

# Interest Groups, County Characteristics, and Local Growth Management Policy Instruments

Jeongho (John) Lee\*

**Abstract:** The primary intent of this study is to investigate what factors drive local governments to implement growth management policy instruments. To answer this research question, this study chose Colorado counties, where local governments voluntarily adopt and implement growth management policy instruments. That means that a wide variation in growth management policy instrument implementation appears among Colorado's local governments. That is to say, some counties more actively implement growth management policy instruments while the rest of counties do not. Utilizing a statistical tool, this article tests seven hypotheses based on the interest group model and county characteristics to empirically explicate this uneven implementation phenomenon of growth management policy instruments across Colorado. The analyzed results prove that counties with many anti-growth management policy interest groups are less likely to implement growth management policy instruments. In addition, the analyzed results demonstrate both that counties earning more income from tourism and counties with highly educated residents are more likely to implement growth management policy instruments, while counties supporting the Democratic Party are less likely to implement growth management policy instruments.

**Keywords:** interest groups, county characteristics, regulatory policy, smart growth

## INTRODUCTION

Growth management policy has produced its diverse instruments that control urban sprawl and preserve green environments since the first generation of growth management policy had appeared in the United States of America (Feiock, 2004; Navarro & Carson,

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1991; Steel & Lovrich, 2000). Influential growth management policy instruments—open space, zoning, and development impact fees, and so forth—attempt to protect environmentally sensitive lands, maintain the quality of agricultural lands, and develop eco-friendly environments (DeGrove, 1984, 2005; Kelly, 1993).

Research relevant to growth management policy has been blossoming in policy process studies—formulation, implementation, and evaluation areas (Anthony, 2004; Hamin, Steere, & Sweetser, 2006; Lubell, Feiock, & Ramirez, 2005). This study focuses on examining mechanisms of a local growth management policy implementation stage. To concentrate on this research goal, this article centers on the case of Colorado counties. The census delineates that Colorado has experienced a rapid population increase of one million since the 1990s. This mushroom growth has made Colorado's local governments consider resolving reduced green space issues, unaffordable housing issues, and traffic problems (Ingram, Carbonell, Hong, & Flint, 2009; Wallis, 2012). A growth management policy instrument is a pivotal strategy to resolve these social issues across Colorado.

Colorado started the first trial to prevent environmental destruction from unplanned and rapid growth in the mid-1960s. However, the style of its growth management policy has been differently developed compared to other states (White & Dahl, 2001). Colorado does not pursue a top-down growth management policy ordinance by not adopting the state growth management law (Colorado Department of Local Affairs, 2010; Ingram, et al., 2009). In the case of implementation of growth management policy instruments, this situation allows local governments to make autonomous and voluntary environmental decisions in that local governments can choose and implement their own growth management policy instruments without direct control and guidance of state governments. Colorado is a typical state pursuing a bottom-up style in conducting growth management policy strategies (Wallis, 2012). Therefore, Colorado is a good case for studying the mechanisms of local growth management policy instrument implementation.

For decades, environmental policy scholars have questioned under what factors local governments adopt or implement growth management policy instruments. To seek answers to this research question, this study focuses on investigating the association between growth management policy instrument implementation and 1) interest groups and 2) Colorado county characteristics. This article is composed of five parts excluding the part of introduction. The first part describes the general content of growth management policy across the USA and Colorado. The second part explains seven hypotheses related to the interest group model and county characteristics. The third part accounts for the content of methodology used in this study. The fourth part interprets the statistical results. The last part mentions conclusion and proposes some implications for future studies.

## **OVERVIEW AND EXAMPLE OF GROWTH MANAGEMENT POLICY**

Regarding the general content of growth management policy, Hawaii is recognized as the first state that adopted growth management policy by passing a land use law in 1961 (Anthony, 2004; Kelly, 1993). Howell-Moroney (2007, 2008) delineates that the law gives its State Land Use commission the power to determine the location, use, and timing of new development across the state. That is to say, the primary goal of growth management policy is to prevent rapid growth and unplanned development of jurisdictions—counties and cities (Dierwechter, 2008). After Hawaii passed its growth management law, 12 states enacted their own growth management legislations (Wallis, 2012).

All growth management laws focus on decreasing environmental costs and negative externalities occurring from rapid growth and environmental destruction. For this, their instruments—population growth caps, residential building permit caps, and development moratoria—are designed for smart growth of jurisdictions that would provide residents with more pleasant environments (Howell-Moroney, 2007). Anthony (2004) and Navarro and Carson (1991) evaluate that growth management policy across the USA has been successful in helping jurisdictions' sustainable growth and providing their residents with eco-friendly environments.

