Journal of Housing Economics 40 (2018) 41–72

Contents lists available at ScienceDirect

Journal of Housing Economics

journal homepage: www.elsevier.com/locate/jhec

Racial climate and homeownership

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ARTICLE INFO

JEL classification:
J15
R31
K42

ABSTRACT

An important question aside from outright discrimination is whether poor underlying race relations in an area might create a chilling effect on homeownership for minorities. From 2012 onward, there were a series of high-profile events in the U.S. related to police brutality which highlighted racial tension. Using Google Trends, we characterize a locality's underlying racial climate based on search interest in these charged events. We use data from the American Community Survey prior to any of these flare-ups and show that the ownership decision for blacks is responsive to the racial climate; black homeownership in localities with the most charged racial climates is 5.6 percentage points lower than in the least charged racial climates based on a sample of movers.

1. Introduction

For more than 80 years, United States government policy has explicitly sought to promote homeownership. One way in which it has done so is by making homeownership a more lucrative investment. The tax code offers a multitude of advantages for homeownership, including the mortgage interest deduction, exclusion of significant portions of capital gains, property tax deductions, exclusion of imputed rental income, and implicit subsidization of interest rates through government-sponsored entities (Poterba and Sinai, 2008; Davis, 2012).

Why the preference for ownership? There are several conceptual arguments that relate to private or societal benefits. First, on the investment side, owner-occupied housing can be viewed as a hedge against rent risk.[2] In addition, homeownership has been found to increase wealth accumulation, often with magnitudes of approximately an additional $10,000 in wealth per year of ownership (Turner and Luea, 2009). Second, some studies find that ownership is associated with more favorable outcomes for the family's children and the larger community. Haurin et al. (2002) find that ownership leads to a higher quality housing environment, greater cognitive ability and fewer child behavior problems.[3] Other work examines positive spillovers from homeownership. DiPasquale and Glaeser (1999) find that homeowners invest more in social capital.

There are also negatives associated with homeownership. Bayer et al. (2016) find that housing price risk is an important consideration and that minorities who purchased during the housing boom were especially vulnerable to economic fluctuations. In addition, Bostic and Lee (2008) highlight the risks and costs of "failed homeownership" among low- and moderate-income borrowers.

The benefits—whether causal or not—have created policy interest in the racial gap in homeownership. In 2002, President George W. Bush said, "We must begin to close this homeownership gap by dismantling the barriers that prevent minorities from owning a piece of the American dream."[4] Shapiro (2006) argues for homeownership as a main strategy for closing the overall racial wealth gap. Despite these calls, Census Bureau data shows persistent gaps in ownership between whites and blacks of 25 percentage points for the past two decades. Despite major swings in the economy, white ownership has never fallen below 67% while black ownership has never exceeded 50% .[5]

One cause of this ownership gap is outright, illegal discrimination in housing and mortgage lending markets. A voluminous literature explores these issues. This type of discrimination represents a restriction in the supply of housing for blacks. In one recent audit study using paired test subjects, black homebuyers were informed about and shown roughly 17% fewer homes than white homebuyers (Turner et al., 2013). There are also concerns about geographic steering and discrimination known as "redlining" (Tootell, 1996; Ondrich et al., 2001; 2003; Ross and Tootell, 2004). Evidence on lending discrimination reveals that

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1 We thank Stephen Ross and anonymous referees for helpful comments.

2 Sinai and Souleles (2005) find that the probability of homeownership increases faster with rent volatility for long-horizon households than for short-horizon households.

3 However, Holupka and Newman (2012) argue that such beneficial homeownership effects may be due to selection bias.

4 See http://www.presidency.ucsb.edu/ws/?pid=25063.

5 See https://www.census.gov/housing/hvs/files/annual16/ann16t_22.xlsx.

https://doi.org/10.1016/j.jhe.2017.12.003
Received 31 May 2017; Received in revised form 12 December 2017; Accepted 13 December 2017
Available online 22 December 2017

minorities are more than twice as likely to be denied a mortgage as whites, although correcting for omitted variables bias significantly diminishes the impact of race (Munnell et al., 1996).

Our work focuses on the impact of a locality's overall "racial climate" on the decision of blacks to own homes. Racial climate would include both factors that affect the supply of housing to blacks such as housing and mortgage discrimination, but additionally demand-side factors that influence the decision to "plant one's roots" and invest in a community. Obvious factors would include labor market discrimination, unequal educational opportunity, racism, and policing.[6] We view "racial climate" in our setting as parallel to "chilling effects" in other recent work. For example, in the context of the 1996 U.S. welfare reform which included anti-immigrant language, the general policy environment can matter for decision making apart from the formal rules, and such indirect effects are termed chilling effects (Watson, 2014).[7] Such chilling effects are inherently difficult to measure, and researchers attempt to find proxies for the overall climate.[8]

In our context, since virtually all standard microdata is wholly inadequate for measuring racism or racial climate spatially (and likely subject to misreporting), we follow an approach pioneered by Stephens-Davidowitz (2014) in using Google Trends. In this study, racial animus at the state-level was proxied by searches related to racial epithets. In our approach, we use a variety of search terms and topics related to "Police Brutality" to measure the long-run state of race relations by locality. In particular, the 'Black Lives Matter' movement was formed in the aftermath of the shooting of 17-year-old Trayvon Martin by a private citizen in February 2012.[9] Other high profile incidents involving blacks and the police (rather than private parties) include the shooting of 18-year-old Michael Brown in Ferguson, Missouri in 2014, the shooting of 12-year-old Tamir Rice in Cleveland, Ohio in 2014, and the death of 25-year-old Freddie Gray in Baltimore, Maryland in 2015. Our work uses Google search interest related to these high-profile policing events occurring in 2012 onward as a proxy for a locality's racial climate, where heightened interest in such topics is arguably associated with a more charged racial climate. Drawing upon data from the American Community Survey (ACS) prior to these events occurring, we examine the ownership decision among a large sample of recent movers. After controlling for other factors, we find that homeownership of blacks in the most racially charged localities is 5.6 percentage points lower than in the least charged localities.

2. Data description

We use the ACS, a nationwide survey administered by the Census Bureau that asks detailed questions about population and housing characteristics, as our principal data source. The ACS samples approximately one percent of the U.S. population; we use respondents in the years 2005 to 2011, prior to the high profile incidents used to measure race relations. Like the Decennial Census, participation in the ACS is mandatory, and the survey can be completed online or by mailing in a paper questionnaire. The ACS identifies all 50 states and the District of Columbia and additionally identifies Public Use Microdata Areas (PUMAs)—approximately 2300 areas of at least 100,000 people nested entirely within a state. The ACS contains sufficient information to identify localities, which we map into metro areas in a similar fashion as in Courtemanche et al. (2017).

The primary variable of interest, Racial Climate, is derived from Google Trends data. Google data, which aggregates millions of searches, provide insights into social perceptions that are hard to accurately elicit from survey data (Stephens-Davidowitz, 2017). Surveys, such as the widely used General Social Survey, which seek to understand concerns and attitudes are wholly inadequate at analyzing racial climate at a metro area level due to insufficient sample sizes, lack of fine geographic locations, and concerns about reporting. Researchers have used Google data in a wide variety of contexts such as studying the influence of racial animus on elections (Stephens-Davidowitz, 2014), the incidence of child abuse during the Great Recession (Stephens-Davidowitz, 2013), and the user base of Bitcoin (Yelowitz and Wilson, 2015).

Google data is available at the Designated Market Area (DMA) level, which we map into metro areas.[10] We focus on term/topics related to police brutality. Interdisciplinary studies, such as Chaney and Robertson (2013), take the view that such policing events reflect racism and discrimination, as well as greater range of social problems including racial profiling and harsh treatment in the criminal justice system. In addition, Fryer (2016) finds that police use of force is greater for blacks relative to whites. Racial climate based on search interest in police brutality represents racial tension at an institutional level, which arguably captures race relations better than the use of racial slurs like in Stephens-Davidowitz (2014). Furthermore, racially charged areas could also be associated with heightened discrimination, which further influences housing decisions. To gauge the racial climate we create an average Z-score index using the following search terms/topics: Police Brutality, Black Lives Matter, Shooting of Michael Brown, Ferguson Unrest, Trayvon Martin, Death of Freddie Gray, and Shooting of Tamir Rice.[11] Fig. 1 illustrates the average Z-scores for the racial climate in the metro areas used in the analysis.

Appendix Table A.1 further illustrates the variation in the aggregate index by metro area. Several of the metro areas with the largest index for racial climate are from areas where the incidents occurred. Arguably, the incidents occurred in these metro areas because of heightened racial tensions and the flare-ups would not have necessarily occurred in different areas for the same stimulus. By aggregating search interest across several different events—that should not be correlated otherwise—we mitigate the influence of each individual event. Nonetheless, there is concern that these areas received a disproportionate amount of search interest because the incident occurred in that locality. Consequently, in a robustness check, we exclude St. Louis, Missouri; Baltimore, Maryland; Cleveland, Ohio; and Orlando, Florida from the analysis.

The regression analysis will evaluate the relationship between racial climate and black homeownership. Anecdotally, Salem, Oregon, and Jacksonville, North Carolina provide an example of a negative relationship between racial climate and homeownership. Oregon with one of the best racial climates has a black homeownership rate of 39.7% while Jacksonville, North Carolina has one of the worst racial climates has a black homeownership rate of 32.7

The earliest incident that we use to gauge underlying racial climate was the "Shooting of Trayvon Martin" that occurred on February 26,

[6] See https://www.nytimes.com/2016/08/21/us/milwaukee-segregation-wealthy-black-families.html for an example of black households locating in less racially charged areas leading to segregation. Presumably, racial climate also influences the decision to locate/invest in homeownership across cities and not just within cities.

[7] Other examples include internet use by Muslim-Americans in the aftermath of the September 11th attacks (Sidhu, 2007) and college applications following affirmative action bans (Antonovics and Sander, 2013).

[8] Watson (2014) proxies for the chilling effect on Medicaid participation for children of immigrants using spatial and temporal variation in federal enforcement actions from the Immigration and Naturalization Service.

[9] See http://blacklivesmatter.com/herstory/

[10] There are a total of 210 DMA in the U.S., which correspond to different media markets as defined by Nielsen. We use Sood (2016) to assign DMA information to counties and use a crosswalk from Missouri Census Data Center (2012) to translate county level information into metro areas. Appendix Table A.5 lists the final crosswalk between DMA and CBSA. In addition, a downloadable version of our constructed crosswalk can be accessed at http://www.yelowitz.com/racialclimate. For our sample, an average of roughly two metro areas map into a single DMA. In the analysis, we cluster at the DMA level.

[11] We use the average indexes for these measures over time rather than exploiting any time variation in the metrics. The average Z-score is created by subtracting the mean and dividing by the standard deviation for each of the search terms. We then sum the scores and divide by the standard deviation of the sum to get an index of mean zero and standard deviation one (Chetty et al., 2011; Kling et al., 2007).

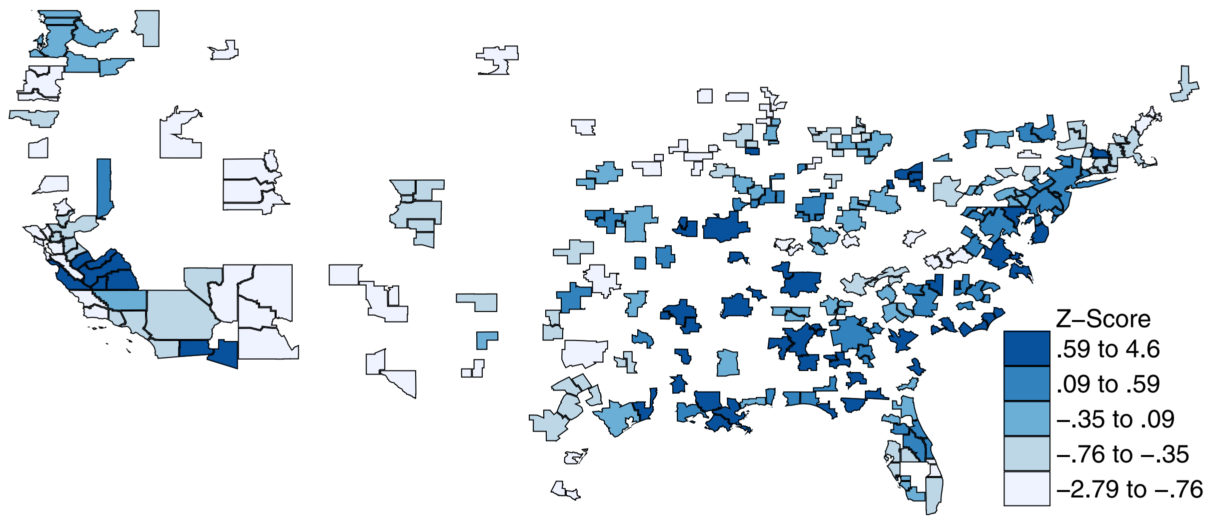

Fig. 1. Google Trends: Racial Climate Z-score by Metro Area. Note: Only CBSAs used in the analysis are shown, which represent 82.7% of the population in 2010. Z-scores are translated from DMA information provided from Google Trends.

2012.[12] To disallow the event itself from driving homeownership rates (i.e., decreased black homeownership due to actual violence/destruction), we focus on a sample from the ACS that entirely predates any of the actual events, using the years 2005–2011. The racial climate metric is based on the assumption that search interest in these events is a manifestation of latent racial tension in an area rather than the event itself driving homeownership rates.

In addition to Google Trends data, we use other metro level data to account for factors that might influence the housing decision. These data include monthly Fair Market Rents (FMR) from the Department of Housing and Urban Development,[13] Housing Price Index (HPI) from the Federal Housing Finance Agency (FHFA),[14] and data from the FBI Uniform Crime Report statistics.[15] Furthermore, we calculate the income to poverty ratio, share in manufacturing, and percent black using the ACS and the logarithm of population from the 2010 Decennial Census for each metro area.

We restrict our sample to (a) households whose head is either black or white (non-Hispanic) (b) heads who reside in metropolitan areas[16] (c) metro areas that have information on monthly FMR from the Department of Housing and Urban Development, HPI from the Federal Housing Finance Agency, and crime statistics as reported in the FBI Uniform Crime Report. The 329 metro areas used in the analysis contain 82.7% of the U.S. population as reported in the 2010 census.

To gauge the influence of racial climate on black homeownership, we analyze three different samples of households. First, we analyze the full sample of households who reside in a metro area. However, use of the full sample raises concerns with timing of measurement and reverse causality. For our principal outcome—homeownership—it is important to recognize that the vast majority of households are established in a location and plausibly made their homeownership decision at a time in the past that reflects a different racial climate than the present climate.[17] For example, ACS tabulations indicate that nearly 56% of all homeowners in 2011 lived in their residence for 10 or more years.

Table 1
Summary statistics.

	Full sample	Young	AcrossMetro movers
Demographics Black$_i$	0.15	0.19	0.16
White$_i$	0.85	0.81	0.84
Male$_i$	0.53	0.49	0.54
Age 18–29$_i$	0.11	0.55	0.26
Age 30–39$_i$	0.17	0.45	0.23
Age 40–49$_i$	0.21	0.00	0.20
Age 50–59$_i$	0.21	0.00	0.15
Age 60–69$_i$	0.14	0.00	0.09
Age 70+$_i$	0.16	0.00	0.07
Family Structure Married$_i$	0.50	0.40	0.40
Widowed$_i$	0.10	0.00	0.06
Divorced$_i$	0.17	0.07	0.18
Separated$_i$	0.03	0.03	0.04
Never Married$_i$	0.20	0.50	0.33
Own Children: 0$_i$	0.72	0.56	0.76
Own Children: 1$_i$	0.12	0.18	0.11
Own Children: 2$_i$	0.10	0.16	0.09
Own Children: $\geq 3_i$	0.05	0.10	0.04
Education and Income			
Less than HS Grad$_i$	0.10	0.06	0.05
High School Grad$_i$	0.26	0.22	0.16
Some College$_i$	0.31	0.37	0.34
Bachelor's Degree$_i$	0.20	0.26	0.28
Graduate Degree$_i$	0.12	0.10	0.16
Household Income$_i$ ($1k)	80.79	64.20	74.68
Housing and Area Owns Home$_i$	0.68	0.41	0.32
Monthly FMR$_j$ ($1)	978.92	955.58	996.44
FHFA HPI$_j$	100.03	100.71	100.13
Crime Rates$_j$ (Z-score)	0.34	0.35	0.44
Observations	5,885,509	1,017,563	150,478

Note: The sample includes white or black headed households from 370 CBSAs in years 2005–2011 in the ACS. Information is reported for household head *i*, and local (metro area) *j* using housing unit weights. Monetary values are reported in 2015 dollars. FHFA HPI is set equal to 100 in 2005.

