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DETERMINANTS OF THE CITY OF RACINE'S LABOR MARKET PERFORMANCE

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Executive Summary

- In 2016, Higher Expectation for Racine County (HERC) established the goal that *"…each municipality in Racine County will achieve and maintain an unemployment rate at or below the State of Wisconsin's unemployment rate."* As part of a comprehensive strategy for attaining this goal, HERC and Racine County Workforce Solutions contracted this study with the purpose of:
    1. Developing models that explain the intercity variation in labor market performance.
    2. Identifying the primary drivers of the relatively high unemployment rate and low employment rate in the City of Racine *vis-à-vis* comparable cities in the U.S. and Racine's *out-county*, defined as Racine County *excluding* the City of Racine

- The analysis in this report is a follow-up to and substantial extension of a community-based learning and research project conducted by a team of UW-Parkside undergraduate students enrolled in Dr. Cloutier's 2005 labor economics course which identified the determinants of labor market performance among 70 Wisconsin counties.

- Unlike the 2005 study, which used *county* as the geographic unit of analysis and limited the scope to Wisconsin, the unit of analysis in this report is *city* and the scope is the entire United States.
    - Throughout this report, the analysis examines labor market outcomes and the underlying socioeconomic characteristics of 676 comparable cities across the U.S. that had a total population of 25,000–500,000, and a 5%–75% Black population.

- Salient facts about the City of Racine's relative labor market performance:
    - In 2015, the city's *unemployment rate* was 7.0% and its *employment rate* was 57.2%. That ranked the city's unemployment (employment) rate the 101st (355th) highest among the 676 comparable cities across the U.S., and 25th (51st) highest among the 118 comparable cities in the East North Central division of the U.S.
    - Over time, the City of Racine has had consistently higher unemployment rates than the State of Wisconsin, Racine County, and all other municipalities in Racine County. In 21 of 27 years (1990–2016), the City of Racine had the highest unemployment rate among 31 of Wisconsin's largest cities.

- In 2015, relative to Racine's out-county, the City of Racine had:
    - a higher unemployment rate (7.0% *vs.* 4.8%);
    - a larger minority population (47.2% *vs.* 11.0%);
    - a higher percentage of households headed by women with children (22.6% vs. 7.7%);
    - a higher percentage of adults whose primary language was not English (13.0% *vs.* 5.0%);
    - fewer of its workers with a long commute (24.3% *vs.* 36.6%);
    - a negative population growth rate since 2010 (-1.9% *vs.* 1.5).
    - a disparate distribution of *highest level of educational attainment* for those age ≥25:
        - more without a high school diploma (19.1% *vs.* 7.6%);
        - more with some college (24.7% *vs.* 12.7%);
        - fewer with at least a college degree (17.4 *vs.* 27.4%);
        - fewer minorities with at least a college degree (7.3% *vs.* 15.5%);

- An identical set of fourteen city characteristics plus an additional 34 dichotomous variables controlling for state and U.S. Census divisions effects were used to estimate two models, one explained the intercity variation in unemployment rates and the other explained the variation in employment rate.

- Overall, the unemployment (employment) models performed quite well, explaining 77% (79%) of the total variation in city unemployment (employment) rates.
- Twelve (10) of the 14 city characteristics had the correct sign and were statistically significant at the α=0.05 level or better.

- The results from the unemployment rate model revealed that the following three city characteristics were most responsible for the City of Racine's higher unemployment rate *vis-à-vis* the out-county and comparable cities, although the rank order of their importance differed (out-county, comparable cities):
  (1, 2) *femhh*: higher prevalence of households headed by women with children
  (2, 3) *minority*: larger relative size of the minority population
  (3, 1) *baplus*: lower percentage of its adult population with at least a college education

- *What will it take for the City of Racine to close the city-vs-state unemployment rate gap of 2.4 percentage points?* Two hypothetical scenarios were examined, one in which the City of Racine looked more like comparable cities, and another in which the city looked more like the rest of Racine County:
  1. If the City of Racine took on the mean values for *femhh, minority,* and *baplus* that were observed among the 676 comparable cities, then the model predicts that the city-*vs*-state unemployment rate gap would decline from 2.4 to 1.3 percentage points.
  2. If the City of Racine took on the values for the three variables that were observed in Racine's out-county, then the city-*vs*-state unemployment rate gap would decline substantially, from 2.4 to 0.4 percentage points.

- Additional headwinds working against HERC's goal for the City of Racine are the city's historical reliance on manufacturing and the legacy of rigid municipal boundaries.

- The 2017 city-*vs*-state unemployment gap of 1.7 percentage points (5.0% *vs.* 3.3%) is the lowest in the last 27 years and far lower than the long term trend in the relationship between the level of state unemployment and the city-*vs*-state gap would have predicted.
  - An examination of the long term trend shows that there has been a distinct structural break starting immediately after the last recession.

- Future econometric work on the relative performance of the City of Racine's labor market should consider:
  - Building a *panel* data set that contains city characteristics for the 676 comparable cities over multiple years.
  - Determining how much the legacy of the City of Racine's rigid municipal boundaries has contributed to the city's labor market outcomes *vis-à-vis* other cities that haven't had restrictions on annexation.
  - Examining the underlying causes of what appears to be a structural change since the end of the last recession between the level of unemployment in the State of Wisconsin and the city-*vs*-state unemployment rate gap.
  - Delving deeper into the relationship between household female-headship and subsequent labor market performance, particularly for young Black men. Recent scholarly work in this area suggests that the geographical density of families headed by women with children could influence city-wide labor market outcomes.
  - Formally considering the potential for simultaneous causation between labor market outcomes and city characteristics.

Introduction

In 2005, University of Wisconsin-Parkside students enrolled in Professor Norm Cloutier's labor economics course conducted an analysis of the factors that explain Racine County's labor market performance *vis-à-vis* all Wisconsin counties (Cloutier, et al, 2005). This report is as a follow-up and extension of that earlier study, but with a more narrowly defined unit of analysis, *city* rather than the *county*, and a broader scope of geographical comparison, the entire *United States* rather than the *State of Wisconsin.* Specifically, we develop a model that explains the inter-city variation in labor market performance among 676 comparable U.S. cities and then utilize a decomposition of the model to isolate the primary city characteristics that are driving the City of Racine's relatively poor labor market outcomes.

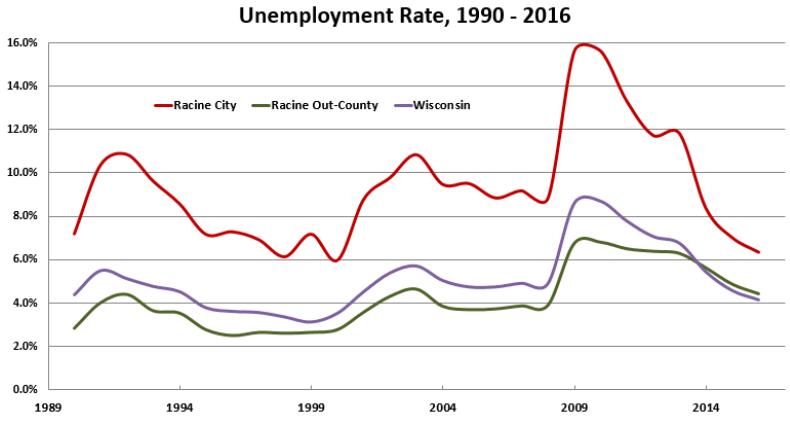
Labor Market Performance

We utilize two measures of labor market performance, the unemployment rate and the employment rate. The unemployment rate (*unemp*) is defined as the number of unemployed workers as a percentage of the civilian labor force. The civilian labor force, in turn, is comprised of employed and unemployed noninstitutionalized civilians, 16 years-of-age and older. Workers are considered unemployed if they were without a job in the survey reference week and were actively looking for work within the last 4 weeks. The employment rate (*emp*) is defined as the number of employed workers as a percentage of noninstitutionalized civilians, 16 years-of-age and older.

In 2015, the City of Racine's unemployment rate was 7.0%. In contrast, the State of Wisconsin and the County of Racine, excluding the city—henceforth referred to as the *out-county*—had unemployment rates of 4.6% and 4.8%, respectively. As Figure 1 demonstrates, the difference

between the City of Racine's unemployment rate and that of both the state and out-county is both large and persistent over time.[1]

Figure 1



Data source: Bureau of Labor Statistics, Local Area Unemployment Statistics.

Table 1 contains the 2015 mean unemployment and employment rates for the 676 comparable cities, by U.S. Census Division. Overall, unemployment rates ranged from a high of 11.6% in Camden, New Jersey to a low of 2.5% in Kyle, Texas. The divisional breakdown shows that there is substantial variation both across and within regions. Cities in the Mid-Atlantic division registered the highest mean unemployment rate (6.8%), while cities in the West North Central division had the lowest (4.1%). The East North Central division, which includes Wisconsin, registered the widest range of unemployment rates, from 3.0% in Ann Arbor, Michigan to 11.0% in Pontiac, Michigan. The City of Racine's 7.0% unemployment rate ranked 25th highest among the 118 comparable cities in the East North Central division, and the 101st highest among all 676 comparable cities.

[1] Among cities in the State of Wisconsin, the City of Racine perennially has the highest or nearly the highest annual unemployment rate. During the period 1990–2016, the City of Racine had the highest unemployment rate in 21 of 27 years among the 31 cities reported in the Wisconsin LAUS data http://worknet.wisconsin.gov/worknet/dalaus.aspx?menuselection=da.

Generally, the relative labor market performance across divisions as measured by unemployment rate was mirrored by the employment rate. However, the variation in employment rates, both across and within divisions, was lower than the divisional variation in unemployment rates. The cities in the Mid-Atlantic division had the lowest mean employment rate (54.8%), while the West North Central division had the highest (64.7%). The East North Central division had the widest range of employment rates, from 38.5% in Flint, Michigan to 71.8% in Sun Prairie, Wisconsin. The City of Racine's employment rate was 57.2%, ranking it near the middle of the pack among both the 118 cities in the East North Center division (51st highest) and all 676 comparable cities (355th highest).

Table 1
Mean Unemployment and Employment Rates by Census Division, 2015

Census Division	***unemp***	**min**	**max**		***emp***	**min**	**max**
New England (38)	6.2%	3.1%	10.6%		60.2%	50.1%	70.8%
Mid-Atlantic (56)	6.8	3.8	11.6		54.8	43.1	65.0
East North Central (118)	5.9	3.0	11.0		55.7	38.5	71.8
West North Central (51)	4.1	2.6	6.9		64.7	55.6	74.2
South Atlantic (165)	5.5	3.1	9.0		57.1	42.6	74.2
East South Central (60)	5.4	3.8	7.3		57.7	46.4	69.8
West South Central (84)	4.4	2.5	9.1		61.3	45.6	72.7
Mountain (16)	5.6	4.2	7.5		56.7	47.3	64.2
Pacific (88)	6.2	2.7	10.3		56.1	36.3	66.6
Total (676)	5.6	2.5	11.6		57.9	36.3	74.2

*Number of cities in parentheses.

The Data

In this section we discuss data sources and how the sample of cities was determined. The filters used to define Racine's comparable cities were total population (25,000 to 500,000) and the relative size of the Black population (5% to 75%). In the contiguous U.S., 707 cities met those conditions. Thirty-one cities were dropped from the analysis because of missing data or because later analysis

found them to be extreme statistical outliers within the framework of the model, leaving 676 cities located in 40 states.[2]

Unless stated otherwise, all data used throughout this report are from the American Community Survey (ACS) 2015 5-year estimates. One notable exception is the unemployment rate itself (*unemp*). Instead of using the ACS unemployment estimates, we use values from the U.S. Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics. There are three reasons to favor the use of the BLS estimates over the ACS. First, the BLS estimates are the values to which the general population and public officials commonly refer. Second, it is well-known that the ACS and BLS survey methods differ, usually resulting in a higher estimate of unemployment with the ACS (Kromer and Howard, 2011). Indeed, the mean values of the 2015 ACS 5-year estimates and BLS unemployment estimates for the 676 cities are 9.50% vs 5.57%, respectively, and the values for the City of Racine are 11.80% vs. 7.02%. Third, while the correlation between the ACS and BLS is relatively high (0.79), it is far from perfect and the BLS measure performed better in the subsequent model estimation in terms of the strength of the relationship between city-level unemployment and its determinants.

Because the BLS does not report the size of the noninstitutionalized civilian population age ≥16 for cities, employment rates could not be estimated using BLS data. Using city employment data from the BLS while using population values from another data source would involve mixing data from sources that use different survey techniques. This has the potential for introducing an uncertain

[2] See Appendix A for the 676 cities listed by state. The criteria used to determine outliers is discussed in a later section.

distortion in our measure of the employment rate. Therefore, the source of the employment rate data is the ACS, while the source of the unemployment rate is the BLS.

The only other variable not estimated from ACS data is the level of unionization (*union*) which is estimated using a union membership database maintained by Professors Barry Hirsch, Georgia State University, and David Macpherson, Trinity University (http://www.unionstats.com/).

Educational Attainment

The level of educational attainment is perhaps the most widely cited influence on labor market outcomes, both at the individual level and for any geographic unit. Indeed, among people 25 years of age and older, the 2015 national unemployment rate for those with no high school diploma was 7.9%, while those with at least a Bachelor's degree had a mean unemployment rate of 2.6% (Bureau of Labor Statistics). Because of its unique role in influencing labor market outcomes and the fact that it is one of the factors that is theoretically amenable to change through public policy this section takes a close look at educational attainment.

Table 2 compares the 2015 level of educational attainment for people age ≥25 in the City of Racine to the mean value among the 676 comparable cities and Racine's out-county for the total, nonminority, and minority populations.[3] The percentage of the total population with no high school diploma is a full five percentage points higher in the City of Racine (19.1%) than the mean value for

[3] Throughout this report, *nonminority* is defined as people who self-identify as "White alone, not Hispanic or Latino" plus those who self-identify as "Asian alone," while *minority* refers to all other groups, i.e. those not classified as nonminority. Asians are included in the nonminority category because their level of educational attainment and labor market outcomes are more closely aligned with Whites than they are with Blacks or Hispanics. For example, in 2015 the percentage of the U.S. population age ≥25 with a Bachelor's degree or higher was higher for Asians than Whites (51.4% vs 33.2%) and the unemployment rate was lower for Asians than Whites (3.8% vs 4.6%) (American Community Survey, Table S1501; and Bureau of Labor Statistics).

the 676 comparable cities (14.1%), and 11.5 points higher than the rest of Racine County (7.6%). The percentage of the total population with at least a Bachelor's degree is significantly lower in the City of Racine (17.4%) than it is in comparable cities (28.4%). Surprisingly, the level of higher educational attainment in Racine's out-county's (27.4%) is also lower than the mean value among comparable cities. Essentially, the out-county is comprised of the City of Racine's near- and distant-suburbs along with smaller urbanized areas. City-suburb housing segregation by income level is well-documented (Watson, 2009), and therefore we can expect to observe higher levels of educational attainment in Racine's out-county than in the city proper, which is indeed the case. It is

Table 2
Highest Level of Educational Attainment, 2015:
Comparable Cities, Racine Out-County and the City of Racine

	Total			Nonminority			Minority		
	Cities Mean	Out-County	Racine	Cities Mean	Out-County	Racine	Cities Mean	Out-County	Racine
No HS Diploma	14.1	7.6	19.1	9.1	6.6	10.2	21.8	18.2	33.6
HS plus	57.4	53.4	63.5	56.3	64.9	66.2	59.9	66.3	59.2
HS degree	23.1	26.5	24.3						
GED	4.1	4.4	6.0						
Some college	22.2	12.7	24.7						
Associate	8.0	9.8	8.5						
BA & higher	28.4	27.4	17.4	34.6	28.5	23.6	18.2	15.5	7.3
BA	17.8	17.9	12.0						
Masters	7.6	7.4	4.1						
Prof degree	1.8	1.3	0.5						
PhD	1.3	0.8	0.7						

*Values are the percentage of the population age≥25 with the corresponding highest level of educational attainment.
Cities N=676
Out-County values are estimates for Racine County excluding the City of Racine.
Nonminority≡ "White alone, not Hispanic or Latino" plus "Asian alone" populations.
Minority≡ all others, i.e. those not classified as nonminority.

notable, therefore, that higher level educational attainment in Racine's out-county, while surpassing that of the City of Racine, does not exceed the mean value for the 676 comparable cities.

