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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.



**Western Illinois  
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# Rural Education in Charts, 2000 - 2022

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## Abstract

This paper provides a snapshot of rural educational attainment as at January 2022. Apart from crosstabulations of educational attainment with demographic variables such as gender and age, the paper also estimates Covid-19 impacts on median earnings of the college-educated population, the respiratory illness has increased median earnings by \$8,350.

## Introduction

During April 2017, the Economic Research Service (ERS) published the Economic Information Bulletin 171 to highlight educational attainment among rural Americans and the influence of education on economic prosperity<sup>2</sup>. This paper updates the data for the publication, data are provided for the period January 2000 and January 2022. The paper also explores the impact of Covid-19 on the earnings of the college-educated population in the nonmetro. It is hoped that the information presented in this paper would assist economic developers to craft research, interventions, training, and policy using the most recent data on rural education.

## Methodology

A dynamic, longitudinal model of rural education is presented. The model is built on statistical analysis of 10 CPS variables given in Table 1. Since the data analysis involved timeseries assessments,

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<sup>2</sup> Rural Education at a Glance, 2017 Edition. Available online:

<http://ers.usda.gov/topics/rural-economy-population/employment-education/rural-education.aspx>.

that is, annual data for the years 2000 and 2015-2022 are analyzed, the impact of Covid-19 on median earnings of the college-educated population is estimated using an econometric model of the form:

$$Y_t = b_1 + b_2 X_t,$$

where  $y_t$  = median income for year  $t$ ;  $X_t$  = a dummy variable coded as  $X_t = 1$  for

Covid-19 years, 2020-2022 and  $X_t = 0$ , otherwise; the intercept  $b_1$  estimates the average value of the dependent variable, median income, across all cross-sectional cases before the onset of Covid-19, and  $b_2$  estimates the difference between the former level and the average level across all cross-sectional cases since Covid-19.

**Table 1: Variables and their Values**

Variable, CPS Label	CPS Description	Recoded Values
Gtmetsta (Metropolitan status)	1: METROPOLITAN 2: NONMETROPOLITAN 3: NOT IDENTIFIED	1=Metro; 2=Nonmetro
Peeduca (Highest level of school completed or degree received)	31: LESS THAN 1ST GRADE 32: 1 <sup>ST</sup> TO 4TH GRADE 33: 5TH OR 6TH GRADE 34: 7TH OR 8TH GRADE 35: 9TH GRADE 36: 10TH GRADE 37: 11TH GRADE 38: 12TH GRADE NO DIPLOMA 39: HIGH SCHOOL GRAD 40: SOME COLLEGE 41: VOCATIONAL 42: ASSOCIATE DEGREE 43: BACHELOR'S DEGREE 44: MASTER'S DEGREE 45: PROFESSIONAL DEG 46: DOCTORATE DEGREE	Less than or equal to 38 = Less than high school; 39 = High school or equivalent; 40 = Some college; 41 or 42 = Associate's degree; 43 = Bachelor's degree; More than or equal to 44 = Graduate or professional degree.
Pwcmpwgt (Composited final weight)	Final weight, 4 implied decimal places	Person's weight for 2021 and 2022.
Pwsswgt (final person's weight).	Final weight	Person's weight for 2015 to 2020.

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Prtage (age)	00-79: Age in Years; 80: 80-84 Years Old; 85: 85+ Years Old.	CPS definition.
pesex	1 = Male; 2 = Female	1 = Male; 2 = Female
Ptdtrace (race)	01: White Only 02: Black Only 03: American Indian, Alaskan 04: Asian Only 05: Hawaiian/Pacific Islander 06: White-Black ... ... 20: 2 or 3 Races 21: 4 or 5 Races.	1 = White; 2 = Black; 3 = American Indian or Alaskan
Pehspron (Hispanic or Non-Hispanic)	1 = Hispanic; 2 = Non-Hispanic	1 = Hispanic; 2 = Non-Hispanic.
Pternwa (Weekly earnings re-coded)	\$0 to \$28,861	\$0 to \$28,861; 2 implied decimals.
Pemlr (Monthly labor force re-code)	1: EMPLOYED-AT WORK 2: EMPLOYED-ABSENT 3: UNEMPLOYED-ON LAYOFF 4: UNEMPLOYED-LOOKING 5: RETIRED 6: DISABLED 7: NOT IN LABOR FORCE, OTHER.	Total Labor Force: 1 to 4; Unemployed: 3 and 4.