[12] See Appendix Fig. A.1 for an illustration of the timing of search interest in each event/topic.

[13] We use data on 2-Bedroom Units at the county level. For counties with sub-areas reported, we weight the areas by their population in 2010 to aggregate to the county level. These are then mapped into metro areas. Data accessed from https://www.huduser.gov/portal/datasets/fmr.html.

[14] For the HPI we use Metropolitan Statistical Areas and Divisions (Not Seasonally Adjusted) estimated using Sales Prices and Appraisal data. We average across quarters to get an annual measure and normalize the measure to be 100 in 2005. Data accessed from https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#mpo.

[15] From the crime data, we create a crime Z-score calculated in a similar fashion as the racial climate index using statistics on violent crimes, murder/non-negligent manslaughter, robbery, aggravated assault, property crime burglary and motor vehicle thefts by metro area. See Fig. A.2 for a map of the crime Z-score.

[16] We exclude all micropolitan areas and areas and Public Use Micro Areas that do not map into a core-based statistical area (CBSA).

[17] Economic theory predicts that households should only respond to changing racial climate in the short-run inasmuch the costs of a poor racial climate exceeds moving costs (Ihlanfeldt, 1981).

Therefore, the measure of racial climate derived from Google Trends data likely does not capture the characteristics of the environment that drove the rent versus own decision for a significant majority of the full sample. In addition, the homeownership rate in a metro area could influence search interest and the racial tension variable resulting in reverse causality.[18]

As one alternative, we analyze a younger sample (household heads aged 18–35) who when surveyed likely made the homeownership decision in the recent past. For this sample, the racial climate captured by the Google Trends index variable likely better characterizes the environment when the decision to rent or own was made. Furthermore, the homeownership of the smaller sample is less likely to drive the racial climate variable mitigating concerns of reverse causality.

As another alternative, we analyze households that moved in the year prior to being surveyed. This sample includes households that actively made the decision to rent or own in the racial environment captured by the racial climate index. We exclude households that moved within a metro area as they were exposed to the same racial climate in the year prior to their move and there is persistence in the homeownership decision. Using the sample of across-metro movers also mitigates concerns for reverse causality as the small proportion of households that moved are unlikely to influence Google searches enough to significantly impact the racial climate index.

Table 1 presents the basic summary statistics for the three samples described above. As shown, the racial composition of the three samples is relatively similar with blacks representing between 15% and 19% of the sample. In relation to the full sample, the across-metro movers sample is younger, less likely to be married, better educated, and significantly less likely to own a home (32% in relative to 68%). The young sample is also less likely to be married, less likely to have children, have lower income, and are significantly less likely to own a home in comparison to the full sample.

3. Empirical methodology

To test for the influence of racial climate on black homeownership, we estimate the following linear probability model, in the spirit of Watson's (2014) analysis of chilling effects of Immigration and Naturalization Service (INS) enforcement actions on non-citizens.[19]

$$Own_{ijt} = \beta_0 + \beta_1 Black_i \times Climate_j + \beta_2 Black_i + \beta_3 X_i + \beta_4 Local_{jt} + \beta_5 Black_i \times Local_{jt} + \delta_j + \delta_t + \varepsilon_{ijt} \quad (1)$$

where Own_{ijt} is an indicator that household i owned a home in location j at time t rather than rent and $Black_i$ is an indicator that the head of the household is black. $Climate_j$ is the time-invariant index for the racial climate that varies at the DMA level (higher values represent a worse racial climate). X_i measures characteristics of the head and other family members including age, gender, marital status, educational attainment, and number of children. $Local_{jt}$ measures factors that vary across cities and over time including FMR, HPI, Crime Rates, and percent in manufacturing.[20] Following Cutler and Glaeser (1997) we also include the interaction $Black_i \times Local_{jt}$ to allow for differential location effects on blacks relative to whites. In addition, we include the interaction of race with other locality characteristics including logarithm of the population in 2010, income to poverty ratio, and percent black. δ_j and δ_t are fixed effects for locality and time. The specification does not include $Climate_j$ itself since it is subsumed with locality fixed effects. The locality fixed effects control for differences in levels for home prices, whereas the HPI controls for differences in growth of housing prices over time. Locality fixed effects also control for time invariant racial differences in the residential location inside a metro area, which influence homeownership rates (Deng et al., 2003). The error term ε_{ijt} is corrected for clustering at the DMA level.

Table 2
Influence of racial climate on homeownership.

	Full	Young	Movers
$Black_i$ × Aggregate	−0.004	$-.042^{***}$	$-.056^{***}$
Index GT Top 25%$_j$	(0.013)	(0.016)	(0.016)
$Black_i$	$-.235^{***}$	$-.273^{***}$	−0.094
	(0.084)	(0.077)	(0.112)
Household Income$_i$	$.079^{***}$	$.210^{***}$	$.126^{***}$
($100k)	(0.003)	(0.019)	(0.007)
Monthly FMR$_{j,\,t}$ ($1k)	$.018^{***}$	0.010	$-.072^{*}$
	(0.006)	(0.027)	(0.042)
FHFA HPI$_{j,\,t}$ (100)	$.017^{**}$	0.036	−0.010
	(0.007)	(0.022)	(0.029)
Crime Rates$_{j,\,t}$	0.002	0.005	0.011
(Z-score)	(0.002)	(0.004)	(0.012)
Share	$.093^{**}$	$.201^{**}$	$.588^{*}$
Manufacturing$_{j,\,t}$	(0.042)	(0.098)	(0.300)
$Black_i$ ×			
Monthly FMR$_{j,\,t}$	$.061^{***}$	$.193^{***}$	$.215^{***}$
($1k)	(0.021)	(0.057)	(0.061)
FHFA HPI$_{j,\,t}$	$.090^{***}$	0.027	0.045
(100)	(0.027)	(0.025)	(0.046)
Crime Rates$_{j,\,t}$	$.011^{***}$	$.011^{**}$	−0.002
(Z-score)	(0.004)	(0.005)	(0.011)
Percent Black$_j$	$.186^{***}$	$.287^{***}$	$.367^{***}$
	(0.054)	(0.059)	(0.126)
Income-to-Poverty	−0.033	0.006	−0.040
Ratio$_j$ (100)	(0.023)	(0.033)	(0.053)
Log Population$_j$	0.143	−0.706	−0.970
(100)	(0.516)	(0.582)	(0.598)
Share	−0.137	$-.238^{*}$	−0.239
Manufacturing$_{j,\,t}$	(0.097)	(0.125)	(0.232)
Obs.	2,089,624	367,195	53,115

Note: Dependent variable is homeownership. The full sample includes white or black headed households from the ACS in years 2005–2011. The sample is restricted to households that live in areas that fall into the upper and lower quartiles for the Aggregate Index of racial climate. Controls for age, education level, presence/number of children, gender/marital status of household head, and year fixed effects were included but not reported. Aggregate Index for Racial Climate uses the following Google Search Terms/Topics: Police Brutality, Black Lives Matter, Shooting of Michael Brown, Ferguson Unrest, Trayvon Martin, Death of Freddie Gray and Shooting of Tamir Rice. Standard errors are clustered at the DMA level and are shown in parentheses *** $p < .01$, ** $p < .05$, * $p < .1$.

Under the assumption that higher values of $Climate_j$ reflect a worse racial climate, we expect the coefficient β_1—the interaction of a worse racial climate and black—to be negative. The coefficient captures at least two effects. First, black households may choose not to invest in a community with a poor racial climate and decide to rent instead. Second, households may select a location based on the racial climate. If this selection occurs, homeownership rates in communities with a good racial climate will be higher while simultaneously reducing the homeownership rate in communities with a poor racial climate.[21] Therefore, β_1 can be interpreted as capturing the net effect of these two behaviors (which work in the same direction). Identification comes from the assumption that the racial climate does not affect the investment/ownership decision of white households; therefore, our specification nets out other fixed local characteristics with δ_j. In addition to the selection of location, there is also selection in the decision to relocate. The estimate will not capture this effect, which could lead to an underestimation of the influence on racial climate on black homeownership.

[18] For example, low rates of black homeownership could result in more searches related to the racially charged events.

[19] Nearly identical results were obtained for the main specification using a Probit model rather than a linear probability model.

[20] Yelowitz (2007) and Yelowitz (2017) examine the impacts of house prices and rents at the local level over time using data from FHFA and HUD.

[21] The discussion of this second factor relies on the assumption that potential homeowners exhibit this behavior more than renters. Given the investment associated with homeownership, this is likely a reasonable assumption.

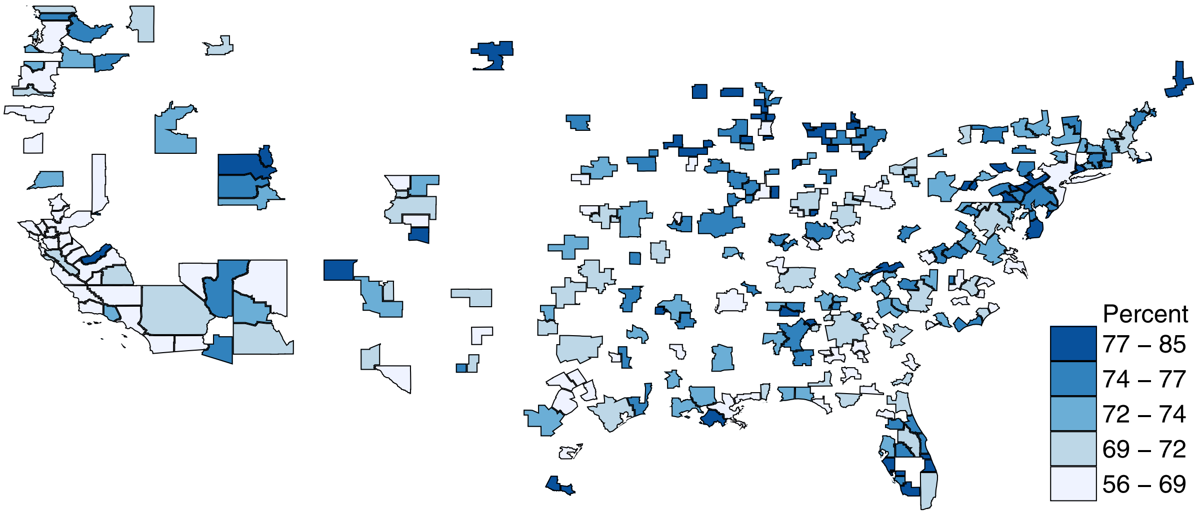

Fig. 2. Homeownership Rates of Movers in New Location by Metro Area, 2011. Note: Only CBSAs used in the analysis are shown, which represent 82.7% of the population in 2010. Data come from the ACS for household that moved in the last year.

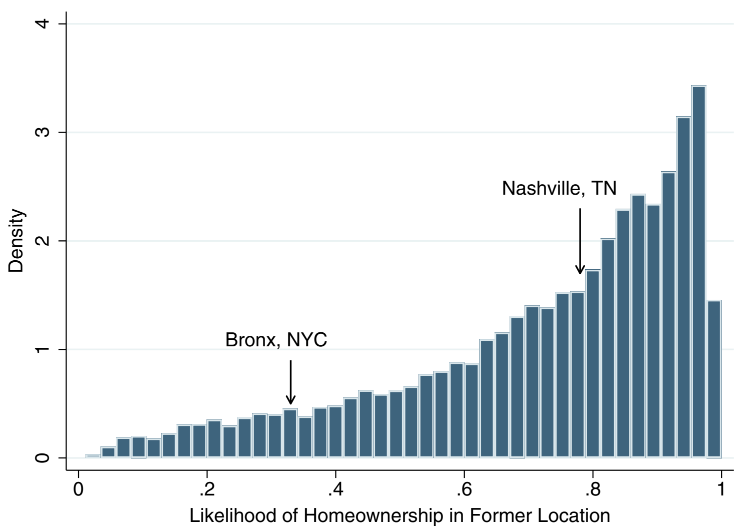

Fig. 3. Homeowner Averages in Origin Location by Demographic Groups. Note: Homeownership is former location (Migration PUMA) is derived by taking the average homeownership of households with similar demographics in an observations former location. Demographics include the household head's age bin (18–34, 35–54, 55 +), income quartile, marital status, and race. The sample is restricted to observations where there are at least 100 household heads in their former location the fall into the same demographic.

4. Results

Table 2 presents the results from our analysis of the three main samples. The main variable is a control for residing in an area with a racial climate index in the highest quartile. We drop observations in the middle quartiles such that the comparison is between the top and bottom quartiles.[22]

The first column shows no evidence that the racial climate negatively impacts either race's homeownership decision. Nonetheless, as outlined, the full specification analyzes the influence of the current racial climate on homeownership for individuals that made the decision under a presumably different climate and also is subject to concerns of reverse causality.

In the second column, we repeat the analysis for households headed by individuals aged 18–35 who likely made the homeownership decision under the racial climate captured by the racial climate index. The results indicate that black households in the most racially charged metro areas are 4.2 percentage points (p-value $<$ .001) less likely to purchase a home relative to those in the least racially charged areas from a base of 25.0% black homeownership.

Table 3
Influence of previous homeownership.

	(1)	(2)	(3)	(4)
Black$_i$ ×	−.093***	−.086***	−.086***	−.086***
Aggregate Index GT Top 25%$_j$	(0.027)	(0.029)	(0.029)	(0.029)
Likelihood Owned Home,		.232***	.233***	.233***
Former location$_{p,\ a,\ I}$		(0.033)	(0.059)	(0.058)
Likelihood Owned Home,			−0.001	−0.047
Former location$_{p,\ a,\ I,\ m,\ r}$			(0.086)	(0.135)
Likelihood Owned Home,				0.047
Former location$_{p,\ a,\ I,\ m,\ r,\ k,\ e}$				(0.097)

Note: Results are presented for analysis of household head *i*, cbsa *j*, Migration PUMA *p*, age group *a*, income bin *I*, marital status *m*, race *r*, children status *k* and education *e*. The sample is restricted to households that moved to a new metro area that fall into the upper and lower quartiles for the Aggregate Index of racial climate. CBSA fixed effects and all variables used in Table 2 were included but not reported. Standard errors are clustered at the DMA level and are shown in parentheses *** p < .01, ** p < .05, * p < .1.

The last column of Table 2 presents the results from the sample of

[22] The main results are robust to conducting the analysis using the top and bottom terciles and quintiles. The coefficient on racial climate is larger in absolute magnitude (more negative) using the top and bottom quintiles and slightly smaller using the top and bottom terciles. The results are presented in Appendix Table A.2.

Table 4
Influence of racial climate on homeownership, robustness checks.

	Hot Spots Excluded	Climate Change	Former racial climate	Segregation Index	2005–2008	2009–2011
$Black_i$ × Aggregate Index GT Top 25%$_j$	−.060** (0.024)	−.054*** (0.018)	−.079*** (0.022)	−.047** (0.019)	−.049* (0.028)	−.045*** (0.015)
$Black_i$ × Climate Change GT_j		0.007 (0.011)				
$Black_i$ × Aggregate Index GT_p			−0.001 (0.004)			
$Black_i$ × Segregation $Index_j$				−0.055 (0.083)		
Obs.	48,026	53,003	33,149	52,287	35,301	17,702

Note: The sample is restricted to households that moved to a new metro area that fall into the upper and lower quartiles for the Aggregate Index of racial climate. Furthermore, the sample is restricted to households that moved to a new metro area. CBSA fixed effects and all variables used in Table 2 and the first measure of the likelihood of previous homeownership were included but not reported for household head *i*, cbsa *j*, and Migration PUMA *p*. Standard errors are clustered at the DMA level and are shown in parentheses *** p < .01, ** p < .05, * p < .1.

across-metro movers. The results indicate that black households in the most racially charged metro areas are 5.6 percentage points less likely to purchase a home (from a base of 20.3% black homeownership).[23]

Across the specifications, blacks are significantly less likely to be homeowners. Blacks are more likely to purchase a home relative to whites as FMR or the HPI increases. Higher crime rates are correlated with increased black homeownership while largely uncorrelated with white homeownership. The proportion of black households in a metro area is also associated with increased black homeownership. Although not presented in the table, the results are consistent with the standard findings that ownership rises with age, education level, marriage and presence of children.

A important consideration for the across-metro movers sample is the persistence in homeownership across moves due to preferences and home equity. Although the ACS does not contain information on the previous homeownership status of movers, it does contain information on the household's original location. To account for differences in the likelihood that a household owned a home, we construct a measure of the average homeownership rate of non-movers in the location from which the household moved with similar characteristics. In constructing the measure, there is a trade-off of including many characteristics and having a precise match with small cell sizes or including a few characteristics but having large cell sizes. To determine which characteristics to use in the creation of the metric, we first estimate a simple model of homeownership on standard demographic controls.[24] To rank order the controls, we run the full model and obtain the R^2 and then run the model repeatedly leaving out individual variables (or groups of variables) one at a time noting the R^2 for each model. Based on the difference in explained variation in homeownership, we determine that the most influential variables are age and income. We construct the first measure using these two characteristics. We then create two more measures using progressively more of the demographics based on importance in explaining homeownership.[25] Fig. 3 shows the distribution of homeownership for non-movers based on demographic group and location using the second measure containing age, income, marital status, and race. As an example, the likelihood of homeownership in the previous location for household heads aged between 35 and 54, with income between $30,000 and $60,000, were married, and white was 31% in the Bronx of New York City and 78% in Nashville, Tennessee.

