A Statistical Analysis of Oregon's Land-Use Ballot Initiatives

by

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Abstract:

This paper explores predictors of support for land-use ballot initiatives in Oregon. Possible predictors include a variety of socioeconomic, spatial, and political variables. Multiple least squares regressions find that aggregate levels of education within a county and the proportion of a county's workforce engaged in farming or forestry occupations appear to play a strong role in county-level land-use ballot initiative results. These effects of education and industry sector employment are consistent across multiple elections. Real per capita income and party identification appear to play a role in specific elections and are not consistent predictors.. Analysis from initiatives in 1970, 1976, 1978, 1982, 2000, and 2004 from Oregon are used to draw these conclusions.

I. Introduction

This paper explores socioeconomic, political, and spatial characteristics that affect county-level land-use ballot initiative voting. Data from Oregon ballot initiatives in 1970, 1976, 1978, 1982, 2000, and 2004 are regressed against a variety of variables that fit into these general categories using ordinary least squares regression. It is found that, even when voting on the same type of measure, there is a wide range in the variation the model explains. However, one element of consistency between ballot initiatives is the effect of education on voting outcome. With the exception of two elections, education was statistically significant, with higher levels of education predicting lower levels of support for the various ballot initiatives. Even when education is not statistically significant the direction of the relationship remains. Interestingly, party identification plays a significant role in only 2000's Measure 7 and 2004's Measure 37 voting. During these elections higher levels of Democrats are associated with lower levels of support for that year's ballot initiative.

This paper is arranged in the following manner: the remainder of Section I provides a brief discussion of land-use issues in an effort to provide information about why having a better understanding of land-use voting behavior is important. Section II examines scholarly works on ballot initiative voting, property rights and the property rights movement, and the political geography of Oregon. Section III summarizes the history of land-use in Oregon and provides a series of maps that show county-level voting results. Section IV discusses models, assumptions, and data. Section V presents the findings of the analysis. Section VI offers a discussion of the results and a description of the policy implications for government services. Finally, Section VII provides a conclusion.

A. The Importance of Understanding Land-Use

The regulation of land-use has far reaching implications across a variety of spheres. A broad array of research has examined how amenity values are affected by development (Wu, 2001), the relationship of housing prices to land-development patterns (Anthony, 2006; Knapp, 1985; Landis; 1992; Pollakowski, 1990, and Rose, 1989), farmland conversion effects (Green, 1995; Green, 2001; Livanis, 2006), effects on cost of public services (Burchell & Mukherji, 2003; Carruthers & Ulfarsson, 2003), and environmental effects of land-use variation (Arnold, 2006; Hasse, 2003; Kahn, 2000). Given the broad range of consequences of differning land-use schemes, it is imperative to understand how people develop their policy preferences for land-use. This study attempts to provide this information for Oregon.

B. Importance of Land-Use in Oregon

Oregon is currently undergoing a change in how it manages lands. The passage of Measure 37 in 2004 fundamentally changed the planning regime that had been in place since 1973. The measure resulted in a shift from a centralized state-level planning regime in which no compensation was paid for any percieved or real loss of land-value to one in which regulating agencies are required to either compensate land-owners for those real and percieved losses or to forgo regulation. Since this ballot measure passed, there have been a total of 7,783 claims for compensation for land-use regulations that cover 795,000 acres (Institute of Portland Metropolitan Studies, 2007). The greatest concentration of the claims, both in numbers and size, is in the northwest of the state and in the Willamette Valley. Approximately 4,800 of the 7,562 claims and 292,954 of the 750,898 acres are located in that region (ibid, 2007).

One previous change in how Oregon managed its lands has had a striking consequence for the amount of farmland in the Willamette Valley. A comparison between the trend in farm loss from 1950 to 1997, shown in Figure 1, shows that it is much steeper than the trend line that uses data from 1974 through 1997. Note that farmland loss in the Willamette Valley is less pronounced after 1974, the year after Senate Bill 100 was passed and a state-wide comprehensive land-use planning system was implemented.

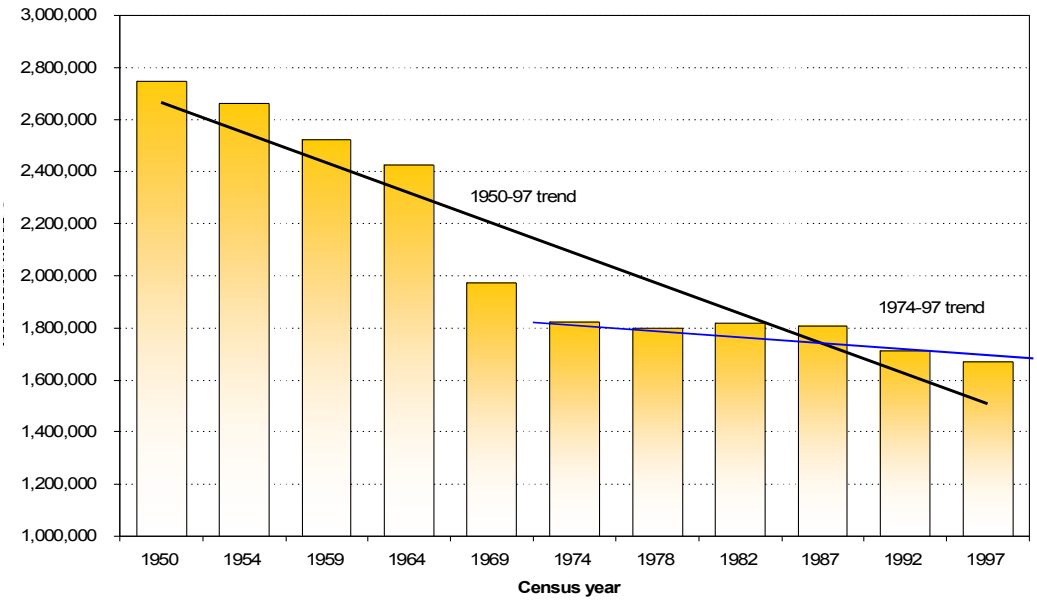


Figure 1. Farmland Loss in the Willamette Valley 1950-1997
Source: 1000 Friends of Oregon

II. Literature Review

The section summarizes the knowledge which is used as the context for statistical analysis. It includes information on research of other scholars on land-use and land-use policy as well as information about Oregon's land-use policy history and the geographic distribution of

support and opposition for land-use ballot initiatives.

A. Initiative Voting Behavior

There is much research on why people form their political opinions and how those opinions translate into initiative voting behavior. Even though the specific ballot measures in this paper all have to do with land-use, research on general voting models can shed light on some fundamental realities of how people form their opinions on land-use initiatives and why they choose to vote as they do.

One of the fundamental questions raised by research on direct democracy is whether or not people are capable of understanding the full consequences of what a "yes" or "no" vote entails. Bowler and Donovan, for example, find that different levels of information result in different voting outcomes (2000). In addition to determining the ability of voters to understand what is actually being decided, the research also finds that elites, and their endorsements, can influence an election (Karp in Bowler, et al, 1998). Socio-economic status also is related to voting behavior (Hahn, 1987). Information on how individuals behave in direct democracy situations is important to this study as it is, after all, an exploration and attempt to explain differences in behavior in direct democracy situations.

B. Political Geography

There is a variety of research done, in a similar manner to this analysis, that uses ballot initiatives to try and understand what factors play a role in developing preferences for land-use policies. One fundamental aspect of this analysis is the effect that geographic attributes

play in determining county-level voting outcomes on land-use ballot initiatives. Gerber and Phillips (2003) use statistical analysis of economic, spatial, and influence of outside groups on land-use policy initiatives outside of San Diego. One very interesting aspect of this work is the idea that, because development occurs in one geographic area, it has differential effects on individuals living close to or further away from the development. Interestingly, and contrary to their initial hypothesis, they find that distance to a development and support for that development are inversely related. Also, the closer a precinct is to a develop-ment the more likely they are to support it. Solecki, Mason, & Martin (2004) use initiative data from New Jersey to explore the geographic predictors of land-use policy preferences. Among their findings is that support for open-space initiatives is stronger in urban areas.

In addition to these general effects of geography on political outcomes it is also important to understand Oregon's particular political geography. In contrast to the previous works on political geography that use statistical analysis to determine what effects geography, among other variables, has on political outcomes, a discussion of Oregon's specific political geography is more qualitative in nature. The works of William Robbins, both as editor and author, provide an especially useful guide to inform this work's discussion of Oregon's land-use ballot initiatives.

A good starting point in a discussion of Oregon's political geography is that Oregon appears to be different than other western states. Sarasohn (1983) notes that Oregon's first non-native settlers were primarily from New England and that this has had a variety of political effects. First, Oregonians tend to vote more like New Englanders than like other western states. This similarity is visible in presidential elections as well as Congressional elections. Sarasohn

notes that, “Only Oregon, Maine and Vermont maintained two Republican Senators throughout the New Deal” (1983, p. 225). He comes to the conclusion that, “one might call Oregon a giant Vermont” (Sarasohn, 1983, p. 225).