Scholars (Feicok, 2004; Navarro & Carson, 199; Steel & Lovrich, 2000) who have been dedicated to growth management policy studies categorize growth management policy as two generations. The period of the first generation covered the 1970s. Its main goal was to control the rate of residential housing construction on the supply side. Its instruments include restriction of apartments, control on floor area minimum, open space, urban growth boundary, and zoning. The period of the second generation covered the 1980s and the 1990s. It was usually designed to charge new entrants such as new residents and developers for using infrastructure and public facilities. Its main instruments are development impact fees.

Colorado is the eighth state that has the largest land among 50 states (Ingram et al., 2009). Coloradans boast about spectacular scenes that almost 50 peaks over 14,000 feet provide. Many tourists visit Colorado to look around these natural marvels and enjoy outdoor sports every year. Aguilera (2008) reported that there were approximately 28 million tourists who took overnight travels to Colorado in 2007. However, Coloradans worry that Colorado's growth has been very rapid since the 1980s. Colorado's population was over five million in 2010. Since 1990, Colorado's population has increased about one million (Wallis, 2012). The census indicates that Colorado was the third fastest growing state in the nation at the end of the 20th century. This

rapid growth has caused some negative issues such as a lack of affordable housing, traffic congestion, and a loss of green space. These negative results caused by rapid growth made Coloradans consider pursuing smart growth.

Colorado voters have generally supported regional environmental policies, which provide local governments with more discretion on environmental policy choices, rather than state-centered environmental policies by not signing the growth management law at the state level unlike other states (Anderson, 1999; Ingram et al., 2009; Porter, 1999). That means that the unique style of Colorado's growth management policy is to delegate power to local governments first. This is commonly called an autonomous style enhancing voluntary regionalism (Ingram et al., 2009).

The voluntary tradition shown in the direction of Colorado's environmental policies was based on the so-called the Local Government Land Use Control Enabling Act of Colorado (C.R.S. 29-20-101), which was enacted in 1974. It has encouraged local governments to autonomously adopt and implement growth management policy instruments by emphasizing that all local governments in Colorado are not mandated by state laws when they adopt and implement growth management policy instruments related to land use (CDLA, 2010; Ingram et al., 2009). To give local governments more authorities to control environmental policies, former governor Romer proposed the Smart Growth Amendment (Amendment 24) in the mid-1990s. However, it was not passed by the Colorado Senate in 2000 (Ingram et al., 2009; Wasserman, 2003). After that, former Governor Owens, Romer's successor, made a critical road map for growth management policy that enables local governments to make and select proper instruments to manage growth in their territories voluntarily. To support local governments' voluntarism, he established the Office of Smart Growth in the Colorado Department of Local Affairs (Ingram et al., 2009). This political history of Colorado's environmental policies helps local governments adopt and implement their environmental policy instruments by themselves.

Colorado's growth management policy has been grown on the voluntarism. This means that what local governments implement a growth management policy instrument is affected by jurisdiction's internal characteristics rather than state's pressure. Meanwhile, the voluntarism circumstance of Colorado leads a broad variation in the implementation of growth management policy instruments among Colorado's counties. To answer why this variation in the implementation of growth management policy instruments exists among Colorado counties, this article focuses on development impact fees, which are popular growth management policy instruments in Colorado.

As of 2013, the Colorado development impact fees have been broadly implemented at the county level. However, this does not mean that all of the Colorado counties evenly implement development impact fees. Namely, some counties more actively

implement development impact fee policy by using several development impact fees while other counties do not. This situation is translated to one research question as follows: under what circumstances the uneven growth management policy instrument implementation emerges among Colorado's counties? The next section employs the interest group model and county characteristics to answer this research question.

