Local Charter School Policy Implementation: Do Policy Networks Matter?

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Abstract: This article draws on research focusing on implementation of local charter school policy in the United States. Since Colorado passed charter school law in 1993, charter school policy has spread very fast and many charter schools have been operating across Colorado. However, there is the variation in the implementation of each school district's state charter school policy. Some school districts implement the state's charter school law very actively through providing their students with charter school services while other school districts do not. The primary research question of the study is to examine why the uneven implementation of charter school policy emerges among Colorado's school districts. The statistical results reveal that the policy network factor is the most persuasive evidence in answering the research question.

Keywords: Local charter school policy implementation, policy networks, school district characteristics

INTRODUCTION

Scholars of policy and public administration have long been studying why some local governments actively implement their state's policies and others implement them to a lesser extent or even not at all. However, charter school policy implementation at the local level still remains an unknown research area although some scholars have been dedicated to studying charter school policy formulation at the state level since the mid-1990s. Based on the lack of academic study in this area, this article aims to expand the understanding of policy implementation mechanisms at the local level,

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focusing on Colorado's charter school policy.

Charter schools, supporting the school choice movement (SCM), are an innovative educational tool that provides educational customers with better educational services. The primary rationale of SCM is that traditional public schools cannot help develop students' inborn creativity well, and students' performance in traditional public schools has been declining (Chubb & Moe, 1990; Hess, 2008; Schneider et al., 2000). To improve these traditional public schools' drawbacks and accomplish better growth, school choice scholars highlight applying a free and competitive market concept to the traditional public school system.

The rationale of school choice advocates is that a market-oriented concept that offers their customers better educational services can develop the traditional public school system because competition among schools leads to better educational entities that students and parents would want to choose. Schools will lose their students to other schools if they are not better than others. These schools' efforts, finally, allow them to comply better with the demands of customers and provide more satisfaction (Chubb & Moe, 1990). Many innovative educational tools are currently being utilized to stimulate traditional public schools to be better and more competitive.

Charter schools are an innovative education tool that has spread rapidly from state to state since Minnesota adopted its charter school law in 1991 (Buckley & Schneider, 2007). However, charter schools have not been completely adopted in all the states. As of the 2011-2012 academic year, 42 jurisdictions including Washington DC, have passed a charter school law but nine states still do not have their own charter school law (Center for Education Reform, 2012). Several scholars (Mintrom, 2000; Renzulli & Roscigno, 2005; Wong & Langevin, 2007) have studied research topics through this state policy adoption phenomenon, applying a binary concept to policy formulation studies. Their research has generally been committed to studying this dichotomous policy adoption phenomenon at the state level. However, these studies are rare at the local level which, in reality, implements the policies.

The primary research question of this study is why there is the variation in charter school policy implementation among Colorado's school districts. The study constructs seven hypotheses to explore this research question, using policy networks and school district characteristics. Several scholars in the fields of policy and public administration concur that policy networks are primarily used as the main theoretical approach to account for mechanisms of policy implementation (Hall & O'Toole, 2000, 2004; Meier & O'Toole, 2003, 2005). This study applies their academic logic to the case of Colorado's school district implementation of charter school policy.

This study consists of five parts, not including the introduction. The first part explains general facts about charter schools across the USA. The second focuses on

the content of Colorado's charter schools. The third is the part of the literature review relevant to policy networks and other explanatory variables and builds up the hypotheses. The fourth part explains the overall equation model, the statistical methods, and their final results. The last part of the conclusion proposes the next steps to be taken for developing this research.

CHARTER SCHOOLS ACROSS THE USA

There were two educational leaders, Ray Budde and Albert Shanker, who introduced the concept of the charter school to the USA in the late 1980s (Kolderie, 2005; Vergari, 2002, 2007). After they emphasized charter schools to facilitate school choice, Minnesota became the first state to pass a charter school law in 1991 and established the first charter school in St. Paul the next year (Wohlstetter & Anderson, 1994). As of 2012, all but nine states have adopted their own charter school law (CER, 2012).[1]

Several scholars (Buckley & Schneider, 2007; Vergari, 2002) highlight that charter schools are innovative educational institutions that effectively facilitate public educational performance without reducing the basic and important role of public education. The primary characteristics of the charter school appear in its definition. Charter schools as public schools do not charge attendees tuition while they possess creative curricula like private schools (Vergari, 2002). Therefore, charter schools are regarded as unique educational institutions compared to traditional public schools and private schools in terms of their autonomy and fiscal situation. McGuinn (2003) points out that charter schools are created by individuals or groups who worry about the poor performance of traditional public schools. They might be teachers, parents, or others interested in establishing charter schools. Meanwhile, there are authorizers who monitor whether charter schools follow and obey their charters. The authorizers might be school districts, state departments of education, or other public authorities (Mintrom & Vergari, 1997; Vergari, 2002; Renzulli & Roscigno, 2005).

Table 1 shows that 42 jurisdictions, including Washington DC, have passed a charter school law. CER ranked these 42 jurisdictions in 2012 and graded them according to standards from groups A to F. It categorizes five states—Washington DC, Minnesota, Indiana, Arizona, and Michigan—into group A, which means that authorities easily permit organizers to establish charter schools while it categorizes four states—Kansas, Iowa, Virginia, and Mississippi—into group F, which means the opposite.

1. The nine states that have not adopted their own charter school law are: Alabama, Kentucky, Montana, Nebraska, North Dakota, South Dakota, Vermont, Washington, and West Virginia.