When city population is split into the *nonminority* and *minority* groups we observe the same general pattern but the disparity in higher level educational attainment for both the City of Racine and Racine's out-county *vis-à-vis* the comparable cities is even more pronounced. Among comparable cities, the percentage of the nonminority and minority populations with at least a Bachelor's degree are 34.6% and 18.2%, respectively, while the corresponding figures are significantly lower for both the out-county (28.5% and 15.5%) and the City of Racine (23.6% and 7.3%).

At the lowest level of educational attainment the pattern is a bit different. Among comparable cities, the percentage of the nonminority and minority populations without a high school diploma is 9.1% and 21.8%, respectively. As expected, both nonminority and minority populations in Racine's out-county record more favorable no-diploma figures (6.6% and 18.2%) than the comparable cities, The City of Racine's nonminority population has only a slightly higher no-diploma value (10.2%) than in comparable cities, a figure that ranks (highest to lowest) Racine near the middle of pack among the 118 comparable cities in the East North Central Census division (66th), and the full sample of 676 comparable cities (243rd). In stark contrast, 33.6% of the minority population in the City of Racine does not have a high school diploma, a value that ranks 8th highest among comparable cities in the East North Central division and 68th among all comparable cities.

Educational Attainment by Age

In order to gain deeper insights into both the current and perhaps future educational attainment disparity between the City of Racine and the 676 comparable cities, data for the total population

were disaggregated into five age categories, from ages 18-24 to age 65 and older. The values in Table 3 show the percentage of each respective age group's corresponding highest level of educational attainment for the City of Racine and the comparable cities.

The same disparities revealed in Table 2 can be observed across most age groups, this is particularly true in the tails of the educational distribution.[4] In Table 2, we saw that 19.1% of people in the City of Racine do not have a high school diploma, which is 35% higher than in comparable cities (14.1%). Table 3 reveals people age ≥65 in the City of Racine are much more likely not to have a high school diploma (28.5%), an incidence that is 40% higher than in comparable cities (20.3%). While the prevalence of no-diploma in Racine is lower in all four of the younger age categories, Racine's values do not compare favorably with the sample of 676 similar cities. For example, 18.3% of Racine's 25-34 year-olds do not have a high school diploma which is 60% higher than the figure for comparable cities (11.4%).

The disparities are even more pronounced at higher levels of educational attainment. Table 2 showed that 12.0% of Racine's population age ≥25 have a Bachelor's degree as their highest level of educational attainment, which is just 65% of the mean rate for comparable cities (17.8%). While the prevalence of this level of educational attainment is higher among Racine's 25-34 year-olds (14.7%), Racine's value is still just 68% of that seen in comparable cities (21.6%). For graduate and professional degrees, the same pattern is seen in all but the oldest age category.

[4] Note that the data in Table 2 are for ages ≥25, but in Table 3 the data are for ages ≥18.)

Table 3
Highest Level of Educational Attainment by Age, 2015
Comparable Cities and the City of Racine*

	Age 18-24		Age 25-34		Age 35-44		Age 45-64		Age ≥ 65	
	Cities	**Racine**	**Cities**	**Racine**	**Cities**	**Racine**	**Cities**	**Racine**	**Cities**	**Racine**
No HS Diploma	14.9	19.2	11.4	18.3	13.1	18.8	13.2	15.3	20.3	28.5
	1.29		**1.60**		**1.43**		**1.16**		**1.40**	
HS or GED	30.0	40.1	24.0	28.1	25.0	28.8	28.1	30.9	31.7	33.4
	1.34		**1.18**		**1.15**		**1.10**		**1.05**	
Some College	41.0	32.7	25.0	26.0	22.4	24.8	22.1	27.0	19.1	17.8
	0.80		**1.04**		**1.11**		**1.22**		**0.93**	
Associate Degree	4.8	3.9	8.7	8.8	9.0	10.1	8.6	9.6	5.2	4.0
	0.81		**1.01**		**1.12**		**1.11**		**0.77**	
Bachelor's Degree	8.6	3.8	21.6	14.7	18.8	11.7	17.1	11.8	13.0	9.6
	0.44		**0.68**		**0.62**		**0.69**		**0.74**	
Graduate/ Prof	0.7	0.3	9.2	4.1	11.7	5.7	10.9	5.3	10.7	6.7
	0.43		**0.45**		**0.49**		**0.49**		**0.63**	

* Cities N=676

Each cell contains the percentage of that age category with the respective highest level of educational attainment for all 676 cities in the sample (unweighted mean) and the City of Racine, respectively. The larger bolded value is the ratio of the value for the City of Racine to the mean for all cities. For example, in the first cell 14.9% of 18-24 year olds in the sample did not have a high school diploma, while in the City of Racine it was 19.2%. In other words, Racine had 29% more of its 18-24 year olds (**1.29**) without a high school diploma compared to all cities in the sample.

Model Specification

The specification of the two ordinary least squares models, one for the unemployment rate (*unemp*) and one for the employment rate (*emp*), is informed by Elhorst (2003) who thoroughly reviewed an extensive literature on the causes of regional unemployment differentials. Each variable is discussed in light of its theoretical impact in the *unemp* model. We expect that the impact of each variable will have the opposite sign in the *emp* model.

However, before we present the theoretical impact of each variable in the model we believe it is important to recognize that these variables are manifestly imperfect indicators of underlying paths of causation that are highly complex and rarely, if ever, observed let alone measured. Worker productivity is theorized to influence labor market outcomes, but we have no direct measures of productivity so we use characteristics that we believe are related to it, like levels of educational attainment discussed in the previous section. Not only are these variables imperfect indicators of productivity, they do not even measure of *educational attainment*, despite the name given to the data by the U.S. Census Bureau. What they actually measure is *years of schooling*, which is only suggestive of the amount of *education* actually acquired.[5]

Likewise, there are other variables that previous research has consistently shown to be strongly related to labor market outcomes but may have multiple, and sometimes conflicting, theoretical paths of causation which we cannot observe directly. Two examples of these type of variables are minority status and family structure. There is nothing in economic theory that suggests that a

[5] There are mainstream economic theories that posit that the statistical link between schooling and labor market performance is not because schooling increases productivity, as human capital theory would suggest. Signaling theory argues that acquired levels of schooling serve as a signal of *potential* productivity to prospective employers. While the paths of causation differ, both human capital and signaling theory suggest a strong link between schooling and labor market performance.

person's race or ethnicity, or their family structure, will *per se* determine labor market performance. Nevertheless, research consistently reveals that these characteristics have a strong statistical relationship with outcomes like unemployment. We should be cautious, however, about making any conclusions about the underlying theoretical causation responsible for the statistical relationship. A variable like minority status could be capturing a whole host of influences, like current labor market discrimination or the impact of intergenerational inequalities in public school financing, just to name two.

Table 4 contains all the variables included in the models, their definitions, means and standard deviations, along with variable values for the City of Racine and Racine's out-county.

Human Capital: schooling, language, and ability

Human capital is defined as a set of skills valued by employers. The acquisition of human capital can take place informally through work/life experience or more formally through education and training. The theoretical and empirical evidence is clear that the acquisition of human capital improves labor market performance and that this relationship has been getting stronger over time (Juhn, 1999). Elhorst (2003) reported on nine studies that explored the impact of human capital on regional labor markets. All nine found that human capital acquisition improves labor market outcomes.

Table 4
Variable Definitions and Basic Statistics, 2015

Variable	Definition	Cities Mean (SD)	Out-County[a]	Racine City
unemp	% labor force age ≥ 16yrs who are unemployed	5.6 (1.6)	4.8	7.0
emp	% pop age ≥ 16yrs who are employed	57.9 (6.7)	61.6	57.2
hsged	% pop age ≥ 25yrs with highest educational attainment as high school or its equivalent	27.2 (7.2)	30.9	30.3
ascoll	% pop age ≥ 25yrs with highest educational attainment as associate degree or some college	30.2 (5.4)	22.5	33.2
baplusNM[b]	% *nonminority* pop age ≥ 25yrs with highest educational attainment as college degree or higher	34.6 (14.6)	28.5	23.6
baplusM[b]	% *minority* pop age ≥ 25yrs with highest educational attainment as college degree or higher	18.2 (9.9)	15.5	7.3
age55	% pop age ≥ 16yrs that is ≥ 55yrs of age	30.5 (5.8)	38.5	30.5
age24	% pop age ≥ 16yrs that is ≤ 24yrs of age	17.9 (6.8)	12.4	16.8
minority	% pop that is *not* categorized as either "White alone, not-Hispanic or Latino" or as "Asian alone"	41.0 (19.4)	11.0	47.2
popgr	% change in the city's population since 2010	5.1 (6.7)	1.5	−1.9
femhh	% of the city's families headed by females with children age < 18yrs	17.5 (6.3)	7.7	22.6
union	% employed *hypothetically* covered by a collective bargaining agreement	11.9 (1.4)	11.4	11.4
hhi	Herfindahl-Hirschman Index of industrial concentration	13.4 (2.4)	13.7	13.7
travel	% employed workers who daily travel 30 or more minutes to work	31.6 (13.5)	36.6	24.3
noengl	% pop age ≥ 25yrs who do *not* have English as the primary language spoken in the home	22.1 (16.6)	5.0	13.0
disable	% pop who are disabled	12.6 (3.6)	11.3	13.4

[a] Out-County values are estimates for Racine County excluding the City of Racine.
[b] The two *baplus* variables were weighted in the regression analysis by the relative size of the race/ethnic group in the *baplus* category. For example, *baplusM* was weighted by the percentage of all those earning a college degree or more who were *minority*. The values in this table are *un*weighted.

While human capital has many dimensions including the pre-market acquisition of soft-skills, the *quality* of schooling, on-the-job training, and labor market experience, we capture the formal training dimension of human capital with three levels of educational attainment. All three refer to the highest level of schooling attained: (1) high school or equivalent (*hsged*); (2) associate's degree or some college (*ascoll*); (3) Bachelor's degree or higher, which is measured for the nonminority (*baplusNM*) and minority populations (*baplusM*). As seen in the previous section, the City of Racine has slightly higher rates of attainment than comparable cities at the levels of high school, associate's degree, and some college, but substantially lower rates of attainment at the level of Bachelor's degree and higher, particularly among minorities. All four variables are expected to have a negative impact on unemployment, that is, holding all other factors constant, higher levels of educational attainment are expected to be associated with lower rates of unemployment. Both *baplusNM* and *baplusM* entered the regression model weighted by the relative size of the nonminority and minority populations, respectively. For example, *baplusM* was weighted by the percentage of all those earning a Bachelor's degree or more who were *minority*. The values in Table 4 are *un*weighted.

Two other human capital-related variables are included: (1) the percentage of the population age ≥ 25 years who do not have English as the primary language spoken in the home (*noengl*), and (2) the percentage of the total population who are disabled (*disable*). The expected impact of noengl on a city's unemployment rate is uncertain. On the one hand, communication skills are valued in the workplace and higher values of *noengl* may be an indirect, albeit imperfect, indicator of lower level workplace communication skills. On the other hand, *noengl* may be an indirect, again albeit imperfect, proxy for the size of the recent immigrant population which some studies have shown to generate superior labor force outcomes (Schaeffer, 1995). The immigrants are not a randomly

selected population. Almost by definition, they represent a group of highly motivated risk takers that are likely to exhibit higher levels of work effort than native populations. Therefore, the anticipated impact of *noengl* is ambiguous.

Higher levels of the population who are disabled (*disable*) are expected to increase a city's unemployment rate. The ACS reports on a number of disability categories, e.g. difficulty associated with vision, cognition, self-care, etc…, across five age groups. Our measure includes all disability types and all age groups. The idea is that the impact of a disability on labor market outcomes may not be confined to the individual with the disability, even if the disabled are of nonworking age, but may very well impact the labor market experience of caretakers within the household.

Demography: age, race/ethnicity, population growth, and family structure

There are a number of demographic characteristics that have been shown to be associated with labor market outcomes. We include two variables that capture the tails of the age distribution: (1) *age24* is the percentage of the city's population age ≥16 who are less than or equal to 24 years of age, and (2) *age55* is the percentage of the city's population age ≥16 who are 55 years of age or older. Higher proportions of either of these age categories are expected to be negatively associated with city-level labor market performance. Young people tend to have lower levels of schooling and experience resulting in higher levels of unemployment and overall lower levels of labor force participation. Workers at the other end of the age distribution, while potentially having more work experience, may nevertheless also experience higher levels of unemployment. The older population may also have less schooling than the prime working age population, and in light of rapid technological advances, their experience and training may be less suited to employers' skill requirements. Once unemployed, older workers may have a harder time finding employment

because employers have fewer years in which they can recoup any expenses for on-the-job training. Health problems may also be more prevalent among older workers. Therefore, both *age24* and *age55* are expected to have positive coefficients in the unemployment model. The City of Racine's age distribution is very similar to the mean values among comparable cities, the proportion of older people (*age55*) is identical (30.5), and the proportion of younger people (age24) is very similar, 16.8% for the city and 17.9% for comparable cities. Comparisons between the city and the out-county, however, reveal nontrivial differences; in the out-county *age55* is eight points higher (38.5) and *age24* is more than four points lower (12.4%).

Minority groups, particularly Blacks, Hispanics, and American Indians, tend to experience substantially higher rates of unemployment and lower rates of employment even after productivity characteristics are held constant (Fairlie and Sundtrom, 1999). In 2015, the national unemployment rate for Whites was 4.6%, Hispanics or Latino 6.6%, and Blacks or African Americans was 9.5%. We include a single variable (*minority*) to capture the racial/ethnic composition of a city's population. Its definition is the percentage of the population that is *not* categorized as either "White alone, not-Hispanic or Latino" or as "Asian alone", which is identical to the minority and nonminority definitions used in the earlier discussions of educational attainment. The City of Racine has a larger percentage of minorities (47.2%) than comparable cities (41.0%), and there is a stark difference with the out-county where only 11.0% of the population are minorities. We expect higher levels of *minority* to be associated with higher unemployment rates and lower employment rates.

The rate population growth can influence a city's labor market outcomes. Higher rates of population growth may be an indicator of the vitality a city's economy and local amenities. We include the

variable *popgr* which measures the percentage change in the city's population since 2010. The impact on labor market outcomes, however, is uncertain. The direction of the effect of *popgr* will depend on the relative speed at which the demand and supply of labor adjust. For example, an attractive city with a vibrant economy could attract more people but the impact on the city's unemployment rate will depend on speed at which the increased population can be absorbed into the labor market. The mean 5-year population growth rate for the City of Racine was -1.9%, while the out-county population grew 1.5% and the mean value for *popgr* among the comparable cities was 5.1%.

We include the percentage of families head by females with children under the age of 18 (*femhh*), which is expected to have a negative impact on labor market outcomes. Extraordinary familial demands on young single mothers can weaken their labor force attachment. In turn, the labor market signal from female-heads might suggest to prospective employers that their labor force participation could be less continuous than other candidates, making single mothers potentially less attractive job candidates. The percentage of families headed by women with children is more than five points higher in the City of Racine (22.6%) than comparable cities (17.5%), and dramatically higher than the proportion in the out-county (7.7%).

Urban and Industrial Structure: concentration, unionization, and travel time

We include three variables that capture aspects of a city's industrial structure and economic connection with the adjacent region. Previous research has shown that industrial concentration can increase a region's unemployment rate (Taylor and Bradley, 1983). Concentration is defined as an over-representation of employment in a small number of industries. The argument is that city's with a more diverse industrial base can weather adverse external shocks in labor demand to a single

sector as displaced workers have more options for re-employment. Our measure of concentration is the Herfindahl-Hirschman Index:

$$hhi_i = 100 \cdot \sum_{j=1}^{13} e_{ij}^2$$

The level of concentration in the i^{th} city is the squared employment shares summed across all 13 broad industrial classifications (j). The highest value *hhi* can take on is 100, that is, when all employment is concentrated in one industry; and with a total of 13 industries, the lowest value for *hhi* is approximately 11.8. We expect that higher levels of industrial concentration will be associated with higher unemployment rates. The City of Racine's level of concentration is 11.4, slightly lower than the 11.9 mean value for comparable cities. There was not a separate value calculated for the out-county.

