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ABSTRACT

Recent developments in information and communication technology have reduced the relevance of location and created optimism that the historic economic advantages of metro areas relative to nonmetro areas may be diminished. This manuscript utilized data from the 2009 Current Population Survey to compare the incomes of the residents of metro compared with nonmetro counties. It was found that nonmetro incomes remain significantly lower than metro incomes even when considering the effects of intervening variables. Metro/nonmetro income differences were especially pronounced among persons with advanced educations and those employed in high-pay service industries. Consequently, many people who choose to live in nonmetro areas continue to do so at considerable economic cost. Under these circumstances, many nonmetro communities will continue to struggle economically and demographically without help.

INTRODUCTION

Throughout U.S. history, residents of nonmetropolitan areas have been economically disadvantaged relative to persons living in metropolitan communities.[1] In nonmetro areas average incomes have been lower, poverty rates have been higher, and underemployment and unemployment have been more extensive (Albrecht, Albrecht, and Albrecht 2000; Beaulieu 2002; Flora and Flora 2008; Irwin et al. 2010; Snyder and McLaughlin 2004; Struthers and Bokemeier 2000; Summers 1995; Tigges and Tootle 1990). One major consequence of nonmetro economic disadvantage is that with only periodic exceptions (e.g., Johnson and Beale 1994), there has been a near-steady net migration stream from nonmetro to metro areas as individuals and families seek improved economic opportunities (Johnson 1989; Kanbur and Rapoport 2005) thus, those who live in nonmetro areas often do so at considerable economic cost. The financial costs of living in nonmetro areas have been especially prominent for certain segments of the population such as the better educated (Carr and Kefalas 2009; Domina 2006a,

[1]Counties in the United States are categorized as being either metropolitan (metro) or nonmetropolitan (nonmetro). A metro area contains a core urban area of 50,000 or more residents. Each metro area includes the counties containing the core urban area as well as any adjacent counties that have a high degree of social or economic integration (as measured by commuting to work) with the metro core. All counties that are not part of a metro area are nonmetro.

2006b; Fuguitt, Brown, and Beale 1989; Lichter, McLaughlin, and Cornwell 1995; Zuiches and Brown 1978).

Recent technological developments have provided hope that the historic economic disadvantages of nonmetro residence may be diminished (Albrecht 2007). Specifically, rapid developments in information and communication technology, accompanied by continued improvements in transportation, have reduced the relevance of location. With modern technology it has become increasingly possible for people and firms to be connected to suppliers and consumers throughout the world, despite location. Thus, many individuals, families and businesses can reside where they wish, even in nonmetro areas, and still be connected to the global world. By using technology to reduce the relevance of location, many hope that nonmetro communities may be on a more even playing field with metro communities. The purpose of this research has been to test this supposition by providing comparisons of the incomes of metro and nonmetro workers. This analysis involved the use of recent data to compare the incomes of the residents of metro and nonmetro counties to assess the extent to which nonmetro economic disadvantage persists. The manuscript continues with a theoretical discussion of the sources of nonmetro economic disadvantage. The research methods are then described and an empirical assessment of the incomes of nonmetro and metro residents is detailed. Finally, conclusions are drawn.

THEORETICAL BASIS FOR NONMETRO DISADVANTAGE

An extensive literature from economic geography (e.g., Fujita, Krugman, and Venables 1999; Krugman 1991; Venables 2003) and agglomeration and central place theory (e.g., Kanbur and Rapoport 2005) has sought to explain the economic advantages of urbanization and centralization where industry and services often locate near one another in large cities. This research has shown that urbanization has two major economic advantages over rural areas; location and population size. With respect to location, urbanization means that transportation costs are reduced by being near markets and suppliers, and that a pooled market for workers with industry-specific skills ensures both a lower probability of unemployment for workers and a lower probability of a labor shortage for industries (Krugman 1991).

