that *if* racial context were relevant *and* we measured racial context at the same aggregate level that individuals do, *then* that racial context variable would be significant in our analysis. But a closer examination of this statement makes it clear that this statement embodies a necessary, not a sufficient condition. The sufficiency condition—that significance at the census tract level decidedly determines that census tracts are synonymous with racial neighborhoods—has not been established. Moreover, what would one conclude if racial context were not significant? Certainly, the insignificance would not translate into a proof that racial context was measured at the wrong level of aggregation. Rather, we are unable to distinguish insignificance from aggregation issues. Also less than ideal is the lack of theoretical underpinning supporting the Oliver and Mendelberg method of choosing the relevant geographic unit. The holes in logic leave us wondering if there might be a better way to identify relevant racial contexts. Running an analysis at many different levels and choosing the level that is statistically significant while discarding others as irrelevant cannot be our best and only recourse.

Indeed, a closer examination of Los Angeles county tracts raises some important red flags about employing a tract level analysis, significance notwithstanding. Consider the map showing the percentage of Latinos by tract in Los Angeles county in Figure 1. This map presents a compelling case that simply the “percentage Latino in a tract” may not capture the racial context of that tract because it leaves out the racial context of surrounding areas which appear relevant to defining racial context in Los Angeles county. From the map, we can see that Los Angeles has a fairly large and well-defined inner city which encompasses a *barrio* area. Whereas individuals may conceptualize their neighborhoods as being of different sizes (Sastry et al., 2002), it is unlikely that those who live in inner-city Los Angeles are unaware of the context of their residence or that those who reside in other areas in the county with similarly high percentages of Latinos believe that to be the same as living within the inner city.⁷ Instead, the inner city is a unique and highly relevant localized social and racial context that is not captured when the measure

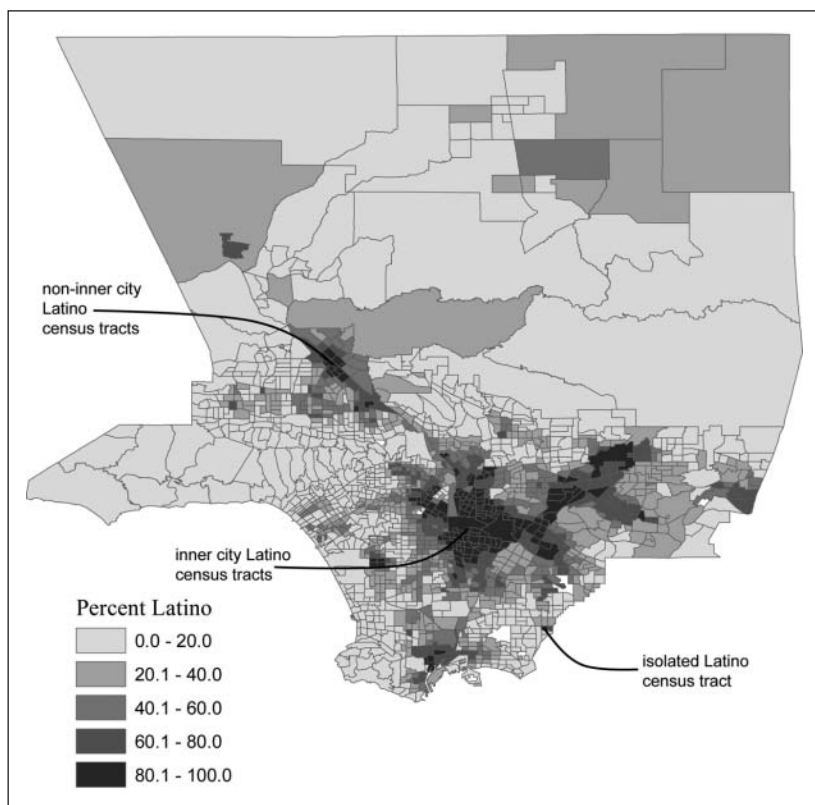


Figure 1. Percentage Latino by census tract

of racial context is constrained to a single census tract. Using a simple census tract characterization of race effectively treats respondents from the inner city as living in identical sociospatial contexts as the respondents from an isolated Latino census tract that is surrounded by high education and high income like those who hail from Hawaiian Gardens, a small community that straddles the Los Angeles and Orange County borders. In isolation, Hawaiian Gardens resembles an inner-city tract. It has a predominantly minority Latino population and roughly 50% of adults failing to earn their high school degree. However, unlike inner-city areas, Hawaiian Gardens is surrounded by middle- to upper-class communities rather than low-income, low-education areas. The city of Cerritos to the north is only 12% Latino and has a median home value of \$300,000. Lakewood, on the northwest edge, is 15% Latino, and

