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## Describing the Education Reform Landscape: A Typology of State Charter School Laws

William Flanary Dabney Jr.  
*Louisiana State University and Agricultural and Mechanical College*

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**DESCRIBING THE EDUCATION REFORM LANDSCAPE:  
A TYPOLOGY OF STATE CHARTER SCHOOL LAWS**

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The School of Social Work

by  
William Flanary Dabney Jr.  
B.S., Louisiana State University  
M.S.W., Louisiana State University  
August 2018

I would like to dedicate this dissertation to my family. You all raise me up in different ways. Without you, I would not have completed this endeavor. All I do is to make you proud.

To my loving wife, who is my best friend and greatest supporter. Even when I don't believe, through your eyes I can do all things. I thank you for committing your life to me knowing the amount of time and effort I would have to put in to earn this degree. You have sacrificed a great deal for me to be at this place in time, and you will never know how much I appreciate and adore you. I love with you all my heart.

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## **Abstract**

Since 2014, 42 states have adopted charter school legislation. Research has been conducted on charter school effectiveness and legislative adoption. However, limitations in the research exist regarding school choice in that studies address inequalities and outcomes at the school level, with limited attention to the state-level policy environment. Additionally, research does not consider variations in state school choice policy nor does it link policy differences to equitable educational outcomes.

This descriptive study described and categorized the variation of state charter school policies and explored differences in state level education finance, student demographics and academic outcomes, and school type characteristics. A cluster analysis yielded three clusters of states with charter school laws that were statistically and descriptively unique in terms of charter school autonomy, equity funding, and growth. ANOVA tests confirmed that the clusters were significantly different than one another. The three indices that were the basis of clustering have underlying composite variables that describe the nature of charter school laws in greater detail. Chi-square tests were conducted to determine whether or not the percentage of states, with each law characteristic specified in the composite variables that made up the index variables (autonomy, equity funding, and growth) differed significantly across clusters. Chi-square tests for all the composite variables reveal that the three state clusters differ significantly from one another. To further explore how the state clusters differed from one another in terms of factors examined in past research, the analysis compared cluster averages for variables measuring state level education finance, student demographics, education outcomes, and school types. ANOVAs were run for all of the clusters' means for each characteristic variable. Only two of thirteen characteristic variables' means were significantly different across clusters.



The descriptive findings in this study can be used in concert with legislative adoption and charter school effectiveness research to reduce limitations in these research areas. Through this advance in charter school research, social workers will gain increased clarity to whether charter school reform is purportedly an equalizer of educational opportunity across class, race, ethnicity and/or gender.

## **Chapter 1: Introduction**

“Public education in the United States arose in part from the goals of a democratic society. It aims to prepare students to become responsible citizens; improve social conditions; promote cultural unity; increase economic self-sufficiency; enhance happiness; and enrich lives” (Renzulli & Roscigno, 2005). However, the country's current education system fails to promote these goals equitably across racial, ethnic, and class groups. School reform, through school choice legislation, is purportedly an equalizer of opportunity across class, race, ethnicity and/or gender. However, research has not substantiated this claim. This concerns social workers because one of the profession’s primary ethical principles, challenging social injustice, requires professionals to confront current educational inequalities and to study attempts to reform the educational system. Nonetheless, literature does not provide a detailed description of how reform has shaped the education system from state to state for social work researchers to understand and navigate.

By 2014, school reform legislation adoption had spread to 85% of the country (Center for Education Reform (CER), 2014). One of the most popular creations to come from school reform is the formation of charter schools. A charter school has features of both a public and private school (Henig, 2008). Though charter schools are publicly funded on a per-pupil basis and legally not allowed to charge tuition, they are able to acquire additional funding from outside sources. Charter schools are public schools that operate to various levels outside the authority of local school boards and state assigned curricula (Henig, 2008). Instead, charters schools are given relative levels of autonomy in choosing their leadership structure and curricula, allowing for greater levels of local leadership and classroom innovation. Lastly, charter schools have more control over their enrollment practices.

Research has been conducted on charter school effectiveness and legislative adoption. Charter school effectiveness research has provided mixed results. This research has found that charter schools perform poorly early on but match traditional public-school performance after operating for a number of years (Ni & Rorrer, 2012). However, research has also shown that charter schools do not match the performance of traditional public schools, no matter how long the charter school has been operating. A limitation of these effectiveness studies is that they do not consider the greater policy environment influencing effectiveness at the school level (Buddin & Zimmer, 2005).

Policy research has been conducted on state adoption of charter school legislation. This research has found that traditionally more conservative states and states with neighbor states who adopt charter school legislation are more likely to adopt legislation than not. Yet, legislative adoption research has simply labeled a state dichotomously as either adopting legislation, or not. Such a simplistic definition of charter school legislative adoption does not capture the nuanced differences in adoption from state to state. These limitations in the school reform body of knowledge hinder researchers from understanding the ways in which states' differences in charter school laws effect factors such as racial and ethnic inequalities in opportunities and student success outcomes.

### **Purpose of Study**

This study fills a void present in two primary lines of research that characterize the school choice literature. The first is based on market theory which asserts that the competition created by charter schools offers a superior educational product and makes traditional public schools better (Lubienski, 2003). However, since the advent of charter schools, literature has shown that charter school and traditional public school effectiveness has had mixed results in

terms of student success. The limitations of research regarding school choice is that studies address inequalities and outcomes at the school level, with limited attention to the state-level policy environment.

The second line of research begins to address the state-level policy environment by explaining the timing of state charter school legislation adoption. The focus in these studies is on the factors leading to the passage of any state level school choice policy. Unfortunately, this work does not consider variations in state school choice policy nor does it link policy differences to equitable educational outcomes

The proposed descriptive study will describe and categorize the variation of state charter school polices and explore differences in state level education finance, student demographics and academic outcomes, and school type characteristics. This study will add to the body of knowledge of public policy work in school reform by building upon the limited, binary description of states' charter school legislative adoption. This will enable future researchers to determine the ways in which state variation in charter school legislation influences factors such as racial, ethnic, class, and socioeconomic disparities in opportunities and student success outcomes.

### **Scope of the Problem**

In this section the problem of education inequality is described, the school choice policy response to the problem is identified, and the evidence related to school policy success and failure is discussed. Educational inequality is a problem that has effected the United States since its inception (Jacob & Ludwig, 2008). Over the past two decades, the perceived solution to educational inequality is the passage of school choice legislation. The most popular form of school choice legislation is the creation of charter schools (CER, 2014). In an effort to

understand the diffusion of school choice reform policies throughout the nation, research in various forms has been conducted. Still with decades of research conducted, an underlying problem that still exists is the limitations in the school reform body of knowledge that keep researchers from understanding the ways in which state differences in charter school legislation effects inequalities in opportunities and student success outcomes.

**Education Inequality.** One of the most effective ways to avoid poverty as an adult in America is to obtain at least a high school degree, or equivalency (Jacob & Ludwig, 2008). As Magnuson and Votruba-Drzal (2009) note, individuals with higher academic achievement and more years of schooling earn more than those with lower levels of educational capital. This is not surprising given that the majority of society believes that schooling makes people more productive, allowing them to command higher wages in the labor market (Jacob & Ludwig, 2008). Unlike other attributes that affect individual economic outcomes, such as family background and personal characteristics, educational attainment can be mostly influenced by individual choice and public policy, making it an ideal target for intervention (Jacob & Ludwig, 2008).

Beyond the broader issues of unfairness, educational inequalities may create costly consequences for the larger society, in excess of what it would take to alleviate the inequalities (Magnuson & Votruba-Drzal, 2009). Research has established that poor education leads to large public and societal costs in the form of lower income and economic growth, reduced tax revenues, and higher costs of public services such as health care, criminal justice, and public assistance (Jacob & Ludwig, 2008).

Despite these high social costs, educational inequalities based on income, race, and ethnicity persist. In modern America, disadvantaged children face a higher risk for a variety of

adverse educational outcomes. In terms of achievement, according to the 2011 National Assessment of Educational Progress (NAEP), only 16 percent of fourth grade students eligible for free lunch score at proficient levels in reading compared with 44 percent of fourth graders whose family incomes are above the eligibility cutoff for free lunch; the disparity in math scores is even larger, 21 versus 53 percent (National Center for Education Statistics (NCES), 2007). Equally large disparities in achievement test scores are observed between whites and minority racial or ethnic groups, with gaps that show up as early as age three or four (Neal & Schanzenbach, 2007).

Belfield and Levin (2010) conclude in that roughly three of every ten students are not graduating from high school on time. There are significantly different dropout rates by race, gender, and socio-economic status. The black male public high school graduation rate is 42 percent, in comparison with 48 percent for Hispanic males and 71 percent for white males (Belfield & Levin, 2010). The disparities are smaller for females, but they follow the same pattern; black female graduate at a rate of 56 percent, Hispanic females at 59 percent, and white females at 77 percent (Belfield & Levin, 2010).

Decades of school reforms have attempted to improve public education and reduce education inequality in America. Three major federal initiatives, No Child Left Behind (2001), Race for the Top (American Recovery and Reinvestment Act, 2011) and the Every Student Succeeds Act (2015) have been the basis for reforms in school choice. This dissertation focused on one type of school choice reform: charter schools.

**State Charter School Legislation.** Charter schools are public schools that operate to various levels outside the authority of local school boards and state assigned curricula (Henig, 2008). Instead of being under the direct control of school boards, charters schools are given

relative levels of autonomy in choosing their leadership structure and curricula, allowing for greater levels of local leadership and classroom innovation. Lastly, charter schools have more control over their enrollment practices.

All of these characteristics of the school are placed into a “charter” that is approved, by an entity designated by the government allowing the school to operate as long as the standards specified in the charter are met (Henig, 2008). A charter is a contract that specifies how the school will operate including, what children are eligible to attend, what type of curricula will be taught, what are the required qualifications of employees, and even hours of operation, to name a few (Henig, 2008). State governments empower certain entities, such as school boards and/or the state department of education, the right to grant charters. Yet, the types of organizations or groups allowed to grant charters vary greatly among states. In some cases, charter approval is limited to only the local school district and at other times includes several bureaucratic institutions (Henig, 2008).

In terms of prevalence, charter school legislation had been passed in 42 states and the District of Columbia as of 2014. The states in which public charter school legislation had not been passed by that time were Alabama, Kentucky, Montana, Nebraska, North Dakota, South Dakota, Vermont, and West Virginia.

Between 2004 and 2014 the percentage of all public schools in the United States that were charter schools increased from 4 to 7 percent, and the total number of charter schools increased from 3,400 to 6,750 (U.S. Department of Education (USDOE), 2014). In addition to increasing in number, public charter schools have also generally increased in enrollment size over the last decade. From fall 2004 to fall 2014, the percentages of public charter schools with

300–499, 500–999, and 1,000 or more students each increased, while the percentage of charter schools with fewer than 300 students decreased (U.S. Department of Education, 2014).

The percentage of public school students who attended public charter schools increased from 2 to 5 percent between fall 2004 and fall 2014 (US Department of Education, 2014). The number of students enrolled in public charter schools increased from 0.9 million to 2.7 million, while the number of students attending traditional public schools decreased by 0.4 million (US Department of Education, 2014).

**Limitations in Charter School Research.** Millions of children attend charter schools because they have been told a charter school is superior to a traditional public school (Lubienski, 2003). Many state legislators also believe charter schools are superior to traditional public schools and support the millions of dollars spent on charter school creation (Lubienski, 2003). However, research supporting this limited. Charter school effectiveness research has provided mixed results. Charter school effectiveness research has found that charter schools perform poorly early on but match traditional public-school performance after operating for a number of years (Ni & Rorrer, 2012). In contrast, research has shown that charter schools do not match the performance of traditional public-schools, no matter how long the charter school has been operating (Buddin & Zimmer, 2005).

Research on state policy adoption is also limited by its sole focus on a simple dichotomy of states. Legislative adoption research has developed elaborate statistical models to predict whether states share adoption characteristic or not. This masks the vast differences in those policies. States that have adopted charter legislation have not done so uniformly. Differences exist in the way states adopt charter school laws in areas of education finance, governing autonomy, and school authorization. These limitations in the school reform body of knowledge



keep researchers from understanding the ways in which state difference in charter school legislation effects social justice factors such as racial and ethnic inequalities in opportunities and student success outcomes. They also provide no insight into factors that lead states to adopt different policy provisions.

### **Contribution to Social Work**

“The primary mission of the social work profession is to enhance human well-being and help meet the basic human needs of all people, with particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty” (NASW Code of Ethic, 2017). Social work as an academic discipline is focused on individuals and groups of people who are disadvantaged. Research has shown that children of color and low socio-economic status face disproportionately negative student success outcomes. This concerns social workers because one of social work’s primary ethical principles, challenging social injustice, requires professionals to confront current educational inequalities and to study attempts to reform the educational system (Gianesin & Bonaker, 2003).

“Social workers promote social justice and social change with and on behalf of clients in a number of ways, including scholarly research” (NASW Code of Ethics, 2017). Current literature does not provide a detailed description of how reform has shaped the education system from state to state for social work researchers to understand and navigate. This dissertation will expand the school reform policy research base by building upon the limited, binary description of states’ charter school legislative adoption. It will support future researchers’ efforts to better understand the ways in which state variation in charter school legislation influences factors such as racial and ethnic disparities in opportunities and student success outcomes.

## **Chapter 2: Literature Review**

This chapter details a brief history of education in America, along with reform efforts and the creation of charter schools. It also details charter school literature research discussing both effectiveness research and policy adoption research. The first section details the history of education in America to provide a framework for understanding the historical context.

### **Genesis of Public Education**

When the first schools opened, the United States was comprised of thirteen colonies in the 17th century. The Boston Latin School was founded in 1635 and was the first public school in United States (Watras, 2007). The first free taxpayer-supported public school in North America, the Mather School, was opened in Dorchester, Massachusetts, in 1639 (Watras, 2007). In 1647, the general court of the Massachusetts Bay colony decreed that every town of fifty families or more should have an elementary school and that every town of 100 families or more should have a Latin school. The goal was to ensure that Puritan children learn to read the Bible and receive basic information about their Calvinist religion (Watras, 2007).

In 1785, the Continental Congress passed a law calling for a survey of the Northwest Territory which included what was to become the state of Ohio. The law created "townships," reserving a portion of each township for a local school. From these "land grants" eventually came the U.S. system of "land grant universities," the state public universities that exist today (Watras, 2007).

A petition presented in the 1817 Boston Town Meeting called for establishing a system of free public primary schools (Watras, 2007). Main support came from local merchants, businessmen and wealthier artisans. Many wage earners opposed it, because they did not want to pay the taxes. In 1827, Massachusetts passed a law making all grades of public school open to all

pupils free of charge. In 1851, the United States passed its first compulsory education law requiring all children to attend school. However, slaves, Native Americans, and other minorities were not afforded public education at that time (Watras, 2007).

Between 1865 and 1877, African Americans and reconstruction supporters advocated to bring public education to the South for the first time. After the Civil War, and with the legal end of slavery, African Americans in the South made alliances with government to push for many political changes, including rewriting state constitutions to guarantee free public education for Caucasian and African American children for the first time. (Watras, 2007). Before this time, state legislation did not dictate that education was to be provided to all children, regardless of class or ethnicity. In 1896, *Plessy v Ferguson* was ruled by the U.S. Supreme Court that separate, but equal education was a right of states (Watras, 2007). After this ruling, most southern states passed laws requiring racial segregation in public schools. It was not until 1954 that the Supreme Court in *Brown v. Board of Education* found that segregated schools were inherently unequal and ordered the end of public school segregation (Watras, 2007). After racial integration, public schools began to take the integrated form citizens know today. From the 1960s on, numerous reforms molded the country's educational system.

### **History of Education Reform**

Since the 1960s, the chronology of federal policies affecting K-16 education reform in the United States has been well documented. Allen-Meares (2004) describes two categories of reform; equality based and achievement based. Equity based reforms deal with providing equal learning opportunities for all students regardless of ethnicity, gender, or disability (Allen-Meares 2004). During the civil rights movement, equity based reforms were needed as the unjust nature of education was revealed to the country.

Achievement based reforms are concerned with increasing the intellectual ability of all students. Some achievement-based reforms arose because United States children were perceived as lagging behind in knowledge compared to other world super powers, namely Russia (Allen-Meares 2004). Other achievement-based reforms such as No Child Left Behind were enacted to hold schools accountable for students' achievement so that all children in public school had the same quality education (Allen-Meares 2004).

A current sub-type of achievement reform is market-based reform. These reforms have been introduced by politicians and private business as a solution for the perceived achievement "failure" of the public-school model (Lubienski, 2003). Market-based reforms have introduced school choice, charter-schools, and school vouchers. Ultimately, market-based school reform leaves parents, students, and communities with positive and negative consequences (Lubienski, 2003).

**Equality Based Reforms.** Equality-based reform was energized in the early 1960s due to the American civil rights movement. The hallmark case *Brown v. the Board of Education* (1954) overthrew the previous *Plessy v. Ferguson* (1896) ruling that separate schooling for children of color was equal (Lubienski, 2003). Even though the federal government mandated desegregation, some states ignored the mandate. Cases such as *Brown II* (1955) and *Swann v. Charlotte-Mecklenburg Board of Education* (1971) were rulings that reinforced desegregation by outlying specific consequences to states who failed to integrate, but children of color still had difficulty receiving quality public education (Lubienski, 2003). However, full sweeping legislation was passed during Lyndon B. Johnson's term in 1965 that would dramatically change the narrative of public education (Lubienski, 2003).

The Elementary and Secondary Education Act (1965) (ESEA) was passed as a part of Johnson's "War on Poverty" and has been one of the most far-reaching federal legislation effecting education that has ever been passed by Congress (Lubienski, 2003). The ESEA enabled the federal government directly allotted funds to improve the situation of poor and disadvantaged children for the first time (Allen-Meares 2004).