As cities became larger, a second advantage resulting from their greater population size became more relevant. Specifically, a larger population base creates opportunities for cities to provide more specialized services in a variety of areas. These advantages can be envisioned by imagining an economic ladder. When the population is larger, this ladder is going to have more rungs at the top that provide

opportunities to climb higher. The "economic ladder" advantages of urban areas can be illustrated by looking at health care. Many small towns have a doctor or two and perhaps even a hospital. However, these small-town doctors are unlikely to be heart surgeons and the small-town hospital is very unlikely to specialize in heart surgery. The population is simply not large enough to provide sufficient demand to support such specializations. The medical specialties are usually going to be in the large cities where they draw their clientele not only from their larger urban population base, but also from surrounding nonmetro areas that do not have those specializations. Such differences become relevant when metro/nonmetro income comparisons are made as the urban-based heart surgeons generally have much higher incomes than small-town general practitioners because they are on a higher rung of the economic ladder (a rung that does not even exist in nonmetro areas). The same metro advantages exist in many other industries including finance, insurance, sports, or politics.

When assessing the likelihood of a decline in nonmetro economic disadvantage, theory and literature would suggest that, while recent developments have reduced some nonmetro disadvantages, others remain. On the one hand, there is no question that improved information, communication, and transportation technology has reduced some locational advantages traditionally enjoyed by metro areas. Thomas Friedman (2007) was not completely overstating when he said, "the world is flat." In the new flat global world, many high-quality jobs have a greater degree of geographic flexibility than in the past. Some nonmetro communities have attracted many of these geographically-flexible businesses (McGranahan and Wojan 2007). In addition, nonmetro areas also have the potential to attract what Richard Florida (2002) describes as "creative class" jobs. Many persons with creative jobs are self-employed and can live where they wish, while many others have computer-based jobs where they no longer need to be in the office every day. Further, nonmetro areas have attracted growing numbers of retirees and mid-career families with high levels of investment income (Nelson 1997, 1999; Nelson and Beyers 1998; Power 1996). As a result, many nonmetro communities, especially those in high-amenity areas, have experienced significant economic and demographic growth in recent years (Beyers and Nelson 2000; Boyle and Halfacree 1998; Cromartie and Wardwell 1999; Green 2001; Henderson and McDaniel 1998; Hunter, Boardman, and Saint Onge 2005; McGranahan 1999, 2009; McGranahan and Wojan 2007; Nelson, Lee, and Nelson 2009; Nord and Cromartie 1997; Otterstrom and Shumway 2003; Rudzitis 1999; Saint Onge, Hunter, and Boardman 2007; Shumway 1997; Shumway and Davis 1996; Shumway and Otterstrom 2001).

Unfortunately for nonmetro areas, the reduced relevance of location is a two-edged sword. While improved technology has opened the door for many who wish to move to nonmetro areas to do so, that same open door has allowed many firms, especially those in the manufacturing sector, to leave nonmetro areas and move to foreign countries to take advantage of the lower-wage labor available there. The subsequent loss of manufacturing employment has cost millions of mostly middle-income nonmetro jobs (Bluestone and Harrison 1982, 2000; Morris and Western 1999; Sassen 1990). Additionally, nonmetro areas have experienced a significant decline in employment in the resource-based industries such as agriculture, forestry, and mining; which historically were major economic drivers in many nonmetro communities. These resource-based jobs were lost largely as a consequence of machines replacing human labor in the production process (Albrecht 2004; Sherman 2005, 2006, 2009). The combined loss of manufacturing and natural resource employment in nonmetro areas has had broad implications beyond just the jobs lost. For example, many lost jobs were held by males, while many newly-emerging service jobs are the type of jobs that Nelson and Smith (1999) described as "bad jobs." That is, they are often low-paying jobs in retail trade or the service sector that are often part-time, lack benefits, and are often "feminized" (Sherman 2009). The disproportionate loss of good-quality male jobs and their replacement with low-pay service jobs that are heavily dependent on female labor has had significant negative family structure and poverty implications (Albrecht et al. 2000; Wilson 1987, 1996). Thus, the implications of economic restructuring and the reduced relevance of location that have occurred in recent years have not all been positive for nonmetro areas.