only 11% of Lakewood residents fail to complete high school. The story is much the same to the south and east where Hawaiian Gardens is bordered by the cities of Cypress and Los Alamitos of posh Orange County. By virtue of their surroundings, the daily experiences of low-income Latinos in Hawaiian Gardens are qualitatively different from low-income Latinos in the inner city. The former are surrounded by large homes, swimming pools, and fancy shopping malls, whereas the latter are surrounded by poverty for miles in every direction.

The map of the data indicates that expanding the geographic unit under consideration would distinguish the inner-city area from other, more isolated pockets of Latino residents, and indeed, even to distinguish the core of the inner city from areas on the outskirts of the inner city. Guidance on how one might achieve this goal can be obtained by studying maps of Los Angeles county. For instance, we see quite unmistakably from the map in Figure 1 that the characteristics of the neighbors of an inner-city tract are rather distinct from the characteristics of the Hawaiian Gardens tract. As well, the characteristics of the neighboring tracts in the core of the inner city contrast with the attributes of the neighbors of the tracts at the edges of the inner city. Accordingly, one way to expand the geographic unit so that it discriminates between different areas of the impoverished inner city as well as unique contexts in the county generally is to absorb some set of a tract's nearest neighbors.⁸ Indeed, research on individuals has indicated that although neighborhood conception may differ by individual, few regard their neighborhood to be as small as their census tract (Kwan, 1999; Golledge & Stimson, 1987).⁹

We might further refine and enrich our measure of racial context by considering that people are multifaceted. Whereas race is a prominent individual characteristic, few believe that race completely defines an individual or that socioeconomic status plays no role in racial relationships. In fact, the exact opposite is the prevailing theory (Branton & Jones, 2005; Gay, 2006; Huckfeldt, 1986; Oliver & Mendelberg, 2000), though again, analyses have been contradictory and empirical verification and consistency of results has been difficult to establish. In our analysis, we turn again to a spatial exploration in the search to understand how best to measure socioeconomic context here. We know that income and education are traditionally components of socioeconomic indicators, but how do these variables manifest themselves in these particular data? Are they basically one in the same or do they tap different facets of life in Los Angeles county? Figure 2 displays a map of the central Los Angeles county area. The figure on the left shows the income distribution for Latinos. The figure on the right displays the education distribution for Latinos. As we can see, income and education draw out related but