Rogers' academic insight provides the logic according to the spread of state charter school laws across the USA. Rogers (2003) emphasizes that it is usual that rapid policy spread emerges after leading entities—jurisdictions or organizations—adopt the same or similar policies. The adoption of state charter school policies is in accord with Rogers' perspective. Charter schools spread rapidly across the USA until 1999 after the initial period (1991-1992) when the leading states, Minnesota and California, formulated their own charter school policy.

As the cumulative numbers of states adopting charter school law in Table 1 indicates, almost 85% of the 42 jurisdictions had enacted their own charter school law from 1993 to 1999 (seven years). Maine was the last state to pass a charter school law in 2011. This spread of state charter school laws fits the S-shaped curve explanation.[2]

Table 1. Jurisdictions Passing Charter School Laws by Year

Year (Number)	Jurisdictions with Charter School Law (Cumulative number of jurisdictions each year)
1991 (1)	MN (1)
1992 (1)	CA (2)
1993 (6)	CO, GA, MA, MI, NM, WI (8)
1994 (3)	AZ, HI, KS (11)
1995 (8)	AK, AR, DE, LA, NH, RI, TX, WY (19)
1996 (7)	CT, DC, FL, IL, NC, NJ, SC (26)
1997 (4)	MS, NV, OH, PA (30)
1998 (5)	ID, MO, NY, UT, VA (35)
1999 (2)	OK, OR (37)
2000 (0)	(37)
2001 (1)	IN (38)
2002 (2)	IA, TN (40)
2003 (1)	MD (41)
2011 (1)	ME (42)

Source: The Center for Education Reform (2012)
Note: The author uses the term "jurisdictions" instead of the term "states" because this table includes Washington DC, which is evaluated as the jurisdiction with the most powerful charter school law.

2. Berry and Berry (2007) point out that the rapid diffusion of innovative policies occurs after some leading jurisdictions adopt innovative policies, accounting for the logic of the S-shaped curve.

The logic of the S-shaped curve supports that a majority of jurisdictions adopt innovative policies after they ascertain effectiveness of innovative policies. The aforementioned view makes sense because jurisdictions can reduce the high transaction costs that they can face in the initial stage of policy formulation by reviewing the results of other leading jurisdictions. CER (2012) indicates that, since the nation's first charter school—City Academy—was established in Minnesota in 1992, approximately 5,500 charter schools are operating across the USA as of the 2011-2012 academic year. More than two million students are enrolled in these charter schools.

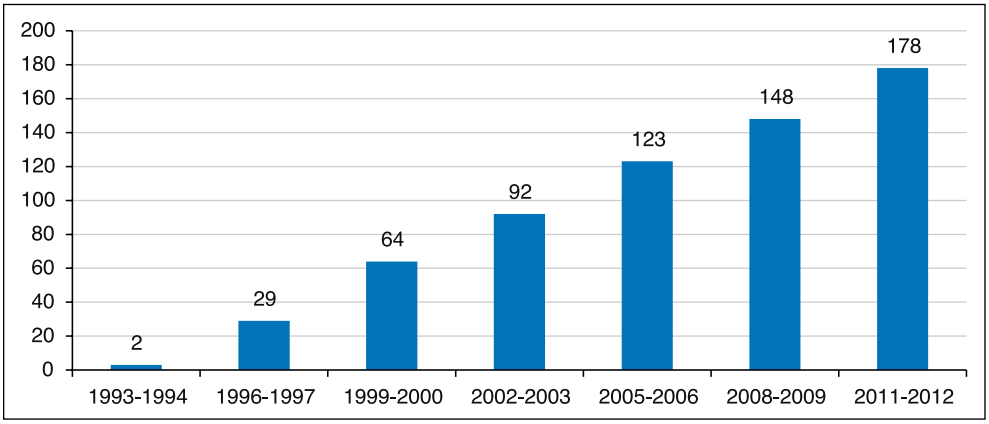
CHARTER SCHOOLS ACROSS COLORADO

Since former Governor Roy Romer signed the Colorado charter schools act in 1993 with the support of both the Democratic and Republican parties, charter schools have been spreading widely and gradually increasing across Colorado (Griffin, 2013; Ziebarth, 2005). At the beginning of the 1990s, educational leaders in Colorado felt that they needed to find new educational tools to offer their children better educational services. To accomplish this goal, they considered applying two educational tools to the state's K-12 system in 1992: tax increases for K-12 schools and vouchers for the state's students. However, Colorado voters did not approve these new educational tools (Ziebarth, 2005). This played the positive role of allowing Coloradans to consider charter schools as new educational tools that would help change and reform the circumstances of Colorado's K-12 system (Hirsch, 2002). In 1993, decision-makers from both the Democratic and Republican parties passed the statute that enabled the operation of charter schools and introduced it to Colorado residents. The law has since been implemented by many school districts.

The two leading charter schools—the Academic Charter School and the Connect School—were established in the Douglas County RE-1 and Pueblo County 70 school districts, respectively, in the 1993-1994 school year (Griffin, 2013). As described in Figure 1, the Colorado Department of Education (CDE) indicates that Colorado's charter schools expansion reached 178 charter schools during the 2011-2012 academic year. The number of charter schools in Colorado makes up about 9.9% of the total number of Colorado's K-12 public schools. CER (2012) reports that there are approximately 79,000 students enrolled in Colorado's charter schools.

As of the 2011-2012 academic year, there are 178 charter schools spread across Colorado. The Denver County 1 School District provides its students with the most charter schools (31) and the Jefferson County R-1 School District provides its students with the second most charter schools (16). Ziebarth (2005) demonstrates that more of

Figure 1. The Growth of Colorado's Charter Schools from the 1993-1994 to 2011-2012 Academic Year



Source: Data from the Center for Education Reform (1993 to 2001) and the Colorado Department of Education (2002 to 2012)

Colorado's charter schools are located in rural areas compared to other states, although the above two activist school districts are located in urban and suburban areas.