This recognition of Oregon's New England-like political culture provides a good baseline for understanding Oregon's political culture. However, recent events provide a more comprehensive understanding of regional variations of political culture within Oregon. For purposes of this literature review, World War II is selected as the starting point for the discussion of Oregon's political geography. Robbins (2004) notes that World War II had serious consequences for the distribution of Oregon's population across the state, “Portland and its suburbs gained more than 250,000 residents and Oregon's growth rate for the 1940s was nearly 40%” (p. 133). Furthermore, most western counties gained population while eastern counties either lost population or had no growth (Robbins, 2004).

The return of service members following World War II also had serious effects on Oregon's political geography. One of the more important effects of those returning from military service is the demand they placed on land and housing. Robbins (2004) describes housing shortages in all areas of the state, both urban and rural from returning veterans. This element of Oregon's political geography is pertinent to this study because the growing emphasis placed on suburban development that many veterans favored directly leads to attempts to control this type of sprawling development in the late 1960s and early 1970s.

Finally, the 1970s saw rise of a more partisan Oregon as urban and rural residents conflicted over environmental and land-use policies with environmentalists and those favoring stringent land-use policies tending to locate in urban areas of the state while rural residents

favored fewer regulations due to their resource dependent economic base (Robbins, 2004). The net result of a population influx into urban areas coupled with an increasing awareness of environmental damage resulted in Oregon becoming overall more progressive during the 1970s (Robbins, 2004).

The rural-urban divide has often been used to divide Oregon into distinct political subregions to describe differences in policy preferences as well as differences in political culture (Clucas & Henkels, 2005). Results from land-use ballot initiatives tend to follow this rural-urban divide, although there are some exceptions. The primary problem with trying to understand land-use ballot initiate results in the context of a rural-urban divide is the use of counties as the unit of measurement. Lane County provides an excellent example of this difficulty. Lane encompasses both highly urban Eugene and highly rural areas as well.

A more nuanced manner used to subdivide states into smaller units based on uniform political beliefs is that based on Elazar's (1975) work. Elazar divides regions of each state based on combinations of three types of political culture. The individualistic culture is characterized by the limitation of government activity that infringes on private activities. The moralistic political culture is based on the notion of using government in pursuit of the common good. Finally, the traditionalistic political culture is based on the maintenance of traditional patterns of authority. The dominant political culture of regions of Oregon, according to Elazar's thought, is based on in-migration patterns. Migrants that settled in the Willamette Valley tended to share a dominantly moralistic political culture while those outside of the Valley share this moralistic orientation while also being influenced with an individualistic culture (Elazar, 1975).

A final manner in which Oregon has been divided into distinct subregions is done by

The Oregonian in their series on the "Nine States of Oregon". The nine regions of Oregon are: Portlandia, Southern Oregon, Cowboy Country, Central Oregon, Columbia Corridor, Timber Country, The Coast, Valley, and Edutopia (Mapes, Pulaski, & Hill 2003). While being somewhat unclear on the methodology used to derive these regions the areas appear to be based on dominant economic drivers such as timber or farming. The results of voting on land-use ballot initiatives conform nicely to some of these areas.

Figure 2: The Nine States of Oregon
Source: *The Oregonian* http://www.oregonlive.com/special/ninestates/

C. Property Rights and the Property Rights Movement

A rich body of research on property rights exists today. Considerable debate over some aspects of these rights remains, however. Questions in which there is some degree of agreement in the literature include what property rights are and where they come from. Alchian & Desetz, 1973; Bromley, 2000; Demsetz, 1967; Schlager & Ostrom, 1992; Yandle, 2000; and Pralle & McCann, 2000 all address these questions to some extent. One of the primary divergences within the literature is the degree to which private property rights infringe upon the public good.

The question of what property rights are is one of the more fundamental questions in political science. One basic understanding of property rights offered by Demsetz in 1967 is that, "An owner of property rights possesses the consent of fellow men to allow him to act in particular ways" (p. 347).

Additionally, research questions where property rights come from. In a later work, Demsetz provides a slightly different definition of property rights in which, “Property rights are an instrument of society and derive their significance from the fact that they help a man form those expectations which he can reasonably hold in his dealings with others. These expectations find expression in the laws, customs, and mores of a society” (p. 347). Yandle (2000) describes the development of property rights in a similar manner, "[private property rights] evolved from custom, tradition, and county courthouses" (p. 42). The answer to where property rights come from provided by Yandle (2000) and Demsetz (1967) are fairly representative of the consensus in the literature. An interesting twist on this element of property rights is provided by Rapaczynski in 1996. He explores whether market forces or "government fiat" is responsible for

the creation of property rights and concludes that economic markets play a more important role (Rapaczynski, 1996). In many ways this is consistent with findings by Yandle and Demsetz when they discuss development of rights in terms of customs, traditions, and mores.

A more recent and much more conflictual strain of property rights research involves questions of public good and private rights. White (2000), for example, asks, "What is and should be public, and what is and should be private - that is, what is public business and what is none of the public's business - is one of the great elemental contests of the Republic" (193). Furniss (1978) explores the political consequences of a property rights system based on public choice theory. In an attempt to help inform this question Schlager and Ostrom (1992) provide a typology of property rights regimes with groups ranging from claimant, proprietor, and owner. This question about property rights plays a role in the property rights movement, two aspects of which are discussed below.

Emerson and Wise (1997) provide a summary of the tension between provision of public goods and the regulatory takings doctrine when they ask, "If as a result of the lawful application of a state regulation, a business person's property experiences a 25 percent decline in value, should the state agency that issued the regulation be required to pay for the amount of the decrease out of its budget?" (p. 411). The answer to this question is the crux of the regulatory takings doctrine. If a full taking of an individual's property requires the government to compensate a fair value for that property does a partial taking, through a regulation, require a partial payment? When applied to land-use policy the regulatory takings doctrine posits that any regulation reducing the value of the property owner's land, even in the pursuit of the public good, requires compensation of an equivalent amount by the regulating government. The regulatory

takings doctrine is especially pertinent to 2000's Measure 7 and 2004's Measure 37, which require governments regulating an individual's property to pay for any loss of value to that property due to the regulation.

The regulatory takings doctrine has been evolving for the past ninety years. Flick, et al., (1995), frame the beginning of the regulatory takings debate with their discussion of a 1922 Supreme Court (*Pennsylvania Coal v. Mahon*) case in which Chief JusticeWendell Holmes notes, "While property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking" (p. 22). The question that results from this is, to what extent does a regulation have to go to be considered a taking? The answer in the context of federal case-law, is, "essentially ad hoc, factual inquiries" (Flick, et. al., 1995). This muddled decision was rendered in Penn Central Tranportation Co. v. New York City (Flick, et. al., 1993) a case from 1978. These court cases leave the door open to the legality of the regulatory takings doctrine in that there is still no clear cut differentiation between where a regulation crosses a border to become a regulatory taking.

D. Methodology

Ordinary least squares regression is a common statistical technique used to predict and test hypotheses (Hill, Griffiths, & Judge, 1997). This statistical technique is widely used in the study of ballot initiatives (Salka, 2003; Solecki, Mason, & Martin, 2004; and Romero & Liserio, 2002). The following variable categories provide a comprehensive set of explanatory variables based on a review of the literature. In this study these variables are used to determine the role each of them play in determining support or opposition to land-use ballot initiatives.

E. Spatial Variables

Spatial variables, for the purpose of this study, are conceptualized as those based on the built or natural environment. Many studies have looked at the effects of the spatial context of individuals on their preference for land-use and environmental policy (Romero & Liserio, 2002; Solecki, et al., 2004; Vorkinn & Reise, 2001). A recent study by Solecki, Mason , and Martin (2004) found that urban individuals are more likely to vote for open space ballot initiatives than rural individuals. Likewise, Vorkinn and Reise (2001) maintain that place attachment influences policy preference as well (2001). Johnston, Swallow, and Bauer (2002) explore different economic values associated with spatial values and their possible effects on land-use patterns.

This analysis hypothesizes, consistent with previous research, that residents of counties with higher population densities and higher rates of population growth are more likely to oppose Oregon ballot measures that seek to prevent, repeal, or limit statewide comprehensive land-use planning.

F. Socioeconomic Variables

Grossman and Krueger (1991) hypothesize that one manner in which economic wealth and preference for environmental goods are related is through a "Environmental Kuznets Curve (EKC). They were able to show that the relationship between income and preference for environmental goods resembles an inverted "U". Grossman and Krueger posit that, at low levels of income, that there are little preferences for environmental goods as income rise because people are focused on achieving a sustainable quality of life. However, at a certain point when basic needs have been met then there is an increase in the preference for environmental goods as

per capita income rises.

A critique of the EKC is that mean per capita income is unable to accurately account for variation in environmental policy preference because it fails to account for income distribution (Magnani, 2000). A possible solution to the mean being too sensitive to outliers is to use the median income of the county. However, the problem with the non-linear relationship remains. A solution to this is discussed in the methodology section. This study hypothesizes that increasing levels of median county per capita income will reduce support for limiting state-wide comprehensive land-use planning.

