Descriptive Finding

The residential segregation of the American Indian and Alaska Native population in US metropolitan and micropolitan areas, 2010

Jack Byerly

Contents

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Abstract

BACKGROUND

Racial/ethnic residential segregation has been studied extensively, but few studies have focused on the growing population of American Indians and Alaska Natives (AIANs). An examination of the group's residential patterns will contribute to an understanding of the social position of AIANs and the overall pattern of racial/ethnic residential segregation in the United States.

OBJECTIVE

What is the average level of residential segregation in 2010 across metropolitan and micropolitan areas with a substantial AIAN presence? What are the most and least segregated areas for this group? What are the causes and correlates of residential segregation for this group?

METHODS

I use the index of dissimilarity to measure the residential segregation of single-race and multiracial AIANs from non-Hispanic whites in 264 metropolitan and micropolitan statistical areas, using data from the 2010 census. I also use data from the 2010 census and the 2006–2010 American Community Survey to estimate OLS regression models examining the possible causes and correlates of segregation levels across metropolitan and micropolitan areas.

RESULTS

The index of dissimilarity for single-race AIANs is 31.8, while for multiracial AIANs it is 23.6. For both single-race and multiracial AIANs, higher segregation levels are found in metropolitan areas with larger populations, a higher proportion of AIANs, more female-headed households, and a lower relative education level for AIANs.

CONCLUSIONS

Relative to other racial/ethnic groups, AIANs – especially multiracial AIANs – experience low levels of residential segregation from non-Hispanic whites.

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CONTRIBUTION
This is the first study that reports and examines residential segregation levels for AIANs using 2010 census data.

1. Introduction

A rich vein of research in demography, sociology, and related fields has focused on the measurement, causes, and consequences of racial/ethnic residential segregation. Little of this research, however, has focused on the American Indian and Alaska Native (AIAN) population. The growth of this population in recent decades (Norris, Vines, and Hoeffel 2012; Passel 1997) has prompted increased attention to the residential segregation of this population (Bennett 2011; Iceland, Weinberg, and Steinmetz 2002; Lichter et al. 2007; Wilkes 2003; Wilkes and Iceland 2004). Nonetheless, gaps remain in our knowledge of this topic. In this paper, I contribute to the literature on the racial/ethnic residential segregation of AIANs by using more recent data (from the 2010 decennial census), comparing the residential segregation of single-race and multiracial AIANs, and examining some of the possible causes and correlates of racial/ethnic residential segregation for these groups.

2. Background

The 2010 decennial census counted approximately 2.9 million single-race AIANs and 2.3 million multiracial AIANs. The size of both populations increased substantially during the decade from 2000 to 2010: Single-race AIANs increased 18.4% and multiracial AIANs increased 39.2%. The growth of both groups outpaced the population growth of the United States as a whole during this period (9.7%) (Norris, Vines, and Hoeffel 2012). This decade was not unique. Since the shift from census enumerator–identified race to self-identification of race on census forms in the mid-twentieth century, the growth of the AIAN population has outpaced that which would be possible based on natural increase and immigration, indicating change driven, in part, by changes in self-identification (Passel 1997; Thornton 1997). Because of movement both into and out of self-identification as AIAN, the total number of identification changes is even larger than the net values suggest (Liebler, Bhaskar, and Porter 2016; Liebler and Ortyl 2014).

     The AIAN population has received only limited attention from scholars of residential segregation, likely due to the group's relatively small size, complex

population dynamics, and traditional association with rural areas. Studies examining residential segregation of AIANs in metropolitan areas in the period 1980–2000 (Bennett 2011; Iceland, Weinberg, and Steinmetz 2002; Lichter et al. 2007; Wilkes 2003; Wilkes and Iceland 2004) find moderate residential segregation of AIANs from non-Hispanic whites. (Index of dissimilarity values in these studies generally fall between 30 and 45.) These values are generally lower than the comparable segregation measures for African Americans and Hispanics (Iceland, Weinberg, and Steinmetz 2002). Research on small towns and rural areas (Lichter et al. 2007) finds a similar pattern: AIANs are moderately segregated from non-Hispanic whites, but to a lesser extent than Hispanics and African Americans. Iceland, Weinberg, and Steinmetz (2002) find slight declines in AIAN/non-Hispanic white residential segregation during the period 1980–2000. Evidence on the segregation of multiracial AIANs is even scarcer, but research to date (Bennett 2011; Iceland, Weinberg, and Steinmetz 2002) suggests that multiracial AIANs are slightly less segregated from non-Hispanic whites than are single-race AIANs.

