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Income Divide and Race/Ethnicity in Tennessee Metropolises

Abstract

Tennessee, like other Southeastern states, has also gained in its share of racial/ethnic diversity, but it also contains some of the most segregated and poorest (e.g., Memphis) metropolises in the southeast. This paper examines one dimension of inequality – the income divide – measured here by the 95/20 Ratio. Important questions include: How does income divide vary across the major racial/ethnic groups in Tennessee's ten metropolises? How do they associate with diversity, segregation, and other geographic predictors? By using simple ranking and correlations analyses to explore these relationships, I find that metropolises that are large, diverse and mostly segregated, with higher African American poverty, highly educated, and mixed-economy are also the most income divided. In contrast, the smaller, mid-diverse metropolises with mixed-economic structure are less divided. Knoxville and Clarksville, the 3rd and 6th largest metropolises in Tennessee, rank as the most and the least income divided for African Americans respectively.

Keywords

Income divide, 95/20 Ratio, Diversity, Segregation, Metropolises

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1. INTRODUCTION

While not new, debates on income inequality and the growing divide between the richest and the poorest segments in American society have gained momentum in recent years, spurred by Thomas Pickett's (2014) *Capital in the Twenty-First Century*. During his December 2013 *State of the Nation* address, President Obama referred to America's "income inequality" and "lack of upward mobility" as "the defining challenges of our time" (Berube 2013). Despite economic growth since the Great Recession of 2008-2009, the gap between the richest 5 percent and the poorest 20 percent has continued to widen (Berube 2013). This has been exacerbated by the general tendency of eliminating the working-class and low-income segments of the society from gaining a share in the economic pie, and they are the ones who are forced to shoulder the greatest consequences of neoliberal economic policies that have been largely instrumental in creating this divide (Harris 2015).

This paper examines the income divide between the richest 5 percent and the poorest 20 percent of metropolitan population across the ten metropolitan statistical areas (MSAs)¹ of Tennessee, as measured by the statistic 95/20 Ratio.² As per the American Community Survey (ACS) estimates of 2008-2012, Tennessee comprises of ten metropolitan statistical areas (MSAs) and these MSAs vary in their demographic and urban economic contexts, varying from Fordist-to-post-Fordist economies, representing a great mix of traditional (e.g., Jackson) to creative-class economy (e.g. Nashville). In addition, by focusing on metropolises of just one state, I use important detailed data on the metropolises and hence take a 'case study approach' that could not be easily duplicated in other areas. Thus, an understanding of income divide within and among these metropolises and how it varies across races and ethnicities in these metropolises will provide useful insights about its urban and ethnic contexts.

This study heavily draws and expands upon several analyses and reports prepared by Berube (2013) and his colleagues at the Brookings Institute that drew significant national attention, especially due to its suitability in contemporary times. By focusing on inter-urban analyses, using the concepts and statistics used by Berube (2013), this paper expands social and urban geography literature by providing a good insight into the inter- and intra-urban patterns of income divide, and how the socio-spatial and economic differences across the sub-regions within Tennessee might be associated with income divide (or not). Given that

¹ I use the terms MSAs, cities, urban areas, places, and metropolises interchangeably throughout the text in this paper, and all of these imply the 'MSAs' that constitutes the scale of analyses.

² The 95/20 Ratio, commonly used in research institutes and think tanks, measures the gap between the cut-off incomes for the richest 5 percent (i.e., 95th percentile and above) and the poorest 20 percent (i.e., 20th percentile and below) in a geographic area. Said another way, it tells us how widely divided the richest/top 5 percent of the overall population within a geographic area are compared to those in the bottom 20 percent of the income earners. Larger the ratio, more is the income gap, and smaller the ratio, lesser is the income gap. Thus, one can make sense of the relative wellbeing or lack thereof by using these simple statistics, which says a lot about a particular city/urban area of a society that is being analyzed.

Tennessee, located within the American Southeastern region,³ is an interesting state with varying levels of economic, social, historical and cultural attributes and differences, puts it in a unique category. This state has specific privileges in terms of demographic and economic attraction pull factors. Tennessee is one of the very few states from the U.S. Southeastern region that contains a sizable share of multi-group and non-Black diverse population. In addition, it also hosts a good mix of economic opportunities, and is home to a great mix of historical and cultural institutions. All of these are important attributes that may influence earning potentials and income levels of various population groups (e.g., see Florida's (2003) discussions on diversity and economy), as the elements of demographic composition, spatiality, economy and culture interact in complex ways to influence income divide. This paper hopes to reflect on these aspects, taking a data-driven empirical approach, and expand upon the line of scholarly work done by Berube and his team at Brookings Institute, by comparing and contrasting income divide among the various metropolises of Tennessee.

More specifically, this paper answers three related questions. First, how does the 95/20 Ratio vary across the ten metropolises of Tennessee? Second, how does 95/20 Ratio vary across the major racial/ethnic groups in these metropolises? Third, what are the predictors of the income divide? Due to the distinctness as well as commonality of the ten metropolises of Tennessee, as stated above, an analyses of income divide in these metropolises can provide a good empirical and theoretical grounding that can be useful in understanding metropolises in other states or regions of this country.

This paper proceeds as follows. The literature review summarizes relevant scholarly work on income inequality and socioeconomic contexts, poverty in the South, and some theories on the income divide. The research design section discusses the study area, data and analytical steps. The paper then presents the findings from statistical analyses. Finally, the conclusions summarize important findings and make connections between the income divide and place/space specific economic contexts, and its policy implications.

2. LITERATURE REVIEW

2.1 INCOME INEQUALITY AND SOCIO-ECONOMIC CONTEXTS

Scholars have also indicated a sharp rise in income inequality over the past several decades (Autor et al. 2006; Card and Dinardo 2002; Chakravorty 1996; Harris 2015; Murphy et al. 1998). The economic restructuring since the 1970s has driven a growing polarization between the poorest and the wealthiest parts of the society. As middle-class jobs have become less prevalent in the U.S., the new economy – based on globalization and

³ The U.S. Southeastern region in this paper refers to the ten states as defined in the Southeastern regional division of the American Association of Geographers (SEDAAG). Tennessee is one of these SEDAAG states. For purposes of readability/American English norms, all throughout the paper, I use the terms 'the Southeast', 'the South' and/or the 'Southeastern region' interchangeably, and all these terms refer to this SEDAAG defined states.

automation – has bifurcated the job market between high-paying jobs that require considerable investment in education and low-paying positions that require little to no skills (Harris 2015; Moore 1989; Porter 2016; Sassen 1991). Skill-biased technical change has also created enormous difference in individuals' earning potentials (Autor et al. 2006, 2003, 1998; Porter 2016).