Unionization

High levels of union membership has been associated with higher levels of unemployment. Unions tend to negotiate higher than average wage rates and impose rigidities into the labor contract that restrict an employer's flexibility in how it uses labor, both of which may decrease the demand for labor. Leonard (1992) found employment growth in union firms to be significantly less than nonunion firms. To the extent that unions are successful in raising the relative wages of its members, in the long run, employers may increase the rate at which they substitute capital for labor. In addition, for union members on layoff, the existence of union benefits can tend to increase the duration of their joblessness because it is less costly to increase job search time (Blackley, 1989). The potential for higher wages in the unionized sector can cause higher "wait unemployment" as unemployed workers expand the duration of their unemployment for the possibility of attaining a job in the higher wage sector (Mincer, 1976). In his time series study of state-level unemployment

Summers (1986) found that a unionization rate of 20% increased a state's unemployment by about 1.2 percentage points relative to a state that had no union workers.

Unfortunately, we are not able to directly measure union membership because is not available at the city level. However, we constructed a variable that may be closely associated with city unionization *coverage*, which is defined as the percentage of employees who are union members or whose job is covered by a union contract. As a proxy for union coverage we rely on *national* coverage rates by industry provided by (Hirsch and Macpherson, 2003). National coverage rates by industry are then matched to each city's industrial structure to obtain a "hypothetical" coverage rate for each city:

$$union_i = 100 \cdot \sum_{j=1}^{18} u_j e_{ij}$$

where u_j is the rate of coverage in the j^{th} industry nationwide, and e_{ij} is the ratio of the number of workers in the j^{th} industry to total employment in the i^{th} city. Thus, the higher the value of *union*, the higher the anticipated level of coverage in a city.

Our proxy for union coverage should be viewed as only suggestive. Hirsch and Macpherson's data set provides national coverage rates for more than 200 industrial classifications, while our hypothetical measure aggregates industries into 18 categories. Using national rates estimated from broadly defined industrial categories is likely to miss significant intra-industry variations in coverage for some cities. Consequently, rather than interpreting *union* as a measure of the degree of union coverage *per se*, it is better to consider it as an estimate of the degree to which a city's employment is in industries that have higher rates of coverage. Nevertheless, we expect higher levels of *union* to be associated with higher unemployment rates and lower employment rates. The

City of Racine had a slightly lower level of *union* (11.4%) than the mean value for comparable cities (11.9%); there was not a separate estimate made for the out-county.

The geographic disparity between job and residential location can influence labor market outcomes and may be an indirect indicator of the degree to which a city's supply of jobs meets the needs of its residents. The percentage of employees who commute 30 or more mins to work (*travel*) is expected to be positively associated with unemployment. In the City of Racine, 24.3% of employees commute to work 30 or more minutes in 2015, while the value for *travel* was 31.6% and 36.6% for comparable cities and in the out-county, respectively.

Regional and state-level fixed effects

Both models contain dummy variables capturing regional and state-level fixed effects. Eight dummies were included for the U.S. Census divisions and 26 for individual states (U.S. Census Bureau). A state-level dummy was included if the state had a minimum of five cities that met the total and Black population filters. Not all states had fixed effect estimates because two states were explicitly excluded (Alaska and Hawaii), nine states had no cities that met the total and Black population filters, nine had at least one but less than five cities that met the filters, and four more had to excluded because of collinearity with the combination of U.S. Census divisions and state-level dummies. The tables reporting the OLS regressions results do not contain the fixed effect results but are available upon request.

Results: unemployment model

Tables 6 includes the results for the unemployment model, including: (1) the estimated ordinary least squares (OLS) coefficients along with the corresponding *p*-value in parentheses; (2) measures

Table 6
Determinants of the Interurban Variation in Unemployment, 2015

Variable	$\widehat{\beta}_i$ (*p-value*)	Standard Beta[c]	Elasticity[d]	$\widehat{\beta}_i(X_{CoR} - \bar{X}_{CC})$	$\widehat{\beta}_i(X_{CoR} - X_{OC})$
constant	7.798 (.0001)				
hsged	-0.070 (.0001)	-0.324	-0.341	-0.214	0.042
ascoll	-0.046 (.0001)	-0.157	-0.248	-0.136	-0.488
baplusNM[b]	-0.068 (.0001)	-0.596	-0.330	0.486	0.495
baplusM[b]	-0.073 (.0001)	-0.159	-0.053	0.210	-0.032
age55	0.040 (.0001)	0.151	0.222	0.001	-0.323
age24	0.042 (.0001)	0.181	0.134	-0.045	0.182
minority	0.019 (.0001)	0.237	0.140	0.117	0.689
popgr[a]	-0.012 (.0457)	-0.051	-0.011	0.084	0.040
femhh	0.060 (.0001)	0.240	0.188	0.306	0.894
union	-0.052 (.0663)	-0.046	-0.112	0.028	0.000
hhi	-0.001 (.4745)	-0.002	-0.003	0.000	0.000
travel	0.010 (.0044)	0.090	0.059	-0.076	-0.127
noengl[a]	-0.016 (.0004)	-0.169	-0.063	0.145	-0.128
disable	0.067 (.0003)	0.158	0.153	0.053	0.145
N	676				
F	48.60				
$\bar{R}^2$	0.77				

The model includes fixed effects for U.S. Census divisions (8) and states (26). *p*-values in parentheses.

[a] Indicates two-tail *p*-values, otherwise all *p*-values are one-tail; *p*-values are associated with White heteroskedastic consistent standard errors.

[b] *baplusNM* and *baplusM* are weighted by the relative size of the *nonminority* and *minority* populations, respectively.

[c] Standardized beta coefficients measure the standard deviation change in the unemployment rate for a one-standard deviation change in the respective variable.

[d] Elasticities were calculated at variable means and are interpreted as the % change in the unemployment rate for a 1% change in the respective variable.

of standardized effects; and (3) a decomposition of the equation that helps identify the primary factors driving the City of Racine's labor market performance relative to comparable cities and Racine's out-county.

As mentioned earlier, 707 cities met the total population and relative size of the Black population filters, but 31 cities were dropped from the analysis, two because of missing data and 29 because they were considered extreme outliers in the regression analysis. Outliers were defined as cities that had extreme values for their studentized residual and Cook's D statistics.[6]

Model performance

The model performed quite well, explaining 77% of the inter-city variation in unemployment. The first column of values contains the estimated OLS coefficients along with the corresponding *p*-values which were generated using White heteroskedastic consistent standard errors. All *p*-values are one-tail with the exception of *popgr* and *noengl*, which are two-tail.

With a few exceptions, individual variables performed as expected and were statistical significant at conventional α-levels. All but two coefficients had the anticipated sign, and 11 of 14 coefficients had *p*-values less than .01. Coefficients on union membership density (*union*) and industry concentration (*hhi*) were not statistically significant at conventional α-levels and had signs that were opposite of our expectations. Regional and state fixed effects estimates are not shown but are

[6] Outliers were defined as cities that had extreme values for their studentized residual (r_i) and Cook's D statistics (D_i). There are no definitive outlier threshold values for these statistics, but commonly used standards are $|r_i|>3$ and $D_i > \frac{4}{n}$ (Bollen, et al, 1990). Conservatively, cities were excluded if $|r_i| >3$ and $D_i > (2 \cdot \frac{4}{n})$. See the end of Appendix B for a list of the 31 cities dropped from the analysis.

available on request. Six of eight regional effects and 17 of 26 state effects were statistically significant at the two-tail, 0.05 α-level. The Wisconsin fixed effect was statistically significant and positive (0.42), while Wisconsin's U.S. Census division (East North Central) had a strong negative impact on unemployment (-1.47). Taken together and holding all else constant, state and regional effects acted to *decrease* the City of Racine's unemployment rate by approximately one-percentage point.

Except for *hhi*, all the explanatory variables have the same definitional structure, *"the percentage of a city's (X) population with (Y) characteristic,"* which makes for both a straightforward interpretation of the estimated coefficients and a comparison across variables. For example, the coefficient on *hsged* (-0.070) indicates that, holding all else constant, a one-percentage *point* increase in the percentage of the population age ≥25 years with a high school diploma or equivalent will decrease a city's unemployment rate by 0.070 percentage *points*. Therefore, for the City of Racine, if *hsged* increased by five percentage points, from 30.3 to 35.3, holding all else constant, we would expect that Racine's unemployment rate will decline from 7.0% to 6.65% [7.0% - (5 x 0.070)]. Notably, all four educational attainment variables have the expected negative sign and are statistically significant with *p*-values less than .0001.[7]

[7] The similar size of the four educational attainment coefficients can be misleading, it is important to keep in mind that both *baplus* variables are weighted by the relative size of the nonminority and minority populations. For example, in the City of Racine the unweighted value for the percentage of the minority population age ≥25 years with a Bachelor's degree or more (*baplusM*) is 7.3% (see Table 4), but the percentage of all people in the City of Racine age ≥25 years with that level of educational attainment who are minority is only 16.0%. Therefore, the *weighted* value of *baplusM* for the City of Racine is approximately 1.2% (7.3% x 0.16). A one-percentage point increase in the weighted value of *baplusM*, from 1.2% to 2.2%, is an unreasonably large 83% change.

Standardized Effects

Interpreting the OLS coefficients can sometimes be misleading because a one-percentage *point* change may be a small for some variables but unreasonably large for others. The next two columns contain standardized coefficients which are more helpful when attempting to compare the relative magnitude of effects across variables. Standardized beta coefficients measure the standard deviation change in the dependent variable (*unemp*) for a one-standard deviation change in the respective explanatory variable. For example, the value for *hsged* in the unemployment model (-0.324) indicates that, holding all else constant, a one-standard deviation increase in *hsged* will decrease *unemp* by 0.324 standard deviations. The standard deviations for *hsged* and *unemp* are 7.2 and 1.6, respectively, see Table 4. Therefore, a city's unemployment rate is expected to decrease by approximately 0.52 percentage *points* (1.6 x 0.324), when the percentage of a city's population age ≥25 years with a high school diploma or equivalent increases by 7.2 percentage *points*.

Since the standardized beta coefficients measure the impact of a typical change in each explanatory variable, i.e. standard deviation, they can be compared across all variables. By this measure, the two most important city characteristics helping to explain the inter-city variation in unemployment are two educational attainment variables (*baplusNM* and *hsged*), followed by the percentage of families headed by women with children (*femhh*), and the relative size of the minority population (*minority*).

Elasticities are an alternative way of standardizing the OLS coefficients. They measure the percentage change in the dependent variable for a one-percent change in the explanatory variable. For example, the -0.341 elasticity for *hsged* indicates that, holding all else constant, a one-*percent* increase in *hsged* will decrease *unemp* by 0.341 *percent*. The mean values for *unemp* and *hsged* are 5.6% and 27.2%, respectively (Table 4). Therefore, for a typical city in the sample, the

unemployment rate will decline by 0.019 percentage *points* (5.6 x .00341) when the percentage of a city's population age ≥25 years with a high school diploma or equivalent increases by 0.272 percentage *points* (27.2 x .01). The values for *hsged* and *unemp* for the City of Racine are 30.3% and 7.0%, so a five-*percent* increase in *hsged* equates to approximately 1.51 percentage points (30.3 x .05) and would be expected to decrease Racine's unemployment rate by approximately 1.7 *percent* (5 x 0.341) from 7.0% to about 6.88% [(7 – (7 x 0.017)].

Like the standardized betas, elasticities can be used to rank the explanatory variables by their relative impact on unemployment. By this measure, the two variables with the largest impact on the inter-city variation in unemployment, in rank order, are *hsged* and *baplusNM*, the same top two variables identified by the standardized beta coefficients. However, the next two most important variables, in rank order, are the educational attainment variable associate's degree or some college (*ascoll*) and the relative size of the older population (*age55*).

Explaining the unemployment gap

In the introduction, we noted that the City of Racine's 2015 unemployment rate (7.0%) was significantly higher than both the mean value for comparable cities (5.6%) and for the out-county of Racine (4.8%). The last two columns in Table 6 help identify the most important characteristics responsible for the City of Racine's *differential* unemployment rate relative to comparable cities and Racine's out-county. Table 4 showed that the characteristics of the City of Racine differ from those that describe comparable cities and the out-county. The values in the last two columns of Table 6, $\hat{\beta}_i(X_{CoR} - \bar{X}_{CC})$ and $\hat{\beta}_i(X_{CoR} - X_{OC})$, measure the contribution that the disparity in characteristics have on the City of Racine's unemployment gap with comparable cities and the out-county. These values are all measured in the same units, i.e. they represent *unemployment percentage points*, and

therefore, can be compared across variables. For example, in comparable cities the mean value of the percentage of nonminorities with a Bachelor's degree or higher (*baplusNM*) was 34.6%, while in the City of Racine is was 28.5%.[8] This disparity contributed 0.486 points to the 1.4 percentage point gap in unemployment between the City of Racine and comparable cities (7% - 5.6%). Two other disparities in characteristics had large *positive* contributions to the gap: the City of Racine's larger incidence of female-headed families with children (*femhh*) contributed 0.306 points, and the city's lower incidence of Bachelor's degree or higher in the minority population (*baplusM*) contributed 0.210 points to the gap.

Some characteristics contributed *negatively* to the unemployment gap, that is, they acted to *decrease* the unemployment gap with comparable cities. Only two characteristics have relatively large negative effects on the unemployment gap and both are educational attainment variables: the percentage of the population age ≥25 years with a high school diploma or equivalent (*hsged*) and the percentage with an associate's degree or some college (*ascoll*), both of which are approximately three percentage points higher in the City of Racine than in comparable cities (Table 4).

The last column calculates the same decomposition effects for the City of Racine's unemployment rate disparity with the out-county. Similar to what was estimated for comparable cities, there is a large disparity between the City of Racine and the out-county in the percentage of families headed by women with children (*femhh*), 22.6% in the city *vs.* 7.7% in the out-county. That disparity accounted for 0.894 points, approximately 40%, of the 2.2 point differential in the unemployment rates between the City of Racine and the out-county. The top three characteristics contributing

[8] Recall that the actual values for the two *baplus* variables used in the OLS regression and in the decomposition were not the values reported in Table 4, but rather their *weighted* values.

positively to the unemployment gap in rank order are *femhh*, the relative size of the minority population (*minority*), and the percentage of nonminorities with a Bachelor's degree or higher (*baplusNM*).

The fact that the City of Racine had a higher percentage of its population age ≥25 years with an associate's degree or some college (*ascoll*) than the out-county, 33.2% vs 22.5%, *decreased* the unemployment gap by 0.488 points. The only other characteristic with a relatively large negative impact on the unemployment gap was the relative size of the older population (*age55*). The out-county's larger percentage of the population age ≥16 years that is 55 years of age and older (38.5%) than the City of Racine (30.5%) acted to decrease the unemployment gap by 0.323 points.

Results: Employment Model

Table 7 contains the results of employment model. The structure of the table is identical to Table 6 and the cities used in the analysis are the same as those in the unemployment model, the only difference is that the measure of labor market performance is the *employment* rate. Overall, the model performs well, explaining 79% of the total variation in city employment rates. As expected, it is generally the case that city characteristics have the opposite sign in the employment model compared to the unemployment model, but there are some important differences in the strength of the statistical relationships.