Additionally, the population size advantages held by metro areas remain. In fact, some have argued that the economic geography and agglomeration advantages held by metro areas because of their larger population base may be enhanced with recent economic changes. These emerging changes may then lead to even greater locational advantages for cities. For example, in his book, *Who's Your City?*, Richard Florida (2008) maintained that powerful, productivity-enhancing agglomerations are emerging and driving economic growth in mega-cities, both in the United States and worldwide. Mega-cities include New York, London, Tokyo, and the San Francisco Bay area. Florida argued that even in a high-tech global world, individuals and businesses in these mega-cities have distinct advantages over those located elsewhere. These advantages derive from the typical benefits of being near a larger population base; but more important, there are tremendous advantages in the global world of being near other creative individuals who are involved in the

same or similar work with whom one can exchange ideas. Additionally, usually, business is built on trust, and trust is more likely to be built in face-to-face interactions. For efficiency purposes, individuals exchanging ideas and building trust often congregate in mega-cities. Consequently, larger population sizes lead to the benefits of location remaining paramount. In previous eras, the key economic factors related to location were generally advantaged access to resources, supplies, and markets. Florida maintains that the key economic factors in the global world have changed. Now the most significant economic factors include talent, creativity, and innovation. No longer does big beat small, but rather it is the fast beating the slow. Thus, while in many ways, the relevance of location has been reduced, in a world where speed is critical there remain great advantages for being near talent, creativity, and innovation that exist in the major cities.

Under these circumstances, Florida paints a bleak and even ominous future for those areas that are not a part of a mega-city. This includes second- and third-tiered cities such as Cleveland, St. Louis, and Milwaukee, and especially nonmetro areas (Goetz, Deller, and Harris 2009). Thus, despite the potential benefits to nonmetro areas resulting from technological developments, the literature suggests that metro areas still have tremendous economic advantages and that median incomes will remain higher in metro areas than in nonmetro areas. Further, given economic structure changes, the economic costs of living in nonmetro areas are likely to be greater for some segments of the population than for others.

To provide empirical insights on these important issues, three research questions were explored in this manuscript: (1) What is the extent of overall metro/nonmetro income differences?; (2) To what extent do these metro/nonmetro income differences vary among different population subgroups?; and (3) Does the metro/nonmetro income gap for the total population and for population subgroups remain when the effects of relevant intervening variables are statistically controlled? In the paragraphs that follow, the specific population subgroups to be studied are identified and specific expectations for these research questions are described.

RESEARCH MODELS AND VARIABLES

To analyze the first research question, a simple bivariate comparison of the gap between the median incomes of metro and nonmetro workers is provided. The primary independent variable for this analysis was whether the respondent's residence was a metropolitan or nonmetropolitan county, while the dependent variable was the respondent's personal income. Specifically, this research focuses on

the differences between the median incomes of metro compared with nonmetro residents. It was anticipated that the average incomes of metro residents would continue to be higher than average incomes for nonmetro residents because of the continued location and population size advantages held by metro communities. To explore the second research question on whether the metro/nonmetro income gap varies across population subgroups, comparisons were made of the incomes of metro and nonmetro residents within various population subgroups based on select intervening variables. Again, because of the differential implications of urbanization, it was projected that the metro/nonmetro income gap would be more extensive for some groups than for others. For both research questions, some metro/nonmetro income differences may be a consequence of the fact that metro workers have higher education levels, work in different industries, and so forth, and thus does not depend on residence *per se*. Consequently, a third research question was developed and the previously-selected intervening variables were analyzed to determine whether metro/nonmetro income differences remain when these variables are statistically controlled. Analysis for the third research question was conducted for both the total study population and for various population subgroups based on the intervening variables.

The selection of intervening variables for this study was made to include variables related to income variations and where metro/nonmetro differences exist. The first intervening variable is industry of employment. This variable is included because wages vary substantially from one industry to another and the industry of employment varies significantly by residence. Nonmetro areas have historically been more dependent on employment in the goods-producing industries (resource-based industries and manufacturing) than metro areas, while metro areas have been more dependent on service industries (Albrecht and Albrecht 2010).

One defining feature of the global era is the increased significance of an advanced education and the growing gap in the incomes of persons with a college degree compared with persons lacking such a degree (McCall 2000; Mishel, Bernstein, and Schmitt 1997). Additionally, the proportion of individuals with an advanced education is greater in metro areas compared with nonmetro areas. Thus, education is the second intervening variable in this analysis. It was expected that median incomes would grow precipitously as education levels increased. This increase was expected to be more substantial in metro areas than in nonmetro areas. Again, the top of the economic ladder is higher in metro areas.

The third intervening variable is race/ethnicity, as incomes vary significantly by race/ethnicity and the racial/ethnic composition of the population varies widely

from metro to nonmetro areas. Gender is used as the fourth intervening variable in this study. Male incomes have historically been higher than female incomes and the gender composition of the work force may vary by metro/nonmetro residence. The final intervening variable is age. Incomes were anticipated to increase with an increase in age and the gap between metro and nonmetro incomes was also expected to increase with age.

