

## The Knowledge Divide: Education Inequality in Missouri 2000

Policy makers, researchers and academics are increasingly recognizing the links between inequality and other social and economic phenomena. Even within the United States, high levels of education inequality persist in many areas - what we term a knowledge divide. So, why is educational inequality important? It is important because educational attainment and earning are high correlated. Areas with concentration of low educational attainment are more likely to be economically distressed. Research by the U.S. Census Bureau found that over the past 25 years earnings differences have grown among workers with different levels of educational attainment. In 1975, full-time year-round workers with a bachelor's degree had 1.5 times the annual earnings of workers with only a high school diploma; and by 1999 this ratio had risen to 1.8. Workers with an advanced degree earned 1.8 times the earnings of high school graduates in 1975, and by 1999 this ratio has increased to 2.6. During the same period, the relative earnings of the least educated workers fell. In 1975, full-time year-round workers without a high school diploma earned 0.9 times the earnings of workers with a high school diploma; and by 1999 they were earning only 0.7 times the average earnings of high school graduates.

The degree of education inequality across Missouri was measured by the Gini coefficient using 2000 Census data at the tract-level. Educational attainment data for this analysis was extracted from the 2000 U.S. Census Summary File 3, which consists of 813 detailed tables of social, economic and housing characteristics compiled from a sample of approximately 1 in 6 Missouri households that received the Census 2000 long-form questionnaire.

The Gini coefficient (G) was used to measure the degree of concentration (inequality) in educational attainment across 10 attainment categories. The Gini coefficient compares the Lorenz curve of a ranked empirical distribution with the line of perfect equality. This line assumes that each element has the same contribution to the total summation of education. The Gini coefficient ranges between 0 and 1. Scores of 0 indicate that there is no concentration of educational attainment in any single category (perfect education equality), and scores of 1 indicate that there is total concentration of educational attainment in a single category (perfect education inequality). The Gini coefficients in Missouri were then z-normalized to the Missouri mean of G=0.256.

$$G = \left| 1 - \frac{\sum_{i=0}^N (\sigma Y_{i-1} + \sigma Y_i)(\sigma X_{i-1} - \sigma X_i)}{N} \right|$$

Where:

N = number of elements

sX = cumulative distribution of elements

sY = cumulative distribution of values

**Low education centers** were defined as those areas having inequality/Gini scores that were 1.0 or more standard deviations above the mean and having 50% or more persons age 25 and older without a high school diploma/GED. This indicates a concentration of persons without a high school diploma/GED in the area.

Low education centers in southeast Missouri were located to the east and northeast of Potosi in Washington County, and in most of Wayne County centered around Piedmont. Washington County is a historic lead mining area, and most of Wayne County is comprised of Mark Twain National Forest and Wappapello Lake.

Low education centers in the Missouri Bootheel were located in Dunklin, Mississippi, New Madrid and Pemiscot counties. In addition to being persistently poor, these areas are engaged in large-scale intensive agriculture of cash crops.

Low education centers in the major metropolitan areas were located in the central city areas of Kansas City and St. Louis. In Kansas City, this area extended to the north and northeast of downtown from I-70 north to the Missouri River, and in an area surrounding Kauffman Stadium. In St. Louis City, this area extended from southwest of downtown along I-55 and the Mississippi River, and in an area northwest of downtown between I-70 and I-64.

**Education equality centers** were defined as areas having inequality/Gini scores that were 1.0 or more standard deviations below the mean. This low inequality, or education equality, indicates that there is little concentration of educational attainment in any one category - it is more evenly distributed across all categories from less than high school to graduate degrees. Therefore, areas with more highly educated persons will generally exhibit lower education inequality, since there is usually only a small number of these persons in most areas.

Equality centers were located in areas dominated by institutions of higher education and the health care industry. In rural areas this included Kirksville in Adair County, Maryville in Nodaway County, Warrensburg in Johnson County, Rolla in Phelps County, Cape Girardeau in Cape Girardeau County and Moberly in Randolph County. In urban areas this included Columbia and the southern portion of Boone County, and Springfield in Greene and northern Christian counties.

