

## ABSTRACT

KLEINSCHMIT, STEPHEN WILLIAM. A Hierarchical Linear Modeling Analysis of State and Local Effects on Community Involvement in Municipal Land Use Governance. (Under the direction of Dr. Richard C. Kearney.)

Land use regulation is an important area of public policy in which responsibility is largely devolved to municipalities by the states. Since its inception, these local regulatory processes were intended to be both democratic and public. Volumes have been written on the shortcomings of citizen participation within such systems, but little literature exists on the nature of interaction between the community and decision makers involved in land use governance. There is also reason to suspect that governance structures may affect the behavior exhibited by those participating in these deliberative processes.

State statutory frameworks often enable or restrain municipalities from exercising certain aspects of authority in regulation land use. To adequately assess the state of community involvement in American municipal land use governance, the contexts the states provide must be examined as well. In doing so, a better of understanding of how differences in community involvement arise between municipalities will emerge.

By introducing the factor of constraints to state and local government, this work also seeks to extend the degree of knowledge as to what affects the actors, processes and outcomes of municipal land use governance. This dissertation examines these factors with an emphasis on the administrative and democratic components of local planning. The theoretical premises tested within this study are in part derived from

literature within the fields of public administration, political science, urban planning, organizational theory and economics.

*The Wharton Residential Land Use Regulation Index* (Gyourko et al. 2008) is used as the foundation for the study's composite dataset. This data is based on a survey of planning directors and executive administrators (N = 2,729) which are members of the International City/County Management Association (ICMA). Data analysis consists primarily of a hierarchical linear modeling analysis, which assesses the impact of state-level "fixed effects" on a local "random effects" model, with community involvement as the study's dependent variable.

The study has several notable findings. First, there does not appear to be a significant state level influence on community involvement in municipal land use governance processes. This suggests that this degree of involvement is highly contingent on the context of local processes. Second, there is a notable relationship between community involvement, and the involvement of local boards and managers. I hypothesize that this finding is caused by the formation of reciprocal ad hoc power-sharing relationships between these groups. Finally, the demographic characteristics of a population may help create a regulatory context that enables greater degrees of community involvement and influence in local processes. This helps confirm previous research that finds that the degree of formal education held by citizens is a significant factor in predicting the degree community involvement in local governance processes.

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A Hierarchical Linear Modeling Analysis of State and Local Effects on  
Community Involvement in Municipal Land Use Governance

by  
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A dissertation submitted to the Graduate Faculty of  
North Carolina State University  
in partial fulfillment of the  
requirements for the Degree of  
Doctor of Philosophy

Public Administration

Raleigh, North Carolina

2010

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## **Dedication**

This dissertation is dedicated to my parents, particularly my mother, Martha Kleinschmit. Her support has helped me persevere through this long and often difficult journey. My father, Edmund Kleinschmit Jr., has always been willing to listen and offer his encouragement. It is because of them that I was able to achieve this monumental goal.

I also dedicate this dissertation to my grandparents, Glen & Aimee Antle and Edmund & Joyce Kleinschmit, who believed their grandchildren could accomplish anything they put their minds to. Thank you for helping to make this dream possible.

## **Biography**

Stephen Kleinschmit completed his undergraduate degree with a double major in Urban & Regional Planning and Applied Geography at East Carolina University in 2001. While working in the fields of municipal utilities and engineering consulting, he obtained his Master of Science in Technology Systems from East Carolina University in 2005. Upon graduating, he worked as a planner for Brunswick County, NC before beginning the Ph.D. Program in Public Administration at North Carolina State University in 2006.

During his program, Mr. Kleinschmit was an instructor in the Department of Political Science at North Carolina State University, where he instructed U.S. Environmental Politics & Policy, Research Methods in Political Science, and American Government & Politics. His research interests include state and local government, administrative theory and environmental management. He is working towards securing a position that will allow him to continue his love of teaching and research in public affairs.

## **Acknowledgements**

I would first and foremost like to thank Dr. Richard Kearney for agreeing to serve as the chair of the advisory committee. Throughout the past few years, there have been a number of challenges that have arisen while completing this dissertation, and I appreciate his patience and understanding. Working with Dr. Kearney has dramatically improved my understanding of state and local government, an area that heavily defines my research agenda. It is my sincere hope that I can follow his path of scholarship, expanding the depth of academic knowledge in this field, as well as within the realms of public administration, environmental management and urban planning.

I would also like to thank the additional members of the committee for putting in the effort to help see this dissertation to fruition. Dr. Gary Blank, Dr. Branda Nowell and Dr. Michael Vasu all contributed significantly to this work throughout the course of its completion. Dr. Blank's environmental impact assessment class drove me to seek a greater understanding of how local environmental processes operate. Dr. Vasu provided much needed perspective on municipal land use planning, which helped inform the study's design and direction. Dr. Nowell challenged me to examine the depth of the study's constructs and methodology, and her class provided a basis for incorporating tenets of organizational theory into this study. Their guidance and friendly approach made this process about as painless as it could be.

There are a number of others who helped contribute to this work. Dr. Virginia Gray's class on interest groups helped provide a basis for incorporating pressure politics into the

municipal land use governance. Dr. Steve Smutko's environmental economics class gave me a foundation for incorporating theories of economically rational behavior in governance processes. Dr. Shevaun Neupert assisted me in learning hierarchical linear modeling, a statistical procedure whose use will only likely grow in public affairs research. I have a feeling that she is going to be seeing more Public Administration doctoral students in the future.

I would like to thank the authors of this study's datasets, particularly the authors of the Wharton Residential Land Use Regulation Index: Drs. Joseph Gyourko, Albert Saiz and Anita Summers. Studying municipal land use governance nationwide is an extremely difficult and time-consuming enterprise. Had this study data not been available, it is likely that the nature of my dissertation would have been fundamentally different. This data allowed me to answer the questions that my practitioner experience drove me to ask.

I would like to thank my uncle, Dr. John Antle, for inspiring me to consider a career in higher education. It was all those stories about your trips to Egypt and the Netherlands (as well as the private tour of the White House) that captured a child's imagination. I trust you are enjoying your new position at Oregon State University.

There are a number of others whose efforts have assisted me throughout my tenure at N.C. State. Dr. Jerrell Cogburn was always willing to listen when I needed a sympathetic ear. Dr. Steven Greene assisted me in developing my talent for instruction, and I appreciate both the opportunity and privilege of being an instructor for the Department of Political Science. Allyson, Eric, Johnnie, Kristin, Maurice, Rebecca, Todd and Sharon have all been friendly colleagues who helped me keep perspective in the midst of this difficult undertaking.

I would also like to thank Dr. Andrew Taylor and the John W. Pope Foundation for awarding the dissertation grant that helped ensure that I finished the program in a timely manner.

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# Chapter 1

## Introduction and Problem Statement

### 1.1 Introduction

The Tenth Amendment to the Constitution states, “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.” This shared responsibility for governing is known as *dual federalism*. The states often further cede power to their own internal political subdivisions, in the interest of local autonomy and control. The nature of political power in the United States is a departure from those in other Western nations. Many of these nations consolidate the exercise of power within national institutions, at the expense of local autonomy.

Local sovereignty is far from a new premise; many towns and cities (particularly in the Eastern U.S.) predate the establishment of the nation. Local autonomy over affairs helps keep the domain of decision making accountable and representative. Additionally, citizens possess “ordinary knowledge” of local affairs that reflect local conditions and knowledge (Lindblom and Cohen 1979, 13), which theoretically helps improve the quality of process outcomes. Municipal governance also encompasses local knowledge as part of shared decision making processes. The provision of information helps to identify public preferences on issues and helps to allocate the provision of collectively consumed public goods. Civic autonomy over certain policy domains presents a fairer and more accessible political system than a centralized, distant national government.

Land use regulation is one of the functional areas of governance; an expressed “police power” of local government, conducted to ensure “the health, safety and general welfare” of the public (as upheld in *Village of Euclid v. Ambler Realty Co.* 272 U.S. 365, 1926). Though the procedural mechanisms for land use governance are highly variable, they are still somewhat constrained by the necessity for due process. This requirement is specified in the Constitution’s Fourteenth Amendment, and was upheld in *Nectow v. City of Cambridge*, 277 U.S. 183, 1928).

Land use regulation in United States began with a very fragmented implementation. Very few municipalities had any form of land use regulation. The movement towards “planning and zoning enabling legislation in the U.S. began in the 1910s” (Meck 1996, 1). Modern land use governance began with the creation of two standard acts disseminated by the U.S. Commerce Department. *The Standard State Zoning Enabling Act (SSZEA)* and the *Standard City Planning Enabling Act (SCPEA)* specified model processes, such as the nature of regulatory boards and the need for comprehensive plans. Individual states separately codified the tenets of these voluntary acts into their general statutes, further enabling municipalities to adopt and amend their own local ordinances and land use plans.

Each unit of local government has the authority to enact or amend their planning ordinances. Gyourko et al. (2008) found wide disparities in the stringency of residential land use regulation at both the state and local levels. Their study provides the basis for the consideration of the variable application of land use regulation by municipalities. If the stringency of land use regulation is inconsistent across states and local governments, then the conceptualization of what constitutes a valid regulatory exercise of police powers is also

inconsistent. Variations are also likely to be somewhat caused by the nature of the actors and processes engaged in land use governance.

This dissertation uses the Gyourko et al. (2008) study to examine overlapping spheres of influence: state and local government. By examining institutional structures and processes, this study seeks to provide new insight into the practice of local government governance. The model acts disseminated in the 1920's provided the basis for land use governance across the United States, specifying both processes and structure. These acts thus preceded many significant advances in the fields of social, political and administrative sciences, as well as the establishment of urban planning as an academic discipline. This work tests hypotheses that evaluate the influence of the actors engaged in land use governance within the United States, with an emphasis on the role of community involvement.

## **1.2 Purpose of Research**

The underlying question the dissertation seeks to answer is “What factors in state and local governments affect the community involvement in municipal growth management?” This study examines the actors and processes that affect land use governance, in an effort to explain what conditions enable effective community involvement. Among the variables examined are the effects of political institutions and ideology, governance processes and the demographic characteristics of local populations. This work also incorporates propositions from established administrative and political theory. The literature gap addressed in this work is to establish an understanding of systematic influences on community involvement in local land use decision making processes.

### **1.3 The Capacity to Govern**

One of the basic assumptions of dual federalism is that governance decisions with local implications are best left to local decision makers. Triesman (2000, 8) challenges this assumption, noting “local governments may lack the administrative capacity to govern well.” Higher levels of government often have better information and resources with which to address complex problems. Consequently, Triesman asserts that “the quality of government can be diminished by being increasingly controlled at the local level.”

Local jurisdictions have numerous environmental factors, each with the potential to influence the practice of local government. Each municipality in itself creates a new context in which local governance occurs. Such a framework might lead a person to believe that local governance is a truly contingent enterprise; that each governance arrangement is unique because of internal dynamics and the external environment in which it operates (Lawrence & Lorsch, 1967). If this premise is true, then it imparts some troubling propositions.

Both federal and state constitutions charge their governments to be the guarantors of both individual and collective rights. If local governance is truly contingent, then the degree to which government intervenes or cedes its role as the guarantor of rights is also contingent. In many states, legislatures must enable local governments to regulate a particular functional domain of oversight. In this respect, the range of acceptable exercises of local government power is bounded by the political and statutory confines of the state. To truly understand the nature of local government, its relationship with the state must be examined.

Political ideology, as revealed through public opinion, can be a “significant determinant of state policy outcomes” (Erikson, Wright & McIver 1993, 229). These

ideologies are determined in part by characteristics of the population, such as education, degree of urbanization and religious fundamentalism (231). State ideologies are relevant to the study of local government in that they provide an environment in which municipalities operate. It is reasonable to expect that variations in ideologies also affect policy preferences in local government.

Political scientists, as well as administrative and organizational theorists, have long worked to identify the problems inherent in government conflict processes. For decades, they have analyzed topics such as citizen mobilization, lobbying and interest group pressure, and political structure to gain a better understanding of how the American political process works. These findings have often helped become the impetus for political reform in both federal and state governments. Incorporating lessons learned from the study of higher level political processes may provide insight for potential problems within local government.

#### **1.4 Land Use Governance as a Function of Local Government**

One of the primary regulatory functions devolved to local government is land use governance, predicated on the need to protect the "health, safety, morals and general welfare" (Hereafter referred to as the "public interest"). These requirements were first established in *The Standard State Zoning Enabling Act of 1924 (SSZEA)* and upheld by the Supreme Court in *Euclid vs. Ambler Realty Co., 272 U.S. 365 (1926)*. The Euclid ruling validated zoning as a valid exercise regulatory of "police powers." Zoning incorporates the spatial division of disparate land uses, whose interactions could be detrimental to the public welfare. In addition to providing an enabling framework for zoning, the Act specified the need for the creation of

several local boards to provide oversight in local land use governance. The structures and processes specified in the SSZEA became the de facto basis for modern comprehensive planning (APA: Standard Acts, 2009). The processes that define modern land use governance have remained essentially unchanged since the 1920s.

One of the most enduring propositions contained within the Act laid out the basis for the zoning board. This board consists of appointed members of the community, who review submitted proposals for consistency with a codified “comprehensive plan.” This plan is intended to provide an equitable and uniform basis to evaluate a proposal for conformity with stated community goals. The Act also provided the impetus for the creation of a “board of adjustment,” an appellate entity for which citizens could seek redress. The board is quasi-judicial in nature, which means that it is allowed to take sworn testimony and introduce evidence. The board is usually composed of citizens appointed for fixed terms by a municipal “appointing authority,” constituted by a wide range of elected officials.

Another major stipulation of the *Standard State Zoning Enabling Act* is the requirement for a citizen involvement, stating “no such regulation, restriction, or boundary shall become effective until after a public hearing in relation thereto, at which parties in interest and citizens shall have an opportunity to be heard” (Sec. 4). This is notable in the sense that from the outset, the practice of land use governance was intended to be both deliberative and democratic. Though there is no explicit requirement as to how this requirement is to be met, many jurisdictions use the public meetings of the aforementioned boards to satisfy this requirement.

Building on the foundation of the SSZEA, *The Standard City Planning Enabling Act*

*of 1928 (SCPEA)* further specified the conditions of the membership of planning commissions, the requirements of the “master plan” and set forth conditions on the subdivision of land and the approval of public improvements. The structure of land use governance specified within the *SSZEA & SCPEA* became the guiding framework within which local governments have governed land use since the practice’s inception. Although the acts do specify model processes, this has not stopped new organizational processes from emerging.

Many jurisdictions have elected to expand their oversight of the functional elements of land use by incorporating specialist advisory boards. These boards often emerge in areas with characteristics that are not common to most jurisdictions: places with unusual features, such as sensitive ecological areas, National Register Historic Districts or significant cultural landmarks. This helps emphasize the often-contextual nature of land use regulation, and show that different elements of organization can be influenced by environmental factors, both internal and external to the municipality.

## **1.5 Bounded Rationality, Complex Problems and Procedural Capture**

As scientific research continues to expand the degree and depth of knowledge of the built environment, society has become more aware of the externalities of development. As a response, government agencies at all levels have created new regulations. Consequently, an entity seeking development approval might be required to navigate a myriad of federal and state regulations, in addition to regional and municipal planning ordinances. To navigate multiple tiers of regulatory oversight and comply with their requirements, an entity must

overcome the problem of *bounded rationality* (Simon 1957). This form of rationality differs from the traditional means of decision making, where complete information is assumed to make optimal choices. Instead, the boundedly rational individual utilizes a system of incentives and probabilities to make decisions, in the interest of maximizing utility (Jones, 1999).

It is very difficult for a single person to possess all the specialist skills required to solve complex problems. The simplest response is to use “satisficing” mechanisms. Simon (1978, 9) describes these as solutions that are not optimal, but are instead “good enough.” The secondary response is to form a coalition with interests that seek to attain a common outcome. In the realm of land use governance, an entity proposing a project often retains the services of specialist consultants to help overcome the problem of bounded rationality. The costs of these services are usually extensive, and the increasing requirements for technical information have the capacity to fundamentally change the nature of land use governance.

Burby (2003, 34) notes the inherently technical nature of planning, stating “the formulation of planning proposals tends to be dominated by technical experts” and “this raises fundamental issues about democratic governance.” High transaction costs mean that many private citizens simply cannot afford to hire private consultants at significant personal expense, which can undercut their ability provide effective negotiation capacity in specialized deliberative processes. Without the resources to retain specialists, public interest coalitions are largely dependent on the knowledge and resources their members can mobilize.

As previously mentioned, Gyourko et al. (2008) found that the degree of stringency in residential land regulation is highly variable. The ability of the public to provision technical

information in land use governance perhaps helps to explain this variation. Disproportionate levels of information between actors create asymmetric dependencies, which enable power relationships to form (Pfeffer & Salancik, 1978). The ability to manipulate facts and analysis are often critical elements of a strategy to exercise power effectively (Pfeffer, 1982). If technical discourse impedes effective participation for certain participants, the democratic function of governance is conceivably less purposive than previously thought.

Capture theory is a theoretical premise that posits: “Larger and older firms use regulation as a political substitute for economic competition, constructing entry barriers against their smaller and newer competitors (existing or potential) or using regulation to impose disproportionate costs upon smaller and newer firms” (Carpenter, 2004: 613). These additional costs in themselves are often enough to dissuade new entrants, thus creating a market structure that is anticompetitive. Applying this to land use governance, advancements in technology and development have helped planning become an increasingly specialized technical enterprise. It is likely that the requirements (education, experience, resources, etc.) for effective involvement in land use governance are becoming increasingly costly. Are individuals and public interest coalitions being constrained by “captured” processes that exhibit a systematic bias towards more resourced private entities?

Modern, specialized civil engineering requirements are a far cry from what was required of development interests at the infancy of the planning discipline. The original enabling acts preceded many of the major scientific and engineering breakthroughs of the 20<sup>th</sup> century. Local land use governance has become dependent on new technologies and processes to “improve” planning. If land use decision making is continuing to become more

technical and specialized, are the processes and structures specified in the original standard acts (SZEPA 1924 & SCPEA 1928) weakening democratic forms of land use governance?

## **1.6 The Pathologies of Boards**

The boards that provide the decision making function in local land use planning consist of three general entities: (1) An advisory “planning board” (or planning commission), (2) a democratically elected legislative board that renders final decisions, commonly a “board of commissioners,” and (3) an appellate “board of adjustment.” Planning boards are generally the first board to weigh the merits of a proposal. This panel is composed of voluntary members who are usually appointed to fixed terms. Once considered by the planning board, a proposal is then sent to the legislative board. It should be noted that this is not always the case. In some jurisdictions, the planning board has final approval; in others its opinion is simply advisory (Anderson and Sass 2004, 3). The board of adjustment is a quasi-judicial board that is used to examine requests for ordinance variances and special use permits, ensuring flexibility for unusual circumstances and a mechanism for appeal of administrative permit denial.

It is important to understand the nature of these boards. While experience in growth management is helpful to membership, it is not required. A municipality’s elected officials might make a good-faith effort to find members who have education or experience in civil engineering or land use, but often these vacancies are simply filled by interested parties. Those persons who come to sit on legislative boards are generally elected (or appointed to fill

vacancies), and there is often no formal requirement for experience in fields related to local land use planning. Despite these problems, boards are often expected to pass judgment on the technical merits of land use planning proposals.

This provides an interesting conundrum. The existence of these boards is ostensibly to provide a democratic forum and additional oversight of the land use planning process, but there is no guarantee that these boards have any degree of specialist technical knowledge to make informed decisions. A lack of formal requirements for board membership or provisions to preclude conflicts of interest might draw those with direct or indirect stakes in the development process to serve on these boards, creating “policing bias” (Cordes 1989, 162). Anderson’s (2008) analysis of local land use planning boards found that nationwide, members of development related-trades with interest in property development (“realtors, lenders, builders, contractors, and architects”) comprised an average of 30 percent of the members of local boards. He also notes another 20 percent who could benefit indirectly from increased development (13). Such members have the potential to creating a “built-in predilection in favor of development projects” (448). Though “some state laws restrict the makeup of the boards,” often the “limitations are extremely narrow.” Additionally, “the vast majority of cities...operate without any explicit conflict of interest regulations” (449).

Anderson (2004, 448) notes that “compounding this potential predilection is that courts usually defer to the judgment of boards because of a presumption of competence” (using local knowledge) and representation (a public body). If the courts are reinforcing the decisions of these boards under these assumptions, then they are further institutionalizing systematic bias in local land use governance. Anderson suggests that if this is true, then

courts should recognize the potential partiality of boards and perhaps “reduce the degree of deference afforded to the decisions of these boards by appellate bodies, including city councils and courts” (449). Thus, public interest advocates not only have to overcome the barrier to entry that technical discourse can create, but also perhaps a systematic overrepresentation of pro-development interests.

### **1.7 Problems of Mobilization and Representation**

Mancur Olson noted the different intrinsic motivations of interest coalitions in his 1965 work, *The Logic of Collective Action*. Private interests have different incentives for participating in decision making processes than public interests. Private groups are often motivated to participate because of direct monetary compensation, or a direct financial benefit from securing reduced regulation. The entity directing a coalition usually has a heightened stake in the proceedings, as an individual’s “personal gain from having a collective good exceeds the cost of some amount of that public good (Olson 1965, 34). Other members are less directly incentivized, but still provide a heightened degree of participation and capacity to an interest coalition. Financial compensation creates a “separate and selective incentive” which “stimulates a rational individual to operate in a group-oriented way” (Olson 1965, 51).

Public interest groups often have much different intrinsic motivations to mobilize than private interests. Public interest coalitions in local land use governance do not always operate on an implicit assumption of compensation, and economic incentives are seldom the motivating factor (Olson 1965, 60). Olson notes that these coalitions “often work on the

premise of social pressure and social incentives,” but generally this must “be in groups that are small enough for face-to-face interaction” (65). Like the private coalitions, collective goods in public interest groups can be provided by “the voluntary, self-interested action” of group members.

## **1.8 The Political Nature of Local Land Use Governance**

Former U.S. House Speaker Tip 'O Neill once famously opined, “All politics is local.” In doing so, he noted the relationship between public opinion and the behavior of elected officials. At the federal level, politicians must stay responsive to their constituency to insure reelection, through means such as constituent service. Thus even national politics can include local priorities.

At the state level “There is no more dominant influence on political decision-making as the mobilization of public opinion” (Erikson, Wright & McIver 1993, 244). A function of state laws is to enable and restrict the exercise of political power for municipalities. If public opinion (or state ideology) is a significant determinant of the nature of state laws, then it is also likely to affect the nature of the authority exercised within its constituent jurisdictions. Thus, the variable nature of state land use enabling frameworks may affect the exercise of regulatory powers at the local level. This may help explain the differences in regulatory land use stringency noted by Gyourko (2008).

Paul Davidoff's “Advocacy and Pluralism in Planning” (1965) noted the inherently political nature of city planning, stating “The right course of action is always a matter of choice, never of fact” (331). If land use governance is necessarily a political endeavor,

community involvement is necessary for information provision and expressing public values. It obliges reason that political processes or structures that act as barriers to forms of community involvement are detrimental to the public interest itself. This perhaps deprives the public of constitutional due process required by *Nectow vs. Cambridge*, 277 U. S. 183 (1928).

A tenet of deliberative theory is that parties engaged in transactions are able to engage in fair and transparent exchange (Raiffa 2000). A governance framework that encourages a disparate provision of power or control of public goods, or undercuts the ability of the public to be effective advocates of their own welfare, is antithetical to popular sovereignty. This is not necessarily an argument for populist political structures. However, representative systems of government must be somewhat responsive and accountable to the governed.

Understanding how political structures affect the actors engaged in land use governance might impart larger questions about local government reform.

## **1.9 The Regulatory Nature of Land Use Governance**

Planning and zoning are fields that are in part administrative processes and are regulatory in nature. These processes, when coupled with democratic processes, assist in the expression of a community's values and work to protect the public welfare. These oversight mechanisms often can delay or obstruct development proposals. For those engaged in production processes, this can have the effect of adding additional costs into the land development production regime. This may reduce profit margins and create resistance to the applicant's goals of economic efficiency and profit generation.

Land use regulation can affect supply and demand for residential housing (Pogodzinski and Sass 1990 & Gyourko et al. 2008), which may have implications for distributional equity. Gyourko (et al. 2008) also found a positive correlation between regulatory stringency, income and home values. Additionally, he found a negative relationship between regulation and poverty rates. Thus zoning can have an exclusionary effect. Additional costs introduced through its practice can undermine efforts to provide affordable housing for low income populations. The stringency of land use regulation may be in part be explained by a premise known as “Tiebout Sorting” (Tiebout, 1956).

This proposition offers an economically rational explanation of residential choice. Tiebout theorized that persons "sort" themselves into communities based on their preferences as to which "collective consumption goods" (416) local government provides (for example: schools, transit, parks). Settlement patterns are optimal aggregations of individual "willingness to pay" transactions, which reveal the reservation values of individuals by their willingness to shoulder the tax burden of providing the public goods they desire. This theory helps form the basis for the inclusion of a number of demographic population variables examined within this study.

Regulatory policy exists because of the existence of market failures, “the failure of a more or less idealized system of price-market institutions to sustain desirable activities or to stop undesirable activities” (Bator 1958, 351). Regulatory action is one of the responses of government to mitigating the externalities of production processes. An effort to hinder a proposal that would endanger public safety is perhaps the most commonly accepted premise of land use regulation. This is often referred to as the “police powers” of local government.

The application of these powers is somewhat uncertain in terms of decision-making. Because of the fragmentation in local government, every municipality has a distinct operational context. Consequently, dissimilar regulatory policies will emerge, as there are different needs and beliefs about what constitutes a valid exercise of police powers.

The provision of information is sought in the land use planning process, in the interest of improved decision making. This also may assist in a more equitable division of public goods. Viewing regulation through this lens implies that the planning process operates with a pluralist exercise of power. Governance differentiates itself from “government” in that the responsibility for decision making is shared among actors. Thus, such arrangements must balance public and private interests, with local administrators and boards assuming a central role, as the guarantors of the public welfare.