## **THEORETICAL APPROACHES TO GROWTH MANAGEMENT POLICY INSTRUMENTS**

This study utilizes seven explanatory variables relevant to interest groups, Colorado county characteristics, and control variables. No one doubts that interest groups are primary policy actors who affect mechanisms of the policy process (Chari, Hogan, & Murphy, 2010; Lee, 2014). Several scholars (Loomis & Cigler, 2006; Ramirez, 2009) demonstrate that a critical role of interest groups is usually shown in the growth management policy process as well. This study expects that counties with many anti-growth management policy interest groups are less likely to implement growth management policy instruments while counties with many pro-growth management policy interest groups are more likely to implement growth management policy instruments. Meanwhile, county characteristics embrace both socioeconomic and demographic factors, which are essential factors when studying why jurisdictions—states, counties, cities, school districts, and towns—implement a specific policy instrument (Berry & Berry, 1990; Mintrom, 2000; Ostrom, 2007, 2011; Sabatier & Weible, 2007). These explanatory variables are expected to provide this study with accurate answers to this study's research question: what factors affect Colorado counties to more actively implement growth management policy instruments?

### **Interest Groups**

Many scholars (Fleischmann & Pierannunzi, 1990; Loomis & Cigler, 2006; Lubell et al., 2005; Nownes 2001; Ramirez, 2009) do not hesitate to argue that interest groups are pivotal policy actors in the public policy process. In America, their proliferation has begun in the 1960s and their activities have still been viable up until now (Nownes & Cigler, 2006). Interest groups' roles have been getting more powerful, and they actively lobby decision-makers to choose policies they prefer. It is possible due to interest groups' power and pressure, which are increased through media and protests. Mahood (2000) supports this view by arguing that policy outcomes are the products of interest groups' activities at the main points of the public policy process.

Especially, interest groups that strongly insist on their own property rights are influential policy actors in policy formulation and implementation (Lee, 2013; Lubell, et al., 2005). If homeowners' and developers' property is sincerely influenced by either pro-development policies to foster economic development or pro-environmental regulations to conserve environments, both homeowners and developers would not want to formulate and implement any policies that depreciate the value of their own property (Fleischmann & Pierannunzi, 1990). Moreover, when there are competing interest groups that have opposite opinions on the same policy, their reflections on that policy are shown in different actions to maximize their own benefits. For instance, developers and homeowners are recognized as anti-environmental and pro-environmental interest groups respectively. Strict environmental regulations toward developers can interrupt increasing their property's value. On the other hand, strong pro-development policies to homeowners decrease value of homeowners' property by destroying residential eco-friendly ambience. Therefore, to understand mechanisms of the growth management policy process completely, it is natural for us to consider the role of interest groups that are involved in the growth management policy process.

Interest groups that want to keep and increase their property value are closely related to the adoption and implementation of local governments' growth management policy because growth management policy is a regulatory policy that is most employed by government planning agencies to control where and how land is developed and what resources are allocated for community services (Lubell et al., 2005). As previously mentioned, two styles of interest groups—pro-environment (pro-growth management policy) and pro-development (anti-growth management policy)—are involved in the implementation of growth management policy instruments. In the case of Colorado, Cronin and Loevy (1993) mention that there are both development interest groups and environment interest groups relevant to growth management policy as follows: “the people of Colorado invariably divide into two groups. One group believes Colorado is obliged to use its resources to provide jobs and expand business opportunities. The other believes that preservation and conservation, and regulations that limit development are both desirable and, in the long run, in the vital interest of the state” (p. 10). Given their observation, it is possible to classify the former people group as a pro-development (anti-growth management policy) interest group and sort the latter people group as a pro-environment (pro-growth management policy) interest group.

Fischel (2001) identifies homeowners as pro-environmental interest groups. Homeowner interest groups can motivate residents who own houses to do greater political activities by emphasizing better economic profit, which occurs due to their communities' housing supply limit, to residents. Therefore, it is natural that powerful pro-environment (pro-growth management policy) interest groups connect with local government decision

makers to protect their residential circumstances and improve their property rights. According to Cox (1982), homeowners are positively associated with greater levels of mobilization against growth in communities. Namely, they are main policy actors in the Not-In-My-Back-Yard (NIMBY) movement. This means that interest groups supporting a value of pro-environment direction in public policy have a positive relationship with the implementation of growth management policy instruments.

Pro-development (anti-growth management policy) interest groups are regarded as being active and regular participants in local politics because business interests are concerned with the specific location of growth (Logan & Molotch, 1987). Clingermayer and Feiock (2001) indicate pro-development groups as anti-environment groups. Developers, realtors, contractors, construction trade unions, and financial institutions are examples of these groups (Lubell et al., 2005). Development interest groups are well organized political organizations with active representatives that deliver their political opinions to decision-makers. This situation gives development interest groups good opportunities in translating their preferences into policies. Another advantage that development interest groups possess is their perceived importance to local economies (Feiock & Kim, 2000). Several studies suggest a substantial degree of cooperation between business and policy regimes as an alliance between government officials and interest groups from the development and real estate/finance industries. This alliance might have more power in communities that desire more economic development. Development and growth interest groups would be particularly influenced by eco-friendly growth management policy instruments. Any changes that reduce development opportunities will disadvantage the development and growth interest groups. Therefore, it is expected that interest groups supporting a value of pro-development direction in public policy have a negative relationship with the implementation of growth management policy instruments.