There also is broad consensus in the literature about using industry sector variables to predict voting behavior, largely based on economic concepts of self-interest. Kahn and Matsusaka (1997) adopt this perspective in a study of the demand for environmental goods. Their analysis of voting patterns on seventeen ballot initiatives in California found that industry sector variables play a significant role in some cases but not others. Sector employment, they maintain, stands in as a heuristic for price in a traditional demand model (Kahn & Matsusaka, 1997).

A final socioeconomic predictor widely used in the literature is education (Salka, 2003; Kline, 2005, and Solecki, Mason, & Martin, 2004). All these studies found education to be a significant predictor of support for more stringent land-use policies. There is also consistency in how education is operationalized. All three of these studies use the percentage of the population, age 25 and over, who have spent at least four years in college.

This analysis hypothesizes that counties with a greater percentage of citizens of high socioeconomic status are more likely to oppose ballot initiatives in Oregon that seek to limit

statewide comprehensive land-use planning. This study also hypothesizes that counties with larger proportions of their workforces composed of fishing, farming, or logging jobs will be more supportive of these six land-use initiatives.

G. Political Variables

The use of at least one variable measuring political leanings is often part of analyses of land-use policy preferences. Salka (2001) uses the percentage of a county's population that is Republican in his study of environmental ballot initiatives in Oregon, California, and Colorado. This type of political variable, party identification, is a widely used technique. Many of the studies discussed above, use some method of controlling for political differences (Salka, 2003; Kahn & Matsusaka, 2003; and Gerber & Phillips, 2003). This analysis hypothesizes that counties with larger proportions of registered Democrats are more likely to support statewide comprehensive land-use planning.

H. Policy Variables

Using variables encompassing different types of policies to explore preferences and influences on land-use policy is not new. Irwin and Bockstael (2004) use a series of

> [...]smart-growth variables that are hypothesized to influence development timing, and by focusing on how the presence of land use externalities may moderate the effectiveness of these policies. In particular, we focus on whether land use externalities alter the effectiveness of a clustering policy designed to protect open space by creating a positive amenity associated with the preserved open space

> that, under certain conditions, may attract development and exacerbate sprawl (p. 706).

Bengston, Fletcher, & Nelson (2004) explore the effects of different land-use policy types on controlling growth and protecting open space.

Given existing knowledge about the success and failure of the ballot measures being studied, this analysis hypothesizes that efforts to prevent the adoption of statewide comprehensive land-use planning and attempts to repeal said planning both will result in less county-level support for the ballot initiative.

III. The Oregon Case Study

The following section provides specific information on the historical development of land-use policy in Oregon. Maps are included to provide visual representations of support and opposition for the six land-use ballot initiatives.

A. Oregon's Land-Use History

Oregon's land-use planning can be divided into three broad historical eras. The first era include the years from 1947 to 1973 in which land-use planning was characterized by planning solely at the city and county levels of government. State legislation in 1947 gave zoning authority similar to that enjoyed by cities to counties (Abbot & Adler, 1994). This first era ended and the second era began in 1973 with the passage of Senate Bill 100 which gave rise to statewide planning. This second era ended in 2004 with the passage of Measure 37. Until 2004 the trend in land-use planning in Oregon was toward more central planning, from cities to

counties and then to state. The third era starts with the passage of Measure 37 and results in a different policy scheme than had been practiced since 1973.

1. Pre-1973 Land-Use Policy in Oregon

Rohse (1987) notes three reasons that drove Oregon to statewide and comprehensive land-use planning. First, increasing populations in the 1960s and 1970s raised concerns about sprawling growth. Second, the environmental costs associated with rapid development created problems in a state known for its environmental quality. Finally, the economic costs associated with sprawling development were rising (Rohse, 1987). A core difficulty with attempting to control these problems was the number of jurisdictions that had regulatory authority over land-use. Within the Willamette Valley alone, there were over 89 government entities responsible for land-use planning (Leonard, 1983).

During this first era, a transition was occurring in Oregon that was characterized by a shift from agricultural to non-agricultural land uses as urban and rural sprawl expanded. This transition was worrisome because Oregon had a reputation for an aesthetically pleasing environment that brought visitors in from out of state, so these changes potentially affected tourism.

In 1961 the state authorized preferential tax treatments to farmers located in exclusive farm use (EFU) zones. Leonard (1983) noted that:

> By the end of the 1960s, an estimated 10,000 acres of farmland were being converted to urban uses each year, out of a total of about 2 million agricultural acres in the whole valley. Between 1959 and 1969, the amount of available farmland

> in Clackamas County, which straddles the southern edge of the Portland metropolitan area, shrank from 319,000 acres to 210,000 – a 34 percent decline. Much of this farmland was lost to new suburban developments built further and further from Portland (p. 6).

The EFU preferential tax treatment allowed farmers to be taxed at a lower rate for farmland when compared to land not in farm production, with the goal that this would prevent farmland from being converted into non-farm uses.

While being similar in many aspects to Senate Bill (SB) 100, SB 10, passed by the Oregon Legislature in 1969, was ultimately ineffective. SB 10 mandated that county officials create a comprehensive zoning plan for their county in accordance with nine broad goals. If the counties failed to implement a zoning plan by the end of 1971, then-Governor Tom McCall would do so for them (Leonard, 1983).

The policy goals of SB 10 enjoyed popular support. Ballot Measure 11 was designed to limit the authority that the state government had over rural land. Oregon's voters rejected the measure in November, 1970. Measure 11 marked the first attempt via the initiative process to direct land-use policy in Oregon. This initiative failed by a margin of 45% to 55% (Oregon Election Division, 1970).

2. Oregon Land-Use Policy From 1973 Until 1982

Even though citizens supported statewide comprehensive land-use SB 10 failed to meet its policy goals because the state lacked oversight power over counties to ensure proper implementation (Leonard, 1983). Counties created zoning but allowed development to continue

at the same rate in farmland and forest areas (Leonard, 1983). Senate Bill 100, passed in 1973, and the beginning of the second era of Oregon's land-use policy regulation, adopted many of the provisions of SB 10 but also added elements of policy that would help the state to regulate and oversee local land-use planning.

SB 100, when passed in 1973, achieved state-wide comprehensive land-use management by limiting development outside Urban Growth Boundaries (UGBs) and through the adoption and implementation of nineteen statewide land-use goals, ten of them drawn from SB 10 (Abbot, 1994). Four new goals were also created when SB 100 was implemented, and five additional goals were created through subsequent amendments (Abbot, 1994). Ultimately SB 100 was much more effective than SB 10 at protecting farmlands and limiting growth of cities to within UGBs. However, this success of limiting growth sharpened opposition to state-wide comprehensive land-use planning. As a result, several attempts have been made through Oregon's initiative process to limit state influence on county land-use planning.

The creation of state oversight agencies was the primary reason for the success of SB 100. SB 100 created two agencies that fulfilled this oversight role. The first was the Department of Land Conservation and Development (DLCD), while the second, a sub-entity within the DLCD, also played an important role in contributing to statewide planning. Through its oversight role, the Land Conservation and Development Commission (LCDC) was responsible for developing statewide goals and ensuring that they were implemented by local governments. The nineteen goals adopted by the LCDC are as shown in Table 1 on the following page.

SB 100 saw greater success than its predecessor in achieving its goals of regulating land-use policy. Farmland loss slowed and city growth was limited through the use of Urban

Growth Boundaries (UGBs), thereby accomplishing two of the primary goals of SB 100 (Leonard, 1983). In 1976, three years after the implementation of SB 100, the first effort to repeal state-wide comprehensive land-use planning occurred. Two years after that, in 1978, a second attempt to repeal SB 100 took place. The final attempt to repeal SB 100 through the direct democracy offered by Oregon's initiative process occurred in 1982.

Table 1:

Senate Bill 100's Statewide Planning Goals

1. Citizen Involvement	9. Economy of the State
2. Land-Use Planning	10. Housing
3. Agricultural Lands	11. Public Facilities and Services
4. Forest Lands	12. Transportation
5. Open Spaces, Scenic and Historic Areas, and Natural Resources	13. Energy Conservation
	14. Urbanization
6. Air, Water, and Land Resources Quality	15. Willamette River Greenway
	16. Estuarine Resources
7. Areas Subject to Natural Disasters and Hazards	17. Coastal Shorelands
8. Recreational Needs	18. Beaches and Dunes
	19. Ocean Resources

Source: Leonard, 1983

a. 1976 Measure 10

Measure 10, (it is somewhat confusing that both 1976's and 1978's ballot measures are both numbered 10) placed on the 1976 ballot, was the first attempt to repeal state-wide comprehensive land-use planning. Measure 10 was designed to rescind state-wide planning and allow counties to fashion land-use planning as they saw fit. Measure 10 was rejected by the voters by a margin of 43% to 57% (Oregon Election Division, 1976). This did not, however, end the use of the initiative process to challenge Oregon's state-wide comprehensive land-use planning. Two years after the failure of Measure 10, another Measure 10 was placed on the ballot.

b. 1978 Measure 10

Measure 10 in 1978 was the second effort to overturn statewide land-use planning. As with the previous attempt to repeal statewide land-use planning, it failed in achieving its goals. In fact, Measure 10 of 1978 was the least successful of all attempts at overturning the system that SB 100 had created, being rejected by voters 40% to 60% (Oregon Election Division, 1978).

c. 1982 Measure 6

Measure 6 in 1982 was the final attempt to directly repeal state-wide comprehensive land-use planning in Oregon. As with the previous two attempts it also failed, this time by a margin of 45% to 55% (Oregon Election Division, 1982).