### **1.10 The Impact of Advocacy Coalitions**

Hoppe and Peterse (1993, 11) describe the Advocacy Coalition Framework (ACF) as a mechanism to solve “wicked problems.” These problems involve a) substantial goal conflicts, b) important technical disputes and c) multiple actors from several levels of government, concepts that are descriptive of the challenges of land use governance. The modification of the physical environment is a process that often involves significant conflict of values. The degree of civil engineering expertise needed to design and construct modern structures is indicative of a process that is imparted with technical complexity. Finally, the patchwork of state and federal laws add a layer of complexity on top of local ordinances, meaning that there are tiers of influence on local processes.

One of ACF's greatest theoretical advancements is the departure from institutional rational choice, as exemplified by Elinor Ostrom's *Institutional Analysis and Development Framework* (IAD). Within ACF, action need not be rational and purposive. ACF posits that policy is a result of competing belief systems, systems that could entail sub-rational processes. Sabatier (1999, 135) states that members of the dominant coalitions are more likely to be heard in open meetings than members of non-dominant coalitions. Thus, members of these coalitions have more access to decision makers and perhaps a favored position to influence policy. Based on earlier consideration of the role of ideology, ACF provides an adequate framework in which to assess the effect of coalition behavior in sub-rational decision systems. ACF is discussed in greater depth within Chapter Two.

### **1.11 The Role of Pluralism**

Problems in advanced societies “cannot be solved by outdated dichotomies between knowledge and interests” (di Norcia 2002, 239). Solving complex problems will not just entail creating conditions of social pluralism; they will need to entail cognitive pluralism. This premise “requires us to recognize all affected stakeholder interests, especially the interests of those whose welfare is at risk” (245). Cognitive pluralism also “complements social pluralism” in the effort to “find all knowledges relevant to the problem” (245).

Ensuring social pluralism in governance may require municipalities to take active measures to adopt structures and procedures that encourage greater community involvement. A cognitively plural governance arrangement would seek to find all relevant sources of

information, to improve the quality of the decisions being made by local government. Such arrangements directly address the problem of bounded rationality. By increasing the diversity of interests represented in governance arrangements, a greater number of potential contingencies can be addressed. Thus, pluralistic governance structures are more favorable forums for solving complex problems than those that those premised on the exercise of power by political elites. Pluralism might result in more citizen satisfaction with local government, but also might create conditions of relativism (see Engelen & Bader 2003, Moore 2009). Thus, municipal governance is a somewhat relative enterprise, which affords the participants the opportunity to define what constitutes the “preferred” community values to be expressed within statutory framework provided. More pluralist forms of governance are assumed to lead to outcomes that are more representative of the desires of the community.

## **1.12 Preview of Upcoming Chapters**

This dissertation comprises five chapters. Chapter Two discusses the origination of land use governance, through the creation of the original enabling acts by the U.S. Department of Commerce. It then reviews the foundation of land use governance structures and processes, and explains planning in its regulatory, political and administrative capacities. It then details the dissertation’s hypotheses, and expands on their theoretical underpinning. Chapter Three explains the research design and methodology used within this dissertation. This will include explanations of separate state and local models of influence on land use governance, an interaction model, and a consolidated hierarchical model with both first and second order models on the dependent variable. This chapter will also contain explanations

of the data set, its collection methodology and examine the preliminary descriptive findings detailed within the Gyourko (2008) study that comprises this dissertation's primary dataset. Chapter Four presents the results of the analyses, focusing on the hypothesis testing, and the comparison of the state and local models with Hierarchical Linear Modeling. It will detail descriptive statistics, correlations, model fit and specification, as well as delineate the limitations of both the models and the study. Chapter Five provides a summary and considerations for further study.

## Chapter 2

# Literature Review and Hypotheses

The literature review chapter begins by detailing the research question, and listing the hypotheses that are examined in this study. After presenting these hypotheses, a comprehensive review of literature explains the theoretical bases of each hypothesis. The chapter will conclude with a brief summary and a preview of the elements of the methodology chapter.

### 2.1 Research Question and Data Sources

The primary research question of the study is “What factors in state and local governments affect the community involvement in municipal growth management?” The Wharton study (Gyourko et al., 2008) that comprises the foundation for this study’s composite data set examines general characteristics of the land use regulatory process. This study’s dependent variable is *community*, which is defined as “the degree of community involvement in affecting residential building procedures and/or growth management procedures.” This “community” variable is used as an indicator for a more broad set of actors, referred to as the “public.” This is meant to delineate a distinct set of actors in governance processes. Their role in affecting growth management is contrasted to the roles of state executives and legislatures, as well as local boards, commissioners and managers, who have official roles within their political institutions.

To measure the impact of local actors, the authors assess the influence of “organizations in affecting residential building activities and/or growth management procedures” (Gyourko 2008, 714). These measures are predicated on measuring two components of land use governance: (1) “building activities” (outcomes) and (2) “growth management procedures” (processes). The authors “decided to ask a series of questions that focused on processes and outcomes, not the specifics of constraints in our survey” (694). The term “governance” is used within this study to describe a construct that encompasses both outcomes and processes of municipal land use regulation.

The Wharton study uses these measures “to provide a current ranking of communities in terms of the stringency of land use regulatory environments” (Gyourko 2008, 694). This concept is important for several reasons. First, the study was created for use “in analyses of supply inelasticity or in studies of the impacts of regulation on house prices and construction intensity” (Gyourko 2008, 694). Restrictive land use policies often limit building density, direct the siting of particular land uses and add additional requirements onto builders that can be passed onto consumers as additional cost. These costs can help make housing less affordable, which can make renting or owning property in an area cost prohibitive.

Regulatory stringency can be seen as an indicator of political efficacy of the local populace. Charles Tiebout's influential 1956 thesis described an idea that would be termed “Tiebout Sorting.” The proposition states that citizens choose to move to communities that reflect the values that they share, and that such patterns reveal an economically rational behavior. A community’s willingness to pay for public goods is revealed by its tolerance of local taxation. A high degree of regulatory stringency may suggest a prevailing community

preference for restrictive land use regulation. This may also lead to the establishment of regulatory structures that assist this preference. Gyourko (2008, 695) notes that there is evidence that communities are systematically “deciding on the degree of regulation they want and then imposing that desire across the board.” In a preliminary descriptive analysis, Gyourko et al. (2008, 711-13) also find that the degree of “regulatory stringency” in land use governance varies widely both between states and within states. Furthermore, elements of process and structure are partially deterministic of the degree of regulatory stringency (695).

In analyzing the local regulatory environment, this study examines two separate spheres of influence: state and local. The state provides a statutory enabling framework that is distinct to each state. Municipalities provide an individual context for local actors and organizational structures. Thus, each of these levels has the potential to influence local processes and outcomes. So variable is the nature of land use regulation that “The proliferation of barriers and hurdles to development has made the local regulatory environment so complex that it is now virtually impossible to describe or map in its entirety” (Gyourko 2008, 694). This study seeks to examine these regulatory environments to help describe the political nature of land use regulation in the United States.

## **2.2 Hypotheses**

The following hypotheses detail the propositions that are operationalized in this dissertation.

*H<sub>1</sub> - There is a positive correlation between the importance of municipal boards and managers in affecting growth management and community involvement in municipal growth*

*management.*

Variables: *local, community*

Nash's (1950, 86) theorem described the nature of actors engaged in multiparty games stress that there are no pure strategies. Entities involved in competitive enterprises base their strategies in part on their perception of what others may do. Within the realm of governance, those engaged in affecting decision-making processes do not do so with any absolute strategy. The optimal strategy is to analyze their abilities within the confines of the forum, seeking to maximize their structural advantages, and minimize those of their opponents. Their strategies adjust as the outcomes of the game become more evident.

Politically influenced regulatory processes are in effect, multiparty games. Actors adjust their strategies to the forum in which they compete, and attempt to change the venue of the decision making process which is more favorable to obtaining their desired outcomes (Schattschneider 1960, 170). This is a purposive, strategic response to the constraints of a particular "game." Thus, actors engaged in deliberative governance processes should pursue strategies that seek to maximize their relative advantages over their opponents.

The advantages of private interest groups in wielding political influence are well documented. In fact, "Every systematic study of interest group populations has found that business groups and corporations are overrepresented and broad-based membership groups are underrepresented (see Boehmke, 2002). The collective action problems inherent in public interest representation exist in part because of the nature in which participation is incentivized for group members. As previously mentioned, private interest coalitions have

more direct mobilization incentive streams than public interest groups, because private entities provide a "selective and non-collective benefit" (Olson 1965, 140). This undercuts the problem of free riding (the consumption of goods by noncontributing actors). Thus, private interests are spurred to participate in processes that result in private benefit.

Public interest groups often find it difficult to keep members mobilized because of the free-rider problem (Schattschneider 1960, Marwell and Ames 1979). Pure public goods are generally neither excludable (able to be denied), nor "rival" or zero-sum (one person's consumption does not prohibit consumption by others). If members of the public were free to consume these goods without contributing their own private resources, an economically rational actor would do so. Governments overcome this problem by introducing non-voluntary mechanisms (taxes, fees, permits), which can coerce users of public resources to help contribute to the cost of provisioning the public good.

Unlike government, public interest organizations do not have the legal ability to introduce coercive mechanisms to overcome free riding behavior. Unless the use or degradation of a common resource has direct implications towards the public, it can be difficult to create incentives for the public to mobilize. Due to the direct nature of the incentive stream for private interest coalitions, it is often much easier for these interests to utilize existing resources and technical capacity to attain their desired outcomes. Voluntary public interest coalitions are likely to operate at a structural disadvantage in deliberative processes because of asymmetric levels of existing resource and coalition capacity.

Lane and McDonald (2007, 716) noted this tendency towards disproportionate

interest representation within community-based environmental planning processes (CBEP). They state that such processes have “tended to marginalize the interests of certain social groups while others empowering others with political and financial resources.” They further state that there is “empirical evidence for inequitable resource distribution and access in participatory efforts in the field of urban and regional planning.” (716) This literature shows that in participatory efforts, some interests are underrepresented while others have privileged access to policy-makers. This “renders planning processes inequitable” (Lane & McDonald 2005, 716).

Coase’s Theorem hypothesizes that in deliberative processes, “the division of goods is efficient, but transaction costs preclude effective bargaining” (Coase 1960, 10).

Transaction costs can preclude market formation (in this case, “political markets”). As a coping mechanism, “market transactions can be replaced by administrative decision” (11). Administrators perhaps are often charged with identifying and correcting “inefficient” or “unfair” outcomes that arise from procedural inequity. The technical nature of land use interest representation is likely to introduce significant transaction costs. If these costs do work to suppress effective deliberation, then better-resourced entities have a structural advantage in representation. This is perhaps at odds with the public welfare being the primary goal in these processes.

The establishment of power relationships is also a component of *Resource Dependency Theory*. Actors “who lack resources critical to fulfilling their institutional mission will seek to form relationships with others that have the resources they need”

(Pfeffer and Salancik 1978, 39). Because of the aforementioned financial and information asymmetries inherent within land use governance processes, it is likely that structurally disadvantaged public coalitions must seek coping strategies to contend with the advantages of competing interests in land use regulatory processes. Perhaps the only recourse mechanism which exists is for groups to appeal to those entities in the process with a public mission, and perceived willingness to assist: local government administrators and boards.

The crux of this hypothesis is the public is at a systematic disadvantage in land use deliberations. They will work to use the knowledge and capacity of administrators and boards as a means to problems of asymmetric mobilization of resources and information. By seeking to create “referent” power relationships with these entities, the public attempts to gain additional capacity for exercising power in regulatory land use processes.

*H<sub>2</sub>a- There is a positive correlation between the number of boards that a proposal must satisfy for final project approval, and the degree of community involvement in municipal land use governance.*

*H<sub>2</sub>b - There is a positive correlation between the number of boards that a proposal must satisfy for final project approval, and the degree of community involvement in municipal land use governance.*

*H<sub>2</sub>c- There is a positive correlation between the length of the review a proposal must satisfy for final project approval, and the degree of community involvement in municipal land use governance.*

Variables: *lpai, lzai, adi, local, community*

Pfeffer (1978, 38) notes that "Organizational structures are the outcomes of political contests within organizations." Bolman and Deal (1997, 175) also assert that "Organizational goals, structure and policies emerge from an ongoing process of bargaining and negotiation among major interest groups." For this hypothesis, the explicit organizations under consideration are legislative and advisory boards, such as planning and design review boards.

Organizational structures are products of political processes, and are likely to "structurally reflect socially constructed reality" (Berger and Luckman 1967, 136). These social constructs of reality help define issue salience and set policy agendas within governance arrangements, and are likely to drive modifications to policy and process that are the most advantageous to solving complex problems. Entities which "control more strategic contingencies garner more power within the organization" (Scott 1998, 212). The larger the number of contingencies introduced by governance processes, the higher the degree of regulatory uncertainty. Increasing the number of regulatory boards, making it less likely that non-governmental actors will have the able to direct the outcomes.

McCubbins, Noll and Weingast (1989) argue that political concerns drive the creation of administrative structure and procedure, because "legislators see the choice of administrative process and procedure as an important factor in assuring that agencies produce policy outcomes that legislators find satisfactory" (432). If political actors are indeed the driving factors behind organizational structure and procedure, then it is likely that the structures are designed to ensure desired outcomes. By creating additional oversight boards and mechanisms of resistance, specialist boards may reflect the will of the public to oversee a

substantive area of land use policy. The presence of such boards may then empower the public to have greater influence in directing growth management procedures and governance outcomes in their municipality.

*H<sub>3a</sub> - There is a positive correlation between the percentage of college graduates within a municipality, and the degree of community involvement in municipal land use governance.*

*H<sub>3b</sub> - There is a negative correlation between the rate of poverty within a municipality and the degree of community involvement in municipal land use governance.*

*H<sub>3c</sub> - There is a positive correlation between the rate of homeownership within a municipality and the degree of community involvement in municipal land use governance.*

Variables: *college, poverty, homeown, community*

Gyourko (2008, 695) notes within the WRLUI study, “Community wealth is strongly positively correlated with the degree of local land use regulation. That is, the higher the median family income, median house value or the share of adults with college degrees, the greater is the community’s WRLURI value.” Communities with higher degrees of formal education also have higher median home values, and have higher rates of home ownership (Sturyk 1975, Gifford and Conley 2006). This finding provides a basis for the consideration of a number of the premises to be tested within this hypothesis, specifically how income, education and homeownership rates affect community involvement in land use governance.

First, there are well-established links between education and civic engagement. Higher levels of formal education give the average citizen a degree of increased capacity to understand political processes. Nagler (1991, 1397) finds that voting activity increases

significantly with years of formal education. Additionally, persons with college educations have significantly higher rates of membership within voluntary organizations. Thus, areas that have higher rates of college graduates will have citizens who are more politically active, and better resourced to participate in the political process. As previously noted in Tiebout's Theorem (1956, 416) residents move to areas that contain the mixture of public goods they desire, creating "optimum communities" of individuals with similar expectations about the provision of collective goods, a process known as Tiebout Sorting. Thus, municipalities with higher levels of education and income are more likely to have higher rates of community involvement in local governance processes, and this should be reflected in higher aggregate ratings of citizen efficacy in land use governance processes.

Communities that have higher rates of homeownership are hypothesized to be more effective at enabling community involvement in development processes. In most communities, "the homeowner is the median voter" (Fischel 2005, 400). Fischel notes that for most homeowners, the home is the largest single asset. Additionally, the location of a home "constitutes somewhere between a quarter to half of its value" (400). Additionally "a home's value can be reduced by changes in nearby land use" and "increases in neighborhood traffic." Thus homeowners are more likely to be involved in land use governance than renters because of their degree of financial investment. I will test the proposition that areas with higher rates of homeownership have higher degrees of involvement in residential growth management procedures of their jurisdiction.

*H<sub>4</sub> - There is a positive correlation between state ideology and the degree of community involvement in municipal land use governance.*

Variables: *ideology, community*

Erikson, Wright and McIver's *Statehouse Democracy* (1993) found that state ideology was a significant predictor of policy preferences. Ideological preferences influence fundamental beliefs about the role and nature of government, particularly regarding the role of community involvement. Direct democracy initiatives are an indicator of a liberal political culture, a culture that encourages public participation in politics and is exemplified by the "moralistic" political culture as defined by Elazar (1969). It would also imply that states with the initiative process would be associated with more pluralist (rather than elitist) models of interest representation.

Boehmke (2002, 841) finds "liberal states have significantly more interest groups" at the state level. This hypothesis is devolves the influence group premise to the local level. A liberal state political culture should create an environment that helps enables public interest groups be more effective in affecting the outcomes of governance processes. This is because the initiative process helps spur interest coalition formation, and enables a more pluralist form of interest representation.

Gyourko et al. (2008) noted significant disparities in the degree of regulatory stringency across the United States. The states that are the most restrictive in their land use regulation correlate highly with partisan political patterns at the state level, particularly in national elections. Of the top 25 most highly regulated states within the Wharton Residential Land

Use Index, only five of the states had a majority or plurality of voter support for the Republican candidates in 2004 (see Table 2.1). Of the 25 least restrictive states, no state had majority or plurality support for the Democratic Party ticket in the 2004 presidential election. During 2008, only two of the most restrictive states had a majority (or plurality) of support for the Republican ticket, whereas the Democratic ticket won five states during the election (see Table 2.2). The table seems to suggest that state political ideology has a correlation with the degree of regulatory stringency at the state-level, which also might influence the practice of regulatory land use governance.

Table 2.1 Regulatory Stringency vs. Electoral Support, 2004 U.S. Presidential Election

<u>State</u>	<u>WRLUI</u>	<u>Obsv.</u>	<u>State</u>	<u>WRLUI</u>	<u>Obsv.</u>
1. Hawaii	2.32	1	26. Georgia	-0.21	56
2. Rhode Island	1.58	17	27. North Carolina	-0.35	64
3. Massachusetts	1.56	79	28. Montana	-0.36	6
4. New Hampshire	1.36	32	29. Ohio	-0.36	135
5. New Jersey	0.88	104	30. Texas	-0.45	165
6. Maryland	0.79	18	31. Nevada	-0.45	7
7. Washington	0.74	49	32. Wyoming	-0.45	7
8. Maine	0.68	44	33. North Dakota	-0.54	8
9. California	0.59	182	34. Kentucky	-0.57	28
10. Arizona	0.58	40	35. Idaho	-0.63	19
11. Colorado	0.48	48	36. Tennessee	-0.68	41
12. Delaware	0.48	5	37. Nebraska	-0.68	22
13. Connecticut	0.38	65	38. Oklahoma	-0.7	36
14. Pennsylvania	0.37	182	39. South Carolina	-0.76	30
15. Florida	0.37	97	40. Mississippi	-0.82	21
16. Vermont	0.35	24	41. Arkansas	-0.86	23
17. Minnesota	0.08	80	42. West Virginia	-0.9	15
18. Oregon	0.07	42	43. Alabama	-0.94	37
19. Wisconsin	0.07	93	44. Iowa	-0.99	59
20. Michigan	0.02	111	45. Indiana	-1.01	47
21. New York	-0.01	93	46. Missouri	-1.03	67
22. Utah	-0.07	41	47. South Dakota	-1.04	11
23. New Mexico	-0.11	16	48. Louisiana	-1.06	19
24. Illinois	-0.19	139	49. Alaska	-1.07	7
25. Virginia	-0.19	35	50. Kansas	-1.13	46

White - Kerry/Edwards    Gray - Bush/Cheney  
 Data source: 2004 Federal Elections Commission

Table 2.2. - Regulatory Stringency vs. Electoral Support, 2008 U.S. Presidential Election

<i>State</i>	<i>WRLUI</i>	<i>Obsv.</i>	<i>State</i>	<i>WRLUI</i>	<i>Obsv.</i>
1. Hawaii	2.32	1	26. Georgia	-0.21	56
2. Rhode Island	1.58	17	27. North Carolina	-0.35	64
3. Massachusetts	1.56	79	28. Montana	-0.36	6
4. New Hampshire	1.36	32	29. Ohio	-0.36	135
5. New Jersey	0.88	104	30. Texas	-0.45	165
6. Maryland	0.79	18	31. Nevada	-0.45	7
7. Washington	0.74	49	32. Wyoming	-0.45	7
8. Maine	0.68	44	33. North Dakota	-0.54	8
9. California	0.59	182	34. Kentucky	-0.57	28
10. Arizona	0.58	40	35. Idaho	-0.63	19
11. Colorado	0.48	48	36. Tennessee	-0.68	41
12. Delaware	0.48	5	37. Nebraska	-0.68	22
13. Connecticut	0.38	65	38. Oklahoma	-0.7	36
14. Pennsylvania	0.37	182	39. South Carolina	-0.76	30
15. Florida	0.37	97	40. Mississippi	-0.82	21
16. Vermont	0.35	24	41. Arkansas	-0.86	23
17. Minnesota	0.08	80	42. West Virginia	-0.9	15
18. Oregon	0.07	42	43. Alabama	-0.94	37
19. Wisconsin	0.07	93	44. Iowa	-0.99	59
20. Michigan	0.02	111	45. Indiana	-1.01	47
21. New York	-0.01	93	46. Missouri	-1.03	67
22. Utah	-0.07	41	47. South Dakota	-1.04	11
23. New Mexico	-0.11	16	48. Louisiana	-1.06	19
24. Illinois	-0.19	139	49. Alaska	-1.07	7
25. Virginia	-0.19	35	50. Kansas	-1.13	46

White - Obama/Biden Gray- McCain/Palin

Data source: 2008 Federal Elections Commission

The political hypotheses are operationalized in this dissertation include an ideology measure first defined by Erikson, Wright and McIver in *Statehouse Democracy* (1993). The “ideology” variable is constructed from *CBS/NY Times* surveys that assess partisan and ideological identification to help explain the aggregate political preferences of the population. Thus, incorporating this variable is done under the premise of seeing the effect of public opinion shapes the actions of state and local government.

*H<sub>5a</sub>- As the degree of state executive and legislative involvement in land use regulation increases, the degree of community involvement in municipal land use governance increases.*

Variables: exec\_rating, community

A high degree of state executive and legislative involvement in land-use initiatives would imply that legislators have determined that the current system of devolved land use regulation is in need of improvement, having potentially been spurred into action by mobilized groups of constituents. More executive and legislative involvement should ostensibly lead to more directives for municipalities engaged in land use governance, as well as more enabling statutes. More enabling statutes give municipalities more “levers of power” (Mintzberg, 1983) and thus more mechanisms with which to regulate land use.

E.E. Schattschneider (1960) found that groups often seek to “venue shop,” or attempt to move the decision-making processes to levels where the organization enjoys structural advantages. This phenomenon might be more common within processes at state and federal levels; entities that engage in deliberative processes are better organized and funded at these

levels. In local land use governance, the degree of venue shopping is likely to be constrained by the resources of the interests and coalitions engaged within deliberations. Those organizations that are able to dominate the governance arrangements at the lowest levels will work to keep the decision-making processes constrained to this forum.

Small public interest organizations often pool their collective resources into larger coalitions, with the purpose of increasing their influence within the realm of state politics. By working to influence state legislative activity, such organizations may seek to take away certain discretionary powers from municipalities. Thus, more state executive and legislative involvement in an area of policy will result in more statutory requirements for local municipalities. Examples of such directives include the specification or modification of processes, organization structures, or regulation of authority for an emerging domain of regulatory oversight.

State involvement in local government usually involves creating mandates that “promote uniformity of policy from one jurisdiction to another” (Bowman and Kearney 1999, 321). These mandates are often disliked by municipalities by imposing new costs through the requirement for service delivery, displacing local priorities in favor of state priorities, and limiting the management flexibility of local governments (321). State actors that are particularly active in promoting land use regulation would be more likely to create mandates for local governments than those with lower degrees of involvement.

Bowman and Kearney (1999, 15) also denote the potential for interjurisdictional conflict between governmental entities in competition for economic development. “States try to make

themselves attractive to business and industry through tax breaks and regulatory relaxation.” This tendency towards regulatory relaxation was also noted by Schnaiberg, Weinberg and Gould (1996) as a partial driver of economic competition between municipalities, states and nations. This might in part explain how variations in regulatory stringency arise between these entities.

*H<sub>5b</sub> - As the degree to which municipal land use decisions are upheld by state courts increases, community involvement in municipal growth management will increase.*

Variables: *judicialrating, community*

Gyourko’s (2008, 709) finds that there are considerable differences between the influences of state actors in municipalities with low, medium, or high degrees of regulatory stringency. This study separates the various actors specified in the Wharton study’s SPII (state political involvement index) into distinct independent variables. This set of hypotheses examines only the influence of the state judicial system, and the degree to which appellate courts have upheld municipal land use regulation.

This hypothesis tests the notion that the members of boards and administrators display risk aversion behavior (as defined by Friedman & Savage, 1948). Litigation in a municipality may oblige local decision makers to engage in protracted legal battles to defend their actions. Such battles can be extremely costly for municipalities, and may be embarrassing to the administrator if they are viewed as being ineffectual at managing conflict. In such environments where the legal environment is not favorable to having the municipal land use decisions upheld, local regulatory boards might have two options: 1)

strengthening the interpretations of local ordinances for soundness or 2) using a looser interpretation of ordinances. I theorize that many municipalities displaying risk averse behavior would elect to be more permissive in their interpretation of ordinances, as this would constitute a path of least resistance. This could manifest itself by increasing the approval of rezonings and special use permits by administrators or boards.

This hypothesis might also help a reporting phenomenon by planning administrators. These planners might find that their staff recommendations are discarded by pro-development interests on various boards, leading to lower job satisfaction or sense of professional worth. This might lead them to report that they are less important in directing municipal growth management, particularly if they feel they are “bullied” by development interests into what they view as sub-optimal outcomes.

As stated in Hypothesis 1, there is an expected relationship between local boards, administrators and the community. These actors are theorized to share a reciprocal power relationship, which means they form ad-hoc coalition relationships to wield more influence in deliberations (Pfeffer and Salancik, 1978). The ability of the community to influence growth management should find that such an effect is constrained by the risk aversion by actors in their local government. Therefore, the more that state court systems uphold municipal land use decisions, the greater the degree of importance of boards, administrators and the community in affecting growth management in their jurisdictions.