Table 3 analyzes the sensitivity of the results to controlling for the likelihood of homeownership prior to the move. The first column replicates the results from the across-metro movers presented in Table 2 but with the restricted sample originating from the exclusion of observations where there were insufficient data to estimate the likelihood of homeownership for a particular location and demographic cell. The last three columns sequentially add controls for the likelihood of homeownership keeping sample sizes constant for comparison. The estimates are extremely stable with the inclusion of additional controls indicating that our racial climate results are unlikely to be driven by omitted variable bias related to previous homeownership. Among across-metro movers, a charged racial climate reduces black homeownership by 9 percentage points controlling for the likelihood of previous homeownership.

5. Robustness

Table 4 contains the results from several different robustness checks using the across-metro movers sample with locality fixed effects and interactions of race and metro characteristics as the baseline model.[26] The first column excludes observations from the focal points of the events that were used in the derivation of our index of racial climate. In particular, we exclude the four "hot spots" of St. Louis, Missouri; Baltimore, Maryland; Cleveland, Ohio; and Orlando, Florida. This exclusion address concerns that search intensity in the area of the actual event might be elevated given the location rather than representing heightened racial tensions. As shown, the magnitudes are not sensitive to the exclusion of these areas; even excluding these areas, black homeownership falls by 6 percentage points.

A possible concern with the metric used to measure racial climate is that it might be correlated with other forms of social activism. In the second column, we add an interaction between the Z-score for Google searches of "Climate Change" and $Black_i$ to control for possible correlations between social activism and search interest in incidents related to racial climate. The results are nearly identical to the main specification that excludes the interaction for climate change. This indicates that our metric of racial climate is unlikely to be driven by social activism rather than increased racial tensions.

In the third column, we present results from a specification that account for the racial climate in the former location. Previous racial

[23] These results are sensitive to the inclusion of metro controls by race interactions. In Appendix Table A.3 we present the results from a Gelbach Decomposition of the influence of each covariate on the racial climate index (Gelbach, 2016). The findings show that interaction of race with Percent Black is the primary covariate that cause the point estimate on the racial climate variable to change from a small insignificant negative to a statistically significant and more negative result when the interactions are added.

[24] The results are reported in Appendix Table A.4.

[25] Household observations are mapped into MIGPUMAS using Ruggles et al. (2015). We exclude observations where there are not at least 100 observations for the particular location/demographic cell. Overall, households are mapped into 26,497 unique cells based on demographics, and former locations. Homeownership rates are calculated using the ACS from 2005 to 2015.

[26] In addition, we include the first measure of the likelihood of previous homeownership (based on age and income) in each specification.

Table 5
Sensitivity to events used in index, leave-one-out.

Excluded event:	Police Brutality	Black Lives Matter	Ferguson/ M. Brown	Trayvon Martin	Freddie Gray	Tamir Rice
$Black_i$ ×						
Aggregate Index1 GT	−.055***					
Top 25%$_j$	(0.015)					
Aggregate Index2 GT		−.032*				
Top 25%$_j$		(0.018)				
Aggregate Index3 GT			−0.029			
Top 25%$_j$			(0.021)			
Aggregate Index4 GT				−.042***		
Top 25%$_j$				(0.016)		
Aggregate Index5 GT					−.072***	
Top 25%$_j$					(0.014)	
Aggregate Index6 GT						−.050***
Top 25%$_j$						(0.013)
Obs.	60,962	56,778	60,035	68,691	56,190	59,267

Note: The sample is restricted to households that moved to a new metro area that fall into the upper and lower quartiles for the Aggregate Index of racial climate. Furthermore, the sample is restricted to households that moved to a new metro area. CBSA fixed effects and all variables used in Table 2 and the first measure of the likelihood of previous homeownership were included but not reported for household head *i*, and cbsa *j*. Standard errors are clustered at the DMA level and are shown in parentheses *** p < .01, ** p < .05, * p < .1.

climate presumably influenced the homeownership decision. Through persistence in homeownership, the former racial climate could impact homeownership in the new location and consequently bias the results. The point estimate for the specification increases in absolute magnitude but the difference is driven by the sample and not the inclusion of the added control.[27] Furthermore, as in the full sample of households, the timing of the measurement for the previous racial climate's homeownership decision likely will not reflect the racial climate when they made the decision to rent or buy a home in the previous location.

Another potential concern in that the racial climate index could be picking up the influence of other features of an urban area such as racial segregation that differentially impact black households. To control for differences in racial composition/segregation within metro areas, we construct a dissimilarities index following Cutler and Glaeser (1997). We use 2010 Decennial Census data with racial counts at the census tract level, which proxies for neighborhoods.[28] Housing segregation in a metro area is defined as:

$$Housing\ Segregation = \frac{1}{2}\sum_{i=1}^{N}\left|\frac{Black_i}{Black} - \frac{White_i}{White}\right| \tag{2}$$

where $Black_i$ ($White_i$) is the number of blacks (whites) in census tract *i* and *Black* (*White*) is the number of blacks (whites) in the metro area. If blacks are evening distributed across the metro area, then the index would be zero. If there is complete segregation, then the index would be one. As reported in Table 4, the inclusion of this measure interacted with race does not alter the main finding and the interacted measure itself is not statistically significant. This finding indicates that racial segregation does not differentially impact blacks' rent versus own decision relative to whites.

As we are using search interest in very contemporaneous events the racial climate might be different for the earliest years of our sample. To test for this possibility, we split the sample between the earlier years (2005–2008) and the years directly preceding the Black Lives Matter movements (2009–2011). The last two columns of Table 4 present the results and once again there is a consistent negative relationship between the likelihood of homeownership for blacks and a poor racial climate. The results, however, are weakly statistically significant in the earlier sample but strongly statistically significant in the later sample. These findings provide greater support for looking at households in transition (movers) rather than the full sample as the racial climate or the impact of racial climate appears to change over time.

Lastly, we analyze the importance of the events included in the construction of the racial climate index. We run the main specification of movers repeatedly excluding one of the search topics from the construction of the index (leave-one-out approach) to analyze the influence on the main result. Table 5 presents the findings. There is still a significant impact of the racial climate on black homeownership in five out of six specifications, however, for the exclusion of the events surrounding Ferguson Missouri the coefficient becomes statistically insignificant. These results highlight some variability in the magnitude of the effect of racial climate depending on the inputs into the racial climate variable.

6. Conclusion

Innovations in creating data and measuring sentiment—via Google Trends—has opened up new possibilities for examining important issues, such as the role for chilling effects on behavior. The costly decision to own—and subsequently invest more in a community—is likely related to the community's amenities and disamenities. We show that negative race relations—as represented by public interest in well publicized policing incidents—significantly reduces minority home ownership in a community. The results vary by specification, but our preferred specification shows that blacks in the most charged racial climate purchase homes 5.6 percentage points less than those who reside in localities with the least charged racial climate from a base of 20.3% black homeownership. Not only does this imply that these households are not receiving the benefits of homeownership, but it also implies that black households are less likely to invest in their communities. (Fig. 2)

Our results, insofar as they capture problems with the criminal justice system, suggest that some recent proposals with bipartisan support to reform policing and sentencing may have larger social benefits beyond those directly aggrieved. Reforms in police tactics—-such as additional training, body cameras, and the use of outside agencies to investigate misconduct—have broad-based support (Ekins, 2016). The results suggest that efforts to reform police conduct could have the positive spillover of greater community investment. Furthermore, inasmuch as homeownership increases wealth accumulation, these policy reforms could help mitigate the overall racial wealth gap.

[27] The results from the specification without the control for the interaction of race and the previous racial climate restricted to the same sample yields a statistically significant point estimate of −8.2 percentage points.

[28] We use Summary File 1 (SF1) Urban-Rural Update files accessed through http://www.ciser.cornell.edu/pub/2010SF1/census2010sf1.shtm.

Appendix A

Table A.1
Google trends, race relations indexes (sorted desending based on all indices).

Metro area	Avg index	Police brutality	Black lives matter	Michael Brown	Ferguson unrest	Trayvon Martin	Freddie Gray	Tamir Rice
St. Louis, MO-IL	49	24	36	100	100	46	9	26
Salisbury, MD-DE	47	85	51	23	28	51	38	57
Baltimore-Columbia-Towson, MD	44	44	53	20	16	54	100	20
Tallahassee, FL	43	80	51	26	19	85	13	27
Valdosta, GA	43	80	51	26	19	85	13	27
Alexandria, LA	39	59	40	23	8	63	19	58
Hattiesburg, MS	38	51	47	50	5	100	4	9
Montgomery, AL	37	73	47	19	14	63	14	32
Virginia Beach-Norfolk-Newport News, VA-NC	36	49	56	24	14	56	22	35
Auburn-Opelika, AL	36	47	62	24	8	71	17	23
Columbus, GA-AL	36	47	62	24	8	71	17	23
Augusta-Richmond County, GA-SC	36	32	18	60	35	44	28	34
Greenville, NC	35	53	58	25	30	34	19	27
Jacksonville, NC	35	53	58	25	30	34	19	27
Memphis, TN-MS-AR	35	34	62	34	19	54	15	28
Columbia, MO	35	46	53	44	51	24	8	18
Jefferson City, MO	35	46	53	44	51	24	8	18
Baton Rouge, LA	34	27	53	30	13	85	11	19
Monroe, LA	34	41	44	18	16	71	20	25
Canton-Massillon, OH	33	29	22	22	14	37	6	100
Mansfield, OH	33	29	22	22	14	37	6	100
Cleveland-Elyria, OH	33	29	22	22	14	37	6	100
Akron, OH	33	29	22	22	14	37	6	100
Salinas, CA	32	100	44	11	4	39	9	19
Santa Cruz-Watsonville, CA	32	100	44	11	4	39	9	19
Cape Girardeau, MO-IL	32	27	67	30	41	34	13	13
Savannah, GA	32	59	36	18	14	63	13	21
Richmond, VA	32	47	64	22	10	46	13	20
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	32	34	44	34	23	37	23	26
Florence, SC	32	34	44	34	23	37	23	26
Beaumont-Port Arthur, TX	32	42	44	18	9	59	9	39
Springfield, MA	31	51	71	14	15	32	13	19
Albany, GA	31	36	67	19	1	78	6	6
Yuma, AZ	30	68	18	7	20	34	18	47
El Centro, CA	30	68	18	7	20	34	18	47
Columbia, SC	30	39	31	28	15	56	17	24
Sumter, SC	30	39	31	28	15	56	17	24
Youngstown-Warren-Boardman, OH-PA	30	31	36	19	9	39	9	65
Burlington, NC	29	34	47	18	15	49	15	27
Greensboro-High Point, NC	29	34	47	18	15	49	15	27
Winston-Salem, NC	29	34	47	18	15	49	15	27
Rockford, IL	29	46	47	18	34	34	12	14
Gadsden, AL	29	32	49	23	6	61	7	24
Tuscaloosa, AL	29	32	49	23	6	61	7	24
Birmingham-Hoover, AL	29	32	49	23	6	61	7	24
Anniston-Oxford-Jacksonville, AL	29	32	49	23	6	61	7	24
Lake Charles, LA	29	10	69	16	14	46	0	46
Wilmington, NC	29	46	42	19	9	46	20	19
Charleston-North Charleston, SC	29	29	60	27	11	54	13	6
Jackson, TN	28	25	40	27	19	22	12	54
Pine Bluff, AR	28	44	51	22	11	37	7	25
Little Rock-North Little Rock-Conway, AR	28	44	51	22	11	37	7	25
Hot Springs, AR	28	44	51	22	11	37	7	25
Minneapolis-St. Paul-Bloomington, MN-WI	28	29	100	11	11	24	6	15
St. Cloud, MN	28	29	100	11	11	24	6	15
New Orleans-Metairie, LA	28	24	42	26	16	59	12	18
Houma-Thibodaux, LA	28	24	42	26	16	59	12	18
Fayetteville, NC	28	39	40	19	13	51	8	23
Rocky Mount, NC	28	39	40	19	13	51	8	23
Goldsboro, NC	28	39	40	19	13	51	8	23
Durham-Chapel Hill, NC	28	39	40	19	13	51	8	23
Raleigh, NC	28	39	40	19	13	51	8	23
Lafayette, LA	28	32	40	18	10	51	8	33
Nashville-Davidson–Murfreesboro–Franklin, TN	27	25	36	22	16	59	13	22
Clarksville, TN-KY	27	25	36	22	16	59	13	22
Hickory-Lenoir-Morganton, NC	27	29	40	18	11	61	12	21
Charlotte-Concord-Gastonia, NC-SC	27	29	40	18	11	61	12	21
Orlando-Kissimmee-Sanford, FL	27	22	40	19	11	71	12	17
Deltona-Daytona Beach-Ormond Beach, FL	27	22	40	19	11	71	12	17

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Table A.1 (*continued*)

Metro area	Avg index	Police brutality	Black lives matter	Michael Brown	Ferguson unrest	Trayvon Martin	Freddie Gray	Tamir Rice
Palm Bay-Melbourne-Titusville, FL	27	22	40	19	11	71	12	17
Ocala, FL	27	22	40	19	11	71	12	17
Decatur, IL	27	39	53	25	18	34	7	15
Danville, IL	27	39	53	25	18	34	7	15
Champaign-Urbana, IL	27	39	53	25	18	34	7	15
Springfield, IL	27	39	53	25	18	34	7	15
Atlanta-Sandy Springs-Roswell, GA	27	22	44	22	11	59	9	23
Athens-Clarke County, GA	27	22	44	22	11	59	9	23
Gainesville, GA	27	22	44	22	11	59	9	23
Rome, GA	27	22	44	22	11	59	9	23
Panama City, FL	27	32	27	20	24	54	7	26
Texarkana, TX-AR	27	36	73	8	10	46	3	13
Shreveport-Bossier City, LA	27	36	73	8	10	46	3	13
Dover, DE	27	39	31	20	13	49	17	18
Trenton, NJ	27	39	31	20	13	49	17	18
Reading, PA	27	39	31	20	13	49	17	18
Atlantic City-Hammonton, NJ	27	39	31	20	13	49	17	18
Ocean City, NJ	27	39	31	20	13	49	17	18
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	27	39	31	20	13	49	17	18
Allentown-Bethlehem-Easton, PA-NJ	27	39	31	20	13	49	17	18
Vineland-Bridgeton, NJ	27	39	31	20	13	49	17	18
Wheeling, WV-OH	27	66	13	8	20	41	16	21
Kingston, NY	26	41	38	20	10	39	12	23
New York-Newark-Jersey City, NY-NJ-PA	26	41	38	20	10	39	12	23
Bridgeport-Stamford-Norwalk, CT	26	41	38	20	10	39	12	23
Madera, CA	26	44	18	28	21	24	26	20
Visalia-Porterville, CA	26	44	18	28	21	24	26	20
Fresno, CA	26	44	18	28	21	24	26	20
Hanford-Corcoran, CA	26	44	18	28	21	24	26	20
Merced, CA	26	44	18	28	21	24	26	20
Topeka, KS	26	19	47	33	25	29	6	22
Manhattan, KS	26	19	47	33	25	29	6	22
Toledo, OH	26	42	42	15	14	27	11	29
Syracuse, NY	26	44	53	16	14	29	6	17
Ithaca, NY	26	44	53	16	14	29	6	17
Warner Robins, GA	25	36	33	17	1	54	15	22
Macon-Bibb County, GA	25	36	33	17	1	54	15	22
Utica-Rome, NY	25	46	33	16	14	32	13	24
Crestview-Fort Walton Beach-Destin, FL	25	17	44	30	18	46	7	15
Mobile, AL	25	17	44	30	18	46	7	15
Pensacola-Ferry Pass-Brent, FL	25	17	44	30	18	46	7	15
Providence-Warwick, RI-MA	25	49	47	19	10	24	11	15
Bakersfield, CA	25	42	49	16	8	39	4	16
Jackson, MS	25	36	49	11	11	54	5	7
Winchester, VA-WV	25	31	33	18	10	39	23	19
Cumberland, MD-WV	25	31	33	18	10	39	23	19
Washington-Arlington-Alexandria, DC-VA-MD-WV	25	31	33	18	10	39	23	19
Hagerstown-Martinsburg, MD-WV	25	31	33	18	10	39	23	19
Joplin, MO	25	12	49	18	29	22	0	43
Dothan, AL	25	32	33	19	11	44	14	19
Buffalo-Cheektowaga-Niagara Falls, NY	25	51	31	17	13	27	13	21
Monroe, MI	24	34	38	16	11	41	7	22
Detroit-Warren-Dearborn, MI	24	34	38	16	11	41	7	22
Ann Arbor, MI	24	34	38	16	11	41	7	22
Kankakee, IL	24	34	40	20	11	41	7	15
Michigan City-La Porte, IN	24	34	40	20	11	41	7	15
Chicago-Naperville-Elgin, IL-IN-WI	24	34	40	20	11	41	7	15
Gainesville, FL	24	25	22	15	11	61	12	22
Naples-Immokalee-Marco Island, FL	24	22	27	20	16	54	8	18
Cape Coral-Fort Myers, FL	24	22	27	20	16	54	8	18
Punta Gorda, FL	24	22	27	20	16	54	8	18
Columbus, IN	24	41	27	20	13	34	9	21
Indianapolis-Carmel-Anderson, IN	24	41	27	20	13	34	9	21
Bloomington, IN	24	41	27	20	13	34	9	21
Kokomo, IN	24	41	27	20	13	34	9	21
Muncie, IN	24	41	27	20	13	34	9	21
Reno, NV	23	46	42	15	18	20	16	8
Carson City, NV	23	46	42	15	18	20	16	8
Decatur, AL	23	15	38	28	15	37	6	24
Florence-Muscle Shoals, AL	23	15	38	28	15	37	6	24
Huntsville, AL	23	15	38	28	15	37	6	24
Charlottesville, VA	23	19	40	20	16	29	16	22
Columbus, OH	23	27	33	19	9	32	9	33
Cincinnati, OH-KY-IN	23	25	44	20	11	27	11	23