The onset of industrial restructuring, accompanied by globalization and shifting spatial locations of manufacturing to lower wage countries like China, Indonesia, Mexico, etc. has eliminated millions of formerly low-skill but high-paying jobs that were based in the American Manufacturing Belt (AMB) and at other locations within the US (Levine 2000). Job markets today are largely bifurcated, creating high paying jobs on one end that require professional degrees and considerable investment in education and skill development (Florida and Mallender 2014; Porter 2016; Sassen 1991). These shifts have created a substantial gulf between the haves and the have-nots. In fact, Pink-Harper (2015) in her attempt to establish a relationship between the human capital and economic development variables finds a very marginal support for the hypothesis that regions with concentrations of highly educated individuals grow more with regard to businesses and jobs. This seems to be aligning well with how the economic restructuring has contributed to greater disparity and inequality rather than economic well-being of people, especially those in the lower ranks of the society.

To further suffice for the above saying, a new research by Berube (2013) finds that the 95/20 Ratio indeed increased from 10.0 in 2007 to 10.8 in 2012 across the 50 largest U.S. cities. While many argue that income gap is inherent in capitalism, what is worrisome is that the widening of this gap creates spaces of sluggishness, urban-degradation and vice-versa (Chakravorty 1996; Schneider and Logan 1981). A city where the rich are very rich, and the poor are very poor, is likely to face many difficulties regarding its social, contextual and cultural wellbeing. In particular, this exacerbates the spatial and socio-economic issues in the spaces occupied by the poorest, that often happen to be in the inner-city areas, mostly comprising minorities in most US MSAs (Lobo and Smole 2002; Lobo et al. 2007; Porter 2016).

2.2 INCOME DIVIDE AND DIVERSITY IN THE SOUTHEAST AND USA

Since the 1980s, the population of the American Southeast has both grown overall and, more significantly, in its diversity (McDaniel and Drever 2009; Smith and Furusest 2004; Wilson 1979). The states of Georgia, Tennessee, North Carolina and Florida, in particular, have attracted diversity of various types (Atiles and Bohon 2003; Furusest et al. 2015; McDaniel and Drever 2009; Sharma 2014a, 2014b, 2013; Winders 2006). For example, Tennessee's total share of non-White population increased from 8 percent in 1990 to 11.6 percent in 2009, and its multi-group diversity score changed from 0.33 (1990) to 0.46 (2009) (Sharma 2014a) [diversity score represents the diversity of a geographic scale that comes from the size and presence of multiple groups at a scale]. During 1990-2000, North Carolina's share of Latinos grew significantly, driven by the construction economy in the Charlotte region (Smith and Furusest 2006, 2004). Despite this growth, the South remains the poorest region of the US, with Tennessee's poverty rate at 18.3 percent, compared to the national rate of 15.3 percent (census.gov).

Some other reasons that can help explain the widening of incomes include the incoming migrants from across the borders, especially since the 1970s economic restructuring and their cross-border access to people and jobs. This pattern has increased since the passing of the North American Free Trade Association (NAFTA) in the mid-1990s (Mohl 2007, 2003). The expanding geography of racial/ethnic diversity across the US has occurred from family-chain and network-driven immigration from Mexico and Central America, especially driven from increased demand for cheap and low-skilled labor in agriculture, service sectors, manufacturing, construction and professional occupations (Alvarez and Mossay 2006; Cornelius et al. 2010; Light 2006: pp.19 and 49; Lichter and Johnson 2009; McDaniel and Drever 2009; Neubauer 2000; Parrado and Kandel 2011; Ritzer and Malone 2000; Winders 2013, 2011, 2006). This has allowed workers of all types -- skilled and unskilled as well as documented and undocumented, to migrate and work in various types of industries in the host country. In this process, Tennessee is one of the southern states that gained in immigrant populations. These immigrants have significantly changed the racial/ethnic composition of many southern metropolises such as Nashville, Charlotte and Birmingham, which have also been called as the 'new destinations for Latinos' by several scholars (see Furuseth and Smith 2006; Smith and Furuseth 2004; Winders 2013). These racial/ethnic compositional change, in return, have created complex geographies of socio-economic and spatial polarization in most global cities (Sassen 1991) and also in many of the emerging new metropolises of the Southeast (Sharma 2014a; Singer 2004, 2003).

In part, the South scores the worst in the country with regard to many aspects – poverty, racism, discrimination, and the income divide (Badger 2015; Kotkin 2014; Long 2015). However, some recent research also suggests that poverty is now less concentrated in the South and that the rate of progress has been much better in the South than in other regions (Badger 2015; Kotkin 2014). To provide better context to these attributes, Passel and Cohn (2011, 2009) indicate that high poverty in the Southern states is due to the undocumented status of immigrants, many of whom are from Latin American countries, as they are forced into low-waged service jobs. In the American South in general, and Tennessee in particular, various scholars have addressed growing diversity and changing segregation across regions and within inter and intra-urban contexts (Atiles and Bohon 2003; Sharma 2014a, 2013; Wilson 1979; Winders 2009). Others have focused on attitudinal changes toward the immigrants (Atiles and Bohon 2003; Charles 2003, 2000) while few others have addressed the issues of identity politics and the conflict for resources (Winders 2011, 2006).

Concerning the relationships between segregation, income and race at a national scale, Clark (2009, 2007), Clark and Blue (2004), Charles (2003, 2000), Jargowsky (1995), and Wilson (1979) suggest interesting relationships between the two and how higher segregation affects poverty and vice versa. While exploring the relationships between segregation and income/class within and among the five largest metropolises of USA, Clark and Blue (2004) find that the attributes associated with class such as education, income and occupation have a much stronger association with segregation, and that class overtakes race/ethnicity in defining segregation. The most profound level of inequality and divided class structure can be found in the densest and most influential urban environment in North America, i.e., in Manhattan (Kotkin 2014). In 1980, Manhattan ranked 17th among the nation's counties in income inequality, which has now become the worst in USA's largest counties (also see Glaeser et al. 2008). While the role of living costs is

critical here, other scholars suggest that the biggest cities with the most pronounced levels of inequality are also those with the highest costs of living (e.g., San Francisco, Miami, Boston, Washington, D.C., New York, Oakland, Chicago and Los Angeles). The four largest metropolises from the US Southeast (Naples, Miami, Port St. Lucie and Durham-Chapel Hill from North Carolina) are among USA's top ten most unequal (income) cities (Long 2015). The largest cities not only attract billionaires, but they also have a potential to attract immigrants to a great extent and these population groups make far lower wages than others due to lack of adequate skills (see Harris 2015; Long 2015; Passel and Cohn 2011; Porter 2016). Inequality in skills, which often plague immigrants from poorer countries (see Passel and Cohn 2011), get further deprived in the host countries as they are forced to take menial jobs that further exacerbates the income divide.

2.3 THEORETICAL FRAMEWORK

There can be substantial differences among various population groups and their income levels as their skills and educational attainments can vary significantly in terms of their countries/regions of origin (see Pink-Harper, 2015; Porter, 2016). These, in turn, affect immigrants' employment opportunities, and hence their over-concentrations in certain types of industries that typically pay very low wages (Glaeser et al. 2008). Human capital and preferences for specific groups also play significant roles in creating clusters of economic deprivation (Charles 2003, 2000; Clark 2009, 2007; Clark and Blue 2004; Hamoudi and Sachs 1999; Li 2005; Lobo and Smole 2002; Pink-Harper 2015; Skop and Li 2005).