3. Oregon Land-Use Planning from 1983 until 2004

The years from 1983 to 2000 are devoid of land-use initiatives in Oregon. This, however, by no means indicates that land-use policy was not an issue in Oregon. Instead of being highly visible, more subtle changes were ongoing. It was during the period from the mid- to late- 1980s until the 1990s that the Wise Use movement developed into a more cohesive movement with the goal of shaping land-use policy. Typically 1988 is considered to mark the beginning of the movement and its associated agenda of environmental deregulation (Ramos, 1995).

Wise Use groups, like any other interest group, engaged in political activities that furthered their goals of deregulation of lands. The Oregon Lands Coalition (OLC), a Wise Use interest group, funded efforts to recall then-Governor Barbara Roberts in 1992 for her support of the Endangered Species Act (Ramos, 1995). Of the fourteen state legislative seats lost by Democrats in the 1992 election in Montana, Wise Use proponents played a decisive role in half (Ramos, 1995). In addition, the Wise Use movement has formed coalitions and adopted elements of the regulatory takings doctrine (Ramos, 1995). These activities of the Wise-Use movement typify the context of land-use policy in Oregon from the late-1980s to the late-1990s.

a. 2000 Measure 7

Measure 7, on the ballot in 2000, a precursor to Measure 37 in 2004, passed by popular vote but was ultimately declared unconstitutional by the State Supreme Court. The summary of the initiative is as follows (Oregon Secretary of State, 2000, p. 1).

> [Measure 7] Amends Constitution. Oregon Constitution prohibits taking

> private property for public use without just compensation. Oregon Supreme Court has not required compensation when property value merely reduced. Measure requires state, local governments pay landowner amount of reduction in market value if law, regulation reduces property value. Compensation required if owner must act to protect certain natural resource, cultural values or low income housing. Exemption for historically recognized nuisance laws or if owner sells alcohol, pornography, operates casino. Applies if regulation adopted after owner acquires property.

Even though Measure 7 was passed by voters, the State Supreme Court ruled it to be unconstitutional for two reasons. First, Measure 7 violated the "separate vote" and the "full text" rules (Condit, 2000). The separate vote doctrine requires that, for any given ballot initiative, there be only one substantive issue. In the case of Measure 7, Judge Lipscomb found there to be several substantive issues, including: "add[ing] exemptions for drug and liquor stores, adult businesses, casinos, and gambling parlors, and required the courts to narrowly construe the exception for traditional nuisance claims" (Condit, 2000, p. 2).

The second issue that derailed the implementation of Measure 7 was the lack of proper documentation of the full changes to Oregon's Constitution that would occur if Measure 7 passed. In this case the judge hearing the case found that voters did not have the information available from the text of the Measure to realize that they were changing, "traditional condemnation law" (Condit, 2000, p. 1).

4. Oregon Land-Use Planning from 2004 to Present

a. 2004 Measure 37

The passage of Measure 37 in 2004 marks the end of the second era of Oregon's land-use planning and the beginning of the third. The third era is characterized by incorporation of the regulatory takings doctrine into Oregon's land-use planning system. Any land-use regulation by state, county, or municipal jurisdictions requires paying the land-owner for losses to property values from the regulation or to forgo that regulation.

Measure 37 in 2004 was far reaching in its effects. The 1976, 1978, and 1982 measures would have allowed for local land-use planning to continue. However, Measure 37 requires that all jurisdictions, even county and city jurisdictions, that implement land-use policy either pay an amount equal to the lost value of regulation or forgo that regulation.

A variety of political factors went into shaping the debate that surrounded Measure 37. One was the framing of the debate in terms of the regulatory takings doctrine and another was the influence of outside individuals providing funding and using the initiative process to further their own ends.

The frame supporters used to describe Measure 37 tended to draw heavily from the regulatory takings doctrine, as the following selection of quotes from the "Arguments in Favor" section from the 2004 General Election Voter's Pamphlet (Oregon Secretary of State, 2004) suggest:

- "This measure is an effort to require just compensation for government actions that diminish the value of private property. We recommend a YES vote".
- "Over the past years we have seen state and local governments take the use and value of

private property by using a loophole in the law. Sure, they tell you that you can fight them in court….but it will take years and your attorney fees alone will likely exceed the value of your property. That is not fair and they know you can't afford it".

- "No one should have to worry about their home and property being taken away by an overreaching government bureaucrat. It's your property, your hard work, and your investment".
- "Measure 37 is very simple. If government takes your property, then government should pay for it".
- "Fortunately, Measure 37 will help ease that burden. Measure 37 levels the playing field between private citizens and that small but powerful segment of state and local government that wants to impose more and more regulations on our private property".

These quotes all share common characteristics. The first is the concept that any taking of property deserves some variety of compensation. This is, in essence, the fundamental idea behind the regulatory takings doctrine. A second frame these quotes exemplify is the idea that any regulation is either a "loophole in the law", or done by an, "overreaching government bureaucrat" (Oregon Secretary of State, 2004). The second and final quotes are interesting in they display a populist sentiment that appeals to a sense of fairness. The final quote indicates that there is a wide-spread and popular support for limiting the government's ability to regulate land and that only a small influential segment of the population opposes this type of government limitation, a point also implied by the second quote. There is the implication that the then-current system worked only for those are able to afford years of lawyer fees.

Interest group participation was also important in the run up to election day in 2004. Howard Rich, chairman of Americans for Limited Government, a New York based organization, is an example of these groups. Rich has a longstanding history of financing ballot initiatives in Oregon which has included spending on term-limits, government spending caps, and of course, Ballot Measure 37 (Hogan & Hammond, 2006). The effects of outside interest groups and their effects on Oregon is noted in the following passage:

> It is difficult to believe that Measure 7 represents an informed expression of the will of the majority of Oregon voters. David Broder, a distinguished reporter for the Washington Post, in his recent book, Democracy Derailed, offers a scathing indictment of the initiative process as it is practiced in Oregon and other states. He describes the citizen initiative process as a well intentioned populist reform that has been hijacked by special interests. He contrasts the kind of superficial political decision-making that occurs in the initiative process with the more careful, deliberative process that occurs when legislation has to go through the legislative branch and secure the executive's concurrence (Echeverria, 2001).

b. Developments after 2004

Even though Measure 37 enjoyed popular support on election day, there has been growing public disquiet about long-term effects since its passing. Commissioned by 1,000 Friends of Oregon, Moore Opinion conducted a survey of Oregon's registered voters in 2007 to gauge their current feelings about their preference for Measure 37. When asked if they wanted

the state legislature to "keep their hands off" Measure 37, to "fix" Measure 37, or to "repeal" it, 23% wanted it repealed, 38% wanted it fixed, and 31% wanted it to remain in its current form (Moore, 2007). However, when looking solely at Multnomah County 27% of respondents wanted the Measure repealed while 23% wanted it to remain as is. Outside the Willamette Valley and Portland area, 38% of respondents wanted the Measure to remain while only 21% wanted it repealed and 33% wanted a fix of some sort (Moore, 2007). This geographic distribution is one that will be explored in the following section. More striking than this geographical distribution, however, is that when asked how they would vote today, only 37% indicated they would vote "yes", while 11% indicated "didn't know", and a majority, 52% indicated they would be "against" the Measure (Moore, 2007). The following section describes the historical development of land-use voting patterns in Oregon from 1970 through 2004.

B. Geography of Support for Land-Use Ballot Initiatives in Oregon From 1970 Through 2004

The political geography of Oregon is somewhat distinctive when compared to other western states in its political geography but still has a rural/urban political divide. Salka (2001) notes one of the reasons for selecting Oregon as one of the states in his analysis of environmental ballot initiatives is that it, as with other western states, has, "significant urban-rural distinctions within its borders. Each has significant metropolitan and concentrated urban areas, whereas the remainder of each state is primarily rural" (p. 38). As with most other western states the rural areas in Oregon have a strong history of resource dependence when compared to the urban areas of the state (Salka, 2001).

1. 1970 Measure 11

In the distribution of county-level support for 1970's Measure 11 there appears to be an inchoate beginning of an "U" shape in Figure 2 that comes to characterize future land-use initiative results. This "U" shape pattern is a tendency for the coastal, southern tier, and eastern counties to support limitations on the ability of the state to plan land-use policies in rural areas. This "U" shape roughly corresponds to the state's urban and rural division, with the urban areas of the Willamette Valley tending to oppose Measure 11 while the remainder of the state tending to support Measure 11. The distribution of voting results can also be roughly related to Elazar's typology of political cultures. The Willamette Valley is dominated by a "moralistic" political culture, typified by the belief that government should be used to promote the greater good. The areas outside of the Willamette Valley also reflect this culture but are tempered by an "individualistic" culture, which favors limiting government influence in private affairs. These cultures help explain why there is little support for Measure 11 in the Willamette Valley but more support for it in other areas of the state.