The literature review indicates that this charter school expansion has led to an imbalance of charter school services among Colorado's school districts. That is to say, some school districts more actively provide charter schools for their residents while others do not. This study defines this imbalance in local charter school services as a variation in local charter school policy implementation and empirically explores why this policy implementation phenomenon is happening among Colorado's local governments. On the basis of the current situation regarding charter school policy implementation in Colorado school districts, the research topic is: why have Colorado's school districts unevenly implemented state charter school policy? The next sections are included for helping to scrutinize more specific explanatory factors that can address this study's goal.

THEORETICAL APPROACHES

Charter schools have been recognized as a successful educational innovation by many Coloradans since voters passed the charter school law in 1993 to provide education customers with better educational services. However, there is the variation in the policy implementation phase where each Colorado school district executes the state's charter school legislation. This study researches why this variation in charter school

policy implementation exists among Colorado's school districts.

The desire to understand the variation in charter school policy implementation can be satisfied with basic and simple utilitarian reasons like student performance—graduation rate or test scores. Student performance is an important factor prompting schools and school districts to find and put in place new educational institutions. However, it seems that this reasoning only accounts for the policy implementation mechanism from a very narrow perspective. Other new factors beyond a common factor like student performance must be studied to explain the charter school policy implementation mechanisms more specifically. In order to accomplish this, the study employs both policy networks and some school district characteristics.

Policy Networks

The use of the term networks, as opposed to individual or isolated organizations, is notable among the jargon explaining inter-organizational arrangements or settings in multiple academic fields as its use has been growing remarkably in several disciplines over the past four decades. deLeon and Vogenbeck (2007) define networks as complexes of organizations working together to accomplish the same goal. Some scholars currently argue that the primary role of networks in joint organization actions is to reduce transaction costs and solve collective action problems by improving trust among policy actors (Burt, 2000). Scholars also declare that networks help policy actors share information (Borgatti & Foster, 2003; deLeon & Vogenbeck, 2007; Granovetter, 1973). Scholars of policy and public administration emphasize that the joint actions by organizations involved in a specific public policy are the main factors in delivering specific public policies to citizens (Goldsmith & Eggers, 2004). Based on this fundamental perspective, the study argues that jurisdictions connected with other organizations deliver public services to their residents more actively by implementing specific policies that improve jurisdictions or make their residents more satisfied. Therefore, it can instinctively be presumed that there is an association between networked organizational arrangements and policy implementation, which is also expressed as public service delivery.

Previous research on state governments in public education policy has provided persuasive evidence of the aforementioned presumption. Several studies prove that education policy outcomes are influenced by networked organizational arrangements. In particular, the studies of Mintrom and his colleague have deeply explored the mechanisms related to charter school policy outcomes at the state level. Moreover, they have categorized network styles by applying both external and internal definitions to networks. Mintrom (2000) and Mintrom and Vergari (1998) introduce external

(inter) policy networks and internal (intra) policy networks by integrating policy networks with the concepts of inter/intra. External policy networks consider networks of individuals or organizations at a different level such as federal, state, and local while internal policy networks indicate the networks of individuals or organizations at the same level. Their discoveries indicate that internal networks foster agenda setting and approval (or adoption) and external networks generate agenda setting in the policy process. This means that policy networks provide more opportunities for policy formulation and implementation in the policy process. In the case of this research, external (inter) policy networks are mainly considered because school districts are at the local level and seven organizations, involved with Colorado's public educational innovations, are at the state level.

Several studies exploring the role of policy networks in the policy process describe a positive relationship between policy networks among organizations and the process of public educational innovations (Cibulka, 2001; Mintrom 2000; Mintrom & Vergari, 1998). Among them, Cibulka (2001) illustrates that the development of policy networks in education policy has a relationship with the growth of national discourse and diverse demands for public school innovation. His study indicates that the growth of policy networks increases public educational innovations. Furthermore, Torenvlied et al. (2012) explain that the development of local education in the USA has been possible with interdependent institutional arrangements. In addition, Meier and O'Toole (2001) emphasize that school districts are public entities accustomed to networked organizational arrangements. School districts are always open to possibilities to connect with several policy actors—public education organizations or legislators at the state level, private organizations, and other school districts at the local level—even though each school district has the taxing power to collect their own revenues.

In the case where school districts implement and manage policies, school districts are naturally embedded in collaboration with other entities (Meier & O'Toole, 2001). In this study, other network nodes that share information on charter schools with school districts are seven organizations at the state level: the Best Board (BEST); the Colorado Education Association (COEA); the Colorado Charter School Institute (CCSI); the Colorado Department of Education (CDED); the Colorado Children's Campaign (CCCM); the Colorado League of Charter Schools (CLCS); and the Education Leadership Council (ELCO). The literature review indicates that these seven public and non-profit organizations are primary policy actors deeply involved in Colorado's school choice movement. Therefore, it makes sense that this study tests whether a school district's implementation of charter school policy increases when there is a strong (dense) connection between a school district and the seven public and non-profit organizations.

This research uses policy network density to measure the external (inter) policy networks between a school district at the local level and the seven organizations at the state level. Scott (2000) defines the density of a network as "the number of lines in a graph, expressed as a proportion of the maximum possible number of lines" (p. 71). That is to say, the density of a network is measured by dividing the number of actual ties among policy actors by the number of total possible ties among total policy actors (Daly et al., 2014). Thus, the degree of network density ranges from zero to one.