ESEA funded primary and secondary education, stressing equal access to education (Allen-Meares 2004). In addition, the bill aimed to shorten the achievement gaps between white students and students of color by providing each child with fair and equal educational opportunities (Allen-Meares 2004). As required in by ESEA, funds are authorized for teacher professional development, instructional materials, resources to support educational programs, and promotion of parental involvement. The ESEA created today's current Head Start programs by providing pre-schooling for disadvantaged children not available in some community environments (Allen-Meares 2004).

Different presidents have reauthorized the ESEA under different names with legislative modifications over a 36-year span. During the Reagan administration it was titled the Education Consolidation and Improvement Act (1981) and under the Clinton administration it was called the Improving America's Schools Act (1994). From 1965 to 1993, changes to the ESEA have occurred primarily in Title I of the legislation. Title I outlines which funds are controlled by federal or state oversight (USDOE, 2014). During different administrations, differing political ideologies dictated at which governmental level (federal or state) funds are controlled. Though major changes occurred in Title I of the original ESEA, no greater change came to the entire legal instrument than when Congress passed No Child Left Behind (NCLB) in 2001 (US Department of Education, 2014).

In addition to the passing of the ESEA to NCLB, other federal legislation was passed to provide equality in public education. Children with disabilities have seen vast policy changes since the 1970s (U.S. Department of Education, 2014). The Education for All Handicapped Act provided funding to special education programs (1975), while the 1973 Rehabilitation Act required that an agency, which included schools receiving federal funding, could not discriminate based on disability (US Department of Education, 2014).

In 1975, the Education for All Handicapped Children's Act promised all children with disabilities a right to a public education. Through guidelines, federal funding, and local accountability measures, the Education for All Handicapped Children's Act was heralded as model legislation (Allen-Meares 2004). In 1997, the Education for All Handicapped Children's Act was amended and renamed The Individuals with Disabilities Education Improvement Act (1997); also known commonly as IDEA (US Department of Education, 2014).

**Achievement Based Reforms.** In 1957, the first achievement-based reform was the National Defense Education Act (NDEA). The signing of the NDEA was primarily influenced by the Soviet's launch of the Sputnik satellite on October 4, 1957. America was losing their competitive advantage in the race to send man to the moon. The United States government feared that the USSR's schools were creating scientists superior to America's schools (Fleming, 1960). Thus, the NDEA authorized \$1 billion in funding over a 4 year period. This money funded 40,000 loans, 40,000 scholarships, and 1,500 graduate fellowships at the post-secondary level (Fleming, 1960). The majority of the NDEA funding was intended for academically gifted students in math and science who did not have the financial resources to pursue undergraduate or graduate degrees (Fleming, 1960).

Matching funds were also available to states in order to support additional plans aimed at improving America's competitiveness in K-12 math and science education (Flattau, Bracken, Van Atta, Bandeh-Ahmadi, de la Cruz, & Sullivan, 2006). This financial support was used for better equipment and learning materials, along with professional development for teachers. Science courses were deliberately reorganized which impacted all students (Flattau et al., 2006). A special characteristic of the reform movement created by the NDEA was the focus on the joint efforts between K-12 teachers and university researchers (Flattau et al., 2006). Rather than being passive receivers of content and approaches, K-12 teachers were now treated as important contributors to the process (Flattau et al., 2006).

The next achievement based reform came in response to the education field report titled "A Nation at Risk: The Imperative for Educational Reform" created by the National Commission on Excellence in Education (1983). The report detailed the impact that low academic performance would have on the United States if not corrected. The report highlighted the decline of American education including low literacy rates, decreases in standardized testing and SAT scores, erosion of curriculum content, lowered student educational expectations, and sub-standard teacher education programs (National Commission on Excellence in Education, 1983). The report concluded that if accountability and educational outcomes were not increased, America would not be able to compete with other super powers in the new and emerging technological age of the computer (National Commission on Excellence in Education, 1983).

Though state and federal government engaged in yearly discussion regarding improving America's public education system, it would not be until 2001 when NCLB was passed that public education in America would receive a marked policy change (Barghaus & Boe, 2011).

NCLB built upon ESEA but focused much more on student academic achievement (Barghaus & Boe, 2011).

NCLB required that all states 1) develop content standards to determine what students should know, 2) administer assessments to measure whether students are meeting those standards, and 3) institute accountability steps to ensure that all students attain proficiency standards (US Department of Education, 2014). NCLB created strict accountability requirements for federal funds in the form of a minimum yearly progress score indicating whether a school is passing or failing (Barghaus & Boe, 2011). Additionally, NCLB outlined consequences if schools did not meet performance measures, primarily seen in high-stakes assessments of student knowledge (Barghaus & Boe, 2011). If schools repeatedly underperformed as compared to national requirements, then the schools were required to engage in a number of interventions to address specific problems regarding the schools' failure (Barghaus & Boe, 2011).

In 2015, NCLB was replaced with Every Student Succeeds Act (ESSA) (US Department of Education, 2017). ESSA is very similar to NCLB except now states are given more responsibility and flexibility in monitoring their schools' academic performance. Struggling schools are still held accountable for their lack of success and standardized testing is still the primary measure of school success (Every Student Succeeds Act, 2015).

**Market-Based Reforms.** Today's public education is still influenced by NCLB's principles. The Every Student Succeeds Act (ESSA) builds upon NCLB by continuing to use market incentives to drive school and student performance. NCLB and ESSA hold schools accountable by mandating that students participate in high stakes testing and publishing each school's performance score which is based on students' test scores and other factors (Mathis, 2009). More importantly, market theory supports giving parents a choice about where to send



their children to school. Three main types of market-based reforms within NCLB are school choice, charter schools, and voucher programs (Mathis, 2009).

School choice is employed differently across states, but the main idea is that any student should be allowed to attend another school if their school of residence does not meet accountability standards set by the state and the Department of Education (Renzulli & Roscigno, 2005). Whether the students and parents choose to move within district or another district to attend another school is based primarily upon state laws and parent preference (Renzulli & Roscigno, 2005).

Charter Schools are the latest form of school reform that offers both choice and stronger autonomy for schools (Mathis, 2009). Charter schools are public schools that receive local, state, and federal funding and participate in the state's ESSA accountability system but have flexibility in creating school structure and meeting accountability standards (Renzulli & Roscigno, 2005). Though these schools are public in that students do not pay to attend them and government based per-pupil dollars follows the students to the charter school, the organizations that run the schools can be private charter management organizations (CMOs) who make a profit from schools' existence.

Charter schools are the most common form of school choice reform (Buddin & Zimmer, 2005). By 2011, approximately 5,300 charter schools opened serving over 1.7 million students in 40 states and the District of Columbia (Center for Education Reform, 2011). Charter schools are public schools of choice that operate under contract between the school, the school district, and the external management organization (Buddin & Zimmer, 2005). These management organizations can be a university, business, school boards, and state boards of education.

Unlike traditional public schools, charter school attendance is not dictated by a student's place of residence (Buddin & Zimmer, 2005). Charter schools have increased freedom in its decisions about school structure, culture, and standards. However, since they are still a public school, they are held to the same accountability measures (i.e. high stakes testing) that other public schools face (Buddin & Zimmer, 2005).

These school reform "choices" theoretically influence new school options and require traditional public schools to compete against charter schools and one another for student attendance, which ultimately equates to tax dollars (Lubienski, 2003). These tax dollars pay for teacher salaries, school utilities, books, computers, other instructional instruments, and for the upkeep of the school buildings (Drame, 2011).

### **History of Charter Schools**

The advent of charter schools was a significant event in the history of the United States education system. After many years of dissatisfaction with their public schools, Minnesota citizens supported the adoption of the first school choice policy. Adopted in 1985, The Postsecondary Enrollment Options Act permitted Minnesota high school students to register at colleges for high school credit. The legislation was the result of negotiating by policy leaders to address the long-standing disagreement between parents and education system employees regarding what programs best serve students (Wong & Langevin, 2007). Educators responded to the passage quickly and negatively, citing the possible devastating impact of transferring funds from secondary schools to post-secondary schools. However, these educators' claims did not stop the spread of legislation (Wong & Langevin, 2007).

In 1987, Minnesota passed the first open enrollment policy, and by 1992 nearly three quarters of the states had adopted similar school choice legislation. Open enrollment policies

allow students to enroll at any public school they choose within a city or town, instead of being bound to a few schools within the school district that the student resides. School choice legislation broadly allows students to choose where they attend school, either through open enrollment, private school vouchers, or attendance at charter schools. In 1991, Minnesota became the first state to adopt charter school legislation, and charter school policies spread at a similarly quick rate across the United States. Yet despite the rapid spread of charter school policies, the debate between charter school supporters and critics remains a hotly contested topic.

Charter schools introduce a fundamental restructuring of the American education system. School choice, which allows parents to decide where their children enroll, introduces market competition into the education system as a way to address perceived failure of government institutions to meet individual educational needs (Henig, 2008). As the debate over charter schools continue, it has transformed into a larger battle of the market against the government. This transformation has made the issues so politically volatile and the stakes so high there is little room left for complexity, nuance, and contingency (Henig, 2008). Numerous studies supporting both the superiority of the traditional public-school system and the promise of charters schools have emerged, attempting to bring clarity to an unclear situation. To date, no conclusive evidence determines whether charter schools are more effective than traditional public schools (Berends, 2015).

Regardless of the absence of clear evidence of charter school effectiveness, the charter school movement swept the nation between 1991 and 2014. By 2014, 2.7 million children attended a charter school. Charter schools continue to dominate education reform discussion (Wong & Langevin, 2007). For example, in the Obama administration's 2008 Race to the Top competition required states to adopt charter school legislation in order to be eligible to receive

award funding. Yet, even with the establishment of multiple positive federal incentives and the widespread acceptance of charter school legislation across the U.S., eight states have still not adopted charter school legislation (Berends, 2015).

### **Theoretical Frameworks for Charter Schools**

Though history can explain what happened, theory helps explain why, or what influenced history. Numerous theories inform the current understanding of the role of education in society and the current state of education reform policies. Three sociological theories explain the role of education in society. Weber's (1962) theory views the education system as a societal structure controlled by the dominant group and used by them to retain power. Structural-Functionalism posits that education functions to provide society with what it needs at the time (Davis and Moore, 1945). Mead and Cooley's (1909) theory of symbolic interaction offers insight into how education guides people in how make sense of the world around them through role recognition and reinforcement.

Theories from economics and political science also provide insight into education reform. Adam Smith's (1776) market theory is the primary driver behind the characteristics of the current educational environment reform. Additionally, a thorough understanding of how market based reforms spread quickly across the country is needed. Thus, innovation diffusion and internal determinates theories are discussed.

**Market Theory.** The most prevalent theory guiding current school reform is Adam Smith's (1776) free market theory. A free market is an idealized system in which the prices for goods and services are determined by the open market and consumers. In Adam Smith's *Wealth of Nations* (1776), Smith argued that choice and competition encourage experimentation and diverse options in the market place (Lubienski, 2003). Additionally, supply and demand dictate

what consumers desire and what they are willing to obtain desired goods and services (Lubienski, 2003).

Free-market theory drives national education reform (Lubienski, 2003). School choice reform provides student customers with a choice of which school they can attend (Lubienski, 2003). Higher achieving schools will be in demand and those schools that do not provide quality education will fail because of a lack of student demand. Thus, competition for students promotes innovation and increased performance in schools (Lubienski, 2003).

Policy makers believed that invoking Smith's market theory would influence traditional public schools to move away from rigid, top-heavy administrative models and to innovate solutions that focus on the needs of students. In the past, public schools were protected from "market discipline" and were not held accountable to their consumers, namely students and their parents (Lubienski, 2003). Market theory predicts that entities not held accountable to market discipline due to monopolization will become lethargic, ineffective, and unresponsive to the needs of consumers (Lubienski, 2003).

Market theory explains what drives the characteristics of charter schools and the idea of reform based on competition. However, the spread of charter school policies fall within a larger study of policy innovation. A policy innovation can be defined as a policy that has elements that are new to the policy arena, even though it is not new to the overall policy landscape (Walker, 1969). Innovation theories explain charter school law adoption across the country. These theories are innovation diffusion and internal determinants of diffusion.

**Innovation Diffusion and Internal Determinants.** In order to understand the factors that could contribute to variations in state charter school laws, this section discusses the chronology of innovation diffusion and internal determinants theories and research. Seminal

authors are noted along with their contribution to the field. Innovation diffusion and internal determinants research has mostly been seen in political science and sociological research but the usage of the framework easily translates to disciplines of education and social work and have informed charter school adoption research.

Sociology scholar Everett Rodgers was the originator of the diffusion of innovations theory. His seminal book, *Diffusion of Innovations* (1962), explains innovation diffusion theory seeks to explain how, why, and at what rate new ideas and technology spread.

Rodgers posited that there are four main factors that contribute to the spread of a new idea. These influences are the innovation itself, communication channels, time, and the social systems (Rodgers, 1962). If an innovation is not effective or efficient, it will likely fail to spread.

Communication channels must be present and open for innovations to spread. Groups must be able to discuss, witness, and experience the innovation working for others before they will adopt.

Rodgers (1962) coined the term, "early adopters" to describe the groups and people who first adopt an innovation. Rodgers (1962) theorized that adopters of any new innovation can be separated into: inventors, early adopters, early majority, and late majority laggards. Diffusion of innovation depends on the human capital of social systems to reach self-sustaining adoption.

Within the rate of adoption, there is a point at which the innovation reaches a critical mass (Rodgers, 1962) and the innovation is no longer driven by outside influences, but instead is driven by the new adopters. As more users adopt an innovation, the adoption reaches a "tipping-point," where outside influences are not driving the innovation, but instead the new users within a group become the main driver (Rodgers, 1962).

Potential adopters gauge an innovation on its relative advantage or the perceived efficiencies gained by the innovation compared to current tools or procedures (Rodgers, 1962).

Additionally, adopters judge the innovation's compatibility with the pre-existing systems, its complexity or difficulty to learn, its testability, its potential for reinvention, and its observed effects (Rodgers, 1962).

Adopters tend to have traits that affect their likelihood to adopt an innovation. A number of individual personality traits have been explored for their impacts on adoption. Ability and motivation have a large impact on a potential adopter's likelihood to adopt an innovation (Rodgers, 1962). Unsurprisingly, potential adopters who are motivated to adopt an innovation are willing to make the adjustments needed to adopt it (Rodgers, 1962). Motivation can be impacted by the meaning that an innovation holds; innovations can have symbolic value that encourage, or discourage, adoption. Potential adopters who have the power to create change, particularly in organizations, are more likely to adopt an innovation than someone with less power over their choices (Rodgers, 1962).

Diffusion of innovations theory has been applied beyond its original domains. In the case of political science and administration, policy adoption focuses on how institutional innovations are adopted by other institutions, at the local, state, or country level. An alternative term is *policy transfer* where the focus is more on the agents of adoption and the adoption of policy knowledge (Walker, 1969).

Jack Walker built upon Rodgers work. Walker (1969) was the first research to apply the theory of diffusion of innovations to American politics, applying it to state laws and organizations. In his seminal study, *The Diffusion of Innovations among the American States*, Walker (1969) examined why some states act as early adopters by adopting social programs more readily than others. He also researched once innovations have been adopted by a few of

these early pioneers, how these new forms of services and programs spread among the American states (Walker, 1969).

Walker (1969) found that many influences shape decisions to adopt innovations and not two ideas diffuse in the same way. In all of the states he examined, he found that the likelihood of a state adopting a new program is much higher if other states have already adopted the idea. Furthermore, the likelihood becomes even higher if the innovation has been adopted by a state that key decision makers view as their equal. These equal states are typically connected by geographic regions (Walker, 1969). States that are wealthy and have high levels of political competitiveness are also likely to be early adopters (Walker, 1969). Communication between powerful entities is a primary influencing factor within a state itself and amongst other states. The communication from state representatives, mayors, governors, and other influential state leaders represent communication networks. Communication networks spread into all the states, but the isolation of some state capitols from the major cosmopolitan centers of the country is a major obstacle seen in the adoption of new ideas (Walker, 1969).

Virginia Gray (1972) built on Walker's work with her article, "Innovation in the States: A Diffusion Study." Her study focused on nonmonetary dimensions of public policy and innovation by states in the fields of education, welfare, and civil rights (Gray, 1972). She also added to Walker's work by exploring patterns of the type of policies and innovations that are adopted (Gray, 1972). The author constructed a statistical model to measure the spread of adoption in specific policies and innovations (Gray, 1972) in the areas of civil rights, welfare, and education, with a total of 12 policies. The model performed fairly well when evaluated by its ability to answer three questions: 1) How do new ideas diffuse and spread among the states, 2) Why are some states more innovative than others, and 3) are there identifiable patterns of



innovation? Gray (1972) found that states vary widely in their innovativeness in different policy areas. Moreover, innovativeness did not appear to correlate strongly across the 12 policies examined (Gray, 1972). For example, education policies diffused at a constant rate throughout the states, however, welfare and education policies varied greatly from state to state (Gray, 1972). Like Walker, political and economic differences among states are found to account for differences in time of adoption (Gray, 1972). States with more wealth are more likely to innovate compared to those who are less wealthy.

Gray (1973) presents an important conceptual addition to innovation diffusion by showing that the innovation itself is largely influential in whether it spread quickly, slowly, or not at all (Gray, 1972). An ineffective or inefficient innovation is less likely to be adopted by a group, especially if there is competition from other innovations (Gray, 1972).