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Table A.1 (*continued*)

Metro area	Avg index	Police brutality	Black lives matter	Michael Brown	Ferguson unrest	Trayvon Martin	Freddie Gray	Tamir Rice
Fort Smith, AR-OK	23	27	64	13	9	29	4	16
Fayetteville-Springdale-Rogers, AR-MO	23	27	64	13	9	29	4	16
Oklahoma City, OK	23	24	27	23	20	32	23	13
Gulfport-Biloxi-Pascagoula, MS	23	27	47	18	5	46	1	15
Asheville, NC	23	31	40	16	6	37	8	21
Greenville-Anderson-Mauldin, SC	23	31	40	16	6	37	8	21
Spartanburg, SC	23	31	40	16	6	37	8	21
Lansing-East Lansing, MI	23	47	29	17	8	34	6	17
Jackson, MI	23	47	29	17	8	34	6	17
Brunswick, GA	22	17	20	16	10	68	9	17
Jacksonville, FL	22	17	20	16	10	68	9	17
Springfield, MO	22	32	31	19	31	15	13	16
Houston-The Woodlands-Sugar Land, TX	22	27	29	22	8	39	11	21
Springfield, OH	22	36	36	13	11	37	5	19
Dayton, OH	22	36	36	13	11	37	5	19
Harrisonburg, VA	22	37	7	23	25	29	16	19
Lincoln, NE	22	41	49	11	18	12	9	15
Rochester, NY	22	47	40	11	13	22	6	15
Bloomington, IL	22	37	36	19	14	20	9	19
Peoria, IL	22	37	36	19	14	20	9	19
Chattanooga, TN-GA	22	37	40	10	8	34	9	15
Dalton, GA	22	37	40	10	8	34	9	15
Cleveland, TN	22	37	40	10	8	34	9	15
Burlington-South Burlington, VT	22	25	67	10	9	15	5	21
Tucson, AZ	22	34	33	14	13	22	11	25
Bremerton-Silverdale, WA	22	29	42	14	16	24	7	18
Mount Vernon-Anacortes, WA	22	29	42	14	16	24	7	18
Olympia-Tumwater, WA	22	29	42	14	16	24	7	18
Wenatchee, WA	22	29	42	14	16	24	7	18
Bellingham, WA	22	29	42	14	16	24	7	18
Seattle-Tacoma-Bellevue, WA	22	29	42	14	16	24	7	18
Saginaw, MI	21	44	18	15	3	51	7	13
Flint, MI	21	44	18	15	3	51	7	13
Bay City, MI	21	44	18	15	3	51	7	13
Louisville/Jefferson County, KY-IN	21	27	20	27	19	27	15	15
Elizabethtown-Fort Knox, KY	21	27	20	27	19	27	15	15
Sheboygan, WI	21	39	33	13	14	32	6	13
Racine, WI	21	39	33	13	14	32	6	13
Milwaukee-Waukesha-West Allis, WI	21	39	33	13	14	32	6	13
State College, PA	21	29	40	11	14	29	6	19
Johnstown, PA	21	29	40	11	14	29	6	19
Altoona, PA	21	29	40	11	14	29	6	19
Muskegon, MI	21	36	38	14	11	29	4	16
Grand Rapids-Wyoming, MI	21	36	38	14	11	29	4	16
Kalamazoo-Portage, MI	21	36	38	14	11	29	4	16
Battle Creek, MI	21	36	38	14	11	29	4	16
Lubbock, TX	21	39	36	16	13	24	6	14
Omaha-Council Bluffs, NE-IA	21	22	40	16	10	27	14	18
Erie, PA	21	34	47	18	5	20	9	13
Las Vegas-Henderson-Paradise, NV	21	25	40	15	9	34	8	14
Hartford-West Hartford-East Hartford, CT	21	37	36	11	8	29	5	19
Norwich-New London, CT	21	37	36	11	8	29	5	19
New Haven-Milford, CT	21	37	36	11	8	29	5	19
Miami-Fort Lauderdale-West Palm Beach, FL	21	22	13	11	3	73	5	17
Riverside-San Bernardino-Ontario, CA	20	37	27	17	9	37	5	12
Los Angeles-Long Beach-Anaheim, CA	20	37	27	17	9	37	5	12
Oxnard-Thousand Oaks-Ventura, CA	20	37	27	17	9	37	5	12
Kansas City, MO-KS	20	20	13	26	25	37	4	17
Lawrence, KS	20	20	13	26	25	37	4	17
Tampa-St. Petersburg-Clearwater, FL	20	17	33	11	9	49	12	12
Lakeland-Winter Haven, FL	20	17	33	11	9	49	12	12
North Port-Sarasota-Bradenton, FL	20	17	33	11	9	49	12	12
Kennewick-Richland, WA	20	44	38	9	21	10	7	13
Yakima, WA	20	44	38	9	21	10	7	13
Waco, TX	20	29	36	18	11	29	8	9
College Station-Bryan, TX	20	29	36	18	11	29	8	9
Killeen-Temple, TX	20	29	36	18	11	29	8	9
Eugene, OR	20	32	44	9	19	20	3	14
Lancaster, PA	20	27	24	13	18	27	18	13
Lebanon, PA	20	27	24	13	18	27	18	13
Harrisburg-Carlisle, PA	20	27	24	13	18	27	18	13
York-Hanover, PA	20	27	24	13	18	27	18	13
San Antonio-New Braunfels, TX	20	20	24	11	8	63	6	5
Madison, WI	20	32	44	11	10	17	6	17

(*continued on next page*)

Table A.1 (*continued*)

Metro area	Avg index	Police brutality	Black lives matter	Michael Brown	Ferguson unrest	Trayvon Martin	Freddie Gray	Tamir Rice
Janesville-Beloit, WI	20	32	44	11	10	17	6	17
San Diego-Carlsbad, CA	20	36	18	18	15	29	8	14
Boston-Cambridge-Newton, MA-NH	20	27	40	15	9	22	8	16
Manchester-Nashua, NH	20	27	40	15	9	22	8	16
Worcester, MA-CT	20	27	40	15	9	22	8	16
Barnstable Town, MA	20	27	40	15	9	22	8	16
Austin-Round Rock, TX	19	27	24	14	11	37	8	15
Colorado Springs, CO	19	34	27	16	14	27	8	11
Pueblo, CO	19	34	27	16	14	27	8	11
Morgantown, WV	19	29	22	14	11	27	13	19
Pittsburgh, PA	19	29	22	14	11	27	13	19
Coeur dAlene, ID	19	37	33	14	11	22	6	9
Lewiston, ID-WA	19	37	33	14	11	22	6	9
Spokane-Spokane Valley, WA	19	37	33	14	11	22	6	9
Wichita, KS	19	25	22	27	16	24	6	11
Lawton, OK	19	24	40	13	14	22	13	7
Wichita Falls, TX	19	24	40	13	14	22	13	7
Knoxville, TN	19	20	16	15	16	39	7	18
Morristown, TN	19	20	16	15	16	39	7	18
Greeley, CO	19	37	24	16	15	22	5	11
Denver-Aurora-Lakewood, CO	19	37	24	16	15	22	5	11
Fort Collins, CO	19	37	24	16	15	22	5	11
Boulder, CO	19	37	24	16	15	22	5	11
Kingsport-Bristol-Bristol, TN-VA	19	29	56	8	10	20	8	0
Johnson City, TN	19	29	56	8	10	20	8	0
Davenport-Moline-Rock Island, IA-IL	18	34	20	17	21	20	8	7
Longview, TX	18	17	27	16	14	24	13	17
Tyler, TX	18	17	27	16	14	24	13	17
Fort Wayne, IN	18	39	22	14	8	22	7	15
Williamsport, PA	18	37	31	13	9	20	9	7
Scranton–Wilkes-Barre–Hazleton, PA	18	37	31	13	9	20	9	7
Pittsfield, MA	18	44	20	10	8	20	7	17
Glens Falls, NY	18	44	20	10	8	20	7	17
Albany-Schenectady-Troy, NY	18	44	20	10	8	20	7	17
Binghamton, NY	18	34	29	10	3	27	7	15
Bangor, ME	17	32	29	11	13	5	5	27
Prescott, AZ	17	32	22	13	9	24	6	16
Lake Havasu City-Kingman, AZ	17	32	22	13	9	24	6	16
Phoenix-Mesa-Scottsdale, AZ	17	32	22	13	9	24	6	16
Flagstaff, AZ	17	32	22	13	9	24	6	16
Modesto, CA	17	32	18	13	13	27	5	15
Stockton-Lodi, CA	17	32	18	13	13	27	5	15
Sacramento–Roseville–Arden-Arcade, CA	17	32	18	13	13	27	5	15
Vallejo-Fairfield, CA	17	32	18	13	13	27	5	15
Yuba City, CA	17	32	18	13	13	27	5	15
Medford, OR	17	34	44	2	20	15	3	3
Las Cruces, NM	17	61	18	6	6	17	6	7
El Paso, TX	17	61	18	6	6	17	6	7
Amarillo, TX	17	41	27	9	13	17	7	7
Iowa City, IA	17	29	27	15	10	24	8	7
Waterloo-Cedar Falls, IA	17	29	27	15	10	24	8	7
Cedar Rapids, IA	17	29	27	15	10	24	8	7
Dubuque, IA	17	29	27	15	10	24	8	7
Chico, CA	17	24	27	7	6	29	8	19
Redding, CA	17	24	27	7	6	29	8	19
Dallas-Fort Worth-Arlington, TX	17	20	24	14	8	37	5	12
Urban Honolulu, HI	17	29	13	24	14	15	5	18
Corpus Christi, TX	17	47	7	13	18	22	3	7
Wausau, WI	17	27	29	9	13	12	8	18
South Bend-Mishawaka, IN-MI	17	36	16	10	8	34	1	12
Niles-Benton Harbor, MI	17	36	16	10	8	34	1	12
Elkhart-Goshen, IN	17	36	16	10	8	34	1	12
Lexington-Fayette, KY	16	24	27	11	10	24	8	11
Lewiston-Auburn, ME	16	36	33	11	5	10	8	12
Portland-South Portland, ME	16	36	33	11	5	10	8	12
Rochester, MN	16	34	53	3	5	10	1	8
Grand Forks, ND-MN	16	8	60	11	4	12	3	16
Fargo, ND-MN	16	8	60	11	4	12	3	16
La Crosse-Onalaska, WI-MN	16	29	33	9	18	15	5	5
Eau Claire, WI	16	29	33	9	18	15	5	5
Santa Maria-Santa Barbara, CA	16	27	27	15	10	20	8	6
San Luis Obispo-Paso Robles-Arroyo Grande, CA	16	27	27	15	10	20	8	6
Missoula, MT	16	17	36	15	15	20	5	4
San Francisco-Oakland-Hayward, CA	16	29	20	13	10	20	6	14

(*continued on next page*)

Table A.1 (*continued*)

Metro area	Avg index	Police brutality	Black lives matter	Michael Brown	Ferguson unrest	Trayvon Martin	Freddie Gray	Tamir Rice
Santa Rosa, CA	16	29	20	13	10	20	6	14
Napa, CA	16	29	20	13	10	20	6	14
San Jose-Sunnyvale-Santa Clara, CA	16	29	20	13	10	20	6	14
Huntington-Ashland, WV-KY-OH	16	31	24	11	11	20	7	6
Charleston, WV	16	31	24	11	11	20	7	6
Sebastian-Vero Beach, FL	16	19	2	11	6	61	3	7
Port St. Lucie, FL	16	19	2	11	6	61	3	7
Farmington, NM	16	41	24	8	10	20	4	2
Santa Fe, NM	16	41	24	8	10	20	4	2
Albuquerque, NM	16	41	24	8	10	20	4	2
Bismarck, ND	15	24	20	3	24	15	5	14
Owensboro, KY	15	19	13	14	21	22	13	1
Evansville, IN-KY	15	19	13	14	21	22	13	1
Green Bay, WI	14	31	20	10	10	17	5	7
Fond du Lac, WI	14	31	20	10	10	17	5	7
Appleton, WI	14	31	20	10	10	17	5	7
Ames, IA	14	24	18	10	13	17	6	12
Des Moines-West Des Moines, IA	14	24	18	10	13	17	6	12
Midland, TX	14	17	29	10	4	12	9	16
Odessa, TX	14	17	29	10	4	12	9	16
Boise City, ID	13	24	31	8	5	10	5	9
St. George, UT	12	19	22	8	9	15	7	4
Logan, UT-ID	12	19	22	8	9	15	7	4
Salt Lake City, UT	12	19	22	8	9	15	7	4
Provo-Orem, UT	12	19	22	8	9	15	7	4
Ogden-Clearfield, UT	12	19	22	8	9	15	7	4
Duluth, MN-WI	12	7	42	3	8	17	2	2
Tulsa, OK	11	10	13	11	8	15	7	12
Anchorage, AK	11	2	18	3	8	24	4	16
Sioux Falls, SD	11	20	27	7	3	7	4	6
Brownsville-Harlingen, TX	9	31	4	8	0	10	1	8
McAllen-Edinburg-Mission, TX	9	31	4	8	0	10	1	8
Salem, OR	8	12	16	2	6	7	2	13
Portland-Vancouver-Hillsboro, OR-WA	8	12	16	2	6	7	2	13
Longview, WA	8	12	16	2	6	7	2	13
Roanoke, VA	2	0	0	0	3	7	4	3
Lynchburg, VA	2	0	0	0	3	7	4	3
Blacksburg-Christiansburg-Radford, VA	2	0	0	0	3	7	4	3

Note: Variation in Google Trends metrics is available at the Designated Market Area level, which we translate to the metro area level. The table includes metro areas used in the main analysis that do not contain missing values for any of the metrics listed. For purposes of the table only, the indexes were normalized to range from 0 to 100. Data from Google Trends was extracted on 3/7/17.

Table A.2
Robustness check: alternative quantiles.

	Full		Young		Movers	
	(1)	(2)	(3)	(4)	(5)	(6)
$Black_i$ × Aggregate Index GT Top $Tercile_j$	−0.017 (0.011)		−.026** (0.011)		−.025* (0.015)	
$Black_i$ × Aggregate Index GT Top $Quintile_j$		−.023* (0.012)		−.061*** (0.018)		−.073*** (0.018)
Obs.	3,709,054	1,684,649	635,352	303,756	99,473	44,273

Note: Dependent variable is homeownership. The full sample includes white or black headed households from the ACS in years 2005–2011. The sample is restricted to households that live in areas that fall into the upper and lower quantiles (either tercile or quintile respectively) for the Aggregate Index of racial climate. Controls included but not reported include age, race, education, marital status, child present, metro level characteristics, interactions of metro characteristics and race, CBSA fixed effects, and year fixed effects. Aggregate Index for Racial Climate uses the following Google Search Terms/Topics: Police Brutality, Black Lives Matter, Shooting of Michael Brown, Ferguson Unrest, Trayvon Martin, Death of Freddie Gray and Shooting of Tamir Rice. Standard errors are clustered at the DMA level and are shown in parentheses *** $p < .01$, ** $p < .05$, * $p < .1$.