### **2.3 Summary of Hypotheses**

The collected hypotheses incorporate variables both internal and external to individual land use governance processes, and theorize that their relationships are interdependent. External conditions (determined at the state level) should help influence the conduct of local governance processes, which is in line with theories about environmental determinism of organizational forms and process. Pfeffer and Salancik (2003, 43) note “the organization’s dependence on the environment that makes the external constraint and control of organizational behavior both possible and almost inevitable.” Many of the nation’s cities and towns were incorporated before the passage the original planning enabling acts, and many of the basic structural and procedural elements of local governments structures have existed before the establishment of land use governance processes. This dissertation examines local procedure and process as internal determinants, and state institutions and structure as the external determinants. Both are needed for a comprehensive examination of land-use governance regimes.

### **2.4 Land Use Planning vs. Land Use Governance**

This dissertation examines governance systems within the domain of land use regulation. Governance has many different meanings, but in the context of this work, governance is used to describe government-centered decision making processes that incorporate “social-political-administrative interventions and interactions” (Rhodes 1996, 657). The notion of incorporating democratic, deliberative processes into official government decision making is

an expansion of the simple administrative pursuit of planning. Such processes help governments “enjoy legitimacy and authority” while “distributing internal and external political and economic power” (Leftwich 1993, 611).

The term “planning” is used in the context of describing administrative review of development proposals. The bureaucratic practice of administering regulatory land use controls is conducted in the interest of “protecting the health, safety, morals and general welfare of the population” (SSZEA 1926), also known as “administrative review.” The American Planning Association defines administrative review as “a review of an application for a development permit based on documents, materials and reports, with no testimony or submission of evidence as would be allowed at a record hearing” (APA 2002, 10-17), as empowered by a legislative body with “the power to adopt ordinances, regulations, and other documents that have the force of law” (APA 2002, 3). Though no testimony or evidence is introduced, administrators are agents of the municipalities in which they are employed, and thus can still be held accountable by elected and appointed officials. Kaiser et al. (1995, 3) describe planning as a “management game with multiparty competition over a community's growth, future land use pattern, and environmental quality” and observed that the planner often assumes the role of “game manager.” Thus, there is never a rigid separation between the political and administrative realms of land use regulation; the political element is present throughout the entirety of land use decision making processes.

The most important delineation between governance and land use administration is who holds the decision making authority. In governance systems, the final decision making authority is vested within a number of boards that might incorporate directly elected

members, or persons appointed by a directly elected official (such as a mayor). Within the administrative realm, planners are empowered by both appointed and elected officials (through codified ordinances) to use administrative discretion to regulate land use development. Thus when this dissertation details the elements of governance, it discusses participatory and democratic processes within land use regulation, whereas planning entails the internal roles of planners as internal agents.

Both land use planning and land use governance are processes that are heavily influenced by bureaucratic agents. Planners are administrators, acting in regulatory capacities for municipalities to help oversee the development of the built environment. Before entering the realm of land use governance, many facets of the development process are handled administratively. Many jurisdictions delineate thresholds for “major” and “minor” projects for the sake of regulatory efficiency. Minor projects are unlikely to have impacts that significant enough to require wider oversight processes, which include public hearings and approval by formal boards. For minor projects, planning administrators are given the discretion to approve or reject proposals (with potential for appeal), according to codified municipality ordinances. Proposals that exceed the thresholds for administrative review and approval undergo more comprehensive governance processes, which include notifications of adjacent property owners (or other potentially affected parties), requirements for public meetings and review by specialist municipal boards.

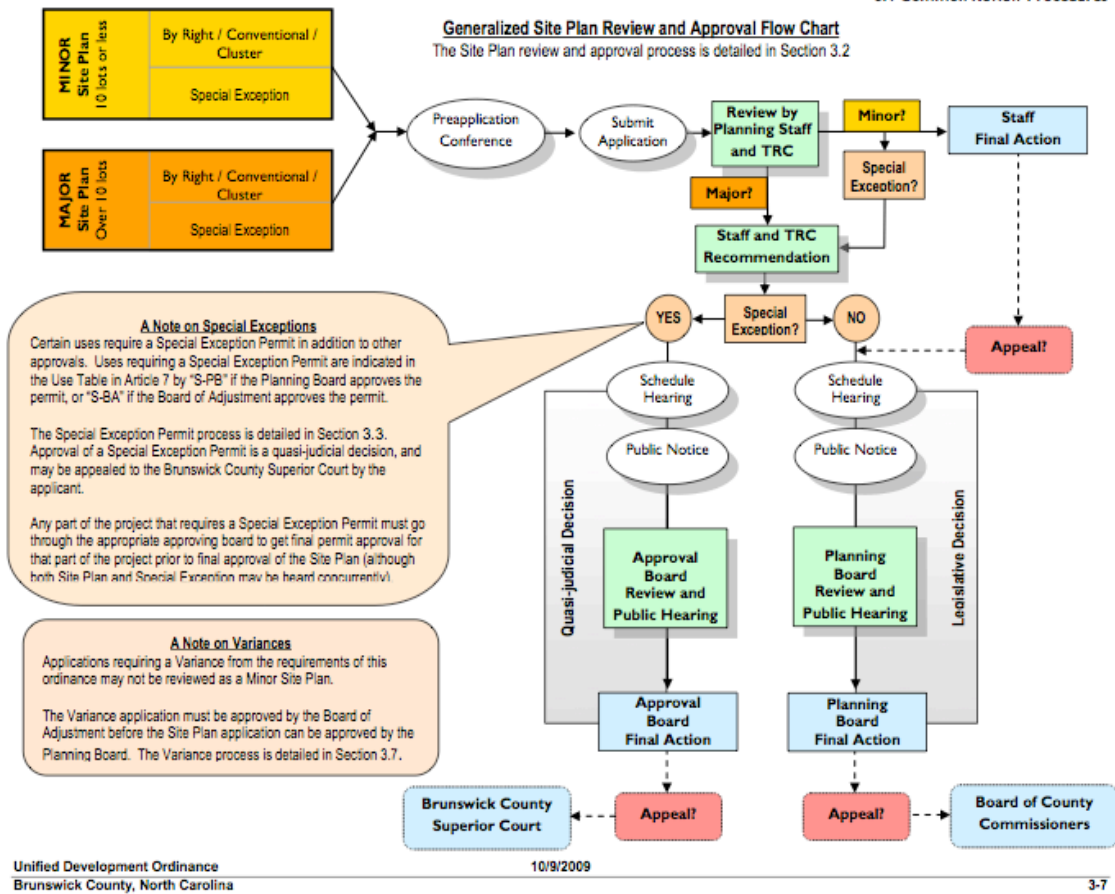


Figure 2.1 A Typical Land Use Governance Process (Brunswick County, NC)

### 2.4.1 The “Standard” Land Use Governance Process

Due to factors such as the creation of the original standard enabling acts, the development of formal planning education programs, the professionalization of the planning discipline, and the creation of professional certification standards (such as AICP, from the *American Institute of Certified Planners*), the general structure of land-use regulatory processes has become somewhat standardized. Regardless, individual municipalities continue

to adopt their own land use ordinances and zoning designations, so individual municipality processes remain highly variable. Though the specific nature of board procedures and structures are often contextual, the general site planning process described incorporates the processes and structures delineated within the standard enabling acts, as well as the consideration of the distinct regulatory processes of project approval and zoning approval. Project approval is not always dependent on zoning approval, as a proposal may already be a permitted use within a certain zone, and rezoning is not required.

This study, like the Wharton study, takes an approach that is “focused on processes and outcomes, not the specifics of constraints” of the regulatory land use governance process (Gyourko 2008, 694). The description of the standard planning process includes a brief discussion of the processes that precede the public meeting stages, which are the main focus of this study. It should be noted that not all land use decisions are made in public meetings. Many minor projects that meet local ordinance requirements are approved administratively, and are not subject to the public meetings requirement. The requirement for public participation plays a pivotal part in the substantive distinction between the premise of planning and governance. Governance is inclusive of public, participatory processes that help satisfy the requirement for constitutional due process (as specified in *Nectow v. City of Cambridge*, 277 U.S. 183, 1928). The administrative practice of planning is not an inherently participatory or public act.

### **2.4.2 The Site Plan**

Site plans are engineering sketches of proposed modifications to the built environment. In some jurisdictions, the requirements for site plans are relatively relaxed, and a simple hand drawn sketch with estimated dimensions to features is acceptable for minor projects, though this has become very rare due to legal issues. The standard format for site plan submittals is engineering “blue prints,” sketches drawn to scale with computer assisted drafting (CAD) software, based upon a verified property survey by a state licensed surveyor and certified for accuracy by a state licensed professional engineer. While a number of large corporate entities retain a facilities division to handle the requirements of the permit approval process, many smaller entities and private individuals retain the services of engineering consultant firms to help satisfy the requirements of local municipalities, and to represent the party throughout the approval process.

### **2.4.3 The Pre-Application Process and Proposal Submittal**

Some municipalities encourage (and sometimes require) entities proposing projects to schedule a meeting with planning agency staff before formally submitting the plan. This can help the applicant determine the feasibility of the project, and often highlight areas of potential concern. This can be desirable to the entity proposing the plan, as it can help reduce costs associated with significant revisions to site plan proposals, and help prevent the purchase of property whose restrictions are incompatible with the potential owner's expected use. These “pre-application conferences” are usually informal affairs, but can be very influential in determining how (or even if) a site plan proposal goes forward. They are

generally optional in nature, though a number of municipalities require them.

The next step in the site plan review process is the formal plan submittal. The applicant is typically required to pay an application (or “review”) fee as part of the application. The submittal can be handled by the applicant, or the applicant's authorized agent. A number of copies of the project’s official site plan, and various other forms of documentation are generally required at this point as well, including verification of requirements by other government agencies, such as: environmental health departments, utilities, state transportation or environmental regulatory agencies. Once all required paperwork is completed, the application is then forwarded to the appropriate agency administrator for review.

#### **2.4.4 Administrative Review**

The nature of review is highly variable across municipalities; in rural municipalities, there might only be a single building inspector or code enforcement official to handle development requests. Many towns and counties have at least some level of administrative specialization, with a “Planning Director,” as well as a small number of staff with varying degrees of experience (Planner I, Planner II), but with more generalist duties (attempting to oversee a wide range of functional areas). The planning process in cities and larger population centers can differ substantially from less populated areas because of the rather complex organizational structures and processes that arise. In opposition to the generalist orientations of smaller municipal planning agencies, these agencies often have large organizational divisions, with very specialized job functions. Some examples of these

specialized divisions include Environmental Planning (with administrative titles such as Environmental Planner I-V), Historic Planning, Transportation Planning, Geographic Information Systems, Long Range Planning, etc. The direct role of administrative specialization is not examined in this study, but bears future consideration.

#### **2.4.5 Minor Project Review**

Once a project proposal is received, it is forwarded to the appropriate administrative agent for review. As specified in the requirements of the codified local ordinances, the plan is then reviewed to determine if it is a “minor” or “major” plan. The ordinances often stipulate a threshold to determine this delineation. “Minor” projects include projects that are common; impacts are well understood and are considered to be minimal, “major” projects trigger a larger, usually more uncertain process for the applicant.

An example of a threshold for a residential subdivision might be ten lots. A project with less than ten lots would be considered a “minor” subdivision, and a project with ten or more lots would be considered a “major” subdivision. This delineation is important for applicants because the length of the major review process. An administrative approval might take only a few weeks, while a major project process could take months or even longer than a year if there is a backlog of submittals. To avoid major reviews, it is not uncommon for applicants to “phase” their project submittals to avoid crossing the major review threshold, but this practice is often discouraged by agency staff, as often “better” design decisions can result from considering the extent of all future development. Some municipalities have begun incorporating clauses in their ordinances that refuse further permit approval to entities that

fail to disclose “phased” projects.

A proposal that meets the definition of a “minor” plan can usually be approved administratively, as long the proposal meets the requirements of the ordinance, as well as state and federal laws. Once a minor plan is received, it is then checked for conformity with local ordinances, and often compliance with state and even federal laws. If no deficiencies are found, the appropriate permitting official can issue the appropriate certificate of compliance, and this can be provided to the applicant as part of the building permit issuance. Often, minor revisions are needed for a proposal, and the administrator can either return the plan with comments to the applicant for revisions, or approve it with stipulations that certain minor changes are made before final approval.

If the proposal is not compatible with the requirements of the ordinance (proposed use is not permitted within particular jurisdiction or zoning designation for example) then the application is denied. At this point, if the applicant wishes to further pursue their project, they have several means of recourse. The applicant can modify the proposed use to one that is “permitted by right” (acceptable use that is delineated in the ordinance). Requesting a variance to the ordinance, a text amendment to modify the ordinance itself, or requesting a change of the zoning designation are all examples of strategies to overcome the denial of an applicant’s application. Generally, the burden of proof for these measures is high, as this places the impetus on the applicant to prove that they have suffered an undue hardship by having to conform to the ordinance as written, or that a modification to the ordinance or zoning classification would be appropriate. Additionally, many states have provisions directing local municipalities against the approval of “spot zoning,” the modification of

zoning for small projects or single parcels of land. Spot zoning implies a non-standard application of ordinances to the benefit of a particular party, and thus a variable enforcement of local laws.

#### **2.4.6 Major Project Review**

Like the minor project permitting process, major projects often involve pre-application conferences and formal application requirements. Unlike the minor review process, the major development process triggers a transition from simple administrative review towards a larger governance protocol. Major projects have impacts that are generally considered far-ranging enough that they cannot be constrained to the property themselves, or would have far reaching effects on other substantive areas of the municipality. For example, a large subdivision proposal can have significant effects on utility system capacity, school enrollment, and traffic flow on streets and roads. Plans are often disseminated to agency staff and other technical staff in other agencies, such as civil engineering and utilities, fire and EMS. Comments from the various agencies can be submitted via formal or informal correspondence (letters or email) to planning staff, or can be solicited in person at a formal meeting.

Many jurisdictions have a requirement for a meeting of technical specialists, commonly referred to as a technical review committee (TRC). The members of the TRC receive copies of the site plan proposals, and meet at a specified date to review plans in an assembled body. The applicant (or their appointed representative) is generally invited to attend this meeting to help answer inquiries from various government agencies. While a TRC

is often desirable, there is usually no formal mandate for states to incorporate them within either of the original enabling acts, nor by state law.

During both the standard review process, and the optional technical review committee, planning department staff and various bureaucratic agents use their technical expertise to comment on the conformity of the proposal with codified local ordinances, state and federal law, and other agency directives. These comments are placed in staff reports, which accompany application packages that are provided to the municipality's requisite boards. There are also often a number of informal recommendations that help take into account particular site factors, local information, and even evaluations of design characteristics. While these informal recommendations are generally not enforceable, they often result in substantive modifications to site plans. Formal and informal comments by administrative agents can be an important determinant of the nature of regulatory review.

#### **2.4.7 The Transition from Planning to Governance**

Proposals that undergo the major permitting process, or seek special exemptions or variances from the codified ordinances, transition the decision making process from a largely administrative process to one that is in part democratic and participatory. A key component of governance processes are decision making boards; the public meetings where decisions are made. Included below is a quick description of standard boards present in municipalities today.

- 1) *Planning Commission* – These boards review plans and can recommend approval or

disproval of the application and then refer it to the legislative body. They are also commonly referred to as a “planning board.” This refers to a “board of the local government consisting of such [elected and appointed or appointed] members whose functions include advisory or nontechnical aspects of planning” (APA 2002, 3-101). This board provides the first level of external review after agency staff. This board reviews plans and staff comments for conformity with codified ordinances and land use plans. Elected officials generally appoint planning board members to their positions.

2) *Legislative Board* – This is the legislative body with the “power to adopt ordinances, regulations, and other documents that have the force of law” (APA 2002, 3-101). These boards provide a higher level of review after staff reviews, planning commissions, and other specialist boards, and use the advisory opinions of these entities to make final decisions about acceptance or denial of a proposal. The membership of these boards are comprised of elected members within local government, the most common examples denoted by city or town councils, or boards of commissioners, and comprise of elected representatives elected by individual districts within the municipality.

3) *Appeals Board* – These are generally referred to as a “board of adjustment.” The American Planning Association (APA) defines this as “any officer or body designated by the legislative body to hear appeals from land-use decisions, including but not limited to the Land-Use Review Board, the local planning agency, local planning commission, a hearing examiner, or any other official or agency that makes a land-use decision on a development

permit” (APA 2002, 10-17). These entities are tasked with hearing appeals, applications for variances, and exceptions from the ordinances as written. It is incumbent for the petitioner to show that the ordinance does not account for practical difficulties in its application, or would create an “undue hardship.” The boards are quasi-judicial in nature, meaning that they take sworn testimony and the introduction of evidence is allowed.

- 4) *Specialist Boards* – Many municipalities have boards that help oversee regulation of impacts within more specialized functional areas of land use. Examples of specialist local boards include historic preservation, environmental, and architectural design. These boards are usually advisory in nature, and their recommendations are considered by legislative boards when determining the final approval or denial of permits. Their membership generally consists of members appointed for fixed terms by elected officials, such as county commissioners or town/city mayors.

#### **2.4.8 Public Notification and Meetings**

The meetings of the aforementioned boards are almost exclusively public in nature. Planning agencies undertake a number of measures to inform the public about projects that are to be reviewed at public meetings, though the nature and timing of these procedures are highly variable across municipalities. This section describes three methods in which municipalities seek to inform the public of projects under consideration at local meetings:

- 1) *Adjacent property owner notification* – Municipalities have requirements for notifying

owners of properties that are either adjacent to the site of the project in question, or are deemed to be close enough that the project might cause substantive impacts on their property. Requirements for the notification of adjacent owners are usually codified in municipal ordinances, and can also be required by state law. Notification generally takes the form of a mailed notice by the municipality, sent to the address of record for the property's owner before the public meeting.

The degree to what is considered “adjacent” is variable, but at a minimum is defined as properties that share a contiguous border with the property under consideration, but can also include properties that would be functionally affected by the proposal. It is often to the planning administrator’s discretion what constitutes a “reasonable” effort to inform adjacent property owners, based on the size or scope of the project.

2) *Signs* – A municipality might require a sign to be posted on the property to provide public notice of a proposal. This has the effect of expanding notification past simple adjacent owners and helps notify those with functional interaction with the property. Signs are posted in the property's front yard, street right-of-way or in the windows of properties under consideration. They often contain short delineations of the proposed change of use, meeting dates, and contact information for the local planning agency for more information. The requirements for signs vary across municipalities and states.

3) *Notices in public media* - Many state statutes require public notification of project proposals that affect land use, which is a carry-over from the procedures specified in the State Zoning Enabling Act. (SZEAE) The traditional means by which this is accomplished

is the publication of notices in local newspapers. Additionally, planning agencies have made use of public access television, the Internet and alternative forms of printed media. There is often a requirement for such notices to be published within a certain period before the meeting will occur. The American Planning Association promoted model ordinances that suggest a requirement for at least 30 days for public notice (APA 2002, 8-103-(5))

The role of the media and the importance of public comment procedures in land use governance regimes are unclear. Due to their size, urbanized areas are likely to have a greater number of mediums with which to work as a common carrier for governmental information. In addition to traditional print media, alternative print media, radio, television, internet-based mediums, and interest group publishing provide a medium for disseminating government information. Smaller towns and rural areas are unlikely to have the same diversity of media for information than as cities. The importance of public notification in affecting governance processes and outcomes is likely to be highly variable across jurisdictions. Analyzing media's role is not an explicit goal of this dissertation, but is mentioned as an issue needing further consideration to gain a comprehensive understanding of land use governance and planning.

#### **2.4.9 The Public Meetings Process**

Upon filing public notices, planners assemble packages for the various oversight boards. These packets often consist of minutes from previous meetings, meeting agendas, and bundled copies of individual proposals (site plan, rezoning, special exceptions). Board members are to review the plans before the meeting to familiarize themselves with comments

from staff and the TRCs.

For the course of this dissertation, the primary process that is considered is specified within the SZE and SCPEA format: a requirement for an advisory planning commission to conduct a review before forwarding the review to the final legislative board for approval. It should be noted that some municipalities do not have a dedicated planning commission, and thus undergo a single layer of review by the legislative board. The multilayered review process is considered as the norm for this dissertation.

The meeting structure itself is highly variable, but generally consists of a number of standard components. Among these are reviews of the minutes of previous meetings, staff reports, and periods of old and new business. Some jurisdictions have periods of public comment when individuals are free to speak about any topic, but there are usually opportunities for public comment within both the segments of old and new business.

#### **2.4.10 Public Participation as a Component of Community Involvement**

One of the most highly variable factors within the open meetings process is the role of the public in the decision making process. Including public comment periods within open meetings can play an important role in providing information. Planners, boards and the proposing entities themselves are unlikely to be able to consider a wide range of impacts and perceptions about proposals, particularly when there are a potentially endless number of competing goals, objectives, and value streams at work.

Apart from providing information, public participation can be used as a means to reveal public preferences about topics concerned with land use. Nonexistent public

attendance at meetings might send a message that certain proposals are without substantive opposition because the public does not have defined preferences on a particular proposal, or there is a general acceptance of its associated impacts. Large, raucous crowds might send the message to voting members of the board that a proposal is undesirable and that thwarting the will of the public will perhaps have electoral consequences.

The various boards may consider the public's comments, to help inform their decisions, but there is generally no requirement that these considerations be used as the basis for decision outcomes. Lack of public participation cannot always be considered an indicator of issue salience or a revelation of public preferences, or of a community's desire to be involved in such a process. Due to the increasingly technical nature of the planning administration, it might be difficult (or impossible) for individual citizens or coalitions to muster the specialist technical knowledge to adequately compete within the deliberative process. This concept has been termed procedural inequity. This dissertation seeks to explore some of the facets of procedural inequity, and advance theories of how public entities in land use deliberative processes develop coping strategies to reduce the advantages inherent in other coalitions.

#### **2.4.11 Final Decision Making**

The final aspect of land use governance is concerned with decision making. After reviewing proposals, staff comments, comments from technical review committee specialists or other agency personnel, legal counsel and the public, a decision must be made by the legislative board. Among the list of possible actions, proposals can be: approved,

conditionally approved, tabled, withdrawn for revisions, or denied. Once this final decision is made, the applicant has little recourse other than to file legal suit against the municipality with whom the permit was denied.

One point to consider in the context of final decision making is the question of risk. Some members of legislative boards are likely to engage in risk-averse behavior, to avoid being named as a litigant in a potential action in either their official or unofficial capacities. There is some reason to believe that the risk (or threat) of legal action can change the nature of decisions in land-use governance, and thus they should be considered. This dissertation does examine the realm of legal activity within land use governance, but only within the framework of judicial involvement at the state level.

## **2.5 The Advocacy Coalition Framework**

The Advocacy Coalition Framework (ACF) as proposed by Sabatier & Jenkins-Smith (1988, 1993; Jenkins-Smith and Sabatier 1994) would provide an excellent basis to advance theoretical constructs about local government and the planning process. Part of ACF deals with the presence of “wicked” problems, “involving substantial goal conflicts, important technical disputes, and multiple actors from several levels of government” (Hoppe and Peterse 1993, 11). Such conditions exist in local government, particularly in the domain of land use governance. As previously mentioned, the difficulty of solving complex problems is beset by the constraints of an individual’s bounded rationality (Simon 1957). Coalition building is one means of overcoming this limitation, thus ACF makes a logical choice for a

framework in which to examine land use governance processes.

Studying land use planning structures under ACF would logically entreat us to consider the elements that comprise “wicked problems.” Analyzing goal conflicts would mean that a review of conflict literature and negotiation theory could produce relevant indicators. The technical nature of disputes within the ACF leads the researcher to also consider technical capacity of the individual coalitions competing for desired outcomes. Finally, the consideration of multiple actors at different levels of government infer that political relationships are perhaps nested, a consideration that has helped drive portions of this study’s methodology. McQueen et al. (2009, 122) cite Sabatier & Jenkins-Smith (1999, 118–120) to delineate the premises on which the framework is based:

The ACF’s “causal logic and resulting hypotheses build from a set of assumptions:

- (i) A central role of scientific and technical information in policy processes;
- (ii) a time perspective of 10 years or more to understand policy change
- (iii) policy subsystems as the primary unit of analysis
- (iii) a broad set of subsystem actors that not only include more than the traditional iron triangles’ members but also officials from all levels of government, consultants, scientists, and members of the media; and
- (iv) a perspective that policies and programs are best thought of as translations of beliefs”

ACF makes an ideal framework for examining local regulatory processes, because this study meets many of the listed assumptions. “Scientific and technical information” is possessed by entities who use it to wield influence; the centrality of these entities to

governance outcomes is an important premise tested. Policy subsystems (through the examination of their constituent participants and processes) are the primary unit of analysis. A fixed “Iron Triangle” model of policy is not assumed; external actors are assumed to enter and leave local political processes, and are important in determining (and adjusting) the strategies of governance participants. State executive, legislative and judicial branches are analyzed in addition to the entities directly engaged in local regulatory processes.

Weible et al. (2009, 122) expand on the Sabatier & Jenkins (1999) premise of “translations of belief, stating “ACF explicitly identifies beliefs as the causal driver for political behavior.” This study incorporates an ideology variable that helps identify the role of belief in influencing regulatory behavior. Perhaps the only condition not directly examined by this dissertation is the time requirement of 10 years to understand policy change. The datasets incorporated in this study are largely cross sectional, though several incorporated means of repeated measures. The unit of analysis not policy change, so this component is not directly applicable.

## **2.6 Municipal Autonomy**

The degree of autonomy in governance is said to be a function to of two principles: initiation and immunity (Clark 1984, 198). Municipalities often must provide the impetus to begin the action of land use regulation. The fragmented initiation of regulatory oversight might help explain the diversity of local ordinances and comprehensive plans; but also leads to a disjointed approach to solving problems. Without regional coordination, there is the potential for interjurisdictional conflict and regulatory relaxation. Since organizational

structures also are in part determined by their environmental dependencies (Pfeffer and Slancik 1978, 39) the contexts of local governance may help explain the diversity of regulatory policies that emerge between municipalities with the same statutory enabling framework.

Immunity also has a potential effect on the types of municipal regulatory decisions. Besides meeting minimal state requirements on topics such as transportation, environmental health or wetlands, there is no higher authority that systematically reviews municipal actions for consistency or substantive merit. This considerable discretion afforded to local government often suggests that the nature of decisions can vary considerably, even on very similar proposals. The lack of an enforcement (or review) mechanism means that the interpretations of codified ordinances are often variable, at times selectively enforced and the degree of application is inconsistent.