METHODS

Data for this study were obtained from the March 2009 Current Population Survey (CPS). The Current Population Survey is a survey conducted monthly since 1940 among a representative sample of U.S. households. This survey is conducted by the Census Bureau for the Bureau of Labor Statistics and provides a comprehensive body of data on the composition of the labor force and the characteristics of persons not in the labor force, unemployment levels, hours worked by those who are employed, income levels, and other demographic and labor force characteristics. The official unemployment and income data released each month by the U.S. government are based on CPS data. In March of each year, more detailed sociodemographic information is obtained, making the present analysis possible. Since the concern of this study is with incomes and the metro/nonmetro income gap, we analyzed only data on adults between the ages of 18 and 65 (the prime working years) who were employed full-time. Full-time employment is defined as persons working 35 or more hours per week for at least 40 weeks during the past year. About two-thirds of the males in this age range have full-time employment compared to just under one-half of the females. There is very little difference in the proportions of males and females in metro and nonmetro areas who are employed full-time. The total annual personal income of individuals with full-time employment was used to determine the dependent variable for this analysis, which is based on the gap between the incomes of metro and nonmetro residents. The relative income gap was determined by the median nonmetro income as a percentage of the median metro income. The CPS sample includes 67,373 individuals within the specified age range with full-time employment. After eliminating persons with missing data on some variables, the data analysis is based on 66,367 individuals.

Income comparisons were made between persons residing in metropolitan counties compared with those residing in nonmetropolitan counties, and residence is the primary independent variable. Individuals whose residence could not be determined were dropped from the analysis. Five intervening variables were utilized

including industry of employment, education, race/ethnicity, gender, and age. Industry of employment was categorized into three major sectors that include: (1) the goods-producing industries (agriculture, natural resource industries, construction, and manufacturing); (2) the low-pay service industries (retail trade, entertainment and household services, and public administration); and (3) high-pay services (professional services, finance, insurance, real estate, education, and health care). Five education levels were utilized, including: (1) less than high school degree; (2) high school degree; (3) some college; (4) college graduate; and (5) post-graduate degree. For parts of the analysis, respondents were dichotomized into those who have at least a college degree (code of 1) and those who do not (code of 0). Five race/ethnicity categories were used, which include: non-Hispanic white; non-Hispanic black; Hispanic; Asian; and Native American. For parts of the analysis, respondents were categorized into white (code of 1) and nonwhite or minority (code of 0). For gender, females were coded 0 and males were coded 1. Five age groups were used that include: 24 or younger; 25-34; 35-44; 45-54; and 55-65. For parts of the analysis, persons 34 or younger were coded 0 and persons 35 and older were coded 1.

For the first research question, a bivariate analysis was used to compare the income gap between metro and nonmetro workers. Similarly, for the second research question, bivariate models examined the metro/nonmetro income gap for various population subgroups. For the third research question, regression and GLM models were used to determine the extent to which the metro/nonmetro income gap remains when effects of the other intervening variables are statistically controlled.

FINDINGS

Table 1 provides data showing the incomes of metro and nonmetro residents overall and of the various population subgroups. This table provides results of a simple bivariate assessment for the first two research questions. In 2009, the median annual income for metro workers was $42,000, which was a statistically significant $6,930 ($p < .01$) higher than the median income of nonmetro workers. Nonmetro workers comprised 18.9 percent of the total labor force and earned 83.5 percent as much as metro workers. Relative to the second research question, Table 1 also makes it apparent that incomes varied significantly for persons from different population segments and, for all groups but one, metro incomes were higher than nonmetro incomes. All metro/nonmetro income differences for the various population subgroups were statistically significant. When examining the individual

TABLE 1. MEDIAN PERSONAL INCOMES OF PERSONS 18-65 WHO WERE EMPLOYED FULL-TIME BY METRO/NONMETRO RESIDENCE, INDUSTRY OF EMPLOYMENT, EDUCATION, RACE/ETHICITY, GENDER AND AGE, 2009 (N = 66,367)