The value of network density between each school district and the seven non-profit and public organizations are measured by using the UCINET 6 software, which was updated by Borgatti et al. in 2002. To measure this variable, this study collected data through surveys given to superintendents in each school district and representatives of the seven organizations in 2012. A main question in the surveys asks the respondent to check if there are any organizations that share information relevant to school choice tools and respondents mark a number one when there are any organizations or school districts sharing information related to school choice tools and otherwise record a number zero.

The response rate from superintendents was about 70%. Based on the responses to this survey questionnaire, the matrix of network interactions between the aforementioned organizations and each school district are made as shown in Figure 2. The value of each matrix is estimated by UCINET 6. The way of measuring contacts between

Figure 2. A Sample of the Matrix of the Density of Policy Networks

	BEST	COEA	CCSI	CDED	CCCM	CLCS	ELCO	PUBC
BEST		0	1	1	1	1	0	0
COEA	1		0	1	1	0	1	1
CCSI	1	1		1	1	1	0	1
CDED	1	1	1		1	1	1	1
CCCM	1	1	1	1		1	1	1
CLCS	1	1	1	1	1		0	1
ELCO	1	1	0	1	1	1		1
PUBC	1	1	1	1	1	1	0	

Note: 1. "PUBC" stands for Pueblo City 60 school district. UCINET 6 estimates the value of its policy network density as 0.839. Using survey responses from 126 school districts and seven organizations, the authors made 126 matrices in this format to measure the Density of policy networks between each organization and each school district.

2. BEST (Best Board), COEA (Colorado Education Association), CCSI (Colorado Charter School Institute), CDED (Colorado Department of Education), CCCM (Colorado Children's Campaign), CLCS (Colorado League of Charter Schools), and ELCO (Education Leadership Council).

each school district and the seven organizations helps this research conceptualize policy networks as the degree of network density made by their contacts. Thus, if the final UCINET 6 result provides a school district with the highest value network density, this means that the school district has the strongest policy network among the 126 school districts that responded to the survey.

Characteristics of Colorado School Districts

Although this research is primarily interested in empirically testing the explanatory power of policy networks for explaining the uneven implementation of Colorado school districts' charter school policy, this research needs to consider the testing characteristics of each school district that could possibly answer the research question. Some scholars (Renzulli & Roscigno, 2005; Wong & Langevin, 2007) indicate that jurisdiction characteristics play critical roles in accounting for dynamic policy process mechanisms. In particular, scholars (Bushouse, 2011; Ostrom, 2007, 2011), who are dedicated to using the Institutional Analysis and Development (IAD) framework, highlight the importance of analyzed subject or entity characteristics in analyzing policy process phenomena.[3] Along with these scholars who put a high value on the explanatory role of jurisdiction characteristics, this research constructs six hypotheses on the basis of some representative elements that portray each school district's characteristics.

According to the relationship between a jurisdiction's service capacity and the outcome variable, Walker's (1969) concept of policy emulation provides a valuable hypothesis. His logic is that jurisdictions that lack their own service capacity want to change and improve themselves through other innovative policies. Therefore, a jurisdiction's service capacity becomes a factor that encourages jurisdictions to adopt and implement innovative new policies. This study applies Walker's academic insight to support a hypothesis related to the ratio of the number of students to the number of teachers in each school district. A lack of school teachers in public schools directly affects student achievement and educational customers recognize that their own school districts' service is bad. It seems that the possibility of local implementation of charter school policy will increase when the number of teachers in public schools is insufficient. Therefore, it is predicted that the higher the ratio of the total number of students to the total number of teachers in a school district the likelier school districts are to

3. Ostrom (2007) expresses a real field where the policy process happens as an "action arena" (p. 27). An action arena consists of both "action situations" and "actors." In this study, the actors are Colorado's school districts, and their action situations are implementing charter school policy.

implement charter school policy. This variable is measured by a ratio of the total number of students divided by the total number of teachers.

Schneider et al. (2000) emphasize that highly-educated adults can obtain better and more information for schools by creating and developing their own networks. Their explanation supports it being feasible for school districts with more highly educated adults to meet more customer requests for educational innovations. Furthermore, Lee and Jeong (2012) demonstrate that the aforementioned prediction of Schneider and his colleagues is correct. Therefore, school districts with more residents with a higher degree of education are more likely to increase the chance of implementing charter school policy. This variable is measured by the percentage of residents with a bachelor's degree or higher in each school district.

Among the three categories of isomorphism emphasized by DiMaggio and Powell (1983), coercive isomorphism explains why organizations change through a resource dependency mechanism. Its main proposition is "The greater the centralization of organization A's resource supply, the greater the extent to which organization A will change isomorphically to resemble the organizations on which it depends for resources" (p. 154). Their view can be extended: organizations (jurisdictions) choose and implement specific policies due to the influences of organizations at a higher level that offer multiple resources and institutions. With this understanding of the definition of coercive isomorphism, the study makes and tests a hypothesis: Colorado's school districts are more likely to implement a charter school policy when their financial condition depends more on financial support from Colorado. To measure this variable, the study calculates the rate of state-supported financial aid out of the whole budget of each school district.

Renzulli (2005) demonstrates that the existence of similar innovative education policies increases the likelihood that jurisdictions enact charter school policy at the state level and implement it at the local level. Jurisdictions already accustomed to similar educational tools will resist less when their own school districts implement charter school policy because decision-makers or educational customers in their territory already know the content of charter schools, and the cognitive legitimacy for school choice movement tools helps jurisdictions implement charter school policy. Thus, it is predicted that the more active implementation of other styles of similar education policies has a positive influence with the implementation of school districts' charter school policy. The ratio obtained by dividing the number of private schools by the number of traditional public schools in each school district is used as a proxy for this variable.[4]

4. A charter school is established on a market-based conception like a private school (Chubb

It is typical for jurisdictions with residents at a higher economic level to meet multiple requests from residents in their own territory and governments always consider their demands in the policy formulation and implementation stages (Berry & Berry, 2007). Regarding mechanisms of the school choice movement, Chubb and Moe (1990) and Schneider et al. (2000) highlight that parents with higher income obtain more qualified information on schools, and parents who have good information related to schools can ask public education governments for more and better education services for their children. Therefore, school districts with poorer residents are less likely to implement charter school policy. The poverty rate in each school district is utilized to measure this variable.

