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The Illinois Institute for Rural Affairs (IIRA) works to improve the quality of life for rural residents by partnering with public and private agencies on local development and enhancement efforts.



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Race Differences in Physicians' Annual Incomes in Illinois: Metro versus Nonmetro

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Abstract

Race is a social construct. Although the median wealth of a White family is 10 times the median wealth of a Black family, race should be less of a determinant of earnings, a proxy for wealth, in professional occupations such as physicians where demand for services outstrip supply by many folds. This argument was empirically tested using microdata from the ACS, 2018 and 2021. Results suggest that Illinois has a diverse healthcare workforce and demographics such as race and place of work do not impact physician earnings.

Introduction

The average Black college graduate has less wealth than the average White person who did not even graduate from high school.

Hamilton, D. et al. (2018). *What We Get Wrong About Closing the Racial Wealth Gap.*²

In my earlier research, I highlighted the stock of human capital for Illinois³ and estimated that the average rate of return of income to one additional year of schooling is 9%⁴. The question is whether one's financial returns to education is influenced by one's race; research by Hamilton et al. suggests that it is the case, but I think that race would be less of a determinant of income in professional occupations such as physicians where demand for services outstrip supply by many folds⁵.

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² See, <https://socialequity.duke.edu/portfolio-item/what-we-get-wrong-about-closing-the-racial-wealth-gap/>.

³ For example, in rural Illinois, minorities accounted for 6% of the stock; see, Athiyaman, A. (2021). The dynamics of rural Illinois' human capital. *Research Brief*, 3(18), November 8. Available: <http://www.iira.org/wp-content/uploads/2021/11/Rural-Illinois-Human-Capital.pdf>.

⁴ Athiyaman, A. (2014). Sources of variation in residents' salary income: An exploratory analysis of rural counties. Macomb, IL: IIRA, Working Paper. Available: <http://www.instituteintelligence.com/wp-content/uploads/2014/02/income-paper-OCTOBER-25.pdf>.

How could we conceptualize race? Are income differences among races more pronounced in the metro or the nonmetro? This paper addresses these and other related questions.

Race, Concepts and Definitions

The Office of Management and Budget states that human concepts should reflect clear and generally understood definitions to assure they are reliable, meaningful, and understood by observers and respondents⁶. However, in academic literature the term 'race' often overlaps with 'ethnicity'⁷; race is a social construction and categorization of people based on perceived shared physical traits, for example, pale complexion. In contrast, a person's ethnicity refers to shared cultural characteristics such as language, practices, and beliefs⁸.

Race is not genetically discrete; DNA research indicates that most physical variation, 93% - 95%, is within groups; only 3% -5% of genetic differences is attributable to geographic or racial

groupings⁹. In conclusion, race is a social construct, not a scientific or biological fact.

Methodology

Data on occupation, gender, and race were obtained from the American Community Survey (ACS), 2018 and 2021; public use microdata samples (PUMS) for Illinois were sourced. Table 1 shows the operational definitions of the variables and Appendix 1 profiles the geographical regions of Illinois, PUMA regions.

Statistics computed from the data include central tendencies and semi interquartile range. Gender and regional differences in incomes were analyzed using t-tests and ANOVA.

⁶ Office of Management and Budget (1997). *Revisions to the standards for the classification of federal data on race and ethnicity*. Available https://obamawhitehouse.archives.gov/omb/fedreg_1997standards

⁷ American Psychological Association (2019). *Race and ethnicity guidelines in psychology: Promoting responsiveness and equity*. See, <https://www.apa.org/monitor/2019/12/ce-corner-race>.

⁸ Athiyaman, A. (2021). Differing perceptions of external environment: The case of ethnic groups in the Midwest, Metro versus Nonmetro regions. *Research Brief*, 3(11), July 16. Available: http://www.iira.org/wp-content/uploads/2021/07/ethnicity_pereceptions_v3_n11_3.pdf.

⁹ Rosenberg, N. A. et al. (2002). Genetic structure of human population. *Science*, 298(5602), 2381-2385.

Table 1: Variables and Operational Definitions

Variable	Definition
PUMA	Public Use Microdata Area Code
ST	State code: Illinois = 17
PWGTP	Person weight
RAC1P	Race of the respondent
HISP	Hispanic origin
SEX	Gender of the respondent
OCCP	Occupation, 3090 = Physician; 3100 = Surgeon
ADJINC	Adjustment factor for income
PERNP	Total person's earnings
PINCP	Total person's income

Findings

In 2021, there were a total of 44,161 physicians, including surgeons, working in Illinois; this number represents an eight per cent increase over the 2018 number of 40,946 physicians¹⁰. The metro region had the majority, 97% of the physicians

worked in the metro. If one's age indicates one's work experience, then the nonmetro is home to experienced physicians; in 2021, the median age of physicians in the nonmetro was 56, compared to 48 for the metro (Table 2).