Table 7
Determinants of the Interurban Variation in Employment, 2015

Variable	$\widehat{\beta}_i$ (*p-value*)	Standard Beta[c]	Elasticity[d]	$\widehat{\beta}_i(\overline{X}_{CC} - X_{CoR})$	$\widehat{\beta}_i(X_{OC} - X_{CoR})$
constant	86.402 (.0001)				
hsged	0.069 (.1251)	0.075	0.032	-0.211	0.041
ascoll	0.139 (.0045)	0.112	0.073	-0.415	-1.492
baplusNM[b]	0.153 (.0001)	0.314	0.072	1.098	1.119
baplusM[b]	0.415 (.0001)	0.213	0.029	1.201	-0.185
age55	-0.400 (.0001)	-0.350	-0.211	-0.005	-3.193
age24	-0.333 (.0001)	-0.339	-0.103	-0.361	1.451
minority	-0.052 (.0004)	-0.152	-0.037	0.324	1.891
popgr[a]	-0.020 (.4081)	-0.021	-0.002	-0.144	-0.070
femhh	-0.099 (.0180)	-0.093	-0.030	0.510	1.481
union	-0.883 (.0001)	-0.181	-0.182	-0.458	0.000
hhi	-0.260 (.0007)	-0.095	-0.060	0.086	0.000
travel	-0.005 (.3772)	-0.010	-0.003	-0.035	-0.059
noengl[a]	0.023 (.2852)	0.058	0.009	0.215	-0.189
disable	-0.703 (.0001)	-0.384	-0.153	0.552	1.505
N	676				
F	54.52				
$\overline{R}^2$	0.79				

The model includes fixed effects for U.S. Census divisions (8) and states (26). *p*-values in parentheses.

[a] Indicates two-tail *p*-values, otherwise all *p*-values are one-tail; *p*-values are associated with White heteroskedastic consistent standard errors.

[b] *baplusNM* and *baplusM* are weighted by the relative size of the *nonminority* and *minority* populations, respectively.

[c] Standardized beta coefficients measure the standard deviation change in the unemployment rate for a one-standard deviation change in the respective variable.

[d] Elasticities were calculated at variable means and are interpreted as the % change in the unemployment rate for a 1% change in the respective variable.

Model performance and standardized effects

Considering the first three columns together, i.e. the OLS estimates and two standardized coefficients, a clear pattern can be seen that has everything to do with the way the employment rate is measured. Recall that the unemployment rate is the ratio of the number of unemployed to the labor force, which in turn is defined as the sum of the employed and unemployed. In order to be considered unemployed, a person must self-report that they have been looking for work in the last four weeks. So the unemployment rate is critically dependent on people's stated intension to find work. The employment rate has no such dependency. It is simply the ratio of the number of employed to the size of the working age population (age ≥16 years).

The difference in the way labor market performance is measured can help us understand some of the differences in the results reported in Table 6 and 7. The variables that capture the age distribution (*age55* and *age24*) and the relative size of the disabled population (*disable*) all have the correct sign and are statistically significant in both the unemployment and employment models. However, the *magnitude* of their effects is larger in the employment model. In absolute value, these variables (*age55*, *age24*, and *disable*) have the top three standardized beta coefficients and three of the top four elasticities. For example, consider the relative performance of the variable *disable*, whose standardized beta coefficient was the largest in the employment model, but ranked seventh in the unemployment model. Given the way the dependent variables are measured, this is not surprising. Some people with a disability may have difficulty finding employment, hence the statistically significant impact of *disable* in the unemployment model. However, some disabled people may be unable to work at all and therefore do not seek employment, and others may become discouraged and decide to stop looking for work after an unsuccessful job search. In either case, they would not be considered part of the labor force and hence would not be included in the

unemployment rate, but they *would* be included in the calculation of the employment rate. The same general reasoning applies to the performance of the two variables that capture the proportion of people in the tails of the age distribution (*age55* and *age24*). Both of these age categories have lower levels of labor force participation than those in the prime working age category.

Taken together, educational attainment is strongly related to city employment rates. All four of the educational attainment variables have the correct sign in the employment model, but overall, the performance of this important set of city characteristics differs somewhat from the unemployment model. Unlike in the unemployment model, the attainment of a high school diploma or equivalent (*hsged*) is *not* statistically significant at conventional α-levels. However, after the top three characteristics mentioned earlier, the attainment of a Bachelor's degree or higher for nonminorities (*baplusNM*) and minorities (*baplusM*) are the fourth and fifth largest standardized beta coefficient.

The estimated level of unionization (*union*), while not statistically significant in the unemployment model, has the anticipated negative sign in the employment model, is statistically significant, and has a relatively large standardized beta (0.181, 6th largest) and elasticity (0.182, 2nd largest). A one-standard deviation increase in *union* (1.4) is associated with a 0.181 standard deviation decrease, or 0.2896 percentage points (1.6 x 0.181) in the employment rate.

Explaining the employment gap

The last two columns of Table 7 show the contribution that each variable makes to the gap in labor market performance between comparable cities or the out-county versus the City of Racine. These columns are similar to those in Table 6 with two notable exceptions. First, while there is indeed a nontrivial gap in the city's employment rate (57.2%) *vis-à-vis* the out-county (61.8%), the mean

employment rate for comparable cities is approximately the same (57.9%) as the city's rate. Second, note that in the column headings the City of Racine's characteristic value (X_{CoR}) is *subtracted* from the corresponding value for comparable cities and the out-county, whereas the order was reversed in Table 6. This change has no substantive effect on our conclusions and was done simply for explanatory convenience and evaluative consistency, i.e. poor labor market performance is associated with a *high* unemployment rate but a *low* employment rate. Therefore, positive values in the last two columns of both Table 6 and Table 7 refer to a variable's contribution to the City of Racine's relatively *poor* labor market performance.

While the gap in the employment rate with comparable cities is small, we can still identify factors that contribute to a relatively higher employment rate for comparable cities *vis-à-vis* the City of Racine. The characteristic with the largest contribution is the relatively higher rate of educational attainment at the level of Bachelor's degree or higher in comparable cities' for both the minority (*baplusM*) and nonminority (*baplusNM*) populations, contributing 1.201 and 1.098 points, respectively. The next two variables contributing to the gap with comparable cities, in rank order, are the City of Racine's relatively higher concentration of disabled people (*disable*) and the higher prevalence of female-headed households with children (*femhh*), contributing 0.552 and 0.510 points, respectively. Counteracting these effects, in rank order, are the City of Racine's lower representation of industries with higher rates of unionization (*union*), higher rates of educational attainment at the level of associate's degree or some college (*ascoll*), lower concentration of young people (*age24*), and higher rate of educational attainment at the high school or equivalent level (*hsged*).

There is clear delineation in the factors that explain the City of Racine's 4.6 point employment rate gap with the out-county. In rank order, the city *vs.* out-county disparity in five characteristics each contribute substantially to the gap: *minority* (1.891), *disable* (1.505), *femhh* (1.481), *age24* (1.451), *and baplusNM* (1.119). Conversely, the disparity in two countervailing characteristics serve to mitigate the size of the employment rate gap: *age55* (-3.193) and *ascoll* (-1.492).

Closing the Unemployment Gap

In 2016, Higher Expectations for Racine County (HERC) established the ambitious goal that *"…each municipality in Racine County will achieve and maintain an unemployment rate at or below the State of Wisconsin's unemployment rate"* (HERC Annual Report, 2017). It is clear from subsequent HERC reports and the actions of its community partners that educational attainment is central to its strategic plan for reaching this goal. Consistent with that notion, our unemployment model revealed that broad measures of educational attainment are strong determinants of the intercity variation in unemployment nationwide, and that the City of Racine's lower rate of attainment at the college level and higher is a significant contributor to the city's unemployment rate disparity *vis-à-vis* comparable cities and the out-county. What the model also demonstrated, however, is that a city's labor market performance is not determined solely by the educational attainment of its citizens—other demographic and socioeconomic factors matter.

With that in mind, *given the City of Racine's socioeconomic and demographic characteristics, is HERC's lower unemployment rate goal reasonable?*

To address this question we turned to our 676 comparable cities to determine how many cities had minority populations (*minority*) and rates of female-headed families with children (*femhh*) as high as in the City of Racine but had 2015 unemployment rates equal to or lower than the State of Wisconsin's 4.6%, or their own state's unemployment rate. Only 85 of the 676 comparable cities (12.6%) had values for both *minority* and *femhh* as high as the City of Racine's, 47.2% and 22.6%, respectively. Of those 85 cities, *none* had an unemployment rate as low as the State of Wisconsin's 4.6%. The unemployment rates among the 85 cities ranged from 4.9% in Chelsea, Massachusetts, to 11.6% in Camden, New Jersey, with a mean rate of approximately 7.4%.

While city-specific characteristics like the size of the minority population and family structure influence a city's unemployment rate, so does the vibrancy of the regional economy in which a city is located. Therefore, a more reasonable standard for considering the HERC goal in non-Wisconsin cities may be their own state's unemployment rate rather than the State of Wisconsin's 4.6% rate. Only eight of the 85 cities (9.4%) that had both *minority* and *femhh* values has high as Racine's had unemployment rates equal to or lower than their own state's rate.[9] It is notable that, five of those eight cities were located in states with unemployment rates of 6% or higher, making it more feasible for a city to attain a lower unemployment rate. Therefore, if the experience of the 676 comparable cities is any indication, the HERC goal of lowering and sustaining the City of Racine's unemployment rate to that of the State of Wisconsin would appear to be challenging indeed.

[9] The eight cities are: Phenix City, AL; North Lauderdale, FL; Orlando, FL; Baton Rouge, LA; Lake Charles, LA; Chelsea, MA; Hattiesburg, MS; and North Charleston, SC.

Legacy effects on current performance

Finally, it is important to recognize that each city has unique, even idiosyncratic, characteristics that have shaped its economic history and that can have lasting, if fading, influences on its future economic outcomes. We will mention two such characteristics for the City of Racine: (1) the relative importance of the manufacturing sector, and (2) the economic geography of its municipal boundaries.

Table 8 shows the absolute and relative size of manufacturing employment in 1950 and 2016 for the U.S., the State of Wisconsin, and the City of Racine.[10] In 1950, nearly one-quarter of all jobs nationwide were in the manufacturing sector, while in the City of Racine more than one out of every two workers were employed in that sector. While there has been a dramatic decline in the *share* of manufacturing employment both nationally and in the City of Racine, the decline in the *number* of manufacturing workers (16,915 to 7,421) has been particularly acute in the city over the past 66 years.

Advances in manufacturing technology, and in more recent decades, the vagaries of international competition (Pierce and Schott, 2016) have meant that the city's industrial base has had to adjust to increasing labor productivity and larger fluctuations in product demand. This has no doubt contributed to the relatively higher rates of unemployment in the city. The legacy of the overwhelming dominance of manufacturing in the city and its continued relative importance has had

[10] Source: U.S. data for both 1950 and 2016 are from Federal Reserve Economic Data (Series MANEMP and LNU02000000); 1950 data are from the *County and City Data Book, 1956* for Wisconsin (Table 1, items 11 and 12) and the City of Racine (Table 4, items 211 and 212); and the 2016 data for Wisconsin and the city from the ACS (Table DP03).

Table 8
Manufacturing Employment: 1950 *vs* 2016

	Number			Share		
	1950	**2016**	**%Δ**	**1950**	**2016**	**%Δ**
U.S.	14.0	12.3	-12.1	23.8	8.1	-65.0%
Wisconsin	414.7	536.8	+29.4	30.6	18.4	-39.9%
City of Racine	16.9	7.4	-56.2	55.2	22.0	-60.1%

*U.S. in millions; Wisconsin and the City of Racine in thousands.

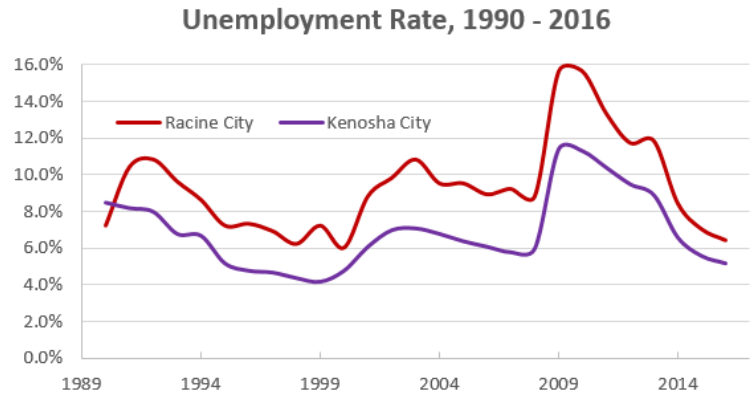
implications for the disparity in educational attainment which has been emphasized throughout this report. While modern day manufacturing requires workers with far more skills than in the 1950s (Berman, et al, 1994) the vast majority of workers are unlikely to seek those skills by pursuing a *"bachelor's degree or higher,"* an educational attainment category that our model showed had a relatively large impact on the inter-city variation in unemployment. Looking forward, we can expect the city to continue to diversify its industrial base, and technological advances in all industries will mean that they will in turn be demanding a higher skill set from their workers. With the added boost from community efforts like Higher Expectations, we can expect a commensurate change in the distribution of educational attainment in the City of Racine which will not only lower unemployment, it will also have the added benefit of decreasing the volatility of labor market outcomes.

The second legacy effect is related to the geographic boundaries of the City of Racine. Unlike the impact of the manufacturing sector, the boundary issue is both truly idiosyncratic and unlikely to fade away over time. As a municipality grows in population it is not uncommon for its legal

boundaries to expand. Almost by definition, the expansion of boundaries occurs in the suburban periphery where the population has tended to enjoy higher levels of income, education, and labor market performance. Therefore, a city's annexation of suburban property may result in the appearance of improved economic performance which may be more a statistical artifact of expanding boundaries than improvements in economic conditions *per se*.

Good examples of the implications of this phenomenon are the experiences of the City of Racine and its immediate southern neighbor, the City of Kenosha, WI. Figure 2 shows that for both cities, fluctuations in unemployment closely track national economic conditions (see Figure 1), but for more than two decades Racine experienced rates of unemployment that averaged nearly 2.5 percentage points higher than Kenosha.

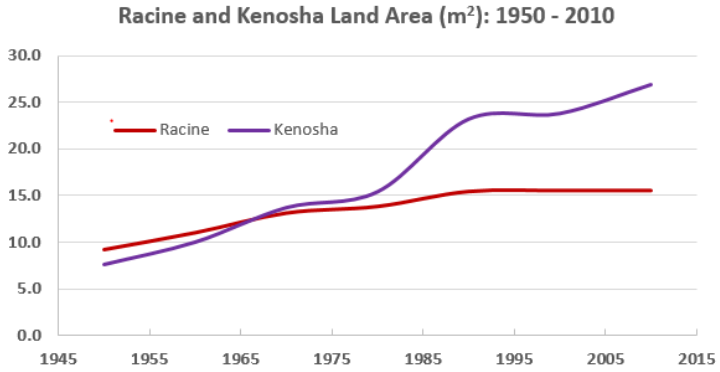
Figure 2



Data source: Bureau of Labor Statistics, Local Area Unemployment Statistics.

While both cities are bounded by Lake Michigan to the east, their history of western expansion is quite different. For decades, the City of Kenosha's western boundary has expanded while the boundary of the City of Racine has remained relatively static. Figure 3 illustrates how the land area of both cities has changed from 1950, when the City of Racine was approximately 21% larger than Kenosha, to 2010, when the City of Kenosha had grown to be 73% *larger* than Racine.

Figure 3



Source: U.S. Census Bureau, City and County Data Book, various years.

Over a span of 60 years the City of Kenosha has more than tripled in size while Racine has grown at a much more modest pace of approximately 68%. Today, the total land area of the City of Racine is only marginally higher than it was in 1980, but during that same period Kenosha added 11.5 m^2, increasing its geographical footprint by nearly 75%. In the 1960s, after contentious negotiations with its surrounding municipalities, the City of Racine arrived at intergovernmental agreements that severely curtailed its ability to annex (Spoto, 2015a). Currently, the City of Racine is virtually landlocked, while the City of Kenosha continues to expand to this day (Flores, 2017).