Table A.3
Influence of metro controls by race interactions: Gelbach decomposition.

Racial climate index point estimate:	Young	Across metro movers
Without Interactions	−0.018	−0.019
	(0.028)	(0.024)
With Interactions	−.042***	−.056***
	(0.024)	(0.016)
Gelbach Decomposition		
$Black_i$ ×		
Percent $Black_j$	−.038***	−.045**
	(0.012)	(0.018)
Log $Population_j$ (100)	−0.005	−0.007
	(0.007)	(0.006)
Crime $Rates_{j,\ t}$ (Z-score)	−0.005	0.001
	(0.003)	(0.004)
FHFA $HPI_{j,\ t}$ (100)	−0.001	−0.002
	(0.002)	(0.003)
$FMR_{j,\ t}$	0.023	0.024
	(0.021)	(0.023)
Income-to-poverty $ratio_j$	0.002	−0.009
	(0.009)	(0.014)
Share $manufacturing_{j,\ t}$	0.000	0.001
	(0.002)	(0.002)

Note: Numbers reported reflect the influence of each covariate in the change of the Race Relations coefficient from the model without metro controls by race interactions to the full specification using a technique described in Glebach (2016). Essentially, we estimate omitted variable bias on the coefficient of interest (in this case Racial Climate) from the exclusion of each control one at a time. The sum of an individual column in the lower panel will fully describe the change in the point estimate across the two models (shown in the top panel). Standard errors are shown in parentheses *** p < .01, ** p < .05, * p < .1.

Table A.4
Determinants of homeownership.

	Coeff.	R^2 if Omitted
Black	−.165***	0.181
	(0.000)	
Age 35–54	.211***	0.145
	(0.000)	
Age 55+	.328***	
	(0.000)	
Married	.140***	0.174
	(0.000)	
Has Child	.031***	0.196
	(0.000)	
High School or less	−.003***	0.196
	(0.000)	
Household Income 2nd Quartile	.128***	0.163
	(0.000)	
Household Income 3rd Quartile	.198***	
	(0.000)	
Household Income 4th Quartile	.234***	
	(0.000)	
Obs.	11,104,464	
R-Squared	0.196	

Note: Sample consists of non-movers in the ACS from 2005 to 2015. Standard errors are shown in parentheses *** p < .01, ** p < .05, * p < .1.

Table A.5
DMA to CBSA crosswalk.

DMA	CBSA
Abilene-Sweetwater TX	Brownwood, TX
Abilene-Sweetwater TX	Sweetwater, TX
Abilene-Sweetwater TX	Snyder, TX
Abilene-Sweetwater TX	Abilene, TX
Albany GA	Albany, GA
Albany GA	Cordele, GA
Albany GA	Fitzgerald, GA
Albany GA	Tifton, GA
Albany GA	Douglas, GA
Albany GA	Moultrie, GA

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Table A.5 (*continued*)

DMA	CBSA
Albany-Schenectady-Troy NY	Bennington, VT
Albany-Schenectady-Troy NY	Albany-Schenectady-Troy, NY
Albany-Schenectady-Troy NY	Gloversville, NY
Albany-Schenectady-Troy NY	Pittsfield, MA
Albany-Schenectady-Troy NY	Glens Falls, NY
Albany-Schenectady-Troy NY	Hudson, NY
Albany-Schenectady-Troy NY	Amsterdam, NY
Albuquerque-Santa Fe NM	Grants, NM
Albuquerque-Santa Fe NM	Farmington, NM
Albuquerque-Santa Fe NM	Los Alamos, NM
Albuquerque-Santa Fe NM	Durango, CO
Albuquerque-Santa Fe NM	Albuquerque, NM
Albuquerque-Santa Fe NM	Silver City, NM
Albuquerque-Santa Fe NM	Gallup, NM
Albuquerque-Santa Fe NM	Alamogordo, NM
Albuquerque-Santa Fe NM	Carlsbad-Artesia, NM
Albuquerque-Santa Fe NM	Santa Fe, NM
Albuquerque-Santa Fe NM	Hobbs, NM
Albuquerque-Santa Fe NM	Taos, NM
Albuquerque-Santa Fe NM	Las Vegas, NM
Albuquerque-Santa Fe NM	Deming, NM
Albuquerque-Santa Fe NM	Espaola, NM
Albuquerque-Santa Fe NM	Roswell, NM
Alexandria LA	Fort Polk South, LA
Alexandria LA	Alexandria, LA
Alpena MI	Alpena, MI
Amarillo TX	Portales, NM
Amarillo TX	Dumas, TX
Amarillo TX	Amarillo, TX
Amarillo TX	Hereford, TX
Amarillo TX	Borger, TX
Amarillo TX	Pampa, TX
Amarillo TX	Clovis, NM
Amarillo TX	Guymon, OK
Anchorage AK	Anchorage, AK
Atlanta GA	Athens-Clarke County, GA
Atlanta GA	Atlanta-Sandy Springs-Roswell, GA
Atlanta GA	Gainesville, GA
Atlanta GA	Cedartown, GA
Atlanta GA	Thomaston, GA
Atlanta GA	Rome, GA
Atlanta GA	Calhoun, GA
Atlanta GA	LaGrange, GA
Atlanta GA	Cornelia, GA
Atlanta GA	Jefferson, GA
Augusta GA	Augusta-Richmond County, GA-SC
Augusta GA	Augusta-Richmond County, GA-SC
Austin TX	Austin-Round Rock, TX
Austin TX	Fredericksburg, TX
Bakersfield CA	Bakersfield, CA
Baltimore MD	Baltimore-Columbia-Towson, MD
Baltimore MD	Easton, MD
Baltimore MD	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Bangor ME	Bangor, ME
Baton Rouge LA	Baton Rouge, LA
Baton Rouge LA	McComb, MS
Baton Rouge LA	Morgan City, LA
Beaumont-Port Arthur TX	Beaumont-Port Arthur, TX
Bend OR	Bend-Redmond, OR
Billings, Mount	Billings, MT
Biloxi-Gulfport MS	Gulfport-Biloxi-Pascagoula, MS
Binghamton NY	Binghamton, NY
Birmingham AL	Tuscaloosa, AL
Birmingham AL	Birmingham-Hoover, AL
Birmingham AL	Anniston-Oxford-Jacksonville, AL
Birmingham AL	Gadsden, AL
Birmingham AL	Talladega-Sylacauga, AL
Birmingham AL	Cullman, AL
Bluefield-Beckley-Oak Hill WV	Bluefield, WV-VA
Bluefield-Beckley-Oak Hill WV	Bluefield, WV-VA
Bluefield-Beckley-Oak Hill WV	Beckley, WV
Boise ID	Boise City, ID
Boise ID	Mountain Home, ID
Boise ID	Hailey, ID

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Table A.5 (*continued*)

DMA	CBSA
Boise ID	Ontario, OR-ID
Boise ID	Ontario, OR-ID
Boston MA-Manchester NH	Boston-Cambridge-Newton, MA-NH
Boston MA-Manchester NH	Manchester-Nashua, NH
Boston MA-Manchester NH	Barnstable Town, MA
Boston MA-Manchester NH	Worcester, MA-CT
Boston MA-Manchester NH	Laconia, NH
Boston MA-Manchester NH	Vineyard Haven, MA
Boston MA-Manchester NH	Boston-Cambridge-Newton, MA-NH
Boston MA-Manchester NH	Keene, NH
Boston MA-Manchester NH	Concord, NH
Bowling Green KY	Bowling Green, KY
Bowling Green KY	Glasgow, KY
Buffalo NY	Olean, NY
Buffalo NY	Jamestown-Dunkirk-Fredonia, NY
Buffalo NY	Rochester, NY
Buffalo NY	Buffalo-Cheektowaga-Niagara Falls, NY
Buffalo NY	Batavia, NY
Buffalo NY	Bradford, PA
Burlington VT-Plattsburgh NY	Berlin, NH-VT
Burlington VT-Plattsburgh NY	Burlington-South Burlington, VT
Burlington VT-Plattsburgh NY	Claremont-Lebanon, NH-VT
Burlington VT-Plattsburgh NY	Plattsburgh, NY
Burlington VT-Plattsburgh NY	Rutland, VT
Burlington VT-Plattsburgh NY	Claremont-Lebanon, NH-VT
Burlington VT-Plattsburgh NY	Malone, NY
Burlington VT-Plattsburgh NY	Barre, VT
Butte-Bozeman Mount	Bozeman, MT
Butte-Bozeman Mount	Helena, MT
Butte-Bozeman Mount	Butte-Silver Bow, MT
Casper-Riverton WY	Riverton, WY
Casper-Riverton WY	Casper, WY
Cedar Rapids-Waterloo-Iowa City & Dubuque IA	Waterloo-Cedar Falls, IA
Cedar Rapids-Waterloo-Iowa City & Dubuque IA	Iowa City, IA
Cedar Rapids-Waterloo-Iowa City & Dubuque IA	Dubuque, IA
Cedar Rapids-Waterloo-Iowa City & Dubuque IA	Cedar Rapids, IA
Champaign & Springfield-Decatur IL	Effingham, IL
Champaign & Springfield-Decatur IL	Champaign-Urbana, IL
Champaign & Springfield-Decatur IL	Lincoln, IL
Champaign & Springfield-Decatur IL	Decatur, IL
Champaign & Springfield-Decatur IL	Charleston-Mattoon, IL
Champaign & Springfield-Decatur IL	Taylorville, IL
Champaign & Springfield-Decatur IL	Springfield, IL
Champaign & Springfield-Decatur IL	Jacksonville, IL
Champaign & Springfield-Decatur IL	Danville, IL
Champaign & Springfield-Decatur IL	Bloomington, IL
Charleston SC	Georgetown, SC
Charleston SC	Charleston-North Charleston, SC
Charleston-Huntington WV	Jackson, OH
Charleston-Huntington WV	Logan, WV
Charleston-Huntington WV	Charleston, WV
Charleston-Huntington WV	Athens, OH
Charleston-Huntington WV	Huntington-Ashland, WV-KY-OH
Charleston-Huntington WV	Huntington-Ashland, WV-KY-OH
Charleston-Huntington WV	Huntington-Ashland, WV-KY-OH
Charleston-Huntington WV	Portsmouth, OH
Charleston-Huntington WV	Parkersburg-Vienna, WV
Charleston-Huntington WV	Point Pleasant, WV-OH
Charleston-Huntington WV	Point Pleasant, WV-OH
Charlotte NC	Hickory-Lenoir-Morganton, NC
Charlotte NC	Charlotte-Concord-Gastonia, NC-SC

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Table A.5 (*continued*)

DMA	CBSA
Charlotte NC	Rockingham, NC
Charlotte NC	Boone, NC
Charlotte NC	Charlotte-Concord-Gastonia, NC-SC
Charlotte NC	Albemarle, NC
Charlotte NC	Shelby, NC
Charlottesville VA	Charlottesville, VA
Chattanooga TN	Chattanooga, TN-GA
Chattanooga TN	Summerville, GA
Chattanooga TN	Dalton, GA
Chattanooga TN	Cleveland, TN
Chattanooga TN	Chattanooga, TN-GA
Chattanooga TN	Dayton, TN
Chattanooga TN	Athens, TN
Cheyenne WY-Scottsbluff NE	Cheyenne, WY
Cheyenne WY-Scottsbluff NE	Scottsbluff, NE
Chicago IL	Chicago-Naperville-Elgin, IL-IN-WI
Chicago IL	Chicago-Naperville-Elgin, IL-IN-WI
Chicago IL	Michigan City-La Porte, IN
Chicago IL	Ottawa-Peru, IL
Chicago IL	Kankakee, IL
Chico-Redding CA	Redding, CA
Chico-Redding CA	Chico, CA
Chico-Redding CA	Red Bluff, CA
Cincinnati OH	Cincinnati, OH-KY-IN
Cincinnati OH	Cincinnati, OH-KY-IN
Cincinnati OH	Cincinnati, OH-KY-IN
Cincinnati OH	Maysville, KY
Cincinnati OH	Wilmington, OH
Clarksburg-Weston WV	Clarksburg, WV
Clarksburg-Weston WV	Elkins, WV
Clarksburg-Weston WV	Fairmont, WV
Cleveland-Akron (Canton) OH	Ashtabula, OH
Cleveland-Akron (Canton) OH	Ashland, OH
Cleveland-Akron (Canton) OH	Cleveland-Elyria, OH
Cleveland-Akron (Canton) OH	Akron, OH
Cleveland-Akron (Canton) OH	Canton-Massillon, OH
Cleveland-Akron (Canton) OH	Mansfield, OH
Cleveland-Akron (Canton) OH	Norwalk, OH
Cleveland-Akron (Canton) OH	New Philadelphia-Dover, OH
Cleveland-Akron (Canton) OH	Wooster, OH
Cleveland-Akron (Canton) OH	Sandusky, OH
Colorado Springs-Pueblo CO	Caon City, CO
Colorado Springs-Pueblo CO	Colorado Springs, CO
Colorado Springs-Pueblo CO	Pueblo, CO
Columbia SC	Columbia, SC
Columbia SC	Newberry, SC
Columbia SC	Orangeburg, SC
Columbia SC	Sumter, SC
Columbia-Jefferson City MO	Jefferson City, MO
Columbia-Jefferson City MO	Mexico, MO
Columbia-Jefferson City MO	Columbia, MO
Columbia-Jefferson City MO	Moberly, MO
Columbus GA	Columbus, GA-AL
Columbus GA	Auburn-Opelika, AL
Columbus GA	Columbus, GA-AL
Columbus GA	Americus, GA
Columbus GA	Valley, AL
Columbus OH	Columbus, OH
Columbus OH	Mount Vernon, OH
Columbus OH	Washington Court House, OH
Columbus OH	Bucyrus, OH
Columbus OH	Cambridge, OH
Columbus OH	Coshocton, OH
Columbus OH	Chillicothe, OH
Columbus OH	Marion, OH
Columbus-Tupelo-West Point MS	Columbus, MS
Columbus-Tupelo-West Point MS	Tupelo, MS
Columbus-Tupelo-West Point MS	Starkville, MS
Corpus Christi TX	Corpus Christi, TX
Corpus Christi TX	Kingsville, TX
Corpus Christi TX	Alice, TX
Corpus Christi TX	Beeville, TX

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Table A.5 (*continued*)

DMA	CBSA
Dallas-Ft. Worth TX	Dallas-Fort Worth-Arlington, TX
Dallas-Ft. Worth TX	Mineral Wells, TX
Dallas-Ft. Worth TX	Paris, TX
Dallas-Ft. Worth TX	Corsicana, TX
Dallas-Ft. Worth TX	Stephenville, TX
Dallas-Ft. Worth TX	Gainesville, TX
Dallas-Ft. Worth TX	Athens, TX
Dallas-Ft. Worth TX	Sulphur Springs, TX
Dallas-Ft. Worth TX	Palestine, TX
Davenport IA-Rock Island-Moline IL	Davenport-Moline-Rock Island, IA-IL
Davenport IA-Rock Island-Moline IL	Galesburg, IL
Davenport IA-Rock Island-Moline IL	Ottawa-Peru, IL
Davenport IA-Rock Island-Moline IL	Muscatine, IA
Davenport IA-Rock Island-Moline IL	Burlington, IA-IL
Davenport IA-Rock Island-Moline IL	Burlington, IA-IL
Davenport IA-Rock Island-Moline IL	Davenport-Moline-Rock Island, IA-IL
Davenport IA-Rock Island-Moline IL	Sterling, IL
Davenport IA-Rock Island-Moline IL	Clinton, IA
Dayton OH	Dayton, OH
Dayton OH	Urbana, OH
Dayton OH	Springfield, OH
Dayton OH	Bellefontaine, OH
Dayton OH	Richmond, IN
Dayton OH	Sidney, OH
Dayton OH	Greenville, OH
Dayton OH	Celina, OH
Denver CO	Fort Collins, CO
Denver CO	Denver-Aurora-Lakewood, CO
Denver CO	Sterling, CO
Denver CO	Craig, CO
Denver CO	Steamboat Springs, CO
Denver CO	Gillette, WY
Denver CO	Greeley, CO
Denver CO	Glenwood Springs, CO
Denver CO	Laramie, WY
Denver CO	Breckenridge, CO
Denver CO	Boulder, CO
Denver CO	Fort Morgan, CO
Denver CO	Edwards, CO
Des Moines-Ames IA	Des Moines-West Des Moines, IA
Des Moines-Ames IA	Boone, IA
Des Moines-Ames IA	Ames, IA
Des Moines-Ames IA	Marshalltown, IA
Des Moines-Ames IA	Fort Dodge, IA
Des Moines-Ames IA	Newton, IA
Des Moines-Ames IA	Oskaloosa, IA
Detroit MI	Ann Arbor, MI
Detroit MI	Detroit-Warren-Dearborn, MI
Detroit MI	Monroe, MI
Dothan AL	Dothan, AL
Dothan AL	Enterprise, AL
Dothan AL	Ozark, AL
Duluth MN-Superior WI	Duluth, MN-WI
Duluth MN-Superior WI	Duluth, MN-WI
El Paso TX	El Paso, TX
El Paso TX	Las Cruces, NM
Elmira NY	Elmira, NY
Elmira NY	Corning, NY
Erie PA	Meadville, PA
Erie PA	Erie, PA
Erie PA	Warren, PA
Eugene OR	Eugene, OR
Eugene OR	Corvallis, OR
Eugene OR	Roseburg, OR
Eugene OR	Coos Bay, OR
Eureka CA	Eureka-Arcata-Fortuna, CA