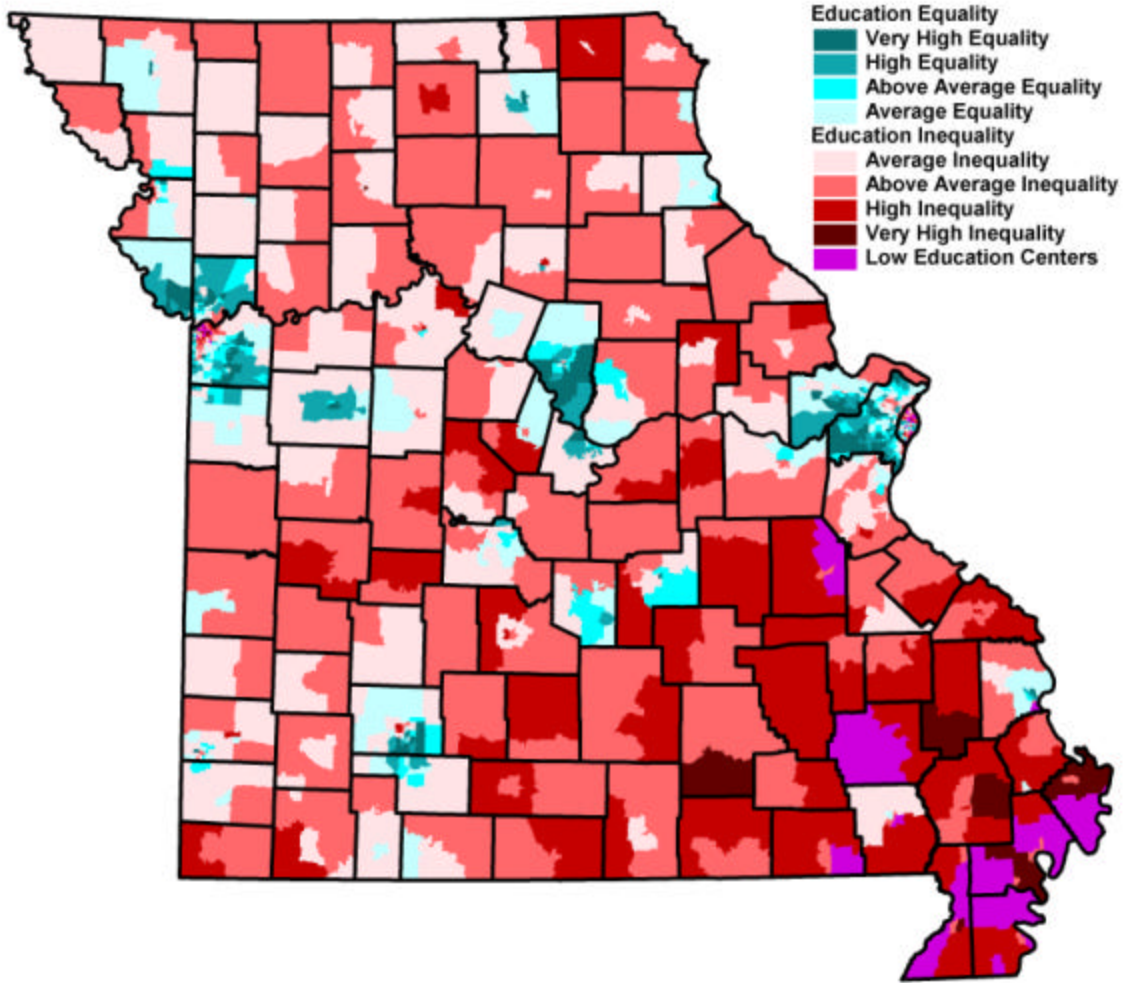
Equality centers were located around military bases, such as Whiteman Air Force Base in Johnson County and Fort Leonard Wood in Pulaski County.

Equality centers were also located in the state's capital of Jefferson City and its surrounding areas in Cole County; and in northern Camden County in the heart of the Lake of the Ozarks, home of many retirees.

Equality centers in the Kansas City metropolitan area were located around the airport in Platte County; in and around Kansas City and Liberty in Ray County; in Blue Springs, Independence and Lee's Summit in suburban Jackson County; and in areas of Kansas City around Swope Park and areas directly bordering Leawood KS and Mission Hills KS.