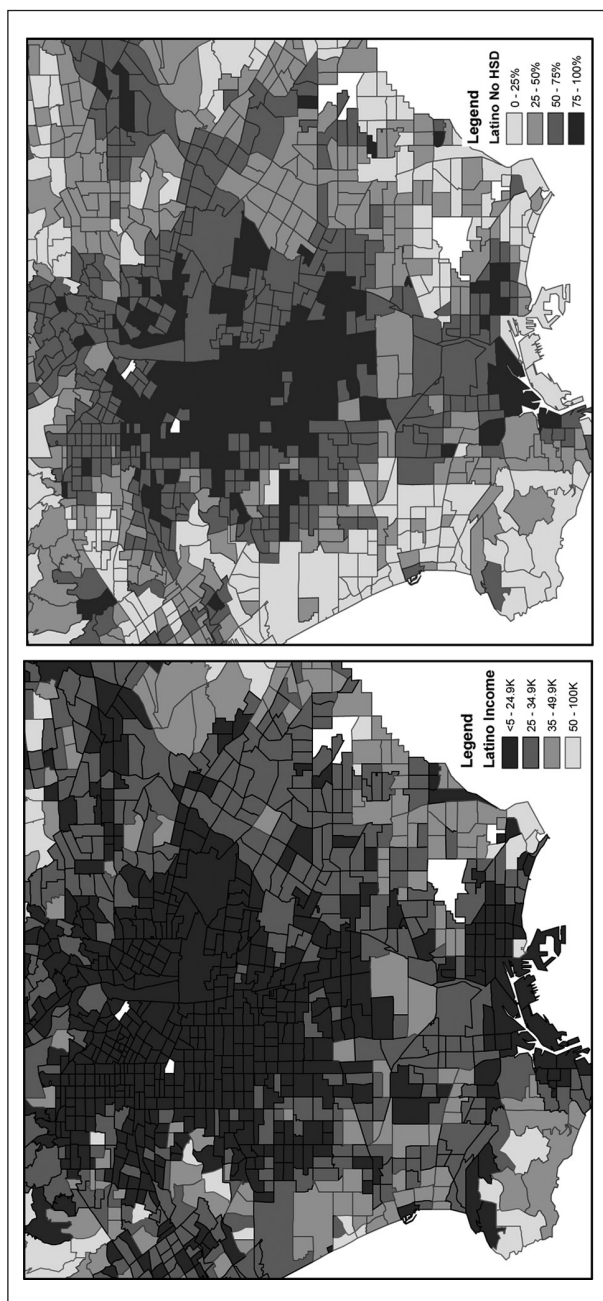


Figure 2. Latino income and Latino education by census tract

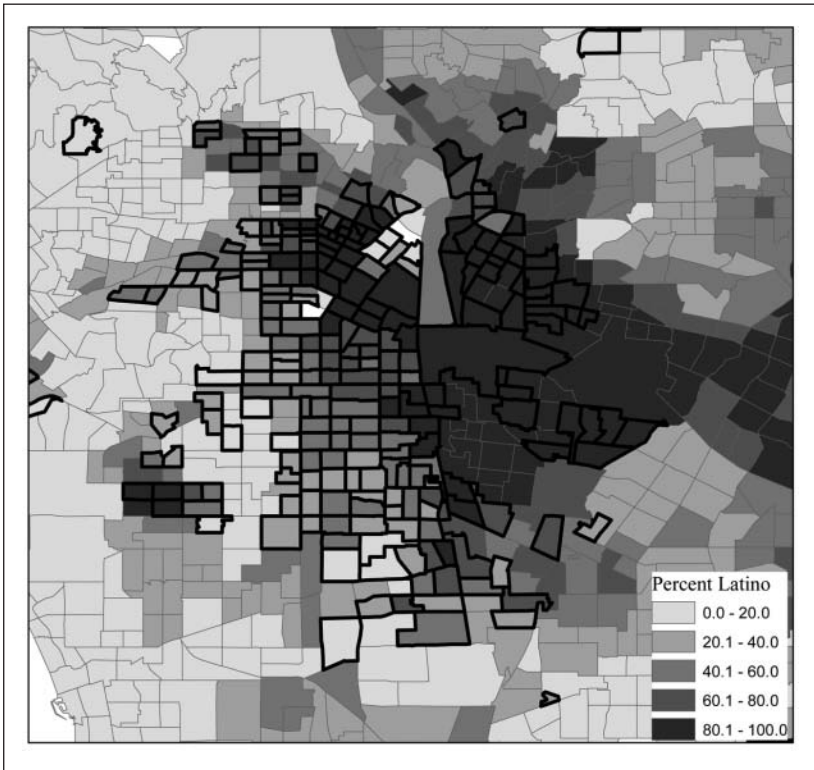


Figure 3. Sociodemographic measure for Latinos by census tract.

The map depicts the central part of Los Angeles county. The thick, black outlines indicate tracts where the Latino socioeconomic measure is one or more standard deviations below the mean Latino socioeconomic status.

different aspects of Latino socioeconomic context. Whereas income remains low throughout this area, educational attainment has a more defined pocket. That is, educational attainment refines and augments the context we can quantify with simply an income measure.