The City of Racine's relatively weak ability to expand its borders has had a significant impact on the city's fiscal condition and it is the only city among Wisconsin's 30 largest cities not to have direct access to an interstate or four-lane highway (Spoto, 2015a,b). There is little doubt, therefore, that its static geographic footprint has impacted measures of economic performance defined at the city-level, like its unemployment rate. In 1999, undergraduate students in Professor Cloutier's Urban Economics course explored the implications of the annexation disparity for the relative rates of unemployment in the two cities. Using detailed U.S. census tract maps and annexation records

provided by the city governments, the students created a *hypothetical* city boundary for Racine under the assumption that it had been able to expand at the same rate as the City of Kenosha. Unemployment rates were then recalculated using the hypothetical borders and it was determined that disparate rates of annexation accounted for at least 25% of the unemployment gap between the two cities.[11]

The implications of this annexation disparity for the comparison between the City of Racine and the out-county are fairly clear. We have already seen that the out-county has superior levels of educational attainment, dramatically lower rates of female-headed families with children, and a smaller minority population, all of which our model showed were strongly associated with the out-county's lower rate of unemployment. Now, with the prospect of changing these characteristics through annexation effectively blocked, the City of Racine's ability to meet the Higher Expectation's goal is hampered.

What this means more broadly for the City of Racine's labor market performance relative to the 676 comparable cities used in this report cannot be known without a more extensive and detailed historical analysis of annexation for all the cities. However, a quick look at the annexation history of the eight cities that met the HERC goal of attaining an unemployment rate at least as low as the rate in their own state suggests that it may be an important factor. Between 2000 and 2010 the City

[11] It is likely that differences in the annexation experience explain far more than 25% of the unemployment gap between the two cities. In creating Racine's new boundaries the students had to make a number of assumptions about the census tracts that would be used in the *hypothetical* annexation. Instead of strategically expanding into portions of census tracts known to contain high income families with low rates of unemployment, the students used the far more conservative approach of trying to keep the geographical footprint of the new hypothetical boundaries somewhat close to the actual boundaries. An alternative approach would have certainly generated a larger annexation effect. In fact, land use records from the two cities showed that the character of *actual* annexation was quite different. In the period 1980-1999, only 3.9% of the modest annexation in Racine was zoned residential, while 24.7% of Kenosha's more aggressive expansion was zoned for housing.

of Racine's geographical footprint remained static but the eight cities that met the HERC goal increased their geographical size during the decade with an average rate of growth of 9.8%. It would take a detailed analysis of each city's annexation to know exactly how boundary expansion impacted their unemployment rate, but it is quite likely that the boundary change had the effect of improving many economic indicators, including unemployment.

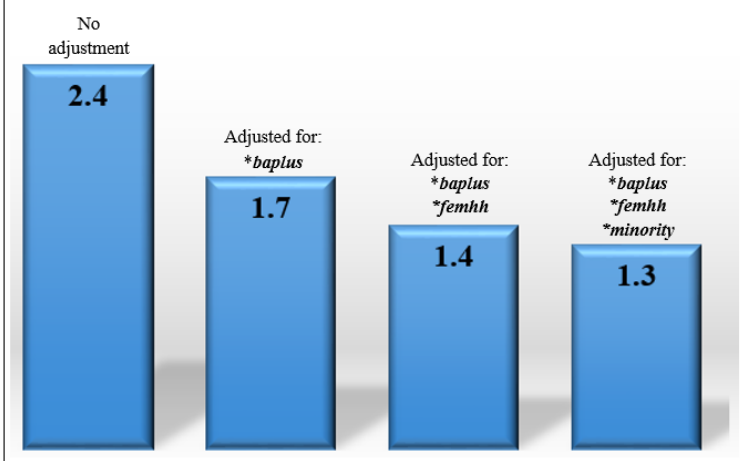
Taken together, the socioeconomic characteristics of the City of Racine along with its industrial and geographical legacy effects, present a significant challenge for coordinated policies intended to improve labor market outcomes in the city *relative* to the out-county or comparable cities. By no means does this imply that the HERC goal is unreachable, but it does suggest that public policy intended to improve the City of Racine's labor market performance must confront a set of structural headwinds that simply do not exist in other municipalities in Racine County.

Impact of changes in City of Racine characteristics on the "gap"

With Racine's unique structural characteristics in mind, we can estimate the impact of changing key demographic and socioeconomic characteristics of the City of Racine on the city-state gap in unemployment. In effect, this has already been done. Recall that in Table 6 we showed the impact that each variable in the model had, not only on the intercity variation of unemployment but also on the unemployment ***gap*** *vis-à-vis* comparable cities and Racine's out-county. That analysis showed that there were three key drivers of the city's gap with the mean unemployment rate for comparable cities and the out-county unemployment rate. Although there was a distinct difference in the ranking of their importance, the three variables were higher levels of educational attainment (*baplus*), the percentage of families headed by women with children under the age of 18 (*femhh*), and the relative

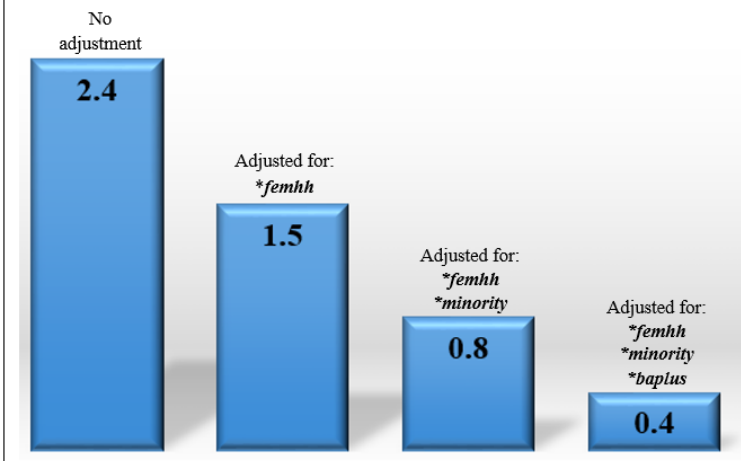
size of the minority population (*minority*).[12] Figures 4 and 5 illustrate the impact on the city-*vs*-state unemployment gap (7% *vs* 4.6%) of changing these three city characteristics to the mean values for comparable cities and the values for Racine's out-county, respectively. The first bar represents the actual city-*vs*-state unemployment rate gap of 2.4% points. The second bar in Figure 4 represents the size of the city-state gap (1.7% points) if the city increased its higher educational attainment (*baplus*) to the mean values observed for the 676 comparable cities, i.e. *bapusNM* increases from 23.6% to 34.6%, and *baplusM* from 7.3% to 18.2%. The next two bars show the *cumulative* effect of decreasing the relative number of female headed households (22.6% to 17.5%) and minority population (47.2% to 41.0%). Altering all three characteristics is not enough to close the city-state gap.

Figure 4
City-State Unemployment Differential*
Scenario 1: Adjusting for Comparable Cities Values



*Values are percentage point differentials between the City of Racine (7.0%) and the State of Wisconsin (4.6%) under the assumption that key city characteristics take on the mean values for comparable cities.

Figure 5
City-State Unemployment Differential*
Scenario 2: Adjusting for Out-County Values



*Values are percentage point differentials between the City of Racine (7.0%) and the State of Wisconsin (4.6%) under the assumption that key city characteristics take on the mean values for Racine's out-county.

[12] Throughout the discussion in this section, the two measures of higher educational attainment, *baplusNM* and *baplusM* are aggregated. The rank order of the three characteristics in explaining the unemployment gap with comparable cities, starting with the most important, is *baplus*, *femhh*, and *minority*, and for the gap with the out-county the ranking is *femhh*, *minority*, and *baplus*.

Figure 5 illustrates the impact of similar hypothetical scenarios when the same three variables are changed to the respective values for Racine's out-county: *femhh* 22.6% to 7.7%; *minority* 47.2% to 11.0%; *bapusNM* 23.6% to 28.6%; and *baplusM* 7.3% to 15.5%. While these changes do not entirely eliminate the city-state unemployment rate gap, only 0.4% points remain.

A look at the city-*vs*-state gap over time

At the time of this writing, the most recent labor market report for smaller geographic units includes preliminary estimates for December 2017, which allows us to calculate a *preliminary* 2017 annual unemployment rate and consider two full years of labor market data for the City of Racine and the State of Wisconsin following the 2015 year used in this analysis. Table 9 shows the 2015–2017 unemployment rates for the city and the state, along with the size of the gap and the city's *relative* rate, defined as a ratio of the city's rate to the state's rate.

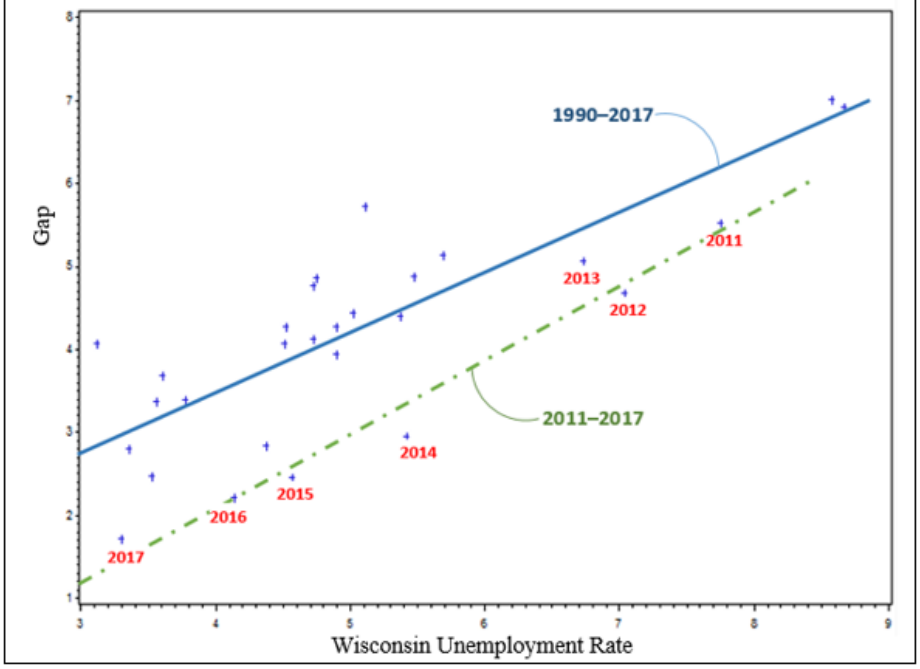
Table 9
City of Racine *vs* State of Wisconsin
Unemployment Rates, 2015–2017

Year	Wisconsin	City of Racine	Unemployment Gap	Relative Unemployment
2015	4.6	7.0	2.4	1.52
2016	4.2	6.3	2.1	1.50
2017	3.3	5.0	1.7	1.51

These values show a significant decline in the unemployment rates for both the city and the state. As state and city rates decline in response to improving regional and national economic conditions, the size of the gap should also diminish, more as a function of math than economics, and the figures in Table 9 show that is indeed what occurred. While the city-*vs*-state gap has closed, the city's ***relative*** unemployment rate did not change, remaining approximately 50% higher than the state's.

A look at the *trend* of the city-*vs*-state gap reveals that there has been a significant change in the *structural* relationship between unemployment in the State of Wisconsin and the city-*vs*-state gap. Figure 6 contains a scatter plot of the city-*vs*-state unemployment rate gap and the state's unemployment rate, along with the regression line which represents the average relationship between these two statistics over the period 1990–2017. Not surprisingly, the plot illustrates a strong relationship between the level of the state's unemployment rate and the size of the city-*vs*-state gap, as the state's unemployment rate increases, so does the city-*vs*-state gap. The simple correlation coefficient between the gap and state's rate is 0.80, and the blue regression line shows that over this 28 year period, a one-percentage point increase in the state's unemployment rate typically added 0.69 percentage points to the city-*vs*-state gap.

Figure 6
The City-State Unemployment Rate Gap and the State of Wisconsin Unemployment Rate, 1990–2017



However, this relationship appears to have undergone a notable change since the severe recession that ended in 2009. Every year during the period 2011–2017 the city-state gap is substantially lower than the original 1990–2017 regression line would have predicted. For example, in 2014 the unemployment rate for the State of Wisconsin was 5.4%. The regression line estimating the 28-year relationship between the gap and the state rate predicts that a state rate of 5.4% should have resulted in a city-*vs*-state gap of 4.4 percentage points, or a 9.8% unemployment rate for the City of Racine. In fact, the actual gap was substantial lower (2.9 points) and the City of Racine had an unemployment rate of 8.4%. The regression's consistent over-estimation of the gap for that past seven years suggests the possibility that there has been a structural change in the relationship between the state's labor market performance and that of the City of Racine.

The dashed green line represents a re-estimation of the relationship using only the last seven years of data. The simple correlation coefficient between the gap and the state's rate over the seven year period is 0.98 and a one-percentage point increase in the state's unemployment rate tended to add 0.91 percentage points to the city-*vs*-state gap. Therefore, it appears as though there may be a stronger statistical relationship between the gap and the state rate, and the impact of a change in the state's rate on the gap has increased. One possible reason for this change may be the radical change in the city's industrial mix *vis-à-vis* the state. In 1950, the share of total employment in manufacturing was 80% higher in the City of Racine than the State of Wisconsin (55.2% *vs* 30.6%), but in 2016 it was only 20% higher (22.0% *vs* 18.4%), see Table 8. However, we should view these results with caution. Seven years is a rather short a period to have a high level of confidence that this finding represents a permanent change in the relationship between the gap and the state's rate.

Nevertheless, it is encouraging that the gap has fallen consistently along this new path, and more important, the 2017 city-*vs*-state gap is the smallest in the last 28 years.[13]

Conclusion

Higher Expectations for Racine County (HERC) established the ambitious goal that *"…each municipality in Racine County will achieve and maintain an unemployment rate at or below the State of Wisconsin's unemployment rate."* Even for those only casually knowledgeable of Racine County's labor market history, it comes as no surprise that the City of Racine has under-performed the State of Wisconsin and other Racine County municipalities, indeed, the city has perennially lagged behind other large Wisconsin cities. The purpose of the statistical analysis in this report has been is to (1) understand why, and (2) to explore scenarios that would close the city-*vs*-state unemployment rate gap.

Using 2015 data primarily from the American Community Survey for 676 comparable cities, models were estimated explaining the intercity variation in unemployment and employment rates. Statistically, the unemployment (employment) models performed well explaining 77% (79%) of the total variation in intercity unemployment (employment), with 12 (10) of the 14 city characteristics statistically significant at the α=0.05 level or better. The highest level of educational attainment among adults, measured at three different levels—high school, some college and associate degree, and a college degree and higher—proved to be strongly associated with the intercity variation in

[13] In 1999, the State of Wisconsin's unemployment rate was 3.1%, or 0.2 percentage points *lower* than the 2017 rate of 3.3%, yet the 1999 city-*vs*-state gap of 4.1 percentage points was substantially *higher* than the 2017 gap of 1.7 percentage points.

labor market performance, albeit a high school degree proved to be a stronger determinant of the unemployment rate than the employment rate.

While the size of the impact and the statistical significance of educational attainment was substantial, the model's results also demonstrated that educational attainment alone does not account for everything, the socioeconomic profile of a city matters as well and has a strong influence on a city's labor market performance. In particular, the age distribution of the population, family structure, the relative size of the minority population, the utilization of the English language as a proxy for recent immigration status, commuting times, and the relative size of the population with disabilities all had statistically significant impacts on labor market performance.

The models were then used to isolate the subset of city characteristics that were primarily responsible for the City of Racine's unemployment rate gap with the State of Wisconsin. To address this issue we asked the following question: *What would happen to the 2015 city-vs-state unemployment gap (2.4 percentage points) if the values of key City of Racine characteristics matched those for comparable cities, or matched the values observed in Racine's out-county?* When considering comparable cities and Racine's out-county, the same three city characteristics rose to the top of the list: higher educational attainment (*baplus*), the percentage of families headed by females with children (*femhh*), and the relative size of the minority population (*minority*). However, the rank order of their importance in explaining the gap (out-county, comparable cities) differed: (1, 2) *femhh*; (2, 3) *minority*; and (3, 1) *baplus*. If the City of Racine had the same values for these three variables as the mean values observed in the 676 comparable cities, then the model suggests that the city-*vs*-state unemployment gap would decline from 2.4 to 1.3 percentage points,

but if the city took on the same values for these variables as observed in Racine's out-county then the city-*vs*-state gap would decline significantly more, from 2.4 to 0.4 percentage points.