By the early 1990s researchers had identified two types of explanations for state government innovation: internal determinants models and regional diffusion models. Berry and Berry (1990) demonstrated that the two theories are conceptually matched, relying on Mohr's (1969) theory of organizational innovation. Mohr (1969) postulated that the tendency to innovate is a function of the motivation to innovate, the strength of obstacles against innovation, and the availability of resources for overcoming such obstacles. Berry and Berry (1990) developed and tested a combined theory of state lottery adoptions supporting both internal and regional influences. They found evidence for both the internal determinants and regional diffusion models of state innovation. Both internal political and economic characteristics of a state and the number of previously adopting neighboring states are found to influence the probability of a lottery adoption (Berry & Berry, 1990). Their results provided support for Mohr's theory (Berry & Berry, 1990).

A conceptual weakness in innovation diffusion theories is the separation between regional diffusion and internal determinants (Berry & Berry, 1992). Internal determinants theories typically ignore the role of regional influences, while regional diffusion theories generally assume that internal state characteristics have no effect (Berry & Berry, 1992). Berry and Berry (1992) explained that neither a pure regional diffusion theory nor an internal determinants theory is an acceptable explanation of state innovation by itself. It is also farfetched to think that states are totally insulated from influence by neighboring states, given the context of federalism, active national associations of state officials, and media attention on state innovation (Berry & Berry, 1992). This is why both internal determinants and regional diffusion must be thought of in concert.

Berry (1994) goes on to describe three models of innovation. The first model is internal determinants, which posits that the primary factors leading a state to innovate are characteristics internal to the state. The other two are diffusion models, namely regional and national interaction. These see state adoptions of policy as imitations of previous adoptions by other states.

### **Charter School Research in Innovation Diffusion and Internal Determinants**

Innovation diffusion and internal determinates research has progressed increasingly in the past fifty years. Coinciding with diffusion and determinants exploration is research concerned with charter school legislation adoption. This section discusses charter school related policy adoption researchers. Authors such as Mintrom and Vergari (1998), Renzulli and Roscigno (2005), Wong and Langevin (2007), and Cohen-Vogel and Ingle (2007) expanded the research on the historical emergence of school choice as a policy innovation. These authors all used a form of event history analysis as a statistical model.

Mintrom and Vergari (1998) tested the empirical relevance of their theoretical argument for the importance of policy network consideration in diffusion studies. A policy network is a network of main governments, public agencies, private companies, nonprofit organizations, think tanks and citizens (Mintrom & Vergari, 1998). The authors found that greater involvement in policy networks by policy entrepreneurs significantly increased the likelihood of these policy entrepreneurs achieving their legislative goals of enacting education reform.

Renzulli and Roscigno (2005) examined how interstate dynamics and intrastate attributes affected the adoption of legislation on, and the creation of charter schools within states (Renzulli & Roscigno, 2005). Their findings revealed a strong copying tendency among adjacent states to adopt charter school legislation and regional similarities in the creation of charter schools. Internal attributes of states, such as competition between the private and public school sectors, the strength of teachers' unions, the presence of ethnic differences in the areas of standardized test scores, urbanization, and republican political party dominance also played a role (Renzulli & Roscigno, 2005).

Wong and Langevin (2007) identified the political and economic factors that explained the passage of school choice laws, how partisan control of state government affected legal and financial support for a publicly funded voucher programs, and which states were most likely to authorize new charter schools (Wong & Langevin, 2007). The authors' found that state adoption was related to Republican partisan gubernatorial control, lower classroom spending, more private schools, more education finance litigation, and more minority representation among students (Wong & Langevin, 2007).

Cohen-Vogel and Ingle (2007) synthesized the educational public policy diffusion research and built upon it by investigating the stage in policy making processes during which

influences on neighboring states was most apparent. The authors analyzed data from state policy makers and showed that the experiences of neighbor states are most pronounced during the agenda setting and proposal formulation stages and the least during the adoption stage (Cohen-Vogel & Ingle, 2007).

### **Synthesis of Charter School Innovation Diffusion and Internal Determinants**

**Literature.** Several patterns emerge in the charter school innovation diffusion and internal determinants literature. States who have more competition between the private and public school sectors, more minority student representation, urbanization, and Republican partisan gubernatorial control were more likely to adopt charter school legislation than states that did not have these characteristics (Renzulli & Roscigno, 2005; Wong & Langevin, 2007). Furthermore, a state was very likely to adopt if they had these characteristics in conjunction with a neighbor state who previously adopted charter school legislation (Renzulli & Roscigno, 2005; Wong & Langevin, 2007).

Research has also shown that the process and timing of participation in charter school legislative reform was influential on state adoption. Pro-charter school policy entrepreneurs that were highly active in policy networks were more likely to see their state adopt charter school legislation (Mintrom & Vergari, 1998). States that were influenced by other states' adoption of charter school legislation demonstrated higher levels of influence during different stages in the adoption process. A state was more influenced by their charter school adopting neighbor state during the agenda setting and proposal formulation stages and the least during the actual adoption (Cohen-Vogel & Ingle, 2007).

## **Charter School Effectiveness Research**

Rodgers (1962) theorized that if an innovation is not effective or efficient, it will likely not spread. This condition was not met in the case of charter schools. Since the inception of charter schools, school choice reform has created a great deal of public debate that only recently has been informed by research, including assessments of charter school student performance. However, research reveals mixed outcomes regarding charter school effectiveness. Studies have found positive results, negative results, results that improve over time, and results that are fixed over time. Charter school effectiveness literature is typically presented by the state in which the research was conducted. This author summarizes the literature in the same fashion: by state.

Solmon, Paark, and Garcia (2001) used longitudinally linked student-level data to track student achievement in all Arizona charter schools. The authors found that students spending two to three years in charter schools outperformed traditional public school students (Solmon, Paark, & Garcia, 2001). The study also showed that students do poorly in their first year in charter schools, which the authors suggested may be a “mobility effect” rather than a charter effect. Over time, students did perform better as they increased their time in charter schools (Solmon, Paark, & Garcia, 2001).

Two separate studies using longitudinally linked student-level data found mixed results in Texas. Gronberg and Jansen (2001) used individual fixed effects to control for prior test scores, along with school-level demographic factors, to examine student test scores on Texas Assessment of Academic Skills (TAAS) between 1997 and 2000. The authors found that charter schools that focused on at-risk students showed slightly greater gains in test scores than traditional public schools, while non-at risk charters showed slightly lesser gains in test scores than traditional schools (Gronberg & Jansen, 2001). They also examined how long the charter

school had been open and found that schools with two or more years of experience produced better academic outcomes (Gronberg & Jansen, 2001) than traditional public schools.

However, Hanushek, Kain, and Rivkin (2002) drew different conclusions from similar Texas achievement data. The authors examined student-level TAAS test scores for 200,000 students in grades four through seven between 1996 and 2001. The authors estimated a student-level fixed-effects model. The findings showed that charter school students did significantly worse than public school students for new charters, but that charter students did as well as traditional public school students for charters that are at least two years old (Hanushek, Kain, & Rivkin, 2002). In addition, the authors found no significant systematic difference in charter school effects for students of different race or ethnic groups (Hanushek, Kain, & Rivkin, 2002).

Bettinger (2004) compared the test scores of charter and traditional public school students in Michigan. Using non-longitudinally linked student-level data, he compared 33 charter schools that opened in 1996–1997 with approximately 550 public schools within five miles of these charter schools. Bettinger (2004) estimated average school test scores as a function of charter school status and other school-level covariates and generally found no significant differences in test scores for charter and conventional public school students.

A second study in Michigan by Eberts and Hollenbeck (2002) examined the performance of Michigan's charter schools relative to conventional schools using longitudinally linked student-level data. Because the authors did not have data of consecutive years of the same subject tests, they used fourth-grade math and fifth-grade science test scores to measure gains of individual students, which adds error to their measurement (Eberts & Hollenbeck, 2002). The analysis examined the tests scores for 1996–97 through the 2000–01 school years. Using a fixed-effect approach, the study found that students attending charter schools were not reaching the

same level of achievement as students in conventional public schools within the same districts (Eberts & Hollenbeck, 2002).

Based on longitudinal student-level data from 2004 to 2009, Ni and Rorrer (2012) utilized two approaches to evaluate Utah charter school effectiveness. The first was a hierarchical linear growth model with a matched sample, and the second was a general methods of moments with student-fixed effects regressions. Both methods produced consistent results that charter schools on average performed slightly worse as compared to traditional public schools, a result that is primarily affected by the low effectiveness and high student mobility of newly opened charter schools (Ni & Rorrer, 2012). Interestingly, when charter schools gained more experience they become as effective as traditional public schools, and in some cases more effective than traditional public schools (Ni & Rorrer, 2012).

In Massachusetts, recent research has shown that Boston charter schools raised standardized test scores more than their traditional school counterparts (Cohodes, 2016). Critics of charter schools argued that charter schools create those achievement gains by focusing exclusively on test preparation, at the expense of deeper learning (Cohodes, 2016). Cohodes (2016) tested this critique by estimating the impact of charter school attendance on subscales of the Massachusetts Comprehensive Assessment System using a two-stage least squares (2SLS) model and examining them for evidence of score inflation. Despite incentives to move effort away from less frequently tested content to highly tested content, and to coach to item type, the author found no evidence of charter schools exclusively focusing on test preparation in comparison to traditional public schools. Boston charter middle schools performed consistently across all standardized test subscales (Cohodes, 2016).

**Synthesis of Charter School Effectiveness Literature.** Several patterns emerge in the charter school effectiveness research. In Arizona, Texas, and Utah, research found that initially charter schools perform worse compared to traditional public schools in student achievement (Solmon, Paark, & Garcia, 2001; Gronberg & Jansen, 2001; Ni & Rorrer, 2012). However in these same states, after a charter school has been open for two to three years, student achievement performance begins to equal that of peer traditional public schools (Solmon, Paark, & Garcia, 2001; Gronberg & Jansen, 2001; Ni & Rorrer, 2012).

Results around school performance have been different in several different states. One study in Texas showed charter schools that focus on at-risk children see larger test score gains compared to traditional public school that serve a similar at risk-population (Gronberg & Jansen, 2001). This same study also showed that charter schools that focus on at-risk children see larger test score gains than charters and traditional public schools who focus on non-at-risk children (Gronberg & Jansen, 2001). Other studies in Texas and in Michigan show that charter schools performed equal or worse than their traditional public school counterparts in student standardized test scores (Hanushek, Kain, & Rivkin , 2002; Eberts & Hollenbeck, 2002; Bettinger, 2004). Lastly, in Boston, MA, charter schools performed better on standardized test compared to traditional public school while also not increasing their focus to teach specifically to standardized test content (Cohodes, 2016).

### **Limitations of Literature**

In summary, charter school research falls into two categories. One category is school choice policy diffusion and the other is charter school effectiveness. School choice policy diffusion and adoption research begins to address the state-level policy environment by explaining the timing of state charter school legislation adoption. The focus in these studies is on



the factors leading to the passage of any state level school choice policy. Unfortunately, this work does not consider the variation in state school choice policy nor does it link policy change to equitable educational outcomes. In the previous studies, the dependent variable has been dichotomous: either a state adopted legislation or it did not. This simplistic approach makes it difficult for social science researches to understand how the full education policy landscape varies from state to state. Now that the presence of charter school legislation at the state level has become the norm in American education policy, a more nuanced understanding of the variation in state school choice policy is needed.

Effectiveness research is also limited. Market theory asserts that the competition created by charter schools offers a superior educational product and makes traditional public schools better. However, literature has shown that charter school effectiveness, and traditional public school effectiveness since the advent of charter schools has had mixed results in terms of student success. Some studies have shown that charter schools are better than traditional public schools in the areas of academic achievement. Other studies have shown that traditional public schools continue to fair better than charter schools in student academic achievement. Lastly research has shown that early on, charter schools perform worse than traditional public schools in areas of academic performance, but after a few years, the charter schools match or surpass traditional public schools in student level academic achievement. The limitations of research regarding school choice effectiveness is that studies address inequalities and outcomes at the school level, with limited attention to the state-level policy environment.

## **Summary**

Rodgers, Gray, Walker, and the Berry's advanced innovation diffusion and internal determinants from simple theories to complex research methodologies. Mintrom and Vergari,

Renzulli and Roscigno, Wong and Langevin, and Cohen-Vogel and Ingle forwarded innovation diffusion and internal determinants research on the historical emergence of school choice as a policy innovation. Occurring simultaneously, research examining the effectiveness of charter schools compared to traditional public schools was happening at the school-level with mixed results. However, these effectiveness studies did not consider the state-level policy environment. The charter school policy adoption research left a gap in the body of knowledge in that all states have not adopted charter school legislation in the same way. Variation in state school choice policy remains unexplored in the research literature.

This descriptive study will define the variation of adoption in state charter school legislation and it will compare states. Findings from this study can be used by innovation and diffusion researchers to better understand the legislative adoption results they find in causal analysis. This will also inform effectiveness research by adding information about the state's own charter school legislative and other descriptive characteristics.

### **Research Objectives**

This dissertation has three research objectives:

- 1) To categorize cluster patterns in the states based upon their charter school law characteristics.

School choice policy innovation and diffusion research has treated school choice at the state level as a dichotomous variable (Cohen-Vogel & Ingle; 2007; Mintrom & Vergari, 1998; Renzulli & Roscigno, 2005; Wong & Langevin, 2007). This masks the vast differences in those policies. Charter school effectiveness research used the school as the unit of analysis and typically focused on schools within one state (Bettinger, 2004; Cohodes, 2016; Eberts & Hollenbeck, 2002; Gronberg & Jansen, 200; Hanushek, Kain, & Rivkin, 2002; Ni & Rorrer,

2012; Solmon, Paark, & Garcia, 2001). This analysis will separate states into statistically distinct clusters based on their charter school law characteristics.

- 2) To describe the charter school law characteristics of states within each cluster.

Within each cluster of states, adoption of specific and defined charter school laws were compared.

- 3) To describe financial, school, government, and student success characteristics of states within each cluster.

After states were grouped into clusters based on the variation in their charter school laws, states were compared regarding their financial, school, government, and student success characteristics. Variables from past research predicating charter school legislative adoption (Wong & Langevin, 2007) and data from the US Department of Education and Department of Labor described each state clustering using the most recent published data. States' characteristics were compared to states within their cluster and compared to the other clusters of states.

## **Chapter Three: Methodology**

This chapter introduces the study population and design for the current descriptive study. After this general information is presented, the remaining content is organized by research objectives. Each of the subsequent subsections includes information about the statistical method, data, and measures used.

### **Research Design**

Descriptive research is used to describe characteristics of a population or phenomenon being studied (Shields & Rangarajan, 2013). Descriptive research generally precedes explanatory research. Descriptive research cannot describe what caused a situation, thus this type of research cannot be used to establish a causal relationship, where one variable affects another (Shields & Rangarajan, 2013). Descriptive research is used extensively in the social sciences and educational research. It provides rich data that often uncovers new knowledge or awareness that may have otherwise gone unnoticed or encountered (Shields & Rangarajan, 2013). The main goal of this type of research is to fully describe a particular phenomenon using a wide assortment of data about what is being studied (Shields & Rangarajan, 2013).

### **Study Population**

The unit of analysis for this study is the state. The population of all 50 states is included. The following states have adopted charter school legislation: AK, AR, AZ, CA, CO, CT, DE, FL, GA, HI, IA, ID, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NC, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, TN, TX, UT, VA, WA, WI, and WY. States without charter school laws are: AL, MT, NE, ND, SD, VT, WV, and KY. Table 1 organizes the states as such. Appendix A gives all the states and their abbreviations.

Table 1: States That Have Adopted Charter School Laws Since 2014

Adopted	AK, AR, AZ, CA, CO, CT, DE, FL, GA, HI, IA, ID, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NC, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, TN, TX, UT, VA, WA, WI, and WY.
Have Not Adopted	AL, MT, NE, ND, SD, VT, WV, and KY
Note: The cut-off date of 2014 is used because a majority of published data regarding charter school legislation is updated through 2014.	

**Objective 1: Identify State Charter School Law Clusters**

**Method.** This study used cluster analysis to place states into categories based on their charter school law characteristics. Cluster analysis comprises a range of methods for classifying multivariate data into subgroups (Everitt, Landau, Leese, & Stahl, 2011). By organizing multivariate data into such subgroups, clustering can help reveal the characteristics of any structure or patterns present (Everitt et al, 2011). To this point, research has not grouped states by similar characteristics regarding their variations in charter school legislative adoption. Research has only identified the likeliness of a state adopting charter school legislation. This descriptive analysis will provide further information on the similarities and differences states possess regarding their variations in their charter school laws.

Clustering involves grouping a set of objects in such a way that objects in the same group are more similar to each other than to those in other groups (Anderberg, 1973). Cluster analysis uses a mathematical specification, or algorithm, to group objects into similar categories, or clusters. Hundreds of clustering algorithms exists, however, the most commonly used types in social sciences are hierarchical, k-means, distribution, and density algorithms (Everitt et al, 2011).

This analysis used a top-down hierarchical clustering algorithm which creates clusters that have a predetermined ordering from top to bottom. There are two types of hierarchical analyses: The first is agglomerative, a "bottom up" approach, where each observation starts in its

own cluster, and pairs of clusters are merged as one moves up the hierarchy. The second is a divisive, a "top down" approach with all observations starting in one cluster, and splits are performed recursively as one moves down the hierarchy (Everitt et al, 2011). This algorithm is best used when data are either categorical or ordinal (Anderberg, 1973).

The following equation is used for the cluster analysis (Rokach & Oded, 2005, pg 336):

**Given:**

A set  $X$  of objects  $\{x_1, \dots, x_n\}$

A distance function  $dist(c_1, c_2)$

**for**  $i = 1$  to  $n$

$c_i = \{x_i\}$

**end for**

$C = \{c_1, \dots, c_n\}$

$l = n + 1$

**while**  $C.size > 1$  **do**

-  $(c_{min1}, c_{min2}) = \text{minimum } dist(c_i, c_j) \text{ for all } c_i, c_j \text{ in } C$

- remove  $c_{min1}$  and  $c_{min2}$  from  $C$

- add  $\{c_{min1}, c_{min2}\}$  to  $C$

-  $l = l + 1$

**End while**

The  $x$  represents states,  $c$  represents clusters, and  $l$  represents the linkage distance between data points in a cluster (Rokach & Oded, 2005). The cluster analysis will group states into similar groups based on their characteristics regarding their variation in charter school laws. To test the clustering, analysis of variance (ANOVA) statistics will be provided to measure significance clustering. Once the cluster analysis is complete, a full descriptive analysis will be provided for every state, organized by their cluster groupings.