Constructing parallels with Florida's (2003) and Hamoudi and Sachs's (1999) understanding of skills associated with labor, i.e., the human capital, it is obvious that the economic wellbeing and growth of a society occurs with investments in building human capital assets (Harris 2015; Pink-Harper 2015; Porter 2016). Though one would expect a positive relationship between human capital and economic growth, some recent research has shown otherwise. For example, Pink-Harper (2015) finds that the human capital variable is not a strong determinant in predicting average annual pay changes for counties. Further, Olaniyan and Okemakinde's (2008) theorization suggest that simply acquiring human capital or educational achievement is not enough, but the type and the quality of human capital matters a lot as that is what determines its transferability to marketable skills. These include investing in appropriate types of higher education, professional and technical skills and talent development, particularly within the context of changing American economy (Pink-Harper 2015; Porter 2016).

The economic vibrancy of a place also affects the earning potentials of its residents (for example, see Boxman *et al.* 1991; Florida 2012, 2003; Olaniyan and Okemakinde 2008; Porter 2016). Economic growth depends upon the quality of education and total human capital attainment, and if education contributes toward skill development of people, it can be very instrumental in the progress of a person and a society (Furuseth et al. 2015; Olaniyan and Okemakinde 2008). Also important is the presence of a well-developed *social network* as that provides proper platform for using the skill and opportunities (see discussions in Boxman et al. 1991; Pink-Harper 2015; Porter 2016). Since the metropolises in Tennessee might represent a wide array of demographic, socio-economic and skill-based

urban contexts, this paper's exploration of the relationships between income divide and geographic contexts will also provide an overview of the *human capital* contexts and how they somehow attribute to varying levels of income divide across Tennessee's ten metropolises. Overall, then, this work will be evaluated through the broader lens of human capital.

3. RESEARCH DESIGN

3.1 STUDY AREA

This study examines the income divide in the ten metropolises of Tennessee (Figure 1) in 2010 (mid-year of American Community Survey-ACS 2008-2012). By limiting the empirical grounding to one state, this research can use a case-study approach to better interrogate broader relationships between income divide, racial/ethnic diversity and segregation and local contexts in a more in-depth manner.

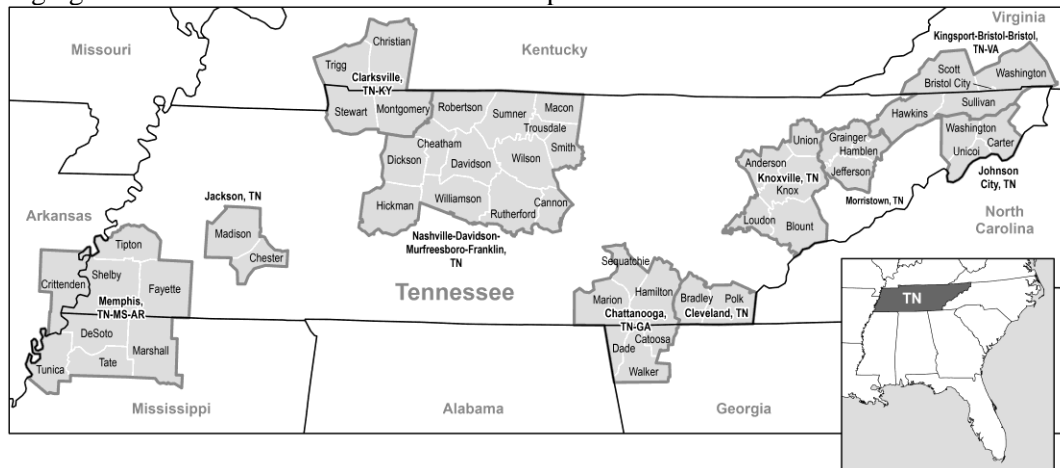


Figure 1. Ten Metropolitan Statistical Areas (MSAs) of Tennessee

Tennessee includes 51 counties and 1,233 census tracts, as per the 2008-2012 ACS data estimates;⁴ and out of these, 13 counties and their census tracts are situated in the adjoining states of Arkansas, Georgia, Kentucky, Mississippi and Virginia (Census 2010 OMB definition, Table 1, Figure 1). About 83 percent (5.3 million people) of Tennessee's total population reside in these ten metropolises (Figure 2), with Whites, African Americans,

⁴ Regarding the use of ACS estimate data, Spielman et al. (2014) have raised concerns about its validity, quality and uncertainty, and while I agree with the broader arguments raised by the authors, I still chose the 2008-2012 five year estimates data as that is the only source of data for the long-form detailed variables such as that of income, and other socio-economic and built-environment attributes used in this analyses. Also, 2010 being the mid-point year of 2008-2012 serves my purpose of measuring income divide for 2010 quite well, and therefore I also use the term 2010 instead of referring to the entire data year 2008-2012 throughout the manuscript.

Table 1. Demographics of Tennessee metropolises

A. Metropolitan statistical areas (Tennessee)	Number of (counties)/ census tracts	Population, 2012 ACS
Chattanooga, TN-GA	(6)/119	528,667
Clarksville, TN-KY	(4)/68	274,404
Cleveland, TN	(2)/24	115,985
Jackson, TN	(2)/30	115,019
Johnson City, TN	(3)/44	198,658
Kingsport-Bristol-Bristol, TN-VA	(5)/75	308,899
Knoxville, TN	(5)/172	699,097
Memphis, TN-MS-AR	(8)/312	1,317,314
Morristown, TN	(3)/26	136,682
Nashville-Davidson-Murfreesboro-Franklin, TN	(13)/363	1,595,454
Ten Metropolises in Tennessee (Total)	(51)/1233	5,290,179
B. Racial/ethnic groups (total ten MSAs)	Population	Proportion
Non-Latino	5,033,129	0.951
Non-Latino White	3,780,599	0.715
Non-Latino African American	1,062,474	0.201
Non-Latino Asian	92,700	0.018
Non-Latino All-Others	97,356	0.018
Latino	257,050	0.049

Data source: 2008-2012 ACS estimate (mid-year 2010), Bureau of US Census

Asians, and Latinos comprising of 75, 17, 1.7 and 4.9 percent respectively of the total population of these ten metropolises. Nashville, Memphis and Knoxville are the three largest metropolises of Tennessee, located in central, west and east Tennessee respectively (Figures 1 and 2). Memphis, Jackson, Nashville and Chattanooga have the highest shares of African Americans, whereas Clarksville, Morristown, Nashville and Memphis have the largest shares of Latinos (Figure 2). Asians comprise a very small share in these metropolises, with Nashville (2.4 percent), Clarksville (2.1 percent), Memphis (1.9 percent), and Knoxville (1.5 percent) as the top ranking; these figures are fairly low compared to the national share of 4.5 percent Asians, but far higher than that for Tennessee as a whole that stands at 1.6 percent Asians only.