Equality centers in the St. Louis metropolitan area were located mainly in St. Louis County, in the western area, in the north central area around Maryland Heights and in cities near St. Louis City such as Brentwood and Webster Groves. In St. Charles County, equality centers areas were located in the southern part of the county around Lake St. Louis, O'Fallon and Weldon Springs. In St. Louis City, equality areas were located in the central downtown area along the river and in areas surrounding Forest Park.

**Education Inequality in Missouri by Census Tract, 2000.**



Gini coefficients z-normalized to Missouri mean.

Average defined as 0.0-0.5 standard deviations around the mean.

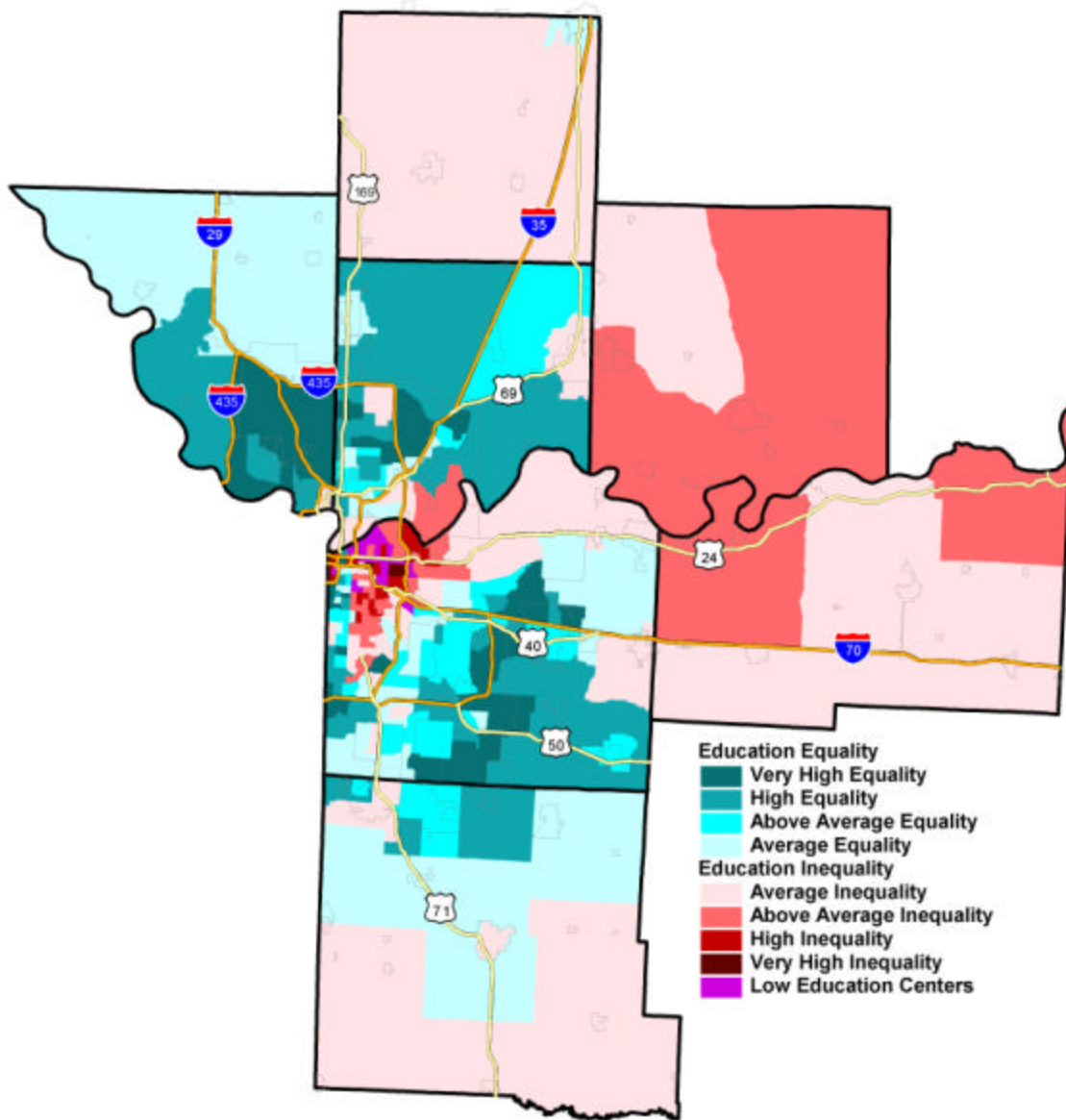
Above Average defined as 0.5-1.0 standard deviations around the mean.