	METRO		NONMETRO			
VARIABLE	MEDIAN INCOME ($)	PERCENT	MEDIAN INCOME ($)	PERCENT	PERCENT NONMETRO	NONMETRO INCOME AS A PERCENT OF METRO
Industry						
Goods producing. . . .	43,166	21.9	37,375	32.6	25.8	86.6*
Low-pay services. . . .	35,000	31.5	32,000	29.9	18.2	91.4*
High-pay services. . .	46,806	46.6	37,135	37.5	15.8	79.3*
Race/ethnicity						
White.	48,100	63.7	38,000	84.0	23.5	79.0*
Black.	35,000	11.2	26,000	4.8	9.1	74.3*
Hispanic.	30,000	17.9	27,640	7.1	8.4	92.1*
Asian.	47,000	6.3	32,785	1.5	5.3	69.8*
Native American. . . .	36,000	0.9	30,000	2.6	40.5	83.3*
Gender						
Male.	48,023	56.7	40,025	57.3	19.1	83.3*
Female.	36,000	43.3	30,100	42.7	18.7	83.6*

Variable	Metro		Nonmetro		Percent Nonmetro	Nonmetro Income as a Percent of Metro
	Median Income ($)	Percent	Median Income ($)	Percent		
Education						
< High school.	23,000	8.7	25,000	8.1	17.7	108.7*
High school grad. . . .	32,515	27.3	30,640	36.9	24.0	94.2*
Some college.	40,000	27.9	35,035	30.5	20.4	87.6*
College graduate. . . .	56,432	23.1	46,600	16.4	14.2	82.6*
Post graduate.	77,000	13.0	57,980	8.1	12.6	75.3*
Age						
< 25.	23,015	6.9	21,000	6.3	17.7	91.2*
25-34.	37,100	23.3	32,000	20.2	16.9	86.3*
35-44.	45,510	28.1	37,421	27.3	18.5	82.2*
45-54.	48,131	27.2	40,000	29.9	20.4	83.1*
55-65.	48,597	14.5	40,042	16.3	20.8	82.4*
Total.	42,000	100.0	35,070	100.0	18.9	83.5*

*Differences between metro and nonmetro residents are statistically significant at the .01 level.

intervening variables, it was found that: average incomes were higher for persons employed in the high-pay service sector than in other industrial sectors, incomes increased sharply as education level increased, whites earned more than minorities, males earned more than females, and income increased with age. All hypothesized relationships were confirmed.

In examining the data in Table 1 to explore the second research question, the metro/nonmetro income gap apparently varies significantly by population subgroup. For industry of employment, median incomes were highest in the high-pay services and lowest in the low-pay services, with the goods-producing industries exhibiting intermediate incomes. In nonmetro areas, incomes in the goods-producing industries were slightly higher than were incomes in the high-pay services. In all industrial sectors, metro incomes were significantly higher than nonmetro incomes. The income gap was greatest for the high-pay services where nonmetro workers earned only 79.3 percent as much as metro workers. In comparison, nonmetro incomes were 86.6 percent as high as metro incomes in the goods-producing industries and 91.4 percent as high in the low-pay service sector. The proportion of the labor force employed in the goods-producing industries (32.6 percent) in nonmetro areas was substantially greater than the proportion of metro workers employed in the goods-producing industries (21.9 percent). Simultaneously, the proportion of metro workers employed in the high-pay service industries (46.6 percent) was higher than the proportion of nonmetro employees working in high-pay industries (37.5 percent). The proportion of the labor force employed in the low-pay service industries was similar in metro and nonmetro areas.

In both metro and nonmetro areas, incomes increased dramatically as education levels increased. These increases, however, were much sharper in metro areas. Persons with less than a high school degree actually earned more in nonmetro than metro areas ($25,000 to $23,000). However, at the highest education levels, metro workers earned far more than their nonmetro counterparts. For those with a postgraduate degree, the income gap was nearly $20,000 annually ($77,000 for metro and $57,980 for nonmetro workers). For persons with less than a high school degree, nonmetro workers earned 108.7 percent as much as metro workers. This proportion steadily declined as education level increased until at the postgraduate level, nonmetro workers earned only 75.3 percent as much as metro workers. Also of significance is the finding that, whereas 36.1 percent of metro workers have at least a college degree, this proportion is only 24.5 percent for nonmetro workers (Table 1).