The final predictor variable is race because many policies in the USA are influenced by minorities. Some scholars point out that many traditional public schools do not usually satisfy families of color (Good & Braden, 2000; Levy, 2010). Therefore, minorities want more educational institutional options for their children. Furthermore, minorities think education as the best tool for raising or improving their social status. This means that school districts with more minorities are more likely to implement charter school policy. However, the 2013 descriptive report by the Colorado League of Charter Schools indicates the reverse, that there are more white students than minority students in Colorado's charter schools. Therefore, it will be meaningful to test the race factor in explaining the uneven implementation of Colorado school district charter school policy. This independent variable is measured by the total number of white residents in each school district.

RESEARCH DESIGN AND ANALYSIS RESULTS

The main research question is to examine the explanatory factors affecting the variation in the charter school policy implementation among Colorado's school districts.

& Moe, 1990; Schneider, et al., 2000; Vergari, 2002). Scholars who introduce a market-based approach into public education argue that noncompetition is a primary negative factor lowering traditional public school performance. They believe that market-based mechanisms help schools in the traditional public school system to change positively by competing with others. Thus, scholars (Mintrom, 2000; Wong & Langevin, 2007) utilize private schools as a proxy for measuring school choice movement tools—charter schools, open enrollment, magnet schools, and homeschooling—because their main concept is the same as that of private schools. Note: Private School Review (2014) indicates that Colorado has 552 private schools and about 70,500 students enrolled in those schools.

This article looks at answers to the research topic, using seven hypotheses coming from policy networks theory and characteristics of each school district in Colorado. Table 2 describes how each predictor variable is estimated and what the potential directions are for the outcome variable.

Table 2. Potential Directions of Predictor Variables on the Outcome Variable

Predictor Variable	Expected Direction	Estimate
Primary Variable		
Policy networks	positive	• Density of policy networks between each school district and seven other public education organizations
School District Characteristics		
Service capacity	positive	• Ratio of the total # of students / total # of teachers in each school district
Educational level	positive	• % of residents with a bachelor's or higher degree in each school district
State financial support	positive	• Rate of state financial support (total state support / total revenue of each school district) in each school district
Similar innovations	positive	• Ratio of total # of private schools / total # of public schools in each school district
Poverty	negative	• % of residents below the poverty line in each school district
Caucasian population	negative or positive	• Number of total white residents in each school district

The unit of analysis for this study is the school district. To test the hypotheses, this study uses a multiple OLS regression model because both the outcome variable and the seven predictor variables are continuous variables (Morgan, Leech, Gloeckner, & Barrett, 2013; Remler & Van Ryzin, 2011). The outcome variable is obtained from secondary data from the Colorado Department of Education (CDE). The other explanatory variables are collected through survey and non-survey data. The survey, which was necessary for measuring policy networks, was administered both to superintendents in Colorado's school districts and representatives of the seven organizations that lead Colorado's school choice movement. The primary sources for non-survey data are mainly provided by CDE. Based on the seven hypotheses, the overall equation model is constructed as follows:

$$VCSPI = \alpha + \beta_1 PNDE + \beta_2 SECA + \beta_3 EDLV + \beta_4 STFS + \beta_5 SMIN + \beta_6 POVT + \beta_7 CAPU + \varepsilon$$

(Note: VCSPI = variation in charter school policy implementation among Colorado's school districts; PNDE = Policy network density; SECA = Service capacity; EDLV = Educational level; STFS = State financial support; SMIN = Similar innovation; POVT = Poverty; CAPU = Caucasian population)

Table 3 shows the descriptive content of all variables. The rate of charter school policy implementation in each Colorado school district ranges between 0 and 0.4.[5] The dataset indicates that the Park County School District has the highest score of 0.4 in the degree of charter school policy implementation. The density of policy networks between each school district and the seven other public organizations ranges between 0.625 and 0.839.[6] The ratio of the total number of students to the total number of teachers, which is used as a proxy for estimating the service capacity predictor variable, indicates that one teacher covers approximately 14 students. Nearly 24% of people over 25 years old in each school district have a bachelor's degree or higher. The average rate of financial support that school districts receive from the state is about 0.5. The ratio of the similar innovation predictor variable, which is measured by dividing the

Table 3. Descriptive Analysis of All of the Variables

	N	Minimum	Maximum	Mean
Charter school policy	178	0.00	0.40	0.0358
Policy networks	126	0.625	0.839	0.69435
Service capacity	178	5.3	33.4	14.008
Educational level	178	7.3	62.2	24.356
State financial support	178	0.03	0.93	0.5028
Similar innovations	178	0.00	0.80	0.0622
Poverty	171	1.2	24.1	8.805
Caucasian population	178	130	429385	19779.74

5. The value of the implementation of each Colorado school district's charter school policy is measured by dividing the number of charter schools that a school district supervises and supports by the whole number of K-12 public schools in each school district.
6. The final UCINET 6 results, which analyze the policy networks of each school district, indicate that two school districts—Mesa County Valley School District 51 and Pueblo City 60 School District—received 0.839, the highest policy network score.

total number of private schools by the total number of public schools in each school district, ranges between 0 and 0.8 with an average of about 0.06. The average percentage of residents below the poverty line in each school district is about 9%. The average number of Caucasians in the school districts is about 20,000.