The results of this election were evenly distributed (see Table 2, next page) with the mean percentage of a county's population that voted "yes" on Measure 11 being 48.05% and the median being 48.74%. The range between the most and least supportive counties, Curry and Benton Counties, respectively, is the smallest seen in any of the six elections examined here, only 21 percentage points. One of the more interesting voting outcomes is that of Jackson County, as it is generally less supportive of land-use initiatives than its neighbors. In 1970, as in subsequent elections, there are lower levels of support for limitations on, repealing, or payment-for-regulation initiatives in Jackson County than for other, neighboring, counties.

Table 2

Mean, Median, and Range of Yes Votes for 1970's Ballot Measure 11

Mean % of County Yes Votes	48.05%
Median % of County Yes Votes	48.74%
Range of % of Yes Votes	36.29% - 57.77% (Benton) – (Curry)

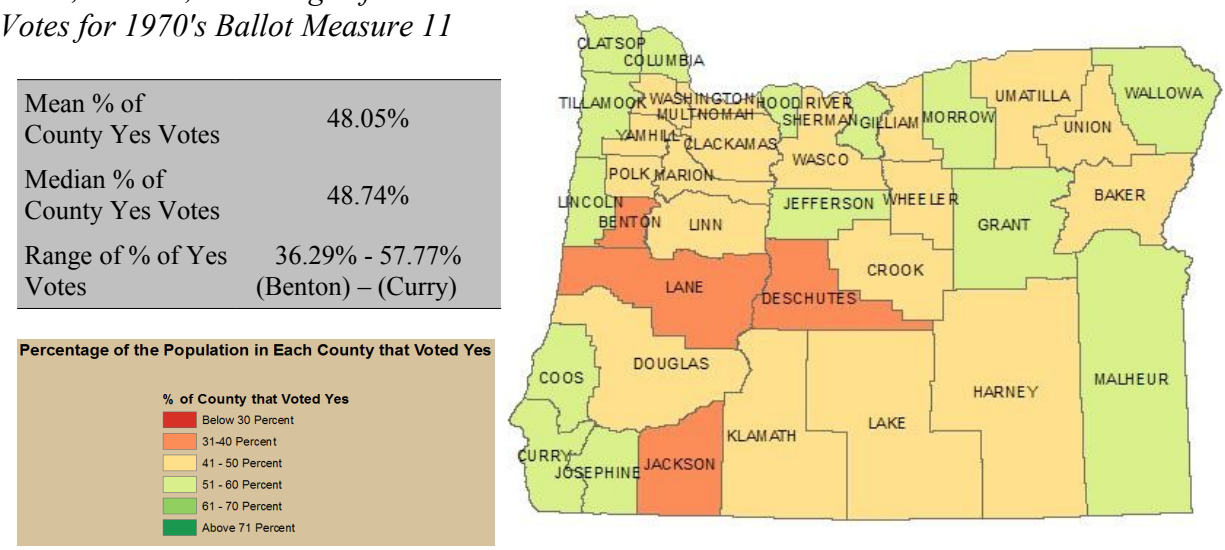


Figure 3: Geographic Distribution of Support for 1970's Ballot Measure 11

2. 1976 Measure 10

The first post-SB 100 state-wide land-use planning election occurred in 1976 when Measure 10 was placed on the ballot. Measure 10 was designed to repeal state-wide planning and allow counties to fashion land-use planning policies as they saw fit. The election results of Measure 10 also reflect the "U" shaped urban/rural distribution. Again, the more urban and densely populated Willamette Valley counties tended to oppose Measure 10 more than the sparsely populated rural areas of the state.

The strongest level of support for Measure 10 was in the counties of southwest Oregon, a pattern that will be repeated in later initiatives. Approximately 75% of the residents of Curry County voted "yes" on the Measure. The only county outside southwest Oregon that had such high levels of support for the Measure was Lake County in southern Oregon where 66.25%

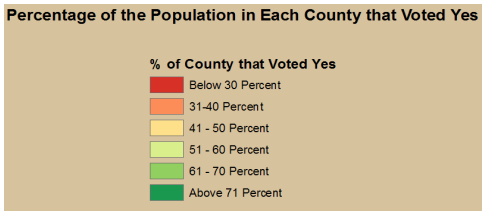
voted “yes”.

Counties with lower levels of support were different geographically than those with higher levels. In this vote, lower levels of support were concentrated in the larger population counties of the Willamette Valley. Only 25.80% of Benton County's residents voted “yes” on the Measure, while 33.5% of Multnomah County's residents voted “yes”.

Table 3

Mean, Median, and Range of Yes Votes for 1976's Ballot Measure 10

Mean % of County Yes Votes	49.72%
Median % of County Yes Votes	47.17%
Range of % of Yes Votes	25.80% - 75.13% (Benton) (Curry)



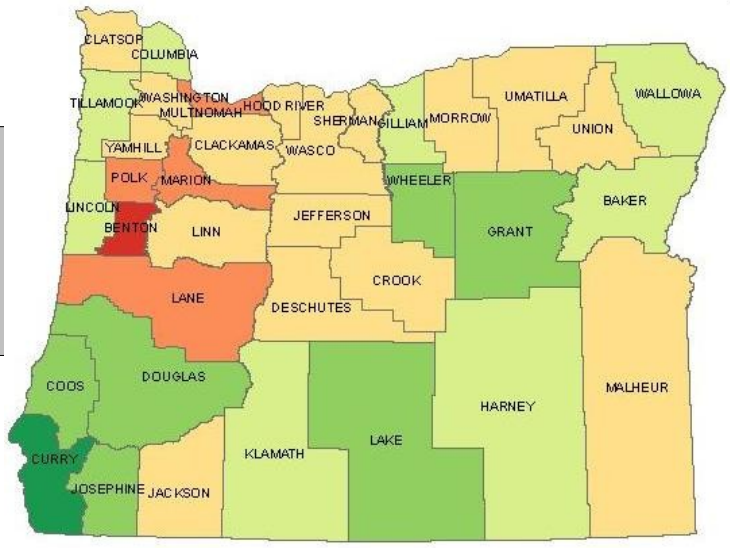


Figure 4. Geographic Distribution of Support for 1976's Ballot Measure 10

3. 1978 Measure 10

1978's Measure 10 was the second of three efforts in the late 1970s and early 1980s to attempt to overturn statewide land-use planning. As with the other two attempts it ultimately failed to achieve its goals. In fact, Measure 10 was the least successful of all attempts at overturning the system that SB 100 had created. 1978's Ballot Measure 10 is somewhat unusual in that the geographic distribution of voting results do not reflect the “U' pattern (in which support tends to be concentrated in western, southern, and eastern counties and opposition tends to be located in the northern Willamette Valley), that is visible for votes in other years. Instead,

there is a rough reverse "L" shape distribution to support and opposition with southern and eastern tier counties providing the highest levels of support for Measure 10 while northern coastal, northern tier, and Willamette Valley counties all had lower levels of support.

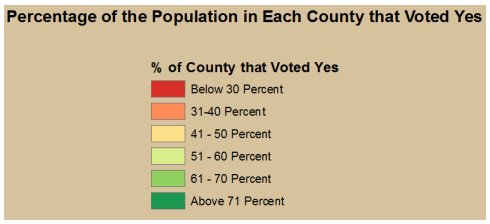
The results of this election are interesting in that the urban/rural breakdown of previous elections does not appear. Elazar's political culture types also do not relate to the distribution of voters for this election.

As Table 4 and Figure 5 show, the mean level of "yes" votes in each county was 42.41% and the median support was 40 percent. The range of percentages was from a low of 29.32% in Benton County to 65.31% in Coos County. The mean and median are smaller when compared to 1976. There is also a similar range between the highest and lowest levels of support between these two elections.

Table 4

Mean, Median, and Range of Yes *Votes for 1978's Ballot Measure 10*

Mean % of County Yes Votes	42.41%
Median % of County Yes Votes	40.04%
Range of % of Yes Votes	29.32% - 65.31% (Benton) (Coos)



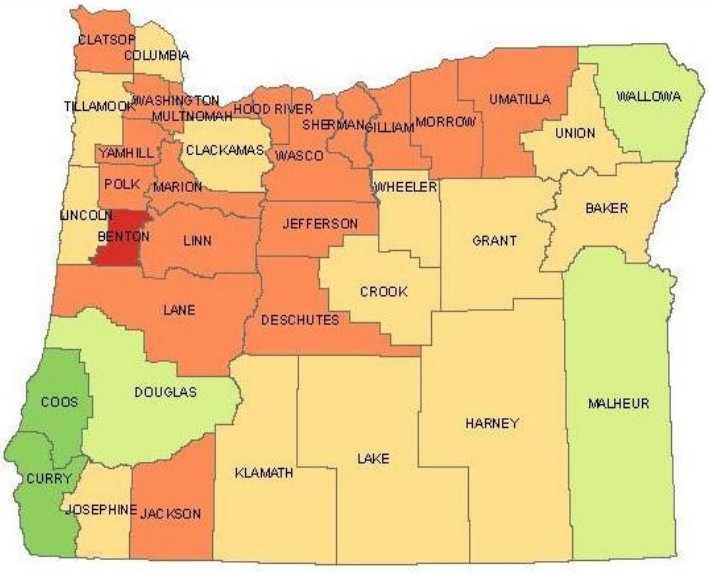


Figure 5. Geographic Distribution of Support for 1978's Ballot Measure 10

The geographic distribution of county level support and opposition for 1978's Measure 10 resembles patterns of support and opposition to the 1976 vote. Support for the Measure once again was concentrated in south coast and far eastern counties. Sixty-five percent of Coos County's residents voted "yes" on the Measure; and, in Curry County 63% of voters supported Measure 10.