For both metro and nonmetro residents, whites had higher incomes than all other racial/ethnic groups. The white residents of metro areas earned about $10,000 more than the white residents of nonmetro areas. For the other racial/ethnic groups, the metro/nonmetro income gap was greatest for Asians and smallest for Hispanics. Proportionally, the metro/nonmetro income gap for blacks and Asians was greater than for whites, while for Hispanics and Native Americans, this income gap was smaller. At the bivariate level the overall metro/nonmetro income gap was greater for whites than for minorities. While nonmetro whites earned 79 percent as much as metro whites, nonmetro minorities earned 83.6 percent as much as metro minorities. The primary reason is that the top positions, with very high incomes, in metro areas, are positions held primarily by white males. It is also significant to note that a much higher proportion of the nonmetro population was white (84 percent) than the metro population (63.7 percent).

In both metro and nonmetro areas, female incomes were about 75 percent as high as their male counterparts. Further, for both males and females, nonmetro residents earned about 83 percent as much as their metro counterparts. Finally, incomes did increase with age – although median incomes for persons from 45 to 54 were virtually identical to the incomes of persons between 55 and 65. The metro/nonmetro income gap did increase as age increased. While nonmetro residents who were younger than 25 earned 91.2 percent as much as metro residents their same age, this proportion decreased to 82.4 percent for persons from 55 to 65.

Tables 2 and 3 present data to test the third research question by examining the extent to which the metro/nonmetro income gap for all study participants and for various population subgroups remain when considering the effects of the intervening variables. In Table 2, the results of four regression models are presented, which explore the relationship between residence, the intervening variables, and income. These regression models allowed an assessment of the relative importance of residence and the different intervening variables in determining income and a determination of whether the relative importance of the intervening variables varies by residence. The various regression models show the analyses for metro residents, for nonmetro residents, and for all (both metro and nonmetro) residents. For the two regression models with all residents, Model 1 does not include the metro/nonmetro residence variable, while the residence variable is included for Model 2. The inclusion of the residence variable in Model 2 shows the extent to which metro/nonmetro income differences remain when the effects of the intervening variables are considered.

TABLE 2. REGRESSION MODELS SHOWING UNSTANDARDIZED AND STANDARDIZED (IN PARENTHESES) COEFFICIENTS OF THE RELATIONSHIP BETWEEN INDEPENDENT VARIABLES AND PERSONAL INCOMES OF PERSONS 18-65 WHO WERE EMPLOYED FULL-TIME, 2009.

	METRO RESIDENTS		NONMETRO RESIDENTS		ALL RESIDENTS (N = 66,367)			
INDEPENDENT VARIABLES	(*N* = 53,829)		(*N*=12,538)		MODEL 1		MODEL 2	
Metro/nonmetro residence.	-	-	-	-	-	-	10,018*	(0.07)
Industry-goods producing.	5,602*	(0.04)	2,469*	(0.03)	4,479*	(0.03)	5,203*	(0.04)
Industry-high-pay services..	10,031*	(0.09)	2,936*	(0.03)	8,973*	(0.08)	8,851*	(0.08)
College education.	39,275*	(0.32)	26,463*	(0.26)	38,180*	(0.32)	37,307*	(0.32)
White/nonwhite.	11,407*	(0.09)	5,488*	(0.05)	9,330*	(0.08)	10,855*	(0.09)
Gender.	22,234*	(0.19)	18,366*	(0.21)	21,926*	(0.19)	21,694*	(0.19)
Age 35-65.	18,546*	(0.15)	13,125*	(0.13)	17,396*	(0.14)	17,572*	(0.14)
Intercept.	4,148*	(0)	12,265*	(0)	5,787*	(0)	-3,182*	(0)
F-value.	2,256*		322*		2,608*		2,303*	
Model R^2.	.20*		.13		.19		.20	

NOTE: *Statistically significant at the .01 level.