## **County Characteristics**

Several classic studies demonstrate that growth management policy is influenced by several jurisdiction characteristics such as the unemployment rate of jurisdictions, a rapid population growth rate of jurisdictions, and the residents' educational level in jurisdictions. It is fundamental for researchers to test the impetus of jurisdiction characteristics in examining mechanisms of the policy process (Bushouse, 2011; Lee, 2014; Ostrom, 2007). Mazmanian and Sabatier (1980) also propose that jurisdictions' socio-economic and demographic factors are a good set of explanatory factors that help examine mechanisms of local institutional choice and use. Thus, based on these several scholars' common suggestions, this article employs three independent variables

including some socioeconomic and demographic factors in seeking answers to the research question.

### Socioeconomic Factors

A residents' educational level factor is included to explain why the variation in the growth management policy instrument implementation exists among Colorado counties. That is why some scholars (Gerber & Phillips, 2003; Lubell et al., 2005; Mohamed, 2008) prove that highly educated residents are more likely to be interested in their community problems and make discreet agreements with local land development to preserve their pleasant residential environments. Thus, it is predicted that jurisdictions with many highly educated residents are more likely to welcome the implementation of growth management policy instruments.

Several scholars (Feiock & Kim, 2000; Steel & Lovrich, 2000; Zahariadis & Morgan, 2005) find that jurisdictions with a poor economic situation are more likely to welcome pro-development policies to offer their residents more jobs and solve their fiscal stress resulting from weaker tax bases and the lack of revenue. Limiting growth means job loss and profit decrease and may hurt the poor more than anyone else. Inversely, Feiock (2004) and Howell-Moroney (2004) indicate that jurisdictions with a good economic situation do not want to develop their areas to preserve community character and eco-friendly circumstances. Their studies support that residents living in jurisdictions with a good economic situation prefer eco-aesthetics. People who pursue eco-aesthetics do not like industrial development that causes noxious pollutants, brings unexpected neighbors, and generates traffic problems to their community. Therefore, jurisdictions with a poor economic situation are less likely to welcome the implementation of growth management policy instruments.

### Demographic Factors

Many studies (Baldassare & Wilson, 1996; Diaz & Green, 2001; Dowall, 1980; Feiock, Tavares, & Lubell, 2008; Protash & Baldassare, 1983) have proved that population factors—density, size, and rate of increase—provide good explanatory reasons about why jurisdictions implement growth management policy instruments. Among them, Protash and Baldassare's (1983) research demonstrates that residents that experienced unpleasant life circumstances—serious traffic jams and expensive infrastructure costs—urge their local governments to control their jurisdictions' rapid growth. Some scholars (Feiock et al., 2008; Protash & Baldassare, 1983) demonstrate that jurisdictions' population growth positively affects the use of growth management policy instruments.

Thus, it is hypothesized that jurisdictions with large population growth are more likely to welcome the implementation of growth management policy instruments.

### **Control Variables**

Growth management policy leads local governments—counties and cities—to pursue smart growth making a balance between environmental conservation and economic development. Generally speaking, local governments expect to control rapid growth and provide their residents with better eco-friendly circumstances in their own territory through using growth management policy instruments. Thus, the main goal of growth management policy is closer to environment conservation rather than economic development in a jurisdiction (Pallagst, 2007). This means that growth management policy is useful for jurisdictions that earn much money from tourism because growth management policy instruments help conserve a nature and provide residents and travelers with eco-friendly facilities. Namely, jurisdictions whose economy strongly depends on tourism can make their economic situations better by implementing growth management policy instruments. Therefore, it is predicted that jurisdictions that earn much money from tourism are more likely to welcome the implementation of growth management policy instruments.

The political tendency of a jurisdiction plays a pivotal role in explaining policy formulation and implementation mechanisms (Mintrom, 2000; Teske, 1991). Mohamed (2008) also recommends that it is reasonable to test a jurisdiction's political tendency to more accurately know about mechanisms of growth management policy instruments. He declares that Democrats support environmental conservation through government regulations while Republicans advocate economic development policies that provide individuals with economic profit. Therefore, it is predicted that jurisdictions supporting the Democratic Party are more likely to welcome the implementation of growth management policy instruments.