Table 2: Demographics of Physicians, 2018 and 2021

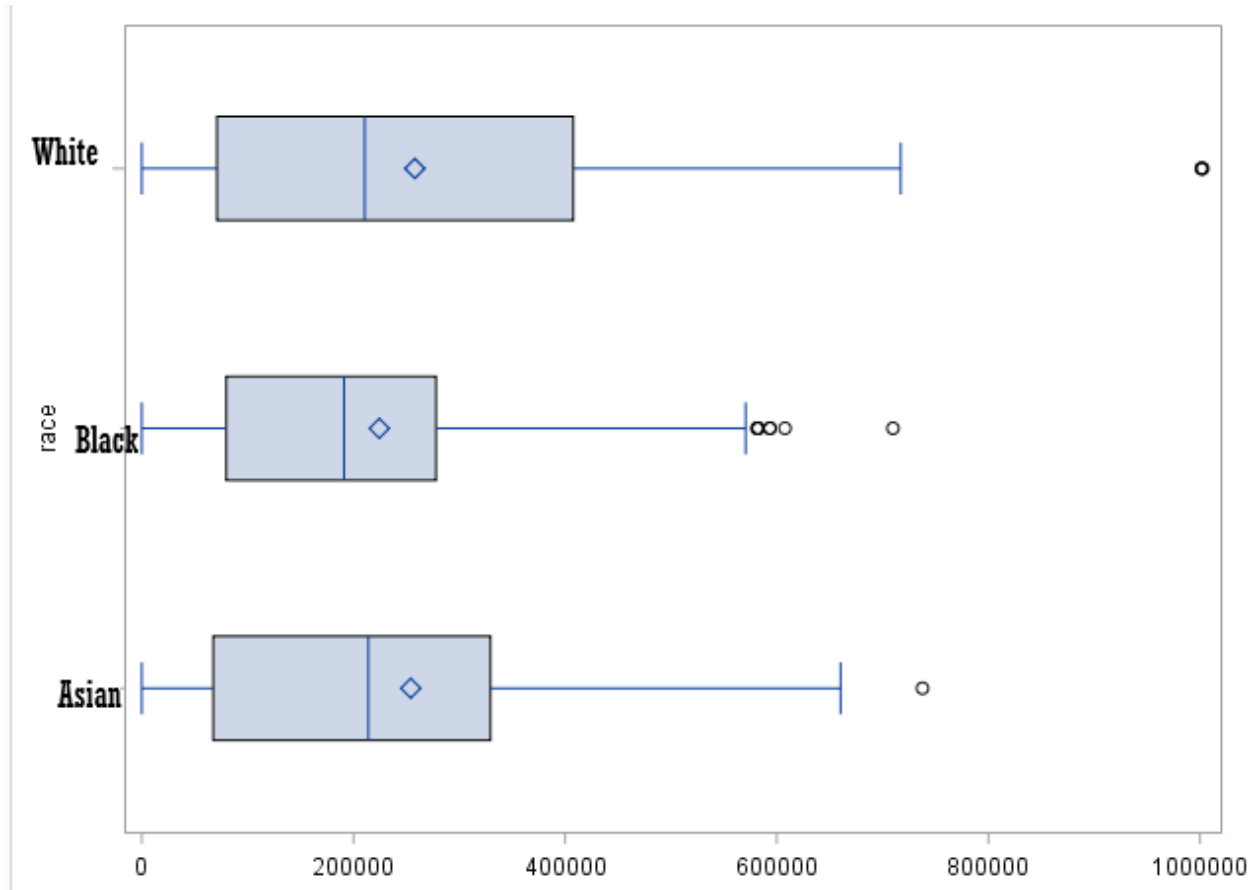
Characteristic	2021 (N = 44,161)		Characteristic	2018 (N = 40,946)	
	Metro	Nonmetro		Metro	Nonmetro
Gender:			Gender:		
Male (N = 27,108)	97%	3%	Male (N = 25,758)	95%	5%
Female (N = 17,053)	98%	2%	Female (N = 15,188)	97%	3%
Median Age	48	56	Median Age	49	53
Race:			Race:		
White (N = 25,675)	96%	4%	White (N = 25,705)	95%	5%
Black (N = 2,411)	99%	1%	Black (N = 2,947)	95%	5%
Asian (N = 13,822)	99%	1%	Asian (N = 11,776)	98%	2%

¹⁰ Asians were responsible for this growth; see racial segment numbers in Table 2.

Figure 1 shows the average earnings for physicians of all three races; the median earnings for Black physicians was \$191,128 - \$19,000 to \$23,000 less than their Asian and White counterparts.

However, the average differences in earnings among the three races were not statistically significant ($F = 1.08$; $p > .33$).