TABLE 3. RESULTS OF REGRESSION AND GLM MODELS SHOWING THE DIFFERENCE BETWEEN MEDIAN PERSONAL INCOMES OF METRO AND NONMETRO RESIDENTS FOR PERSONS WITH DIFFERENT CHARACTERISTICS OF PERSONS 18-65 WHO WERE EMPLOYED FULL-TIME WHILE CONTROLLING FOR OTHER INDEPENDENT VARIABLES, 2009 (N = 66,367)

VARIABLE	N	F-VALUE	MODEL R^2	EXPECTED MEAN INCOME		METRO/ NONMETRO INCOME DIFFERENCE	NONMETRO INCOME AS A PERCENT OF METRO
				METRO	NONMETRO		
Industry							
Goods producing. . . .	15,919	742.8*	.19	56,891	48,634	8,527	85.5**
Low-pay services. . . .	20,673	860.5*	.17	46,305	41,227	5,078	89.0**
High-pay services. . .	29,775	1,432.3*	.19	63,875	49,437	14,438	77.4**
Education							
< High school.	5,729	74.6*	.07	28,157	28,141	16	99.9
High school grad. . . .	19,353	287.3*	.08	40,235	35,283	4,952	87.7**
Some college.	18,708	321.4*	.09	47,591	40,963	6,628	86.1**
College graduate. . . .	14,540	255.2*	.10	74,022	58,368	15,654	78.9**
Post graduate.	8,037	165.0*	.11	105,618	75,225	30,393	71.2**

Table 3. RESULTS OF REGRESSION AND GLM MODELS SHOWING THE DIFFERENCE BETWEEN MEDIAN PERSONAL INCOMES OF METRO AND NONMETRO RESIDENTS FOR PERSONS WITH DIFFERENT CHARACTERISTICS OF PERSONS 18-65 WHO WERE EMPLOYED FULL-TIME WHILE CONTROLLING FOR OTHER INDEPENDENT VARIABLES, 2009 (N = 66,367) *Continued.*

VARIABLE	N	F-VALUE	MODEL R^2	EXPECTED MEAN INCOME		METRO/ NONMETRO INCOME DIFFERENCE	NONMETRO INCOME AS A PERCENT OF METRO
				METRO	NONMETRO		
Race/ethnicity							
White.	44,764	1,736.4*	.19	63,077	51,507	11,571	81.7**
Black.	6,659	159.4*	.13	43,439	37,970	5,469	87.4**
Hispanic.	10,540	293.6*	.14	37,998	37,501	497	98.7
Asian.	3,606	128.4*	.18	61,747	62,386	-639	101.0
Native American. . . .	798	25.1*	.16	46,737	35,231	11,507	75.4**
Age							
< 25.	4,480	37.7*	.05	26,577	25,360	1,217	95.4
25-34.	15,029	439.3*	.15	45,544	38,981	6,563	85.6**
35-44.	18,525	715.8*	.19	60,505	48,516	11,989	80.2**
45-54.	18,440	737.5*	.19	64,665	52,013	12,652	80.4**
55-65.	9,893	336.8*	.17	66,143	55,912	10,231	84.5**

TABLE 3. RESULTS OF REGRESSION AND GLM MODELS SHOWING THE DIFFERENCE BETWEEN MEDIAN PERSONAL INCOMES OF METRO AND NONMETRO RESIDENTS FOR PERSONS WITH DIFFERENT CHARACTERISTICS OF PERSONS 18-65 WHO WERE EMPLOYED FULL-TIME WHILE CONTROLLING FOR OTHER INDEPENDENT VARIABLES, 2009 (N = 66,367) *Continued.*

VARIABLE	N	F-VALUE	MODEL R^2	EXPECTED MEAN INCOME		METRO/ NONMETRO INCOME DIFFERENCE	NONMETRO INCOME AS A PERCENT OF METRO
				METRO	NONMETRO		
Gender							
Male.	37,712	1,481.7*	.19	65,223	55,038	10,185	84.4**
Female.	28,655	905.3*	.16	45,545	36,681	8,864	80.5**
Total.	66,367	2,303.1*	.20	56,802	46,783	10,018	82.4**

NOTE: *p>.01 level. ** Differences between metro and nonmetro residents are statistically significant at the .01 level.

Results show that for all four regression models, there were positive relationships between income and: employment in the goods-producing and the high-pay service industries, having a college education, being white, being male, and being 35 years old or older. In all models, the most important variable for predicting income was education, followed by gender, and then age. Most significantly, Table 2 shows that even when considering the effects of the intervening variables, metro residents earned $10,018 more than nonmetro residents.