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Table A.5 (*continued*)

DMA	CBSA
Eureka CA	Crescent City, CA
Evansville IN	Evansville, IN-KY
Evansville IN	Owensboro, KY
Evansville IN	Jasper, IN
Evansville IN	Evansville, IN-KY
Evansville IN	Madisonville, KY
Fairbanks AK	Fairbanks, AK
Fargo-Valley City ND	Wahpeton, ND-MN
Fargo-Valley City ND	Grand Forks, ND-MN
Fargo-Valley City ND	Fergus Falls, MN
Fargo-Valley City ND	Grand Forks, ND-MN
Fargo-Valley City ND	Wahpeton, ND-MN
Fargo-Valley City ND	Jamestown, ND
Fargo-Valley City ND	Fargo, ND-MN
Fargo-Valley City ND	Fargo, ND-MN
Flint-Saginaw-Bay City MI	Alma, MI
Flint-Saginaw-Bay City MI	Mount Pleasant, MI
Flint-Saginaw-Bay City MI	Flint, MI
Flint-Saginaw-Bay City MI	Saginaw, MI
Flint-Saginaw-Bay City MI	Midland, MI
Flint-Saginaw-Bay City MI	Owosso, MI
Flint-Saginaw-Bay City MI	Bay City, MI
Florence-Myrtle Beach SC	Laurinburg, NC
Florence-Myrtle Beach SC	Myrtle Beach-Conway-North Myrtle Beach, SC-NC
Florence-Myrtle Beach SC	Florence, SC
Florence-Myrtle Beach SC	Lumberton, NC
Florence-Myrtle Beach SC	Bennettsville, SC
Fresno-Visalia CA	Merced, CA
Fresno-Visalia CA	Fresno, CA
Fresno-Visalia CA	Hanford-Corcoran, CA
Fresno-Visalia CA	Visalia-Porterville, CA
Fresno-Visalia CA	Madera, CA
Ft. Myers-Naples FL	Punta Gorda, FL
Ft. Myers-Naples FL	Arcadia, FL
Ft. Myers-Naples FL	Clewiston, FL
Ft. Myers-Naples FL	Cape Coral-Fort Myers, FL
Ft. Myers-Naples FL	Naples-Immokalee-Marco Island, FL
Ft. Smith-Fayetteville-Springdale-Rogers AR	Fort Smith, AR-OK
Ft. Smith-Fayetteville-Springdale-Rogers AR	Fayetteville-Springdale-Rogers, AR-MO
Ft. Smith-Fayetteville-Springdale-Rogers AR	Fort Smith, AR-OK
Ft. Wayne IN	Fort Wayne, IN
Ft. Wayne IN	Wabash, IN
Ft. Wayne IN	Decatur, IN
Ft. Wayne IN	Auburn, IN
Ft. Wayne IN	Angola, IN
Ft. Wayne IN	Kendallville, IN
Ft. Wayne IN	Van Wert, OH
Ft. Wayne IN	Huntington, IN
Gainesville FL	Gainesville, FL
Grand Junction-Montrose CO	Grand Junction, CO
Grand Junction-Montrose CO	Montrose, CO
Grand Rapids-Kalamazoo-Battle Creek MI	Coldwater, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Grand Rapids-Wyoming, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Kalamazoo-Portage, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Holland, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Ionia, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Sturgis, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Muskegon, MI
Grand Rapids-Kalamazoo-Battle Creek MI	Battle Creek, MI
Great Falls Mount	Great Falls, MT
Green Bay-Appleton WI	Manitowoc, WI
Green Bay-Appleton WI	Oshkosh-Neenah, WI
Green Bay-Appleton WI	Shawano, WI

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Table A.5 (*continued*)

DMA	CBSA
Green Bay-Appleton WI	Green Bay, WI
Green Bay-Appleton WI	Appleton, WI
Green Bay-Appleton WI	Fond du Lac, WI
Green Bay-Appleton WI	Marinette, WI-MI
Green Bay-Appleton WI	Marinette, WI-MI
Greensboro-High Point-Winston Salem NC	Winston-Salem, NC
Greensboro-High Point-Winston Salem NC	Mount Airy, NC
Greensboro-High Point-Winston Salem NC	Greensboro-High Point, NC
Greensboro-High Point-Winston Salem NC	North Wilkesboro, NC
Greensboro-High Point-Winston Salem NC	Burlington, NC
Greenville-New Bern-Washington NC	New Bern, NC
Greenville-New Bern-Washington NC	Washington, NC
Greenville-New Bern-Washington NC	Kill Devil Hills, NC
Greenville-New Bern-Washington NC	Jacksonville, NC
Greenville-New Bern-Washington NC	Greenville, NC
Greenville-New Bern-Washington NC	Kinston, NC
Greenville-New Bern-Washington NC	Morehead City, NC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Cullowhee, NC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Greenville-Anderson-Mauldin, SC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Greenwood, SC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Spartanburg, SC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Marion, NC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Forest City, NC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Seneca, SC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Toccoa, GA
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Asheville, NC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Gaffney, SC
Greenville-Spartanburg SC-Asheville NC-Anderson SC	Brevard, NC
Greenwood-Greenville MS	Grenada, MS
Greenwood-Greenville MS	Indianola, MS
Greenwood-Greenville MS	Greenwood, MS
Greenwood-Greenville MS	Greenville, MS
Greenwood-Greenville MS	Cleveland, MS
Harlingen-Weslaco-Brownsville-McAllen TX	Brownsville-Harlingen, TX
Harlingen-Weslaco-Brownsville-McAllen TX	Raymondville, TX
Harlingen-Weslaco-Brownsville-McAllen TX	Rio Grande City, TX
Harlingen-Weslaco-Brownsville-McAllen TX	McAllen-Edinburg-Mission, TX
Harrisburg-Lancaster-Lebanon-York PA	Harrisburg-Carlisle, PA
Harrisburg-Lancaster-Lebanon-York PA	Lewistown, PA
Harrisburg-Lancaster-Lebanon-York PA	Lancaster, PA

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Table A.5 (*continued*)

DMA	CBSA
Harrisburg-Lancaster-Lebanon-York PA	York-Hanover, PA
Harrisburg-Lancaster-Lebanon-York PA	Gettysburg, PA
Harrisburg-Lancaster-Lebanon-York PA	Lebanon, PA
Harrisonburg VA	Harrisonburg, VA
Harrisonburg VA	Staunton-Waynesboro, VA
Hartford & New Haven CT	Hartford-West Hartford-East Hartford, CT
Hartford & New Haven CT	Torrington, CT
Hartford & New Haven CT	New Haven-Milford, CT
Hartford & New Haven CT	Worcester, MA-CT
Hartford & New Haven CT	Norwich-New London, CT
Hattiesburg-Laurel MS	Laurel, MS
Hattiesburg-Laurel MS	Hattiesburg, MS
Helena Mount	Helena, MT
Honolulu HI	Kahului-Wailuku-Lahaina, HI
Honolulu HI	Hilo, HI
Honolulu HI	Urban Honolulu, HI
Honolulu HI	Kapaa, HI
Houston TX	Houston-The Woodlands-Sugar Land, TX
Houston TX	El Campo, TX
Houston TX	Huntsville, TX
Houston TX	Bay City, TX
Houston TX	Port Lavaca, TX
Houston TX	Brenham, TX
Huntsville-Decatur (Florence) AL	Huntsville, AL
Huntsville-Decatur (Florence) AL	Florence-Muscle Shoals, AL
Huntsville-Decatur (Florence) AL	Albertville, AL
Huntsville-Decatur (Florence) AL	Scottsboro, AL
Huntsville-Decatur (Florence) AL	Decatur, AL
Idaho Falls-Pocatello ID	Idaho Falls, ID
Idaho Falls-Pocatello ID	Jackson, WY-ID
Idaho Falls-Pocatello ID	Pocatello, ID
Idaho Falls-Pocatello ID	Jackson, WY-ID
Idaho Falls-Pocatello ID	Rexburg, ID
Idaho Falls-Pocatello ID	Blackfoot, ID
Indianapolis IN	Peru, IN
Indianapolis IN	Marion, IN
Indianapolis IN	Greensburg, IN
Indianapolis IN	Indianapolis-Carmel-Anderson, IN
Indianapolis IN	Lafayette-West Lafayette, IN
Indianapolis IN	New Castle, IN
Indianapolis IN	Connersville, IN
Indianapolis IN	Columbus, IN
Indianapolis IN	Crawfordsville, IN
Indianapolis IN	Bloomington, IN
Indianapolis IN	Bedford, IN
Indianapolis IN	Logansport, IN
Indianapolis IN	Muncie, IN
Indianapolis IN	Frankfort, IN
Indianapolis IN	Kokomo, IN
Jackson MS	Jackson, MS
Jackson MS	Natchez, MS-LA
Jackson MS	McComb, MS
Jackson MS	Vicksburg, MS
Jackson MS	Brookhaven, MS
Jackson TN	Jackson, TN
Jacksonville FL	Brunswick, GA
Jacksonville FL	Lake City, FL
Jacksonville FL	Jacksonville, FL
Jacksonville FL	St. Marys, GA
Jacksonville FL	Palatka, FL
Jacksonville FL	Waycross, GA
Johnstown-Altoona PA	State College, PA

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Table A.5 (*continued*)

DMA	CBSA
Johnstown-Altoona PA	Altoona, PA
Johnstown-Altoona PA	Huntingdon, PA
Johnstown-Altoona PA	Somerset, PA
Johnstown-Altoona PA	Johnstown, PA
Johnstown-Altoona PA	DuBois, PA
Jonesboro AR	Jonesboro, AR
Jonesboro AR	Paragould, AR
Joplin MO-Pittsburg KS	Fayetteville-Springdale-Rogers, AR-MO
Joplin MO-Pittsburg KS	Joplin, MO
Joplin MO-Pittsburg KS	Parsons, KS
Joplin MO-Pittsburg KS	Pittsburg, KS
Joplin MO-Pittsburg KS	Miami, OK
Juneau AK	Juneau, AK
Kansas City MO	Kansas City, MO-KS
Kansas City MO	Marshall, MO
Kansas City MO	Lawrence, KS
Kansas City MO	Kansas City, MO-KS
Kansas City MO	Atchison, KS
Kansas City MO	Sedalia, MO
Kansas City MO	Warrensburg, MO
Kansas City MO	Ottawa, KS
Knoxville TN	Morristown, TN
Knoxville TN	Knoxville, TN
Knoxville TN	Middlesborough, KY
Knoxville TN	Sevierville, TN
Knoxville TN	Crossville, TN
Knoxville TN	Newport, TN
La Crosse-Eau Claire WI	La Crosse-Onalaska, WI-MN
La Crosse-Eau Claire WI	Winona, MN
La Crosse-Eau Claire WI	Eau Claire, WI
La Crosse-Eau Claire WI	Menomonie, WI
La Crosse-Eau Claire WI	La Crosse-Onalaska, WI-MN
Lafayette IN	Lafayette-West Lafayette, IN
Lafayette LA	Lafayette, LA
Lafayette LA	Opelousas, LA
Lake Charles LA	Lake Charles, LA
Lake Charles LA	DeRidder, LA
Lansing MI	Jackson, MI
Lansing MI	Lansing-East Lansing, MI
Lansing MI	Hillsdale, MI
Laredo TX	Zapata, TX
Laredo TX	Laredo, TX
Las Vegas NV	Las Vegas-Henderson-Paradise, NV
Las Vegas NV	Pahrump, NV
Lexington KY	Frankfort, KY
Lexington KY	Lexington-Fayette, KY
Lexington KY	Richmond-Berea, KY
Lexington KY	London, KY
Lexington KY	Danville, KY
Lexington KY	Mount Sterling, KY
Lexington KY	Somerset, KY
Lima OH	Lima, OH
Lima OH	Wapakoneta, OH
Lincoln & Hastings-Kearney NE	Hastings, NE
Lincoln & Hastings-Kearney NE	Grand Island, NE
Lincoln & Hastings-Kearney NE	Kearney, NE
Lincoln & Hastings-Kearney NE	Beatrice, NE
Lincoln & Hastings-Kearney NE	Lincoln, NE
Lincoln & Hastings-Kearney NE	Lexington, NE
Little Rock-Pine Bluff AR	Russellville, AR
Little Rock-Pine Bluff AR	Little Rock-North Little Rock-Conway, AR
Little Rock-Pine Bluff AR	Arkadelphia, AR
Little Rock-Pine Bluff AR	Pine Bluff, AR
Little Rock-Pine Bluff AR	Batesville, AR
Little Rock-Pine Bluff AR	Malvern, AR
Little Rock-Pine Bluff AR	Searcy, AR
Little Rock-Pine Bluff AR	Camden, AR
Little Rock-Pine Bluff AR	Hot Springs, AR
Los Angeles CA	Oxnard-Thousand Oaks-Ventura, CA
Los Angeles CA	Los Angeles-Long Beach-Anaheim, CA

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Table A.5 (*continued*)

DMA	CBSA
Los Angeles CA	Riverside-San Bernardino-Ontario, CA
Louisville KY	Campbellsville, KY
Louisville KY	Louisville/Jefferson County, KY-IN
Louisville KY	Madison, IN
Louisville KY	Louisville/Jefferson County, KY-IN
Louisville KY	Elizabethtown-Fort Knox, KY
Louisville KY	Bardstown, KY
Louisville KY	North Vernon, IN
Louisville KY	Seymour, IN
Lubbock TX	Lubbock, TX
Lubbock TX	Levelland, TX
Lubbock TX	Plainview, TX
Lubbock TX	Lamesa, TX
Macon GA	Macon-Bibb County, GA
Macon GA	Warner Robins, GA
Macon GA	Milledgeville, GA
Macon GA	Dublin, GA
Madison WI	Madison, WI
Madison WI	Baraboo, WI
Madison WI	Janesville-Beloit, WI
Madison WI	Platteville, WI
Mankato MN	New Ulm, MN
Mankato MN	Mankato-North Mankato, MN
Marquette MI	Escanaba, MI
Marquette MI	Iron Mountain, MI-WI
Marquette MI	Iron Mountain, MI-WI
Marquette MI	Houghton, MI
Marquette MI	Marquette, MI
Medford-Klamath Falls OR	Grants Pass, OR
Medford-Klamath Falls OR	Klamath Falls, OR
Medford-Klamath Falls OR	Brookings, OR
Medford-Klamath Falls OR	Medford, OR
Memphis TN	Memphis, TN-MS-AR
Memphis TN	Memphis, TN-MS-AR
Memphis TN	Dyersburg, TN
Memphis TN	Memphis, TN-MS-AR
Memphis TN	Blytheville, AR
Memphis TN	Jonesboro, AR
Memphis TN	Corinth, MS
Memphis TN	Oxford, MS
Memphis TN	Helena-West Helena, AR
Memphis TN	Forrest City, AR
Memphis TN	Clarksdale, MS
Memphis TN	Jackson, TN
Meridian MS	Meridian, MS
Miami-Ft. Lauderdale FL	Key West, FL
Miami-Ft. Lauderdale FL	Miami-Fort Lauderdale-West Palm Beach, FL
Milwaukee WI	Racine, WI
Milwaukee WI	Whitewater-Elkhorn, WI
Milwaukee WI	Milwaukee-Waukesha-West Allis, WI
Milwaukee WI	Beaver Dam, WI
Milwaukee WI	Watertown-Fort Atkinson, WI
Milwaukee WI	Sheboygan, WI
Milwaukee WI	Chicago-Naperville-Elgin, IL-IN-WI
Minneapolis-St. Paul MN	Minneapolis-St. Paul-Bloomington, MN-WI
Minneapolis-St. Paul MN	Brainerd, MN
Minneapolis-St. Paul MN	Red Wing, MN
Minneapolis-St. Paul MN	Rochester, MN
Minneapolis-St. Paul MN	Marshall, MN
Minneapolis-St. Paul MN	Faribault-Northfield, MN
Minneapolis-St. Paul MN	St. Cloud, MN
Minneapolis-St. Paul MN	Willmar, MN
Minneapolis-St. Paul MN	Mankato-North Mankato, MN
Minneapolis-St. Paul MN	Alexandria, MN
Minneapolis-St. Paul MN	Bemidji, MN
Minneapolis-St. Paul MN	Hutchinson, MN
Minneapolis-St. Paul MN	Owatonna, MN
Minneapolis-St. Paul MN	Minneapolis-St. Paul-Bloomington, MN-WI
Minot-Bismarck-Dickinson (Williston) ND	Minot, ND