Counties with lower levels of support again tended to be more geographically dispersed. Counties with lower than 37% of support for Measure 10 included: Benton, Multnomah, Hood River, Deschutes, Jackson, Gilliam, and Wasco. Benton County again had the lowest level of support at 29.32%.

4. 1982 Measure 6

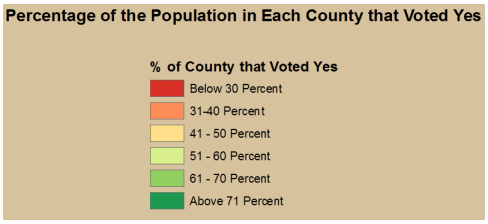
1982's Measure 6 was the final attempt to directly repeal 1973's Senate Bill 100. Like previous attempts in 1976 and 1978 this attempt failed, although by a narrower margin than in 1978. In Figure 5 , below, the "U" shape distribution of support for the Measure among Oregon's counties again is visible. There are relatively higher levels of support among coastal counties, southern counties, and eastern counties with lower levels of support being concentrated in the Willamette Valley.

Among all the votes examined, the results of the 1982 election perhaps best exemplify the urban/rural "U" shaped distribution of results. Opposition to Measure 6 is highly concentrated in the Willamette Valley as shown by Benton, Marion, Multnomah and Washington Counties. This distribution also closely fits Elazar's distribution of political cultures in the state.

Table 5

Mean, Median, and Range of Yes Votes for 1982's Ballot Measure 6

Mean % of County Yes Votes	54.30%
Median % of County Yes Votes	52.47%
Range of % of Yes Votes	32.57% (Multnomah) – 75.76% (Malheur)



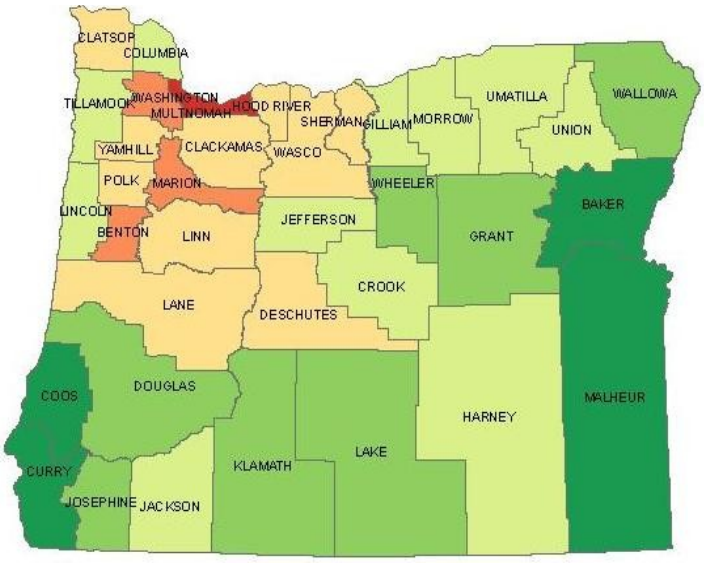


Figure 6. Geographic Distribution of Support for 1982's Ballot Measure 6

With 1982's Measure 6, the geographical distribution of support or opposition to comprehensive land-use planning becomes much more distinct, when compared with earlier ballot measure voting patterns. One consequence of this geographic distribution is that even with median and mean percentages of "yes" votes higher than 50% the Measure still failed. This is due to high levels of support in low population counties and low levels of support in high population counties. For Measure 6, the mean percentage of county-level "yes" votes was 54.30% and the median percentage of county-level "yes" votes was 52.47%. The range of "yes" votes was from 32.5% in Multnomah County to 75.76% in Malheur County.

For the first time, the highest level of support for overturning state-wide comprehensive land-use planning was away from the south coast. Malheur County in southeast Oregon had a level of support of 75.76%. Curry County had the next highest levels of support with 73.86% and then Coos County with 72.46%.

The counties with the lowest levels of support for the measure become also become much more distinct with Measure 6. The counties with 50% or fewer of their populations voting "yes" on the Measure were a nearly contiguous block from Deschutes and Lane County in the south to Multnomah County in the north. Counties with low levels of support for the ballot measures did not previously have this contiguous attribute. Multnomah again had the lowest percentage of its county population voting "yes" with only 32.5%, with Benton County next at 34.38%.

5. 2000 Measure 7

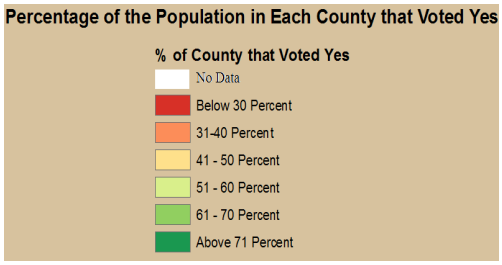
Measure 7 was a successful attempt to limit the state's ability to plan land-use. However, as described earlier, it was ultimately declared unconstitutional so it was not implemented. Measure 7 would have implemented a policy requiring the state to pay individuals affected by a land-use limitation to pay for any foregone benefit or to waive enforcement.

The results of 2000's Measure 7 ballot initiative are shown in figure 7 and summarized in table 6. We can see that the urban/rural split is present in this election's outcome as well. Lane, Benton, Multnomah, and Polk Counties in the Willamette Valley all opposed this measure more strongly than the rural reaches of the state again reflecting the "U" pattern as well as falling into Elazar's distribution of differing politcal cultures.

Table 6

Mean, Median, and Range of Yes Votes for 2000's Ballot Measure 7

Mean % of County Yes Votes	59.03%
Median % of County Yes Votes	56.10%
Range of % of Yes Votes	43.77% (Multnomah) – 69.31% (Malheur)



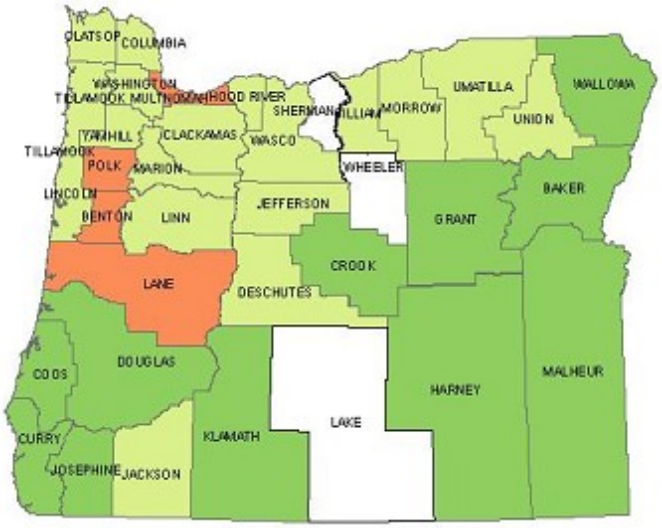


Figure 7: Geographic Distribution of Support for 2000's Ballot Measure 7

The average level of support for Measure 7 was 59% and the median was just over 56%. Multnomah County offered the least support with 43.77% of citizens voting for the Measure while almost 70% of citizens in Malheur County supported the Measure.

6. 2004 Measure 37

Ballot Measure 37, in 2004, marked the first successful initiative (in both number of votes needed for passage and legality) that limited state-wide comprehensive land-use planning. Table 6, located below, shows the geographic distribution of support/opposition to Ballot Measure 37. Note that the "U" shaped distribution begins to lose its coherence in the strong support for the Measure when compared to the distributions of the late 1970s and early 1980s, during which there had been a stronger geographic pattern associated with support. This election, does however, bear a distribution of results similar to 1978's reverse "L" shape in which

the southern tier and eastern counties tended to support Measure 37 more strongly than northern coast and Willamette Valley counties.

The distribution of support for 2004's Measure 37 shows the strong overall support for the Measure. The mean percentage of each county's population that voted "yes" on the Measure was 65.16% and the median was 65%. The range was from 48.71% in Benton County to 74.84% in Klamath County.