In Table 3, regression and GLM models were run independently for each population subgroup as determined by the intervening variables. The regression models include metro/nonmetro residence (the independent variable) and the intervening variables, except for the variable under analysis, regressed on income for each population subgroup. Additional analysis with the GLM (General Linear Model) program allowed a computation and direct comparison of what the incomes of metro and nonmetro residents in each population subgroup would be if their characteristics were the same as the remainder of the population on each of the other independent and intervening variables in the model. Results show that overall, when controlling for the intervening variables, nonmetro residents earn 82.4 percent as much as metro residents. When examining the individual population subgroups, it was found that a nonmetro resident employed in the high-pay service industries who was alike on all characteristics except residence could expect to earn $14,438 less than someone living in a metro county. The metro/nonmetro income gap was $8,257 for persons working in the goods-producing industries and $5,078 for those in the low-pay service industries. Table 3 shows that the metro/nonmetro income gap increased steadily as educational levels increased. This gap was especially great for persons with an advanced education. While a person with a postgraduate degree could expect to earn $75,225 in nonmetro counties (all else equal), this person would earn more than $30,000 more ($105,618) in a metro county. For persons with less than a high school degree, metro and nonmetro incomes were virtually identical, while for those with a postgraduate degree, nonmetro residents earned only 71.2 percent as much as metro residents. With respect to the other intervening variables, Table 3 reveals that the metro/nonmetro income gap was greater for whites than for minorities, was greater for females than for males, and increased as age increased, up to a point, and then began to decline.

CONCLUSIONS

Despite hopes that advances in information and communication technology would reduce the economic advantages of metro compared with nonmetro areas, the data analysis presented here indicates that nonmetro incomes continue to lag behind metro incomes and these differences persist when the effects of a set of intervening variables are considered. When statistically controlling for the effects of industry of employment, education, race/ethnicity, gender, and age, it was found that a person living in a metropolitan county could expect to earn more than $10,000 more per year than a person living in a nonmetropolitan county. The metro/nonmetro income gap was even more pronounced among certain population segments. In particular, nonmetro residence is especially costly for persons employed in the high-pay service industries and for persons with advanced levels of education. A nonmetro resident with a postgraduate degree can expect to earn $30,000 less per year than a person with whom he/she shares all characteristics except residence. Clearly, most individuals and families are better off economically in metropolitan communities compared with nonmetro communities. Under these circumstances, most nonmetro communities will continue to struggle economically and demographically. It remains difficult for nonmetro communities to attract or retain individuals with advanced levels of education and those employed in high-pay service industries because of the far superior economic opportunities in metro areas.

Higher metro incomes provide strong evidence supporting agglomeration and central place theory. Additionally, incomes were highest for persons employed in the high-pay service industries, incomes increased sharply as education increased, white workers earned more than minorities, males earned more than females, and incomes increased with age. Further, the metro/nonmetro income gap was greatest in the high-pay services, the metro/nonmetro income gap increased as education increased, and generally increased with age. When controlling for the effects of the intervening variables, the metro/nonmetro income gap was greater for females than for males. Finally, the metro/nonmetro income gap was greater for whites than for minorities.

These results have several significant implications. First, strong rural communities are vital to the health and security of our nation. Not only do rural areas provide the food, fiber, energy, water, and open recreational spaces on which all Americans (including urban residents) are dependent, but there are millions of Americans who chose to live in nonmetro communities for noneconomic reasons. In this regard, many people appreciate the advantages of rural living that include: being next to nature, experiencing less congestion, having lower crime rates, and

living in close-knit communities. Policy makers need to be cognizant of the continued economic disadvantages of rural areas and consider policies and programs that increase opportunities for individuals and families to earn an economic livelihood in rural areas. In particular, continued improvement in information and communication technology may open doors to make it possible for more people who truly want to live in rural areas to find a way, economically, to do so.

This study has several limitations and it is hoped that other researchers will seek to overcome these limitations and provide further insights on this important topic. Specifically, this study did not use trend data, did not consider cost-of-living differences between metro and nonmetro residents, and did not take into account residential preferences. One potentially fruitful area of research involves analysis that explores variations within metro and nonmetro communities. In this study, all residents of nonmetro communities were compared with all residents of metro communities. Analysis that considers variations in communities may be helpful. Such variations may include population size, region, industrial structure, or another factor.

AUTHOR BIOGRAPHY

Don E. Albrecht is the Director of the Western Rural Development Center located at Utah State University. Dr. Albrecht has conducted extensive research on the issues and concerns of nonmetro America and potential approaches for addressing these concerns. Recently, his research has focused on the implications of recent economic transformations for nonmetro communities.

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