**Data and Measures.** This study utilized administrative data from the Center for Education Reform for the 2014-2015 academic year for content on state charter school law characteristics. The data were accessible publically through the World Wide Web. Each state has data collected in the areas of charter school autonomy, funding equity, and charter school growth. In order to utilize this information for the current study, the data were converted into a data set in EXCEL. The CER (2014) state that their mission is, "to expand educational

opportunities that lead to improved economic outcomes for all Americans, particularly our youth, ensuring that the conditions are ripe for innovation, freedom and flexibility throughout U.S. education.” The CER is a strong supporter of charter school proliferation, and other school choice legislation. Though the CER has clear biases, they collect data central to charter school legislative environments for each state that has passed charter school legislation. The data used here are objective measures of the presence or absence of the characteristics of states laws. They are not based on value judgement and are consequently appropriate for objective scientific study. In 42 state cases, the author modified the data to ensure objectivity. These instances are noted below.

**Charter School Law Characteristics.** The author used binary coding to signal the complete presence of a variable or the absence/ partial presence of variable. The variables were coded 1 to indicate the presence of a conditions and coded 0 to indicate the condition’s absence.

The data describe state law characteristics on a number of dimensions. The author organized the data into three conceptual index areas: charter school autonomy, funding equity, and charter school growth.

**Charter School Autonomy.** The charter school autonomy index indicates how self-directed charter schools can operate at the state and local level. This includes laws at the state level and regulations/terms set forth by the school district. Similarly, the school autonomy index is also concerned with the comparative amount of self-rule a charter school possess regarding their teaching staff. Salary range, experience, teacher union participation allowance are all examples of charter school teacher autonomy. The composite variables that make up charter school autonomy index are summed together to produce a score 1-3 for each state. Each

composite variable is coded 1 to indicate the presence of a condition and coded 0 to indicate the condition's absence. The charter school autonomy composite variables are as follows:

*State autonomy* is a composite variable that represents charter schools' operational autonomy from state government, or to what extent charter schools have to follow laws that govern the operations of traditional public schools in the same state. *Local/district autonomy* is a composite variable that represents charter schools' operational autonomy at the local level such as school boards and school districts. This composite variable indicates whether or not charter schools have to follow local school board rules that govern the operations of traditional public schools in the same state. *Teacher hiring autonomy* is a composite variable that represents the operational autonomy a state allows charter schools to possess regarding their hiring, firing, allowing union participation, and employment standards for their teachers.

**Charter School Funding Equity.** The charter school funding equity index centers on whether a state's charter schools receive the same amount of money as traditional public schools. Funds can pass through the state, the district, or both and is traditionally awarded per pupil. Also, funds for charter school facilities can be appropriated in similar means as traditional public schools. States can either set aside grants, capital outlays, or loans for charter school organization. Conversely, states can chose not to provide charter schools with avenues to procure facility funding. The composite variables that make up charter school funding equity index are summed together to produce a score 1-2 for each state. Each composite variable is coded 1 to indicate the presence of a conditions and coded 0 to indicate the condition's absence. The charter school funding equity index composite variables are as follows:

*Student funding* is a composite variable that indicates whether or not per pupil funding is the same for charter schools as it is for traditional public schools in the same state. *Facility*



*funding* is a composite variable that represents if charter schools receive any extra funds from their state for things like building maintenance, technology expenditures, and additional grounds keeping.

**Charter School Growth.** The charter school growth index is concerned with the ability states have to initiate and authorize charter schools. This index indicates whether or not a state has a charter school cap each year, allows for charter schools to appeal the rejection of their charter, and allows multiple bodies within a state to authorize charter schools. Each composite variable is coded 1 to indicate the presence of a conditions and coded 0 to indicate the condition's absence. The composite variables that make up charter school growth index are as follows:

*No cap on charter schools* is a composite variable that represents whether or not state government imposes a cap on the number of charter schools that can be created in a year. *Appeal process allowed* is a composite variable that represents if state government allows charter schools an appeals process if their charter is denied. *Multiple authorizers allowed* is a composite variable that indicates whether or not there are multiple bodies (either state government, governs office, school district, school boards) that can authorize charter schools within a state.

## **Objective 2: Describe Charter School Law Characteristics of States within Each Cluster**

This section describes the charter school law characteristics of the state clusters identified in the preceding section.

**Method.** For each cluster of states, this analysis presents mean scores of charter school autonomy, funding equity, and charter school growth for each cluster of states identified in objective 1. It also presents mean cluster scores for the variables that comprise each scale. In this analysis, the differences across clusters for each variable will be measured with Chi Squares.

**Data and Measures.** The data and measures used in the section are the same as those used in objective 1. Each charter school autonomy, funding equity, and charter school growth index is made up of a number of composite variables. This section explores the composite variables as well as the indexes. A brief review of the composite variables that comprise each index is described here.

The charter school autonomy index is comprised of three binary composite variables: *state autonomy*, *local/district autonomy*, and *teacher hiring autonomy*. The charter school funding equity index is comprised of two binary composite variables: *student funding* and *facility funding*. Lastly, the charter school growth index is comprised of three binary composite variables: *no cap on charter schools*, *appeal process allowed*, and *multiple authorizers allowed*. Please reference objective 1 for full variable coding details.

### **Objective 3: Describe Financial, School, Government, and Student Success Characteristics of States within each Cluster**

This section uses descriptive data on political, economic, and social factors that prior research has found to be related to the passage of charter school laws.

#### **Data and Measures**

This section combines the data sources used in objectives 1 and 2 with data sources used in Wong and Langevin's (2007) seminal work "Policy Expansion of School Choice in the American States," along with data from the Department of Education, and the Department of Labor. This section organizes the data by conceptual areas and describes the data source the first time it is used. Appendix B presents an overview of which study variables come from which source.

The data have been organized into three conceptual categories: States' financial characteristics, states' school characteristics, and states' students testing characteristics. A

detailed description of each data point is described. This descriptive analysis will replicate data from variables from past research (Wong & Langevin, 2007) and data from the US Department of Education and Department of Labor.

**Financial Characteristics.** Financial characteristics describe a state's overall citizen wealth and how a state spends money in the educational environment. This is important to consider because wealthier states have greater percentages of revenues to spend on public education (Wong & Langevin, 2007). *Per capita income* is a measure of the per capita income for states. The data are based on the data from the Department of Labor (2017). *Percentage of spending on public education* is the percentage of public elementary and secondary education spending contributed by a state government. This calculation of money spent on public education divided by a state's total revenue is based on the Department of Education's Common Core of Data (2017). *Percentage of education spending on instructor costs* is the percentage of current expenditures used for instructional expenses. The calculation of instructor spending from the total school expenditures is based on the Department of Education's Common Core of Data (2017). All data are averaged between the years 2012, 2013, and 2014, unless otherwise indicated. The data are averaged to capture central tendencies in the financial characteristics over time and to mitigate against unexplained outliers. All of the data represent the most updated, published data.

**School Environment Characteristics.** School environment characteristics describe a state's school environment characteristics including student demographics, difference in the percentage of public and private schools, pupil-teacher ratio, percentage of neighboring states that adopted charter school legislation, and how long ago has a state adopted charter school legislation. These variables are explored because previous research has indicated that these

variables are influential in the adoption of charter school legislation and in charter school performance compared to traditional public schools (Bettinger, 2004; Cohodes, 2016; Eberts & Hollenbeck, 2002; Gronberg & Jansen, 2001; Hanushek, Kain, & Rivkin, 2002; Mintrom & Vergari 1998; Ni & Rorrer, 2012; Renzulli & Roscigno, 2005; Solmon, Paark, & Garcia, 2001; Wong & Langevin, 2007) *Percentage of minority students* is the percentage of elementary and secondary students who are racial minorities. The number of non-white students is shown in the Department of Education's Common Core of Data (2017). *Percentage of private schools in 2013* is the percentage of elementary and secondary schools in the state that were privately operated schools in 2013. The calculation of the private school market is based on the Private School Universe Survey (Department of Education, 2017) and the Department of Education's Common Core of Data (2017). *Pupil-teacher ratio* is defined as the total number of public elementary and secondary students divided by the total number of teachers in a given year. The calculation of the pupil-teacher ratio is based on the Department of Education's Common Core of Data (2017). *Percentage of neighboring states who passed charter school legislation before 2014* is a spatial diffusion measure that calculates the proportion of neighboring states having previously adopted a charter school law. *Years charter school legislation passed in state* is a measure of how many years have passed between the year a state adopted charter school legislation and 2014 (which is the last date of collection for the Department of Education's Common Core of Data). Data are based on CER data (2017). Unless a specific year is given, the data are averaged between the years 2012, 2013, and 2014. The data are averaged to capture environmental characteristics' central tendencies over time and to mitigate against unexplained outliers. All data represent the most updated published data.

**Student Achievement.** Student achievement describes a state's public school students' academic achievement in the areas of test scores and dropout percentage. Student achievement vis-a-vis standardized test scores and dropout rate are how the majority of charter school effectiveness research measures effectiveness (Bettinger, 2004; Cohodes, 2016; Eberts & Hollenbeck, 2002; Gronberg & Jansen, 2001; Hanushek, Kain, & Rivkin, 2002; Ni & Rorrer, 2012; Solmon, Paark, & Garcia, 2001). *Percentage of 4<sup>th</sup> grade math students testing at, or above proficient* is a percentage measure of 4<sup>th</sup> grade children tested who were at, or above the "proficient" math level outlined by the Department of Education. *Percentage of 8<sup>th</sup> grade math students testing at, or above proficient* is a percentage measure of 8<sup>th</sup> grade children tested who were at, or above the "proficient" math level outlined by the Department of Education. *Percentage of 4<sup>th</sup> grade reading students testing at, or above proficient* is a percentage measure of 4<sup>th</sup> grade children tested who were at, or above the "proficient" reading level outlined by the Department of Education. *Percentage of 8<sup>th</sup> grade reading students testing at, or above proficient* is a percentage measure of 8<sup>th</sup> grade children tested who were at, or above the "proficient" reading level outlined by the Department of Education. The data were averaged from the years 2013 and 2015 (only collected on odd years). *Percentage of students who dropped out in 2013* is a percentage of high school dropouts among persons 16 through 24 years old (status dropout rate), by state in 2013. The data come from the Department of Education.

## Chapter 4: Results

This section details the results of: the hierarchical cluster analysis, ANOVA testing for the overarching charter school laws related to autonomy, funding, and growth; chi-squares significance testing for the sub-variables that comprise the overarching charter school legislation conceptual areas of autonomy, funding, and growth; and a detailed description of each cluster of states' charter school environment using data sources from past research. First, a thorough accounting of the country's charter school law characteristics are provided before the cluster analysis.

The majority of all states demonstrate complete autonomy at the state and district/local level and in teaching hiring. Thirty-three states (67.7%) have laws that give charter schools complete autonomy at the state level. Thirty-four states (68.6%) have laws that give charter schools complete autonomy at the local/district level. Lastly, 28 states (56.9%) give charter schools complete autonomy in their teacher hiring process. Percentages are shown in Table 2.

Table 2: State Frequencies of Charter School Autonomy

Variable	Complete Autonomy		Not Completely Autonomous	
	N	%	N	%
State Autonomy	33	67.7	17	32.3
Local/District Autonomy	34	68.6	16	31.4
Teacher Hiring Autonomy	28	56.9	22	43.1
All states included (N=50), District of Columbia not included				

Charter school funding equity is mixed for the states. Thirteen (27.5%) states have the same formula funding as public schools. Thirty-seven states (72.5%) do not have the same formula funding. Twenty-nine states (58.8%) have the same facility funding as public schools and twenty-one states do not have the same facility funding. Percentages are shown in table 3.

Table 3: State Frequencies of Charter School Funding Equity

Variable	Funding the Same as Public Schools		Funding Less than Public Schools	
	N	%	N	%
Student Funding	13	27.5	37	72.5
Facility Funding	29	58.8	21	41.2
All states included (N=50), District of Columbia not included				

Charter school growth laws are present in roughly half of the states. Twenty-five states (50%) have no cap on the number of charter schools that can be opened in a year. Twenty-four states (49%) allow an appeals process for charters that are denied by state/local government. Twenty-five states (50%) allow multiple authorizers (state or local bureaucratic entities) to grant charter schools the ability to open and operate in the state. Percentages are shown in table 4.

Table 4: State Frequencies for Charter School Growth

Variable	Complete Presence of Growth Variable		Growth Variable not Completely Present	
	N	%	N	%
No Cap on Charter Schools	25	50.0	25	50.0
Appeal Process Allowed	24	49.0	26	51.0
Multiple Authorizers Allowed	25	50.0	25	50.0
All states included (N=50), District of Columbia not included				

### Objective 1: Identify State Charter School Law Clusters

In order to place states into categories based on their charter school law characteristics, a top-down hierarchical cluster analysis was conducted on state charter school laws in autonomy, funding equity, and growth index variables. A number of numeric clustering solutions were considered. The most cogent analysis yielded a cluster with three distinct groups of states. A two cluster solution was too broad and would not enhance the current dichotomy seen in the literature. The four clusters solution replicated the three cluster with the addition of a fourth cluster containing only Rhode Island. A dendrogram illustrating the possible cluster solutions is

found in Appendix C. A cluster with only one state limits the ability to run significant tests on the differences in charter school law characteristics.

The cluster analysis was run with, and without states with no charter schools. In both analyses, the clusters were identical aside from states with no charter school laws (WV, KY, AL, SD, VT, NB, ND, and MT). Thus, states with no charter school laws were kept in the cluster. Cluster one is made up of 14 states: MA, MS, MI, OH, NC, IL, ME, WA, NH, WY, CT, TX, NY, AR. Cluster two is made up of 14 states: WV, KY, AL, SD, VT, NB, ND, MT, KS, VA, IA, MD, AK, RI. Cluster three is made up of 22 states ID, HI, TN, LA, UT, NV, PA, SC, CO, CA, FL, NM, OK, MN, MO, AZ, DE, GA, IN, OR, WI, NJ. Table 5 reflects the grouping. Additionally, a map depicting the cluster groupings can be found in Appendix D.

Table 5: Clusters of States

	States
Cluster 1	MA, MS, MI, OH, NC, IL, ME, WA, NH, WY, CT, TX, NY, AR
Cluster 2	<i>WV, KY, AL, SD, VT, NB, ND, MT</i> , KS, VA, IA, MD, AK, RI
Cluster 3	ID, HI, TN, LA, UT, NV, PA, SC, CO, CA, FL, NM, OK, MN, MO, AZ, DE, GA, IN, OR, WI, NJ

Note: *Italics* indicate states that have no charter school laws

By examining the descriptive statistics of each cluster, a number of observations are noted. Cluster two is comprised of the eight states that have not adopted any charter school legislation and 6 other states (KS, VA, IA, MD, AK, and RI) who have. In terms of charter school autonomy, cluster two has a mean of zero. This indicates that six states in this cluster with charter school laws require the charter schools to follow the same laws of governance as traditional public schools. They also have the same hiring practices as traditional public schools. Clusters one and three have relatively high levels of charter school autonomy, both with means of 2.5 and 2.73 respectively. These means can be seen in Figure 1.



Cluster two is also low in terms charter school equity funding, with a mean of .21. School equity funding is law that stipulates if charter schools will receive the same per-pupil and facility dollars as traditional public schools. Cluster one has the highest mean for charter school equity funding. Cluster three is slightly behind one, and has a mean of 1.09. These means can be seen in Figure 1.

Cluster two has the lowest mean, .57, in charter school growth. Charter school growth is law that supports charter schools to proliferate by states having multiple authorizers, no cap on the amount of charter schools can be opened, and allowing rejected charters to be appealed. Cluster three has the greatest mean of 2.55. Cluster one is similar to cluster two, with a conservative mean of .79. These means can be seen in Figure 1.

The clusters analysis separated into three descriptively unique clusters. The states in cluster one have a high mean in the areas of charter school autonomy and equal funding. However, cluster one has a lower mean in the area of charter school growth. Cluster three has the greatest or second greatest mean in autonomy, funding equity, and growth. Lastly, the states in cluster two have the lowest means in the areas of autonomy, funding equity, and growth. Descriptively, the clusters are summarized as follows: The states in cluster one have charter school laws that generally support autonomy, funding equity, but not growth; Cluster two has charter school laws that generally does not support autonomy, funding equity, but not growth; Cluster three has charter school laws that generally support autonomy, funding equity, and growth. Table 6 illustrates the characteristics of clusters. Cluster one is described as “Support with Limited Growth,” due to the growth mean being low and all other means being relatively high. Cluster two is described as “Limited Support,” because comparatively, cluster two has the lowest means in all the charter school legislative areas, limiting charter school support. Cluster

three is described as “All Supportive,” because this cluster has the highest or second highest means in all the charter school law areas.