These maps push us toward a measure that combines the education and income level of Latinos, – (proportion high school + normalized income).¹⁰ With this sociodemographic measure, areas where Latinos with low education and low income are distinguishable from areas where Latinos have higher education and income levels. In addition, we can also see that this socioeconomic measure adds another degree of richness to our measure of context that surpasses the level we attain with just the percent Latino variable. Figure 3 maps this socioeconomic measure on top of the percent Latino variable. The

Table 3. Racial Attitudes Toward Latinos by Blacks (SES Context)

	Number of nearest neighbors		
	5	8	15
Intercept	2.2960* (0.2487)	2.1573* (0.2599)	2.1630* (0.2797)
Neighboring proportion Latino	-1.0963* (0.3075)	-0.8198* (0.3234)	-0.7355* (0.3214)
Neighboring Latino SES context	0.5050* (0.2086)	0.4737* (0.2236)	0.4953* (0.2465)
Education	-0.0553 (0.0393)	-0.0562 (0.0394)	-0.0575 (0.0394)
Homeowner	-0.0138 (0.0902)	-0.0313 (0.0903)	-0.0392 (0.0904)
Age	0.0026 (0.0026)	0.0027 (0.0026)	0.0027 (0.0026)
Length of residence	-0.0354 (0.0341)	-0.0365 (0.0342)	-0.0364 (0.0343)
R ²	0.02	0.01	0.01
N	1,049	1,049	1,049

Note: Standard errors in parentheses.

* $p < 0.05$.

gray color scheme shows the distribution of Latino concentration. The tracts that are more than a standard deviation below the mean income and education level of Latinos have thick, black outlines. That is, the areas with thick, black outlines depict the areas where Latinos have the lowest socioeconomic status. Interestingly, the areas with the highest percentage of Latinos are not a perfect fit for the areas with the poorest and least educated Latinos. Instead, the majority of these lowest SES Latinos reside in the highest black population areas of Los Angeles where there are both large concentrations of black and Latinos.

Our spatial exploration leads us to the combination of alternative contextual measures in the study of racial attitudes. In Figure 3, we mapped a measure of race with socioeconomic measures (education and income). Above, we also discussed the relevance of surrounding areas. Table 3 shows the results of an OLS analysis with three different measures of racial context. In the first column, the racial context measure incorporates information from the five nearest neighbor census tracts. The second column uses an eight nearest neighbor measure. The last column defines context using a tract's 15 nearest neighbors. In each of these operationalizations, nearest neighbors are defined by the distance between the centroid of the tracts.

In the analyses, the "neighboring proportion Latino" variable captures the proportion of Latinos in the nearest neighbor census tracts. This measure help us tease out the concept of a neighborhood by, for example, distinguishing individuals who reside in inner city Los Angeles from those who reside

in similar census tracts but couched in different contexts and even distinguishing the heart of the inner city from the border of the inner city. Clearly, living in inner city Los Angeles poses a unique environment that cannot be captured simply by measuring characteristics in any particular census tract. The variable, “neighboring Latino SES Context,” measures the socioeconomic status of Latinos in nearest neighbor census tracts. We move away from a single census tract SES characteristic for the same reasons we expanded our measure of racial context to surrounding areas. Although the basic unit of analysis remains the census tract, we are able to enrich the informational content of our contextual variables by incorporating the surrounding contextual environment. All of our nearest neighbor variables capture context, though incorporate that information from a differing number of neighboring areas. It is not clear from our spatial exploration whether 5, 8, 15, or some other number of neighbors is ideal. Indeed, the proper number of neighbors to include is always a difficult decision, often without clear guidelines. One may employ a variety of criteria that might originate from substantive knowledge, patterns evident in the maps, or semivariograms. Not uncommonly, several different measures will fall within the realm of being reasonable. One tactic at that point would be to run the analysis, as we have done in Table 3, with several different measures, noting how the different measures affect the results.

Notably, like the single census tract analysis, the “neighboring proportion Latino” variable is negative and significant for each of the three different operationalization of racial context, implying that there is some consistency across results and that the contact hypothesis is correct. We also note the consistency across results when we consider the socioeconomic status of Latinos. Here, the coefficient is positive and significant across specifications, demonstrating that simple contact does not always reduce racial animosity. Contact with the poorer, less educated Latinos increases racial animosity. In many ways, this result was foreshadowed in our analysis at the various aggregation levels shown in Table 2. The census tract is unable to capture some facets of racial context in Los Angeles. The city level is too high a level of aggregation, combining too many distinct racial contexts together. Aggregating smaller, homogeneous neighborhoods into larger, more heterogeneous neighborhoods can create a false racial heterogeneity, which appears to be what is happening with the city-level analysis (Krupka, 2007). Analysis at too small a level (i.e., the tract level here) may create the opposite, equally undesirable outcome.