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## Findings

Table 2 shows average values for demographic variables in 2000 and 2022. The median age of the nation's population has increased, from 49 years of age in 2000 to 51 years of age in 2022. The educational level of the

population has also increased, from no college degree in 2000 to "associate diploma" in 2022. The population mix has changed, there are more Blacks and Hispanics in the nation, and the nonmetro is losing population.

**Table 2: Demographic Changes, 2000 to 2022**

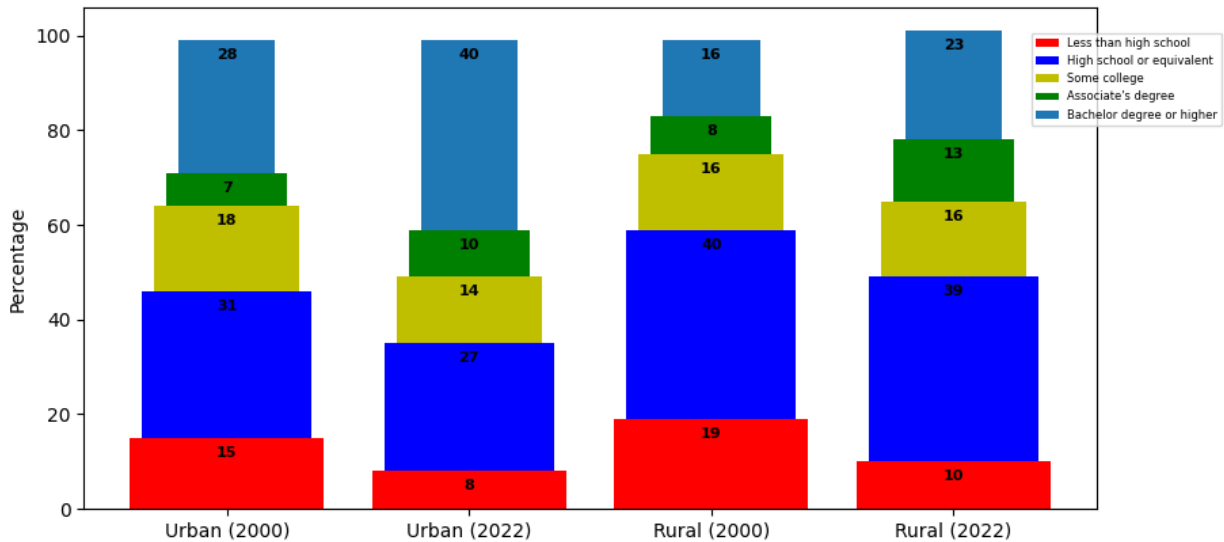
Variable	Average Values	
	2000	2022
Age	49	51
Education	40: Some college, no degree	41: Associate degree
Race	White: 87%; Black: 12%	White: 85%; Black: 14%
Region or Location	Urban: 81%; Rural: 19%	Urban: 87%; Rural: 13%
Hispanics	10%	16%
Earnings	\$34,610	\$62,334

*Rural Educational Attainment by Demographics*

In 2000, slightly less than one-in-four rural residents had a college education; this number has increased to more than one-in-three residents in 2022. The metro has more college educated

persons; the gap between the number of college-educated persons in the metro versus the nonmetro is widening, it was 11 points in 2000 and has increased to 14 points in 2022 (Figure 1). This validates our research findings on outmigration in rural communities<sup>3</sup>.