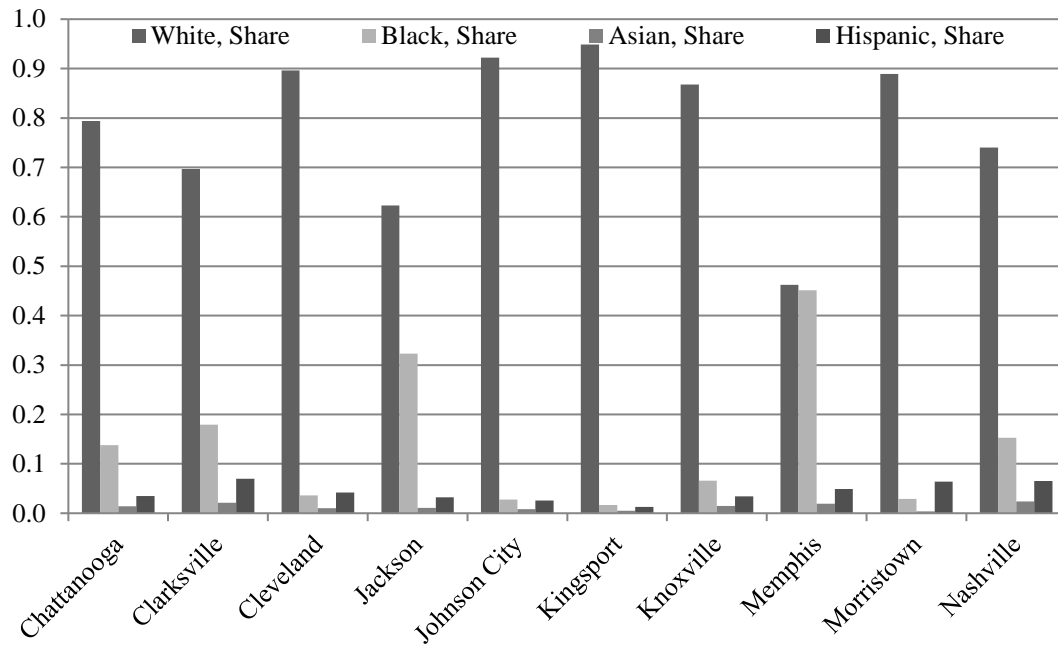


Figure 2. Demographic characteristics of ten metropolitan areas of Tennessee, 2010
Data source: 2008-2012 ACS estimate (mid-year 2010), Bureau of US Census

3.2 DATA SOURCES, MEASUREMENT STATISTICS AND METHODOLOGY

Multi-group Theil Diversity Score (DS), commonly known as the diversity score is the diversity that comes from the presence of different groups (such as racial/ethnic categories) at a particular geographic scale, and varies according to the number of groups and their percentages in each census tract (CT) or block group (BG) for which it is computed (Brown and Sharma 2010; Sharma and Brown 2012; Theil and Finezza 1972). The Diversity Score can have a lower bound of zero when only one racial/ethnic group is found in a census tract, and the upper bound occurs when all racial/ethnic groups are equally represented. The Entropy Index (EI or the multi-group Theil Index), measures the degree of segregation (opposite of intermixing) of multiple groups at a particular scale, and its value varies between 0 (perfect intermixing), and 1 (no intermixing/perfect segregation). Thus, even if a place is very diverse, and if they do not mix spatially, it could get a high value of entropy index, suggesting that the place is highly segregated. For example, an EI of 0.78 implies higher level of segregation than an EI of 0.34; however, a DS of 0.78 is far more diverse than a DS of 0.34.

Using these ten MSAs as the scale of analysis, this paper examines how the income divide (measured by the statistic “95/20 Ratio”, as used by Berube 2013) varies among them, and how it varies across the major racial/ethnic groups. In addition, it examines the association between income divide and the socio-economic attributes of these metropolises. I use the five year 2008-2012 ACS estimates at tract level to calculate the

95/20 Ratios, racial/ethnic diversity scores and entropy indices for all ten metropolises, using the specifications in Reardon and Sullivan (2004) and in Sharma and Brown (2012:326–327). Diversity scores for tracts and the MSAs are computed using the following equations:

$$DS = \sum g = 1 - n \Pr(g) * \ln(1/\Pr(g)) \quad (1)$$

$$DSi = \sum g = 1 - n \Pr(g) i * \ln(1/\Pr(g) i) \quad (2)$$

Where DS indicates the diversity score for an MSA, DSi is the diversity score for a census tract $_i$ within that MSA; and $\Pr(g)$ is the proportion of a particular racial/ethnic group $_g$, where there are n racial/ethnic groups. Likewise, Entropy Index (EI) for all MSAs are computed using the following equation:

$$EI = \sum i = 1 - n (Ti * (DS - DSi) / (DS * T)) \quad (3)$$

Where EI indicates the Entropy Index for an MSA; Ti is the total population of census tract $_i$, with n tracts overall, DS and DSi are the diversity scores for the MSA and census tract $_i$ respectively, and T is the MSA's total population. Thus, the Entropy Index for the entire MSA represents the deviation of each census tract $_i$'s diversity score (or mix of racial/ethnic groups) from that of the MSA overall, weighted by the population of i relative to the MSA population, and summed over all census tracts i .

Further, the 95/20 Ratios are computed using simple descriptive statistics and I use Berube's (2013) specifications for computing this ratio. This is computed for total population and for Whites, African Americans, Asians and Latinos only. The diversity scores (DS) and entropy indices (EI) are computed using five groups together (White, African American, Asian, Latino and All Others). I exclude American Indians due to their small presence in these metropolises whereas 'All-Others' group becomes a more significant population segment at the census tracts, and hence can't be ignored.

These indices (95/20 Ratio, DS and EI) are then analyzed for metropolitan-level variation, using simple descriptive and ranking analyses (Figures 2 and 3). I also use the 35th and 65th percentile values of all ten metropolitan diversity scores, entropy scores and 95/20 Ratios to create a matrix of low, medium and high categories of MSAs based on their rankings (Table 4). Finally, to explore how income divide associates with major characteristics of these ten metropolises, I conduct a Pearson's bivariate correlations analyses of the computed indices (DS , EI , and 95/20 Ratio) along with a select list of 51 variables (demographic, socio-economic and built-environment), and elaborate on these relationships.

Finally, I want to comment on some limitations of this study. Though a further analyses using exploratory factor analyses or a principal component analyses, followed by a regressions analyses would be desirable, I chose not to go that route due to the limitation of only ten metropolises in the comprising the sample, which would make the regression models statistically not robust. Thus, correlations analyses form an important method of this investigation in this paper, connecting income divide with diversity, intermixing and other important metropolitan-level characteristics.

4. ANALYSES AND FINDINGS

4.1 DIVERSITY AND INTERMIXING AND GROUP-BASED COMPONENTS

As shown in Figure 3, among all ten metropolises of Tennessee, Memphis is the most diverse (DS=1.013), followed by Clarksville (DS=0.938), and Nashville (DS=0.849), whereas Memphis, Chattanooga, and Jackson are also the three most segregated (or least intermixed) metropolises in Tennessee, with entropy index (EI) values of 0.321, 0.301, and 0.238 respectively. On the other hand, the most intermixed metropolises are Cleveland (EI=0.103), Clarksville (EI=0.128), Kingsport (EI=0.137) and Knoxville (EI=0.201).