These results should be viewed with caution and predictions regarding the impact of changing city characteristics on labor market outcomes, e.g. higher levels of educational attainment, should be considered rough estimates. All statistical models, including ours, have inherent strengths and weaknesses, and their applicability to any one city may vary and depend on the unique characteristics of that place. See Appendix A for a fuller discussion of the strengths and weaknesses of statistical models generally, and more specifically, how the City of Racine's characteristics and history may impact the interpretations of our results.

Looking ahead

The analysis reflected in this report should be considered a first attempt at identifying key city characteristics and estimating the magnitude of their effects on the City of Racine's relative labor market performance. While the models performed quite well, there is room for improving the model's specification.

For example, the current cross-sectional model (one year, multiple cities) can be expanded by using *panel data* if city characteristics for the same 676 comparable cities are collected from other years. A potential disadvantage of a model using cross-sectional data is that results may be associated with particular *nationwide* economic circumstances in the chosen year, in our case 2015. A model using panel data can explore the temporal stability of results.

Using an extraordinary longitudinal data set that followed 20 million children over 26 years, the recent groundbreaking research by Chetty, et al. (2018), henceforth referred to as CHJP, uncovered a fascinating nuanced relationship between subsequent labor market outcomes for Black boys and the presence of fathers. While the data and analytical framework in CHJP are quite different than ours, the strong impact of female-headed households with children (*femhh*) in our analysis appears to be consistent with CHJP's work. The innovative nuance of CHJP, however, is that they measured the presence of a father both within the household itself and within each household's *neighborhood*. They found that the presence of fathers in a young Black boy's neighborhood may have a stronger impact on subsequent labor market success than a father in the young boy's household itself. While we may not be able to implement CHJP's research design, the logical conclusion of their work is that the geographical concentration, or segregation, of female-headed households with children is likely associated with lower exposure of children to neighborhood fathers, which in turn may adversely impact labor market outcomes measured at the city-level. Like other aggregate socioeconomic measures we may be able to control for both the prevalence of female-headed households with children and the degree to which they are concentrated with a city.

Finally, future work may be able to explore more complex causality between labor market outcomes and city characteristics. Specifically, a city's labor market performance may not only be impacted by certain city characteristics, but those same characteristics may be impacted by the city's labor market outcomes.

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Appendix A

Limitations of the Unemployment and Employment Models

While the models estimated in this study certainly offer insight into the factors influencing the City of Racine's labor market performance, all statistical models belie the complexity of real-world urban economies. The following is a discussion of the inherent limitations of statistical models with specific reference to the models estimated in this study. This section is *not* intended to discount the findings or conclusions of the study, rather it is an explicit recognition that (1) all statistical models are abstractions of real-world phenomenon, (2) models necessarily require the adoption of simplifying assumptions, and (3) consumers of reports such as this one should be fully informed of the strengths and weaknesses of this approach to understanding the relative impact of city characteristics on labor market performance.

Causality

The nexus of causality among the variables in our analysis is certainly more nuanced than the models' specification implies. For example, our results strongly suggest that, holding all else constant, increases in the relative number of female-headed households with children (*femhh*) will increase a city's unemployment rate. However, it is plausible that the vector of causation works in the other direction as well, that is, the economic hardship accompanying unemployment may result in fewer marriages (Schmitt, 2009), which in turn could result in an increase in female-headed households with children. Our models do not account for the potential simultaneous causation between unemployment and family structure. The implication for our evaluation of the models' performance is that we should be cautious about assigning too much confidence to any single finding.

Demand for labor *versus* the supply of labor

Fundamentally, the performance of a city's labor market is the result of the interaction of the supply of labor and the demand for labor. A review of the variables in our models shows that they are overwhelmingly *supply-side* characteristics, that is, they primarily measure the characteristics of working age adults (labor supply), not businesses (labor demand). The only variable that refers to industry-level data is the measure of industrial concentration (*hhi*), which was not a strong predictor of the variation in city unemployment rates. A review of the literature shows that our models' specification is generally consistent with previous work which has emphasized supply-side characteristics.

While there is little doubt that demand-side considerations matter, the demand for labor is difficult to measure and it is not reported by the U.S. Census. We explored one of the simplest measures of industrial mix, the percentage of a city's workers employed in manufacturing but like previous researchers, we did not find that it had a statistically significant impact on unemployment. In fact, there is ambiguity in the literature regarding the theoretical justification for the inclusion of industry variables in an unemployment model (Elhorst, 2003). One of the reasons for this result and the theoretical ambiguity is that our model uses cross-sectional data, i.e. across many cities at one point in time, in our case, 676 cities in 2015. The impact of an industrial mix variable, therefore, is highly dependent on the time period chosen for analysis. Had we chosen a different year we may have generated a different result for the size of the manufacturing sector as the fortunes of industrial sectors fluctuate differently with technological change, international trade, and the business cycle.

Measuring the impact of changing city characteristics on unemployment

While it may be self-evident, it is worth stating explicitly that our model's estimated marginal or incremental effects of changing city characteristics on unemployment represent *general tendencies* based on the observed experience of the 676 cities included in our analysis. The real-world impact is likely to vary by city and time period. For example, in the "closing the gap" section of this report we estimate that the impact of improving the City of Racine's higher educational attainment (*baplus*) to the same level observed in comparable cities will decrease Racine's city-*vs*-state unemployment gap by 0.70 percentage points. This is our best estimate of the impact of increasing *baplus*, but we should keep in mind that the impact may differ across cities and time periods.

Perhaps nothing highlights this observation better than recent announcements made by the Foxconn Technology Group which is in the process of locating new facilities in Racine County with the promise of significant job creation. Foxconn's original job creation estimate was 13,000, but a recent statement from Foxconn executive Louis Woo predicts that the skill set of the workers taking those jobs is likely to be radically different from the projections the company made just a few months ago. Woo stated that the total job creation number of 13,000 had not changed, but company's original workforce projections anticipated *"…75 percent assembly line workers, 25 percent engineers and managers…, (but) now it looks like about 10 percent assembly line workers, 90 percent knowledge workers."* (Burke, 2018) Should these projections be anywhere close to accurate, the impact of Foxconn on Racine County will be radically different than originally thought.

Our model suggests that higher level educational attainment is a significant driver of labor market performance. As implied by the discussion in the previous section, however, the increased *supply* of

human capital (*baplus*) translates into improved labor market outcomes when there is sufficient *demand* for that human capital. Therefore, Foxconn's recent workforce skill projections imply that improvements in the city's workforce skill profile will have very different implications today than they had just six months ago. Specifically, increases in higher level educational attainment (*baplus* or *ascoll*) may now have a larger positive impact on the City of Racine's labor market outcomes than it would have had prior to the change in Foxconn's skill projections. In addition, the increased demand for workers with higher levels of education attainment will in turn impact the mix of industries and occupations that provide support for both Foxconn operations and the households of Foxconn workers.

Panel data: combining cross-sectional and time-series data

As mentioned, our data were strictly *cross-sectional*, examining 676 cities at one point in time. Time-series data would consider only one city over a long period of time. City-level data from the U.S. Census is not published frequently enough to develop a model using time-series data. However, the as the American Community Survey (ACS) matures we should be able to expand our models to incorporate *panel data*, which in our case would be defined as data that consider the same group of cities (676) over numerous consecutive time periods. The structure of our models would be considerably more complex and, theoretically, could consider whether the impact of various city characteristics on unemployment changes over time.

Again, the discussion in Appendix A is not meant to be overly critical of the analysis carried out in this study, rather it is meant to support readers of this report in their effort to become an informed consumer of econometric analysis.

Appendix B

676 cities included in the analysis

FIPS	City	*unemp*	*emp*
100820	Alabaster city, Alabama	4.3	65.3
103076	Auburn city, Alabama	5.5	54.6
107000	Birmingham city, Alabama	7.2	51.2
120104	Decatur city, Alabama	6.0	54.7
121184	Dothan city, Alabama	6.2	54.4
124184	Enterprise city, Alabama	5.9	53.7
126896	Florence city, Alabama	6.6	50.4
128696	Gadsden city, Alabama	7.3	46.4
135800	Homewood city, Alabama	4.0	67.4
135896	Hoover city, Alabama	4.1	66.1
137000	Huntsville city, Alabama	5.8	57.6
145784	Madison city, Alabama	4.8	63.4
150000	Mobile city, Alabama	7.3	51.9
151000	Montgomery city, Alabama	6.3	55.3
157048	Opelika city, Alabama	5.5	56.2
159472	Phenix City city, Alabama	5.4	53.7
162328	Prattville city, Alabama	5.0	57.5
177256	Tuscaloosa city, Alabama	6.2	49.5
404720	Avondale city, Arizona	5.6	62.4
410530	Casa Grande city, Arizona	6.4	48.4
422220	El Mirage city, Arizona	5.9	60.2
427820	Glendale city, Arizona	5.5	57.5
428380	Goodyear city, Arizona	5.3	55.5
444410	Maricopa city, Arizona	5.4	60.1
466820	Sierra Vista city, Arizona	6.1	47.3
471510	Surprise city, Arizona	5.6	51.3
473000	Tempe city, Arizona	4.8	63.9
600562	Alameda city, California	4.1	61.7
602252	Antioch city, California	6.9	55.6
603820	Banning city, California	5.9	36.3
604758	Beaumont city, California	3.9	56.8
604982	Bellflower city, California	6.3	56.2
605290	Benicia city, California	3.8	61.2
606000	Berkeley city, California	3.8	56.2
608142	Brentwood city, California	4.2	58.7
611530	Carson city, California	8.6	55.8
612552	Cerritos city, California	4.9	54.4
613210	Chino city, California	4.9	50.7
614890	Colton city, California	6.4	56.5
615044	Compton city, California	10.3	51.4
616350	Corona city, California	5.2	60.5
617568	Culver City city, California	4.9	65.6
618996	Desert Hot Springs city, California	7.9	47.7
620018	Dublin city, California	2.9	63.7
621230	Eastvale city, California	4.5	62.0
621712	El Cajon city, California	7.4	53.6
622020	Elk Grove city, California	4.6	59.5
623182	Fairfield city, California	5.5	55.6

624680	Fontana city, California	7.0	57.5
628168	Gardena city, California	6.6	57.0
632548	Hawthorne city, California	5.9	61.7
633000	Hayward city, California	6.6	60.5
633182	Hemet city, California	9.2	38.9
633434	Hesperia city, California	8.7	46.6
633588	Highland city, California	5.6	55.0
636546	Inglewood city, California	8.7	57.9
639892	Lakewood city, California	5.1	61.2
640004	La Mesa city, California	5.2	59.0
640130	Lancaster city, California	7.4	46.1
640886	Lawndale city, California	6.3	63.3
641124	Lemon Grove city, California	6.8	56.6
642524	Lompoc city, California	6.9	51.0
643000	Long Beach city, California	7.3	58.7
644574	Lynwood city, California	8.2	53.5
646842	Menifee city, California	7.8	48.4
646870	Menlo Park city, California	2.7	63.9
648648	Monrovia city, California	5.1	65.6
649270	Moreno Valley city, California	7.1	54.4
650076	Murrieta city, California	5.3	56.1
650398	National City city, California	6.6	48.8
651560	Norco city, California	5.3	48.0
653000	Oakland city, California	5.8	59.9
653070	Oakley city, California	6.2	61.8
653322	Oceanside city, California	5.3	54.8
653896	Ontario city, California	6.4	59.5
655156	Palmdale city, California	8.9	50.9
655618	Paramount city, California	7.8	57.0
656000	Pasadena city, California	5.9	62.0
656700	Perris city, California	9.7	52.1
657456	Pittsburg city, California	6.0	57.1
658072	Pomona city, California	7.4	53.4
659444	Rancho Cordova city, California	6.6	58.7
659451	Rancho Cucamonga city, California	4.8	60.3
659962	Redlands city, California	3.7	54.1
660466	Rialto city, California	7.6	53.8
660620	Richmond city, California	5.8	58.4
662000	Riverside city, California	6.4	55.4
664000	Sacramento city, California	6.3	55.6
665000	San Bernardino city, California	8.2	47.2
667112	San Jacinto city, California	10.0	47.9
668084	San Leandro city, California	5.1	61.8
668294	San Pablo city, California	7.7	56.5
670742	Seaside city, California	8.3	56.7
675000	Stockton city, California	9.6	50.5
675630	Suisun City city, California	5.3	60.3
680238	Tracy city, California	7.5	61.7
681204	Union City city, California	4.3	59.0
681344	Upland city, California	4.7	58.0
681554	Vacaville city, California	4.9	54.0
681666	Vallejo city, California	8.3	54.0
682590	Victorville city, California	6.9	45.3
685446	Wildomar city, California	6.7	54.8

804000	Aurora city, Colorado	4.2	64.2
816000	Colorado Springs city, Colorado	4.5	58.9
908000	Bridgeport city, Connecticut	8.8	58.3
918430	Danbury city, Connecticut	4.6	65.9
937000	Hartford city, Connecticut	10.6	50.1
946450	Meriden city, Connecticut	7.2	58.7
947290	Middletown city, Connecticut	5.7	62.8
950370	New Britain city, Connecticut	8.2	56.4
952000	New Haven city, Connecticut	7.6	55.9
952280	New London city, Connecticut	8.4	52.8
955990	Norwalk city, Connecticut	4.9	66.9
956200	Norwich city, Connecticut	7.3	62.0
973000	Stamford city, Connecticut	4.7	66.9
980000	Waterbury city, Connecticut	9.4	53.5
982800	West Haven city, Connecticut	6.9	60.4
1021200	Dover city, Delaware	6.8	51.9
1077580	Wilmington city, Delaware	6.9	55.5
1200950	Altamonte Springs city, Florida	5.1	62.3
1201700	Apopka city, Florida	4.7	61.3
1207300	Boca Raton city, Florida	4.2	56.9
1207875	Boynton Beach city, Florida	5.2	54.7
1207950	Bradenton city, Florida	5.5	49.2
1211050	Casselberry city, Florida	5.2	55.7
1212875	Clearwater city, Florida	4.9	53.9
1212925	Clermont city, Florida	5.2	50.7
1213275	Coconut Creek city, Florida	4.7	60.7
1214125	Cooper City city, Florida	4.3	66.9
1214400	Coral Springs city, Florida	5.0	65.5
1216335	Dania Beach city, Florida	5.6	59.1
1216525	Daytona Beach city, Florida	7.1	45.1
1216725	Deerfield Beach city, Florida	5.1	55.4
1216875	DeLand city, Florida	6.3	42.6
1217100	Delray Beach city, Florida	4.9	54.4
1217200	Deltona city, Florida	6.3	51.3
1224000	Fort Lauderdale city, Florida	5.3	58.1
1224125	Fort Myers city, Florida	5.4	48.4
1224300	Fort Pierce city, Florida	9.0	44.4
1225175	Gainesville city, Florida	5.0	51.5
1227322	Greenacres city, Florida	4.5	60.1
1228452	Hallandale Beach city, Florida	6.0	51.6
1232000	Hollywood city, Florida	5.3	59.5
1232275	Homestead city, Florida	6.4	56.9
1236550	Key West city, Florida	3.1	61.9
1236950	Kissimmee city, Florida	5.8	58.7
1238250	Lakeland city, Florida	6.1	48.1
1239075	Lake Worth city, Florida	5.0	61.6
1239425	Largo city, Florida	5.1	52.9
1243125	Margate city, Florida	5.3	57.5
1243975	Melbourne city, Florida	6.1	51.0
1245000	Miami city, Florida	5.8	55.2
1245060	Miami Gardens city, Florida	7.5	52.2
1245975	Miramar city, Florida	5.0	63.8
1249425	North Lauderdale city, Florida	5.4	65.4
1249450	North Miami city, Florida	7.1	56.7