There are a number of reasons why studying the residential segregation of AIANs may be theoretically and empirically intriguing. First, it contributes to producing a more complete picture of racial/ethnic residential segregation in the United States by including a racial/ethnic group not often considered in residential segregation research. Second, it may help us understand how residential segregation patterns change in the presence of shifting racial/ethnic identity and a growing multiracial population. Finally, despite the relatively disadvantaged socioeconomic position of AIANs as a group (Davis, Roscigno, and Wilson 2016; Huyser, Sakamoto, and Takei 2010; Huyser, Takei, and Sakamoto 2014; Snipp 1989, 1992), past research has shown that they are less segregated from non-Hispanic whites than many other racial/ethnic minority groups. A better understanding of the residential segregation patterns of this group may help us understand the relative importance of race/ethnicity and socioeconomic status in the production, reproduction, and decline of racial/ethnic residential segregation.

I use 2010 decennial census data to measure the extent of residential segregation, as measured by the index of dissimilarity, in metropolitan and micropolitan areas (MSAs) in the United States with a substantial population (1,000 individuals or more) of both single-race and multiracial AIANs. This data has not previously been used to examine residential segregation for AIAN groups. I also use OLS regression models to investigate the MSA-level factors that may contribute to, or are associated with, residential segregation for both single-race and multiracial AIANs.

3. Data and methods

I measure residential segregation using the index of dissimilarity (D) for census tracts within MSAs, using the package 'seg' (Reardon and Townsend 2018) for Stata 15.1. The comparison group for all calculations of D is single-race non-Hispanic whites. Data on residence and race/ethnicity comes from the 2010 decennial census. Because estimates of residential segregation may be unreliable when populations are very small (Wilkes 2003), I limit the analysis to MSAs with a minimum population of 1,000 single-race AIANs and 1,000 individuals who identified as AIAN in combination with one or more other racial identities (i.e., multiracial AIANs). The full sample includes 219 metropolitan areas and 45 micropolitan areas, encompassing approximately 71.9% of the national single-race AIAN population and approximately 79.2% of the national multiracial AIAN population. I also report average D values for just the 219 metropolitan areas in the sample and list the five most and least segregated MSAs for each of the samples (full and metropolitan only) and groups (single-race and multiracial AIANs).

I then estimate OLS regression models using the D values for single-race AIANs and multiracial AIANs. In each analysis, the dependent variable is the D value for the relevant group in each MSA in the full sample. The explanatory variables are based on past findings (e.g., Rugh and Massey 2014) on the MSA-level factors that help explain racial/ethnic residential segregation. The independent variables and their data sources are summarized below and in Table 1.

'Region' is based on the US Census Bureau's classification of states into four broad regions – West, Midwest, South, and Northeast. For MSAs that straddle two regions, I use the first named city in the MSA to assign the region. West is the omitted category in the multivariate analyses. 'Logged population' is the natural log of the MSA population, based on the 2010 decennial census. The population value is logged to reduce skew. 'Percent urban' is the percentage of the MSA's population that lives in urban (as opposed to rural) areas, based on the 2010 decennial census. 'Percent elderly' is the percentage of the MSA's population age 65 years or older, based on the 2010 decennial census. 'Percent AIAN' is the percentage of the MSA's population that is single-race AIAN, based on the 2010 decennial census. 'Percent homeowners' is the percentage of homes in the MSA that are owner-occupied, based on the 2010 decennial census. 'Percent female-headed households' is the percentage of family households in the MSA headed by women, based on the 2010 decennial census. 'Military quarters population' is the number of people per 100,000 housed in military quarters in the MSA, based on the 2010 decennial census. 'Median home construction year' is the median year of housing construction in the MSA, based on the 2006–2010 five-year American Community Survey (ACS) estimates. 'Income ratio' is the ratio of median