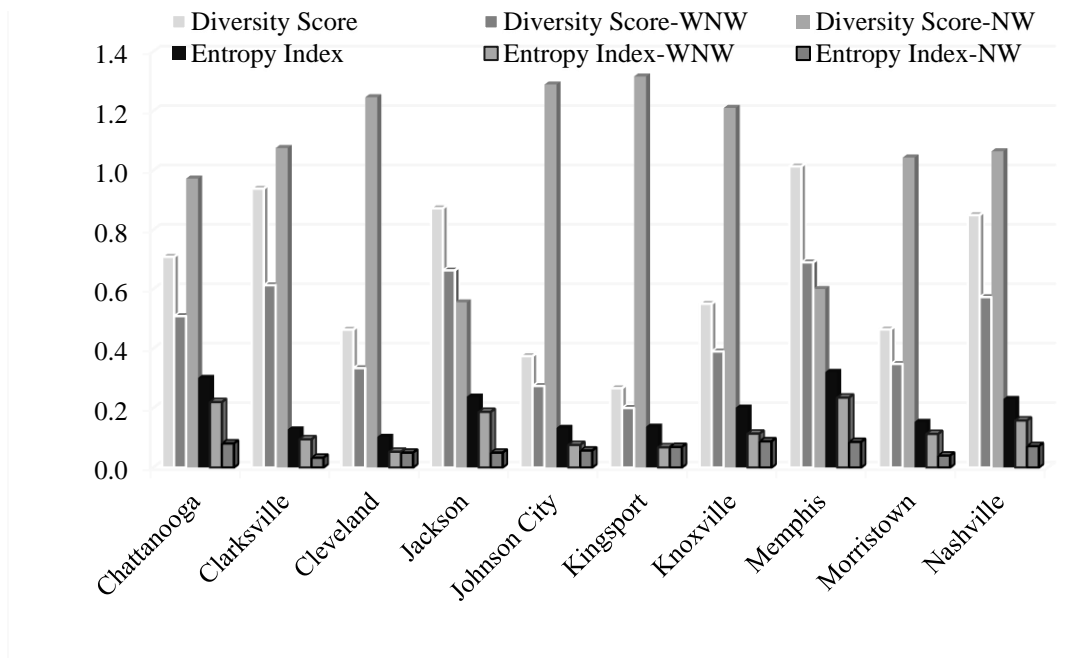


Figure 3. Diversity score, entropy index, their components for ten metropolises, 2010

4.2 RACIAL/ETHNIC VARIATION IN INCOME DIVIDE: A TALE OF TEN METROPOLISES

On comparing the 95/20 Ratio for the overall sample (using data of all ten metropolises together) with metro-level statistics, Jackson (4.03), Memphis (3.7), and Nashville (3.1) emerge as the most divided metropolises, slightly above the value of 3.02 for the overall sample. Morristown also has the lowest income divide (95/20 Ratio = 1.62, Table 2.A), suggesting that the poorest 20 percent are not too far behind the richest 5 percent. The 95/20 Ratio is the largest for Latinos (5.37), followed by Asians (4.9) and African Americans (4.45) (Table 2.B). This is not surprising given these ten metropolises comprise almost 83.27 percent of the state's total population (6,353, 226, ACS 2008-2012: Figure 2); out of this (83.27 percent), non-Hispanic Whites comprise 71.5 percent whereas African Americans, Latinos and Asians comprise 20.1 percent, 4.9 percent and 1.8 percent respectively of total metropolitan population of 5,290,179 (Table 1.B).

Table 2. (A) 95/20 Ratio for overall sample and ten metropolises and (B) 95/20 Ratio by race/ethnicity for overall sample (includes population of all ten MSAs together)

A. 95/20 ratio for sample and ten MSAs, TN				
MSAs	Mean (\$)	20 th (\$)	95 th (\$)	95/20 ratio
Sample	49,146	30,980	93,656	3.02
Chattanooga	46,194	30,988	82,794	2.67
Clarksville	45,281	34,404	70,662	2.05
Cleveland	37,242	26,515	54,306	2.05
Jackson	42,400	23,096	93,166	4.03
Johnson City	37,808	28,441	64,118	2.25
Kingsport	40,238	31,359	62,779	2.00
Knoxville	50,641	32,320	92,480	2.86
Memphis	47,567	25,334	93,716	3.70
Morristown	38,217	32,263	52,157	1.62
Nashville	56,755	35,561	110,188	3.10
B. 95/20 ratio by race/ethnicity for sample				
Sample	49,146	30,980	93,656	3.02
White	52,716	34,896	97,546	2.80
African American	43,529	21,919	97,540	4.45
Asian	71,517	35,357	173,239	4.90
Latino	46,462	21,768	116,890	5.37

Note: Bold cells indicate MSAs and racial/ethnic groups with their 95/20 ratios higher than the sample mean value=3.02

The 95/20 Ratio for Whites are the highest in Jackson (2.95), Memphis (2.95), Knoxville (2.93) and Nashville (2.87) whereas those with the lowest values include Morristown (1.60), Kingsport (2.03), Cleveland (2.14) and Johnson City (2.16) (Table 3.A). It is interesting to note that while Memphis is one of the poorest metropolises in the US (in 2012), it also ranks as the second highest for income divide, is one of the most diverse and the second most segregated among these ten metropolises.

The 95/20 Ratios for African Americans was not computable for few MSAs as some of these did not score a value for 95th percentile (since tract-level income data were used, and hence data limitations for computations; using individual data would have better served the purpose). For the metropolises that scored, Knoxville is the most divided metropolis for African Americans (7.29), followed by Nashville (4.60), Kingsport (4.45), Chattanooga (4.29), Jackson (3.96) and Memphis (3.72) (Table 3.B). It is interesting to note that even though Memphis has the largest share of African Americans (45.1 percent of its total) among these ten MSAs, the 95/20 Ratio is the highest in Knoxville (only 6.6 percent of Knoxville's population is African American). In contrast, the 95/20 Ratio for African Americans is the lowest for Clarksville.

Similar data issues limited analyzing 95/20 Ratios for Asians as the 20th percentile values were incomputable for few metropolises (Table 3.C). Thus, for the metropolises that scored this value (Chattanooga, Clarksville, Johnson City, Knoxville, Memphis and Nashville), the 95/20 Ratio scored the highest for Knoxville (6.44), Chattanooga (6.03), Memphis (4.7) and Nashville (4.33). This also suggests that while population size matters,

other reasons contributing to such variations may include wide occupational differences across various Asian sub-groups (e.g., Chinese, Indians, South Koreans, Bangladeshis, Pakistanis, Nepalese, Bhutanese, Sri Lankans, Indonesians, Laotians, Filipinos, Japanese, Cambodians, Vietnamese, etc.).