## **METHODOLOGY**

This study targets to empirically investigate what factors drive Colorado counties to implement growth management policy instruments. An overall equation model is completed by the seven hypotheses developed in the previous section. The final equation model is as follows:

$$VGMPI = \alpha + \beta_1AGMIG + \beta_2PGMIG + \beta_3REDUC + \beta_4UNEMP + \beta_5POPCH + \beta_6TURIM + \beta_7POLTE + \varepsilon$$

Note: VGMPI=variation in growth management policy instrument implementation among Colorado’s counties; AGMIG=anti-growth management policy interest groups; PGMIG=pro-growth management policy interest groups; REDUC=residents’ educational level; UNEMP=unemployment rate; POPCH=population change; TURIM=tourism income; POLTE=political tendency

Table 1 shows the expected direction between each independent variable and the dependent variable. This study employs multiple ordinary least square (OLS) analysis to estimate the final equation model because the dependent variable, the uneven implementation of local growth management policy instruments, is a continuous variable and the seven independent variables are continuous variables (Hair, Balck, Babin, & Anderson, 2010; Remler & Van Ryzin, 2014; Wagner, 2013).

**Table 1.** Expected Direction between Colorado County GMP Instrument Implementation and Each Independent Variable

Independent Variables	Expected Direction
<b>Interest Groups</b>	
AGMIG	Negative
PGMIG	Positive
<b>Socioeconomic Factors</b>	
REDUC	Positive
UNEMP	Negative
<b>Demographic Factors</b>	
POPCH	Positive
<b>Control Variables</b>	
TURIM	Positive
POLTE	Positive

Note: D.V.: variation of growth management policy (GMP) instrument implementation among Colorado’s counties

I.V.s: AGMIG=anti-growth management policy interest groups; PGMIG=pro-growth management policy interest groups; REDUC=residents’ educational level; UNEMP=unemployment rate; POPCH=population change; TURIM=tourism income; POLTE=political tendency

## **Data Collection**

The author collected the main data of the county growth management policy through an e-mail survey and the 2010 Colorado county land use survey, which was created by the Colorado Department of Local Affairs (CDLA). The 2010 Colorado County Land Use survey was completed based on 45 counties that responded to the CDLA survey. The author conducted a survey to make up for the 2010 CDLA survey in 2013 and e-mailed 19 counties that did not answer the 2010 CDLA survey. The survey was e-mailed to a staff member in charge of growth management policy or land use policy in the 19 counties.<sup>1</sup> Based on these two data sources, the author was able to collect the data about the growth management policy information of 60 counties. The four counties that did not respond to the e-mail survey were treated as missing cases in the final dataset. They were Baca, Kit Carson, Mineral, and Sedgwick counties, which are small counties having a population of below 9,000. The final dataset including all of the other variables was completed in December, 2013.

## **Dependent Variable**

The dependent variable of this study is the variation of growth management policy instrument implementation of Colorado counties. In order to measure the dependent variable, this study utilizes development impact fees, which are a representative growth management policy instrument among several growth management policy instruments that Colorado's local governments have used.<sup>2</sup> The final dataset includes the information about the development impact fees of 60 Colorado counties.

Colorado supports that local governments autonomously and voluntarily choose

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1. The author conducted this e-mail survey in June, 2013. The e-mail survey questionnaire is as follows:

Please indicate where your county uses Development Impact Fees from the areas listed below.