**Figure 1: Educational Attainment by Metro and Nonmetro, 2000 and 2022**

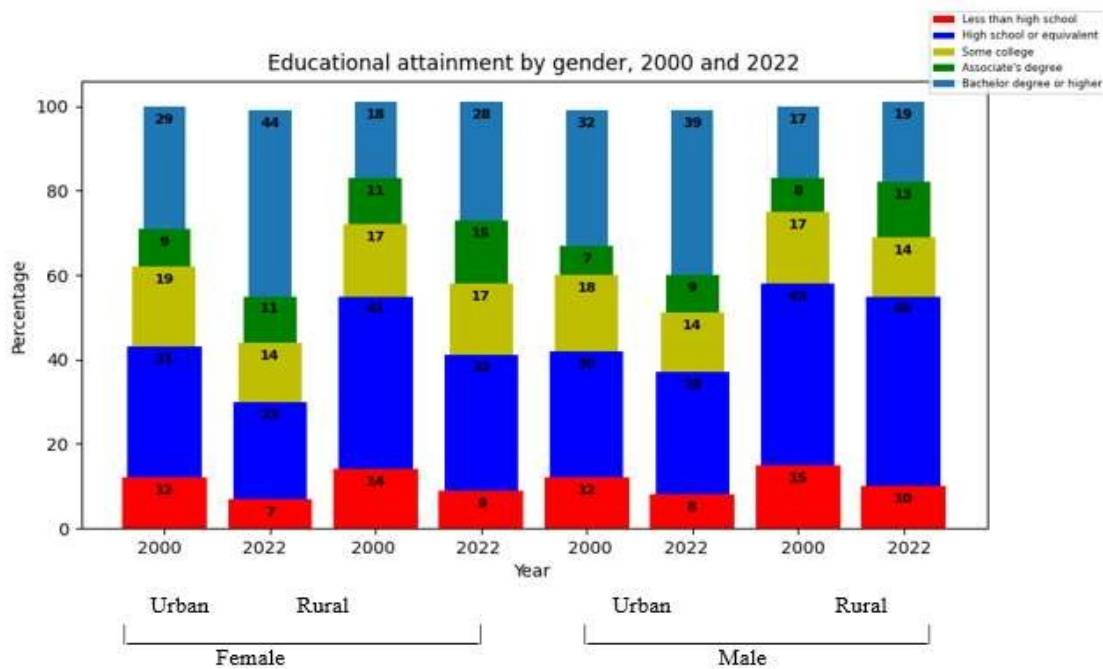


<sup>3</sup> Athiyaman, A. (2021). [Explaining Outmigration Intentions of Rural Population](#). Research Brief, Short Paper, Vol. 3, No. 17 (October 24, 2021).

Figure 2 plots educational attainment by gender, for both the metro and the nonmetro. In general, females are better qualified than males; in 2022, 43% of females in the nonmetro had a college degree, compared to 32% of males. Other “demographic” findings include:

- (i) Age is negatively associated with education, and
- (ii) Educational attainment is increasing for all races (Appendix 1).

**Figure 2: Educational Attainment by Gender, Metro, and Nonmetro: 2000 and 2022**



### *Educational Attainment and Economic Outcomes*

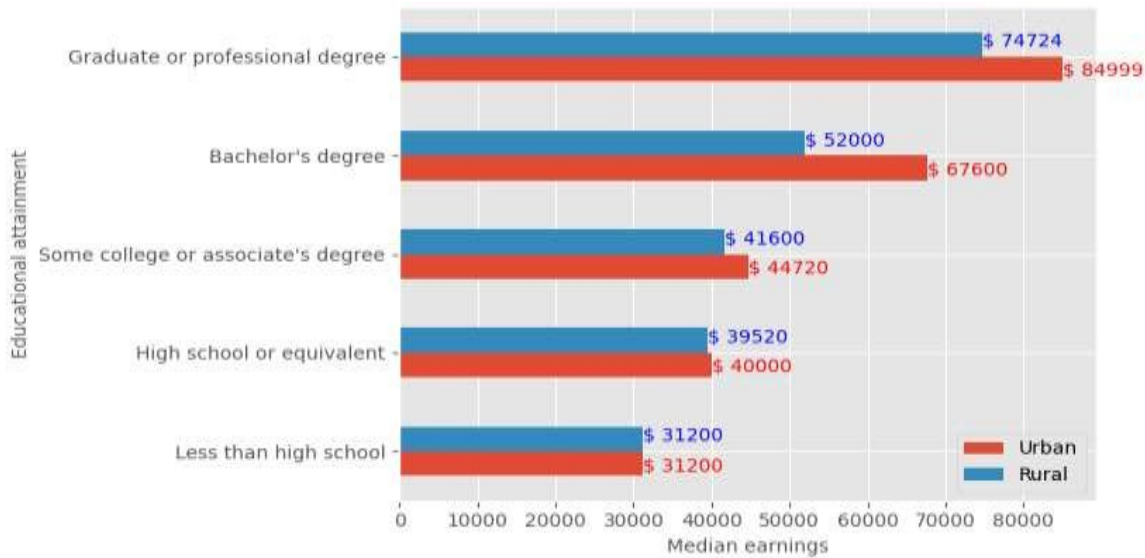
Figure 3 shows that median earnings are positively correlated with educational attainment. The nonmetro