High defined as 1.0-1.5 standard deviations around the mean.

Very High defined as more than 1.5 standard deviations around the mean.

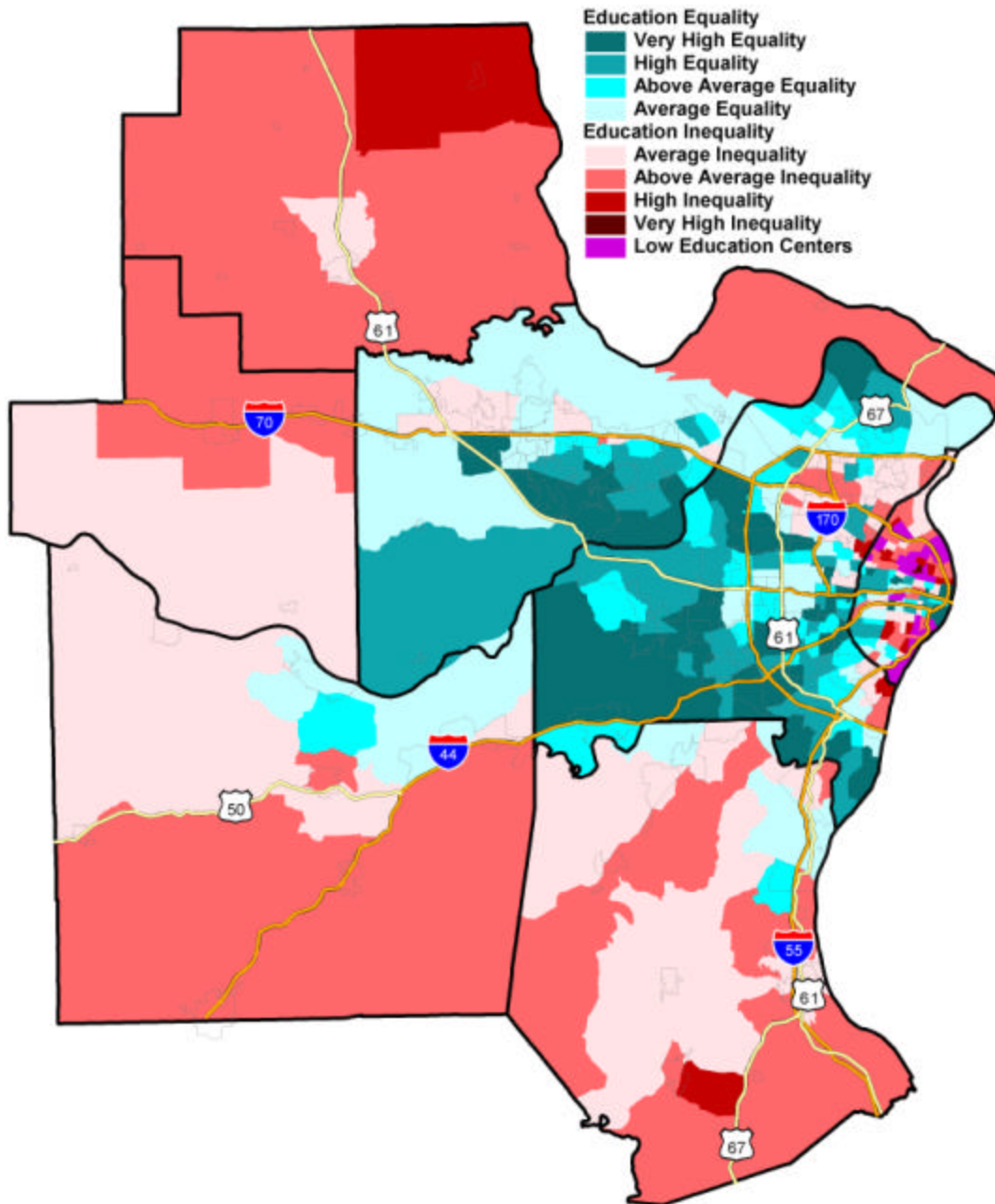
Low Education Centers defined as 50% or more persons age 25 and older without a high school diploma/GED.