Table 3. Income divide by race/ethnicity for ten metropolises of Tennessee

A. Income ratio for Whites				C. Income ratio for Asians		
	20 th (\$)	95 th (\$)	95/20 ratio	20 th (\$)	95 th (\$)	95/20 ratio
Sample	34,896	97,546	2.80	35,357	173,239	4.90
Chattanooga	34,401	81,352	2.36	31,625	190,808	6.03
Clarksville	35,029	75,686	2.16	26,429	119,339	4.52
Cleveland	26,250	56,266	2.14	33,571		2.05
Jackson	34,622	102,180	2.95	21,673		4.34
Johnson City	28,881	62,377	2.16	6,750		19.80
Kingsport	31,446	63,730	2.03	28,095		5.05
Knoxville	32,970	96,737	2.93	32,456	209,160	6.44
Memphis	35,334	104,142	2.95	36,177	169,974	4.70
Morristown	32,335	51,810	1.60	69,219		1.36
Nashville	39,083	111,979	2.87	37,570	162,688	4.33
B. Income ratio for African Americans				D. Income ratio for Latinos		
	20 th (\$)	95 th (\$)	95/20 ratio	20 th (\$)	95 th (\$)	95/20 ratio
Sample	21,919	97,540	4.45	21,768	116,890	5.37
Chattanooga	19,625	84,277	4.29	21,737	101,826	4.68
Clarksville	21,059	65,583	3.11	21,849	75,399	3.45
Cleveland	20,500		3.78	18,229		6.31
Jackson	19,302	76,354	3.96	23,403		6.93
Johnson City	16,859		3.64	19,474		4.00
Kingsport	23,352	103,854	4.45	17,583		6.50
Knoxville	17,534	127,768	7.29	20,292	121,665	6.00
Memphis	22,383	83,257	3.72	21,034	122,066	5.80
Morristown	19,287		3.44	25,983		4.01
Nashville	24,578	113,037	4.60	23,815	128,692	5.40

Note: Bold cells indicate MSAs with 95/20 ratios higher than the sample values. In some cases, bold cells also indicate those metros for whom the 95th percentile incomes were not scored, and hence the next higher level of incomes were used to compute the income divide ratios (e.g., Table 2.C: 70/20 ratio for Cleveland = 2.05 and hence bold; the \$ values other than 95th percentiles are not shown here to keep the table clean, but it can be provided upon request).

Their variation in terms of human capital accumulation (e.g., educational attainments and skills, see discussions in Pink-Harper 2015 and Porter 2016), citizenship and legal status, demographic and life-cycle/stage variations, including a significant share comprising the student population who have lower incomes, can be useful in explaining wide income divide for Asians. Finally, the 95/20 Ratios for Latinos (Table 3.D) are the highest in Knoxville (6.0), Memphis (5.8) and Nashville (5.4), whereas the metropolises with lowest ratios include Clarksville (3.45), Morristown (4.01) and Chattanooga (4.68). Again, while the size of Latino population in these metros matter, like other groups, this group too merits

deeper analysis for their occupational niches that can flesh out better insights.

4.3 MATRIX ANALYSES: DIVERSITY, ENTROPY AND INCOME DIVIDE

I create a matrix of these ten metropolises based upon low-mid-high categories for diversity scores, entropy indices and 95/20 ratios. I use the 35th and 65th percentile values of these ten metropolitan scores as the cut-off to create these categories, and the results are presented in Table 4. Since lower numerical values of entropy index suggest high-intermixing, the metropolises that score entropy index values lower than 35th percentile are classified as *high-intermixing* whereas those scoring greater than 65th percentile are classified as *low-intermixing*. When looking at this matrix, it is apparent that Memphis, Nashville and Jackson, the three metropolises with largest shares of African Americans and/or minorities, are also those with highest diversity, highest income divide and lowest intermixing (i.e., highest segregation). In contrast, Knoxville turns out to be mid-diverse, mid-gap and mid-intermixed; Clarksville seems to be an interesting metro in that it obtains low levels of income divide and high levels of diversity and intermixing.

Table 4. Matrix of low-mid-high values of Tennessee metropolises

Metropolises	95/20 Income ratio: 35 th (2.05), 65 th (2.90)		Diversity score: 35 th (0.46), 65 th (0.85)		Entropy index 35 th (0.14), 65 th (0.23)	
Chattanooga	2.672	Mid Gap	0.709	Mid-Diversity	0.301	Low-Mixing
Clarksville	2.054	Low Gap	0.938	High-Diversity	0.128	High-Mixing
Cleveland	2.048	Low Gap	0.463	Low-diverse	0.103	High-Mixing
Jackson	4.034	High Gap	0.872	High-Diversity	0.238	Low-Mixing
Johnson City	2.254	Mid Gap	0.374	Low- Diversity	0.133	High-Mixing
Kingsport	2.002	Low Gap	0.267	Low- Diversity	0.137	High-Mixing
Knoxville	2.861	Mid Gap	0.550	Mid-Diversity	0.201	Mid-Mixing
Memphis	3.699	High Gap	1.013	High-Diversity	0.321	Low-Mixing
Morristown	1.617	Low Gap	0.464	Mid-Diversity	0.153	Mid-Mixing
Nashville	3.099	High Gap	0.849	High-Diversity	0.230	Low-Mixing

Notes: Bold MSAs are the most income divided, most diverse and least intermixed

4.4 BIVARIATE CORRELATIONS ANALYSES: METROPOLITAN ATTRIBUTES AND INCOME DIVIDE

A Pearson's bivariate (two-tailed) correlation analysis using 51 variables is conducted. The variables are selected based on prior research (Clark 2009, 2007; Clark and Blue 2004). Results show some expected and some unexpected relationships (Table 5) with positive association of 95/20 Ratio with diversity, entropy index (overall and White vs. non-White), share of Asians below poverty, share of 25 years and older population with educational attainment of a Master's or professional degree, and share of African Americans. The variables with negative correlation include share of whites, diversity among non-White, share of metro's population with poverty levels between 100 percent-149 percent poverty, and share of metropolitan population born in Tennessee, share of White population below poverty, share of labor (16 years and older) employed in agriculture/forestry/primary,

manufacturing/construction, and those engaged in scientific/professional, managerial/administrative jobs. Interestingly, none of the variables pertaining to foreign-born status and their year of entry were significant. Surprisingly, the variables on 'contract rent' were also not significant, even though prior research found this to have significant associations with income divide. Also, there were several variables that were highly correlated with each other (for example, diversity score (overall)) was strongly correlated with diversity score among non-whites and that for white versus non-Whites.

Likewise, many race-based education and occupation variables were strongly correlated with each other (the full correlations matrix is not provided here). The metros with higher segregation (among non-Whites) and Asians below poverty along with higher levels of Masters and/or professional degree holders, and engaged in FIRE occupations also have higher levels of income divide. In contrast, metropolises with mixed-economy have a lower income divide. This is not surprising given that post-Fordist metropolises have shown far more economic diversity compared to others that are stuck with one or the other specialized economic activity. In addition, the metropolises that are diverse and segregated, have higher shares of African Americans in poverty and have population without any schooling and adequate employment opportunities. Also, see Antipova's (2015) discussions on racial/ethnic (un)employment in Memphis and Porter's (2016) commentary on inner-city economic development. A closer look at the ACS data suggests that out of all 25 years and older population in Jackson, about 1.5 percent have no schooling, 28.5 percent have high school or lesser degree, and only 14 percent have a Bachelor's degree.