Clark asserts that the lack of oversight in local government would be functionally equivalent to the judicial system having no state or federal appellate courts (Clark 1984, 198). There is no guarantee that the decisions made in local regulatory processes truly conform with codified land use plans, and that there is a standard and fair application of constitutional due process. The issues of initiation and immunity are not examined within this study, but their roles do bear consideration for future research.

## **2.7 Chapter Summary**

This dissertation tests hypotheses that consider of political structures and governance processes on the ability of the public to influence municipal growth management. This is

done to help explain how variations in regulatory stringency among the states, and between municipalities. Chapter Four will detail the operationalization of the hypotheses, the dataset and methods that are used to test the theoretical premises mentioned within this chapter.

## Chapter 3

# Conceptual Model and Methodology

Chapter Three begins with an explanation of the dissertation's chosen data analysis procedure, Hierarchical Linear Modeling. It then explains the multilevel conceptual models that are tested. The chapter continues with a delineation of the study's datasets and variable operationalization, and concludes with a discussion of the how the variables are tested.

### **3.1 Selection of Data Analysis Technique**

The method chosen for data analysis in this study is Hierarchical Linear Modeling (HLM). HLM is part of a group of statistical procedures named Linear Mixed Models (LMM). LMM operate on different assumptions than standard General Linear Model (GLM) regression-based functions, most notably in that observations are not independent. Additionally, LMM procedures are able to accurately model correlated error terms, which is important for this study because of the hierarchical nature of this study's analysis.

The dissertation's multilevel model examines the relationship of state government institutions and ideological effects on the actors, processes and outcomes of municipal land use governance. The states are hypothesized to systematically enable or restrain aspects of municipal governance through their political and statutory frameworks. Because of the assumption of nonrandom relationships between variables, normal regression functions violate the assumptions of GLM methods. HLM is a regression-based procedure that has been typically associated with education research (see Raudenbush and Bryk 1992,

Raudenbush 1995, Snijders and Boskers 1994, Osbourne 2000, Hox 2000). This study compares two-level “null,” “random coefficient regression,” and “intercepts as outcomes” models with one dependent variable, *community*. This variable assesses the degree of community involvement in municipal growth management.

There are several additional considerations that are required for proper hypothesis testing, which can only be adequately addressed by HLM.

1. Variables within the dataset have differing numbers of observations between groups. The level-1 (local) variables have slightly different sample sizes, due to a small number of missing responses within individual variables. The HLM procedure is able to account for these differences without creating threats to validity. The number of cases for the level-1 model is  $n = 2,324$ . The sample size of level-2 cases is  $n = 48$ .

2. It is expected that the strength of regression relationships will vary between groups. HLM’s independent treatment of variables and correlated error terms is necessary for accurate, valid hypothesis testing.

3. HLM is able to incorporate mixed variables (variables that use different units of analysis: ordinal, interval and ratio). The study uses a number of mixed variables, including ordinal rankings of “degrees of involvement,” several interval measures, and a number of ratio level demographic variables (e.g. income, poverty, etc.)

### 3.2 Model Specification and Selection

This dissertation uses a two-level, random coefficient hierarchical model (HLM2) to explain variance within the dependent variable, *community*. The dependent variable is used to quantify the degree of community involvement in municipal growth management. The dependent variable is contained in the first order model, which also specifies the local model of influence. The level-1 regression analyses are repeated within each group, operating similar to the manner of an OLS regression process. The slopes and error terms derived in the level-2 model constitute the beta weights and intercepts within the level-1 model. Like OLS regression, the intercepts represent the value of the dependent variable when independent variable is equal to zero. The equation below constitutes the fully specified HLM2 *intercepts as outcomes* model used to assess the impact of state-level fixed effects on the random effects contained in municipality-level random effects.

#### Level-1 Model (municipality-level random effects)

$$\begin{aligned} community = & \beta_0 + \beta_1 (lpai) + \beta_2 (lzai) + \beta_3 (poverty) + \beta_4 (homeown) \\ & + \beta_5 (college) + \beta_6 (adi) + \beta_7 (local) + r \end{aligned}$$

#### Level-2 Model (state-level fixed effects)

$$\beta_0 = \gamma_{00} + \gamma_{01} (exec\_rating) + \gamma_{02} (judicial) + \gamma_{03} (ideology) + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

$$\beta_2 = \gamma_{20} + u_2$$

$$\beta_3 = \gamma_{30} + u_3$$

$$\beta_4 = \gamma_{40} + u_4$$

$$\beta_5 = \gamma_{50} + u_5$$

$$\beta_6 = \gamma_{60} + u_6$$

$$\beta_7 = \gamma_{70} + u_7$$

The components of the *intercepts as outcomes model* contained in the model are detailed below. For more detail on variables and sources, reference *Table 3.1* for level-1 and *Table 3.2* for level-2 variables. The conceptual model, based on the expected relationships detailed within the hypotheses of Chapter Two, is displayed in *Figure 3.1*.

### Level-1

*community* = The degree of community involvement in municipal land use governance.

*lpai* = The number of processes a proposal must pass for final approval (permitted by right).

*lzai* = The number of processes a proposal must pass for final approval (rezoning required).

*poverty* = The federal poverty rate within a municipality.

*homeown* = The rate of home ownership in a municipality.

*college* = The ratio of college graduates in a community to the total population.

*adi* = The average length of time it takes from project submittal to permit issuance.

*local* = The involvement of local councils, managers and boards in municipal land use governance.

$\beta_1 - \beta_7$  = Level-1 regression coefficients calculated with level-2 slopes and random effects

$r$  = Residual error

### Level-2

*exec\_rating* = The willingness of state governors and legislatures to support greater land use controls.

*judicialrating* = The degree to which courts uphold municipal land use decisions.

$\gamma_{00}$  = Level-2 intercept

$\gamma_{10} - \gamma_{70}$  = The slopes for individual level-2 variables used for predicting  $\beta_1 - \beta_7$

$u_{0j}$  = The random effect of level-2 predictors on the state grand mean, while holding state predictors constant.

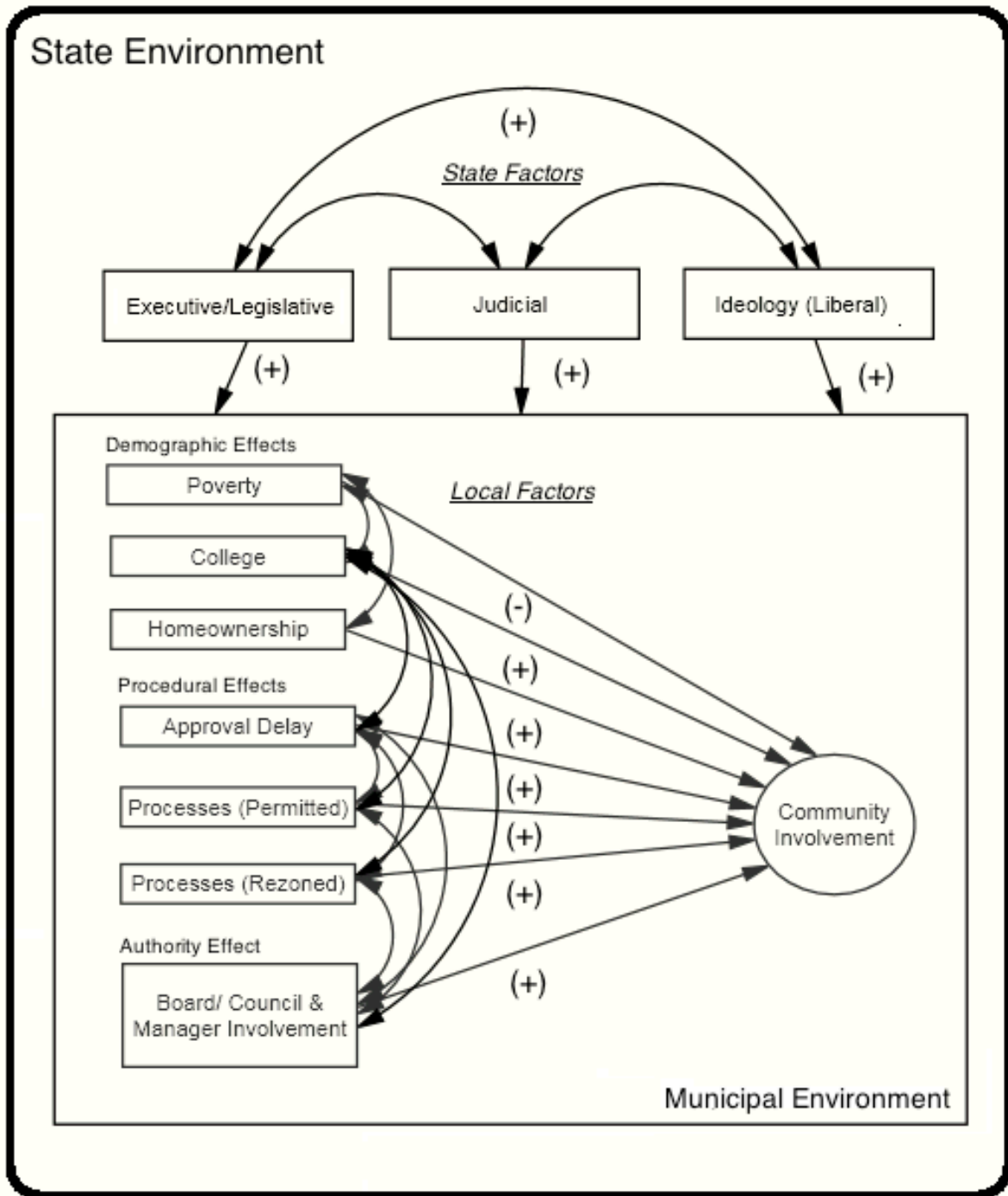


Figure 3.1 Multilevel Conceptual Model

### 3.3 Study Component Datasets

This analysis is derived from a composite dataset, constructed from several existing sources of secondary survey data. The following section comprises a description of the datasets from which variables are incorporated. Additional detail on this data is incorporated within Appendix A.

***The Wharton Residential Land Use Regulation Index (2008)*** - This dataset incorporates a recent study conducted by Gyourko, Saiz and Summers at the University of Pennsylvania's Wharton School of Business. The study's main index variables consists of eleven sub-indexes, which were mostly constructed from a survey of International City/County Manager Association (ICMA) members, with an N= 2,729. The purpose of the study is to establish a measure of "regulatory stringency" for residential housing markets to understand how local land use regulation affects residential housing prices. Gyourko et al. (2008) find that greater degrees of land use regulation impose additional costs on the development process, and help to constrain supply within housing markets, increasing the cost of residential housing.

***Variables:*** *lzai, lpai, adi, local, community*

***Foster and Summers Legislative & Judicial Profiles (2005)*** - This study's variables are incorporated as part of the WRLURI index. The study creates a rating mechanism for each U.S. state, analyzing state executives and legislatures for their activity to enact greater land use regulations, and judicial systems for willingness to uphold municipal land use decisions.

***Variables:*** *exec\_rating, judicialrating*

***Erikson, Wright and McIver (2004)*** - This study is an updated version of the original state ideology measures developed by the authors in their book: *Statehouse Democracy: Public Opinion & the American States*. CBS & NY Times polls are used to create a weighted ideology variable based on the ideological self-identification of survey respondents. The author's original data has been computed into a new variable for the last five years of data (1999-2003) by Dr. John Korey, CSU - Pomona POWERMUTT Project (Korey, 2009).

***Variable: ideology***

***U.S. Decennial Census, Summary File 3 (2000)*** - U.S. Census Bureau Census Demographics for the 2000 Decennial Census, Summary File 3. "Summary File 3 presents detailed population and housing data (such as place of birth, education, employment status, income, value of housing unit, year structure built), collected from a 1-in-6 sample and weighted to represent the total population."

***Variables: college, poverty, homeown***

### **3.4 Variables**

Tables 3.1 and 3.2 consist of basic delineations of the constructs and variables used within this dissertation. They list the name of the operationalized construct, the name of the variable used in this dissertation, a brief description of the variable, the original data source, and the level at which the data is aggregated in the dissertation's models. Expanded delineations of the variables, and the original variable codebook for the Wharton study (Gyourko et al., 2008) are included as appendices.

Table 3.1 Level-1 Variables

Construct	Variable	Description	Data Source	Data Level
Community involvement	community	The degree of community involvement in municipal growth management	Wharton Residential Land Use Regulation Index (pressure)	Level-1
Approval processes (permitted by right)	lpai	Then number of processes a proposal must pass for final approval (permitted by right)	Wharton Residential Land Use Regulation Index (lpai)	Level-1
Approval processes (rezoning required)	lzai	The number of processes a proposal must pass for approval (rezoning required)	Wharton Residential Land Use Regulation Index (lzai)	Level-1
Involvement of local government actors	local	The involvement of councils, managers and boards in municipal growth management	Wharton Residential Land Use Regulation Index	Level-1
Approval delay	adi	The length of time (in months) it takes the average proposal to obtain final approval	Wharton Residential Land Use Regulation Index	Level-1
College graduates	college	The percentage of population age 25 or older with a bachelors degree or higher	US Census (2000) Summary Tape File 3A	Level-1
Home ownership rate	homeown	The percentage of owner-occupied, non-vacant housing units in a municipality	US Census (2000) Summary Tape File 3A	Level-1
Poverty rate	poverty	The percentage of the population below the federal poverty line	US Census (2000) Summary Tape File 3A	Level-1

*Table 3.2 Level-2 Variables*

<b>Construct</b>	<b>Variable</b>	<b>Description</b>	<b>Data Source</b>	<b>Data Level</b>
Executive rating	exec_rating	Executive and legislative involvement in land use regulation	Fosters & Summers (2005)	Level-2
Judicial rating	judicialrating	Willingness of state courts to uphold municipal land use decisions	Fosters & Summers (2005)	Level-2
Ideology	ideology	Mean state ideology, constructed from CBS/ NY Times Polls	Erikson, Wright & McIver (2003)	Level-2

### **3.5 Centering**

Centering is a standard procedure in LMM, which simply entails subtracting the mean from observation, so that this mean is zero. “Grand mean centering often improves the interpretability of coefficients because “0” now has a meaning” (Garson, 2010a). Group-mean centering, in contrast, changes the meaning of coefficients “in complex ways that make coefficients hard to interpret, as different mean values are subtracted from different sets of raw scores” (Garson, 2010). The use of grand-mean centering allows consistent comparison of changes in residual variance across the dataset’s constituent indices. Thus, data is no longer in a raw form, and cannot be interpreted as such.

### **3.6 External & Internal Validity**

Examining threats to external validity entails ensuring generalizability across the population from which the sample is drawn. The selection of cases for the level-1 model was obtained from the Wharton Residential Land Use regulation Index (WRLURI). This study is comprised a survey of International City Managers Association (ICMA) members, and “a detailed survey of the Philadelphia metropolitan statistical area (MSA), from the Delaware Valley Regional Planning Commission” (Gyourko et al. 2008, 696). The surveys were targeted to planning directors and chief administrative officers, and mailed to 6,896 ICMA member municipalities. There were 2,649 surveys returned, for a response rate of 38.4 percent. The authors note, “While communities with at least 2500 residents are well represented in the sample, it is still the case that the typical city in our sample is not the

average city in the country” (696).

<i>Population</i>	<i>Response rate (percentage)</i>	<i>Number in ICMA list</i>
Less than 2500	29.4	17
2500 to 5000	28.3	1952
5000 to 10 000	35.3	1840
10 000 to 50 000	41.7	2557
50 000 to 100 000	49.5	402
100 000 and over	62.2	241

*Figure 3.2 WRLURI Survey Response Rates (Gyourko et al. 2008, 696)*

Using a logit model to compare groups, the authors also note that there are a number of demographic differences (home ownership, education, age, race) between those of all census-designated places, and those of metropolitan areas (Gyourko 2008, 697). They note that this might be of interest as metropolitan areas “contain a vast majority (about 4/5ths) of the country’s population” (697). Both the aforementioned response rates and the demographic representativeness of the municipalities contained within the surveys are mentioned in the final chapter as study limitations.

The data used for analysis is a composite of a number of datasets, each with a different number of cases. The HLM2 procedure removes cases from Level-1 variables with missing data, which reduced the number of level-1 cases from 2,729 to 2,324. This sample size is still very large, and is adequate for statistical reliability in HLM2 and OLS regression models. For consistency and accurate comparison of results, the same data (N = 2,324) is used for OLS regression in later single level analyses. A map of the municipalities in this data is provided in Figure 4.16. The level-2 data set size is limited to the size of the most

incomplete variable, which is *judicialrating* (Foster and Summers 2005) with 46 states. The number of groups analyzed within the level-2 model satisfies the conditions of statistical validity. Maas & Hox (2005, 88) state that the thirty cases “is smallest acceptable number” for a level-2 predictor, and thus the number of cases in the level-2 model are sufficiently large for statistical reliability.

Local government has a reasonable expectation for the frequent entry and exit of political actors (mayors, boards, councils, individual citizens or public interest groups, etc.). The planning director and chief executive officers that comprise the survey’s population are likely to be the most consistent participants in decision making processes. Their experience, procedural familiarity, formal training and repeated interactions with various actors perhaps give them the most consistent perspective to assess the involvement of local actors. I believe that this constitutes the best possible population from which to derive data for this study’s research question, and with a large sample size, fulfills the requirement for external validity.

### **3.7 Data Analysis**

This process for analyzing HLM data is relatively straightforward, due to procedural similarities with OLS regression. Simple univariate analyses are first derived to illustrate measures of central tendency for individual variables. Individual hypotheses are then examined using the appropriate procedures for bivariate hypothesis testing (*t*-test, Chi-square, ANOVA and simple regression procedures). The outcomes are discussed and later compared with similarities with the slopes and intercepts derived from the HLM analysis of level-1 and level-2 models.

$\beta_{0j}$  is a level-2 predictor that is used to create the level-1 intercept model; the level-1 regression weights ( $\beta_1$ -  $\beta_7$ ) are derived from the slopes of the level-2 predictors and random error. The primary outcomes to be tested are the significance of level-2 fixed effects, and the amount of variance explained in the level-1 dependent, community. HLM analyzes the proportion of variance explained between groups ( $\tau_{00}$ ) and within groups ( $\sigma^2$ ). This “analysis of variance explained” computes the degree of intraclass correlation ( $\rho$ ), which is used to explain the relationship of the state and local spheres of influence on the dependent, community. “The ICC is the between-groups effect on the intercept of the outcome variable divided by total variance” (Garson, 2010b).

Using the  $t$  ratio (a comparative test of equality of means), the significances of aggregated independent variables are obtained and then are compared using disaggregated variable hypothesis testing procedures, to analyze the interaction effects. The significance of independent variables is considered individually, and then in regard to their effect on the aggregated model. Model significance is obtained through Chi-squared testing. The model is determined to be significant if the model intercept differs significantly from zero. The minimum significance level chosen for all significance tests in this study is ( $\alpha = 0.05$ ), though significant results at more stringent significance levels are noted. HLM analyses do not calculate a traditional model  $R^2$  value like those in simple multivariate regression procedures. Snijders and Boskers (1994) metric of a “pseudo R-squared” is used to allow comparable assessment to more other forms of regression modeling.

### **3.8 Chapter Summary**

Chapter Three explains the rationale for choosing this study's primary statistical procedure, Hierarchical Linear Modeling. It delineates the studies from which data has been incorporated to create this dissertation's composite dataset, and explains the operationalization of the variables used from each. It then comments on challenges to validity, then explains the process used for the data analysis and hypothesis testing that are used to generate the results detailed in Chapter Four.

## Chapter 4

# Results

Chapter IV begins with a description of tests of normality for the study's variables. Prior to running modeling procedures, univariate and K-means cluster analyses were used to assess the normality of the dependent and independent variables at level-1 and level-2. Then descriptive statistics and the significance of bivariate correlations are discussed. Finally, the outcomes of the HLM2 analyses and models are discussed, and compared with single level local regression models.

### 4.1 Variable Transformations

A number of level-1 variables exceeded accepted standards of kurtosis<sup>1</sup>, which in this study is defined at a score of +/-2 (Garson, 2010c). A number of level-1 variables also had noticeable skew<sup>2</sup>, but all had values within the range of +/- 2, also recommended by Garson. Using the transformations had the effect of reducing overall kurtosis and skewness. Using the Tabachnick and Fidell (2000, 87) guide to selecting data cleaning techniques, a number of variable transformations were conducted (see table 4.3). All level-2 variables were within acceptable ranges, so no transformations were performed.

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<sup>1</sup> Kurtosis is a measure of how flat or peaked a variable's distribution is when compared to a normal distribution. Distributions are described as either leptokurtic (peaked), mesokurtic(normal) or flat (platykurtic).

<sup>2</sup> Skewness is of a measure of the symmetry of a distribution. Long "tails" on a distribution's ends influence the accuracy of the sample mean, increasing the likelihood of Type I and Type II errors. Distributions either have positive (right leaning) or negative (left leaning) skew.

Table 4.1 Variable Transformations

Old Variable	New Variable	Transformation
<i>adi</i>	<i>adi_log</i>	log(10)
<i>local</i>	<i>local_reflect_log</i>	reflect, then square root
<i>lzai</i>	<i>lzai_log</i>	log(10)
<i>college_recode</i>	<i>college_sqrt</i>	square root

Table 4.5 compares the descriptive statistics of the original and transformed variables. The maximum kurtosis value in the analysis declined from 3.294 to 1.304. The maximum skew value of in the dataset decreased from 1.630 to 1.240. Thus, all variables are now well within acceptable ranges.

## 4.2 Univariate Analysis

The following univariate analyses consist of conducting a K-means clustering analysis of level-1 variables, detailing the nature of descriptive statistics and the analyses of the original variables. The histograms of the distributions are also discussed, and then compared with the histograms of the transformed variables.

### 4.2.1 Level-1 Variables

*community* - This variable constitutes the study's dependent variable, which is defined as "the degree of community involvement in affecting municipal land use governance." The

variable consists of an ordinal variable, scaled from 1 to 5. The mean of the variable is 3.18, exhibiting a slight positive skew from the mode (3.0). This suggests that local planners believe that community involvement has a somewhat positive effect on municipal land use governance. The variable has a fairly normal (mesokurtic) distribution.

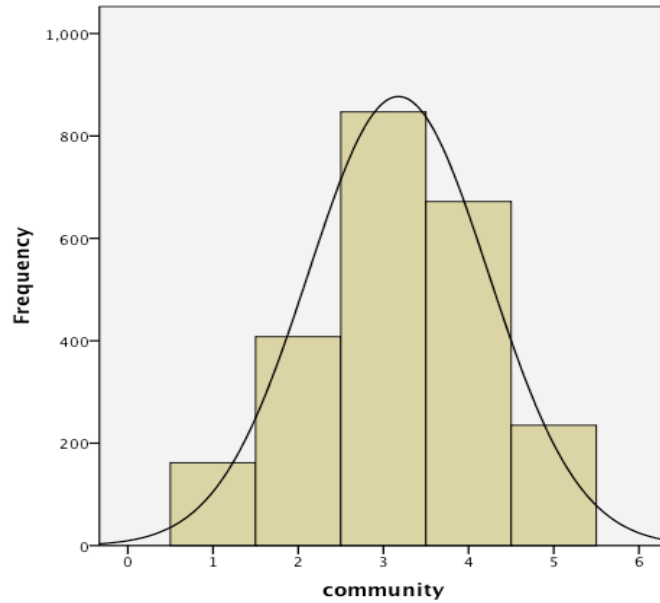


Figure 4.1 Frequency Distribution of “community” Variable

*local* - This independent variable measures degree of involvement by “local councils, managers and commissioners” in affecting municipal land use governance. It is an ordinal variable with a range of 1 to 5, whose mean of 4.39 is negatively skewed behind the mode of 5. The response of ‘5’ comprises 61.5 percent of the total responses. When compared to *community involvement*, it appears planning administrators believe that official actors (e.g. boards, managers) are highly influential in determining the growth management procedures

and outcomes within their jurisdiction, to a much greater extent than the community. It is also problematic because many “local land use decision makers have little, if any, formal education in planning” (Kaplan et al. 2008, 3). If such actors are indeed so influential in affecting growth management, it may bear a deeper consideration as to the regulatory function such actors play in providing a regulatory function. For the purposes of parametric testing, the original local variable was reflected, and the square root transformation was used to reduce a leptokurtic (peaked) distribution.

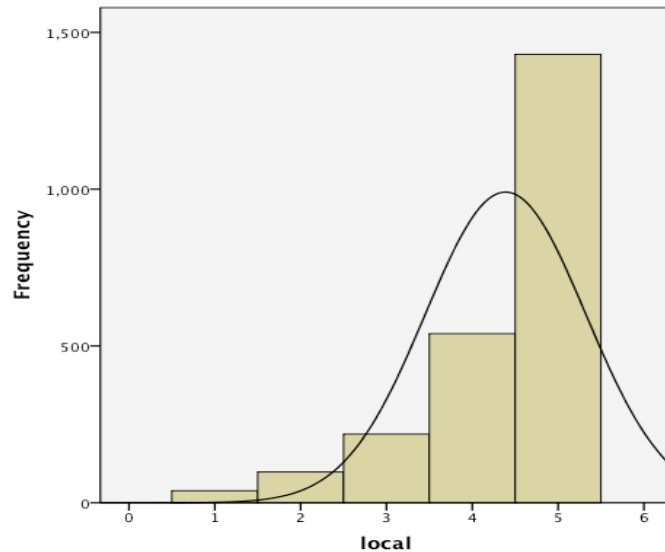


Figure 4.2 Frequency Distribution of “local” Variable

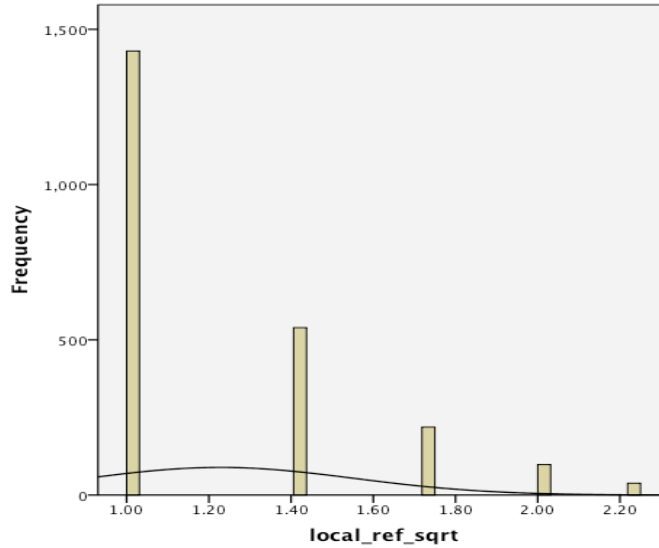


Figure 4.3 Transformed Distribution of “local” Variable

*lpai* – The local project approval index is an independent variable, with a range from 0 to 6. This variable simply counts the number of processes a proposal must fulfill to gain final approval, which do not include rezoning (often referred to as “uses permitted by right”). As the distance between the values is equal, the variable has an interval level of measurement. The mean for the index is 1.52, and the distribution is highly leptokurtic (peaked) when compared with a normal distribution. The most common response was ‘1’, with 87 percent of respondents reported that gaining final project approval required the approval of 0-2 entities. It is assumed that projects that are approved with ‘0’ board approvals are those that are approved administratively. This finding helps to lend support to the procedural model detailed in Chapter 2.