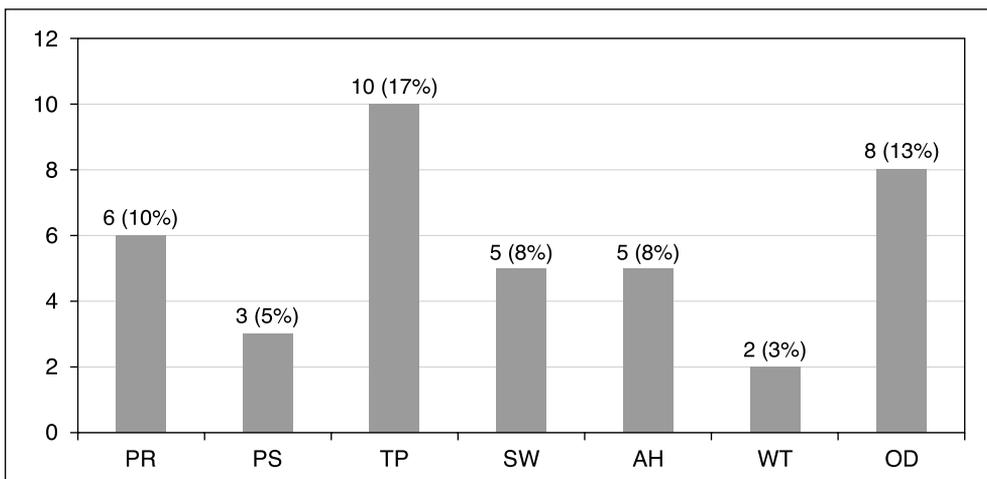
1) affordable housing 2) fire prevention 3) parks and recreation 4) public facilities 5) public safety 6) roads 7) schools 8) sewers 9) storm water management 10) transportation 11) trash 12) water 13) wind farms

or if your county uses Development Impact Fees in other areas, please tell me about those other areas.

2. Among several growth management policy instruments, Colorado's local governments utilize an urban growth boundary (UGB) to control rapid growth of a big city in the metro areas (Wallis, 2012).

and operate development impact fees that charge new entrants—residents and developers—for constructing infrastructure and using public facilities. In October, 2001, the Colorado General Assembly passed Senate Bill 15, which was coded as Section 29-20-104.5 of the Colorado Revised Statutes (White & Dahl, 2001). The Colorado statute defines development impact fees as “any fee, charge, or assessment relating to a capital expenditure which is imposed on land development as a condition of approval of such land development, as a prerequisite to obtaining a permit or service” (SB 15). White and Dahl (2001) emphasize that its content explicitly draws that local governments can impose development impact fees to new comers or developers with their leeway. Since Colorado voters passed its development impact fee law, local governments in Colorado voluntarily adopt and implement development impact fees in 13 public services—transportation, parks and recreation, affordable housing, public safety, water, storm water management, sewers, schools, wind farms, trash, fire prevention, public facilities, and roads. The dependent variable of this study was measured by dividing the total number of development impact fees that each county uses by the 13 development impact fees. Figure 1 describes what areas Colorado counties use development impact fees. Based on Figure 1, we can know that ten counties use development impact fees for their transportation area and six counties use development impact fees to improve their parks and recreation areas.

**Figure 1.** Development Impact Fees Used by Colorado Counties and Number of Counties Implementing Development Impact Fees



Note: PR=parks and recreation; PS=public safety; TP=transportation; SW=storm water management; AH=affordable housing; WT=water; OD=other development impact fees.

The other development impact fees implemented by Colorado counties are for sewers, schools, wind farms, trash, fire prevention, public facilities, and roads.

## Independent Variables

The equation model of this study embraces the seven independent variables, which are anti-growth management policy interest groups (AGMIG), pro-growth management policy interest groups (PGMIG), residents' educational level (REDUC), unemployment rate (UNEMP), population change (POPCH), tourism income (TURIM), and political tendency (POLTE). Table 2 explains how these independent variables are measured and where they are obtained from.

**Table 2.** Measurement of Seven Independent Variables

Independent Variables	Measurement	Source
<b>Interest Groups</b>		
AGMIG	logged number of nonfarm establishments	Census
PGMIG	homeownership (%)	Census
<b>Socioeconomic Factors</b>		
REDUC	% of people with bachelor degree or higher	Census
UNEMP	logged number of the unemployed	CDLE
<b>Demographic Factors</b>		
POPCH	population change (%)	Census
<b>Control Variables</b>		
TURIM	logged tourism income (\$)	Colorado Tourism Office
POLTE	% of people who voted for Obama in 2012	Denver Post

Note: AGMIG=anti-growth management policy interest groups; PGMIG=pro-growth management policy interest groups; REDUC=residents' educational level; UNEMP=unemployment rate; POPCH=population change; TURIM=tourism income; POLTE=political tendency; CDLE=Colorado Department of Labor and Employment.