Our conjecture of a better level of analysis arises from our study of the maps of Los Angeles, several of which we have included, and leads us to intermediate levels of aggregation based on a set of neighboring census tracts

that appears to be a reasonable, and even a compelling choice based on our spatial exploration of the demographics of Los Angeles county. The defining characteristics of these aggregation levels are that they allow us to distinguish interaction between black and Latinos of different socioeconomic backgrounds. The socioeconomic distinction is an important distinction, and one that is not captured well at smaller or larger aggregation levels. To be clear, our explication of a nearest-neighbor approach does not present this particular measure as *the* measure of racial or socioeconomic context, but rather underscores the importance of spatial exploration of data for finding a good and reasonable scale at which an analysis should be conducted. Our spatial analysis also cautions against using convenient geographic units.

Discussion

The threat and contact hypotheses are premised on the argument that context shapes racial and ethnic attitudes. Operationalizing this context in a quantitative analysis, however, is tremendously complex and not given enough attention in these studies. In the analysis of racial context, Figure 1 presented a compelling case (statistical significance notwithstanding) that the tract level is not the proper or a good level of analysis for the study of racial context on the formation of racial attitudes in Los Angeles county. The census tract unit is simply too small to capture and distinguish the types of neighborhoods that define Los Angeles county. Moreover, one is hard pressed to put forth any type of theoretical justification for employing a tract-level analysis. Without such a justification, one is particularly susceptible to geographical scale problems.

Determining the level at which our basic mechanism is rooted is a thorny problem defying quick and obvious answers. For our query, we must determine how the components producing racial attitudes are exchanged. Some of the boundaries in which these exchanges occur are geographical and historically determined. Neighborhoods are created and sustained through a variety of social, political, and economic forces with enduring natures. Areas like the inner city of Los Angeles are not likely to disappear without enormous external effort. Wealthy areas like Beverly Hills are also not likely to change character overnight. These areas are unique and define the landscape of Los Angeles county. Accordingly, in any analysis, one must consider how socio-spatial identities are formed by these structural forces that define and sustain the neighborhoods under study. Indeed, one role of neighborhoods in our study here is to create a proxy under which we understand how “contact”

between individuals occurs. As Hewstone (2009) elucidates, there are a number of moderators and mediators between contact and the effects of contact. It is not simply the opportunity for contact, but actual contact that matters. In this sense, neighborhoods are one way to measure opportunity for contact, but actual contact would require individual responses. However, neighborhoods also define a more intangible quality that may affect racial attitudes even without formal interactions.

Mapping racial and socioeconomic attributes helped us gain some important insight into how neighborhoods are constructed in Los Angeles county. This is an effort that appears to be essential in these analyses. To be clear, we are hardly advocating our specific nearest-neighbor sociodemographic measure (whether that incorporate 5, 8, or 15 neighbors) as *the* proper way to measure racial context in all instances. For this particular research question, we have presented compelling evidence that our sociodemographic contextual measure is more theoretically justified than other simple measures. Up until this point, different scholars have been presenting different analyses conducted at different levels of analyses with different results. Evidence for both the contact and threat hypothesis have been presented without a means to unify or reconcile the evidence. Much of this reconciliation falls at the feet of conceptualizing racial context.¹¹ Paying closer attention to how context is operationalized in studies of race leads to a deeper understanding of racial contours and attitudes. This attention to detail illuminated several aspects of the race debate that have been raging unresolved.

We are quite clearly not the first to suggest that racial context might be related to racial attitudes. Indeed, this is only one study in a large literature devoted to the topic. We are also not the first to suggest that socioeconomic context might be a mediating force that intercepts the direct link between context and attitudes. Others have eloquently presented and elaborated on this theory. Despite the interest and scholarship, however, a review of the literature demonstrates that the empirical analysis has been wildly inconsistent, offering plenty of evidence on both sides of the debate. It is the source of this inconsistency and its connection to geography and aggregation that we have aimed to elucidate. Much can be gained by adopting a serious and detailed geographical perspective of this fascinating social phenomenon.