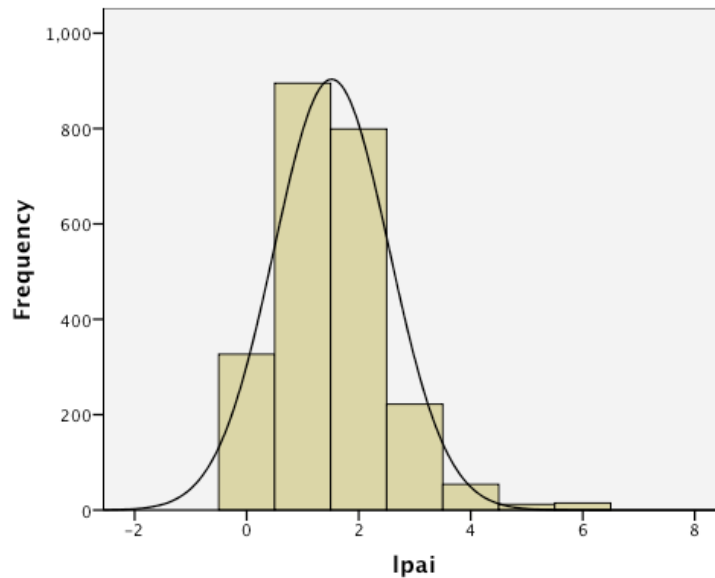


Figure 4.4 Frequency Distribution of "lpai" Variable

*lza*– The local zoning approval index is an interval level variable, with a range from 0 to 6. This variable simply aggregates the number of processes a proposal must to accomplish rezoning. The mean for the index is 2.08, and the distribution, like the *lpai* variable, is highly leptokurtic (peaked) when compared with a normal distribution. The value of the mode was '2', which constituted 54 percent of all responses, while 96 percent of respondents reported that gaining final zoning approval required approval by three entities or less. It is assumed that projects that are approved with '0' board approvals are those that are approved administratively.

When compared to the *lpai* variable, there are a few noticeable differences. First, the difference in means suggest that rezoning is a more onerous process than a simple project approval. Only 14.1 percent of municipalities reported having no formal meetings required for project approval, while only 2.6 percent reported that no such meetings were needed for a

rezoning request. This variable was transformed within a logarithmic transformation (base 10) to create the *lzi\_log* variable for HLM2 and OLS regression procedures.

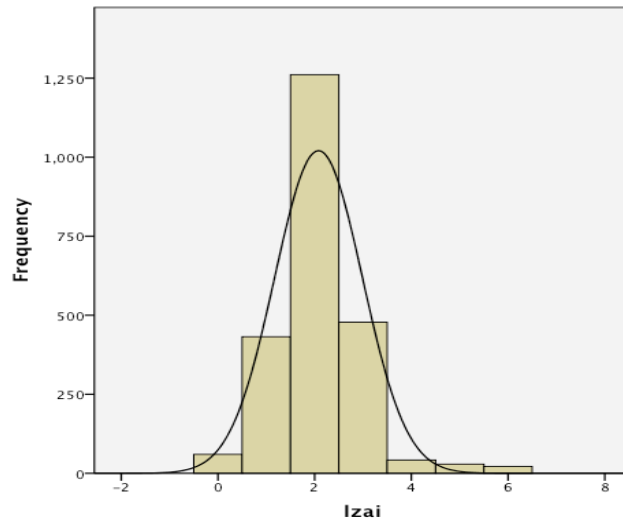


Figure 4.5 Frequency Distribution of “lzi” Variable

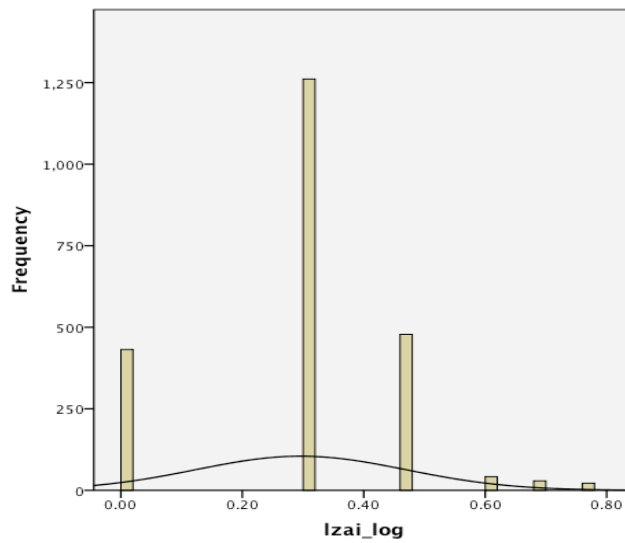
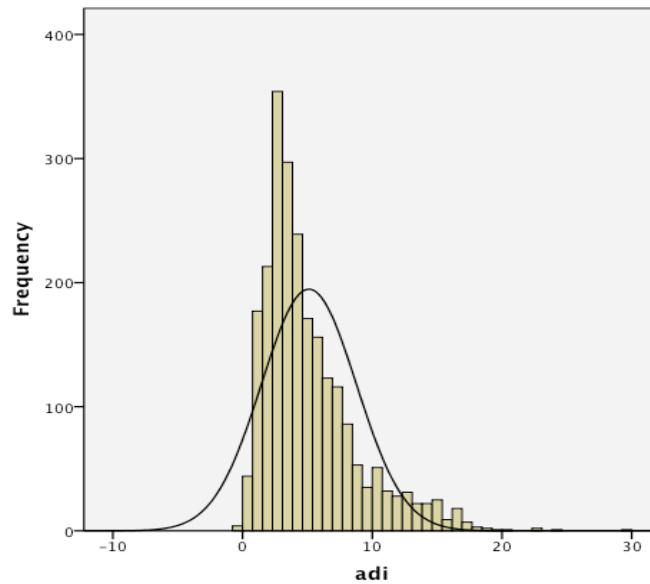


Figure 4.6 Frequency Distribution of Transformed “lzi” Variable

*adi*– The approval delay index is the length of time that it takes for final approval for residential housing projects. The delays range from 0 to 29 months, with ‘0’ being scored for those municipalities that have no delay between application and permit issuance. The mean time for approval reported was 5.11 months, with a median score of 4. The distribution of responses is highly peaked and shows a strong positive skew. A small number of cases (n =3) were eliminated due to coding errors.



*Figure 4.7 Frequency Distribution of “adi” Variable*

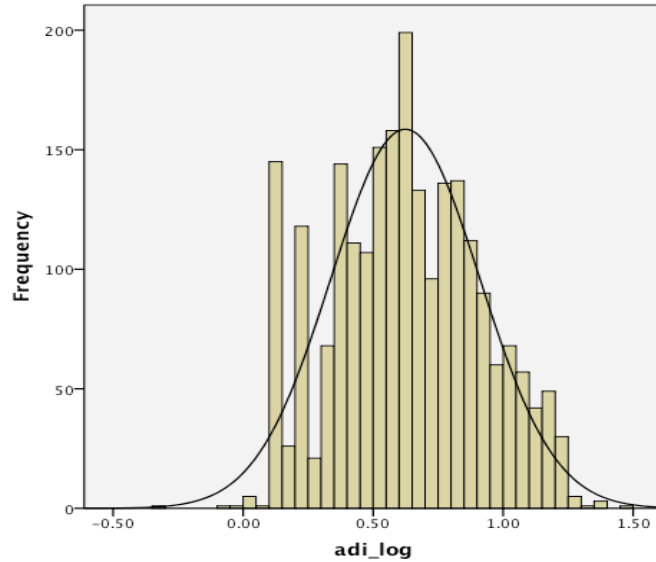


Figure 4.8 Transformed Distribution of “adi” Variable

*poverty* – This ratio level variable (Source: 2000 U.S. Census, Summary Tape File 3) quantifies the rate of poverty within a municipality. The scores range from 0.00 to 0.48. The calculated mean is 0.1172 (11.72 percent), which is roughly in line with the official 2000 Census estimate for the entire United States of 11.8 percent in 1999, and 11.3 percent in 2000. (Poverty 2000: Census, 1). The distribution of the values is leptokurtic, with a positive skew.

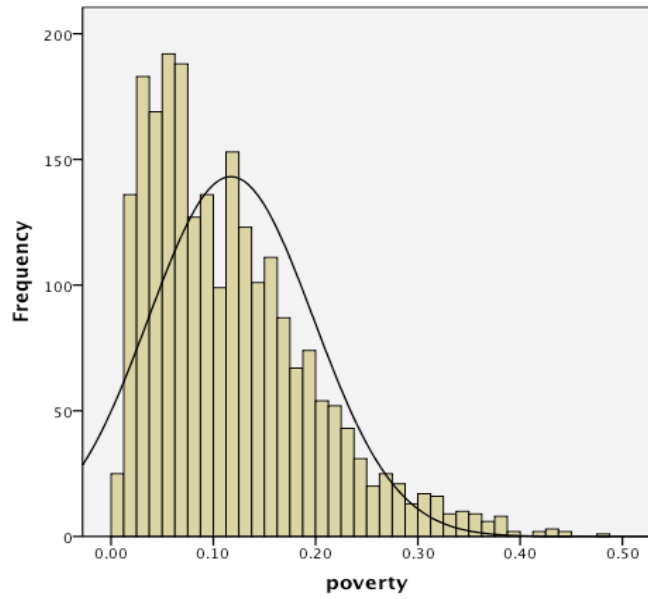


Figure 4.9 Frequency Distribution of “poverty” Variable

*homeown* - This ratio level variable (Source: 2000 U.S. Census, Summary Tape File 3) quantifies the rate of owner-occupied housing in a municipality. The scores range from 0.19 to 0.81. The calculated mean is 0.6925 (69.25 percent), which is comparable to the estimate of the official 2000 Census estimate for the United States at 66.2 percent in 1999. (Poverty 2000: Census, 1). The distribution of the values is leptokurtic (peaked), with a positive skew.

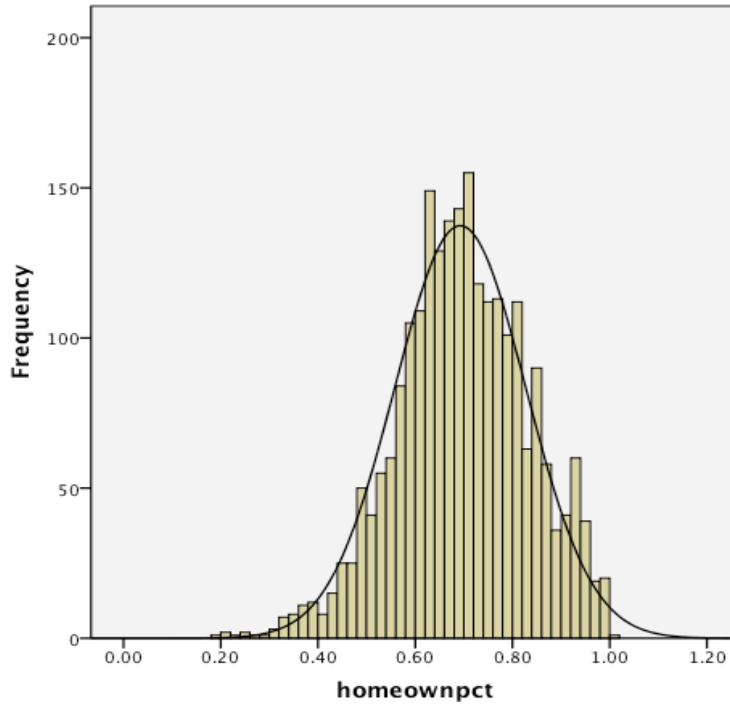


Figure 4.10 Frequency Distribution of “homeown” Variable

*college* – This variable is the ratio of college graduates (population ages 25 or greater, a bachelors degree or higher) to the total population. The original calculated mean for all reported municipalities is 18.7 percent, compared to 24.4 general population estimate in the 2000 Census (Census 2000: Educational Attainment, 1). The distribution of the municipalities in the data is not normal, due a large number of missing cases. Because the HLM2 procedure does not tolerate missing data in level-1, large numbers of potential missing cases in the *college* variable could remove a large number of cases in the model, systematically affecting the nature of the regression results.

By replacing missing values with the known 2000 national estimate (24.4), the mean score for survey municipalities increases to 25.46 percent. Gyourko et al. (2008) also note

that demographic characteristics of the survey population (ICMA member municipalities) are different from those of those of the larger census population, being slightly wealthier and more educated. The distribution of values is very flat (platykurtic), and exhibits a positive skew due to large statistical outliers.

Using an independent samples t-test, the original *college* variable was compared with an imputed variable “collegetrecode” and which resulted in statistically significant differences between the mean values ( $p < 0.001$ ). Next, a single sample t-test was conducted with the nationally reported mean of 24.4 versus between several “college” variables, using multiple missing data imputations, all of which showed statistically significant differences with the original calculated mean, and the known estimate ( $p < 0.001$ ). For this analysis, a *college* variable that substitutes the known 2000 Census estimate for missing cases is used. Because of its much smaller t-value and difference to the mean (when compared with the original variable), it is a more accurate reflection of the true effect of college education than all other missing data removal/imputation alternatives. Statistical testing showed negligible differences in the change of regression coefficients between models, particularly within HLM2 models, which are grand mean centered. All operationalizations of the *college* variable (with missing values removed, known mean or missing value imputation) showed a significant correlation ( $p < 0.001$ ) in both multilevel and single level regression models.

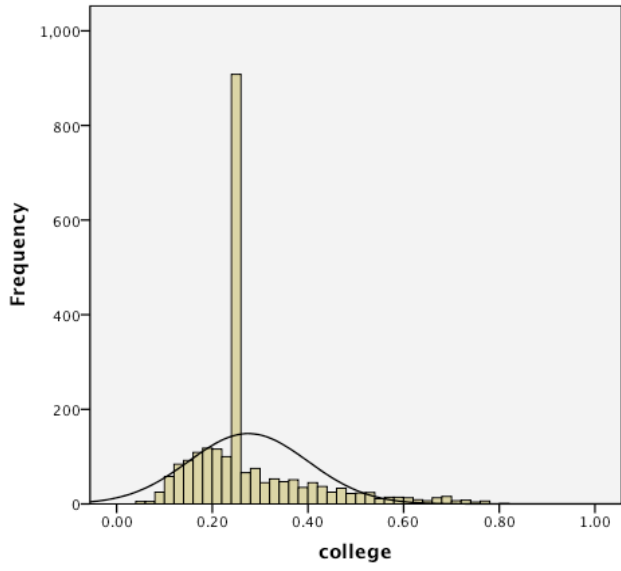


Figure 4.11 Frequency Distribution of "college" Variable

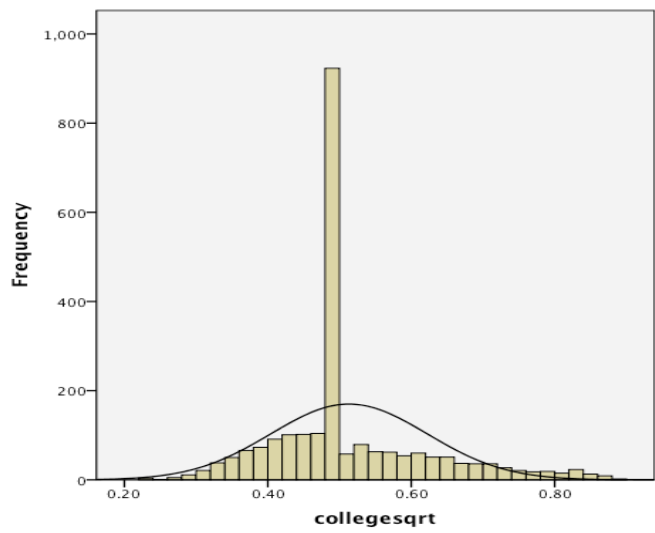


Figure 4.12 Frequency Distribution of "college" Variable

Table 4.3 Level-1 Descriptive Statistics

	N	Range	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
community	2324	1 -5	3.18	1.057	-.196	.051	-.472	.102
<b>adi</b>	2324	0 - 29	5.11	3.662	1.492	.051	<b>2.721</b>	.102
<b>local</b>	2324	1 - 5	4.39	.936	-1.630	.051	<b>2.186</b>	.102
lpai	2324	0 - 6	1.52	1.026	.891	.051	1.974	.102
<b>lzai</b>	2324	0 - 6	2.08	.908	.940	.051	<b>3.294</b>	.102
<b>college</b>	2324	.05 - .81	.2546	.12464	1.617	.051	<b>2.859</b>	.102
homeown	2324	.19 - 1.00	.6925	.13494	-.203	.051	.055	.102
poverty	2315	.00 - .48	.1172	.08064	1.069	.051	1.043	.102
Valid N	2315							

Table 4.4 Comparison of Original and Transformed Level-1 Variables

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
adi	2321	29	0	29	5.12	3.658	13.384	1.497	.051	<b>2.730</b>	.102
local	2324	4	1	5	4.39	.936	.875	-1.630	.051	<b>2.186</b>	.102
lzai	2324	6	0	6	2.08	.908	.825	.940	.051	<b>3.294</b>	.102
college	2324	.81	.00	.81	.1870	.18658	.035	.847	.051	<b>2.859</b>	.102
adi_log	2277	1.79	-.32	1.47	.6238	.28643	.082	.066	.051	<i>-.606</i>	.103
local_rf_sqrt	2324	1.24	1.00	2.24	1.2274	.32521	.106	1.240	.051	<i>.581</i>	.102
lzai_log	2264	.78	.00	.78	.2961	.17248	.030	-.242	.051	<i>.077</i>	.103
college_sqrt	2324	.68	.22	.90	.5132	.10912	.012	.947	.051	<i>1.304</i>	.102
Valid N (listwise)	2250										

#### 4.2.2 Level-2 Variables

*exec\_rating* –This variable details the relative degree of activity by state legislatures and executives in enacting greater land use restrictions in the last ten years. The variable ratings range from 1 to 3, with a mean of 2. The variable has an interval level of measurement, and measures for all U.S. states (n = 50).

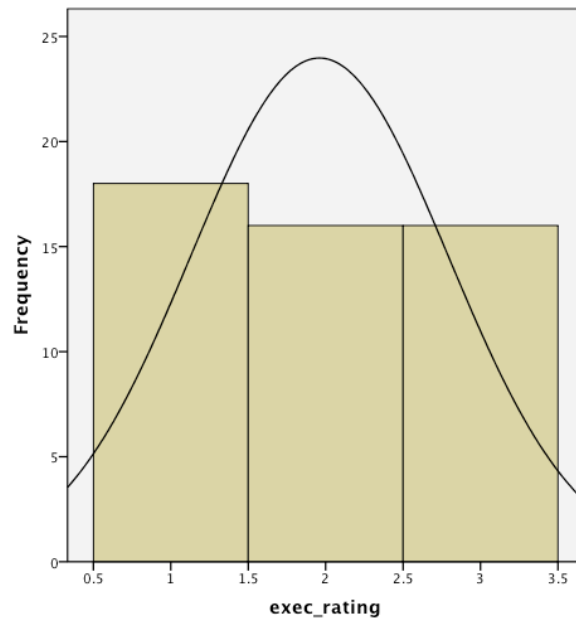
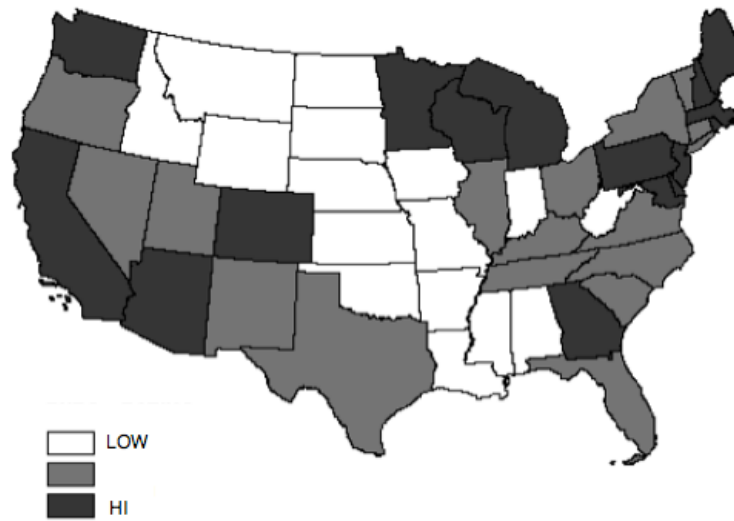


Figure 4.13 Frequency Distribution of “*exec\_rating*” Variable



*Figure 4.14 State Executive & Legislative Activity in Enacting Land Use Controls  
(Data: Fosters & Summers 2005, as incorporated by Gyourko et al. 2008)*

*judicialrating* – This variable is a measure of the willingness of appellate courts to uphold municipal land use decisions. The variable ratings range from 1 to 3, with a mean 2.29 score. The variable shows a negative skew, with only 8.3 percent of values receiving a score of ‘1.’ Like *exec\_rating*, this variable omits Alaska and Hawaii, but also has insufficient data to make determinations for Georgia and Oklahoma, resulting in valid cases for 46 states.

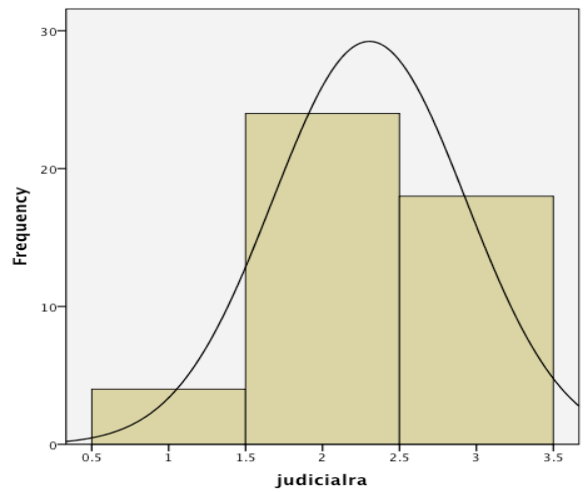


Figure 4.15 Frequency Distribution of “judicialrating” Variable

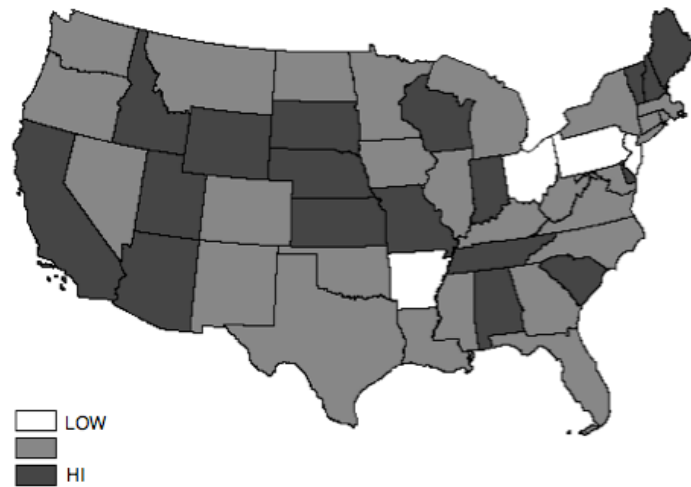


Figure 4.16 State Judicial Rating  
 (Data: Fosters & Summers 2005, as incorporated by Gyourko et al. 2008)

*ideology* – This interval assesses states on a scale of -100 (most conservative) to 100 (most liberal). Data values range from -31.52 to 5.17, with a mean of -13.84. The variable exhibits a positive skew from its median value of -14.925. The distribution is somewhat platykurtic (flatter than a normal distribution), with a kurtosis of -0.601. This variable omits Alaska and Hawaii from consideration, for an  $n = 48$ .