single-race AIAN household income to median non-Hispanic white household income in the MSA, based on the 2006–2010 five-year ACS estimates. 'Education ratio' is the ratio of the percent of the single-race AIAN population age 25 years or older with at least a bachelor's degree to the percent of the non-Hispanic white population age 25 years or older with at least a bachelor's degree in each MSA, based on the 2006–2010 five-year ACS estimates. 'Percent manufacturing' is the percentage of the civilian employed population age 16 years or older in the MSA working in the manufacturing industry, based on the 2006–2010 five-year ACS estimates. 'Percent FIRE' is the percentage of the civilian employed population age 16 years or older in the MSA working in the finance, insurance, or real estate industry, based on the 2006–2010 five-year ACS estimates. 'Percent education' is the percentage of the civilian employed population age 16 years or older in the MSA working in education, training, or library occupations, based on the 2006–2010 five-year ACS estimates.

Table 1: Descriptive statistics (data from the 2010 decennial census except as noted)

Variable	Mean/percentage	Standard deviation	Minimum	Maximum
White/single-race AIAN D	31.8	12.8	6.5	85.6
White/multiracial AIAN D	23.6	8.1	5.2	55.4
Region				
West	35.2	–	0	1
Midwest	18.1	–	0	1
South	36.7	–	0	1
Northeast	9.8	–	0	1
Logged population	12.8	1.2	10.4	16.8
Percent urban	77.6	14.9	33.0	100.0
Percent elderly	13.5	3.4	6.5	27.5
Percent single-race AIAN	2.8	7.2	0.1	75.5
Percent homeowners	65.8	5.4	50.0	78.7
Percent female-headed households	19.0	3.5	9.9	33.1
Military quarters population	220.8	786.9	0.0	9392.4
Median home construction year*	1976.3	8.3	1953	1994
Income ratio*	0.7	0.2	0.2	1.8
Education ratio*	0.5	0.2	0.1	1.7
Percent manufacturing*	10.2	4.6	0.9	26.3
Percent FIRE*	6.2	1.9	3.1	17.0
Percent education*	6.1	1.3	3.8	12.4

Note: n = 264 metropolitan and micropolitan statistical areas. *Data from the 2006–2010 five-year American Community Survey estimates.

4. Results

Table 2 reports the average D values for the full sample and the metropolitan-only sample. Single-race AIANs are more residentially segregated from non-Hispanic whites than multiracial AIANs: 31.8 compared to 23.6, respectively. Limiting the sample to metropolitan areas only shows a similar pattern.

Table 2:   Average D values for the full sample and the metropolitan-only sample

Full sample (n = 264 metropolitan and micropolitan statistical areas)	
Group	**Average D**
Single-race AIANs	31.8
Multiracial AIANs	23.6
Metropolitan statistical areas only (n = 219 metropolitan statistical areas)	
Single-race AIANs	33.2
Multiracial AIANs	25.1

Table 3 shows the five most and least segregated MSAs for each of the groups. For both single-race AIANs and multiracial AIANs, the least segregated MSAs are micropolitan areas in Oklahoma, Oregon, and California. Most of these areas have substantial AIAN populations, but none are majority AIAN. (Only one MSA in the sample – the Gallup, NM Micro Area – has a majority single-race AIAN population.) Restricting the sample to metropolitan areas only, the least segregated MSAs are relatively small metropolitan areas, primarily in the West and Midwest. The most segregated MSAs for both groups are primarily large MSAs in the Northeast and Midwest as well as MSAs in Washington, Minnesota, and, especially, Arizona.

The results of the multivariate analysis are shown in Table 4. Conditional on other variables in the model, single-race AIANs are least segregated from non-Hispanic whites in the South and most segregated from non-Hispanic whites in the Northeast. The Midwest is not statistically significantly different from the West. Regional patterns are somewhat different for multiracial AIANs, with the South not statistically significantly different from the West and both the Midwest and Northeast more segregated than the West.