The analyzed results of the study's equation model are shown in Table 4 and Table 5. Table 4 includes the values of the correlations, tolerance levels, and variance inflation factors (VIF) to measure whether there is multicollinearity among the predictor variables. As shown in Table 4, the statistical results estimating the multicollinearity indicate that the characteristics of each predictor variable do not contain similar characteristics that the other predictor variables have. Therefore, the statistical results obtained from the multiple OLS regression analysis can be expected to be more correct because there are no multicollinearity issues in the equation model.

Table 4. The Results of the Multicollinearity Analysis of All of the Predictor Variables

	PNDE	SECA	EDLV	STFS	SMIN	POVT	CAPU	Tolerance	VIF
PNDE	1.000							0.684	1.462
SECA	0.307**	1.000						0.722	1.386
EDLV	0.359**	0.132	1.000					0.510	1.960
STFS	-0.277**	-0.026	-0.480**	1.000				0.528	1.895
SMIN	0.243**	0.287**	0.345**	-0.287**	1.000			0.785	1.274
POVT	-0.152	-0.284**	-0.440**	0.360**	-0.187*	1.000		0.653	1.532
CAPU	0.459**	0.354**	0.392**	-0.146	0.392**	-0.242**	1.000	0.561	1.783

Note: PNDE = Policy network density; SECA = Service capacity; EDLV = Educational level; STFS = State's financial support; SMIN = Similar innovations; POVT = Poverty; CAPU = Caucasian population
Note: ** significant at e 0.01 level; * significant at the 0.05 level

Table 5 displays the statistical findings of the multiple OLS regression analysis, whose goal is to examine whether there are relationships between the outcome variable and each predictor variable when other predictor variables are held constant. First, the sample size is 120 cases, which do not have any missing values for any predictor variable. Table 5 demonstrates that since the *p*-value of the F-statistic is less than 0.01, the total equation model combining the seven predictor variables significantly predicts the variance of the outcome variable. The adjusted R^2 of 0.378 suggests that the seven predictor variables account for nearly 38% of the variance in the outcome variable. Three predictor variables among the seven predictor variables—policy networks, educational level, and service capacity—are statistically significant at the 0.01 level, 0.05 level,

Table 5. Determinants of the Outcome Variable

	Unstandardized Coefficient		Standardized Coefficients		
	B	S.E.	Beta	t	Sig.
Constant***	-0.423	0.080		-5.276	0.000
Policy networks***	0.573	0.113	0.443	5.085	0.000
Service capacity *	0.003	0.001	0.163	1.928	0.056
Educational level**	0.001	0.001	0.201	1.999	0.048
State's financial support	-0.002	0.034	-0.007	-0.070	0.944
Similar innovation	0.050	0.043	0.096	1.176	0.242
Poverty	-0.001	0.001	-0.065	-0.724	0.471
Caucasian population	-1.190E-007	0.000	-0.066	-0.685	0.495
N	120				
F (7, 113)***	11.415				
Adjusted R^2	0.378				

Note: Outcome variable: Rate (Number of charter schools / Total number of public schools in each Colorado school district)

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level

and 0.1 level respectively while the rest of the predictor variables are not statistically significant. Meanwhile, the three predictor variables demonstrate that the positive directions, predicted in each hypothesis, are right to explain the outcome variable as well.

These findings support that the logic of the first, second, and third hypothesis are correct. That is, these results show the hypotheses that those Colorado school districts that have stronger policy networks with the non-profit and public educational organizations, more highly educated residents, and worse service capacity are more likely to implement the state charter school policy. The standardized coefficients of the three statistically-significant predictor variables show that the policy network predictor variable is the most critical in explaining the outcome variable by indicating that the value of its standardized coefficient is higher than the value of the other two variables' standardized coefficients.

CONCLUSION

Scholars of policy and public administration have been interested in studying whether governance style has a significant effect on delivering public services to their customers. They usually divide governance style into two categories—single governance and collaborative governance.[7] Many recent studies indicate that the collaborative governance style is more effective than the single governance style at delivering a specific policy tool to customers. However, the literature review indicates that studies have not yet reached the area of local implementation of charter school policy. This current academic gap in the charter school policy literature has stimulated the authors to find a proper research case and theoretical approach in order to relieve this academic disparity. The authors first of all chose the policy network model as the main theoretical approach providing a rationale for why variation in local implementation of charter school policy exists and selected Colorado's school districts as the unit of analysis.

Colorado school districts make a good case because there are many school districts that collaborate more actively with the other state public and non-profit organizations while other school districts collaborate less actively with other organizations in delivering charter school services to their customers. This practical collaborative governance gap among Colorado school districts made it possible for this study to examine empirically why the variation in the local charter school policy implementation appears across Colorado. To test the effect of collaborative governance on local implementation of charter school policy, this study used the concept of network density to measure networks among the school districts and seven non-profit and public organizations at the state level. The final results significantly support that the variation in the local charter school policy implementation can be accounted for by the policy network factor.

A school district is a pubic organization that implements policy that a state government formulates. Colorado's charter school law was enacted in 1993. Since then, residents in some Colorado school districts have received more charter school services while residents in other school districts have not. As presumed, the results of this study confirm that a school district with strong (dense) networks with the other organizations more actively implements the state charter school policy. That is to say, this study demonstrates that it is true that residents in a school district conducting collaborative

7. In the case of public service delivery or the public policy decision-making process, single governance is a style where a single government or public sector entity works alone to accomplish a public goal or make decisions. However, collaborative governance is a style leading several stakeholders—governments, private companies, non-profit organizations, citizens, and others—to work collectively (Ansell & Gash, 2008).

governance have received more charter school services. Likewise, this final result suggests that a school district that wants to deliver more charter school services to their residents needs to pursue collaborative governance characterized as inter-organizational arrangements more than a single government structure.