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Table A.5 (*continued*)

DMA	CBSA
Minot-Bismarck-Dickinson (Williston) ND	Bismarck, ND
Minot-Bismarck-Dickinson (Williston) ND	Williston, ND
Minot-Bismarck-Dickinson (Williston) ND	Dickinson, ND
Missoula Mount	Missoula, MT
Missoula Mount	Kalispell, MT
Mobile AL-Pensacola (Ft. Walton Beach) FL	Pensacola-Ferry Pass-Brent, FL
Mobile AL-Pensacola (Ft. Walton Beach) FL	Mobile, AL
Mobile AL-Pensacola (Ft. Walton Beach) FL	Crestview-Fort Walton Beach-Destin, FL
Mobile AL-Pensacola (Ft. Walton Beach) FL	Daphne-Fairhope-Foley, AL
Monroe LA-El Dorado AR	Monroe, LA
Monroe LA-El Dorado AR	El Dorado, AR
Monroe LA-El Dorado AR	Bastrop, LA
Monroe LA-El Dorado AR	Natchez, MS-LA
Monroe LA-El Dorado AR	Ruston, LA
Monterey-Salinas CA	Salinas, CA
Monterey-Salinas CA	San Jose-Sunnyvale-Santa Clara, CA
Monterey-Salinas CA	Santa Cruz-Watsonville, CA
Montgomery (Selma) AL	Montgomery, AL
Montgomery (Selma) AL	Troy, AL
Montgomery (Selma) AL	Talladega-Sylacauga, AL
Montgomery (Selma) AL	Selma, AL
Nashville TN	Tullahoma-Manchester, TN
Nashville TN	Nashville-Davidson–Murfreesboro–Franklin, TN
Nashville TN	Lewisburg, TN
Nashville TN	Lawrenceburg, TN
Nashville TN	Clarksville, TN-KY
Nashville TN	Bowling Green, KY
Nashville TN	Shelbyville, TN
Nashville TN	Cookeville, TN
Nashville TN	Paris, TN
Nashville TN	McMinnville, TN
Nashville TN	Clarksville, TN-KY
New Orleans LA	New Orleans-Metairie, LA
New Orleans LA	Picayune, MS
New Orleans LA	Houma-Thibodaux, LA
New Orleans LA	Gulfport-Biloxi-Pascagoula, MS
New Orleans LA	Bogalusa, LA
New Orleans LA	Hammond, LA
New York NY	Bridgeport-Stamford-Norwalk, CT
New York NY	New York-Newark-Jersey City, NY-NJ-PA
New York NY	New York-Newark-Jersey City, NY-NJ-PA
New York NY	Kingston, NY
New York NY	New York-Newark-Jersey City, NY-NJ-PA
New York NY	Allentown-Bethlehem-Easton, PA-NJ
Norfolk-Portsmouth-Newport News VA	Virginia Beach-Norfolk-Newport News, VA-NC
Norfolk-Portsmouth-Newport News VA	Elizabeth City, NC
Norfolk-Portsmouth-Newport News VA	Virginia Beach-Norfolk-Newport News, VA-NC
Norfolk-Portsmouth-Newport News VA	Big Stone Gap, VA
Norfolk-Portsmouth-Newport News VA	Kill Devil Hills, NC
Norfolk-Portsmouth-Newport News VA	Roanoke Rapids, NC
Norfolk-Portsmouth-Newport News VA	Blacksburg-Christiansburg-Radford, VA
North Platte NE	North Platte, NE
Odessa-Midland TX	Odessa, TX
Odessa-Midland TX	Midland, TX
Odessa-Midland TX	Pecos, TX

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Table A.5 (*continued*)

DMA	CBSA
Odessa-Midland TX	Big Spring, TX
Odessa-Midland TX	Andrews, TX
Oklahoma City OK	Oklahoma City, OK
Oklahoma City OK	Ponca City, OK
Oklahoma City OK	Enid, OK
Oklahoma City OK	Shawnee, OK
Oklahoma City OK	Woodward, OK
Oklahoma City OK	Elk City, OK
Oklahoma City OK	Stillwater, OK
Oklahoma City OK	Weatherford, OK
Omaha NE	Omaha-Council Bluffs, NE-IA
Omaha NE	Omaha-Council Bluffs, NE-IA
Omaha NE	Fremont, NE
Omaha NE	Columbus, NE
Orlando-Daytona Beach-Melbourne FL	Deltona-Daytona Beach-Ormond Beach, FL
Orlando-Daytona Beach-Melbourne FL	Orlando-Kissimmee-Sanford, FL
Orlando-Daytona Beach-Melbourne FL	The Villages, FL
Orlando-Daytona Beach-Melbourne FL	Ocala, FL
Orlando-Daytona Beach-Melbourne FL	Palm Bay-Melbourne-Titusville, FL
Ottumwa IA-Kirksville MO	Ottumwa, IA
Ottumwa IA-Kirksville MO	Fairfield, IA
Ottumwa IA-Kirksville MO	Kirksville, MO
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Kennett, MO
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Carbondale-Marion, IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Mount Vernon, IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Paducah, KY-IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Poplar Bluff, MO
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Union City, TN-KY
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Mayfield, KY
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Paducah, KY-IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Sikeston, MO
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Cape Girardeau, MO-IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Martin, TN
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Cape Girardeau, MO-IL
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Union City, TN-KY
Paducah KY-Cape Girardeau MO-Harrisburg-Mount Vernon IL	Murray, KY
Panama City FL	Panama City, FL

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Table A.5 (*continued*)

DMA	CBSA
Panama City FL	Crestview-Fort Walton Beach-Destin, FL
Parkersburg WV	Parkersburg-Vienna, WV
Parkersburg WV	Marietta, OH
Peoria-Bloomington IL	Peoria, IL
Peoria-Bloomington IL	Ottawa-Peru, IL
Peoria-Bloomington IL	Pontiac, IL
Peoria-Bloomington IL	Bloomington, IL
Peoria-Bloomington IL	Canton, IL
Philadelphia PA	Atlantic City-Hammonton, NJ
Philadelphia PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Philadelphia PA	Allentown-Bethlehem-Easton, PA-NJ
Philadelphia PA	Dover, DE
Philadelphia PA	Reading, PA
Philadelphia PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Philadelphia PA	Vineland-Bridgeton, NJ
Philadelphia PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Philadelphia PA	Ocean City, NJ
Philadelphia PA	Trenton, NJ
Phoenix AZ	Payson, AZ
Phoenix AZ	Phoenix-Mesa-Scottsdale, AZ
Phoenix AZ	Safford, AZ
Phoenix AZ	Prescott, AZ
Phoenix AZ	Lake Havasu City-Kingman, AZ
Phoenix AZ	Show Low, AZ
Phoenix AZ	Flagstaff, AZ
Pittsburgh PA	Pittsburgh, PA
Pittsburgh PA	Indiana, PA
Pittsburgh PA	Morgantown, WV
Pittsburgh PA	Oil City, PA
Pittsburgh PA	New Castle, PA
Portland OR	Prineville, OR
Portland OR	Hood River, OR
Portland OR	Portland-Vancouver-Hillsboro, OR-WA
Portland OR	Portland-Vancouver-Hillsboro, OR-WA
Portland OR	Longview, WA
Portland OR	Salem, OR
Portland OR	Albany, OR
Portland OR	The Dalles, OR
Portland OR	Newport, OR
Portland OR	La Grande, OR
Portland OR	Hermiston-Pendleton, OR
Portland OR	Astoria, OR
Portland-Auburn ME	Portland-South Portland, ME
Portland-Auburn ME	Augusta-Waterville, ME
Portland-Auburn ME	Berlin, NH-VT
Portland-Auburn ME	Lewiston-Auburn, ME
Providence RI-New Bedford MA	Providence-Warwick, RI-MA
Providence RI-New Bedford MA	Providence-Warwick, RI-MA
Quincy IL-Hannibal MO-Keokuk IA	Quincy, IL-MO
Quincy IL-Hannibal MO-Keokuk IA	Hannibal, MO
Quincy IL-Hannibal MO-Keokuk IA	Fort Madison-Keokuk, IA-IL-MO
Quincy IL-Hannibal MO-Keokuk IA	Fort Madison-Keokuk, IA-IL-MO
Quincy IL-Hannibal MO-Keokuk IA	Jacksonville, IL
Quincy IL-Hannibal MO-Keokuk IA	Fort Madison-Keokuk, IA-IL-MO
Quincy IL-Hannibal MO-Keokuk IA	Macomb, IL
Quincy IL-Hannibal MO-Keokuk IA	Quincy, IL-MO
Raleigh-Durham (Fayetteville) NC	Wilson, NC

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Table A.5 (*continued*)

DMA	CBSA
Raleigh-Durham (Fayetteville) NC	Pinehurst-Southern Pines, NC
Raleigh-Durham (Fayetteville) NC	Roanoke Rapids, NC
Raleigh-Durham (Fayetteville) NC	Sanford, NC
Raleigh-Durham (Fayetteville) NC	Henderson, NC
Raleigh-Durham (Fayetteville) NC	Fayetteville, NC
Raleigh-Durham (Fayetteville) NC	Dunn, NC
Raleigh-Durham (Fayetteville) NC	Goldsboro, NC
Raleigh-Durham (Fayetteville) NC	Rocky Mount, NC
Raleigh-Durham (Fayetteville) NC	Raleigh, NC
Raleigh-Durham (Fayetteville) NC	Durham-Chapel Hill, NC
Raleigh-Durham (Fayetteville) NC	Oxford, NC
Rapid City SD	Rapid City, SD
Rapid City SD	Spearfish, SD
Rapid City SD	Scottsbluff, NE
Rapid City SD	Sheridan, WY
Reno NV	Susanville, CA
Reno NV	Carson City, NV
Reno NV	Reno, NV
Reno NV	Fallon, NV
Reno NV	Gardnerville Ranchos, NV
Reno NV	Winnemucca, NV
Reno NV	Fernley, NV
Richmond-Petersburg VA	Charlottesville, VA
Richmond-Petersburg VA	Richmond, VA
Richmond-Petersburg VA	Virginia Beach-Norfolk-Newport News, VA-NC
Roanoke-Lynchburg VA	Martinsville, VA
Roanoke-Lynchburg VA	Roanoke, VA
Roanoke-Lynchburg VA	Lynchburg, VA
Roanoke-Lynchburg VA	Blacksburg-Christiansburg-Radford, VA
Roanoke-Lynchburg VA	Danville, VA
Roanoke-Lynchburg VA	Charlottesville, VA
Rochester MN-Mason City IA-Austin MN	Albert Lea, MN
Rochester MN-Mason City IA-Austin MN	Mason City, IA
Rochester MN-Mason City IA-Austin MN	Rochester, MN
Rochester MN-Mason City IA-Austin MN	Austin, MN
Rochester NY	Rochester, NY
Rockford IL	Rockford, IL
Rockford IL	Freeport, IL
Rockford IL	Rochelle, IL
Rockford IL	Dixon, IL
Sacramento-Stockton-Modesto CA	Yuba City, CA
Sacramento-Stockton-Modesto CA	Sacramento–Roseville–Arden-Arcade, CA
Sacramento-Stockton-Modesto CA	Stockton-Lodi, CA
Sacramento-Stockton-Modesto CA	Vallejo-Fairfield, CA
Sacramento-Stockton-Modesto CA	Sonora, CA
Sacramento-Stockton-Modesto CA	Modesto, CA
Sacramento-Stockton-Modesto CA	Truckee-Grass Valley, CA
Salisbury MD	Salisbury, MD-DE

(*continued on next page*)

Table A.5 (*continued*)

DMA	CBSA
Salisbury MD	Cambridge, MD
Salisbury MD	Salisbury, MD-DE
Salt Lake City UT	Ogden-Clearfield, UT
Salt Lake City UT	Salt Lake City, UT
Salt Lake City UT	Heber, UT
Salt Lake City UT	Evanston, WY
Salt Lake City UT	Logan, UT-ID
Salt Lake City UT	Vernal, UT
Salt Lake City UT	Elko, NV
Salt Lake City UT	Summit Park, UT
Salt Lake City UT	Price, UT
Salt Lake City UT	St. George, UT
Salt Lake City UT	Logan, UT-ID
Salt Lake City UT	Cedar City, UT
Salt Lake City UT	Rock Springs, WY
Salt Lake City UT	Provo-Orem, UT
San Angelo TX	San Angelo, TX
San Antonio TX	San Antonio-New Braunfels, TX
San Antonio TX	Victoria, TX
San Antonio TX	Uvalde, TX
San Antonio TX	Eagle Pass, TX
San Antonio TX	Kerrville, TX
San Antonio TX	Del Rio, TX
San Diego CA	San Diego-Carlsbad, CA
San Francisco-Oakland-San Jose CA	San Francisco-Oakland-Hayward, CA
San Francisco-Oakland-San Jose CA	San Jose-Sunnyvale-Santa Clara, CA
San Francisco-Oakland-San Jose CA	Ukiah, CA
San Francisco-Oakland-San Jose CA	Santa Rosa, CA
San Francisco-Oakland-San Jose CA	Napa, CA
San Francisco-Oakland-San Jose CA	Clearlake, CA
Santa Barbara-Santa Maria-San Luis Obispo CA	Santa Maria-Santa Barbara, CA
Santa Barbara-Santa Maria-San Luis Obispo CA	San Luis Obispo-Paso Robles-Arroyo Grande, CA
Savannah GA	Statesboro, GA
Savannah GA	Jesup, GA
Savannah GA	Brunswick, GA
Savannah GA	Hinesville, GA
Savannah GA	Hilton Head Island-Bluffton-Beaufort, SC
Savannah GA	Vidalia, GA
Savannah GA	Savannah, GA
Seattle-Tacoma WA	Aberdeen, WA
Seattle-Tacoma WA	Wenatchee, WA
Seattle-Tacoma WA	Seattle-Tacoma-Bellevue, WA
Seattle-Tacoma WA	Bellingham, WA
Seattle-Tacoma WA	Oak Harbor, WA
Seattle-Tacoma WA	Mount Vernon-Anacortes, WA
Seattle-Tacoma WA	Shelton, WA
Seattle-Tacoma WA	Port Angeles, WA
Seattle-Tacoma WA	Bremerton-Silverdale, WA
Seattle-Tacoma WA	Centralia, WA
Seattle-Tacoma WA	Olympia-Tumwater, WA
Sherman TX-Ada OK	Sherman-Denison, TX
Sherman TX-Ada OK	Durant, OK
Sherman TX-Ada OK	Ada, OK
Sherman TX-Ada OK	Ardmore, OK
Shreveport LA	Shreveport-Bossier City, LA
Shreveport LA	Mount Pleasant, TX
Shreveport LA	Texarkana, TX-AR
Shreveport LA	Natchitoches, LA
Shreveport LA	Texarkana, TX-AR
Shreveport LA	Magnolia, AR
Shreveport LA	Marshall, TX
Sioux City IA	Sioux City, IA-NE-SD

(*continued on next page*)

Table A.5 (*continued*)