Table 7

Mean, Median, and Range of Yes Votes for 2004's Ballot Measure 37

Mean % of County Yes Votes	65.16%
Median % of County Yes Votes	65.00%
Range of % of County Yes Votes	48.71% (Benton) – 74.84% (Klamath)

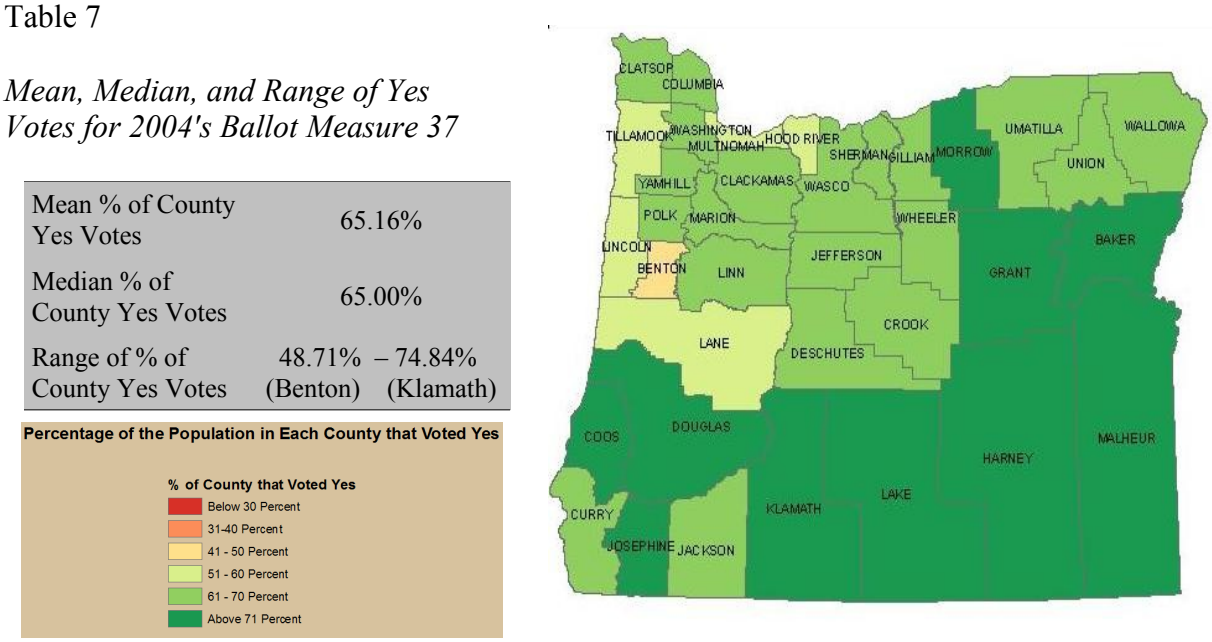


Figure 8. Geographic Distribution of Support for 2004's Ballot Measure 37

In 2004, Measure 37 maintained its traditional geographical support while adding areas that had previously opposed these types of measures. This change was significant; all counties except Benton supported Measure 37. Even Multnomah County, which offered the least support for the previous two ballot measures that would have disbanded state-wide comprehensive land-use planning, had 51.47% of its voters support Measure 37. There were also extremely high levels of support in the state that form a band across many of the southern-tier

counties. Interestingly, Curry County no longer offered the highest levels of support, which is a fairly drastic change from its previous voting patterns.

IV. Method

This paper contains eight ordinary least squares regressions. The output from six of these analyses represent the individual years in which ballot measures regarding land-use were on Oregon's election slate. The seventh and eighth models represent an aggregation of all data gathered on land-use ballot initiatives; one using a year dummy variable and the other using a policy type dummy variable. The yearly models are used to provide information to help provide information about the historical evolution of Oregon's changing land-use policy sphere. The aggregate models are used to evaluate the relationships between the theoretically relevant characteristics of counties and how their residents vote, and also as a means of prediction. Interestingly, these three uses of models align neatly with the traditional uses of econometrics: prediction, hypothesis testing, and evaluation of the degree and direction of relationships.

A. Variables

Variables were created in the following manner.

1. Land-Use Policy Preference

The dependent variable is the percentage of voters in each county that voted “yes” on a given ballot measure.

2. Population Growth

Population growth as a variable is created by taking a ten-year difference between the population of the reference year in which the election was taking place and the population of that county ten years previously. The reference value was then divided by the difference which gives us the percentage of growth in the county over the ten years prior to the election. Population values came from the *Oregon Blue Book* for the appropriate year.

3. Population Density

The population density of each county is calculated by dividing the population of the county by the square mileage of that county. This gives us the number of individuals per square mile within the county. Information for this variable was gathered from the appropriate *Oregon Blue Book*.

4. Education

This variable uses the number of individuals (24 years or older) in each county who have completed four or more years of college education and dividing it by the total number of individuals who are twenty-four years or older. Information for this variable was gathered via the 1970, 1980, 1990, and 2000 U.S. Census.

5. Party Identification

Party identification is the partisan breakdown for party identification for each county, available in the Secretary of State's summary for each election and dividing it by the total

number of individuals who voted in the election. This gives us the percentage of voters in each county who self-identify as Democrats. Information for this variable comes from the Oregon Elections Division.

6. Type of Policy

Policy type is a series of dummy variables that characterize the type of land-use policy being voted upon, with the reference being a payment for regulation policy type. For the 1970 election, in which the policy sought to limit the authority of the state government to regulate rural land-use, 0 is equivalent to not preventing and 1 is equivalent to a vote for prevention. Likewise, in 1976, 1978, and 1982 a vote of 0 is equivalent to not desiring repeal while a vote of 1 is equivalent to rescinding SB 100 and removing the authority of the state to regulate local land-use.

7. Real Per Capita Income (PCI)

Per capita income is the mean income of a county's population measured in dollars, available from the Bureau of Economic Analysis, in nominal terms. Nominal values were adjusted to 2004 dollars using conversion factors obtained at http://oregonstate.edu/cla/polisci /faculty-research /sahr/sahr.htm. Inflation is used in order to enable comparison between time periods.

8. Sector Employment

Sector employment represents the percentage of each county's total workforce that is

employed in construction, farming, and fishing or forestry. From this point on these variables will have the annotation of % Construction, % Farm, or % FFA. Attributes of this variable range from 0 to 1. Data for this variable are from the Bureau of Economic Analysis.

9. Year

A series of dummy variables was created to represent the year in which the initiative was on the ballot. To enable comparison of 2004's Measure 37 with all other years, Measure 37 is employed as the reference year. Each year, (1970, 1976, 1978, and 1982) is assigned an individual variable whose value is 1 for that year and 0 for all other years.

B. Data Pooling

To obtain the most robust model possible, the data from all six elections are pooled. Two different regressions are run using the pooled data. The first is done with a dummy variable for the year a particular initiative was on the ballot. The second regression is run using the policy type dummy variable. These regressions are run separately because the two dummy variables are perfectly correlated.

C. Testing For Non-Linear Per Capita Income

Non-linear relationships between income and the dependent variables are tested for through the inclusion of a squared term. The statistical significance of this term shows whether there is a linear or non-linear relationship between PCI and the dependent variable.

D. Perfect and Imperfect Multicollinearity

There is perfect multicollinearity between the dummy variable for the year of the intiative and the dummy variable for the type of policy. This necessitated performining two ordinary least squares regressions with the pooled data set first using the year dummy variable and the second time using the policy type dummy variable.

There also are varying degrees of imperfect multicollinearity between different sets of independent variables, with adjusted PCI and education being the two variables that give the greatest difficulty in this regard. With adjusted PCI included in the model, 55% of the variation in the dependent variable is explained. With education included in the model 77% of the variation is explained. Ameliorating this concern is that education, when run individually, is statistically significant while adjusted PCI is not. This imperfect collininearity is due to higher levels of education tending to result in higher levels of income. The relationship between education and income complicates the results of the regressions via this prior relationship. Reading the results for the effects of education and income on land-use ballot initiative voting preference needs to be done with care due to this.

E. Data

Data for this project came from a variety of sources which are listed in Table 8 on the next page.

Table 8

Data, Sources, and Authors

Data	Source	Author
Ballot Initiative Results	1970, 1976, 1978, 1982, 2000, 2004 Official Abstract of Votes	Oregon Elections Division
County Population	1960, 1966, 1968, 1970, 1972, 1976, 1978, 1982, 1994, 2000, 2004 Oregon Blue Book	Oregon Secretary of State
County Size	2004 Oregon Blue Book	Oregon Secretary of State
Education	1970, 1980, 1990, 2000 Census of the Population	U.S. Census Bureau
Party ID	1970, 1976, 1978, 1982, 2000, 2004 Official Abstract of Votes	Oregon Secretary of State
Real PCI	Local Area Personal Income http://www.bea.gov/regional/reis/	Bureau of Economic Analysis
Inflation Conversion Factors	Inflation Conversion Factors for Dollars 1665 to Estimated 2007	Rob Sahr
% Farm % FFA % Construction	State Annual Personal Income http://www.bea.gov/regional/spi/	Bureau of Economic Analysis

Note: The information regarding % Farm, % FFA, and % Construction is measured in the percent of the total workforce engaged in those occupations , not in terms of income. The data source title is misleading in this regard.