Based on this academic finding, this study supports that, in the case of Colorado, an open and democratic organizational orientation where a school district collaborates with other organizations by sharing charter school information is a good strategy for a school district that wants to implement state charter school policy more actively in its own territory. On the other hand, future studies can contribute by finding more answers to this study when they test whether internal (or intra) policy networks between one school district and other districts facilitate implementation of state charter school policy. This article was not able to investigate the role of internal policy networks on the local implementation of charter school policy because the current dataset does not include information related to internal policy networks.

According to the other findings, the service capacity predictor variable shows that school districts more actively implement charter school policy when school districts cannot provide students with better education services due to lack of teachers in their territory. This finding explains that Colorado school districts regard and use charter schools as alternative institutions in the case that their traditional public schools do not offer their customers qualified educational services. Thus, charter schools are, at least, considered and used in Colorado as innovative educational institutions to make up for school districts' poor education services.

Another empirical result of the study clarifies that residents' educational level positively affects the uneven implementation of the charter school policy among Colorado school districts. This empirical result can be supported through Schneider and his coauthors who demonstrated that highly educated parents more actively gather information related to school choice than uneducated ones do. Schneider and his colleagues account for this phenomenon with social networks that are created by highly educated parents. Namely, the highly educated make and manage social networks well with other parents interested in gathering school information, and they obtain more and better information about schools through these social networks. Thus, parents who are involved in social networks that consist of highly educated parents can ask their school districts for more and better education services because they have highly qualified education information obtained through their social networks.

Based on the results of both policy network and educational level predictor variables, it will be good and meaningful for future studies to consider extending the scope of this study from only the organizations' policy networks to all-encompassing policy networks including individuals as well as interest groups. In studying education policy

mechanisms more than one decade ago, Mazzoni (1995) highlighted the roles of individuals and interest groups in the education policy area. The emergence of individuals and interest groups in education policy shows that future studies analyzing the roles of policy networks in the education policy process need to cover mixed policy networks including several policy actors—individuals, interest groups, or organizations—at all levels.

In addition, as indicated in Table 1, CER (2012) ranks the 42 jurisdictions with a charter school law, using grades from A to F. This means that it will be useful for future studies to examine local charter school implementation across representative states in the different CER categories to obtain more in-depth answers explaining the dynamic mechanisms of local charter school policy implementation because each state has its own unique environment. This academic trial will also improve the generalizability of the current study by analyzing more school district cases in states that are representative of each grade category from A to F. Meanwhile, it would be good for future studies to use results comparing national or state average student test scores with school district averages as an alternative proxy for estimating the student performance of each school district. The suggestion is that a school district is more likely to implement a charter school policy when its average student test scores are lower than the national or state averages. Finally, this study did not test the role of political characteristics on local charter school policy implementation. Teske (1991) emphasizes that political tendency is a primary factor in examining public policy process mechanisms. His research proves that political tendencies—Democratic or Republican—affect whether and when a jurisdiction adopts or implements a specific public policy. Based on this academic finding, future studies will need to investigate whether a school district is influenced by its political tendency when it more actively implements a state charter school law.

REFERENCES

Ansell, C., & A. Gash. 2008. Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4): 543-571.

Berry, F. S., &W. D. Berry.2007. Innovation and diffusion models in policy research. In P.A. Sabatier (Ed.), *Theories of the policy process* (pp. 223-260). Boulder, CO: Westview Press.

Borgatti, S. P., &P. C. Foster. 2003. The network paradigm in prganizational research: A review and typology. *Journal of Management*, 29(6): 991-1013.

Borgatti, S. P., M. Everett, & L. Freeman. 2002. *UCINET for windows: Software for social network analysis*. Harvard, MA: Analytic Technologies.

Buckley, J., & M. Schneider. 2007. *Charter schools: Hope or hype?* Princeton, NJ: Princeton University Press.

Burt, R. S. 2000. The network structure of social capital. *Organizational Behavior*, 22: 345-423.

Bushouse, B. K. 2011. Governance structures: Using IAD to understand variation in service delivery for club goods with information asymmetry. *Policy Studies Journal*, 39(1): 105-119.

Center for Education Reform. 2012. *Charter school laws across the states*. Retrieved from http://www.edreform.com/wp-content/uploads/2012/04/CER_2012_Charter_Laws.pdf.

Chubb, J., & T. Moe. 1990. *Politics, markets, and the organization of schools*. Washington. DC: Brookings.

Cibulka, J. 2001. The changing role of interest groups in education: Nationalization and the new politics of education productivity. *Educational Policy*, 15(1): 12-40.

Colorado League of Charter Schools. 2013. Charter school facts. Retrieved from http://www.coloradoleague.org/colorado-charter-schools/charter-schools-fact-sheet.php.

Daly, A. J., K. S. Finnigan, S. Jordan, N. M. Moolenaar, & J. Che. 2014. Misalignment and perverse incentives: Examining the politics of district leaders as brokers in the use of research evidence. *Educational Policy*, 28: 145-174.

deLeon, P, & D. M. Vogenbeck. 2007. Back to square one: The history and promise of the policy sciences. In J. Rabin, W. B. Hildreth, & G. J. Miller (Eds.), *Handbook of public administration* (pp.503-539). NY: Taylor & Francis.

DiMaggio, P., & W. Powell. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2): 147-160.

Goldsmith, S., & W. D. Eggers. 2004. *Governing by network: The new shape of the public sector*. Washington, DC: Brookings Institution Press.