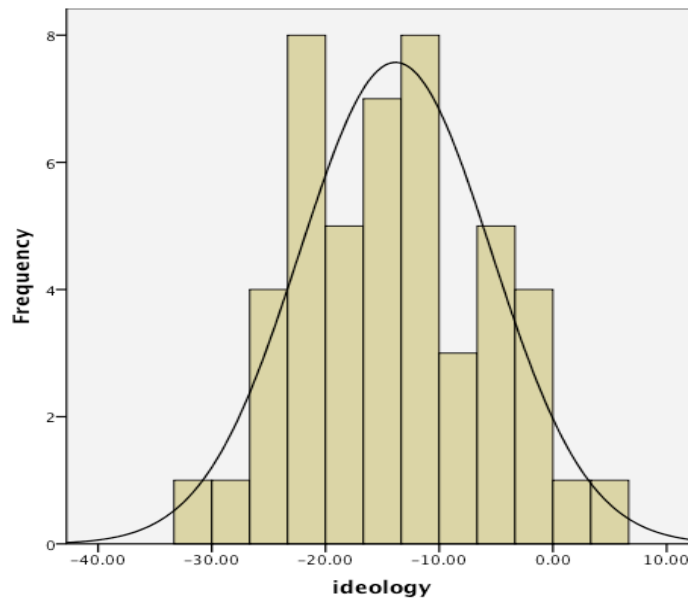


Figure 4.17 Frequency Distribution of “ideology” Variable

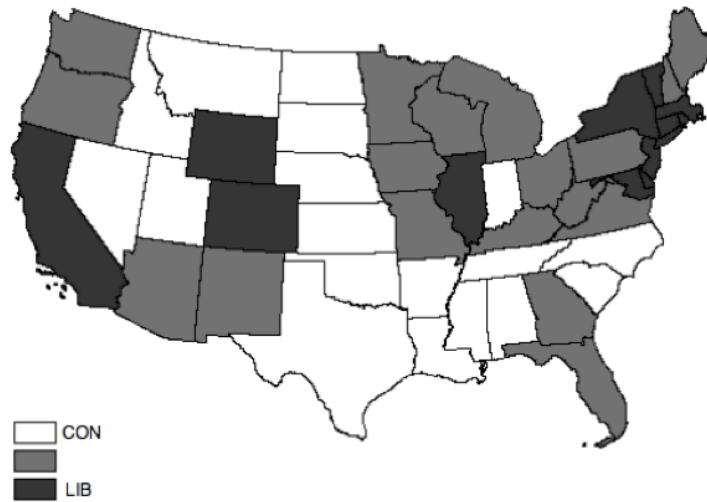


Figure 4.18 State Ideology (Data: Erikson, Wright & McIver 2003)

Table 4.5 - Level-2 Descriptive Statistics

	N	Range	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
exec_rating	50	1 to 3	1.96	.832	.077	.337	-1.556	.662
judicialra	46	1 to 3	2.30	.628	-.328	.350	-.596	.688
ideology	48	-31.52 to 5.17	-13.8396	8.42868	.187	.343	-.601	.674
Valid N	46							

### 4.3 Covariate Relationships

Bivariate correlations (as evidenced by Pearson's R) are used to show the level of association between variables. Strong correlations between variables may cause multicollinearity problems with linear modeling methods like regression. Having several bivariate correlations that exceed +/- 0.7 would be cause for concern (Garson, 2010d). With one exception, all bivariate correlations are +/- 0.37 or less, and numerous correlations are significant at the 0.05 and 0.01 levels (see Appendix A). The relationship between the percentage of those in poverty and the rate of homeownership exhibits a moderately strong negative relationship at -0.645. At the state level (Level 2) the only association of notable strength is between the "exec\_rating" and "ideology" variables, with bivariate correlation of (-0.645).

Table 4.6 - Level 1 Bivariate Correlations (Original and Transformed Variables)

		community	lpai	lzai	poverty	homeown	college	adi	local	adi_log	lzai_log	local_rf_sqrt	college_sqrt
community	Pearson Correlation	1	.056**	.013	-.095**	.016	.227**	.181**	.370**	.178**	-.003	-.367**	.181**
	Sig. (2-tailed)		.007	.526	.000	.450	.000	.000	.000	.000	.890	.000	.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
lpai	Pearson Correlation	.056**	1	.303**	-.063**	.059**	.025	.137**	.086**	.131**	.252**	-.084**	.049*
	Sig. (2-tailed)	.007		.000	.002	.004	.235	.000	.000	.000	.000	.000	.018
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
lzai	Pearson Correlation	.013	.303**	1	.072**	-.010	-.114**	-.036	.036	-.094**	.953**	-.032	-.063**
	Sig. (2-tailed)	.526	.000		.001	.634	.000	.083	.082	.000	.000	.122	.003
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
poverty	Pearson Correlation	-.095**	-.063**	.072**	1	-.645**	-.311**	-.213**	-.152**	-.234**	.062**	.154**	-.338**
	Sig. (2-tailed)	.000	.002	.001		.000	.000	.000	.000	.000	.003	.000	.000
	N	2315	2315	2315	2315	2315	2315	2315	2315	2268	2256	2315	2315
homeown	Pearson Correlation	.016	.059**	-.010	-.645**	1	.147**	.078**	.090**	.085**	.030	-.094**	.282**
	Sig. (2-tailed)	.450	.004	.634	.000		.000	.000	.000	.000	.149	.000	.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
college	Pearson Correlation	.227**	.025	-.114**	-.311**	.147**	1	.260**	.119**	.257**	-.125**	-.124**	.744**
	Sig. (2-tailed)	.000	.235	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324

Table 4.6 - Continued

adi	Pearson Correlation	.181**	.137**	-.036	-.213**	.078**	.260**	1	.133**	.929**	-.083**	-.136**	.213**
	Sig. (2-tailed)	.000	.000	.083	.000	.000	.000		.000	.000	.000	.000	.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
local	Pearson Correlation	.370**	.086**	.036	-.152**	.090**	.119**	.133**	1	.122**	.035	-.993**	.107**
	Sig. (2-tailed)	.000	.000	.082	.000	.000	.000	.000		.000	.099	.000	.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324
adi_log	Pearson Correlation	.178**	.131**	-.094**	-.234**	.085**	.257**	.929**	.122**	1	-.096**	-.125**	.210**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	2277	2277	2277	2268	2277	2277	2277	2277	2277	2250	2277	2277
lzai_log	Pearson Correlation	-.003	.252**	.953**	.062**	.030	-.125**	-.083**	.035	-.096**	1	-.032	-.059**
	Sig. (2-tailed)	.890	.000	.000	.003	.149	.000	.000	.099	.000		.126	.005
	N	2264	2264	2264	2256	2264	2264	2264	2264	2250	2264	2264	2264
local_rf_sqrt	Pearson Correlation	-.367**	-.084**	-.032	.154**	-.094**	-.124**	-.136**	-.993**	-.125**	-.032	1	-.111**
	Sig. (2-tailed)	.000	.000	.122	.000	.000	.000	.000	.000	.000	.126		.000
	N	2324	2324	2324	2315	2324	2324	2324	2324	2324	2277	2264	2324
collegesqrt	Pearson Correlation	.181**	.049*	-.063**	-.338**	.282**	.744**	.213**	.107**	.210**	-.059**	-.111**	1
	Sig. (2-tailed)	.000	.018	.003	.000	.000	.000	.000	.000	.000	.005	.000	
	N	2324	2324	2324	2315	2324	2324	2324	2324	2277	2264	2324	2324

\*\* . Correlation is significant at the 0.01 level (2-tailed). \* . Correlation is significant at the 0.05 level (2-tailed).

Table 4.7 Level- 2 Bivariate Correlations

		exec_rating	judicialrating	ideology
exec_rating	Pearson Correlation	1	-.125	.615**
	Sig. (2-tailed)		.389	.000
	N	50	46	48
judicialrating	Pearson Correlation	-.130	1	-.077
	Sig. (2-tailed)	.389		.612
	N	46	46	46
ideology	Pearson Correlation	.615**	-.077	1
	Sig. (2-tailed)	.000	.612	
	N	48	46	48

\*\* . Correlation is significant at the 0.01 level (2-tailed).

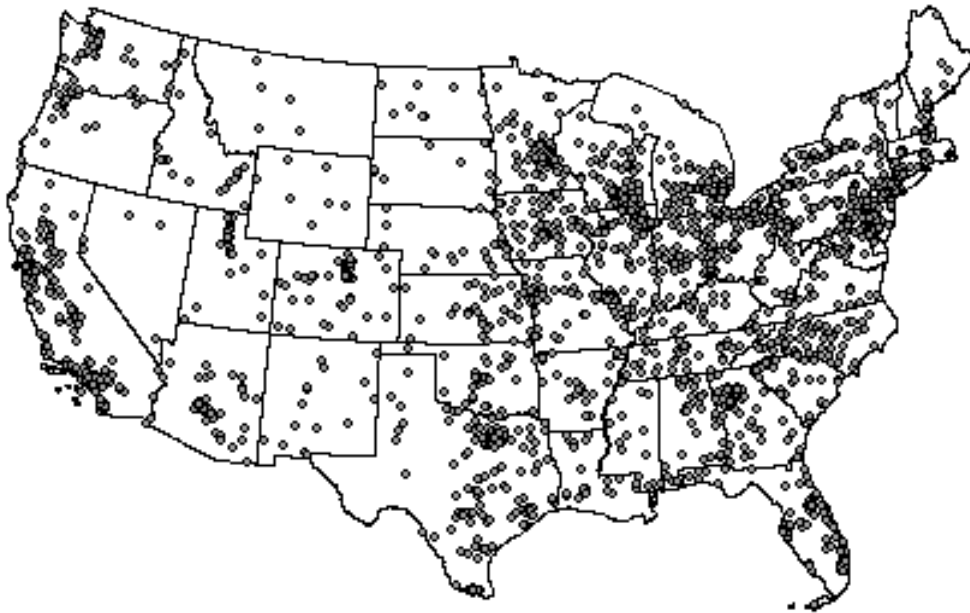


Figure 4.19 Census Designated Places Used in Study (N = 2,324)

## 4.4 Model Analysis

The hierarchical relationship between level-1 and level-2 variables is very weak, but statistically significant ( $p < 0.001$ ). The majority of the variance explained on the dependent variable, *community*, occurred at level-1. The following section details the testing procedure used for comparing HLM2 and OLS regression models.

### 4.4.1 HLM2 Multilevel Model Outcomes

This section details three models that were tested in evaluating level-2 fixed effects. First, the *null model* establishes a basis for comparison: the level-1 and level-2 intercepts when all variables at both levels are controlled. Second, the *random coefficient regression model* then introduces level-1 variables, and tests their significance when level-2 variables are controlled. Finally, the *intercepts as outcomes model* assesses full level-2 fixed effects on the level-1 variables. The null model is used as the basis for comparison for the other two models.

1) Null Model/ One-Way Analysis of Variance Model – The null model controls all level 1 (random) and level 2 (fixed) effects, comparing both intercepts for the dependent variable, *community*.

#### Level-1 Model

$$\begin{aligned} \text{community} = & \beta_0 + \beta_1(\text{lpai} = 0) + \beta_2(\text{lzai} = 0) + \beta_3(\text{poverty} = 0) \\ & + \beta_4(\text{homeowner} = 0) + \beta_5(\text{college} = 0) + \beta_6(\text{adi} = 0) + \beta_7(\text{local} = 0) + r \end{aligned}$$

Where :

$Y$  = Dependent variable, *community*  
 $\beta_0$  = Level-1 intercept of the level-2 model  
 $r$  = Residual error

### Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01} (\text{exec\_rating} = 0) + \gamma_{02} (\text{judicial} = 0) + \gamma_{03} (\text{ideology} = 0) + u_0$$

Where :

$\beta_0$  = Level-1 intercept  
 $\gamma_{00}$  = Mean value of the level-1 dependent variable when level-2 predictors are controlled  
 $u_0$  = Random error of level-2 intercept

$$ICC = 0.0244$$

Since all independent variables are controlled, there is only consideration of the dependent variable and its intercepts. Because the models are “grand mean centered,” the HLM functions examine the deviation of the individual municipality’s score from the mean score for all observations. The null model assesses the degree of between-group variance in the *community* variable. By considering the intraclass correlation of the null model ( $\tau / (\tau + \sigma^2) = 0.0244$ ), only 0.022 (2.2 percent) of the variance is explained between states, but a Chi-square test determines that this relationship is significant ( $p < 0.001$ ). Thus, the between-group variance is significant, but the intercept terms do not vary considerably.

The reliability estimate represents the average reliability of level-2 estimates on the level-1 random-effect OLS estimates. It constitutes a ratio measure of “true” vs. “observed” variance, and in the null model results in a reliability of 0.431 (43.1 percent). The sigma

square ( $\sigma^2$ ) constitutes the level-1 residual, which simply represents the amount of within group variance in the dependent variable. The tau ( $\tau_{00}$ ) constitutes the level-2 residual for “community” in the model. Both fixed effects (through t-test) and variance components (Chi-square test) are significant at ( $p < 0.001$ ).

By using the intercepts of the coefficients for level-1 (0.0244) and level-2 (3.1444), the magnitude of the range of plausible values is found to create the 95 percent confidence interval around the mean.

$$3.1444 \pm 1.96 (0.0244)^{1/2} = (3.1205, 3.1684)$$

2) Random Coefficient Regression Model - The random coefficient regression model fully considers all level-1 variables, while controlling level-2 variables. This allows for the comparison of this model to the null model, to assess the significance of individual regression components. Using Snijders and Bosker’s (1994) metric for pseudo  $R^2$  ( $R^2 = \sigma^2 \text{ null} - \sigma^2 \text{ random reg.} / \sigma \text{ null}$ ), then  $(1.0852 - 0.90213 / 1.0852) = 0.1686$

Level-1 Model

$$\text{community} = \beta_0 + \beta_1 (\text{lpai}) + \beta_2 (\text{lzai}) + \beta_3 (\text{poverty}) + \beta_4 (\text{homeowner}) + \beta_5 (\text{college}) + \beta_6 (\text{adi}) + \beta_7 (\text{local}) + r$$

Where :

$\beta_0$  = Level-1 intercept of the level-2 model

$\beta_1 - \beta_7$  = The effect of level-2 slope estimates on the level-1 predictors

$r$  = Residual error

## Level-2 Model

$$\begin{aligned}\beta_0 &= \gamma_{00} + \gamma_{01} (\text{exec\_rating} = 0) + \gamma_{02} (\text{judicial} = 0) + \gamma_{03} (\text{ideology} = 0) + u_0 \\ \beta_1 &= \gamma_{10} + u_1 \\ \beta_2 &= \gamma_{20} + u_2 \\ \beta_3 &= \gamma_{30} + u_3 \\ \beta_4 &= \gamma_{40} + u_4 \\ \beta_5 &= \gamma_{50} + u_5 \\ \beta_6 &= \gamma_{60} + u_6 \\ \beta_7 &= \gamma_{70} + u_7\end{aligned}$$

Where :

$\beta_0 =$  Level-1 intercepts

$\gamma_{10} - \gamma_{70} =$  The slopes of level-2 predictors

$u_1 - u_7 =$  Random error in level-2 predictors

$$\text{Model Pseudo } R^2 = 0.1686$$

3) Intercepts as Outcomes Model - The intercepts as outcomes models considers both the fully specified level-1 and level-2 model, used to assess the impact of level-2 fixed effects on the intercept of the level-1 random effects model. The model nomenclature is identical to the previously specified random coefficient regression model.

## Level-1 Model

$$\begin{aligned}\text{community} &= \beta_0 + \beta_1 (\text{lpai}) + \beta_2 (\text{lzai}) + \beta_3 (\text{poverty}) + \beta_4 (\text{homeown}) \\ &+ \beta_5 (\text{college}) + \beta_6 (\text{adi}) + \beta_7 (\text{local}) + r\end{aligned}$$

## Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01} (\text{exec\_rating}) + \gamma_{02} (\text{judicial}) + \gamma_{03} (\text{ideology}) + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

$$\beta_2 = \gamma_{20} + u_2$$

$$\beta_3 = \gamma_{30} + u_3$$

$$\beta_4 = \gamma_{40} + u_4$$

$$\beta_5 = \gamma_{50} + u_5$$

$$\beta_6 = \gamma_{60} + u_6$$

$$\beta_7 = \gamma_{70} + u_7$$

$$\text{Model Pseudo } R^2 = 0.1681$$

Table 4.8 HLM2 Model Comparisons, Level -1

			Null	RCR	Intercepts
<u>Level 1</u> Random effect	<i>Intercept</i>	Coefficient	3.144	3.177	3.178
		Sig. (2-tailed)	0.000***	0.000***	0.039*
		Approx. d.f.	46	39	36
	<i>Approval Processes</i>	Coefficient		0.014	0.015
		Sig. (2-tailed)		0.520	0.504
		N		40	40
	<i>Approval w. Rezoning</i>	Coefficient		0.0102	0.011
		Sig. (2-tailed)		0.896	0.916
		N		40	40
	<i>Local Govt. Actors</i>	Coefficient		1.617	1.607
		Sig. (2-tailed)		0.000***	0.000***
		N		40	40
	<i>Approval Delay</i>	Coefficient		0.336	0.346
		Sig. (2-tailed)		0.000***	0.000***
		N		40	40
	<i>College Grads</i>	Coefficient		1.249	1.250
		Sig. (2-tailed)		0.000***	0.000***
		N		40	40
	<i>Home Ownership</i>	Coefficient		-0.477	-0.468
		Sig. (2-tailed)		0.038*	0.019*
		N		40	40
	<i>Poverty Rate</i>	Coefficient		0.415	0.401
		Sig. (2-tailed)		0.288	0.264
		N		40	40

\*0.05, \*\*0.01, \*\*\*0.001

Table 4.9 HLM2 Model Comparisons, Level-2

			Null	RCR	Intercepts
Level 2 Fixed effect	<i>Intercept</i>	Coefficient	3.144	3.177	3.178
		Sig. (2-tailed)	0.000**	0.000**	0.000**
		Approx. d.f.	46	46	44
	<i>State Executives</i>	Coefficient			0.004
		Sig. (2-tailed)			0.925
		N			44
	<i>State Courts</i>	Coefficient			0.026
		Sig. (2-tailed)			0.549
		N			44
	<i>State Ideology</i>	Coefficient			-0.001
		Sig. (2-tailed)			0.798
		N			44
*0.05, **0.01, ***0.001		Pseudo R <sup>2</sup>		0.1686	0.1681

#### 4.4.2 Multilevel Model Comparison

There are several important findings that are suggested by the multilevel model outcomes. The first is confirmation of Tip O’Neill’s famous (and perhaps overused) adage that politics are indeed local, including land use governance. Even though the municipalities act under the authority granted by the states, there doesn’t seem to be a noticeable state level effect, which in itself is a significant finding. Thus, either state institutions (executives, legislative and courts) do not have a substantial effect on community involvement in governance processes, or planning practitioners do not perceive their influences.

The *community* variable is not the only variable that quantifies the involvement of local actors at level-1; the *local* variable assesses the impact of local commissioners,

managers and boards. When dependent and independent variables are reversed (*local* dependent, instead of *community*), the pseudo  $R^2$  of a full intercepts model improves marginally to 0.043, or 4.3 percent of variance explained by Level 2 variables. Thus, municipal boards, councils and managers are only slightly more influenced by state institutions than the community. This confirms that state level fixed effects have minimal impact on local random effects. The remaining analysis will focus on level-1 random effects.

#### **4.4.3 Local Level Multiple Regression Models**

Since state level effects have been disproven as a significant component of explaining variance in *community*, a single level multiple regression analysis provides a better basis for explaining variance in *community*, without the influence of fixed state effects. Using multiple regression also allows consideration of raw scores, without the effects of HLM grand mean centering procedure.

Level-1 variables were analyzed for multicollinearity using a number of tests. First, variance inflation factors (VIFs) were used to assess individual variables by comparing how “inflated” variables are, when compared to how large their standard errors would be if they were not correlated with other factors. Garson (2010d) states that variables with inflation factors exceeding 10 “may merit further investigation.” Neither the full or reduced models had any single variable that exceeded the limit, with a maximum score of 1.869 reported.

The second diagnostic used was “condition indexes,” which assess multicollinearity of both variables and models through the use of eigenvalues and condition indexes. The OLS regression model exhibits low eigenvalues, but a moderately high condition index (which

exceeds the highest recommended value of 30). To be acceptable, the values should be 15 or below (Garson, 2010d). The condition index confirms that there are some issues with multicollinearity in the full model. Due to the strong negative correlation between poverty and homeownership (-0.645) and the moderately strong correlation between poverty and college graduation rates (-0.328), these variables were assumed to contribute towards multicollinearity issues in the originally specified model.

An alternative level-1 regression model was examined using stepwise elimination. This method eliminated a number of variables, including *lpai*, *lzai*, and *poverty*. By removing these insignificant variables, the condition index was reduced from 30.883 in the full model to 11.344 within the reduced model, while only slightly reducing the proportion of variance explained (0.4 percent).

The full OLS model measured an  $R^2$  score of 0.172, which translates to 17.2 percent of the variance in the *community* variable explained by the model. Using stepwise regression to remove insignificant variables slightly reduces the  $R^2$  score to 0.168 (or 16.8 percent of the dependent's variance explained). Both the OLS and stepwise models would be considered “low” in overall explanatory strength, containing an  $R^2$  of less than 0.3 (Garson, 2010b), but otherwise are considered adequate models.

#### Full OLS Model

a) With original variables,  $R^2 = 0.172$

$$community = lpai + lzai + local + adi + college + homeown + poverty + e$$

b) With transformed variables,  $R^2 = 0.154$

$$\text{community} = \text{lpai} + \text{lzai\_log} + \text{local\_ref\_log} + \text{adi\_log} + \text{college\_sqrt} + \text{homeown} + \text{poverty} + e$$

Stepwise model

a) With original variables,  $R^2 = 0.168$

$$\text{community} = \text{local} + \text{adi} + \text{college} + \text{homeown} + e$$

b) With transformed variables,  $R^2 = 0.164$

$$\text{community} = \text{local\_ref\_log} + \text{adi\_log} + \text{college\_sqrt} + \text{homeown} + e$$

Table 4.10 Level-1 Multiple Regression Model Comparison

		Full	Stepwise
<b><i>intercept</i></b>	Coefficient	1.3926	1.346
	Sig. (2-tailed)	0.000***	0.000***
	N	2314	2314
<b><i>Approval Processes Permitted by Right</i></b>	Coefficient	0.004	
	Sig. (2-tailed)	0.836	
	N	2314	
<b><i>Approval Processes Req. Rezoning</i></b>	Coefficient	0.17	
	Sig. (2-tailed)	0.474	
	N	2314	
<b><i>Local Govt. Actors</i></b>	Coefficient	0.387	0.389
	Sig. (2-tailed)	0.000***	0.000***
	N	2314	2314
<b><i>Approval Delay</i></b>	Coefficient	0.029	0.03
	Sig. (2-tailed)	0.000***	0.000***
	N	2314	2314
<b><i>College Graduates</i></b>	Coefficient	1.19	1.208
	Sig. (2-tailed)	0.000***	0.000***
	N	2314	2314
<b><i>Home Ownership</i></b>	Coefficient	-0.574	-0.463
	Sig. (2-tailed)	0.003**	0.003**
	N	2314	2314
<b><i>Poverty</i></b>	Coefficient	-0.308	
	Sig. (2-tailed)	0.363	
	N	2314	
	Model R <sup>2</sup>	0.172	0.168
	Sig. (2-tailed)	0.000***	0.000***

\*0.05, \*\*0.01 \*\*\*0.001

## 4.5 Discussion of Hypotheses

*H<sub>1</sub> - There is a positive correlation between the involvement of local boards and managers in affecting local processes, and the degree of community involvement in affecting municipal land use governance.*

The analysis shows a moderately strong, and statistically significant positive relationship between the *local* and *community* variables in bivariate correlations ( $r = 0.37$ ). The HLM2 and regression analyses also confirm that there are significant relationships between these variables when placed in multivariate models. It appears when governmental actors are highly involved in municipal land use governance, the community is also more involved. This finding gives credence the notion of coalition building activity in land use governance. Such relationships with governmental actors may enable the community to wield greater influence in governance processes.

*H<sub>2a</sub> - There is a positive correlation between the number of boards that a proposal must satisfy for final project approval when permitted by right, and the degree of community involvement in municipal land use governance.*

*H<sub>2b</sub> - There is a positive correlation between the number of boards that a proposal must satisfy for final project approval when rezoning is required, and the degree of community involvement in municipal land use governance.*

The findings do not support the assertion that having additional processes enables community involvement in municipal governance. This is true whether such processes consider proposals that are permitted by right (already approved for use in their zoning designation) or if rezoning is required for final approval. Over 96 percent of municipalities in

the survey data had three or less processes (with '2' being the mode, with 54 percent of all responses). So few municipalities have more than 3 boards, it can be difficult to assess the influence of additional boards without isolating them for study. The findings of significance with approval delay (listed in  $H_2 c$ ) suggest that the delays introduced within permitting processes are a better predictor of the contingency effect on community involvement.

*H<sub>2</sub> c - There is a positive correlation between the length of the review a proposal must satisfy for final project approval and the degree of community involvement in municipal land use governance.*

The approval delay index (*adi* variable) is an alternative operationalization for the construct I also wished to measure in the *lpai* and *lzai* variables. One of the assumptions for those indicators is that by introducing more processes, the amount of time for final approval increases. The *adi* variable de-pegs approval time from processes, and a latent indicator for stringency. As previously mentioned, most municipalities have a relatively low number of processes needed for formal approval. Those that do have longer review times are thus assumed to have more stringent review guidelines, which may in turn be beneficial for giving time for citizens or community groups to mobilize resources to participate. This assertion is supported by the results: there is a somewhat weak ( $r = 0.181$ ) but statistically significant correlation ( $p < 0.001$ ) between the *adi* and *community* variables. State-level fixed effects did show a weak individual effect on approval delays, but the variable was not significant in any of the HLM2 models. Approval delays did prove to be significant in the local level multiple regression models, but was not a strong mechanism for explaining variance in the community involvement variable.

*H<sub>3a</sub> - There is a positive correlation between the percentage of college graduates within a municipality, and the degree of community involvement in municipal land use governance.*

This hypothesis is supported through a number of tests. Bivariate correlations reveal a weak ( $r = 0.186$ ) but statistically significant ( $p > 0.001$ ) association between the two variables. The HLM2 analysis also shows a statistically significant relationship between state level fixed effects on the *college* variable, but these effects do not prove significant in explaining variance in *community*. The ratio of college graduates does provide a weak, but significant explanatory factor in explaining community involvement in the level-1 multiple regression model. Thus, as the percentage of citizens with college degrees increases, the more effective the community is in influencing growth management. It is also likely that board members may in part reflect a number of the demographic characteristics of the population. Citizens are likely to demand that those that govern them are somewhat representative of the values and characteristics of the population. It seems likely that members of regulatory boards in municipalities with higher levels of formal education are also likely to have more education themselves.

*H<sub>3b</sub> - There is a negative correlation between the rate of poverty within a municipality and the degree of community involvement in municipal land use governance.*

This hypothesis was partially supported. Simple bivariate correlations reveal a moderately weak ( $r = -0.095$ ) but statistically significant ( $p < 0.001$ ) association between the two variables. The HLM2 analysis also does not show there to be a significant relationship between poverty and state fixed effects on the dependent variables while using the HLM2

procedure. Alternatively, the rate of poverty did not prove to be an effective predictor in the level-1 multiple regression models. It might be that the degree of community involvement is relatively low in all jurisdictions, regardless of income.

*H<sub>3c</sub> - There is a positive correlation between the rate of homeownership within a municipality and the degree of community involvement in municipal land use governance.*

Testing does not support this hypothesis. Simple bivariate correlations reveal a very weak ( $r = 0.016$ ) and insignificant ( $p > 0.1$ ) positive association between home ownership and community involvement. The HLM2 analysis does show a statistically significant correlation with state level fixed effects on the *homeown*, but these effects do not prove significant in explaining variance in the dependent variable, *community*. The *homeown* variable does prove to be significant in the single level OLS and stepwise regression models, but this is problematic.