location is associated with less earnings; again, it validates our earlier research on business clusters - high-paying jobs are in the metro<sup>4</sup>.

<sup>4</sup> Athiyaman, A., & Parkan, C. (2008). A functionalist framework for identifying business clusters: Applications in far North Queensland.

*Australian Journal of Management*, 33(1), 201-229.

**Figure 3: Metro-Nonmetro Earnings by Educational Attainment, January 2022**



To estimate the effect of Covid-19 on median pay for the college-educated in the nonmetro, an interrupted time-series analysis was performed. The hypothesis that Covid-19 will result in

permanent change in average earnings of the college educated was tested. Table 3 shows the results of this exercise.

**Table 3: Impact of Covid-19 on Annual Earnings in the Nonmetro, College-Educated Population**

Term	$b_j$	SE	$t$	$P$
Intercept	$b_1$	42,930	21.93	<.01
$X_t$	$b_2$	8,350	2.47	<.05

As shown in Table 3, the average earnings for the college-educated, pre Covid-19, was \$42,930. Covid-19 has resulted in higher earnings, the college-educated has gained an average of \$8,350 per annum since Covid-19 first appeared in early 2020.

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## Summary and Conclusion

This paper is an update to the USDA's Economic Information Bulletin 171 on rural education<sup>5</sup>; data are presented for 2000 and 2022. Some of the salient findings include:

- (i) the metro has more college educated persons;
- (ii) the gap between the number of college-educated persons in the metro versus the nonmetro is widening;
- (iii) females are better qualified than males;

- (iv) median earnings are positively correlated with educational attainment, and
- (v) Covid-19 has increased annual earnings of the college educated by \$8,350.

People differ in productivity and these differences are related to environmental factors<sup>6</sup>. The path forward for rural communities is strengthening investments in human capital<sup>7</sup>; a “how to” guide for strengthening human resources is provided in our earlier research on the topic<sup>8</sup>.

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<sup>5</sup> See footnote 2.

<sup>6</sup> Athiyaman, A. (2021). Deep Tech Inventions in Rural Illinois, *Research Brief*, 3(10). Available online: [http://www.iira.org/wp-content/uploads/2021/06/deep-tech-inventions-v3-n10\\_2.pdf](http://www.iira.org/wp-content/uploads/2021/06/deep-tech-inventions-v3-n10_2.pdf).

<sup>7</sup> Athiyaman, A. (2021). Explaining Outmigration Intentions of Rural Population. *Research Brief*, 3(17). Available online: [http://www.iira.org/wp-](http://www.iira.org/wp-content/uploads/2021/10/Explaining-Outmigration-Intentions.pdf)

[content/uploads/2021/10/Explaining-Outmigration-Intentions.pdf](http://www.iira.org/wp-content/uploads/2021/10/Explaining-Outmigration-Intentions.pdf).

<sup>8</sup> Athiyaman, A. (2019). Determinants of Sustainability and Human Capital. *Research Brief*, 1(6). Available online: [http://www.instituteintelligence.com/wp-content/uploads/2019/08/HumanCapital\\_IL\\_v1\\_6.pdf](http://www.instituteintelligence.com/wp-content/uploads/2019/08/HumanCapital_IL_v1_6.pdf).

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## Appendix 1: Demographic Factors and Educational Level