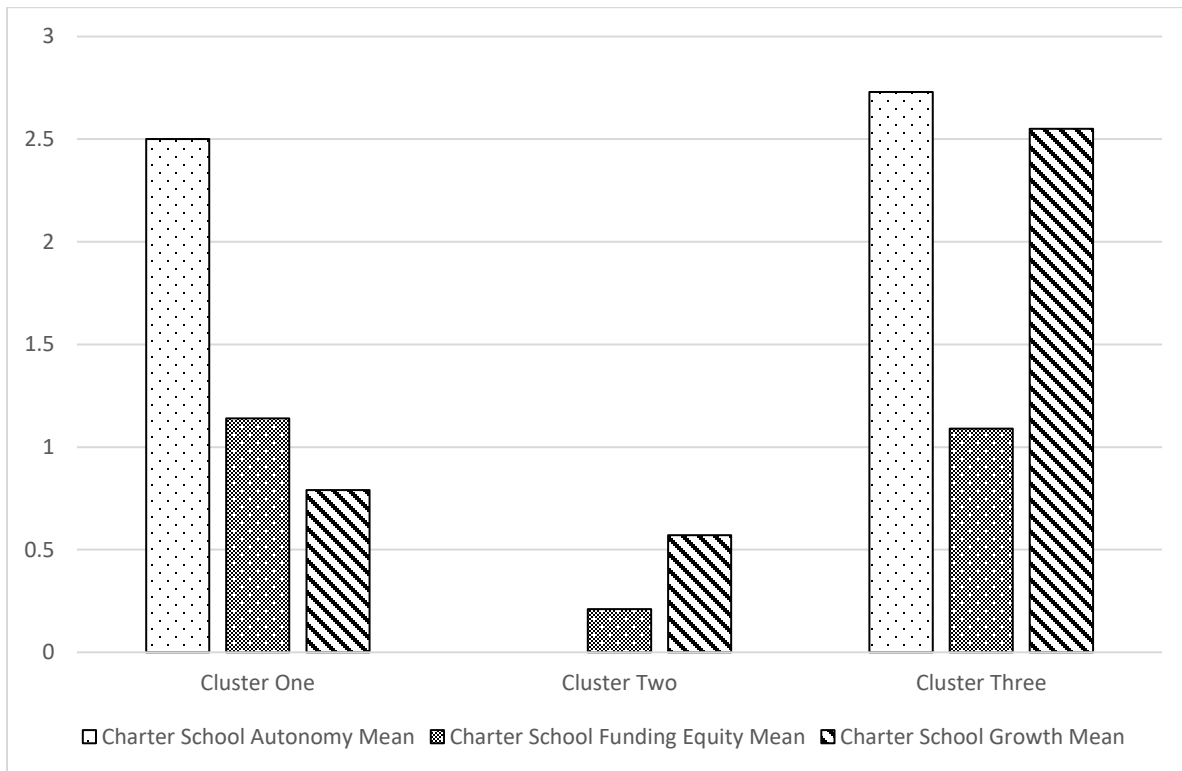


Figure 1: Means from Objective 1 Cluster Analysis

Table 6: Cluster Descriptive Characteristics in the Areas of Autonomy, Funding Equity, and Growth

Cluster	General Description of Charter School Legislation in Cluster
Support with Limited Growth (Cluster One)	Legislation supportive of autonomy, funding equity; not supportive of growth
Limited Support (Cluster Two)^	Legislation not supportive of autonomy, funding, or growth
All Supportive (Cluster Three)	Legislation supportive of autonomy, funding equity, and growth

Note^: Cluster two is comprised of 8 of 14 states that have no charter school legislation

Though these clusters are descriptively unique, an understanding of the statistical difference in the clusters is needed. To accomplish this, an ANOVA was conducted on the states in each cluster to test differences between autonomy, financial equity, and growth means.

The ANOVA revealed significant differences in the charter school autonomy means across the three state clusters [F(2, 47) = 119.73, p = .00]. Likewise, there was a significant difference in the charter school equity funding means across state clusters [F(2, 47) = 12.2, p = .00]. Lastly, there was a significant difference in the charter school growth means across state clusters [F(2, 47) = 58.97, p = .00]. The results from the ANOVA signify that the clusters that formed from the analysis are statistically significant. These three clusters have unique, descriptive legislative characteristics. These ANOVA results can be found in Table 7.

A Tukey Honest Significance Difference (HSD) post-hoc test was conducted to better understand where the differences lie among the groups (Greene, 2000).

The following formula is used for the Tukey HSD (Greene, 2000):

$$\text{HSD} = \frac{M_i - M_j}{\sqrt{\frac{MS_w}{n_h}}}$$

Where:

$M_i - M_j$  is the difference between the pair of means, and

$MS_w$  is the Mean Square Within, and  $n$  is the number in the group.

The Tukey HSD post-hoc test reveals that although the overall cluster analysis proved to be significant, there was not always a significant difference between pairs of clusters for every variable. In regards to charter school autonomy, the Support with Limited Growth cluster (M=2.50, SD=.76) and the All Supportive cluster (M=2.73, SD=.55) are not statistically different from each other, but both clusters are statistically different from the Limited Support cluster (M=.00, SD=.00). Charter school equity funding mean differences are similar to charter school autonomy. The Support with Limited Growth cluster (M=1.14, SD=.54) and the All

Table 7: Charter School Index Variables Cluster Analysis ANOVA

Charter School Index Variables	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Charter School Autonomy					
Between Groups	2.00	70.64	35.32	119.73	.00*
Within Groups	47.00	13.86	0.30	--	--
Total	49.00	84.50	--	--	--
Charter School Funding Equity					
Between Groups	2.00	8.13	4.07	12.02	.00*
Within Groups	47.00	15.89	0.34	--	--
Total	49.00	24.02	--	--	--
Charter School Growth					
Between Groups	2.00	43.26	21.63	58.97	.00*
Within Groups	47.00	17.24	0.37	--	--
Total	49.00	60.50	--	--	--
* $p < .05$					
Note: All states included, District of Columbia not included					

(Supportive cluster (M=1.09, SD=.61) are not statistically different from each other. Both the Support with Limited Growth cluster and the All Supportive cluster are statistically different from the Limited Support cluster (M=.21, SD=.51). The charter school growth variable demonstrates a different pattern. The Support with Limited Growth cluster (M=.79, SD=.43) and the Limited Support cluster (M=.57, SD=.85) are not statistically different from each other. Both Support with Limited Growth cluster and the Limited Support cluster are statistically different from the All Supportive cluster (M=2.55, SD=.51). Results from the Tukey HSD post hoc test can be found in Table 9.

These results from the Tukey HSD post-hoc test support the descriptive cluster groupings. In terms autonomy and funding equity, the Support with Limited Growth cluster and the All Supportive cluster behave very similarly in that they both have charter school laws that

supports charter school autonomy and funding equity. The Limited Support cluster, however, is quite different than the other two clusters. The Limited Support cluster's states generally do not have charter school laws that facilitate charter school autonomy and funding equity. Results can be found on Table 8.

The similarity between the Support with Limited Growth cluster and the All Supportive cluster displayed in autonomy and funding equity is not displayed for the growth index. Here, the Support with Limited Growth cluster and the Limited Support cluster behave similarly. Neither of these clusters allow charter school proliferation, while the All Supportive cluster's state laws allow charter schools to grow and proliferate. Results can be found on Table 8.

## **Objective 2: Describe Charter School Law Characteristics of States within Each Cluster**

The three indices that were the basis of clustering have underlying composite variables that describe the nature of charter school laws in greater detail. The charter school autonomy index is comprised of three composite variables: *state autonomy*, *local/district autonomy*, and *teacher hiring autonomy*. Charter school funding equity is comprised of two composite variables: *student funding and facility funding*. Lastly, charter school growth combines three variables: *no cap on charter schools*, *appeal process allowed*, and *multiple authorizers allowed*. Table 9 illustrates which composite variable comprises each index variable

To further explore differences in charter school laws across clusters, chi-square analyses were run to determine whether or not the percentage of states with each law specified in the composite variables differed significantly across clusters. Table 10 displays the frequencies and percentages for the first chi-square test for the index variable charter school autonomy. For the Limited Support cluster, autonomy is not present in the composite variables of *state*, *local*, and *teacher autonomy*. States in this cluster have either not adopted charter school legislation or have

not granted charter schools any autonomy, at any level. The Support with Limited Growth cluster had a high percentage of states with state (93%) and local/district (93%) autonomy. This cluster

Table 8: Tukey Post-Hoc Test for ANOVA of Charter School Index Variables

Charter School Index Variables	Primary Grp	Comparison Grp	Mean Difference	Std. Error	Sig.
Autonomy	1	2	2.500*	0.205	0
		3	-0.227	0.186	0.445
	2	1	-2.500*	0.205	0
		3	-2.727*	0.186	0
	3	1	0.227	0.186	0.445
		2	2.727*	0.186	0
Funding Equity	1	2	0.929*	0.22	0
		3	0.052	1.99	0.963
	2	1	-0.929*	0.22	0
		3	-0.877*	0.199	0
	3	1	-0.052	0.199	0.963
		2	0.877*	0.199	0
Growth	1	2	0.214	0.229	0.62
		3	-1.760*	0.207	0
	2	1	-0.214	0.229	0.62
		3	-1.974*	0.207	0
	3	1	1.760*	0.207	0
		2	1.974*	0.207	0

\* The mean difference is significant at the 0.05 level.

also had a majority of states with teacher autonomy (64%). Lastly, the All Supportive cluster had a high percentage of states with state (91%), local/district (96%), and teacher (86%) autonomy.

A chi-square test for the autonomy composite variables revealed an overall significant difference across state clusters for the composite variables *state autonomy*  $X^2(2, N = 50) = 37.76$ ,  $p > .05$ , *local/district autonomy*  $X^2(2, N = 50) = 41.34$ ,  $p > .05$ , and *teacher autonomy*  $X^2(2, N = 50) = 26.44$ ,  $p > .05$ . The results from the chi-squares tests signify that the difference in the

frequencies of the composite variables in the school autonomy index are significant. Chi-square results can be found on Table 11.

Table 9: Organization of Composite Variable per Index Variable

Index Variable	Composite Variables
Charter School Autonomy	State Autonomy
	Local/District Autonomy
	Teacher Hiring Autonomy
Charter School Funding Equity	Student Funding
	Facility Funding
Charter School Growth	No Cap on Charter Schools
	Appeal Process Allowed
	Multiple Authorizers Allowed

Table 12 displays the frequencies and percentages for the school funding equity composite variables. For the Limited Support cluster, equal student funding is present in the fewest states (7%) compared to all the other clusters. Additionally, this cluster also has the lowest percentage of states (14%) with equal facility funding. The Support with Limited Growth cluster has the highest percentage of states (50%) with student funding the same as public schools. Furthermore, this cluster has the second highest percentage of states (64%) with charter school facility funding equaling that of traditional public schools. The All Supportive cluster had the second lowest percentage of states (27%) with student funding equal to traditional public schools. Additionally, this cluster has the most states (82%) with facility funding equal to traditional public schools. A general pattern is observed: the majority of states in the clusters do not receive the same student funding as traditional public schools. This is even seen in the All Supportive cluster. States in clusters are more likely to receive equal facility funding, except for the Limited Support cluster.

Table 10: Frequencies for Charter School Autonomy Composite Variables

Cluster	Complete Autonomy		Not Complete Autonomy	
	N	%	N	%
State Autonomy				
Limited Support (Cluster 2)	0	0%	14	100%
Support with Limited Growth (Cluster 1)	13	93%	1	7%
All Supportive (Cluster 3)	20	91%	2	9%
Local/District Autonomy				
Limited Support (Cluster 2)	0	0%	14	100%
Support with Limited Growth (Cluster 1)	13	93%	1	7%
All Supportive (Cluster 3)	21	96%	1	4%
Teacher Autonomy				
Limited Support (Cluster 2)	0	0%	14	100%
Support with Limited Growth (Cluster 1)	9	64%	5	36%
All Supportive (Cluster 3)	19	86%	3	14%
N=50				

Table 11: Chi-Squares for Autonomy Composite Variables

Composite Variable	Chi-Square	DF*	p
State Autonomy	37.76	2	.000*
Local/District Autonomy	41.34	2	.000*
Teacher Autonomy	26.44	2	.000*
p<.05			
Note: All states included, District of Columbia not included			

Chi-square test for the funding equity composite variables demonstrate an overall significant difference in the clustering of states for all the funding equity composite variables.



There was a significant difference in the clusters for the composite variables *student funding*  $X^2(2, N = 50) = 37.76, p > .05$ , *local/district autonomy*  $X^2(2, N = 50) = 41.34, p > .05$ , and *teacher autonomy*  $X^2(2, N = 50) = 26.44, p > .05$ . The results from the chi-squares signify that the difference in the frequencies of the composite variables in the school autonomy index are significant. Chi-square results can be found on Table 13.

Table 14 displays the frequencies for the chi-square test for the school funding equity index variable. For the Limited Support cluster, 36% of states have no cap on the number of charter schools that can be created in a one year period. Additionally, this cluster has 21% states that allow an appeals process for those entities whose proposal to open a charter school is denied. Furthermore, the Limited Support cluster has no states that allow multiple authorizes to grant charter schools the ability to open and function.

The Support with Limited Growth cluster has the lowest percentage of states (36%) with no cap on the number of charter schools that can be created in over a one year period. Additionally, 14% of states in this cluster allow an appeal process for those entities whose proposal to open a charter school is denied. Furthermore, 43% of states in the Support with Limited Growth cluster allow multiple authorizes to grant charter schools the ability to open and function. The differences in these variables define the difference between the Support with Limited Growth cluster and the All Supportive cluster. Table 15 displays the frequencies and percentages.

The All Supportive cluster has the highest percentage of states (82%) having no cap on the number of charter schools that can be created in a one year period. Additionally, 86% of states in this cluster allow an appeal process for those entities whose proposal to open a charter

Table 12: Frequencies for Charter School Funding Equity Composite Variables

Cluster	Funding the Same as Public Schools		Funding Less than Public Schools	
	N	%	N	%
Student Funding				
Limited Support (Cluster 2)	1	7%	13	93%
Support with Limited Growth (Cluster 1)	7	50%	7	50%
All Supportive (Cluster 3)	6	27%	16	73%
Facility Funding				
Limited Support (Cluster 2)	2	14%	12	86%
Support with Limited Growth (Cluster 1)	9	64%	5	36%
All Supportive (Cluster 3)	18	82%	4	18%
N=50				

school is denied. Furthermore, 86% of states in the All Supportive cluster allow multiple authorizes to grant charter schools the ability to open and function. Table 14 displays these frequencies and percentages.

Chi-square test for the growth composite variables reveal an overall significant difference in the clustering of states for all the growth composite variables. This includes significant differences across clusters for the composite variables *no cap on charter schools*  $X^2(2, N = 50) = 14.57, p > .05$ , *appeal process allowed*  $X^2(2, N = 50) = 23.30, p > .05$ , and *multiple authorizers allowed*  $X^2(2, N = 50) = 25.92, p > .05$ . The results from the chi-squares signify that the difference in the frequencies of the composite variables in the school autonomy index are significant. Chi-square results can be found in Table 15.

Table 13: Frequencies for Charter School Funding Equity Composite Variables

Cluster	Funding the Same as Public Schools		Funding Less than Public Schools	
	N	%	N	%
Student Funding				
Limited Support (Cluster 2)	1	7%	13	93%
Support with Limited Growth (Cluster 1)	7	50%	7	50%
All Supportive (Cluster 3)	6	27%	16	73%
Facility Funding				
Limited Support (Cluster 2)	2	14%	12	86%
Support with Limited Growth (Cluster 1)	9	64%	5	36%
All Supportive (Cluster 3)	18	82%	4	18%
N=50				

**Objective 3: Describe Financial, School, Government, and Student Success Characteristics of States within each Cluster**

A cluster analysis has grouped states into three descriptively and statistically unique clusters. From this analysis, the three clusters have identified as follows. The Support with Limited Growth cluster is comprised of 14 states that generally have laws that support the autonomy and funding of charter schools, but the states are limited in laws that allow charter school growth. The Limited Support cluster is comprised of 14 states, including 8 without any charter school laws and 6 with limited laws related to charter school autonomy, funding, and growth. The All Supportive cluster is the largest group comprised of 22 states and generally has laws that supports autonomy, funding, and charter school growth.

Further chi-square tests confirmed the significant differences between these three clusters, and highlighted even more detailed differences in the composite variables that

comprised the indices of autonomy, funding equity, and growth. To gain an even deeper understanding of in the variations across these clusters, a number of state characteristics were examined based upon their usage in past research. State characteristics data (defined on pages 42-45) comes primarily come from Wong and Langevin's 2007 charter school policy diffusion research. All variables and sources were presented in Appendix B.

To establish a basis of comparison, means of state characteristics are presented in Tables 16-18. The country's average financial characteristics of per capita income, percentage of state spending on public education, and percentage of education spending on instructor costs are outlined in Table 16. For the nation, the average per capita income is \$52, 892.17. On average, the percentage a state spends on public education from the total state revenues is 49%. Of the funds spent on public education, an average of 60% of these funds are spent on instructor costs.

The states' school environment characteristics averages of the percentage of minority public school students, the pupil-teacher ratio, percentage of private schools, percentage of neighboring states that passed charter school legislation, and the years since charters school had been passed are outlined in Table 17. On average, the percentage of minority students in public schools is 40%. The average pupil-teacher ratio is 15.57 to one. The average percentage of private schools in the United States is 19%. On average, 81% of a state's neighbors have passed charter school legislation, and the average state has had charter school legislation for 14.18 years.