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Notes

1. Contextual effects are only one facet of how intergroup context functions. For an overview of the complex psychological processes involved with intergroup contact, see Hewstone (2009).
2. As Taylor (1998) notes, perceived threat may be physical or cultural, rather than economic or political, and may rest on preexisting racial or ethnic resentment. In addition to the studies that examine the effects of outgroup population size in specific contextual environments, individual-level survey studies have also examined the effects of intergroup contacts on racial attitudes. Rather than employing objective measures of contextual composition, these survey studies rely on respondents' self-reports of contacts with outgroup members. Kinder and Mendelberg (1995), for example, found that prejudice played a smaller role in shaping racial policy attitudes among white respondents with more reported contacts with blacks. Interestingly, the studies that have relied on individual-level survey data tend strongly toward the contact hypothesis.
3. The MAUP problem is composed of two distinct problems. The *aggregation problem* refers to the many different ways that a spatial plane may be divided into a particular number of polygons, and the variation in results that accrues from these different divisions. The *scale problem* refers to varying results as data for more numerous, and smaller, areal units are aggregated into fewer and larger areal units (Openshaw, 1984, 8).
4. As the model includes individual-level variables as well as contextual variables, we also explored specifications involving hierarchical linear models. There were some differences in the results between the OLS and the multilevel models, though the results from the multilevel models do not change our basic storyline. More importantly, there was a great deal of variation in the composition of the aggregated units. An assumption of the multilevel model is that the within-unit errors are normal and independent with equal variance across units. One of the reasons we choose to present the OLS results is because of the tenuous nature of this homogeneity and equal variance assumption. Another reason, perhaps more poignant in this particular analysis, is our strong inclination toward providing an analysis that has a baseline analysis. Here, we use the Oliver and Wong (2003) study as our baseline analysis. This published study is cited and referenced in discussions of racial context and racial attitudes. Using the same data and same methods provides a base to understand the role of contextual measures in the analysis. If we change many facets at once (e.g., model type, model specification, data set),

then we also obscure the origin of the differences and the nature of the role of the contextual measure. If changing the model type that is to HLM or some other model, is imperative, then such a change should be made, but that does not appear to be the case here, and so we are able to preserve important elements of comparability with previous studies.

5. In our data set, there was good number of each type of contextual unit. In particular, there were 96 tracts, 82 zip codes, 29 cities, and 60 neighborhoods.
6. Our measure of neighborhood in these tables disaggregates the City of Los Angeles into smaller communities, such as Canoga Park, Hollywood, Studio City, and so on. The communities were formed by grouping the census tracts falling within each of the various community's boundaries. The boundaries for each community were obtained from the Los Angeles Almanac. We aggregated the demographic information for each census tract within a specific community to obtain the neighborhood level measures. For those areas not contained within the city of Los Angeles, the neighborhood measure is identical to the city measure.
7. In her study of Franklin County, Ohio, Kwan (1999) found that the average distance traveled for both work and nonwork related activities ranged from 3.9 miles to 9.8 miles which suggests individuals are not confined solely to their own census tract.
8. This is a common technique in spatial analyses. For example, in the literature that discusses "bespoke neighborhoods" (Buck, 2001; Johnston et al., 2005; MacAllister et al., 2001; Tunstall et al., 2000), the effect of an individual's surrounding environment is explored by examining neighbors at various levels. In the examination of bespoke neighborhoods, as in our current study, we see that effects may differ depending on the spatial scales at which contextual environments are defined.
9. Census tracts typically range from about 1,500 to 8,000 people.
10. We normalize income to be between 0 and 1 so that income and education will have equal influence in the overall measure. We also multiply the sum by -1 so that higher scores indicate a lower socioeconomic status.
11. To be sure, we have examined but one aspect of this question. We hope others will follow with illuminating findings about model specification, either in choice of variables or in the value of adopting alternative models such as a limited dependent variable or hierarchical linear model. We have no intention of presenting the final word on the topic, but merely to provide a clear and pointed message illuminating the important and unmistakable role of context in these studies. As geography is fundamental to studies of racial context and transcend these other aspects, this study is a natural and an important first step. The ability to isolate the problem and effects by retaining the other aspects of the model was fundamental for our research design here.

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