**Education Inequality in the Kansas City MSA by Census Tract, 2000.**



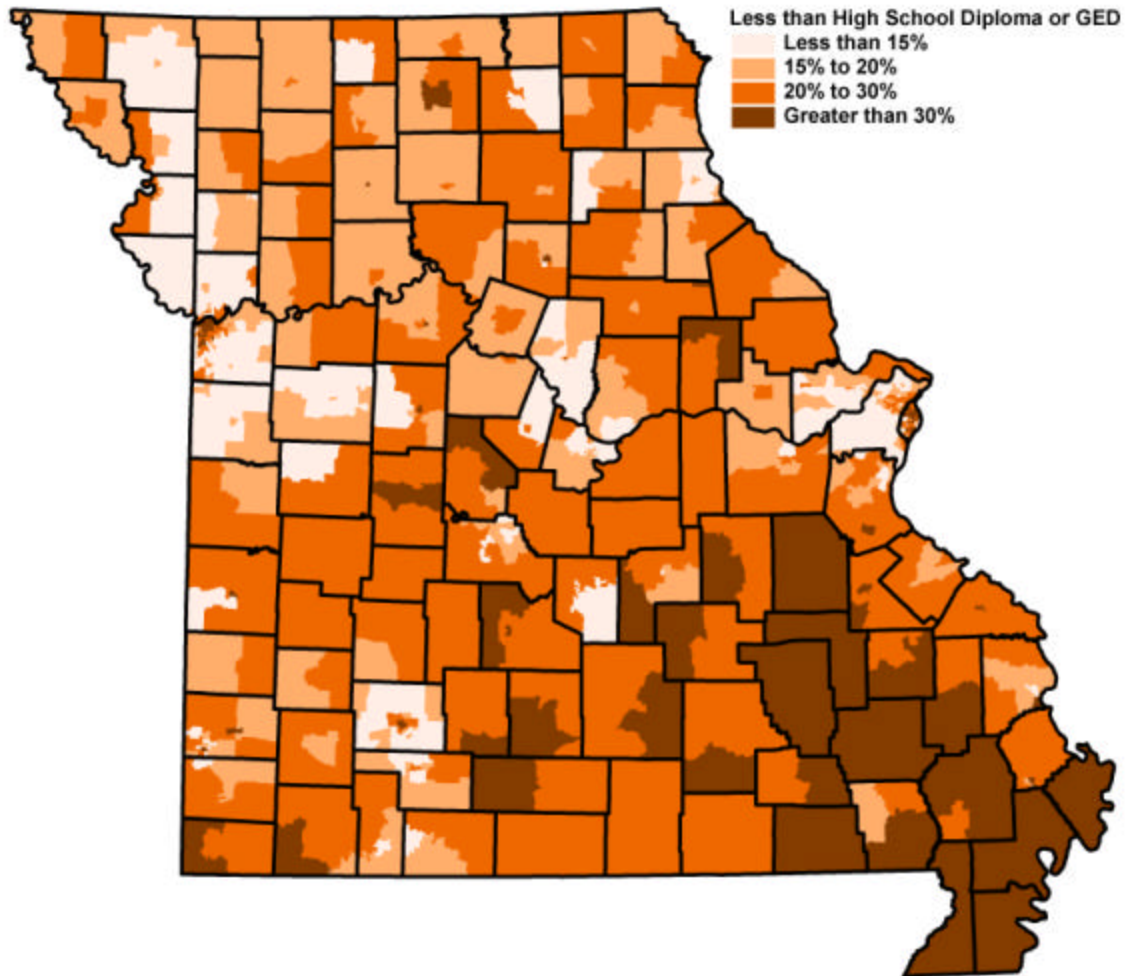
Gini coefficients z-normalized to Missouri mean.  
 Average defined as 0.0-0.5 standard deviations around the mean.  
 Above Average defined as 0.5-1.0 standard deviations around the mean.  
 High defined as 1.0-1.5 standard deviations around the mean.  
 Very High defined as more than 1.5 standard deviations around the mean.  
 Low Education Centers defined as 50% or more persons age 25 and older without a high school diploma/GED.