The mean state student achievement averages in 4<sup>th</sup> and 8<sup>th</sup> grade math standardized test scores, 4<sup>th</sup> and 8<sup>th</sup> grade reading scores, and dropout percentage are outlined in table 18. On average, 41% of students tested at or above proficient in 4<sup>th</sup> grade math. On average, 34% of

Table 14: Frequencies for Charter School Growth Composite Variables

Cluster	Complete Presence of Growth Legislation		Growth Legislation not Completely Present	
	N	%	N	%
No Cap on Charter Schools				
Limited Support (Cluster 2)	5	36%	9	64%
Support with Limited Growth (Cluster 1)	3	21%	11	79%
All Supportive (Cluster 3)	18	82%	4	18%
Appeal Process Allowed				
Limited Support (Cluster 2)	3	21%	11	79%
Support with Limited Growth (Cluster 1)	2	14%	12	86%
All Supportive (Cluster 3)	19	86%	3	14%
Multiple Authorizers Allowed				
Limited Support (Cluster 2)	0	0%	14	100%
Support with Limited Growth (Cluster 1)	6	43%	8	57%
All Supportive (Cluster 3)	19	86%	3	14%
N=50				

Table 15: Chi-Squares for Growth Composite Variables

Composite Variable	Chi-Square	DF*	p
No Cap on Charter Schools	14.57	2	.001*
Appeal Process Allowed	23.3	2	.000*
Multiple Authorizers Allowed	25.92	2	.000*
p<.05			
Note: All states included, District of Columbia not included			

Table 16: States' Financial Characteristics

Variable	Mean	Std. Dev.	Min, Max
Avg Per Capita Income 2012-2014	\$52,892.17	\$8,705.27	\$38,246, \$72,525
Avg Percentage of State Spending on Public Education 2012-2014	49%	0.12	28%, 89%
Avg Percentage of Education Spending on Instructor Costs 2012-2014	60%	0.03	54%, 69%
Note: All states included, District of Columbia not included			

students tested at or above proficient in 8<sup>th</sup> grade math. The average number of students who tested at or above proficient in 4<sup>th</sup> grade reading is 35%. The mean number of students who tested at or above proficient in 8<sup>th</sup> grade reading is 34%. The mean state dropout rate is 6%. Not shown in the table is the percentage of states having a Republican governor in 2014, which is 64%.

These descriptive measures in states' characteristics in the financial, school environment, and student achievement were calculated for each cluster. For each descriptive variable, all the clusters will be presented along with the national average for comparison.

Table 17: States' School Environment Characteristics

Variable	Mean	Std. Dev.	Min, Max
Avg Percentage of Minority Students 2012-21-4	40%	0.18	8%, 86%
Avg Pupil-Teacher Ratio 2012-2014	15.57	2.95	10.60, 23.85
Percentage of Private Schools in 2013	19%	0.07	3%, 38%
Percentage of Neighboring States who Passed Charter School Legislation before 2014	81%	0.23	0%, 100%
Years that Charter School Law Passed in State	14.18	7.62	0, 23
Note: All states included, District of Columbia not included			

For the variables that make up financial characteristics of the states, the clusters are all very close to the national average. Descriptively, per capita income for the clusters closely mirrors that of the national average of \$52,892.17. All of the clusters also closely resemble

**Table 18: States Students' Achievement**

Variable	Mean	Std. Dev.	Min, Max
Avg Percentage of 4th grade math students testing at, or above proficient 2013 & 2015	41%	0.07	28%, 56%
Avg Percentage of 8th grade math students testing at, or above proficient 2013 & 2015	34%	0.07	19%, 53%
Avg Percentage of 4th grade reading students testing at, or above proficient 2013 & 2015	35%	0.06	22%, 48%
Avg Percentage of 8th grade reading students testing at, or above proficient 2013 & 2015	34%	0.06	20%, 47%
Percentage of Students who dropout in 2013	6%	0.19	3%, 11%

Note: All states included, District of Columbia not included

the national average for the amount of total state revenues spent on public education. The support limited cluster is the highest with 51% of total revenues being spent on public education. This is compared to the national average of 49%. The lowest percentage is spent by the All Supportive cluster at 48%. Lastly, for all clusters, the percent of money spent on education that is allocated for instructors costs is identical for all clusters at 61%. For states' financial characteristics, all the clusters closely mirror the national average. The descriptive statistics for states' financial characteristics can be found on table 19.

For the variables that make up school environment characteristics of the states, the clusters differ slightly from the national average. The biggest difference is seen in the ethnic composite of each cluster. The national average for the percentage of non-white children in public schools is 41%. The Limited Support cluster is much lower than the national average at 31%, followed by the Support with Limited Growth cluster at 37%. The All Supportive cluster is higher than the national average at 49%. The mean pupil teacher ratio differs from the national

average of 15.57 students per teacher. The Limited Support cluster has the lowest at 14.47 students per teacher and the All Supportive cluster has the highest at 16.75 students per on teacher.

The percentage of private schools in states in each cluster closely resembles the national average. The All Supportive cluster has the highest at 21% compared to the national average of 19%. The Limited Support cluster has the lowest, 17%, followed by the Support with Limited Growth cluster at 18%. The percentage of neighboring states that passed charter school laws for any given state is 81%. The Limited Support cluster differs from the national average at 71%. Both the Support with Limited Growth cluster and the All Supportive cluster are greater than the national average at 85%. The national average for the number of years a given state has had charter school legislation is 14.18 years.

The Limited Support cluster is the lowest at 7.21 years, but that is because this cluster has eight states without any charter school laws. When only the states who have passed charter school laws are considered, the Limited Support cluster averages 16.83 years that their states have had charter school legislation. This is greater than the national average, but the greatest amount of years states have had charter school legislation is 18.14, which is the All Supportive cluster. When considering states' school environment characteristics, they differ slightly by cluster and do not follow the same uniformity of states' financial characteristics. This is seen is a variety of ways. For example, this is seen in the fewer percentage of minority students in the Limited Support cluster and the fewer number of neighboring states who passed charter school laws for the Limited Support cluster. All descriptive results for school environment characteristics can be found in Table 20.



Table 19: Clusters and National Financial Characteristics

Variable	Mean	Std. Dev.	Min, Max
Avg Per Capita Income 2012-2014			
Limited Support (Cluster Two)	\$52,977.69	\$9,903.26	\$40,836, \$72,525
Support with Limited Growth (Cluster One)	\$53,011.50	\$9,445.40	\$38,246, \$68,140
All Supportive (Cluster Three)	\$52,761.82	\$7,800.67	\$43,744, \$70,583
National Average	\$52,892.17	\$8,705.27	\$38,246, \$72,525
Avg Percentage of State Spending on Public Education 2012-2014			
Limited Support (Cluster Two)	51%	0.15	31%, 89%
Support with Limited Growth (Cluster One)	48%	0.09	35%, 61%
All Supportive (Cluster Three)	48%	0.13	28%, 85%
National Average	49%	0.12	28%, 89%
Avg Percentage of Education Spending on Instructor Costs 2012-2014			
Limited Support (Cluster Two)	60%	0.02	56%, 64%
Support with Limited Growth (Cluster One)	60%	0.04	56%, 69%
All Supportive (Cluster Three)	60%	0.03	54%, 65%
National Average	60%	0.03	54%, 69%

Note: All states included, District of Columbia not included

Finally, for the variables that make up student achievement characteristics of the states, the clusters are all very close to the national average. However, a trend that emerges is that the Support with Limited Growth cluster is always slightly above the national average, and the All

Supportive cluster is always slightly below the national average. The Limited Support cluster is either the same as the national average or slightly above. All clusters closely mirror the national mean of percentage of 4th grade math students testing at, or above proficient, which is 41%. The Support with Limited Growth cluster is slightly higher at 44% and the All Supportive cluster is slightly lower at 40%. The same pattern is seen in the percentage of 8th grade math students testing at, or above proficient. The national average is 34% and the Support with Limited Growth cluster is slightly above the national average at 36% and the All Supportive

cluster is slightly lower at 33%. For percentage of 4th grade reading students testing at, or above proficient the Support with Limited Growth cluster is slightly above the national average of 35%, with a number of 37%. The All Supportive cluster is below the national average at 34%. Again, for the percentage of 8th grade reading students testing at, or above proficient, the Support with Limited Growth cluster is slightly above the national average of 34%, at 36%. The All Supportive cluster is slightly lower than the national average, coming in at 33%. Lastly, the dropout percentage for the nation is 7% (students ages 16-24). The Support with Limited Growth cluster and the Limited Support cluster are just slightly lower at 6%, with the All Supportive cluster equaling the national average. All descriptive results for student achievement characteristics can be found in Table 21.

Though descriptively the clusters closely mirrored the national averages for financial student achievement characteristics, and differed in school environment characteristics, a statistical test is needed to truly discern if the clusters are different regarding these descriptive variables. To accomplish this, ANOVAs were run for all of the clusters' means for each variable. The results will be displayed by the three areas of financial, school environment, and student achievement characteristics.

For all of the sub-variables in the area of states' financial characteristics, none of the clusters are significantly different from each other. These results can be found in Table 22. For the school environment sub-variables, *percentage of minority students* and *pupil teacher ratio* are statically different for clusters. *Percentage of minority students* was statistically different across clusters at the  $p < .05$  level [ $F(2, 47) = 4.80, p = .01$ ]. *Pupil teacher ratio* was also statistically different across clusters at the  $p < .05$  level [ $F(2, 47) = 3.49, p = .04$ ]. Initially,

Table 20: Cluster and National School Environment Characteristics

Variable	Mean	Std. Dev.	Min, Max
Avg Percentage of Minority Students 2012-2014			
Limited Support (Cluster Two)	31%	0.16	9%, 60%
Support with Limited Growth (Cluster One)	37%	0.17	9%, 71%
All Supportive (Cluster Three)	49%	0.18	22%, 87%
National Average	41%	0.18	9%, 87%
Avg Pupil-Teacher Ratio 2012-2014			
Limited Support (Cluster Two)	14.47	2.18	10.60, 19.32
Support with Limited Growth (Cluster One)	14.83	2.28	12.11, 18.97
All Supportive (Cluster Three)	16.75	3.40	12.17, 23.86
National Average	15.57	2.95	10.60, 26.86
Percentage of Private Schools in 2013			
Limited Support (Cluster Two)	17%	0.08	3%, 30%
Support with Limited Growth (Cluster One)	18%	0.07	5%, 33%
All Supportive (Cluster Three)	21%	0.07	7%, 38%
National Average	19%	0.07	3%, 38%
Percentage of Neighboring States that Passed Charter School Legislation before 2014			
Limited Support (Cluster Two)	71%	0.25	0%, 100%
Support with Limited Growth (Cluster One)	85%	0.17	50%, 100%
All Supportive (Cluster Three)	85%	0.23	0%, 100%
National Average	81%	0.23	0%, 100%
Years Charter School Law Passed in State			
Limited Support (Cluster Two)	7.21	8.89	0, 20
Support with Limited Growth (Cluster One)	14.93	6.78	2, 21
All Supportive (Cluster Three)	18.14	2.98	12, 23
National Average	14.18	7.62	0, 23
Note: All states included, District of Columbia not included			

*years that charter school laws passed in state* was significantly different for the clusters, but when the states with no charter school laws are removed from the all legislation limited cluster, the means are no longer statistically different. *Percentage of private schools in 2013* and *percentage of neighboring states who passed charter school legislation in 2014* were not statistically different among clusters. Results of the ANOVA can be found in Table 23.

A Tukey HSD post-hoc test reveals that for the significant variables found in school environment, percentage of minority students is significant, however, pupil teacher ratio is approaching significance. In regards to the percentage of minority students, the Support with Limited Growth cluster (M=.37, SD=.17) and the All Supportive cluster (M=.49, SD=.18) are not statistically different from each other. The Limited Support cluster (M=.31, SD=.16) has a significantly lower percentage of minority students compared to the Support with Limited Growth cluster. For *pupil teacher ratio*, the Support with Limited Growth cluster (M=.18,

SD=.07) and the All Supportive cluster (M=.21, SD=.07) are statistically similar to one another. The Limited Support cluster (M=.17, SD=.08) is approaching being statistically different from the All Supportive cluster with a *p* value of .056. The Limited Support cluster is not statistically different than the Support with Limited Growth cluster. Results from the Tukey HSD test are found in Table 24.

For all of the sub-variables in the area of states student achievement, none of the clusters are significantly different from each other. Results can be found in Table 25. For the objective three analysis, the only variables that were statistically significant were average percentage of minority students and average pupil teacher ratio.

Table 21: Cluster and National Student Achievement Characteristics

Variable	Mean	Std. Dev.	Min, Max
Percentage of Students who dropout in 2013			
Limited Support (Cluster Two)	6%	0.02	3%, 9%
Support with Limited Growth (Cluster One)	6%	0.02	3%, 9%
All Supportive (Cluster Three)	7%	0.02	4%, 12%
National Average	7%	0.02	3%, 12%
Avg Percentage of 4th grade math students testing at, or above proficient 2013 & 2015			
Limited Support (Cluster Two)	41%	0.06	28%, 48%
Support with Limited Growth (Cluster One)	44%	0.08	28%, 56%
All Supportive (Cluster Three)	40%	0.07	28%, 56%
National Average	41%	0.07	28%, 56%
Avg Percentage of 8th grade math students testing at, or above proficient 2013 & 2015			
Limited Support (Cluster Two)	34%	0.07	19%, 45%
Support with Limited Growth (Cluster One)	36%	0.08	22%, 53%
All Supportive (Cluster Three)	33%	0.07	20%, 48%
National Average	34%	0.07	19%, 53%
Avg Percentage of 4th grade reading students testing at, or above proficient 2013 & 2015			
Limited Support (Cluster Two)	36%	0.05	19%, 45%
Support with Limited Growth (Cluster One)	37%	0.07	24%, 49%
All Supportive (Cluster Three)	34%	0.05	20%, 48%
National Average	35%	0.06	19%, 53%
Avg Percentage of 8th grade reading students testing at, or above proficient 2013 & 2015			
Limited Support (Cluster Two)	35%	0.05	26%, 45%
Support with Limited Growth (Cluster One)	36%	0.07	20%, 47%
All Supportive (Cluster Three)	33%	0.06	21%, 44%
National Average	34%	0.06	20%, 47%

Table 22: Financial Characteristics Sub-variables ANOVA

Variables	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Avg Per Capita Income 2012-2014					
Between Groups	2.00	\$675,562.73	\$337,781.37	0.00	0.996
Within Groups	47.00	\$3,712,631,025.99	\$78,992,149.49	--	--
Total	49.00	\$3,713,306,588.72	--	--	--
Avg Percentage of State Spending on Public Education 2012-2014					
Between Groups	2.00	0.01	0.01	0.38	0.685
Within Groups	47.00	0.75	0.02	--	--
Total	49.00	0.76	--	--	--
Avg Percentage of Education Spending on Instructor Costs 2012-2014					
Between Groups	2.00	0.00	0.00	0.37	0.696
Within Groups	47.00	0.04	0.00	--	--
Total	49.00	0.04	--	--	--
p<.05					
Note: All states included, District of Columbia not included					

Table 23: School Environment Characteristics Sub-variables ANOVA

Variables	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Percentage of Minority Students <sup>^</sup>					
Between Groups	2.00	0.28	0.14	4.80	0.013*
Within Groups	47.00	1.37	0.03	--	--
Total	49.00	1.65	--	--	--
Pupil-Teacher Ratio <sup>^</sup>					
Between Groups	2.00	55.26	27.63	3.49	.039*
Within Groups	47.00	372.48	7.93	--	--
Total	49.00	427.74	--	--	--
Percentage of Private Schools in 2013					
Between Groups	2.00	0.01	0.01	0.85	0.436
Within Groups	47.00	0.27	0.01	--	--
Total	49.00	0.28	--	--	--
p<.05					
<sup>^</sup> Indicates data is averaged from years 2012-2014					
Note: All states included, District of Columbia not included					

Table 24: Tukey Post-Hoc Test for ANOVA of School Environment Characteristics Variables

Charter School Funding Equity Variables	Primary Grp	Comparison Grp	Mean Difference	Std. Error	Sig.
Avg Percentage of Minority Students 2012-2014	1	2	0.062	0.06444	0.6
		3	-0.112	0.05829	0.145
	2	1	-0.062	0.06444	0.6
		3	-0.174	0.05829	0.012
	3	1	0.112	0.05829	0.145
		2	0.174	0.05829	0.012
Avg Pupil-Teacher Ratio 2012-2014	1	2	0.360	1.06403	0.939
		3	-1.920	0.96245	0.125
	2	1	-0.360	1.06403	0.939
		3	-2.280	0.96245	0.056
	3	1	1.920	0.96245	0.125
		2	2.280	0.96245	0.056

p<.05  
 Note: All states included, District of Columbia not included

Table 25: Student Achievement Characteristics Sub-variables ANOVA

Variables	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Avg Percentage of 4th grade math students testing at, or above proficient 2013 & 2105					
Between Groups	2.00	0.01	0.01	1.53	0.228
Within Groups	47.00	0.21	0.01	--	--
Total	49.00	0.23	--	--	--
Avg Percentage of 8th grade math students testing at, or above proficient 2013 & 2105					
Between Groups	2.00	0.01	0.01	0.97	0.387
Within Groups	47.00	0.25	0.01	--	--
Total	49.00	0.26	--	--	--

p<.05  
 Note: All states included, District of Columbia not included

Table 25 Continued: Student Achievement Characteristics Sub-variables ANOVA

Variables	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Avg Percentage of 4th grade reading students testing at, or above proficient 2013 & 2105					
Between Groups	2.00	0.01	0.00	1.36	0.267
Within Groups	47.00	0.15	0.00	--	--
Total	49.00	0.16	--	--	--
Avg Percentage of 8th grade reading students testing at, or above proficient 2013 & 2105					
Between Groups	2.00	0.01	0.00	0.96	0.389
Within Groups	47.00	0.17	0.00	--	--
Total	49.00	0.18	--	--	--
Percentage of Students who dropout in 2013					
Between Groups	2.00	0.01	0.00	0.99	0.378
Within Groups	47.00	0.18	0.00	--	--
Total	49.00	0.19	--	--	--
p<.05					
Note: All states included, District of Columbia not included					



## Chapter 5: Discussion

### Summary of Results

This study described and categorized states based upon characteristics of charter schools laws. A cluster analysis yielded three clusters of states with charter school laws that were statistically and descriptively unique in terms of charter school autonomy, equity funding, and growth. ANOVA tests confirmed that the clusters were significantly different than one another.