The effects of the other predictors are generally similar across groups. For both groups, increased segregation is found in more populous MSAs, with D increasing by approximately 2.6 for each group for each one-unit increase in logged population, conditional on the other variables in the model. Both 'percent AIAN' and 'percent female-headed households' are associated with statistically significantly higher segregation scores for both groups, while a higher single-race AIAN/non-Hispanic

white education ratio is associated with statistically significantly lower segregation values. The only other coefficient that is statistically significant at the $p < 0.05$ level is the MSA 'percent urban' for multiracial AIANs, which is modestly and positively associated with segregation scores. Two other coefficients reach marginal statistical significance ($p < 0.10$): A higher single-race AIAN/non-Hispanic white income ratio is associated with lower segregation scores for single-race AIANs, and the MSA 'percent employed in finance, insurance, and real estate' is associated with higher segregation scores for multiracial AIANs.

Sensitivity analyses (not shown) suggest some sensitivity to the exclusion of micropolitan areas for both groups.

Table 3: **D values for the most and least segregated MSAs in the full sample and metropolitan-only sample**

Full sample (n = 264 metropolitan and micropolitan statistical areas)			
Single-race AIANs			
Most segregated		**Least segregated**	
Show Low, AZ Micro Area	85.6	Miami, OK Micro Area	6.5
Bemidji, MN Micro Area	68.5	Tahlequah, OK Micro Area	6.9
New York–Northern New Jersey–Long Island, NY–NJ–PA Metro Area	67.8	Muskogee, OK Micro Area	7.5
Flagstaff, AZ Metro Area	65.9	Ada, OK Micro Area	8.0
Yakima, WA Metro Area	65.7	Grants Pass, OR Micro Area	10.4
Multiracial AIANs			
Most segregated		**Least segregated**	
New York–Northern New Jersey–Long Island, NY–NJ–PA Metro Area	55.4	Red Bluff, CA Micro Area	5.2
Show Low, AZ Micro Area	50.5	Ada, OK Micro Area	6.6
Bridgeport–Stamford–Norwalk, CT Metro Area	44.3	Tahlequah, OK Micro Area	7.6
Milwaukee–Waukesha–West Allis, WI Metro Area	43.0	Duncan, OK Micro Area	7.8
Philadelphia–Camden–Wilmington, PA–NJ–DE–MD Metro Area	40.9	Albany–Lebanon, OR Micro Area	7.9
Metropolitan statistical areas only (n = 219 metropolitan statistical areas)			
Single-race AIANs			
Most segregated		**Least segregated**	
New York–Northern New Jersey–Long Island, NY–NJ–PA Metro Area	67.8	Jacksonville, NC Metro Area	13.0
Flagstaff, AZ Metro Area	65.9	Joplin, MO Metro Area	13.0
Yakima, WA Metro Area	65.7	Springfield, MO Metro Area	14.3
Tucson, AZ Metro Area	62.3	Medford, OR Metro Area	15.0
Farmington, NM Metro Area	62.2	Eugene–Springfield, OR Metro Area	15.1
Multiracial AIANs			
Most segregated		**Least segregated**	
New York–Northern New Jersey–Long Island, NY–NJ–PA Metro Area	55.4	Medford, OR Metro Area	10.9
Bridgeport–Stamford–Norwalk, CT Metro Area	44.3	Crestview–Fort Walton Beach–Destin, FL Metro Area	11.5
Milwaukee–Waukesha–West Allis, WI Metro Area	43.0	Missoula, MT Metro Area	11.9
Philadelphia–Camden–Wilmington, PA–NJ–DE–MD Metro Area	40.9	Joplin, MO Metro Area	12.0
Trenton–Ewing, NJ Metro Area	40.6	Olympia, WA Metro Area	12.1