**Education Inequality in the St. Louis MSA by Census Tract, 2000.**



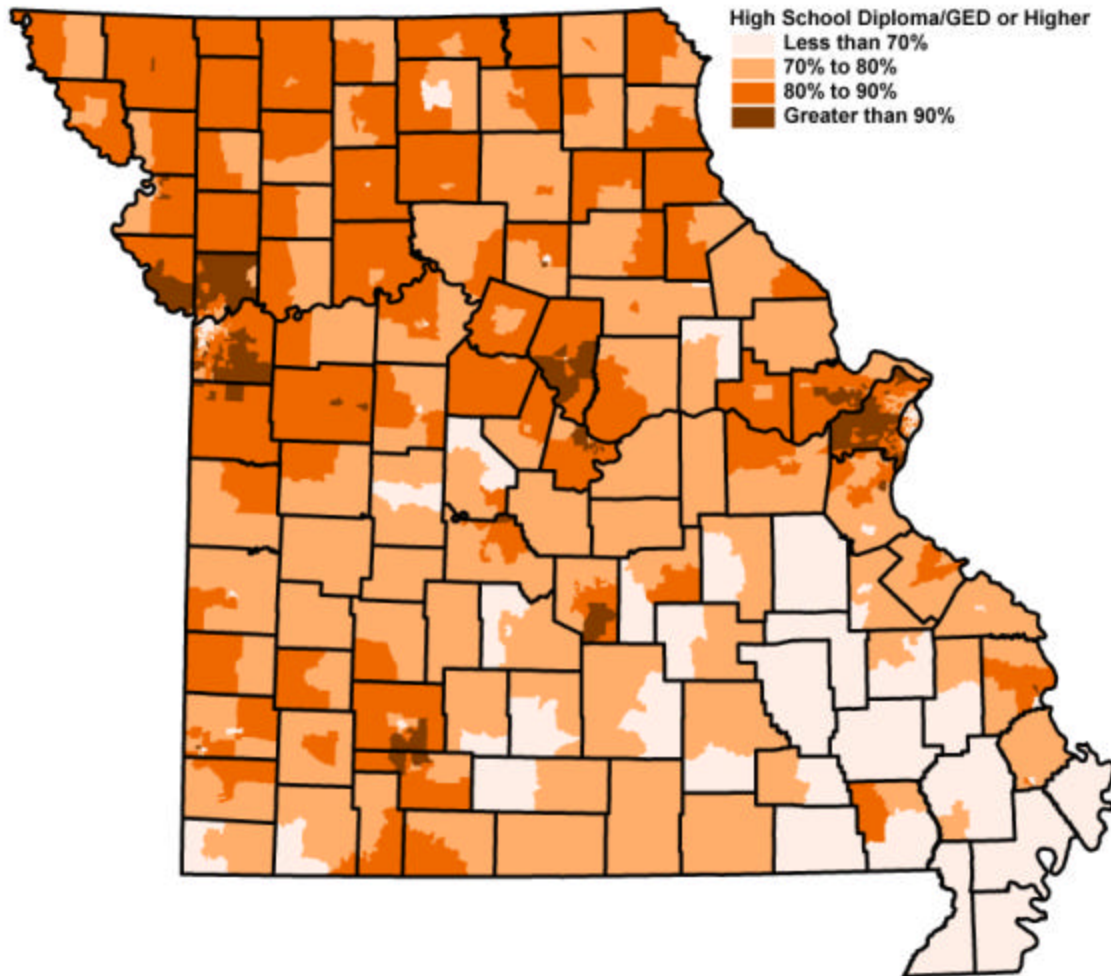
Gini coefficients z-normalized to Missouri mean.  
 Average defined as 0.0-0.5 standard deviations around the mean.  
 Above Average defined as 0.5-1.0 standard deviations around the mean.  
 High defined as 1.0-1.5 standard deviations around the mean.  
 Very High defined as more than 1.5 standard deviations around the mean.  
 Low Education Centers defined as 50% or more persons age 25 and older without a high school diploma/GED.