Because of the *homeown* variable's very low bivariate correlation with *community*, and lack of any variance explained ( $R^2 = 0.00$ ), there should not be any significant relationship in multivariate models. Further statistical testing has shown there to be an interaction effect between the *homeown* and *poverty* variables, which changes the directionality of the *homeown* variable coefficient in multivariate models. Thus, any findings of significance in regression models should be discounted as a false positive.

*H<sub>4</sub> - There is a positive correlation between liberal state ideology and the degree of community involvement in municipal land use governance.*

Not supported. Liberal state ideologies do not show a significant statistical correlation

with community involvement. The only significant correlation with the *ideology* variable in this analysis was a moderately strong bivariate correlation ( $r = 0.615$ ) with the *exec\_rating* variable. If there is indeed a direct ideological effect on municipal governance, it would likely manifest its effect by being operationalized at the local level.

*H<sub>5a</sub>- As the degree of state executive and legislative activity in land use regulation increases, the degree of community involvement in municipal land use governance increases.*

Not supported. There was no statistically significant correlation found between state political institutions and community involvement in land use governance. As noted in the analysis for the previous hypothesis, there is a notable correlation with ideology and state political institutions. Analysis detailed in H<sub>1</sub> delineated a moderately strong correlation ( $r = 0.37$ ) between the involvement of the community and local boards, managers and councils; the actors that perform the executive and legislative functions of in municipal governance. Thus, the effect of executive and legislative actors on community involvement appears at the local, not state level.

*H<sub>5b</sub> - As the degree to which municipal land use decisions are upheld by state courts increases, the degree of community involvement in municipal growth management will increase.*

The state-level effects of the appellate court system were not found to be statistically significant in explaining variance in the *community* variable. One explanation of this finding is that the cost of fighting a protracted legal battle is prohibitive to most members of the community. Because of these significant transaction costs, it is perhaps that only contentious

(non-normal) issues bring the potential for litigation. Thus, the threat of litigation is not one that is particularly common in municipal governance systems, and perhaps local decision makers are less risk averse to this concept than hypothesized.

The significant, though weak explanatory power of all state level variables is a notable finding itself. This suggests that state level actors are not perceived as being effective at influencing the degree of community involvement in municipal processes. Thus, land use governance continues to take a very contextual orientation; local factors and perhaps the individual issues or proposals discussed are likely to be the drivers of community involvement.

#### **4.6 Chapter Summary**

The study finds that there are statistically significant, though minimal, state-level effects on community involvement in municipal land use governance. Explaining community involvement in such local regulatory processes can mostly be attributed to three local factors: First, the level of involvement of local boards, managers and commissioners in regulating growth management. Second, the length of time a proposal takes for final approval. Finally, demographic characteristics of the municipality's population, particularly the proportion of citizens with higher education, affect the degree of involvement in local land use governance

## Chapter 5

# Discussion and Conclusion

Chapter 5 discusses the results of the study, and discusses them in the context of existing theory. Next, the limitations of the work are discussed; commenting on what factors may have affected the outcomes of the analyses. The chapter then addresses emerging trends that are likely to define research in land use governance processes, and finally discusses the contributions of the work to the fields of public administration and urban planning before concluding.

### **5.1 Discussion and Implications**

This study's preeminent finding is that a positive relationship exists between official actors (boards, council and managers) and the degree of community involvement in land use governance processes. The significant association between community involvement and local authority suggests that community advocates recognize that forming ad-hoc associations with representatives of local government helps to provide the technical capacity and legitimacy, which they lack. This suggests that the public is at least aware of their relative disadvantages, and use the technical and resource subsidy effect of local decision-makers as a coping mechanism.

The correlation of local authorities with college graduates conveys that the educational characteristics of the population help inform their ideological preferences, which

might help drive forms of conflict about the nature of land use decisions. Additionally, boards are like share a degree of representativeness with their community, so the preferences of the board are likely to mirror the preferences of the average citizen (and perhaps magnify the relationship effect). Thus, This is in line with tenets of Ecological Modernization Theory, which supposes that education (and its corresponding role in economic development) is a major determinant of creating a political and economic climate that is favorable for addressing the externalities of production (see Huber 2004).

An alternative explanation is that the characteristics of local populations enable different forms of civic engagement. Gyourko et al. (2008) note considerable demographic differences between municipalities based on their degree of overall land use stringency. Highly regulated areas have significantly higher median home values, family incomes and a greater percentage of college graduates than moderate or lightly regulated municipalities. These municipalities are likely to have more stringent demands of their elected and appointed officials, and the composition of regulatory boards is likely to reflect the demographics of the municipality's constituent population.

This poses a number of interesting questions. First, should the nature of regulatory boards be so highly variable? Ostensibly local control is done in the interest of keeping government accountable. But an expanding body of literature in the fields of administration and environmental justice has found that the conventional wisdom is often incorrect. Meyer (2004) lists "procedural inequity" as one of the causes of injustice. In these types of decision-making structures, the public is given a forum to participate, but lack of resources and

technical capacity precludes them from wielding a substantive degree of influence in decision outcomes. Thus, one's rights are basically determined by one's willingness (or ability) to pay to participate in local processes, which is opposed to how they are defended within the court system.

### **5.1.1 Implications for the Study of Land Use Governance**

Understanding the nature of how participants interact provides a clue into some of the fundamental premises of both governance and administration. What is the most desirable relationship with which to engage the public? Are city managers to be "disinterested administrators" who do not advocate a position on behalf of the public? Are they to play the consultant's roll, and help push for outcomes more desirable to the public interest?

The finding of interdependent relationships between municipal decision makers and the community should have implications for individual citizens and local interest groups. This study aligns with previous research that finds that community involvement can change the nature of land use decision making processes (Montgomery 1983, Hampton 1999, Tanaka 2005, Forester 2006). This finding seems to confirm Pfeffer and Salancik's (1978) premise of power relationships existing in institutional arrangements, where some actors gain additional technical capacity and legitimacy from their association with others.

This study's finding of insignificant state effects on community involvement merits consideration of a number of premises for practitioners. First, the mode of dissemination of efforts to democratize local land use governance bears consideration. If states (or their

constituent municipalities) lack the political will to pass legislation that demands greater citizen input, then perhaps this speaks of a greater obligation of the field to push for these measures. Organizations such as the American Planning Association (APA) and the International City Managers Association (ICMA) could work to include mechanisms for increasing effective community involvement in planning curricula, as components for accreditation, or as part of training programs for elected/appointed officials. As previously noted, though the original planning enabling acts did disseminate a basic institutional form for land use planning, the processes are far from standardized. The academic fields and professional organizations of urban planning and public administration also have also likely assisted in creating, disseminating and legitimating various institutional forms and policies.

Another premise derived from this study is that the element of time is a partial determinant of community involvement. The longer a review process takes, the more likely it is that the community will be involved in local land use governance. I theorize that fairly quick review processes do not give citizens the time to adequately form interest coalitions, disseminate information to local policy makers and help define the salience of the issue in the local community. Having long review times enables increased public involvement by giving them time to form, legitimate and mobilize community coalitions, and to define issues to a wider set of non-participants within the media.

This study also confirms previously found relationships between the demographic characteristics of local populations, and the degree of community involvement in local land use governance. The relationships between demographic characteristics (education) of the

population and civic engagement are well documented (see Zaller 1992, Delli Carpini & Keeter 1996, Popkin and Dimock 1999, Galston 2001). Thus, citizens who live in highly educated jurisdictions are likely to enjoy “better” governance arrangements, which in turn may help ensure better conditions in their communities.

The inclusion of the Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1993) appears to be justified as a means to explain policy processes and outcomes in both state and municipal governance arrangements. Many of the assumptions posited within the hypotheses seemed to manifest them in analysis. It should be noted that the expectation of nested relationships of forms of policy change was also a component of Ostrom’s IAD framework (particularly in linking action arenas). Changes in institutional rules at the state level were expected to have effects in “deeper” (local) levels, resulting in “increased stability in the mutual expectations of individuals interacting according to a set of rules,” though such changes are usually difficult and costly to accomplish (Ostrom 1999, 59). Though the IAD framework for policy change does provide a helpful set of assumptions for testing hierarchical relationships in municipal governance, the Advocacy Coalition Framework was chosen instead for a number of reasons: 1) Its departure from traditional single-level “iron triangle” type politics, 2) its supposition that actors at multiple levels affect the policy process, 3) its intention for use to address complex technical problems, and 4) the ability of actors to form non-official advocacy coalitions (Sabatier and Jenkins-Smith 1999, 120).

ACF also supposes that policy systems learn and change. In municipalities, this may be accomplished by the accumulation of professional experience by administrators, by

having staggered terms in local boards (continuity ensures knowledge is transferred to new members), or persistent participation and repeated interactions by community groups. Sabatier and Jenkins-Smith (1999, 123) propose that such learning occurs across coalitions when two conditions are met: 1) Coalitions have the technical resources to engage in debate, or engage in “informed conflict,” and 2) there are conflicts between core or secondary aspects of belief systems. This study’s finding of significant relationships between education, and community involvement reinforces the notion that to participate in “informed conflict” in municipal governance processes, community members must possess the capacity to do so.

### **5.1.2 Implications for Practitioners**

This study also has a number of implications for planning administrators. Prior sections detail the existence of a “reciprocal” relationship between boards, managers and the community. If a municipality does want to increase engagement with the local population, they might want to consider their model of interaction with the public. I describe hypothesize that a “consultant” model of interaction between authority figures and the community is occurring, where reciprocal “ad hoc” relationships are being formed. These relationships afford additional technical capacity and legitimacy to community members, and help form dominant coalitions in governance processes. This may also further enhance the ability of practitioners to wield more influence themselves, through membership in these coalitions.

Because the nature of community involvement is so variable within land use governance arrangements, new forms of involvement may hold the key to improving its

quality. While many municipalities continue to relegate the community's official role largely to public meetings, the rise of e-Government is likely to hold promise in helping to overcome a number of problems with this format. Posting proposal information online could help disseminate information to the community, and supplant the need for direct meeting participation for community members. Additionally, by allowing community members to comment on proposals through an online portal, there is the potential for enhancing public information provision, while reducing the need for active participation and reducing transaction costs.

Finally, as this study measures community involvement on both processes and outcomes, the findings suggest that when community is involved in local governance, they are more influential in affecting municipal growth management. This is interesting in that it suggests that the application of land use regulation in municipalities is variable, and prone to pressure politics. Though political systems are meant to be responsive to their citizens, one would hope that regulatory systems, premised on guaranteeing the public interest, are not highly variable in their application. If municipal actions, like the approval of permits, rezonings and special use permits are in part determined by the amount of community involvement in a municipality, then practitioners may need to push for ordinances with more stringent delineations of their intent and requirements for approval/denial. This may help ensure a fair, consistent application of municipal ordinances to all citizens.

## 5.2 Study Limitations

A number of limitations are recognized within this study. First and foremost is the nature of the dependent variable, “community.” For the purposes of this study, the dependent seeks to assess “community involvement,” which is defined by the *pressure* variable in the WRLURI (Gyourko et al. 2008, 723). The Wharton study details this as “The degree of involvement of community pressure in affecting the residential building activities and/or growth management procedures of a jurisdiction.” Due to the potential range of municipality types and political contexts, no exact delineation exists of what factors an administrator considers when assessing “community involvement.” Community members are free to exert influence both within and beyond the confines of municipal policy processes. Thus, this measure is assumed to reflect a more systemic assessment of community involvement, which consists of a planning/executive administrator’s subjective judgment of the importance of community involvement in municipal growth activities.

Perhaps the most recognizable representation of community involvement is public participation in open meetings. Other forms might include the pressure politics of individuals and groups outside this forum. Such systems might include formal or informal relationships with local administrators and boards, and may also be factors in the survey respondent’s perception of community involvement within their municipality. Gyourko et al. (2008, 700) note that a number of New England communities have provisions for direct democracy, allowing citizens to directly vote to approve or reject land use proposals. Thus, the assessment of what constitutes community involvement is largely relative to the context of the survey respondent.

The ratings of planning directors and executive administrators are used as a latent indicator of community involvement. Future research will likely need to delineate wider differences between public participation and forms of political influence, as subsets of a larger “involvement” concept. The potential for multidimensionality in this construct does present a minor theoretical limitation for study. Ideally, a more distinct delineation as to types of “community involvement” measured would be desirable. Examples of this might constitute assessments of citizen attendance or participation in public meetings, the activities of local interest groups, or more direct measures of civic engagement.

A number of existing studies on community involvement in municipal land use governance utilize case study methodologies. Most studies based on quantitative data are either too dated for relevance or for combination with data derived from more recent research. In some works, the variable delineations do not provide any further conceptual clarity over those used within this dissertation. Others are too contextual (state or regional focus) for use in inferential modeling of nationwide trends. Collecting data for large-N studies on municipal governance sub-processes is inherently difficult, time consuming and costly; thus few nationwide studies exist on this subject.

The current fiscal environment is not conducive to primary data collection. Very few organizations have the capacity or membership to be able to disseminate such a survey instrument to the study’s target population: planning department directors or chief executive administrators. These organizations face an extended period of budgetary retrenchment, and given limited resources, were unable to offer their assistance in disseminating an original survey during the course of this study. It may be that the Wharton data is the only recent

(and theoretically defensible) means with which to explore community involvement in American land use governance at the time of this dissertation's defense.

This study aims to advance knowledge in the fields of public administration and urban planning by identifying significant nationwide trends in the components of municipal governance processes for future study. It is intended to provide a base for replication, or be verified by alternative operationalizations of its variables, to address the aforementioned shortcomings. To paraphrase Voltaire, this dissertation does not let "perfect be the enemy of the good," lest research be stymied in a subfield of administrative theory that is lightly populated with quantitative research of national trends. I note the potential limitations of the study, and allow researchers to accept, expand or re-operationalize the constructs in future research.

Another limitation to this study is that two variables assess the influence of multiple groups within singular variables. The *local* (level-1) variable measures the influence of "local councils, managers and boards" in affecting growth management in a municipality, but it would be more desirable to assess the impacts of each of these actors individually. The *exec\_rating* (level-2) variable assesses both the effect of state legislatures and executives. While the Wharton study does provide a separate state legislative assessment variable, there is no separate measure of state executives (a limitation of Foster & Summers, 2005 data). Thus, the *exec\_rating* variable provides an assessment of the interdependence of the state legislatures and their executives in affecting land use regulation rather than a true assessment of their individual effects.

The *Wharton Residential Land Use Regulation Index*, this dissertation's primary data source, is also premised on understanding the effect of land use regulation on residential housing markets. Thus, the metrics that were derived from this study are oriented towards assessing the effect of political and procedural influences aspects of land use governance processes and outcomes. To model the dynamics of land use governance comprehensively, a number of survey questions would need to incorporate assessments of commercial, industrial and office/institutional uses as well. These types of uses are often considered to have more intensive impacts than residential housing, and they have significant consequences for the local economy as well. I theorize that there is likely to be different types of public responses to these projects, which may in turn lead to different types of mobilizations of community involvement.

### **5.3 Future Research**

As development pressure will undoubtedly continue to impact natural and social systems, understanding the nature of decision-making processes will likely prove an important component in addressing largely decentralized and incremental environmental problems. These are what Kettl (1998) describes as "second generation problems." Land use governance in the European Union has recognized "democratic deficits" inherent in local land use management, and has incorporated procedures for ensuring adequate amounts of public input and impact assessment in local processes. The United States, which has not enacted widespread multijurisdictional land use planning (like the UN Local Agenda 21 Program), will likely continue its trend of highly unstandardized and contextual land use

decision making. Until decision-makers in institutions at all levels of government grasp the importance of cumulative impact assessment, it will prove difficult to mitigate the impacts of distributed environmental degradation.

Though the local planning process described in this work explains a general municipal governance process, many jurisdictions are finding that addressing complex environmental problems can only be adequately addressed by regional planning initiatives. Layzer (2008) considers the practice of ecosystem-based management, a governance structure predicated on addressing land use planning goals to their ecological extent. Contrary to conventional wisdom, she finds that accomplishing stated goals is often easier in conditions in which the public does not participate, essentially finding that a more technocratic form of decision-making is more desirable for solving complex environmental problems.

Research into land use governance will likely need to expand into examining the roles and effectiveness of the community to engage in regional collaboration initiatives. Literature assessing the impact of regional land use governance is light, as is the role of public participation in these emerging processes, which also warrants further examination. It is likely that community involvement in such regional structures is much different than that of municipal governments. Because of the expanded conflict inherent in regional scale political governance, it is likely that these processes mirror state or federal processes more closely than those within municipal governance. Thus, these systems are likely to have greater impact assessment requirements, interest group mobilizations and media coverage than in

most municipalities.

An increasingly important consideration of the public participation component of land use governance not only addresses whether the public participates, but also where and when. Many municipalities have begun to mandate community meetings and information sessions for major projects before substantive review of a proposal begins. It is thought that several goals are obtained through such processes. First, such meetings provide a means for discussing proposals under more preliminary, formative processes without considerable resource investment. Second, it is likely that such processes are facilitative for gaining concessions and mitigating conflict. Third, they may expedite approval processes and help gain regulatory certainty for developers. Finally, they assist in providing more information to the public and media, ostensibly leading to more informed decision-making. Thus, understanding the relative advantages of different types of governance processes (and sub-processes) may help improve the quality of land use decisions.

Finally, future research may need to evaluate the substantive role the public plays in governance processes, particularly with respect to how local actors assert standing. This study has shown that a relationship exists between the involvement of public officials and the community in land use governance. I hypothesize that this is in part due to legitimacy and technical capacity afforded to community representatives by their non-official associations with local government decision makers. As many community advocates do not have the legal sanction to act as a representative for public interests, it is interesting to ponder the question of standing and the role of legitimation in land use governance processes.

## 5.4 Conclusion

This dissertation contributes to the literature within a small, but growing subfield of public administration and urban planning literature, which explores both the nature of devolved land use governance and its constituent subsystems. Without understanding how governance processes affect outcomes, it may be difficult for local governments to truly incorporate meaningful citizen input into land use governance. Existing literature points to 1) prohibitively technical discourse, 2) the lack of direct incentives for involvement and 3) significant transaction costs as being causal of true civic engagement in municipal governance. These issues need to be addressed if local regulatory processes are to incorporate the normative values of “fairness, equity and social justice,” as mentioned by Gunder (2006, 214).

Increasing civic involvement has been heralded as a solution to improving governance outcomes, but it has also been derided as a misdirected approach (Bedford and Clark 2002; Coglianesi 2000; Parsons 1990, Kweit and Kweit 1981). Simply enlarging the number of participants in itself is not likely to improve the quality of land use decisions if this enlargement does not also increase the diversity of information provided. Jurisdictions with little civic engagement (or social capital) have “insufficient mechanisms to effectively foster shared social norms or build capacity to participate in community governance” (Pavey et al. 2007, 107). This effectively undermines the expression of public preference and promotes procedurally induced inequities in interest representation.

Ultimately, community involvement is only one component of improving the quality

of land use decision making in the United States. State laws, such as New Jersey's *State Planning Act* (NJSA 52:18A-196) have adopted a strategy of increased state oversight of local processes. This includes periodic external evaluations of municipalities for consistency in decision-making and conformity with stated plans. It is interesting to note that an emerging solution to improving municipal governance is not any systematic procedural or democratic reform, but simple oversight of existing processes.

This work's contribution to the fields of public administration and urban planning is measured in a number of ways. Gyourko et al. (2008) completed only a very basic examination of the correlations of sub-indexes within the WRLURI data. This study isolated a number of important constructs from larger indexes and examined them for their own significance. In doing this, I believe that I have both verified prior research and theory and extended the knowledge base in a particular subfield of academic literature (particularly planning administration).

I also believe that my findings help provide a frame to posit a number of new questions about the nature of local governance. Very few nationwide assessments of municipal land use governance exist, particularly those that do so using the lens of planning and administrative and political institution. I believe that the fields of urban planning and public administration are somewhat "Balkanized" into their own respective areas of inquiry. This study adds multidisciplinary to the debate on land use governance by introducing principles of public administration, organizational theory, and political science that have perhaps never undergone extensive empirical testing within this context.

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# Appendices

## Appendix A – Variable Codebook

## Gyourko et al. (2008) Wharton Residential Land Use Regulation Index

1) *community* - Formerly “pressure.” The degree of involvement of community pressure in affecting the residential building activities and/or growth management procedures of a jurisdiction (1 = not at all involved; 5 = very involved).

---

2) *lpai - Local Project Approval Index* - The simple sum of the number of organizations that must approve a project that *does not* need any change to current zoning.

$$lpai = commission\_norezD + council\_norezD + cntyboard\_norezD + envboard\_norezD + pubhlth\_norezD + dsgnrev\_norezD$$

### Components

*commission\_norezD* - The requirement that a local planning commission review and approve a new project that does not need rezoning. (0 = not required; 1 = required)

*council\_norezD* - The requirement that local council, managers, or commissioners review and approve a new project that does not need rezoning. (0 = not required; 1 = required)

*cntyboard\_norezD* - The requirement that the county board review and approve a new project that does not need rezoning. (0 = not required; 1 = required)

*envboard\_norezD* - The requirement that an environmental review board approve a new project that does not need rezoning. (0 = not required; 1 = required)

*pubhealth\_norezD* - The requirement that the public health office review and approve a new project that does not need rezoning. (0 = not required; 1 = required)

*dsgnrev\_norezD* - The requirement that a design review board approve a new project that does not need rezoning. (0 = not required; 1 = required)

---

3) *lzai - Local Zoning Approval Index* - Which organizations or regulatory bodies have to approve any request for a zoning change. The LZAI is the simple sum of the number of entities whose approval is required.

$$l_zai = commissionD + loczoningD + councilD + cntyboardD + cntyzoningD + envboardD + zonvote$$

### Components

*commissionD* - The requirement that a local planning commission review and approve a new project that entails rezoning, (0 = not required; 1 = required)

*localzoningD* - The requirement that a local zoning board review and approve a new project that entails rezoning. (0 = not required; 1 = required)

*cntyboardD* - The requirement that the county board of commissioners reviews and approve a new project that entails rezoning. (0 = not required; 1 = required)

*cntyzoningD* - The requirement that the county zoning board review and approve a new project that entails rezoning. (0 = not required; 1 = required)

*envboardD* - The requirement that an environmental review board approve a new project that entails rezoning. (0 = not required; 1 = required)

*zonevoteD* - The requirement that all new projects that entail rezoning be voted on at a meeting of the jurisdictions' citizens. (0 = not required; 1 = required)

4) local - The degree of involvement of the local council, managers and commissioners in affecting the residential building activities and/or growth management procedures of a jurisdiction. (1 = not at all involved; 5 = very involved)

5) adi – The Approval Delay Index that measures the average length of time required to complete the review of singles and multifamily residential projects in a jurisdiction.

$$adi = [(time\_sfu + time\_mfu)/2 + (time1\_150sfu + time1\_m50sfu + time1\_mfu)/3 + (time2\_150sfu + time2\_m50sfu + time2\_mfu)/3]/3$$

*ADI time\_sfu* Length of residential review, single-family. The average length of time required to complete the review of single-family residential projects in a jurisdiction. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time\_mfu*- Length of residential review, multifamily. The average length of time

required to complete the review of multifamily residential projects in a jurisdiction, (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time1\_150sfu* - Rezoning application time, less than 50 single-family units. The typical amount of time between application for rezoning and issuance of a building permit for a project with less than 50 single-family units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time1\_m50sfu* - Rezoning application time, more than 50 single-family units The typical amount of time between application for rezoning and issuance of a building permit for a project with more than 50 single-family units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time1\_mfu* - Rezoning application time, multifamily units The typical amount of time between application for rezoning and issuance of a building permit for a project with multifamily units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time2\_150sfu* - Sub-division approval time, less than 50 single-family units The typical amount of time between application for sub-division approval and the issuance of a building permit for a project with less than 50 single-family units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time2\_m50sfu* - Sub-division approval time, more than 50 single-family units The typical amount of time between application for sub-division approval and the issuance of a building permit for a project with more than 50 single-family units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

*ADI time2\_mfu* - Sub-division approval time, multifamily units The typical amount of time between application for sub-division approval and the issuance of a building permit for a project with multifamily units. (1.5 = less than 3 months; 4.5 = 3 to 6 months; 9.5 = 7 to 12 months; 18.5 = 13 to 24 months; 24 = more than 24 months)

---

### **U.S. Census Summary File 3 (2000) Decennial Census**

*Census indicator data codes are listed with the name of variable as operationalized.*

6) college (P037) “Educational Attainment. Data on attainment are tabulated for the population 25 years old and over. However, when educational attainment is cross-tabulated

by other variables, the universe may change. (For example, when educational attainment is crossed by disability status, the data are tabulated for the civilian non-institutionalized population 18 to 34 years old.) People are classified according to the highest degree or level of school completed.” (Census 2000 SF3, B-8) Variable is calculated as sum of population with bachelor degree, master’s degree, professional degree or doctorate, divided by total population.  $college = \{(P037015 + P037016 + P037017 + P037018 + P037032 + P037033 + P037034 + P037035) / (P037001)\}$

---

7) *poverty* (P087001) - “The Census Bureau uses the federal government’s official poverty definition. The Social Security Administration (SSA) developed the original poverty definition in 1964, which federal interagency committees subsequently revised in 1969 and 1980. The Office of Management and Budget’s (OMB’s) *Directive 14* prescribes this definition as the official poverty measure for federal agencies to use in their *statistical work*.” (Census 2000 SF3, B-34)

“The poverty status of families and unrelated individuals in 1999 was determined using 48 thresholds (income cutoffs) arranged in a two dimensional matrix. The matrix consists of family size (from 1 person to 9 or more people) cross-classified by presence and number of family members under 18 years old (from no children present to 8 or more children present). Unrelated individuals and 2-person families were further differentiated by the age of the reference person (RP) (under 65 years old and 65 years old and over).” (Census 2000 SF3, 8-35)

---

8) *homeown* (H15) - “All occupied housing units are classified as either owner occupied or renter occupied.”