Table 3 shows the results of the descriptive statistics for the seven independent variables. The range of numbers of non-farm establishments in Colorado counties is between 36 and 62,128. This variable's mean is 3104.23, which explains that each county in Colorado has about 3,104 non-farm establishments. The mean of 71.381 for homeownership percentage indicates that nearly 71 % of residents in each county in Colorado have their own houses. Approximately 28 % of adults in each county in Colorado possess a bachelor's degree or higher degrees. On average, each county in Colorado has about 6,267 unemployed persons. The average population change of Colorado counties is about 0.627%. The average tourism income of Colorado counties

is \$199,678,125. Finally, the range of a political tendency is between 14.3% and 73.4%. The dataset shows that 14.3% of Kiowa County residents voted the Democratic candidate, President Obama, in the 2012 presidential election while 73.4% of Denver County residents supported the Democratic candidate.

**Table 3.** Descriptive Statistics of Seven Independent Variables

	N	Minimum	Maximum	Mean
AGMIG	64	36	62128	3104.23
PGMIG	64	50.4	90.3	71.381
REDUC	64	10.7	57.7	28.298
UNEMP	64	114	48153	6267.06
POPCH	63	-12.5	8.2	.627
TURIM	64	800000	4530800000	199678125
POLTE	64	14.3	73.4	42.577

Note: AGMIG=anti-growth management policy interest groups; PGMIG=pro-growth management policy interest groups; REDUC=residents' educational level; UNEMP=unemployment rate; POPCH=population change; TURIM=tourism income; POLTE=political tendency

## STATISTICAL RESULTS

Table 4 presents the analyzed results obtained from the multiple ordinary least square (OLS) regression analysis. The valid observations are 58 counties, which do not include any missing cases of either dependent variable or independent variables. The *F*-statistic ( $F=4.987$ ,  $df=7, 51$ ) is statistically significant at the 0.01 level. This means that the combination of the seven independent variables significantly predicts the dependent variable—the variation of growth management policy instrument implementation among Colorado's counties. The adjusted *R*-squared value is 0.325, which is interpreted as follows: The seven independent variables in the equation model account for approximately 32.5% of the variation in the dependent variable.

The analyzed results demonstrate that among the seven independent variables, the four independent variables are statistically significant at different levels while the rest of the independent variables are not statistically significant. The AGMIG (anti-growth management policy interest groups) independent variable, which was utilized to test the main hypothesis, is statistically significant at the 0.1 level, the REDUC (residents' educational level) independent variable is statistically significant at the 0.01 level, and both TURIM (tourism income) and POLTE (political tendency) independent variables

**Table 4.** Determinants for the Dependent Variable

	Unstandardized Coefficient		Standardized Coefficients	t	Sig
	B	S.E.	Beta.		
AGMIG*	-0.061	0.033	-1.441	-1.838	0.072
PGMIG	-0.003	0.002	-0.245	-1.668	0.102
REDUC***	0.003	0.001	0.501	2.822	0.007
UNEMP	0.049	0.034	1.061	1.477	0.146
POPCH	-0.003	0.003	-0.144	-0.968	0.338
TURIM**	0.029	0.012	0.721	2.395	0.020
POLTE**	-0.002	0.001	-0.326	-2.121	0.039
Constant	-0.273	0.179		-1.530	0.132
N	58				
F (7, 51)***	4.987				
Adjusted R <sup>2</sup>	0.325				

Note: D.V.: variation of growth management policy instrument implementation among Colorado's counties  
 I.V.s: AGMIG=anti-growth management policy interest groups; PGMIG=pro-growth management policy interest groups; REDUC=residents' educational level; UNEMP=unemployment rate; POPCH=population change; TURIM=tourism income; POLTE=political tendency

\*\*\* significant at 0.01 level; \*\* significant at 0.05 level; \* significant at 0.1 level

are statistically significant at the 0.05 level.

The unstandardized coefficients of the four statistically significant independent variables show how each independent variable explains the dependent variable. First, the unstandardized coefficient value of the AGMIG independent variable is -0.061, which means that the implementation of Colorado's county growth management policy instruments decreases by approximately 0.00061 for every one percent increase in non-farm establishments in Colorado counties when all other independent variables are held constant.<sup>3</sup> As presumed, the direction of this independent variable is negatively associated with the dependent variable. Its negative direction vis-à-vis the dependent variable points out that Colorado counties with many non-farm establishments in their own territory are less likely to implement growth management policy instruments than Colorado counties with a few non-farm establishments.