**Percent Population with Less than High School Diploma/GED  
In Missouri by Census Tract, 2000**



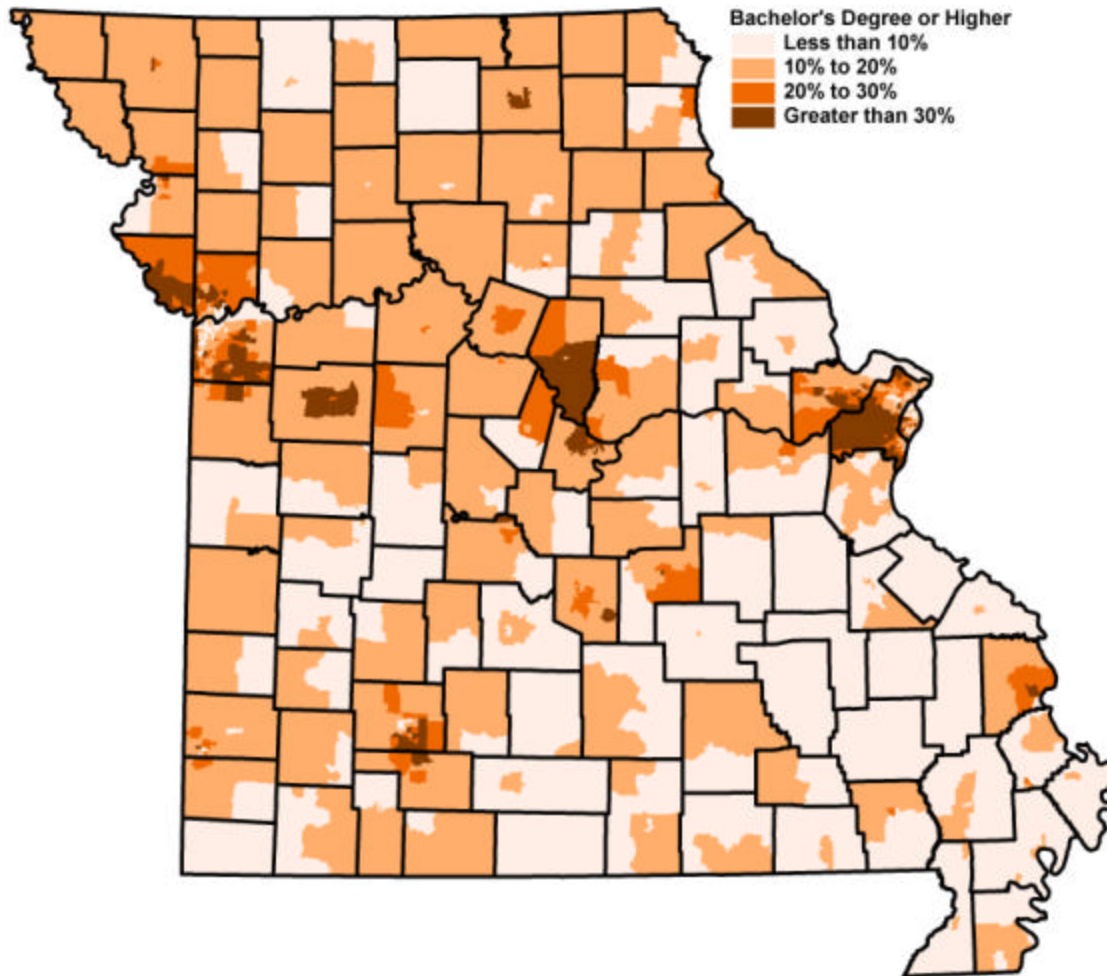
Percent population age 25 and older.

**Percent Population with a High School Diploma/GED or Higher  
In Missouri by Census Tract, 2000**



Percent population age 25 and older.