The three indices that were the basis of clustering have underlying composite variables that describe the nature of charter school laws in greater detail. Chi-square tests were conducted to determine whether or not the percentage of states, with each law characteristic specified in the composite variables that made up the index variables (autonomy, equity funding, and growth) differed significantly across clusters. Chi-square tests for all the composite variables reveal that the three state clusters differ significantly from one another.

To further explore how the state clusters differed from one another in terms of factors examined in past research, the analysis compared cluster averages for variables measuring state level education finance, student demographics, education outcomes, and school types. ANOVAs were run for all of the clusters' means for each characteristic variable. Only two of thirteen characteristic variables' means were significantly different across clusters.

**Synthesis of Results.** The results from the descriptive analysis identified variations in charter school polices across states and grouped similar states together into clusters. These state clusters were assessed for differences in charter school law characteristics. Furthermore, this analysis investigated the cluster difference in state level education finance, student demographics and education outcomes, and school type characteristics.

A cluster analysis was conducted on states' variation of charter school law characteristics in three index areas, namely charter school autonomy, funding equity, and growth. A number of numeric clustering solutions were considered. The most logical analysis yielded a cluster with three distinct groups of states. A two cluster solution was too broad and would not enhance the current dichotomy seen in the literature. The four clusters solution replicated the three cluster with the addition of a fourth cluster containing only Rhode Island. A cluster with only one state limits the ability to run significant tests on the differences in charter school law characteristics. These groupings can be found in Table 5.

The three state groupings can be generally characterized in the following ways: Cluster one, described as "Support with Limited Growth," had states with a high mean in areas of charter school autonomy and equal funding, but had lower means in the areas of growth. Cluster three, described as "All Supportive," had states with the greatest or second greatest mean in autonomy, funding equity, and growth. Lastly, cluster two, described as "Limited Support," had states with the lowest means in the areas of autonomy, funding equity, and growth. The Limited Support cluster was comprised of eight states without charter school legislation and six states with charter school legislation. When the states with no charter school laws were removed from the cluster analysis, the same three clusters were created. Overall, the three clusters were significantly different from one another in terms autonomy, funding equity, and growth aspects of charter school laws.

Next, the analysis assessed how the clusters identified in step one compare to each other in terms of the composite variables that comprised the three index variables (charter school autonomy, funding equity, and growth). Within each legislative adoption index variable, clusters of states are descriptively and statistically different from each other in terms of (a) state,

local/district, and teacher autonomy, (b) student and facility funding equity, (c) capping the amount of new charter schools that can be opened per year, allowing an appeal process for charter schools that are denied, and (d) multiple authorizer growth variables.

The analyses discussed above related to research in objective 1 and 2 show that particular provisions of charter school laws are not adopted uniformly as represented in innovation and diffusion research literature that focuses on the presence or absence of a law. Some states limit charter school functions in every legal aspect. Other states support charter schools in every legal aspect and support their proliferation, and other states support charter schools that have already been created but limit the number that can be created. Charter school diffusion studies are incomplete because they do not fully describe the type of charter law adoption that has occurred. There have been no efforts to predict the differences in specific charter school law provisions. Similarly, charter school effectiveness research does not take into account charter school law characteristics within each state.

It is possible that the characteristics of charter school laws within a state influence school performance. Some state laws provide charter schools with different per-pupil funding than traditional public schools receive. Schools with financial disadvantages will not perform as well as schools without those disadvantages (Eberts & Hollenbeck, 2002). Conversely, state laws can grant full autonomy to charter schools to teach and innovate in whichever way they desire based upon best practices and other research. Traditional public schools that do have the same autonomy and wish to pursue similar instructional changes must go through a bureaucratic process (Cohodes, 2016). Theoretically, schools who are dynamic in their instructional methods and curriculum design are better positioned to increase academic performance (Cohodes, 2016). When effectiveness research compares charter schools and traditional public schools on

measures in student performance and does not take into account the different policy environments these schools occupy, incomplete findings are disseminated that misrepresent the “effectiveness” of either school type.

The difference in state level education finance, student demographics, academic outcomes, and school type were examined across clusters. Data sources and variables from past seminal charter school legislative adoption research were used. Unlike the variation seen in state charter school legislative adoption, the clusters did not significantly differ from each other in terms of most of the descriptive measures. However, two measures significantly differed from each other. These variables are pupil-teacher ratio and percentage of minority children.

The All Supportive cluster had a significantly larger pupil teacher ratio and larger number of minority students compared to the other clusters. Thus, the cluster containing states with more minorities and higher teacher pupil ratios also have states with laws that are the most supportive of charter school proliferation. This finding parallels school-level research: Charter schools are more likely to be present in low socio-economic areas where the population is ethnically non-white (Gronberg & Jansen, 2001). This concentration of charter school friendly laws is of particular importance to social work because research has shown that children of color and low socio-economic status face disproportionately negative student success outcomes (Gronberg & Jansen, 2001). This makes understanding and evaluating the outcomes of these policies essential.

**Future Research.** Through the descriptive research in this study, it is evident that states differ in the manner in which they adopt and carry out charter school legislation. Legislative adoption research has developed elaborate statistical models to predict whether states share adoption characteristic or not, but states do not adopt charters uniformly. The current status of state charter school policy is not adequately represented. Currently, states are represented as a

simple dichotomy; they either adopt or do not adopt charter schools. This simplistic approach makes it difficult for social science researchers to understand the full educational policy landscape from state to state.

Now that the presence of charter school legislation at the state level has become the norm in American education policy, a more nuanced understanding of the variation in state school choice policy is needed. However, this understanding of adoption in current research has been overlooked. States can adopt charter school laws in such a way that enables the proliferation of charter schools. This is seen in the All Supportive cluster. States can also adopt charter school legislation in a way that supports the charter schools that are created, but limits the amount of new charter schools growth year to year. This is seen in the Support with Limited Growth cluster. This approach is more cautious compared to the All Supportive cluster. And, there are states that allow charter schools, but the legislation surrounding the adoption is so limited in terms of autonomy, funding equity, and growth that these states closely resemble states that have not adopted charter school legislation at all. The charter school states in the Limited Support cluster allow charter schools to exist in such a limited way that these states' charter schools are not drastically different from traditional public schools in terms of law characteristics. The states in the limited support cluster that allow charter schools have law characteristics that do not provide charter schools with operational and hiring autonomy. If a charter school has to teach a similar curriculum and hire teachers in the same way a peer traditional public school does, then what is the true difference between these schools?

Using this study's descriptive findings, future research could seek not only to determine if certain state characteristics such as standardized test scores, political party of governor, and number of private school in a state influence a state's adoption of charter school legislation.

Future research can also investigate which provisions of the law that states enact. Future work could additionally determine if state characteristics influence which cluster the state is classified.

The limitation of charter school effectiveness research is that studies address inequalities and outcomes at the school level, with limited attention to the state-level policy environment. Charter school effectiveness has had mixed results in terms of student success. These conflicting results are problematic because the past several decades have seen an increased rise in accountability pressures on schools with a related focus on improving large numbers of underperforming schools (Cohen-Vogel, 2016). School reform practices and research has highlighted challenges of effectively scaling promising educational interventions (Cohen-Vogel, 2016). Where new practices take hold, they are typically short lived, limited to a small number of pilot traditional public schools or charter schools, and sit at a distance from the typical instructional practices (Cohen-Vogel, 2016). There is growing agreement that the primary problem of scale is a failure to understand the conditions under which teaching and learning take place and to adapt educational interventions to them (Cohen-Vogel, 2016). Including the condition of a state's charter law characteristics to a charter school effectiveness research design can further inform researchers concerning their findings. For example, the study in Michigan conducted by Bettinger (2004) found no significant differences between test scores for charter and conventional public school students. However, this study did not take into account that Michigan law does not provide charter schools the same per-pupil dollar amount as traditional public schools. Nor does Michigan state law allow charter schools to create their own policies around hiring and firing teachers. These two environmental factors (e.g., student funding and teacher hiring/firing policies) in Michigan warrant consideration and inclusion in future charter school effectiveness research in that state. Future charter school effectiveness research can not

only compare the performance of charter schools to traditional public schools on student achievement, but can also couch these comparable results in the context of the state's legislative environment and compare results across states.

**Impact on Social Work.** One of social work's primary ethical principles, challenging social injustice, requires professionals to challenge current educational inequalities and to study attempts to reform the educational system (NASW Code of Ethics, 2017). Nonetheless, current literature does not provide a detailed description of how reform has shaped the education system from state to state for social worker researchers to understand and navigate. The descriptive findings in this study can be used in concert with legislative adoption and charter school effectiveness research to reduce limitations in these research areas. Through this advance in charter school research, social workers will gain increased clarity to whether charter school reform is purportedly an equalizer of educational opportunity across class, race, ethnicity and/or gender. The cluster a state occupies speaks to the level of supportive afforded to charter schools by the laws adopted in that state. School social workers advocate for children and families to have quality educational resources afforded to them. Understanding the landscape of school choices and characteristics of these schools helps social workers better inform and educate children and families on their educational options. This knowledge contributes to social work practice. For example, a school social worker who practices in a charter school in a Limited Support cluster state can discuss with families that charter schools are not going to be that different in comparison to traditional public schools in regards to curriculum or state of the art facilities. This information helps families make the best educational decisions for their children. This study's findings support future researchers to better understand the ways in which state

variation in charter school legislation influences factors such as racial and ethnic disparities in opportunities and student success outcomes.

## **Limitations**

A fundamental limitation of a descriptive study is that the findings indicate norms, not standards. Descriptive research shows what is being done, not what could be done or should be done (Johnson, 1953). Furthermore, these types of studies cannot be used to correlate variables or determine cause and effect (Johnson, 1953). This study describes the variation in charter school legislative adoption but does not investigate the causal influences on the various adoption types. However, descriptive research may be a pre-cursor to future research because it can help identify variables that can be tested later. The findings may point the researcher to specific factors that may be impactful and warrant further study (Johnson, 1953). This information may guide the researcher to gather more nuanced data that may be either quantitative or qualitative in nature. Descriptive studies result in rich data that is collected in large amounts (Johnson, 1953). This dissertation does “richly,” or in a detailed fashion, capture charter school laws characteristics exhibited by each state and statistically groups them in a way that can inform future research.

There are also limitations with the use of cluster analysis. The state law characteristics data (Appendix E) are not widely dispersed, have a limited variety of categories, and contain a relatively small number of cases (states). Therefore, the potential for clusters with arbitrary groupings due to insensitivity of data differences is a threat (Anderberg, 1973). Rhode Island might have been arbitrarily grouped with the Limited Support cluster. The four cluster solution created a cluster comprised only of Rhode Island (Appendix C). Rhode Island is the only state in the Limited Support cluster to have equal student funding equity as articulated by state law



(Appendix E). However, to reduce this possibility, this study conducted ANOVAs to reveal if significant differences existed in index variable means across the three clusters. Indeed, there was a significant difference for every index variable mean across the three clusters.

The administrative data used for the cluster analysis have both strengths and weaknesses in regards to validity and reliability (Shadish, Cook, & Campbell, 2002). Threats to the reliability of administrative data include human error input. These data were collected by the CER. Content validity refers to the extent to which a measure represents all aspects of a given construct (Shadish, Cook, & Campbell, 2002). Regarding content validity, though the data were objectively coded to remove biased scoring from the center, much of the original detail from the data were lost due to new binary coding procedures. For example, the CER can list a state as having “partial” student equity funding (CER, 2014). Having partial student funding equity is not that same as having complete, equal student funding. However, it is also different from not having any of the same funding. To reduce bias seen in vague language used by the CER in data collection, a binary coding system was adopted to signify either a complete presence of a characteristic, or not. This limits this descriptive study to understand the magnitude of charter school law characteristics in states.

## **Conclusion**

Despite these limitations, this study has added to the public policy body of knowledge by building upon the limited, binary description of states’ charter school legislative adoption. This study describes and categorizes the variation of state charter school polices and explores the differences in state level education finance, student demographics and academic outcomes, and school type characteristics. Prior research has shown that children of color and low socio-economic status face disproportionately negative student success outcomes. Because states in the

All Supportive cluster have the greatest percentage of minority students, it is of great importance to ensure equitable educational outcomes for these children. However, children in these states are living in an environment that have the most charter school friendly laws. Research has not consistently demonstrated that charter schools are the most effective solution for increasing student success, yet charter schools receive immense legislative support in the states that comprise the All Supportive cluster. This concerns social workers because one of social work's primary ethical principles, challenging social injustice, requires professionals to confront current educational inequalities and to study attempts to reform the educational system (Gianesin & Bonaker, 2003). The support and proliferation of an inconsistent solution to a population that needs a consistent and effective solution more than any other equates to social injustice. This dissertation's findings will enable future researchers to determine the ways in which state variation in charter school legislation influences factors such as racial, ethnic, class, and socioeconomic disparities in opportunities and student success outcomes.

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## Appendix A: State Abbreviations

State	State Abbreviation
Alabama	AL
Alaska	AK
Arizona	AZ
Arkansas	AR
California	CA
Colorado	CO
Connecticut	CT
Delaware	DE
Florida	FL
Georgia	GA
Hawaii	HI
Idaho	ID
Illinois	IL
Indiana	IN
Iowa	IA
Kansas	KS
Kentucky	KY
Louisiana	LA
Maine	ME
Maryland	MD
Massachusetts	MA
Michigan	MI
Minnesota	MN
Mississippi	MS
Missouri	MO
Montana	MT
Nebraska	NE
Nevada	NV
New Hampshire	NH
New Jersey	NJ
New Mexico	NM
New York	NY
North Carolina	NC
North Dakota	ND
Ohio	OH
Oklahoma	OK
Oregon	OR
Pennsylvania	PA
Rhode Island	RI
South Carolina	SC
South Dakota	SD
Tennessee	TN
Texas	TX
Utah	UT
Vermont	VT
Virginia	VA
Washington	WA
West Virginia	WV
Wisconsin	WI
Wyoming	WY

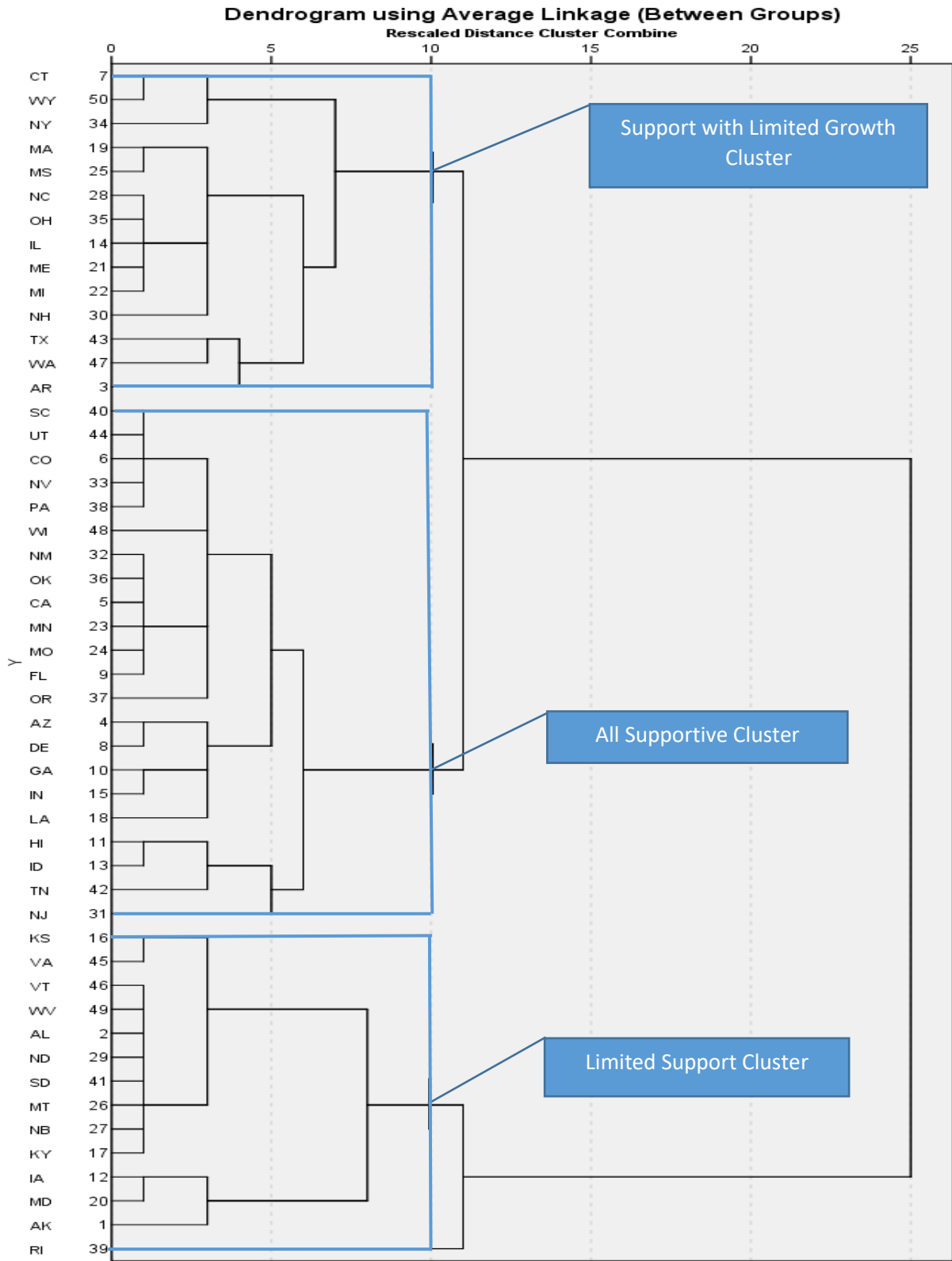
Note: All states included, District of Columbia not included