Owner occupied. A housing unit is owner occupied if the owner or co-owner lives in the unit even if it is mortgaged or not fully paid for. The owner or co-owner must live in the unit and usually is Person 1 on the questionnaire. The unit is ‘ ‘Owned by you or someone in this household with a mortgage or loan’ ’ if it is being purchased with a mortgage or some other debt arrangement, such as a deed of trust, trust deed, contract to purchase, land contract, or purchase agreement. The unit is also considered owned with a mortgage if it is built on leased land and there is a mortgage on the unit. Mobile homes occupied by owners with installment loans balances are also included in this category.” (Census 2000 SF3, B63)  
 $homeown = (H015002 / H015001)$

### **Foster and Summers (2005)**

9) *exec\_rating* - The level of activity in the executive and legislative branches over the past ten years that is directed toward enacting greater statewide land use restrictions. (Ordinal, 1 = little recent activity, 2 = moderate activity, 3 = high level of activity)

---

*10) judicialrating* - The tendency of appellate courts to uphold or restrain municipal land use regulation. (1 = restricts local regulation; 2 = neutral; 3 = supports local regulation)

---

**Erikson, Wright and McIver (2003)**

*11) ideology\_* - Ideology score of state residents, 1999-2003, where -100 is most conservative and 100 is most liberal. Scores are weighted by number of respondents in the state surveyed in each year. Source: Derived from analysis of CBS/New York Times polls by Gerald C. Wright et al. <http://php.indiana.edu/~wright1/>. Variable description and data accessed December 6, 2009 through the CSU Pomona POWERMUTT Project.

## Appendix B – Wharton (WRLURI) Survey

**Appendix 1. The Survey Instrument**

Zell/Lurie Real Estate Center  
Wharton School, University of Pennsylvania

**SURVEY ON RESIDENTIAL LAND-USE  
REGULATION**

**JURISDICTION**

Name of Jurisdiction \_\_\_\_\_ Zip Code \_\_\_\_\_

Type of Jurisdiction \_\_\_\_\_

(City, County, Township, Town, Village, Borough)

Size of Jurisdiction \_\_\_\_\_ square miles

**Population**

Current population estimate \_\_\_\_\_

Population growth: Past 5 years \_\_\_\_\_ % Projected next 5 years \_\_\_\_\_ %

**GENERAL CHARACTERISTICS OF LAND REGULATORY PROCESS**

1. In your community, how involved are the following organizations in affecting residential building activities and/or growth management procedures? Please rate the importance of each on a scale of 1 to 5 by circling the appropriate number (1 = not at all involved; 5 = very involved).

- Local Council, Managers, Commissioners	1	2	3	4	5
- Community pressure	1	2	3	4	5
- County legislature	1	2	3	4	5
- State legislature	1	2	3	4	5
- Local courts	1	2	3	4	5
- State courts	1	2	3	4	5

2. Which of the following are required to approve zoning changes, and by what vote?

	Yes	Yes, by simple majority	Yes, by more than simple majority	No
- Local Planning commission				
- Local Zoning Board				
- Local Council, Managers, Commissioners				
- County Board of Commissioners				
- County Zoning Board				
- Environmental Review Board				

3. Which of the following are required to approve a new project that does not need rezoning, and by what vote?

	Yes	Yes, by simple majority	Yes, by more than simple majority	No
- Planning Commission				
- Local Council, Managers, Commissioners				
- County Board				
- Environmental Review Board				
- Public Health Office				
- Design Review Board				

4. On a scale of 1 to 5, please rate the importance of each of the following factors in regulating the rate of residential development in your community (1 = not at all important; 5 = very important). Please circle the appropriate number.

	Single family units					Multi family units				
	1	2	3	4	5	1	2	3	4	5
- Supply of land										
- Cost of new infrastructure										
- Density restrictions										
- Impact fees/exactions										
- City budget constraints										
- City Council opposition to growth										
- Citizen opposition to growth										
- School crowding										
- Length of review process for zoning										
- Length of review process for building permits										
- Length of review process for land development plan										

**RULES OF RESIDENTIAL LAND USE REGULATION**

5. Does your community place annual limits on the total allowable:

	Yes	No
- No. of building permits – single family?		
- No. of building permits – multi-family?		
- No. of residential units authorized for construction – single family?		
- No. of residential units authorized for construction – multi-family?		
- No. of multi-family dwellings?		
- No. of units in multi-family dwellings?		

6. To build, do developers have to meet these requirements?

	Yes	No
- Meet the minimum lot size requirement? If yes: ½ acre or more _____ ½ acre or less _____ 1 acre or more _____ 2 acres or more _____		
- Include "affordable housing" (however defined)?		
- Supply mandatory dedication of space or open space (or fee in lieu of dedication)?		
- Pay allocable share of costs of infrastructure improvement?		

**SPECIFIC CHARACTERISTICS**

7. How does the acreage of land zoned for the following land uses compare to demand?

	Far more than demanded	More than demanded	About right	Less than demanded	Far less than demanded
- Single-family					
- Multi-family					
- Commercial					
- Industrial					

8. How much has the cost of lot development, including subdivisions, increased in the last 10 years? Please circle the appropriate category.

0-20%      21-40%      41-60%      61-80%      81-100%      >100%

9. How much has the cost of a single family lot increased in the last 10 years? Please circle the appropriate category.

0-20%      21-40%      41-60%      61-80%      81-100%      >100%

10. What is the current length of time required to complete the review of residential projects in your community?

For single-family units: \_\_\_\_\_ months      For multi-family units: \_\_\_\_\_ months

11. Over the last 10 years, how did the length of time required to complete the review and approval of residential projects in your community change?

	no change	somewhat longer	considerably longer
- Single-family units			
- Multi-family units			

12. What is the typical amount of time between application for rezoning and issuance of a building permit for development of:

	Less than 3 mos.	3 to 6 mos.	7 to 12 mos.	13 to 24 mos.	If above 24, How long?
- Less than 50 single family units					
- 50 or more single family units					
- Multi-family units					

13. What is the typical amount of time between application for subdivision approval and the issuance of a building permit (assume proper zoning is already in place) for the development of:

	Less than 3 mos.	3 to 6 mos.	7 to 12 mos.	13 to 24 mos.	If above 24, How long?
- Less than 50 single family units					
- 50 or more single family units					
- Multi-family units					

14. How many applications for zoning changes were submitted in your community in the last 12 months?  
\_\_\_\_\_

15. How many applications for zoning changes were approved in your community in the last 12 months?  
\_\_\_\_\_

In the event we might need to clarify any of the answers to the above questions, we would appreciate the following information, which will be held in total confidence.

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Organization \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 E-mail \_\_\_\_\_

Please check this box if you would like to receive the results of this survey.

Thank you very much for taking the time to complete this survey.

June 2004

## Appendix C – Statistical Output

Program: HLM 6 Hierarchical Linear and Nonlinear Modeling  
 Authors: Stephen Raudenbush, Tony Bryk, & Richard Congdon  
 Publisher: Scientific Software International, Inc. (c) 2000  
 techsupport@ssicentral.com  
 www.ssicentral.com

-----  
 Module: HLM2.EXE (6.06.2857.2)  
 Date: 3 October 2010, Sunday  
 Time: 0: 8: 7  
 -----

SPECIFICATIONS FOR THIS HLM2 RUN

Problem Title: Null/ One-Way ANOVA

The data source for this run = \\tsclient\C\HLM\dissertation\HLM2Recode\hlm2  
 The command file for this run = whlmtmp.hlm  
 Output file name = \\tsclient\C\HLM\dissertation\HLM2Recode\hlm2.txt  
 The maximum number of level-1 units = 2324  
 The maximum number of level-2 units = 48  
 The maximum number of iterations = 100  
 Method of estimation: restricted maximum likelihood

Weighting Specification

	Weighting?	Weight Variable Name	Normalized?
Level 1	no		
Level 2	no		
Precision	no		

The outcome variable is COMMUNITY

The model specified for the fixed effects was:

Level-1 Coefficients	Level-2 Predictors
INTRCPT1, B0	INTRCPT2, G00

The model specified for the covariance components was:

Sigma squared (constant across level-2 units)

Tau dimensions  
 INTRCPT1

Summary of the model specified (in equation format)

Level-1 Model  
 $Y = B0 + R$

Level-2 Model  
 $B0 = G00 + U0$

Iterations stopped due to small change in likelihood function

\*\*\*\*\* ITERATION 11 \*\*\*\*\*

Sigma\_squared = 1.08520

Tau  
INTRCPT1,B0 0.02444

Tau (as correlations)  
INTRCPT1,B0 1.000

```
-----
Random level-1 coefficient Reliability estimate
-----
INTRCPT1, B0 0.431
-----
```

The value of the likelihood function at iteration 11 = -3.409101E+003  
The outcome variable is COMMUNITY

Final estimation of fixed effects:

```
-----
Fixed Effect      Coefficient      Standard      Approx.
                   Error          T-ratio      d.f.      P-value
-----
For      INTRCPT1, B0
INTRCPT2, G00      3.144505      0.034377      91.471      47      0.000
-----
```

The outcome variable is COMMUNITY

Final estimation of fixed effects  
(with robust standard errors)

```
-----
Fixed Effect      Coefficient      Standard      Approx.
                   Error          T-ratio      d.f.      P-value
-----
For      INTRCPT1, B0
INTRCPT2, G00      3.144505      0.033931      92.674      47      0.000
-----
```

Final estimation of variance components:

```
-----
Random Effect      Standard      Variance      df      Chi-square      P-value
                   Deviation      Component
-----
INTRCPT1,      U0      0.15633      0.02444      47      107.99333      0.000
level-1,      R      1.04173      1.08520
-----
```

Statistics for current covariance components model

```
-----
Deviance = 6818.201696
Number of estimated parameters = 2
-----
```

Program: HLM 6 Hierarchical Linear and Nonlinear Modeling  
 Authors: Stephen Raudenbush, Tony Bryk, & Richard Congdon  
 Publisher: Scientific Software International, Inc. (C) 2000  
 techsupport@ssicentral.com  
 www.ssicentral.com

-----  
 Module: HLM2.EXE (6.06.2857.2)  
 Date: 3 October 2010, Sunday  
 Time: 15:31:50  
 -----

SPECIFICATIONS FOR THIS HLM2 RUN

Problem Title: Transformed Random Coefficient Regression

The data source for this run = hln2transform  
 The command file for this run = whintmp.hlm  
 Output file name = c:\hln2.txt  
 The maximum number of level-1 units = 2324  
 The maximum number of level-2 units = 43  
 The maximum number of iterations = 100  
 Method of estimation: restricted maximum likelihood

Weighting Specification

	Weighting?	Weight Variable Name	Normalized?
Level 1	no		
Level 2	no		
Precision	no		

The outcome variable is COMMUNITY

The model specified for the fixed effects was:

Level-1 Coefficients	Level-2 Predictors
INTRCPT1, B0	INTRCPT2, G00
% LPAI slope, B1	INTRCPT2, G10
% POVERTYP slope, B2	INTRCPT2, G20
% HOMEOWNP slope, B3	INTRCPT2, G30
% ADI_LOG slope, B4	INTRCPT2, G40
% LZAI_LOG slope, B5	INTRCPT2, G50
% COLGE_RE slope, B6	INTRCPT2, G60
% LOCAL_RE slope, B7	INTRCPT2, G70

\*% - This level-1 predictor has been centered around its grand mean.

The model specified for the covariance components was:

Sigma squared (constant across level-2 units)

Tau dimensions  
 INTRCPT1  
 LPAI slope  
 POVERTYP slope  
 HOMEOWNP slope  
 ADI\_LOG slope  
 LZAI\_LOG slope  
 COLGE\_RE slope  
 LOCAL\_RE slope

Summary of the model specified (in equation format)

Level-1 Model

$$Y = B0 + B1*(LPAI) + B2*(POVERTYP) + B3*(HOMEOWNP) + B4*(ADI\_LOG) + B5*(LZAI\_LOG) + B6*(COLGE\_RE) + B7*(LOCAL\_RE) + R$$

Level-2 Model

$$\begin{aligned} B0 &= G00 + U0 \\ B1 &= G10 + U1 \\ B2 &= G20 + U2 \\ B3 &= G30 + U3 \\ B4 &= G40 + U4 \\ B5 &= G50 + U5 \\ B6 &= G60 + U6 \end{aligned}$$

B7 = G70 + U7

Run-time deletion has reduced the number of level-1 records to 2242

Iterations stopped due to small change in likelihood function

\*\*\*\*\* ITERATION 1243 \*\*\*\*\*

Sigma\_squared = 0.90518

Tau

INTRCPT1, B0	0.00795	0.00124	-0.03449	-0.01528	-0.00010	-0.01349	0.00227	-0.01238
LPAI, B1	0.00124	0.00454	-0.04160	-0.02109	0.00314	-0.00440	-0.01460	-0.01213
POVERTYP, B2	-0.03449	-0.04160	0.64598	0.33900	-0.03877	0.04693	0.22969	0.12478
HOMEOWNP, B3	-0.01528	-0.02109	0.33900	0.19482	-0.03642	0.01075	0.14392	0.06592
ADI_LOG, B4	-0.00010	0.00314	-0.03877	-0.03642	0.02163	0.00814	-0.03621	-0.01472
LZAI_LOG, B5	-0.01349	-0.00440	0.04693	0.01075	0.00814	0.03368	-0.02258	0.02555
COLGE_RE, B6	0.00227	-0.01460	0.22969	0.14392	-0.03621	-0.02258	0.14108	0.03104
LOCAL_RE, B7	-0.01238	-0.01213	0.12478	0.06592	-0.01472	0.02555	0.03104	0.04931

Tau (as correlations)

INTRCPT1, B0	1.000	0.207	-0.481	-0.388	-0.008	-0.824	0.068	-0.625
LPAI, B1	0.207	1.000	-0.768	-0.709	0.317	-0.356	-0.576	-0.810
POVERTYP, B2	-0.481	-0.768	1.000	0.956	-0.328	0.318	0.761	0.699
HOMEOWNP, B3	-0.388	-0.709	0.956	1.000	-0.561	0.133	0.868	0.673
ADI_LOG, B4	-0.008	0.317	-0.328	-0.561	1.000	0.302	-0.656	-0.451
LZAI_LOG, B5	-0.824	-0.356	0.318	0.133	0.302	1.000	-0.328	0.627
COLGE_RE, B6	0.068	-0.576	0.761	0.868	-0.656	-0.328	1.000	0.372
LOCAL_RE, B7	-0.625	-0.810	0.699	0.673	-0.451	0.627	0.372	1.000

-----  
Random level-1 coefficient Reliability estimate

INTRCPT1, B0	0.161
LPAI, B1	0.145
POVERTYP, B2	0.067
HOMEOWNP, B3	0.062
ADI_LOG, B4	0.055
LZAI_LOG, B5	0.039
COLGE_RE, B6	0.057
LOCAL_RE, B7	0.080

-----

Note: The reliability estimates reported above are based on only 43 of 48 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

The value of the likelihood function at iteration 1243 = -3.096700E+003

The outcome variable is COMMUNITY

Final estimation of fixed effects:

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	3.176521	0.026409	120.284	47	0.000
For LPAI slope, B1					
INTRCPT2, G10	0.014778	0.024173	0.611	47	0.544
For POVERTYP slope, B2					
INTRCPT2, G20	-0.414656	0.385772	-1.075	47	0.288
For HOMEOWNP slope, B3					
INTRCPT2, G30	-0.477994	0.224489	-2.129	47	0.038
For ADI_LOG slope, B4					
INTRCPT2, G40	0.336751	0.082895	4.062	47	0.000
For LZAI_LOG slope, B5					
INTRCPT2, G50	0.013506	0.128774	0.105	47	0.917
For COLGE_RE slope, B6					
INTRCPT2, G60	1.249839	0.215754	5.793	47	0.000
For LOCAL_RE slope, B7					
INTRCPT2, G70	-1.617945	0.108075	-14.971	47	0.000

The outcome variable is COMMUNITY

Final estimation of fixed effects

(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
--------------	-------------	----------------	---------	--------------	---------

For	INTRCPT1, B0					
	INTRCPT2, G00	3.176521	0.025540	124.372	47	0.000
For	LPAI slope, B1					
	INTRCPT2, G10	0.014778	0.022800	0.648	47	0.520
For	POVERTYP slope, B2					
	INTRCPT2, G20	-0.414656	0.340775	-1.217	47	0.230
For	HOMEOWNP slope, B3					
	INTRCPT2, G30	-0.477994	0.189583	-2.521	47	0.015
For	ADI_LOG slope, B4					
	INTRCPT2, G40	0.336751	0.077551	4.342	47	0.000
For	LZAI_LOG slope, B5					
	INTRCPT2, G50	0.013506	0.102285	0.132	47	0.896
For	COLGE_RE slope, B6					
	INTRCPT2, G60	1.249839	0.177148	7.055	47	0.000
For	LOCAL_RE slope, B7					
	INTRCPT2, G70	-1.617945	0.092518	-17.488	47	0.000

Final estimation of variance components:

Random Effect		Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1, U0		0.08919	0.00795	42	56.14658	0.071
LPAI slope, U1		0.06741	0.00454	42	46.92696	0.277
POVERTYP slope, U2		0.80373	0.64598	42	51.83272	0.142
HOMEOWNP slope, U3		0.44138	0.19482	42	42.89806	0.433
ADI_LOG slope, U4		0.14707	0.02163	42	41.42337	>.500
LZAI_LOG slope, U5		0.18353	0.03368	42	34.25952	>.500
COLGE_RE slope, U6		0.37560	0.14108	42	36.16099	>.500
LOCAL_RE slope, U7		0.22205	0.04931	42	35.57049	>.500
Level-1, R		0.95141	0.90518			

Note: The chi-square statistics reported above are based on only 43 of 48 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

Statistics for current covariance components model

Deviance = 6193.399650  
Number of estimated parameters = 37

Program: HLM 6 Hierarchical Linear and Nonlinear Modeling  
 Authors: Stephen Raudenbush, Tony Bryk, & Richard Congdon  
 Publisher: Scientific Software International, Inc. (c) 2000  
 techsupport@sscicentral.com  
 www.ssicentral.com

-----  
 Module: HLM2.EXE (6.06.2857.2)  
 Date: 3 October 2010, SUNDAY  
 Time: 15:46:31  
 -----

SPECIFICATIONS FOR THIS HLM2 RUN

Problem Title: Transformed Intercepts as Outcomes Model

The data source for this run = response  
 The command file for this run = whltemp.hlm  
 Output file name = c:\hlm2.txt  
 The maximum number of level-1 units = 2324  
 The maximum number of level-2 units = 48  
 The maximum number of iterations = 100  
 Method of estimation: restricted maximum likelihood

Weighting Specification

	Weighting?	Weight Variable Name	Normalized?
Level 1	no		
Level 2	no		
Precision	no		

The outcome variable is COMMUNITY

The model specified for the fixed effects was:

Level-1 Coefficients	Level-2 Predictors
INTRCPT1, B0	INTRCPT2, G00
\$	EXECRATI, G01
\$	JUDICIAL, G02
\$	IDEOLOGY, G03
% LPAI slope, B1	INTRCPT2, G10
% LZAI slope, B2	INTRCPT2, G20
% POVERTYP slope, B3	INTRCPT2, G30
% HOMEOWNP slope, B4	INTRCPT2, G40
% ADI_LOG slope, B5	INTRCPT2, G50
% V44_A slope, B6	INTRCPT2, G60
% LOCAL_RE slope, B7	INTRCPT2, G70

\*% - This level-1 predictor has been centered around its grand mean.  
 \*\$ - This level-2 predictor has been centered around its grand mean.

The model specified for the covariance components was:

Sigma squared (constant across level-2 units)

Tau dimensions  
 INTRCPT1  
 LPAI slope  
 LZAI slope  
 POVERTYP slope  
 HOMEOWNP slope  
 ADI\_LOG slope  
 COLGE\_RE slope  
 LOCAL\_RE slope

Summary of the model specified (in equation format)

Level-1 Model

$$Y = B0 + B1*(LPAI) + B2*(LZAI) + B3*(POVERTYP) + B4*(HOMEOWNP) + B5*(ADI\_LOG) + B6*(V44\_A) + B7*(LOCAL\_RE) + R$$

Level-2 Model

B0 = G00 + G01\*(EXECRATI) + G02\*(JUDICIAL) + G03\*(IDEOLOGY) + U0  
 B1 = G10 + U1  
 B2 = G20 + U2  
 B3 = G30 + U3  
 B4 = G40 + U4  
 B5 = G50 + U5  
 B6 = G60 + U6  
 B7 = G70 + U7

Run-time deletion has reduced the number of level-1 records to 2268

Iterations stopped due to small change in likelihood function

\*\*\*\*\* ITERATION 1522 \*\*\*\*\*

Sigma\_squared = 0.90624

Tau								
INTRCPT1,B0	0.00781	0.00135	-0.00214	-0.04320	-0.01907	-0.00337	-0.00589	-0.01039
LPAT,B1	0.00135	0.00460	-0.00093	-0.03772	-0.02167	0.00563	-0.01240	-0.01444
LZAI,B2	-0.00214	-0.00093	0.00096	0.00796	0.00228	0.00133	-0.00161	0.00439
POVERTYP,B3	-0.04320	-0.03772	0.00796	0.82357	0.44095	-0.03442	0.28859	0.12537
HOMEOWNP,B4	-0.01907	-0.02167	0.00228	0.44095	0.25126	-0.03386	0.16993	0.07281
ADI_LOG,B5	-0.00337	0.00563	0.00133	-0.03442	-0.03386	0.02185	-0.02832	-0.01896
COLGE_RE,B6	-0.00589	-0.01240	-0.00161	0.28859	0.16993	-0.02832	0.12990	0.03640
LOCAL_RE,B7	-0.01039	-0.01444	0.00439	0.12537	0.07281	-0.01896	0.03640	0.05604

Tau (as correlations)

INTRCPT1,B0	1.000	0.225	-0.782	-0.539	-0.431	-0.258	-0.185	-0.497
LPAT,B1	0.225	1.000	-0.442	-0.613	-0.637	0.561	-0.507	-0.900
LZAI,B2	-0.782	-0.442	1.000	0.283	0.147	0.291	-0.144	0.599
POVERTYP,B3	-0.539	-0.613	0.283	1.000	0.969	-0.257	0.882	0.584
HOMEOWNP,B4	-0.431	-0.637	0.147	0.969	1.000	-0.457	0.941	0.614
ADI_LOG,B5	-0.258	0.561	0.291	-0.257	-0.457	1.000	-0.532	-0.542
COLGE_RE,B6	-0.185	-0.507	-0.144	0.882	0.941	-0.532	1.000	0.427
LOCAL_RE,B7	-0.497	-0.900	0.599	0.584	0.614	-0.542	0.427	1.000

-----  
 Random level-1 coefficient Reliability estimate  
 -----

INTRCPT1, B0	0.159
LPAT, B1	0.143
LZAI, B2	0.029
POVERTYP, B3	0.083
HOMEOWNP, B4	0.078
ADI_LOG, B5	0.056
COLGE_RE, B6	0.054
LOCAL_RE, B7	0.090

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Note: The reliability estimates reported above are based on only 43 of 48 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

The value of the likelihood function at iteration 1522 = -3.142764E+003

The outcome variable is COMMUNITY

Final estimation of fixed effects:

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	3.178132	0.026893	118.177	44	0.000
EXECRATI, G01	0.011268	0.042339	0.266	44	0.791
JUDICIAL, G02	0.034936	0.040851	0.855	44	0.397
IDEOLOGY, G03	-0.001887	0.004540	-0.416	44	0.679
For LPAT slope, B1					
INTRCPT2, G10	0.014398	0.024243	0.594	47	0.555
For LZAI slope, B2					
INTRCPT2, G20	0.007448	0.025143	0.296	47	0.768
For POVERTYP slope, B3					
INTRCPT2, G30	-0.495565	0.397572	-1.246	47	0.219
For HOMEOWNP slope, B4					
INTRCPT2, G40	-0.544823	0.230122	-2.368	47	0.022
For ADI_LOG slope, B5					
INTRCPT2, G50	0.348020	0.084822	4.103	47	0.000
For COLGE_RE slope, B6					

INTRCPT2, G00	1.273309	0.213355	5.968	47	0.000
For LOCAL_RE slope, B7					
INTRCPT2, G70	-1.630719	0.108624	-15.012	47	0.000

The outcome variable is COMMUNITY

Final estimation of fixed effects  
(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	3.178132	0.022885	138.873	44	0.000
EXECRATI, G01	0.011268	0.040576	0.278	44	0.783
JUDICIAL, G02	0.034936	0.040817	0.856	44	0.397
IDEOLOGY, G03	-0.001887	0.004129	-0.457	44	0.650
For LP AI slope, B1					
INTRCPT2, G10	0.014398	0.022805	0.631	47	0.531
For LZAI slope, B2					
INTRCPT2, G20	0.007448	0.020059	0.371	47	0.712
For POVERTYP slope, B3					
INTRCPT2, G30	-0.495565	0.361245	-1.372	47	0.177
For HOMEOWNP slope, B4					
INTRCPT2, G40	-0.544823	0.197648	-2.757	47	0.009
For ADI_LOG slope, B5					
INTRCPT2, G50	0.348020	0.078114	4.455	47	0.000
For COLGE_RE slope, B6					
INTRCPT2, G60	1.273309	0.173290	7.348	47	0.000
For LOCAL_RE slope, B7					
INTRCPT2, G70	-1.630719	0.093637	-17.415	47	0.000

Final estimation of variance components:

Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1, U0	0.08836	0.00781	39	53.74507	0.058
LP AI slope, U1	0.06781	0.00460	42	47.57438	0.256
LZAI slope, U2	0.03099	0.00096	42	33.07869	>.500
POVERTYP slope, U3	0.90751	0.82357	42	53.67390	0.107
HOMEOWNP slope, U4	0.50125	0.25126	42	45.26374	0.337
ADI_LOG slope, U5	0.14781	0.02185	42	41.83844	>.500
COLGE_RE slope, U6	0.36042	0.12990	42	36.53785	>.500
LOCAL_RE slope, U7	0.23673	0.05604	42	36.54321	>.500
level-1, R	0.95197	0.90624			

Note: The chi-square statistics reported above are based on only 43 of 48 units that had sufficient data for computation. Fixed effects and variance components are based on all the data.

Statistics for current covariance components model

Deviance = 6285.527439  
Number of estimated parameters = 37