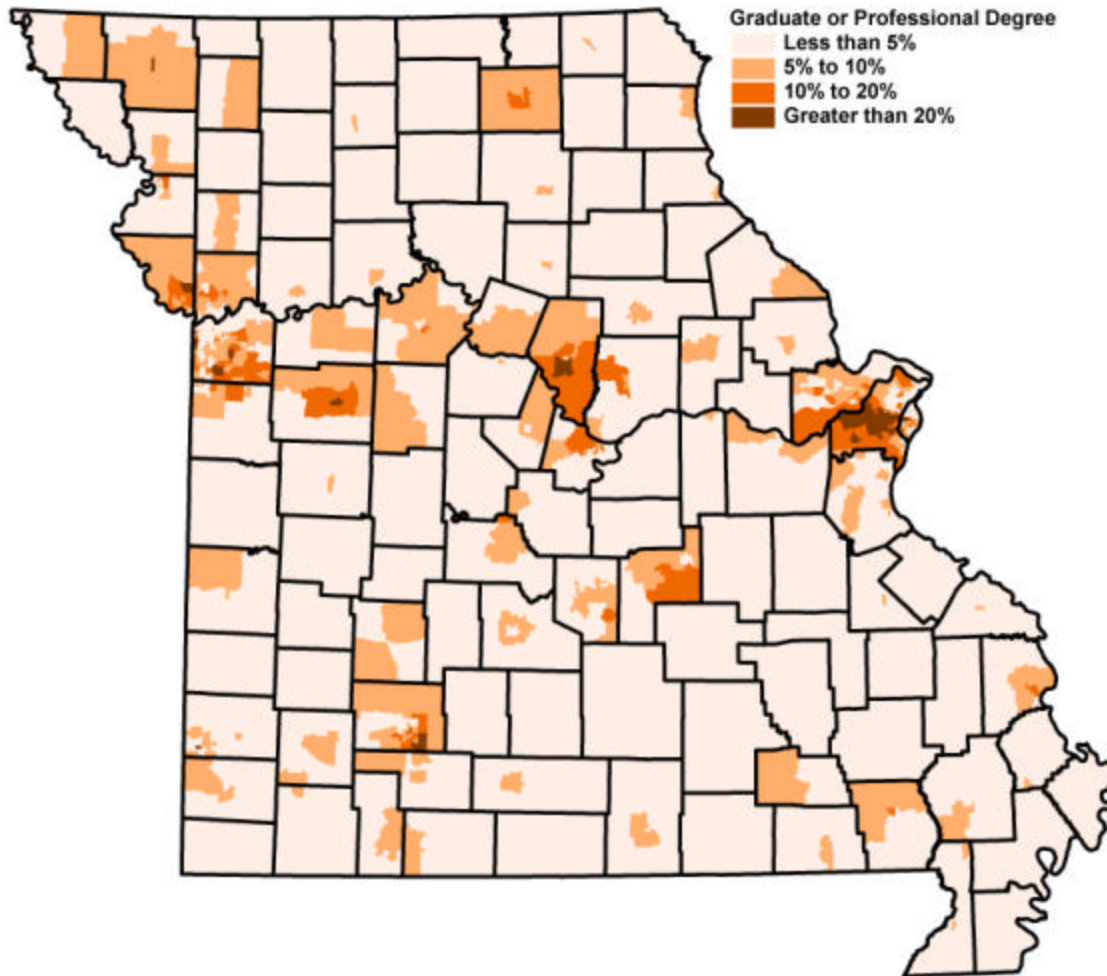
**Percent Population with Bachelor's Degree or Higher  
In Missouri by Census Tract, 2000**



Percent population age 25 and older.



**Percent Population with a Graduate or Professional Degree  
In Missouri by Census Tract, 2000**



Percent population age 25 and older.

## About MERIC

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The Missouri Economic Research and Information Center (MERIC) at the Missouri Department of Economic Development provides comprehensive analysis of Missouri's socioeconomic environment at the local, regional and state levels. To achieve this, MERIC employs a wide array of analysis tools, which include econometric models, geographic information systems and advanced statistical methods. On-going projects at MERIC include targeted development, economic and social impact assessments, industry and occupational analyses, layoff analyses, and information on Missouri's demographic and economic trends. Coupled with its analysis capability, MERIC is also the U.S. Department of Labor affiliate that maintains a comprehensive labor market database for Missouri. MERIC has current information on employment/unemployment, occupations, wages, layoffs, labor availability, and a variety of other information designed to help understand labor market conditions.

In addition, MERIC has developed an outreach infrastructure which includes a comprehensive web site, e-mail distribution list and monthly newsletter. MERIC's mission is to provide value-added research with a customer focus, which means offering accurate, relevant and timely information to decision makers and the public to facilitate a better understanding of Missouri's socioeconomic environment. Ultimately, MERIC and the rest of the Department of Economic Development strive to make Missouri the best place to live, work, vacation and conduct business.

For more information, visit MERIC on-line at

<http://www.MissouriEconomy.org>

***Principal Investigator:***

David J. Peters

580 Harry S. Truman Building  
Missouri Economic Development  
PO Box 3150  
Jefferson City, MO 65102-3150

TEL: (573) 522-6261

FAX: (573) 751-7385

E-MAIL: [dpeters@ded.state.mo.us](mailto:dpeters@ded.state.mo.us)