Second, the unstandardized coefficient value of the REDUC (residents' educational

3.  $Y=a+b\ln X$  with a level-dependent variable and a logged independent variable is interpreted as follows: the change in  $Y$  is obtained by multiplying the coefficient of  $b$  by 0.01 when one percent in  $X$  increases (Gujarati, 2003).

level) independent variable is 0.003, which means that the implementation of Colorado's county growth management policy instruments increases by 0.003 for every one percentage increase of residents' educational level when all other independent variables are held constant. As assumed, the direction of the REDUC independent variable is positively associated with the dependent variable. This positive direction suggests that Colorado counties with more highly educated residents are more likely to implement growth management policy instruments than Colorado counties with lower educated residents.

Third, the unstandardized coefficient value of the TURIM independent variable, 0.029, indicates that the implementation of Colorado's county growth management policy instruments increases by approximately 0.00029 for every one percent increase in the tourism income of Colorado counties when all the other independent variables are held constant. As hypothesized, the direction of the TURIM independent variable is positively associated with the dependent variable. This positive direction explains that Colorado counties with a higher level of tourism income are more likely to implement growth management policy instruments than Colorado counties that earn less from tourism.

Finally, the unstandardized coefficient value of the POLTE independent variable is -0.002, which points out that the implementation of Colorado's county growth management policy instruments decreases by 0.002 for every one percentage increase in residents' Democratic Party support when all the other independent variables are held constant. This negative direction with respect to the dependent variable reveals that Colorado counties with a stronger democratic tendency are less likely to implement growth management policy instruments than Colorado counties with a weaker democratic tendency.

## CONCLUSION

This study started to know about what factors lead local governments to more actively implement growth management policy instruments. The primary goal of this study was completed through focusing on Colorado counties and empirically analyzing the variation of their development impact fee implementation. Colorado counties are ideal study cases to accomplish this study's goal because Colorado allows local governments in its territory to voluntarily adopt and implement growth management policy instruments. This means that Colorado's local governments basically adopt and implement growth management policy instruments based on a bottom-up style (Wallis, 2012). The main point of a bottom-up (voluntary) style is to provide local governments with

legitimacy in choosing and using growth management policy instruments. Therefore, Colorado's local governments are freer from state governments' control in conducting growth management policy instruments, compared to other states. This situation helps this study find more accurate answers to the research question by concentrating on analyzing internal characteristics of local governments excluding external factors.

The main theoretical approach of this study was the interest group model embracing both anti-growth management policy and pro-growth management policy interest groups. Not surprisingly, the findings declare that the counties with many anti-growth management policy interest groups less actively implement growth management policy instruments by demonstrating that there is a negative association between the AGMIG independent variable and the dependent variable. This empirical evidence supports the idea that pro-economic development interest groups in Colorado do not prefer that local governments implement growth management policy instruments. This is why Colorado's growth management policy is closer to environmental policy, which would reduce or control economic profit of pro-development interest groups.

The analyzed results prove that counties with many highly educated residents more actively implement growth management policy instruments. Based on this result, we can know that highly educated residents prefer environmental conservation to economic development. This finding is consistent with the substantial amount of empirical evidence suggesting that highly educated people support government interventions to receive benefits obtained from environmental conservation.

This study demonstrates that there is a positive association between the tourism income independent variable and the implementation of local growth management policy instruments. The main goal of growth management policy instruments is to prevent rapid growth or sprawl in jurisdictions and provide residents with better eco-friendly circumstances. Eco-friendly circumstances that growth management policy pursues play a role in attracting more tourists to a jurisdiction by conserving natural environments and offering more convenient public facilities. This perspective would be relevant to the amenity effect of growth management policy. A pleasant environment and spectacular natural surroundings are critical in facilitating local tourism. That is to say, this empirical result implies that growth management policy instruments can help local governments make their jurisdictions more attractive to tourists. Therefore, growth management policy might be a useful policy for Gangwon-do's and Jeju-do's local governments, which strongly depend on tourism for their revenue.

The final finding of this study presents that the hypothesis relevant to a political tendency of residents was proved with an unexpected result. Generally, we believe that Republicans advocate economic development while Democrats support environmental conservation. However, this final result indicates that Colorado counties with a demo-

cratic tendency are in fact less likely to implement growth management policy instruments. This result is not consistent with the results of similar studies investigating local governments' political tendency of other states on the growth management policy topic. This unexpected result proposes that future studies are necessary to look at why Colorado counties with a democratic tendency are less likely to implement growth management policy instruments. It is not easy to find an answer to this research question with quantitative methods. Thus, after finding some counties that have a democratic tendency but do not prefer implementing growth management policy instruments, future studies need to consider using a qualitative method that conducts interviews with representative decision makers or staff members in the growth management policy arena in those counties.

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