1249475	North Miami Beach city, Florida	6.0	56.4
1249675	North Port city, Florida	5.5	47.6
1250575	Oakland Park city, Florida	5.0	64.2
1250750	Ocala city, Florida	6.0	48.2
1251075	Ocoee city, Florida	4.5	63.9
1253000	Orlando city, Florida	4.9	66.1
1253575	Oviedo city, Florida	4.4	65.5
1254000	Palm Bay city, Florida	6.2	50.8
1254200	Palm Coast city, Florida	6.3	44.8
1254700	Panama City city, Florida	6.0	52.5
1255125	Parkland city, Florida	3.9	65.7
1255775	Pembroke Pines city, Florida	4.7	60.3
1255925	Pensacola city, Florida	4.6	56.7
1257425	Plantation city, Florida	4.4	63.5
1257550	Plant City city, Florida	5.1	59.2
1258050	Pompano Beach city, Florida	5.8	51.5
1258715	Port St. Lucie city, Florida	5.4	52.7
1260975	Riviera Beach city, Florida	5.9	56.0
1261500	Rockledge city, Florida	5.1	54.9
1262625	St. Cloud city, Florida	5.4	55.9
1263000	St. Petersburg city, Florida	4.8	57.8
1263650	Sanford city, Florida	6.2	55.6
1264175	Sarasota city, Florida	4.7	52.2
1269700	Sunrise city, Florida	5.2	61.3
1270600	Tallahassee city, Florida	5.3	58.6
1270675	Tamarac city, Florida	5.4	55.6
1271000	Tampa city, Florida	5.3	57.2
1271400	Temple Terrace city, Florida	5.0	62.1
1271900	Titusville city, Florida	6.5	47.9
1276600	West Palm Beach city, Florida	4.8	58.0
1278250	Winter Garden city, Florida	4.5	65.0
1278275	Winter Haven city, Florida	6.9	46.4
1278300	Winter Park city, Florida	4.8	52.5
1301052	Albany city, Georgia	8.0	47.0
1301696	Alpharetta city, Georgia	4.6	67.3
1304000	Atlanta city, Georgia	6.5	57.5
1313492	Carrollton city, Georgia	8.2	52.3
1319000	Columbus city, Georgia	7.4	50.2
1323900	Douglasville city, Georgia	6.5	59.4
1324600	Duluth city, Georgia	4.9	63.2
1324768	Dunwoody city, Georgia	4.4	65.7
1331908	Gainesville city, Georgia	5.3	60.3
1338964	Hinesville city, Georgia	5.9	51.9
1342425	Johns Creek city, Georgia	4.6	64.2
1343192	Kennesaw city, Georgia	4.8	71.4
1344340	LaGrange city, Georgia	7.0	52.5
1345488	Lawrenceville city, Georgia	6.0	55.9
1349756	Marietta city, Georgia	5.2	66.9
1351670	Milton city, Georgia	4.6	64.4
1355020	Newnan city, Georgia	6.0	59.2
1359724	Peachtree City city, Georgia	4.8	59.7
1366668	Rome city, Georgia	7.0	51.1
1367284	Roswell city, Georgia	4.4	67.1
1368516	Sandy Springs city, Georgia	4.5	68.6

1369000	Savannah city, Georgia	6.6	52.7
1371492	Smyrna city, Georgia	4.7	71.5
1373256	Statesboro city, Georgia	7.8	45.9
1373704	Stockbridge city, Georgia	6.8	57.5
1378800	Valdosta city, Georgia	6.4	51.9
1380508	Warner Robins city, Georgia	6.1	57.2
1384176	Woodstock city, Georgia	4.6	68.9
1701114	Alton city, Illinois	8.5	50.9
1703012	Aurora city, Illinois	5.7	66.3
1704845	Belleville city, Illinois	6.3	57.7
1705573	Berwyn city, Illinois	6.5	61.4
1706613	Bloomington city, Illinois	4.8	66.3
1710487	Calumet City city, Illinois	9.4	51.9
1711163	Carbondale city, Illinois	5.8	47.4
1712385	Champaign city, Illinois	5.1	58.8
1715599	Collinsville city, Illinois	5.9	61.6
1718563	Danville city, Illinois	7.6	46.3
1718823	Decatur city, Illinois	7.7	53.2
1719161	DeKalb city, Illinois	5.7	57.5
1723074	Elgin city, Illinois	6.6	64.2
1724582	Evanston city, Illinois	5.0	59.2
1728326	Galesburg city, Illinois	6.2	45.9
1730926	Granite City city, Illinois	7.6	54.1
1738570	Joliet city, Illinois	7.5	63.5
1738934	Kankakee city, Illinois	9.4	48.0
1755249	O'Fallon city, Illinois	5.3	57.8
1759000	Peoria city, Illinois	6.9	56.7
1762367	Quincy city, Illinois	5.2	58.5
1765000	Rockford city, Illinois	8.1	53.1
1765078	Rock Island city, Illinois	6.5	57.2
1772000	Springfield city, Illinois	5.4	58.8
1777005	Urbana city, Illinois	5.3	53.9
1779293	Waukegan city, Illinois	7.0	61.9
1801468	Anderson city, Indiana	6.3	48.7
1816138	Crown Point city, Indiana	5.7	57.3
1819486	East Chicago city, Indiana	9.0	45.2
1820728	Elkhart city, Indiana	4.8	56.5
1822000	Evansville city, Indiana	4.5	57.3
1825000	Fort Wayne city, Indiana	4.9	60.2
1831000	Hammond city, Indiana	7.1	53.1
1838358	Jeffersonville city, Indiana	3.8	61.2
1840392	Kokomo city, Indiana	4.9	53.4
1840788	Lafayette city, Indiana	4.3	64.7
1842426	Lawrence city, Indiana	4.6	66.8
1846908	Marion city, Indiana	6.5	48.9
1848798	Michigan City city, Indiana	7.1	47.1
1849932	Mishawaka city, Indiana	4.7	60.4
1851876	Muncie city, Indiana	6.1	50.1
1852326	New Albany city, Indiana	4.8	58.6
1861092	Portage city, Indiana	6.3	57.0
1864260	Richmond city, Indiana	5.8	48.2
1871000	South Bend city, Indiana	5.7	57.3
1875428	Terre Haute city, Indiana	6.5	48.9
1909550	Burlington city, Iowa	5.1	57.5

1912000	Cedar Rapids city, Iowa	3.9	66.9
1919000	Davenport city, Iowa	5.2	60.8
1921000	Des Moines city, Iowa	4.5	64.7
1938595	Iowa City city, Iowa	2.6	65.0
1982425	Waterloo city, Iowa	5.5	60.2
2036000	Kansas City city, Kansas	6.1	58.4
2039350	Lenexa city, Kansas	3.5	71.1
2044250	Manhattan city, Kansas	3.0	58.5
2071000	Topeka city, Kansas	4.6	58.7
2079000	Wichita city, Kansas	5.0	61.0
2108902	Bowling Green city, Kentucky	4.8	56.7
2117848	Covington city, Kentucky	5.3	56.4
2124274	Elizabethtown city, Kentucky	4.8	55.6
2127982	Florence city, Kentucky	5.0	65.0
2128900	Frankfort city, Kentucky	4.3	56.6
2130700	Georgetown city, Kentucky	4.2	66.9
2135866	Henderson city, Kentucky	5.1	52.8
2137918	Hopkinsville city, Kentucky	7.0	48.2
2140222	Jeffersontown city, Kentucky	4.1	67.9
2156136	Nicholasville city, Kentucky	4.4	59.9
2158620	Owensboro city, Kentucky	4.9	55.0
2158836	Paducah city, Kentucky	6.4	50.0
2165226	Richmond city, Kentucky	5.0	56.4
2200975	Alexandria city, Louisiana	7.1	48.4
2205000	Baton Rouge city, Louisiana	6.1	58.1
2208920	Bossier City city, Louisiana	5.7	57.3
2213960	Central city, Louisiana	4.5	61.6
2236255	Houma city, Louisiana	6.1	56.6
2239475	Kenner city, Louisiana	5.4	60.1
2240735	Lafayette city, Louisiana	5.8	63.1
2241155	Lake Charles city, Louisiana	5.5	56.6
2251410	Monroe city, Louisiana	7.7	50.2
2254035	New Iberia city, Louisiana	9.1	54.3
2255000	New Orleans city, Louisiana	6.5	55.5
2270000	Shreveport city, Louisiana	7.2	54.9
2270805	Slidell city, Louisiana	6.9	57.4
2360545	Portland city, Maine	3.3	65.0
2401600	Annapolis city, Maryland	4.2	65.2
2408775	Bowie city, Maryland	4.3	67.8
2430325	Frederick city, Maryland	4.7	67.8
2431175	Gaithersburg city, Maryland	3.9	68.3
2436075	Hagerstown city, Maryland	7.0	56.5
2445900	Laurel city, Maryland	4.8	72.0
2467675	Rockville city, Maryland	3.5	68.3
2469925	Salisbury city, Maryland	7.7	56.2
2509000	Brockton city, Massachusetts	6.9	58.3
2511000	Cambridge city, Massachusetts	3.1	65.3
2513205	Chelsea city, Massachusetts	4.9	65.0
2521990	Everett city, Massachusetts	4.4	65.2
2534550	Lawrence city, Massachusetts	9.3	56.0
2537000	Lowell city, Massachusetts	6.3	59.4
2537490	Lynn city, Massachusetts	5.5	62.2
2537875	Malden city, Massachusetts	4.5	62.9
2539835	Medford city, Massachusetts	4.0	65.5

2545000	New Bedford city, Massachusetts	8.6	55.3
2553960	Pittsfield city, Massachusetts	5.8	57.8
2556585	Revere city, Massachusetts	4.9	62.6
2559105	Salem city, Massachusetts	5.0	63.2
2562535	Somerville city, Massachusetts	3.2	70.8
2567000	Springfield city, Massachusetts	9.1	50.9
2569170	Taunton city, Massachusetts	6.0	59.8
2572600	Waltham city, Massachusetts	3.8	65.0
2582000	Worcester city, Massachusetts	5.9	56.4
2603000	Ann Arbor city, Michigan	3.0	57.1
2605920	Battle Creek city, Michigan	6.0	52.3
2612060	Burton city, Michigan	6.1	51.5
2621020	Dearborn Heights city, Michigan	5.1	50.9
2624120	East Lansing city, Michigan	3.3	47.7
2624290	Eastpointe city, Michigan	8.4	54.1
2627440	Farmington Hills city, Michigan	3.1	62.0
2629000	Flint city, Michigan	10.8	38.5
2634000	Grand Rapids city, Michigan	5.0	60.3
2641420	Jackson city, Michigan	8.7	51.0
2642160	Kalamazoo city, Michigan	5.4	57.1
2642820	Kentwood city, Michigan	3.5	64.5
2646000	Lansing city, Michigan	6.6	57.6
2647800	Lincoln Park city, Michigan	5.3	52.4
2650560	Madison Heights city, Michigan	6.7	58.8
2656320	Muskegon city, Michigan	9.7	40.3
2659440	Novi city, Michigan	3.2	65.8
2659920	Oak Park city, Michigan	7.9	55.4
2665440	Pontiac city, Michigan	11.0	49.7
2665560	Portage city, Michigan	4.0	62.8
2665820	Port Huron city, Michigan	9.2	51.1
2669035	Rochester Hills city, Michigan	3.9	62.3
2669800	Roseville city, Michigan	7.4	56.3
2670520	Saginaw city, Michigan	9.9	43.8
2674900	Southfield city, Michigan	6.8	53.7
2674960	Southgate city, Michigan	4.1	55.6
2676460	Sterling Heights city, Michigan	5.5	58.2
2679000	Taylor city, Michigan	6.9	51.7
2684000	Warren city, Michigan	6.9	53.4
2686000	Westland city, Michigan	4.9	57.9
2688940	Wyoming city, Michigan	4.1	67.4
2701900	Apple Valley city, Minnesota	3.2	71.5
2706616	Bloomington city, Minnesota	3.5	64.7
2707948	Brooklyn Center city, Minnesota	4.6	62.8
2707966	Brooklyn Park city, Minnesota	3.9	68.2
2708794	Burnsville city, Minnesota	3.5	68.8
2713114	Coon Rapids city, Minnesota	3.8	67.5
2717288	Eagan city, Minnesota	3.0	74.2
2718116	Eden Prairie city, Minnesota	2.8	71.2
2722814	Fridley city, Minnesota	3.9	64.0
2740382	Maplewood city, Minnesota	3.7	63.2
2743000	Minneapolis city, Minnesota	3.4	68.3
2747680	Oakdale city, Minnesota	3.5	69.9
2751730	Plymouth city, Minnesota	3.0	68.0
2754214	Richfield city, Minnesota	3.1	67.5

2754880	Rochester city, Minnesota	2.9	68.5
2755852	Roseville city, Minnesota	3.1	61.5
2756896	St. Cloud city, Minnesota	4.1	65.2
2757220	St. Louis Park city, Minnesota	2.9	72.7
2758000	St. Paul city, Minnesota	3.7	64.4
2759350	Shakopee city, Minnesota	3.1	73.6
2771428	Woodbury city, Minnesota	2.7	71.5
2806220	Biloxi city, Mississippi	6.0	52.3
2814420	Clinton city, Mississippi	4.6	61.8
2829700	Gulfport city, Mississippi	6.8	52.7
2831020	Hattiesburg city, Mississippi	6.3	53.8
2833700	Horn Lake city, Mississippi	5.9	63.8
2844520	Madison city, Mississippi	3.9	67.4
2846640	Meridian city, Mississippi	7.1	53.5
2854040	Olive Branch city, Mississippi	4.4	66.9
2855760	Pearl city, Mississippi	4.4	60.9
2869280	Southaven city, Mississippi	4.5	66.8
2874840	Tupelo city, Mississippi	6.2	56.0
2906652	Blue Springs city, Missouri	4.9	65.9
2911242	Cape Girardeau city, Missouri	4.6	57.9
2915670	Columbia city, Missouri	3.5	64.9
2924778	Florissant city, Missouri	5.2	62.6
2931276	Hazelwood city, Missouri	5.3	61.9
2935000	Independence city, Missouri	6.3	56.0
2937000	Jefferson City city, Missouri	4.2	55.6
2938000	Kansas City city, Missouri	5.7	62.7
2939044	Kirkwood city, Missouri	3.4	64.5
2941348	Lee's Summit city, Missouri	4.0	68.5
2946586	Maryland Heights city, Missouri	4.1	68.7
2960788	Raytown city, Missouri	6.9	59.8
2964082	St. Charles city, Missouri	4.2	64.2
2964550	St. Joseph city, Missouri	4.7	58.7
2965000	St. Louis city, Missouri	6.0	56.7
2975220	University City city, Missouri	4.6	62.0
2978442	Wentzville city, Missouri	3.6	71.0
3103950	Bellevue city, Nebraska	2.9	64.6
3137000	Omaha city, Nebraska	3.2	65.6
3231900	Henderson city, Nevada	6.5	58.0
3251800	North Las Vegas city, Nevada	7.5	57.6
3345140	Manchester city, New Hampshire	3.6	64.4
3403580	Bayonne city, New Jersey	6.1	58.2
3407600	Bridgeton city, New Jersey	10.3	46.3
3410000	Camden city, New Jersey	11.6	45.7
3413690	Clifton city, New Jersey	6.0	62.0
3421000	Elizabeth city, New Jersey	7.4	61.9
3421480	Englewood city, New Jersey	5.2	63.4
3425770	Garfield city, New Jersey	7.6	56.9
3428680	Hackensack city, New Jersey	5.7	62.6
3436000	Jersey City city, New Jersey	5.4	61.8
3440350	Linden city, New Jersey	6.7	60.0
3441310	Long Branch city, New Jersey	5.9	59.9
3446680	Millville city, New Jersey	9.1	55.4
3451000	Newark city, New Jersey	9.0	51.5
3456550	Passaic city, New Jersey	8.3	52.2