5. DISCUSSIONS, CONCLUSIONS AND POLICY IMPLICATIONS

Nashville, also known as the Music City and Memphis (the FedEx City) -- the two largest metropolises in Tennessee also have the highest levels of income divide, and this is not surprising as several prior research have suggested that larger metros/urban areas have the potential to attract immigrants, and immigrants do not necessarily have the best access to the highest paid jobs and opportunities (see Glaeser et al. 2008; Kotkin 2014; Roberts et al. 2013). Jackson (95/20 Ratio=4.034) is an exception with the highest income divide in Tennessee, and this can be well explained from the context of its long history of plantation/slavery-based economy. In contrast, the metropolises with lower-economic specialization and mixed economic opportunities have lower income divide (i.e., lower 95/20 Ratios). Some of these include the mid-sized metropolises such as Clarksville (2.05), Cleveland (2.05), Morristown (1.6) and Kingsport-Bristol (2.02). An overview of existing industries and economic opportunities available in these metropolises suggest that their small population size and less dynamic economies might be limiting opportunities with wide-income variations, and hence a limitation to generating a wider income-gap. Memphis, one of the poorest metropolises in the US in 2012 (AP 2013; NBB 2012), still seems to be battering with the historical remnants of slavery. Though some of the African Americans have moved upward into the middle class because of better education and occupation, there are too many left behind, especially in the inner-city poverty stricken areas whose incomes and employment are the lowest among all (Antipova 2015). An in-

depth investigation of occupational engagements and their variation across racial/ethnic groups would offer more insights about these.

Table 5. Correlations matrix for select variables with 95/20 ratio (IR95/20)

Demographic Characteristics	IR95/20
MSA Population, Logged, 2012	0.402
Diversity Score, 2012	0.674*
Diversity Score, White vs. Non White, 2012	0.734*
Diversity Score, Non White, 2012	-0.795**
Entropy Index, 2012	0.760*
Entropy Index, White vs. Non-White, 2012	0.756*
Entropy Index, Among-Non-White, 2012	0.462
Socio-Economic Characteristics	IR95/20
Income Range	0.784**
Share, Below 100% of Poverty Rate	-0.053
Share, Between 100%-149% Poverty Rate	-0.504
Share, Below 100% of Poverty Rate, Born in Tennessee	0.049
Share, Between 100%-149% Poverty Rate, Born in Tennessee	-0.484
Share, Below 100% of Poverty Rate, Born out of US	-0.521
Share, Between 100%-149% Poverty Rate, Born out of US	-0.651*
Share, Below Poverty Rate, White, 2012	-0.831**
Share, Below Poverty Rate, Black, 2012	0.822**
Share, Below Poverty Rate, Hispanic, 2012	-0.142
Share, Below Poverty Rate, Asian, 2012	0.667*
Education, No schooling, 2012, Above 25 Years Proportion	0.397
Education, High School or Less Education, 2012, Above 25 Years Proportion	-0.458
Education, Associate/Some College, 2012, Above 25 Years Proportion	-0.355
Education, Bachelor's Degree, 2012, Above 25 Years Proportion	0.627
Education, Master's Degree, 2012, Above 25 Years Proportion	0.665*
Education, Professional Degree, 2012, Above 25 Years Proportion	0.748*
Education, Doctorate Degree, 2012, Above 25 Years Proportion	0.560
Black, Uninsured (Share, Total Pop.)	0.816**
Asian, Uninsured (Share, Total Pop.)	0.553
White, Uninsured (Share, Total Pop.)	-0.836**
Hispanic, Uninsured (Share, Total Pop.)	-0.005
Built-Environment Characteristics	IR95/20
Agric./Forest/Fishing/Hunt/Mining.-Employ.2012, Share-Total Employed	-0.678*
Manuf./Warehouse.-Employ.2012, Share-Total Employed	-0.678*
Profess./Manag./Scientific/Admin.-Employ.2012, Share-Total Employed	-0.668*
FIRE Services.-Employ.2012, Share-Total Employed	0.488
Median Year, Housing Structure Built	-0.196
Median Value, Owner occupied Households (2012)	0.196
Share, Households Percent Vacant	0.175
Share, Households Rented	0.603
Contract Rent, Below \$499, Proportion of Total Rental Households, 2012	-0.403
Contract Rent, \$499-\$999, Proportion of Total Rental Households, 2012	0.302
Contract Rent, \$1000-1499, Proportion of Total Rental Households, 2012	0.386
Contract Rent, \$1500-\$1999, Proportion of Total Rental Households, 2012	0.191
Contract Rent, Above \$2000, Proportion of Total Rental Households, 2012	0.405
FB-Entered 2010 or later, as Share of Total F-B in 2012	0.108
FB-Entered (Not US Citizen) 2010 or later, as Share of Total FB, 2012	0.086
FB-Entered during 2000-2009, as Share of Total F-B, 2012	0.326
FB-Entered (Not US Citizen) during 2000-2009, as Share of Total FB, 2012	0.249
FB-Entered during 1999-2000, as Share of Total F-B in 2012	0.144
FB-Entered (Not US Citizen) during 1999-2000, as Share of Total FB, 2012	0.058
FB-Entered before 1990, as Share of Total F-B in 2012	-0.015
FB-Entered (Not US Citizen) before 1990, as Share of Total FB in 2012	-0.424

Note: *Correlation significant at 0.05 level; **Correlation significant at 0.01 level.

Of special interest is Chattanooga where recent developments such as new firms in science and engineering, information technology, research and development, medical and health-care services and other industries (e.g. the Nissan car assembly plant), smart city initiatives, urban revitalization and tourist projects along the picturesque Tennessee River, etc. might have created diverse sets of economic opportunities which eventually creates a well distributed income and growth for most. An overview of the Chattanooga Area Chamber of Commerce (CACC 2014) suggest that the top employers in Chattanooga include Hamilton County Department of Education, BlueCross BlueShield of Tennessee, Tennessee Valley Authority, Erlanger Health System, Memorial Health Care System, Unum, McKee Foods Corporation, City of Chattanooga, Volkswagen Chattanooga, and Amazon.com.dedc LLC. Likewise, a snapshot of the Industrial Development Board's report for Clarksville, Tennessee, suggests the Clarksville-Montgomery County School System (3,900 employees), Montgomery County Government (921 employees) and City of Clarksville (9,989 employees) as the top employers. Morristown's top opportunities are in production (7,660 employees), office/administration (5,980 employees), transportation/material moving (4,380 employees), sales/related occupations (4,320 employees), education/training/library (3,390 employees), etc. (BLS 2014).