Good, T. L., & J. S. Braden. 2000. Charter schools – Another reform failure or a worthwhile investment? *Phi Delta Kappan*, 81(10): 745-755.

Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology*, 78(6): 1360-1380.

Griffin, J. 2013. *Colorado's charter schools: Their history and their future*. Denver Post. Retrieved from http://www.denverpost.com/ci_23261474/colorados-charter-schools-their-history-and-their-future#

Hall, T. E., & L. O'Toole. 2000. Structures for policy implementation: An analysis of national legislation, 1965-1966 and 1993-1994. *Administration & Society*, 31(6): 667-686.

Hall, T. E., & L. O'Toole. 2004. Shaping formal networks through the regulatory process. *Administration & Society*, 36 (2): 186-207.

Hess, F. M. 2008. *The future of educational entrepreneurship: Possibilities for school reform*. Cambridge, MA: Harvard Education Press.

Hirsch, E. 2002. The colorado charter schools act. In Vergari, S. (Ed.). *The charter school landscape* (pp. 93-112). Pittsburgh, PA: University of Pittsburgh Press.

Kolderie, T. 2005. *Ray budde and the origins of the 'charter concept'*. Retrieved from http://www.educationevolving.org/pdf/Ray-Budde-Origins-Of-Chartering.pdf.

Lee, J., & Jeong, J. 2012. Explanatory factors for the uneven implementation of charter school policy. *Korean Journal of Policy Studies*, 27(1): 153-172.

Levy, T. 2010. Charter schools legislation and the element of race. *Western Journal of Black Studies*, 34(1): 43-52.

Mazzoni, T. L. 1995. State policymaking and school reform: Influences and influentials. In J. D. Scribner, & D. H. Clayton. (Eds.), *The study of educational politics* (pp. 53-73). Washington, DC: The Falmer Press.

McGuinn, P. 2003. *Breaking open the iron triangle? Interest groups, public opinion, and federal education policy*. Paper presented to the 2003 Northeastern Political Science Association Conference.

Meier, K. J., & L. O'Toole. 2001. Managerial strategies and behavior in networks: A model with evidence from U.S. public education. *Journal of PublicAdministration and Theory*, 11(3): 271-293.

Meier, K. J., & L. O'Toole. 2003. Public management and educational performance: The impact of managerial networking. *Public Administration Review*, 63(6): 689-699.

Meier, K. J., & L. O'Toole, L. 2005. Managerial networking: Issues of measurement and research design. *Administration & Society*, 37(5): 523-541.

Mintrom, M. 2000. *Policy entrepreneurs and school choice*. Washington, DC: Georgetown University Press.

Mintrom, M., & S. Vergari. 1997. Education reform and accountability issues in an intergovernmental context. *Publius*, 27(2): 143-166.

Mintrom, M., & S. Vergari. 1998. Policy networks and innovation diffusion: The case of State education reforms. *The Journal of Politics*, 60(1),126-148.

Morgan, G. A., N. L. Leech, G. W. Gloeckner, & K. C. Barrett. 2013. *IBM SPSS for introductory statistics: Use and interpretation* (5th ed.). New York, NY: Routledge.

Ostrom, E. 2007. Institutional rational choice: An assessment of the institutional analysis and development framework." In P. Sabatier (Ed.), *Theories of the policy Process*. Boulder, CO: Westview press.

Ostrom, E. 2011. Background on the institutional analysis and development framework.

Policy Studies Journal, 39(1): 7-27.
Private School Review. 2015. *Colorado private schools*. Retrieved from http://www.privateschoolreview.com/state_private_schools/stateid/CO.
Remler, D. K., & G. G. Van Ryzin. 2011. *Research methods in practice: Strategies for description and causation.* Thousand Oaks, CA: SAGE publications, Inc.
Renzulli, L. A. 2005. Organizational environments and the emergence of charter schools in the United States. *Sociology of Education*, 78(January): 1-26.
Renzulli, L.,& V. J. Roscigno. 2005. Charter school policy, implementation, and diffusion across the United States. *Sociology of Education*, 78(October): 344-366.
Rogers, E. M. 2003. *Diffusion of innovation* (5th ed.). New York: Free Press.
Schneider, M., P. Teske, & M. Marschall. 2000. *Choosing schools: Consumer choice and the quality of American schools.* Princeton, NJ: Princeton University Press.
Scott, J. 2000. *Social network analysis: A handbook* (2nd ed.). Thousand Oaks, CA: Sage Publications.
Teske, P. 1991. Interests and institutions on state regulation. *American Journal of Political Science*, 35(1): 139-154.
Torenvlied, R., A. Akkerman, K. J. Meier, & L. O'Toole. 2012. The multiple dimensions of managerial networking. *American Review of Public Administration*, 43(3): 251-272.
Vergari, S. 2002. *The charter school landscape*. Pittsburgh, PA: University of Pittsburgh Press.
Vergari, S. 2007. The politics of charter cchools. *Educational Policy*, 21(1): 15-39.
Walker, J. L. 1969. The diffusion of innovations among the American states. *American Political Science Review*, 63(3): 880-899.
Wohlstetter, P., & L. Anderson. 1994. What can U.S. charter schools learn from England's Grant-Maintained Schools? *Phi Delta Kappan* 75(6): 486-491.
Wong, K. K., & W. E. Langevin. 2007. Policy expansion of school choice in the American states. *Peabody Journal of Education*, 82(2-3): 440-472.
Ziebarth, T. 2005. *Peaks and valleys: Colorado's charter school landscape*. Retrieved from http://www.ppionline.org/documents/Colorado_Charter_1220.pdf.