DMA	CBSA
Sioux City IA	Sioux City, IA-NE-SD
Sioux City IA	Spirit Lake, IA
Sioux City IA	Sioux City, IA-NE-SD
Sioux City IA	Spencer, IA
Sioux City IA	Norfolk, NE
Sioux City IA	Storm Lake, IA
Sioux Falls(Mitchell) SD	Sioux Falls, SD
Sioux Falls(Mitchell) SD	Pierre, SD
Sioux Falls(Mitchell) SD	Yankton, SD
Sioux Falls(Mitchell) SD	Mitchell, SD
Sioux Falls(Mitchell) SD	Brookings, SD
Sioux Falls(Mitchell) SD	Huron, SD
Sioux Falls(Mitchell) SD	Aberdeen, SD
Sioux Falls(Mitchell) SD	Vermillion, SD
Sioux Falls(Mitchell) SD	Watertown, SD
Sioux Falls(Mitchell) SD	Worthington, MN
South Bend-Elkhart IN	Plymouth, IN
South Bend-Elkhart IN	Elkhart-Goshen, IN
South Bend-Elkhart IN	Warsaw, IN
South Bend-Elkhart IN	South Bend-Mishawaka, IN-MI
South Bend-Elkhart IN	South Bend-Mishawaka, IN-MI
South Bend-Elkhart IN	Niles-Benton Harbor, MI
Spokane WA	Walla Walla, WA
Spokane WA	Pullman, WA
Spokane WA	Sandpoint, ID
Spokane WA	Lewiston, ID-WA
Spokane WA	Spokane-Spokane Valley, WA
Spokane WA	Lewiston, ID-WA
Spokane WA	Coeur dAlene, ID
Spokane WA	Moscow, ID
Spokane WA	Moses Lake, WA
Spokane WA	Othello, WA
Springfield MO	Springfield, MO
Springfield MO	Harrison, AR
Springfield MO	Mountain Home, AR
Springfield MO	Branson, MO
Springfield MO	Fort Leonard Wood, MO
Springfield MO	West Plains, MO
Springfield MO	Rolla, MO
Springfield MO	Lebanon, MO
Springfield-Holyoke MA	Springfield, MA
Springfield-Holyoke MA	Greenfield Town, MA
St. Joseph MO	St. Joseph, MO-KS
St. Joseph MO	Maryville, MO
St. Joseph MO	St. Joseph, MO-KS
St. Louis MO	St. Louis, MO-IL
St. Louis MO	St. Louis, MO-IL
St. Louis MO	Farmington, MO
St. Louis MO	Centralia, IL
Syracuse NY	Seneca Falls, NY
Syracuse NY	Cortland, NY
Syracuse NY	Syracuse, NY
Syracuse NY	Ithaca, NY
Syracuse NY	Auburn, NY
Tallahassee FL-Thomasville GA	Tallahassee, FL
Tallahassee FL-Thomasville GA	Valdosta, GA
Tallahassee FL-Thomasville GA	Thomasville, GA
Tallahassee FL-Thomasville GA	Bainbridge, GA
Tampa-St. Petersburg (Sarasota) FL	Sebring, FL
Tampa-St. Petersburg (Sarasota) FL	Homosassa Springs, FL
Tampa-St. Petersburg (Sarasota) FL	Tampa-St. Petersburg-Clearwater, FL
Tampa-St. Petersburg (Sarasota) FL	North Port-Sarasota-Bradenton, FL
Tampa-St. Petersburg (Sarasota) FL	Lakeland-Winter Haven, FL
Tampa-St. Petersburg (Sarasota) FL	Wauchula, FL

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Table A.5 (*continued*)

DMA	CBSA
Terre Haute IN	Terre Haute, IN
Terre Haute IN	Vincennes, IN
Terre Haute IN	Washington, IN
Toledo OH	Defiance, OH
Toledo OH	Findlay, OH
Toledo OH	Toledo, OH
Toledo OH	Fremont, OH
Toledo OH	Adrian, MI
Toledo OH	Tiffin, OH
Toledo OH	Port Clinton, OH
Topeka KS	Manhattan, KS
Topeka KS	Topeka, KS
Topeka KS	Emporia, KS
Topeka KS	Junction City, KS
Traverse City-Cadillac MI	Cadillac, MI
Traverse City-Cadillac MI	Sault Ste. Marie, MI
Traverse City-Cadillac MI	Traverse City, MI
Traverse City-Cadillac MI	Big Rapids, MI
Traverse City-Cadillac MI	Ludington, MI
Tri-Cities TN-VA	Johnson City, TN
Tri-Cities TN-VA	Big Stone Gap, VA
Tri-Cities TN-VA	Kingsport-Bristol-Bristol, TN-VA
Tri-Cities TN-VA	Richmond, VA
Tri-Cities TN-VA	Kingsport-Bristol-Bristol, TN-VA
Tri-Cities TN-VA	Greeneville, TN
Tucson (Sierra Vista) AZ	Sierra Vista-Douglas, AZ
Tucson (Sierra Vista) AZ	Nogales, AZ
Tucson (Sierra Vista) AZ	Tucson, AZ
Tulsa OK	Bartlesville, OK
Tulsa OK	Tulsa, OK
Tulsa OK	Coffeyville, KS
Tulsa OK	Tahlequah, OK
Tulsa OK	Muskogee, OK
Tulsa OK	McAlester, OK
Twin Falls ID	Hailey, ID
Twin Falls ID	Burley, ID
Twin Falls ID	Twin Falls, ID
Tyler-Longview(Lufkin & Nacogdoches) TX	Jacksonville, TX
Tyler-Longview(Lufkin & Nacogdoches) TX	Huntsville, TX
Tyler-Longview(Lufkin & Nacogdoches) TX	Tyler, TX
Tyler-Longview(Lufkin & Nacogdoches) TX	Nacogdoches, TX
Tyler-Longview(Lufkin & Nacogdoches) TX	Longview, TX
Tyler-Longview(Lufkin & Nacogdoches) TX	Lufkin, TX
Utica NY	Oneonta, NY
Utica NY	Utica-Rome, NY
Victoria TX	Victoria, TX
Waco-Temple-Bryan TX	Killeen-Temple, TX
Waco-Temple-Bryan TX	College Station-Bryan, TX
Waco-Temple-Bryan TX	Waco, TX
Washington DC (Hagerstown MD)	Winchester, VA-WV
Washington DC (Hagerstown MD)	Washington-Arlington-Alexandria, DC-VA-MD-WV
Washington DC (Hagerstown MD)	Washington-Arlington-Alexandria, DC-VA-MD-WV
Washington DC (Hagerstown MD)	Washington-Arlington-Alexandria, DC-VA-MD-WV
Washington DC (Hagerstown MD)	Cumberland, MD-WV
Washington DC (Hagerstown MD)	Winchester, VA-WV
Washington DC (Hagerstown MD)	Hagerstown-Martinsburg, MD-WV

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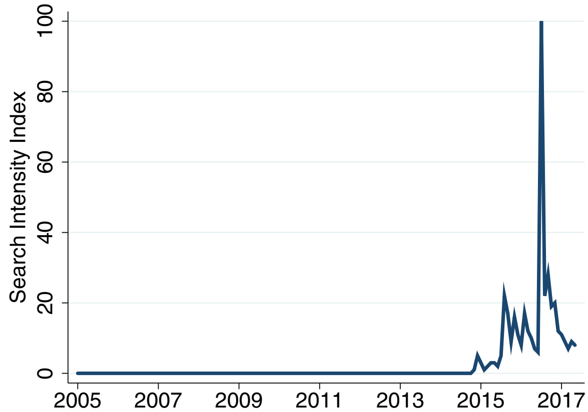
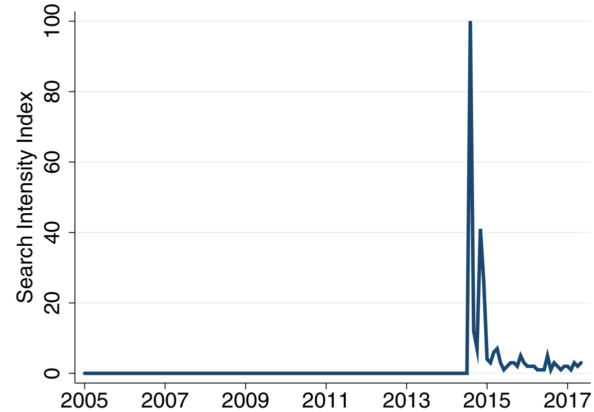
Table A.5 (*continued*)

DMA	CBSA
Washington DC (Hagerstown MD)	Washington-Arlington-Alexandria, DC-VA-MD-WV
Washington DC (Hagerstown MD)	Cumberland, MD-WV
Washington DC (Hagerstown MD)	Chambersburg-Waynesboro, PA
Washington DC (Hagerstown MD)	California-Lexington Park, MD
Washington DC (Hagerstown MD)	Hagerstown-Martinsburg, MD-WV
Watertown NY	Ogdensburg-Massena, NY
Watertown NY	Watertown-Fort Drum, NY
Wausau-Rhinelander WI	Wausau, WI
Wausau-Rhinelander WI	Merrill, WI
Wausau-Rhinelander WI	Wisconsin Rapids-Marshfield, WI
Wausau-Rhinelander WI	Stevens Point, WI
West Palm Beach-Ft. Pierce FL	Miami-Fort Lauderdale-West Palm Beach, FL
West Palm Beach-Ft. Pierce FL	Port St. Lucie, FL
West Palm Beach-Ft. Pierce FL	Sebastian-Vero Beach, FL
West Palm Beach-Ft. Pierce FL	Okeechobee, FL
Wheeling WV-Steubenville OH	Weirton-Steubenville, WV-OH
Wheeling WV-Steubenville OH	Weirton-Steubenville, WV-OH
Wheeling WV-Steubenville OH	Wheeling, WV-OH
Wheeling WV-Steubenville OH	Wheeling, WV-OH
Wichita Falls TX & Lawton OK	Wichita Falls, TX
Wichita Falls TX & Lawton OK	Lawton, OK
Wichita Falls TX & Lawton OK	Altus, OK
Wichita Falls TX & Lawton OK	Vernon, TX
Wichita Falls TX & Lawton OK	Duncan, OK
Wichita-Hutchinson KS	Wichita, KS
Wichita-Hutchinson KS	Liberal, KS
Wichita-Hutchinson KS	Salina, KS
Wichita-Hutchinson KS	McPherson, KS
Wichita-Hutchinson KS	Dodge City, KS
Wichita-Hutchinson KS	Arkansas City-Winfield, KS
Wichita-Hutchinson KS	Great Bend, KS
Wichita-Hutchinson KS	Garden City, KS
Wichita-Hutchinson KS	Hutchinson, KS
Wichita-Hutchinson KS	Hays, KS
Wilkes Barre-Scranton PA	Selinsgrove, PA
Wilkes Barre-Scranton PA	Scranton–Wilkes-Barre–Hazleton, PA
Wilkes Barre-Scranton PA	Sunbury, PA
Wilkes Barre-Scranton PA	Bloomsburg-Berwick, PA
Wilkes Barre-Scranton PA	East Stroudsburg, PA
Wilkes Barre-Scranton PA	Lewisburg, PA
Wilkes Barre-Scranton PA	Pottsville, PA
Wilkes Barre-Scranton PA	Williamsport, PA
Wilkes Barre-Scranton PA	Lock Haven, PA
Wilkes Barre-Scranton PA	Sayre, PA
Wilkes Barre-Scranton PA	Allentown-Bethlehem-Easton, PA-NJ
Wilmington NC	Wilmington, NC
Wilmington NC	Myrtle Beach-Conway-North Myrtle Beach, SC-NC
Yakima-Pasco-Richland-Kennewick WA	Yakima, WA
Yakima-Pasco-Richland-Kennewick WA	Hermiston-Pendleton, OR
Yakima-Pasco-Richland-Kennewick WA	Ellensburg, WA
Yakima-Pasco-Richland-Kennewick WA	Walla Walla, WA
Yakima-Pasco-Richland-Kennewick WA	Kennewick-Richland, WA
Youngstown OH	Youngstown-Warren-Boardman, OH-PA
Youngstown OH	Youngstown-Warren-Boardman, OH-PA
Youngstown OH	Salem, OH
Yuma AZ-El Centro CA	Yuma, AZ
Yuma AZ-El Centro CA	El Centro, CA
Zanesville OH	Zanesville, OH

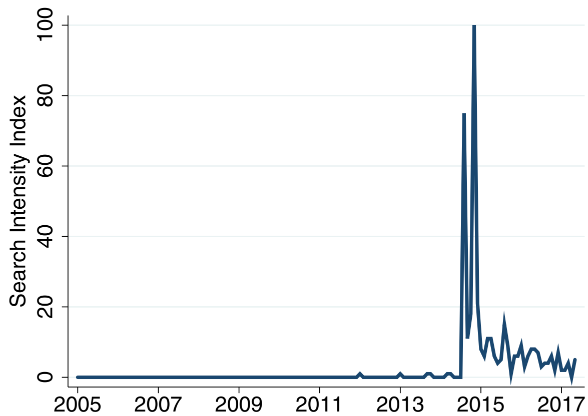
We use Sood (2016) to assign DMA information to counties and use a crosswalk from Missouri Census Data Center (2012) to translate county level information into CBSAs. A downloadable version of our constructed crosswalk can be accessed at http://www.yelowitz.com/racialclimate.



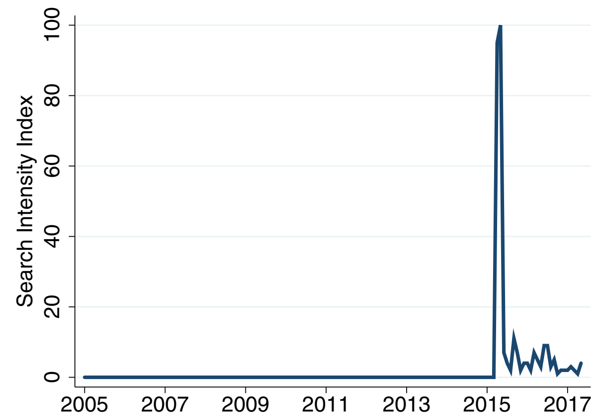
(a) Black Lives Matter



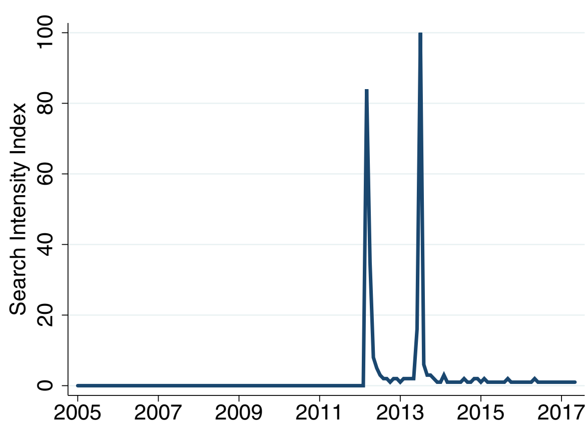
(b) Shooting of Michael Brown



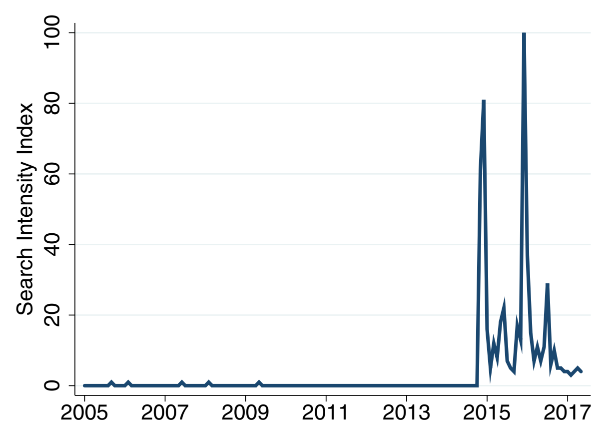
(c) Ferguson Unrest



(d) Death of Freddie Gray



(e) Trayvon Martin



(f) Shooting of Tamir Rice

Fig. A.1. Google Trends Racial Climate Variables Intensity over Time, National.

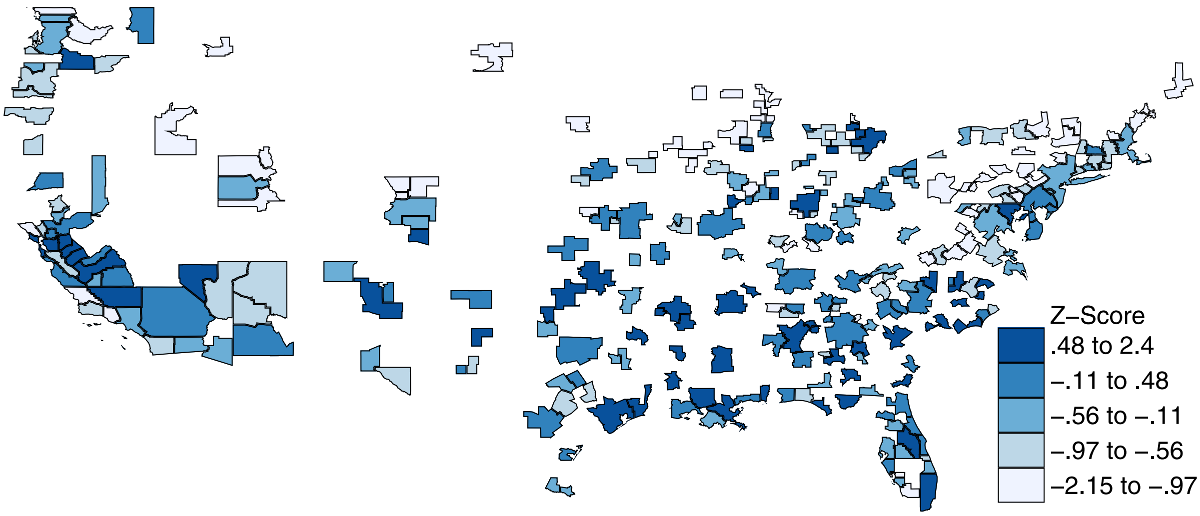


Fig. A.2. Crime Intensity Z-score by Metro Area 2012 Note: Crime statistics originate from the FBI Unified Crimes Report.

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