Table 4:   **OLS regression results predicting index of dissimilarity values**

Variable	White/AIAN segregation	p	White/multiracial AIAN segregation	p
Region				
West	ref.		ref.	
Midwest	2.99 (2.46)		4.27 (1.23)	**
South	−6.08 (2.02)	**	0.26 (1.01)	
Northeast	10.13 (3.32)	**	6.72 (1.66)	***
Logged population	2.60 (0.89)	**	2.58 (0.45)	***
Percent urban	0.11 (0.07)		0.08 (0.03)	*
Percent elderly	0.15 (0.26)		0.01 (0.13)	
Percent single-race AIAN	0.58 (0.11)	***	0.19 (0.06)	**
Percent homeowners	0.01 (0.17)		0.12 (0.09)	
Percent female-headed households	0.59 (0.23)	*	0.53 (0.12)	***
Military quarters population	−0.00 (0.00)		−0.00 (0.00)	
Median home construction year	0.17 (0.11)		−0.05 (0.06)	
Income ratio	−6.90 (3.56)	†	−2.83 (1.78)	
Education ratio	−8.65 (3.06)	**	−3.97 (1.53)	*
Percent manufacturing	0.10 (0.19)		0.11 (0.09)	
Percent FIRE	0.11 (0.45)		0.43 (0.23)	†
Percent education	0.48 (0.65)		0.30 (0.33)	
Intercept	−352.29 (224.11)		69.58 (112.05)	
Adjusted R^2	0.3891		0.6195	
n	264		264	

Note: *** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .1$.

5. Limitations and future directions

In addition to the sensitivity issues discussed above, a number of other limitations to the analysis should be noted. First, the index of dissimilarity is but one of many measures of segregation (Massey and Denton 1988), and it is also insensitive to the spatial arrangement of the subunits within MSAs. Techniques that take space into account (e.g., Lee et al. 2008) can provide a more complete picture of segregation patterns across the metropolitan landscape. Additional factors, such as natural and constructed physical barriers, may also be important to take into account (Roberto and Hwang 2017). Segregation measurements may also be different when using different subunits

(e.g., block groups or blocks) or different aggregate units (e.g., limiting to principal cities or other places within MSAs).

Second, other MSA-level factors not considered here may help explain segregation for AIANs. The characteristics included here are based on past research primarily conducted on other racial/ethnic groups; factors unique to, or more salient for, the AIAN population, such as tribal gaming income or changes in racial/ethnic identity (which could be context-dependent [Light and Iceland 2016]), might be relevant to explaining segregation patterns for this group.

Third, a more extensive investigation should be made into the differing segregation patterns for specific multiracial and tribal groups. Specific multiracial groups (e.g., those who identify as both AIAN and African American) may have unique segregation patterns that are obscured by combining all multiracial AIANs into a single group. There could also be differences across AIAN tribal groups (Huyser, Takei, and Sakamoto 2014) and between those who do and do not assert a tribal affiliation (Liebler, Bhaskar, and Porter 2016).

Fourth, examining segregation in non-MSA areas may be particularly important for AIANs relative to other racial/ethnic minorities due to the forced relocation of AIAN populations to rural reservations by European settlers. Although the AIAN population has become more urbanized in recent decades (Fixico 2000) and my sample covers the majority of the 2010 population of the relevant groups, substantial non-MSA populations of AIANs remain, and their distribution and degree of segregation are an important part of explaining overall levels of segregation for this group (Lichter et al. 2007).

Finally, it is important to consider change in segregation over time. This is complicated by changes in tract and MSA boundaries, and particularly complicated in the case of AIANs due to the large-scale shifts in racial identity described above. Some evidence suggests that segregation levels for this group are declining modestly (Iceland, Weinberg, and Steinmetz 2002), but this does not take into account individual-level changes in racial identity. Trends in segregation may be driven by residential mobility, changes in racial identification, fertility and mortality, and changing patterns of mixed-race household formation (Ellis et al. 2012).

This paper has shown that AIANs remain moderately segregated from non-Hispanic whites, based on the most recent decennial census data, and has examined some of the possible causes and correlates of racial/ethnic residential segregation for single-race and multiracial AIANs. Likely future growth of this population, driven by intermarriage, changes in identification, and natural increase, will make studying their residential outcomes an increasingly important part of understanding the racial/ethnic residential landscape of the United States.

6. Acknowledgments

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