

Chapter 8

The Shape of Educational Equity:

Using GIS to Explore the Intersections of Space, Race, and School Choice

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ABSTRACT

This chapter provides an overview of the benefits of utilizing geographic information systems (GIS) to explore the intersections of school choice policy, educational equity, space, and race. The author discusses the theory of racial space, a framework for understanding the complex interactions between spatial processes and race. Additionally, the author offers an overview of GIS functionality and discusses research that incorporates GIS as a tool to examine the role of charter schools in shaping educational opportunities and outcomes across neighborhoods, cities, and states. Finally, this chapter will introduce emerging research areas and interdisciplinary research approaches, including advanced geospatial techniques, used to examine the intersections of geography and educational equity.

INTRODUCTION

Space has always been a critical component of the sociological study of racial inequality, yet only recently has it been a central focus of educational research. Over the past two decades, compelling research about the fertile connections between geography and educational equity have become central to contemporary educational reform conversations. Researchers and policymakers have acknowledged the potential of geography-based research methods within education research, as questions regarding educational opportunity are centered on “space, place, and geography. Questions of how school services are arranged, how resources and demographics are distributed across a city, and where students go to school are essentially questions of location, distance, and proximity” (Yoon & Lubieniski, 2018, p. 53).

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One approach education researchers have employed to investigate educational issues involving racial segregation and school choice policy is through a geographic information system (GIS). A GIS is a computer system that can analyze and present data on maps. GIS can also be used to conduct statistical analysis of data that uncovers spatial patterns. A GIS can be used as a primary research methodology to perform spatial analyses, it can provide a spatial perspective in combination with other methodologies, and it can be used to illustrate findings in a spatial format on maps. Therefore, GIS offers researchers a variety of ways to examine spatial processes and locational characteristics.

Maps are helpful to education researchers studying segregation and educational access and equity because maps can illustrate patterns of racial isolation within an area, where and how segregation evolves over time and space and where segregation does not occur. Maps also have the potential to explain how segregation came to be. These insights can lead to policy discussions that target areas experiencing racial isolation or areas that are moving towards becoming segregated. Another reason maps can play a vital role in education research is that they appeal to a broad audience. Not only can maps present information in distinct, straightforward and compelling images, they can be understood by the general public and they are easily shared with others. This facilitates broader discussion with communities about ongoing issues within the local school system.

This chapter provides an overview of GIS, school choice policy and racial and socioeconomic segregation in charter schools. Also, the author provides a foundation for understanding the connections among space, race and social processes, including the theory of racial space. Lastly, the author reviews several studies that incorporate GIS to explore the complex relationships among charter schools, space and race.

GEOGRAPHIC INFORMATION SYSTEMS

A geographic information system (GIS) is a database system that can bring together, store, analyze, and present geographically-referenced data on a map or in a table in real time. Geographically referenced data, or geospatial information, is any data referencing a specific place and it can include location, distance and relative position on the Earth's surface. Geospatial information includes features like the Grand Canyon, the Washington Monument, bike paths, school district boundaries and stop signs. Each feature listed here has associated data and, in GIS terminology, that information is an attribute. Attributes of the Grand Canyon include its length, depth and its widest point. Attributes of a school district boundary include the total enrollment, the racial and socioeconomic characteristics of the students, and the number of teachers employed by the district.

GIS has the ability to combine and display geospatial information on maps that highlight local relationships, patterns and trends. Fundamentally, maps are collections of layers, with each layer representing an attribute. For example, a bike trail map may have layers for trails, walking paths, and other amenities like restrooms or water fountains. Together, these layers produce a complete illustration of the space a cyclist will encounter in real life.

Using GIS, a researcher can link and merge layers with different attributes to create maps that illustrate specific characteristics of geographic coordinates, which are specific points or areas on the Earth's surface. These maps can be helpful for researchers investigating the socio-spatial settings where school choice policy takes place. Variables included in a socio-spatial setting include socioeconomic, political, educational and cultural factors, the built environment and the physical environment. Each of these characteristics can be connected to a location and placed on a map. Therefore, geospatial analysis

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