Figure 1: Median Income, 2021



Note: The diamonds indicate the location of the mean values.
 Mean earnings: White = \$257,958; Blacks = \$224,384; Asian = \$254,121.
 Maximum earnings by race: White = \$1,002,581; Black = \$709,695, and Asian = \$737,636.

Table 3 shows the growth in earnings among physicians by race; during 2018-2021, Black physicians had their income grow at an annual compound rate of 1%

whereas Asian and White physicians had an ACGR of 2.5% and 3.4% respectively.

Table 3: Annual Compound Growth Rate (ACGR) in Earnings: White, Black, and Asian Physicians

Race	Median Earnings		ACGR
	2018	2021	
White	\$189,962	\$210,626	3.4%
Black	\$185,303	\$191,128	1.0%
Asian	\$198,567	\$214,102	2.5%

One possible explanation for this lower growth in earnings for Blacks could be that fewer Black physicians are in well-reimbursed or compensated specialties¹¹. Another reason could be that Black physicians treat more Medicaid patients. Note that pay discrimination has been ruled out in our empirical analysis (Figure 1).

Finally, to address the question whether income differences among races are more pronounced in the metro or the nonmetro, an analysis of variance, general linear model, (GLM) was calibrated using the 2021 data. The model included an interaction term for race and region. Table 4 shows the results of this exercise.

Table 4: GLM Model Results

Dependent Variable: Earnings

Source	DF	Sum of Squares	Mean Square	F	p>F
Model	5	231548032654	46309606531	1.24	.2885
Error	1911	7.1466502E13	37397436685		
Corrected Total	1916	7.169805E13			

Source	DF	Partial SS	Mean Square	F	p>F
Region	1	5888309192	5888309192	0.16	.6916
Race	2	112517476780	56258738390	1.50	.2224
Region * Race	2	109205135928	54602567964	1.46	.2325

¹¹ Campbell, K. M., Corral, I., Linares, J. L. I., & Tumin, D. (2020). Projected estimates of African American medical graduates of closed historically Black medical schools. *JAMA network open*, 3(8), e2015220-e2015220.

Table 4 shows that the probability of observing an F as large as 1.24 is .28; the model with region, race, and their interaction as predictors does not explain sufficient amount of variability in the dependent variable, the explained variance or R-square is .003.

Summary and Conclusion

Race is a social construct without a biological basis. However, it is a reality that members of non-dominant groups often face significant disadvantages in life¹². The racial wealth gap is large; the median wealth of a White family is 10 times the median wealth of a Black family¹³.

In healthcare, supply and demand are not independent; medical practitioners have the ability to generate demand for their services directly¹⁴. This implies that a physician's race and place of work, metro or nonmetro, will have little or no impact on her earnings.

This argument was empirically tested using microdata from the ACS, 2018 and 2021. Results of data analysis suggest

that physician's race and place of work do not explain variability in earnings.

One interesting finding was differences in ACGR of earnings for different races; specifically, Black physicians' income growth lagged behind that of Asian and White physicians. It could be that Black physicians attend to more Medicaid patients; however, lack of data on the subject prevents us from empirically testing this assertion.

Physicians in Illinois represent different ethnic groups; diversity in the workforce offers benefits such as new perspectives and innovation¹⁵. In conclusion, Illinois healthcare has the right tools it needs to succeed.

¹² Athiyaman, A. (2022). Free expression among races: Differences between the metro and the non-metro. *Research Brief*, 4(21), November. Available: http://www.iira.org/wp-content/uploads/2022/11/RB4_21_free-expression-among-races.pdf.

¹³ Noel, N., Pinder, D., Stewart, S., & Wright, J. (2019). The economic impact of closing the racial wealth gap. *McKinsey & Company*, 13.

¹⁴ Athiyaman, A. (2021). Supplier-induced demand and telemedicine in rural Illinois: An exploratory analysis. *Research Brief*, 3(20), December. Available: <http://www.iira.org/wp-content/uploads/2021/12/supplier-induced-demand-and-telemedicine-in-rural-illinois.pdf>.

¹⁵ Hewlett, S. A., Marshall, M., & Sherbin, L. (2013). How diversity can drive innovation. *Harvard business review*, 91(12), 30-30.

Appendix 1: PUMA Codes Related to PUMS

PUMA code	Geographical Areas Covered by the Code
00104	Jo Daviess, Carroll, Whiteside, Lee
00202	Henry, Mercer, Henderson, Warren, Hancock, McDonough, Fulton
00300	Adams, Pike, Brown, Schuyler, Mason
00600	Douglas, Edgar, Coles, Cumberland
00700	Clark, Jasper, Crawford, Lawrence, Richland, Clay, Wayne
01001	Monroe, Randolph, Washington, Jefferson, Marion
02700	Stephenson, Ogle