3457000	Paterson city, New Jersey	10.4	50.8
3458200	Perth Amboy city, New Jersey	9.6	56.8
3459190	Plainfield city, New Jersey	7.6	65.0
3461530	Rahway city, New Jersey	6.7	62.4
3474000	Trenton city, New Jersey	8.3	50.5
3476070	Vineland city, New Jersey	8.5	55.5
3501780	Alamogordo city, New Mexico	5.6	48.3
3516420	Clovis city, New Mexico	4.9	53.7
3532520	Hobbs city, New Mexico	6.5	59.6
3601000	Albany city, New York	5.1	55.8
3603078	Auburn city, New York	6.3	52.2
3606607	Binghamton city, New York	6.5	48.3
3611000	Buffalo city, New York	7.0	52.6
3624229	Elmira city, New York	7.5	44.4
3629113	Glen Cove city, New York	4.5	62.0
3638077	Ithaca city, New York	5.0	43.1
3643335	Long Beach city, New York	4.1	64.5
3647042	Middletown city, New York	5.2	59.6
3649121	Mount Vernon city, New York	6.1	59.5
3650034	Newburgh city, New York	6.0	57.6
3650617	New Rochelle city, New York	5.2	60.2
3651055	Niagara Falls city, New York	7.6	52.2
3659641	Poughkeepsie city, New York	5.5	53.8
3663000	Rochester city, New York	6.9	53.2
3663418	Rome city, New York	5.5	51.6
3665508	Schenectady city, New York	5.8	56.5
3673000	Syracuse city, New York	6.5	49.7
3675484	Troy city, New York	5.9	54.7
3676540	Utica city, New York	6.3	49.9
3678608	Watertown city, New York	5.8	52.4
3681677	White Plains city, New York	3.8	64.3
3684000	Yonkers city, New York	5.5	56.3
3702080	Asheboro city, North Carolina	5.9	52.7
3702140	Asheville city, North Carolina	4.2	60.6
3709060	Burlington city, North Carolina	5.3	57.0
3714100	Concord city, North Carolina	4.3	62.2
3719000	Durham city, North Carolina	4.7	64.1
3722920	Fayetteville city, North Carolina	6.6	45.6
3725580	Gastonia city, North Carolina	6.2	55.8
3726880	Goldsboro city, North Carolina	7.9	43.1
3728000	Greensboro city, North Carolina	5.7	58.7
3728080	Greenville city, North Carolina	5.7	57.8
3731060	Hickory city, North Carolina	5.3	57.9
3731400	High Point city, North Carolina	5.9	57.1
3735200	Kannapolis city, North Carolina	5.8	58.8
3743920	Monroe city, North Carolina	5.5	59.5
3746340	New Bern city, North Carolina	5.5	51.7
3755000	Raleigh city, North Carolina	4.6	65.6
3757500	Rocky Mount city, North Carolina	8.8	49.9
3758860	Salisbury city, North Carolina	6.9	45.3
3759280	Sanford city, North Carolina	7.0	56.4
3764740	Statesville city, North Carolina	6.9	53.5
3767420	Thomasville city, North Carolina	5.9	54.5
3774440	Wilmington city, North Carolina	5.2	57.6

3775000	Winston-Salem city, N Carolina	5.5	56.1
3901000	Akron city, Ohio	5.7	54.3
3903828	Barberton city, Ohio	5.4	53.7
3907972	Bowling Green city, Ohio	4.5	58.6
3912000	Canton city, Ohio	6.1	53.1
3915000	Cincinnati city, Ohio	5.0	57.1
3916000	Cleveland city, Ohio	6.6	47.4
3916014	Cleveland Heights city, Ohio	4.4	58.8
3921000	Dayton city, Ohio	5.9	47.7
3925256	Elyria city, Ohio	5.6	57.1
3925704	Euclid city, Ohio	6.1	56.1
3925914	Fairborn city, Ohio	4.4	58.5
3925970	Fairfield city, Ohio	4.3	64.9
3929106	Gahanna city, Ohio	3.6	69.0
3929428	Garfield Heights city, Ohio	5.7	54.6
3933012	Hamilton city, Ohio	5.1	54.6
3936610	Huber Heights city, Ohio	4.9	58.2
3939872	Kent city, Ohio	4.5	59.7
3941664	Lakewood city, Ohio	4.0	67.6
3943554	Lima city, Ohio	5.9	51.0
3944856	Lorain city, Ohio	7.3	51.8
3947138	Mansfield city, Ohio	6.2	43.8
3947754	Marion city, Ohio	5.9	41.2
3948244	Massillon city, Ohio	5.7	56.3
3949840	Middletown city, Ohio	5.7	52.1
3966390	Reynoldsburg city, Ohio	4.0	66.2
3967468	Riverside city, Ohio	5.6	55.0
3970380	Sandusky city, Ohio	5.8	56.3
3971682	Shaker Heights city, Ohio	4.2	62.6
3974118	Springfield city, Ohio	5.4	51.3
3977000	Toledo city, Ohio	5.8	53.3
3980892	Warren city, Ohio	7.3	44.6
3983342	Westerville city, Ohio	3.6	66.1
3986772	Xenia city, Ohio	5.1	51.0
3988000	Youngstown city, Ohio	7.7	41.8
3988084	Zanesville city, Ohio	6.6	47.7
4023200	Edmond city, Oklahoma	2.9	65.5
4048350	Midwest City city, Oklahoma	4.3	57.8
4070300	Stillwater city, Oklahoma	3.0	55.0
4075000	Tulsa city, Oklahoma	4.0	61.2
4202000	Allentown city, Pennsylvania	7.6	53.9
4206088	Bethlehem city, Pennsylvania	5.9	54.9
4213208	Chester city, Pennsylvania	9.1	43.2
4221648	Easton city, Pennsylvania	6.8	51.8
4224000	Erie city, Pennsylvania	6.2	54.5
4232800	Harrisburg city, Pennsylvania	7.0	52.9
4241216	Lancaster city, Pennsylvania	6.2	54.8
4261000	Pittsburgh city, Pennsylvania	5.2	56.7
4263624	Reading city, Pennsylvania	7.6	49.5
4269000	Scranton city, Pennsylvania	6.2	51.9
4285152	Wilkes-Barre city, Pennsylvania	7.3	50.3
4285312	Williamsport city, Pennsylvania	6.7	53.4
4287048	York city, Pennsylvania	8.7	50.1
4419180	Cranston city, Rhode Island	5.9	57.9

4422960	East Providence city, Rhode Island	6.4	59.2
4454640	Pawtucket city, Rhode Island	6.9	59.6
4459000	Providence city, Rhode Island	7.1	55.6
4480780	Woonsocket city, Rhode Island	7.8	53.8
4500550	Aiken city, South Carolina	6.6	48.9
4501360	Anderson city, South Carolina	6.2	49.3
4513330	Charleston city, South Carolina	4.6	61.9
4516000	Columbia city, South Carolina	6.5	50.3
4525810	Florence city, South Carolina	6.3	57.4
4529815	Goose Creek city, South Carolina	5.5	54.8
4530850	Greenville city, South Carolina	5.0	60.6
4530985	Greer city, South Carolina	4.6	64.3
4550875	North Charleston city, South Carolina	5.7	58.6
4561405	Rock Hill city, South Carolina	6.3	60.7
4568290	Spartanburg city, South Carolina	6.6	52.0
4570405	Sumter city, South Carolina	6.9	48.5
4703440	Bartlett city, Tennessee	5.0	62.5
4714000	Chattanooga city, Tennessee	5.8	54.6
4715160	Clarksville city, Tennessee	5.9	51.0
4715400	Cleveland city, Tennessee	5.5	51.9
4716540	Columbia city, Tennessee	5.8	54.8
4727740	Franklin city, Tennessee	3.8	67.2
4728540	Gallatin city, Tennessee	5.0	57.7
4728960	Germantown city, Tennessee	4.3	59.8
4733280	Hendersonville city, Tennessee	4.2	65.6
4737640	Jackson city, Tennessee	6.3	54.1
4738320	Johnson City city, Tennessee	5.7	55.6
4740000	Knoxville city, Tennessee	5.2	57.3
4741200	La Vergne city, Tennessee	4.8	69.8
4741520	Lebanon city, Tennessee	5.4	55.4
4750280	Morristown city, Tennessee	6.9	48.8
4750780	Mount Juliet city, Tennessee	4.4	67.0
4751560	Murfreesboro city, Tennessee	4.6	63.7
4755120	Oak Ridge city, Tennessee	5.1	55.9
4801000	Abilene city, Texas	3.7	53.4
4801924	Allen city, Texas	3.3	71.1
4803000	Amarillo city, Texas	3.0	64.1
4804000	Arlington city, Texas	4.0	64.8
4806128	Baytown city, Texas	7.0	55.6
4807000	Beaumont city, Texas	6.1	55.0
4807132	Bedford city, Texas	3.8	67.3
4808236	Big Spring city, Texas	4.9	45.6
4810912	Bryan city, Texas	3.5	61.4
4813024	Carrollton city, Texas	3.5	70.8
4813492	Cedar Hill city, Texas	4.7	67.5
4815976	College Station city, Texas	3.2	55.5
4816432	Conroe city, Texas	3.8	60.8
4816624	Copperas Cove city, Texas	4.3	49.7
4819972	Denton city, Texas	3.4	61.4
4820092	DeSoto city, Texas	5.3	62.9
4821628	Duncanville city, Texas	4.9	62.4
4824768	Euless city, Texas	3.8	70.8
4827684	Frisco city, Texas	2.9	71.5
4828068	Galveston city, Texas	5.0	53.1

4829000	Garland city, Texas	4.2	63.7
4830464	Grand Prairie city, Texas	4.1	66.4
4830920	Greenville city, Texas	5.1	52.3
4831928	Haltom City city, Texas	4.3	64.6
4835576	Hurst city, Texas	4.1	62.9
4837000	Irving city, Texas	3.8	68.7
4839148	Killeen city, Texas	4.9	52.1
4839952	Kyle city, Texas	2.5	71.4
4840588	Lake Jackson city, Texas	4.3	64.0
4841212	Lancaster city, Texas	5.9	61.5
4841440	La Porte city, Texas	4.8	63.8
4841980	League City city, Texas	3.6	69.7
4842508	Lewisville city, Texas	3.3	72.7
4843012	Little Elm city, Texas	2.7	72.1
4843888	Longview city, Texas	4.8	57.9
4845000	Lubbock city, Texas	3.3	62.1
4845072	Lufkin city, Texas	5.4	54.9
4845744	McKinney city, Texas	3.5	67.2
4846452	Mansfield city, Texas	3.4	67.8
4847892	Mesquite city, Texas	4.3	65.6
4848072	Midland city, Texas	3.4	67.6
4848804	Missouri City city, Texas	4.5	64.7
4850256	Nacogdoches city, Texas	4.6	52.1
4853388	Odessa city, Texas	4.2	65.6
4856348	Pearland city, Texas	3.4	70.2
4857176	Pflugerville city, Texas	2.9	70.2
4858016	Plano city, Texas	3.7	67.3
4861796	Richardson city, Texas	3.7	64.5
4862828	Rockwall city, Texas	3.6	64.7
4863284	Rosenberg city, Texas	4.3	61.9
4863500	Round Rock city, Texas	3.3	68.6
4863572	Rowlett city, Texas	3.9	67.8
4864472	San Angelo city, Texas	4.1	55.9
4866128	Schertz city, Texas	3.3	60.2
4866644	Seguin city, Texas	3.8	54.6
4867496	Sherman city, Texas	3.9	58.3
4870808	Sugar Land city, Texas	3.6	61.8
4872176	Temple city, Texas	3.7	58.6
4872368	Texarkana city, Texas	4.7	50.4
4872392	Texas City city, Texas	6.2	52.4
4872530	The Colony city, Texas	3.5	72.6
4874144	Tyler city, Texas	4.2	57.8
4875428	Victoria city, Texas	4.1	60.8
4876000	Waco city, Texas	4.3	54.2
4876816	Waxahachie city, Texas	3.7	62.6
4879000	Wichita Falls city, Texas	4.3	51.1
4880356	Wylie city, Texas	3.4	69.5
5101000	Alexandria city, Virginia	3.3	74.2
5114968	Charlottesville city, Virginia	3.7	60.6
5116000	Chesapeake city, Virginia	4.5	58.6
5121344	Danville city, Virginia	7.2	48.9
5129744	Fredericksburg city, Virginia	5.3	60.4
5135000	Hampton city, Virginia	6.0	55.2
5135624	Harrisonburg city, Virginia	5.3	54.6

5147672	Lynchburg city, Virginia	5.6	53.1
5148952	Manassas city, Virginia	4.2	69.8
5156000	Newport News city, Virginia	5.4	57.9
5157000	Norfolk city, Virginia	5.6	50.8
5164000	Portsmouth city, Virginia	6.2	54.2
5167000	Richmond city, Virginia	5.2	58.8
5168000	Roanoke city, Virginia	4.9	58.5
5170000	Salem city, Virginia	4.4	59.7
5176432	Suffolk city, Virginia	5.0	59.3
5182000	Virginia Beach city, Virginia	4.3	60.4
5186720	Winchester city, Virginia	4.4	58.8
5307695	Bremerton city, Washington	6.8	47.3
5308850	Burien city, Washington	4.3	61.4
5317635	Des Moines city, Washington	5.1	59.9
5323515	Federal Way city, Washington	5.0	61.3
5335415	Kent city, Washington	5.1	61.7
5336745	Lacey city, Washington	6.6	52.3
5338038	Lakewood city, Washington	6.8	48.5
5340840	Lynnwood city, Washington	4.9	59.7
5357745	Renton city, Washington	4.0	66.6
5362288	SeaTac city, Washington	5.3	58.4
5363960	Shoreline city, Washington	4.2	61.5
5370000	Tacoma city, Washington	6.8	56.9
5373465	University Place city, Washington	5.4	57.6
5414600	Charleston city, West Virginia	5.7	57.1
5439460	Huntington city, West Virginia	5.8	47.6
5455756	Morgantown city, West Virginia	5.5	49.1
5486452	Wheeling city, West Virginia	6.0	54.1
5506500	Beloit city, Wisconsin	6.5	54.4
5525950	Fitchburg city, Wisconsin	3.2	69.1
5539225	Kenosha city, Wisconsin	5.6	59.3
5548000	Madison city, Wisconsin	3.1	68.6
5566000	Racine city, Wisconsin	7.0	57.2
5578600	Sun Prairie city, Wisconsin	3.2	71.8

31 cities excluded from the analysis

105980	Bessemer city, Alabama	8.9	42.5
600296	Adelanto city, California	10.7	35.2
603526	Bakersfield city, California	9.1	57.5
620956	East Palo Alto city, California	5.4	63.6
646898	Merced city, California	10.7	49.4
672520	Soledad city, California	11.2	27.7
680994	Twentynine Palms city, California	8.3	30.3
683542	Wasco city, California	13.5	36.0
827865	Fountain city, Colorado	5.6	55.1
1050670	Newark city, Delaware	4.7	47.6
1310944	Brookhaven city, Georgia	3.8	72.7
1315172	Chamblee city, Georgia	3.8	73.0
1321380	Dalton city, Georgia	6.5	58.9
1359735	Peachtree Corners city, Georgia	4.8	67.2
1714026	Chicago Heights city, Illinois	9.7	50.0

1733383	Harvey city, Illinois	11.8	40.0
1753559	North Chicago city, Illinois	7.3	33.9
1834114	Hobart city, Indiana	7.5	61.8
2039000	Leavenworth city, Kansas	5.1	49.6
2418750	College Park city, Maryland	6.5	46.9
3402080	Atlantic City city, New Jersey	13.5	50.7
3451210	New Brunswick city, New Jersey	5.3	53.0
3734200	Jacksonville city, North Carolina	6.8	35.6
3774540	Wilson city, North Carolina	10.0	53.6
4041850	Lawton city, Oklahoma	4.2	48.7
4050050	Muskogee city, Oklahoma	4.6	51.6
4233408	Hazleton city, Pennsylvania	9.6	54.2
4549075	Myrtle Beach city, South Carolina	8.4	56.7
4832312	Harker Heights city, Texas	4.7	50.4
4835528	Huntsville city, Texas	5.5	34.6
4858820	Port Arthur city, Texas	9.8	51.1