For some of the largest and the most income divided metropolises (e.g., Memphis, Nashville and Jackson), ACS 2008-2012 estimates suggest 14.3 percent and 10 percent of Memphis's labor force engaged in professional/management/admin-services and FIRE services respectively. The major employers in Memphis include office/administration support (96,160 employees), transportation, material/moving (82,110 employees), sales-related (58,730 employees), food preparation/serving-related (48,380 employees), healthcare practitioners/technical (37,840 employees), production (37,380 employees), education/training/library (33,710 employees), laborers/freight/stock movers (32,990 employees), and management (31,300 employees) (BLS 2014; MMAER 2013). Likewise, major employment opportunities for Nashville-Davidson metropolitan region include office and administrative support (138,490 employees), sales-related (78,900 employees), food preparation/serving (71,270 employees), transportation and material moving (66,390 employees), production (59,510 employees), healthcare-practitioners/technical (53,470 employees), management (49,430 employees), business/financial operations (40,750 employees), education/training/library (38,660 employees), installation/maintenance/repair (31,940 employees) (NMAER 2013). Knoxville's major occupations include office/administration (58,000 employees), sales (32,660 employees), food preparation/serving (32,070 employees), transportation/material moving (22,810 employees), healthcare-practitioners/technical (22,220 employees), production (21,090 employees), management (18,790 employees), and education/training/library (16,890 employees) (BLS 2014). The major opportunities in Jackson include office/administrative support (9,930 employees), production (6,560 employees), healthcare-practitioners/technical (5,620), sales-related (5,620 employees), food preparation and serving (4,980 employees), transportation and material moving (4,660 employees) (BLS 2014).

This analysis is an eye-opener in that our assumption that diversity is good and segregation is bad, at least in terms of the growing income divide, may not be always true because they may have different effects on income divide, depending upon the economic

context and the metropolitan size. First, higher diversity does not necessarily imply lower income divide (r -values are positive). Second, higher segregation is positively associated with poverty and income divide. Third, while diversity is good, the size of a metropolitan area along with the level of educational attainment (i.e., human capital) also matters. For example, Nashville and Memphis, two of Tennessee's largest metropolises are economic pioneers within the state (music city, FedEx Global Headquarters, large universities such as Vanderbilt, University of Memphis, Tennessee State University, and University of Tennessee-Medical Campus, insurance industries, city and state government services, health-care services, etc.). At the same time these metropolises with the highest 95/20 Ratios also have larger shares of highly educated population (with Masters, Doctorates or professional degrees) that are employed in well-paid jobs. These creative class people, though, also need labor in low-waged activities that do not pay much. Also, better educational attainments in larger metropolises enhance opportunities of higher income potentials. At the same time, the negating effects of higher segregation also creates income-polarized spaces and places (e.g., see Clark and Blue 2004; Clark 2009). Florida (2003) had indicated that more than 40 percent of Memphis's work force comprised of the working class category, which may add to the higher income divide for Memphis. Further, Morgan Quitno's (2010) ranking of crime rates in US metropolises suggests Memphis ranking the 4th highest in terms of crime, whereas Nashville ranks 84th and Jackson ranks 13th among all 347 US metropolises.

While much of the income inequality literature focuses on the effects of skill-biased technical change and available economic opportunities as the causes of income polarization (Chakravorty 1996; Sassen 1991), this analysis suggests that metropolitan size and economy-type interact with variables such as diversity, segregation, poverty rates and educational attainment that produce different levels of income inequality. This is also a good reminder of the ongoing debates on the role of race and class in contemporary urban context (Bobo and Zubrinsky 1996; Sharma and Brown 2012; Sharma 2014a, 2014b, 2013; Jargowsky 1995; Wilson 1979) along with poverty, particularly in the post-war era that has created a distinct geography of income inequality (Florida and Mallender 2014). It is obvious that while Tennessee metropolises rank quite low in Florida's (2003) creative class index, some aspects of these are captured by the fact that income-polarization and income divide is also occurring in the metropolises that have embraced the new economy along with attracting larger shares of diverse, elite, affluent, and educated population.

Both poverty and inequality are critical issues because of how they interact with the socio-economic mobility of people and the society as a whole (King et al. 2010). If poverty were primarily a temporary condition, it would be less of a concern, but for many it is not temporary and can have severe impacts. Too much of inequality or growing disparity can create dissatisfaction and have physical and psychological health impacts. National statistics confirm that Memphis is one of the poorest metropolitan areas in USA, with poverty rate of 19.9 percent in 2012, whereas these rates for Nashville and Knoxville are 14.3 percent and 16.5 percent respectively (AP 2013; NBB 2012). Tennessee also ranks as the 12th poorest state in USA, with 13.7 percent of its families and 18 percent of its people below poverty (NBB 2012). In addition, the unemployment rates in Knoxville, Memphis and Nashville are 4.9 percent, 7.0 percent, and 6.5 percent respectively in April 2014 whereas this rate for the State of Tennessee is 6.3 percent (BLS 2014; NMAER 2013). The

fact that Memphis still ranks as one of the poorest metropolis in USA in 2012 (NBB 2012; AP 2013) shows the need to take steps to address the consequences of the income divide.

There will be an income divide in any society, but too much of gap can produce unhealthy results through institutional and structural deprivations (Schneider and Logan, 1981). Thus, it is also important to promote economic mobility without compromising diversity as it promotes overall economic growth and attracts talent (Florida 2003; Sharma 2016) and slows urban decline (Brown and Sharma 2010; Sharma and Brown 2012). While scholars have agreed that investment in human capital produces results (Florida 2003; Hamoudi and Sachs 1999; Lobo and Smole 2002) in cities and urban areas, it is also necessary to invest in developing mixed-economy plans for smart and sustainable (urban) growth. For example, Lobo and Smole (2002) indicate that in addition to institutional stratification and spatial segregation of populations, their human capital characteristics also impact their economic productivity which ultimately determines their earning potentials (Harris 2015; Pink-Harper 2015; Porter 2016). The nature of urban landscapes also prescribes that residences and jobs are widely dispersed and it is mostly production processes that necessitate the flow of labor, locally and regionally, and a lot of economic success (or lack thereof) depends upon the location and types of business establishments within and among a network of metropolitan areas (Lobo and Smole 2002). Thus, while the spatial segregation of jobs and opportunities and the very nature of the economy is biased, and some areas remain more neglected than others that limit the potentials that an individual can exploit, the fact still remains that certain geographic locations may remain devoid of adequate opportunities that can severely impede their earnings.

Finally, policies for reducing poverty and inequality have often focused on short-term plans and benefits, but history suggests that this has not worked. Instead, it is important to not only focus on static transfers of income, but also to take steps that can promote economic and social mobility by facilitating human capital development along with the creation of more work opportunities and savings. One must invest in education and create a model of mixed-economy model. At the same time, cities and the society as a whole must also address the needs of the economically disadvantaged by improving their learning capabilities through investment in human capital (Harris 2015; Pink-Harper 2015; Porter 2016) and social-capital skills (King et al. 2010; Lobo and Smole 2002). There is no denial that technical and job-market skills are crucial for survival in current economic environment, and hence investments in opportunities that can enhance the human capital skills are crucial for the overall economic (and hence social) wellbeing of the metropolitan population of Tennessee.

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