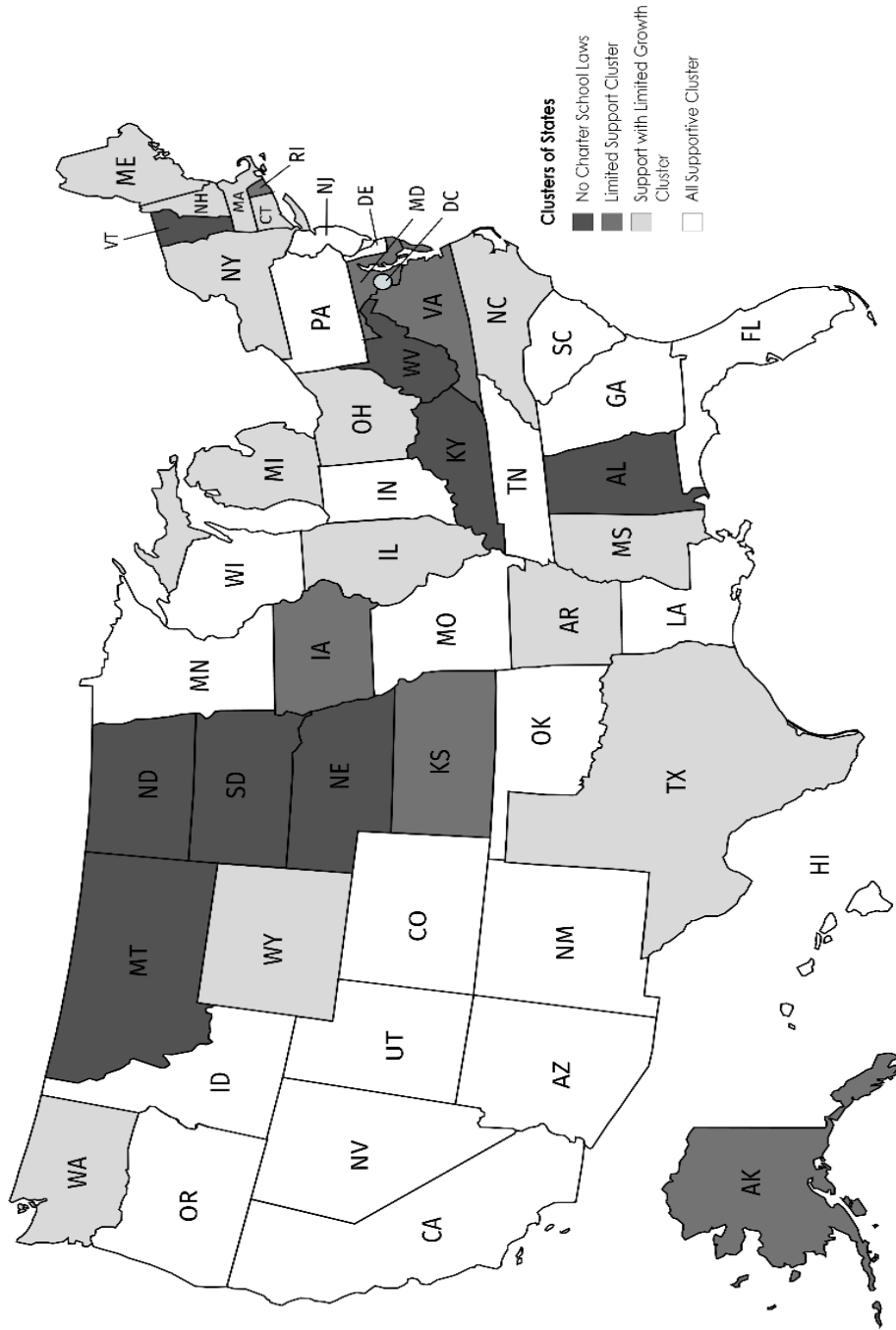
## Appendix B: Objective Three Variables and Sources

Variable	Source
<b>States' Financial Characteristics</b>	
Per Capita Income 2012-14	United State Department of Labor
Percentage of State Spending on Public Education 2012-14	United State Department of Education Common Dataset as used in Wong and Langevin, 2007
Percentage of Education Spending on Instructor Costs 2012-14	United State Department of Education Common Dataset as used in Wong and Langevin, 2007
<b>States' School Environment Characteristics</b>	
Percentage of Minority Students 2012-14	United State Department of Education Common Dataset as used in Wong and Langevin, 2007
Pupil-Teacher Ratio 2012-14	United State Department of Education Common Dataset as used in Wong and Langevin, 2007
Percentage of Private Schools in 2013	United State Department of Education Common Dataset as used in Wong and Langevin, 2007
Percentage of Neighboring States who Passed Charter School Legislation before 2014	Data measured using methodology used by Wong and Langevin, 2007
Years Charter School Law Passed in State	Data measured using methodology used by Wong and Langevin, 2007
<b>States Students' Achievement</b>	
Percentage of 4th grade math students testing at, or above proficient 2013 and 2015	United States National Center for Education Statistics as used by Cohodes, 2016
Percentage of 8th grade math students testing at, or above proficient 2013 and 2015	United States National Center for Education Statistics as used by Cohodes, 2016
Percentage of 4th grade reading students testing at, or above proficient 2013 and 2015	United States National Center for Education Statistics as used by Cohodes, 2016
Percentage of 8th grade reading students testing at, or above proficient 2013 and 2015	United States National Center for Education Statistics as used by Cohodes, 2016
Percentage of Students who dropout in 2013	United States National Center for Education Statistics as used by Cohodes, 2016

# Appendix C: Dendrogram from Cluster Analysis



# Appendix D: Map of Clusters



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## Appendix E: States' Charter School Law Data

Appendix 5

Charter School Legislation Data by State (Center for Education Reform, 2014)

Cluster	State	Autonomy			Funding/Equity Total			Growth				
		State Autonomy	Local/District Autonomy	Teacher Autonomy	Autonomy Total	Student Funding	Faculty Funding	Funding Equity Total	No Cap Allowed	Appeals Process Allowed	Multiple Authorizers Allowed	Growth Total
1	AR	1	1	0	2	1	1	2	0	0	0	0
1	CT	0	1	0	1	0	1	1	1	0	0	1
1	IL	1	1	1	3	0	1	1	0	1	0	1
1	MA	1	1	1	3	0	1	1	0	0	0	0
1	ME	1	1	1	3	1	0	1	0	0	1	1
1	MI	1	1	1	3	0	1	1	0	0	1	1
1	MS	1	1	1	3	1	0	1	0	0	0	0
1	NC	1	1	1	3	1	0	1	1	0	0	1
1	NH	1	1	0	2	0	1	0	0	1	0	1
1	NY	1	1	1	3	0	1	1	0	0	1	1
1	OH	1	1	1	3	0	1	1	0	0	1	1
1	TX	1	1	0	2	1	1	2	0	0	1	1
1	WA	1	1	1	3	1	1	2	0	0	1	1
1	WY	1	0	0	1	1	0	1	1	0	0	1
2	AK	0	0	0	0	0	1	1	1	1	0	2
2	AL	0	0	0	0	0	0	0	0	0	0	0
2	IA	0	0	0	0	0	0	0	1	1	0	2
2	KS	0	0	0	0	0	0	0	1	1	0	2
2	KY	0	0	0	0	0	0	0	0	0	0	0
2	MD	0	0	0	0	0	0	0	1	1	0	2
2	MT	0	0	0	0	0	0	0	0	0	0	0
2	NE	0	0	0	0	0	0	0	0	0	0	0
2	ND	0	0	0	0	0	0	0	0	0	0	0
2	RI	0	0	0	0	1	1	2	0	0	0	0
2	SD	0	0	0	0	0	0	0	0	0	0	0
2	VA	0	0	0	0	0	0	0	1	0	0	1
2	VT	0	0	0	0	0	0	0	0	0	0	0
2	WV	0	0	0	0	0	0	0	0	0	0	0
3	AZ	1	1	1	3	1	1	2	1	0	1	2
3	CA	1	1	1	3	0	1	1	1	1	1	2
3	CO	1	1	1	3	0	1	1	1	1	1	3
3	DE	1	1	1	3	1	1	2	1	0	1	2
3	FL	1	1	1	3	0	1	1	1	1	0	2
3	GA	1	1	1	3	1	1	2	1	1	1	2
3	HI	1	1	0	2	0	1	1	1	1	1	3
3	ID	1	1	0	2	0	1	1	1	1	1	3
3	IN	1	1	1	3	1	1	2	1	1	1	3
3	LA	1	1	0	2	1	1	2	1	1	1	3
3	MN	1	1	1	3	0	1	1	1	0	1	2
3	MO	1	1	1	3	1	0	1	0	1	1	2
3	NJ	0	1	1	2	0	1	0	0	1	0	2
3	NM	1	1	1	3	0	1	1	0	1	1	2
3	NV	1	1	1	3	0	1	1	1	1	1	3
3	OK	1	1	1	3	0	1	1	0	1	1	2
3	OR	1	1	1	3	0	0	0	1	1	0	2
3	PA	1	1	1	3	0	1	1	1	1	1	3
3	SC	1	1	1	3	0	1	1	1	1	1	3
3	TN	0	0	1	1	0	1	1	1	1	1	3
3	UT	1	1	1	3	0	1	1	1	1	1	3
3	WI	1	1	1	3	0	0	0	1	1	1	3

# Appendix F: States' Characteristics Data

Appendix 6

*Descriptive Characteristics for States US Department of Education, 2017 & US Department of Labor (2017)*

STATE	Governor in 2014	Financial Characteristics				School Environment Characteristics				Student Achievement							
		Per Capita Income 2012-2014 Avg		Percentage of Education Spending on State Spending on Public Education		Percentage of Minority Students 2012-2014 Avg		Percentage of Pupil-Teacher Ratio 2012-2014 Avg		Percentage of Charter Schools that Passed Law before 2014		Percentage of 4th Grade Math Students Testing at or above proficient 2013 and 2015 Avg <sup>a</sup>		Percentage of 8th Grade Math Students Testing at or above proficient 2013 and 2015 Avg <sup>a</sup>		Percentage of 4th Grade Reading Students Testing at or above proficient 2013 and 2015 Avg <sup>a</sup>	
		2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg	2012-2014 Avg
AK	1	\$70,510.67	58%	56%	51%	16.87	3%	0%	19	36%	33%	29%	31%	31%	29%	31%	6%
AL	1	\$42,417.67	55%	57%	43%	15.86	20%	100%	0	28%	19%	30%	26%	30%	19%	26%	9%
AR	0	\$40,628.33	52%	56%	37%	14.04	5%	100%	19	36%	27%	32%	29%	32%	29%	29%	7%
AZ	1	\$48,801.33	42%	54%	59%	22.73	21%	100%	20	39%	33%	30%	30%	30%	30%	30%	9%
CA	0	\$60,150.33	56%	60%	75%	23.86	21%	100%	22	31%	28%	28%	29%	28%	28%	29%	7%
CO	0	\$58,963.67	43%	59%	45%	17.48	15%	86%	21	47%	40%	40%	39%	40%	39%	39%	7%
CT	0	\$68,140.67	39%	63%	42%	12.67	22%	100%	18	43%	37%	43%	44%	43%	44%	44%	5%
DC	0	\$68,601.00	0%	55%	91%	12.74	24%	67%	18	30%	19%	25%	18%	18%	18%	6%	
DE	1	\$58,659.00	59%	62%	52%	13.95	31%	100%	19	40%	32%	32%	32%	32%	32%	6%	
FL	1	\$46,179.67	38%	61%	59%	15.28	28%	67%	18	42%	29%	39%	32%	32%	32%	8%	
GA	1	\$48,119.67	44%	62%	57%	15.66	20%	75%	21	37%	29%	34%	31%	31%	31%	9%	
HI	0	\$67,957.00	85%	59%	86%	15.81	27%	0%	20	42%	31%	30%	27%	30%	27%	5%	
ID	1	\$46,711.00	64%	60%	83%	19.32	14%	83%	16	39%	35%	35%	38%	35%	38%	7%	
IL	0	\$56,263.67	28%	60%	50%	15.31	23%	80%	18	38%	34%	35%	36%	35%	36%	5%	
IN	1	\$47,983.00	56%	58%	29%	17.80	24%	75%	13	51%	39%	39%	36%	39%	36%	8%	
IO	1	\$52,299.33	49%	61%	21%	14.21	13%	67%	12	46%	37%	38%	37%	37%	37%	5%	
KS	1	\$51,239.00	55%	60%	34%	12.69	12%	75%	20	45%	37%	37%	36%	37%	36%	5%	
KY	0	\$42,693.67	54%	57%	21%	16.26	19%	86%	0	41%	29%	38%	37%	37%	37%	8%	
LA	1	\$43,887.67	43%	57%	53%	15.36	18%	100%	19	28%	20%	26%	24%	26%	24%	12%	
MA	0	\$67,089.00	39%	64%	35%	13.46	26%	80%	21	56%	53%	49%	47%	49%	47%	4%	
MD	0	\$72,525.33	44%	62%	59%	14.81	30%	75%	11	30%	36%	36%	41%	36%	40%	5%	
ME	1	\$47,715.00	40%	59%	9%	12.11	18%	100%	3	44%	38%	37%	37%	37%	37%	4%	
MI	1	\$48,326.33	58%	58%	32%	18.06	16%	100%	21	36%	30%	30%	33%	30%	33%	6%	
MIN	0	\$60,363.00	66%	65%	29%	15.60	15%	60%	23	60%	48%	40%	41%	40%	41%	5%	
MO	1	\$46,871.67	33%	59%	27%	13.92	18%	75%	16	39%	32%	36%	36%	36%	36%	9%	
MS	1	\$38,246.00	50%	57%	55%	15.19	14%	75%	4	28%	22%	24%	20%	20%	20%	9%	
MT	0	\$46,125.33	48%	59%	20%	14.04	12%	50%	0	43%	40%	36%	39%	39%	39%	10%	
NE	1	\$51,616.33	32%	64%	31%	13.69	18%	83%	0	46%	37%	39%	38%	38%	38%	5%	
NC	1	\$45,870.67	61%	62%	49%	15.47	17%	100%	18	45%	35%	37%	32%	37%	32%	8%	
ND	1	\$56,124.33	53%	58%	19%	11.74	8%	67%	0	47%	40%	36%	34%	34%	34%	7%	
NH	0	\$64,680.67	35%	64%	12%	12.58	33%	67%	19	55%	47%	46%	45%	46%	45%	3%	
NJ	1	\$70,583.67	41%	60%	51%	12.17	28%	100%	18	48%	48%	43%	44%	44%	44%	4%	
NM	1	\$43,744.33	69%	57%	75%	15.22	14%	100%	17	33%	22%	28%	29%	28%	29%	11%	
NV	1	\$50,813.33	34%	58%	64%	21.12	15%	100%	17	33%	33%	27%	28%	29%	29%	11%	
NY	0	\$57,565.00	40%	69%	54%	13.25	23%	83%	16	38%	32%	37%	34%	34%	34%	7%	
OH	1	\$48,072.67	44%	58%	27%	16.26	19%	60%	17	47%	38%	38%	38%	38%	38%	6%	
OK	0	\$45,843.67	49%	55%	48%	16.24	7%	100%	15	37%	24%	32%	29%	32%	29%	6%	
OR	0	\$50,162.33	50%	58%	36%	22.01	23%	100%	15	39%	34%	34%	37%	34%	37%	9%	
PA	1	\$52,157.00	36%	62%	31%	14.36	38%	83%	17	45%	39%	41%	41%	41%	41%	6%	
RI	0	\$55,115.67	39%	62%	38%	14.63	28%	100%	19	40%	34%	39%	36%	36%	36%	6%	
SC	1	\$44,169.33	46%	56%	47%	15.02	20%	100%	18	36%	29%	29%	29%	29%	29%	9%	
SD	1	\$49,429.33	31%	59%	23%	13.86	9%	50%	0	40%	36%	34%	35%	35%	35%	7%	
TN	1	\$43,807.33	46%	62%	34%	15.10	19%	75%	12	40%	30%	34%	33%	33%	33%	6%	
TX	1	\$51,826.33	41%	59%	71%	15.40	13%	100%	19	43%	35%	30%	30%	30%	30%	8%	
UT	1	\$59,247.00	53%	63%	24%	23.08	12%	100%	16	44%	37%	39%	36%	39%	36%	5%	
VA	0	\$63,103.00	39%	58%	48%	14.18	24%	80%	16	47%	38%	43%	36%	43%	36%	4%	
VT	0	\$53,240.33	89%	63%	8%	10.60	30%	67%	0	48%	45%	44%	45%	44%	45%	3%	
WA	0	\$59,114.67	60%	58%	42%	18.97	19%	100%	2	48%	41%	40%	40%	40%	40%	7%	
WI	1	\$51,716.00	45%	60%	28%	15.06	15%	100%	21	46%	41%	36%	38%	36%	38%	4%	
WV	1	\$40,836.00	58%	58%	9%	14.04	14%	80%	0	34%	23%	29%	26%	29%	26%	4%	
WY	1	\$56,902.67	52%	59%	21%	12.36	9%	50%	19	48%	37%	39%	37%	39%	37%	6%	

## Vita

William Dabney, a native of Atlanta, Georgia received his Bachelor's degree at Louisiana State University in 2007. William worked as an addictions counselor for a number of years before he earned his Master's in Social Work Degree in 2010, also from Louisiana State University. He then went on to serve as a legislative auditor focusing on performance measures for the Louisiana Department of Children and Family Services. Later, he served as a policy analyst for the Texas Department of Family and Protective Services. William decided to engage in doctoral study at Louisiana State University's School of Social Work in 2011. He will receive his Doctor of Philosophy in Social Work in August of 2018 and will teach social work at Methodist University as a tenure-track faculty member. William's main research focus is the effects of education reform on at-risk kindergarten through twelfth-grade populations.