F. Models

The general form used for the ordinary least squares regression is:

$$Y = \alpha_1(X_1) + \alpha_2(X_2) + \alpha_3(X_3) + \ldots + \alpha_T(X_T)$$

The model used for the regression for the six individual years is:

$$(Percentage\ of\ Each\ County\hat{}'s\ Population\ That\ Voted\ Yes)_t = \beta_1 + \beta_2(Population\ Growth)_t + \beta_3(Density)_t + \beta_4(Education)_t + \beta_5(Party\ ID)_t + \beta_6(Adjusted\ Income)_t + \beta_7(Adjusted\ Income^2)_t + \beta_8(Percent\ Farm)_t + \beta_9(Percent\ FFA)_t + \beta_{10}(Percent\ Construction)_t + e_t$$

The model used for the ordinary least squares regression with policy dummy variables for the pooled data is shown here:

$$(Percentage\ of\ Each\ County\hat{}'s\ Population\ That\ Voted\ Yes)_t = \beta_1 + \beta_2(Population\ Growth)_t + \beta_3(Density)_t + \beta_4(Education)_t + \beta_5(Party\ ID)_t + \beta_6(Adjusted\ Income)_t + \beta_7(Adjusted\ Income^2)_t + \beta_8(Percent\ Farm)_t + \beta_9(Percent\ FFA)_t + \beta_{10}(Percent\ Construction)_t + \beta_{11}(Prevent)_t + \beta_{12}(Repeal)_t + e_t$$

Finally, the model for the consolidated ordinary least squares regression with year dummy variables is shown here:

$$(Percentage\ of\ Each\ County\hat{}'s\ Population\ That\ Voted\ Yes)_t = \beta_1 + \beta_2(Population\ Growth)_t + \beta_3(Density)_t + \beta_4(Education)_t + \beta_5(Party\ ID)_t + \beta_6(Adjusted\ Income)_t + \beta_7(Adjusted\ Income^2)_t + \beta_8(Percent\ Farm)_t + \beta_9(Percent\ FFA)_t + \beta_{10}(Percent\ Construction)_t + \beta_{11}(1970)_t + \beta_{12}(1976)_t + \beta_{13}(1978) + \beta_{14}(1982) + \beta_{15}(2000) + e_t$$

V. Results

This section contains discussion of the results of the ordinary least squares regressions. First is a discussion of the joint effects followed by a discussion of the individual effects. All discussion of p-values will relate to t-test p-values for individual attributes of the model and to f-test p-values for joint model effects. The level for statistical significance is set at an α-level of at least 0.05, although in some discussions this is stretched to an α-level to .1 to explore additional facets of independent variable effects on land-use voting behavior.

A. Results of Joint Effects of Each Model

While all eight joint model effects are statistically significant (see the last row of each following table to see the p-value of the f-tests) the models range widely in their ability to explain variation in the percentage of each county that voted "yes" on a given initiative. For

1970 the model explains 48.9% of the variation in the dependent variable with the adjusted R^2 of 0.312. The difference between the two values indicates the possibility that there are one or more independent variables that are unrelated to the dependent variable. This difference between the R^2 and adjusted R^2 is consistent for all individual-year regressions. Differences between the two measures are drastically reduced in the two pooled regressions. In 1976, the explanatory power of our model increases its ability to predict the dependent variable by about five percentage points from 1970, explaining a total of 53.90% of variation. Again, as in 1970, the adjusted R^2 is 16 percentage points lower. 46.80% of the variation is explained when applying the model to 1978's voting outcome. This is the poorest fit for any of the regressions. For 1982's Measure 10 data, the model explains a full 66.80% of the variation in how the counties voted. The difference between the R^2 and adjusted R^2 is also reduced, to a difference of 11 percentage points. In 2000 79% of the variation is explained. The model does an even more complete job of explaining the variance of how counties voted in 2004's Measure 37, with 80.60% of the variation explained for. The difference between between the R^2 and adjusted R^2 is the smallest of all individual year regressions, a difference of only seven percentage points.

The joint model effects of our two consolidated regressions explain 59.90% and 67.50% of the variation for the policy dummy regression and the year dummy regression, respectively. More importantly, however, is that the difference between the R^2 and adjusted R^2 is greatly reduced in both regression, to 2.7 percentage points for the policy dummy regression and 2.5 percentage points for the year dummy regression.

B. Results of Individual Effects of Each Model

1. Effects of Individual Model Attributes for 1970's Measure 11

Table 9

Results of Ordinary Least Squares (OLS) Regression for 1970's Ballot Measure 11

	Coefficient	S.E.	T-Statistic	P-Value
Constant	33.846	22.136	1.529	.138
Growth	.019	.062	.309	.759
Density	-.001	.005	-.257	.799
Education	-.559	.234	-2.383	.025
Party ID	.032	.180	.176	.862
Real PCI	.001	.002	.672	.508
Real PCI^2	-3.1E-008	.000	-.611	.546
% Farm	15.897	12.499	1.272	.215
% FFA	159.747	73.840	2.163	.040
% Construction	74.881	80.059	.935	.358
R^2	.489		F-Statistic	2.761
Adj. R^2	.312		P-Value	.021

Table 9 shows that the percentage of each county's population with at least four years of college (p-value of .025) and the percentage of each county's population that worked in forestry and fishing occupations (p-value of .040) were signifcant predictors of county voting outcomes in 1970. There is some consistency to this outcome across all years with some exceptions which will be noted in the applicable year's narrative. Since the relationship between education and support for Measure 10 is negative, it is predicted that for each percentage point increase in a county's population with at least four years of college education that support for Measure 10 declines by 0.59 percentage points, *ceteris paribus*. In contrast to this negative

relationship between education and voting outcome, there is a positive relationship between how many individuals in the county's workforce in forestry and fishing occupations and support for Measure 10. For each 1 percentage point increase in each county's total workforce that is employed in forestry or fishing occupations support for Measure 10 is expected to increase by 1.59 percentage points, if all other variables are held constant.

2. Effects of Individual Model Attributes for 1976's Measure 10

Table 10

Results of OLS Regression for 1976's Ballot Measure 10

	Coefficient	S.E.	T-Statistic	P-Value
Constant	101.869	73.166	1.392	.176
Growth	-.007	.109	-.065	.948
Density	-.008	.009	-.919	.367
Education	-.961	.358	-2.685	.012
Party ID	.449	.373	1.205	.239
Real PCI	-.005	.006	-.819	.420
Real PCI^2	9.33E-008	.000	.804	.429
% Farm	-6.960	9.770	-.712	.483
% FFA	176.157	109.175	1.614	.119
% Construction	-97.698	168.173	-.581	.566
R^2	.539		F-Statistic	3.378
Adj. R^2	.379		P-Value	.007

In contrast to 1970's Measure 10 in which both education and % FFA were significant, education is the sole statistically significant variable in explaining variance for 1976's Measure 11 (Table 10). For 1976, education has a p-value of 0.012. The direction of the

relationship is consistent with other years and what theory would support. As the percentage of each county's population that has had at least four years of college increases by 1 percentage point, it is predicted that, in the absence of any other change, support for Measure 11 declines by 0.961 percentage points.

3. Effects of Individual Model Attributes for 1978's Measure 10

Table 11

Results of OLS Regression for 1978's Ballot Measure 10

	Coefficient	S.E.	T-Statistic	P-Value
Constant	87.113	38.361	2.271	.032
Growth	.003	.084	.036	.972
Density	.000	.007	-.046	.963
Education	-.514	.333	-1.544	.135
Party ID	.283	.337	.840	.409
Real PCI	-.004	.003	-1.139	.265
Real PCI^2	5.64E-008	.000	1.036	.310
% Farm	-10.013	7.727	-1.296	.206
% FFA	181.386	71.636	-2.532	.018
% Construction	-108.151	159.326	-.679	.503
R^2	.468		F-Statistic	2.545
Adj. R^2	.284		P-Value	.030

The results of the regression for 1978's Measure 10 (Table 11) is one of the most interesting statistically, although the results are to be expected given the high levels of opposition to Measure 10. The most interesting aspect is the statistical insignificance of education, with a p-value of 0.135. The sole significant variable is the percentage of each county's workforce

employed in fishing and forestry occupations. This relationship between occupation and county-level voting outcomes is stronger than previously with an expected increase in support for Measure 10 of 1.8 percentage points for each percentage point increase of a county's workforce employed in fishing and forestry and related occupations. Care is required when making comparisons between the effects of workforce sectors between 1970 and 1978 because the dependent variables differ. 1970's Measure 11 was designed to prevent the state from regulating rural land uses while 1978's Measure 10 was desinged to repeal a comprehensive land-use planning system.

4. Effects of Individual Model Attributes for 1982's Measure 6

1982's Measure 6, as shown in Table 12 on the next page, displays a different combination of statistically significant variables. For this regression the combination of per captia income (PCI) and the squared control variable are significant, with p-values of 0.017 and 0.023 respectively. Theoretically, the relationship between PCI and voting is what should be expected, with an increase in income resulting in declining support for Measure 6. However, when considering the non-linear control variable the results are more surprising. Because the PCI^2 coefficient is positive, it tempers the negative effects of PCI on county voting outcomes.

Table 12

Results of OLS Regression for 1982's Ballot Measure 6

	Coefficient	S.E.	T-Statistic	P-Value
Constant	414.674	125.903	3.294	.003
Growth	-.099	.083	-1.194	.243
Density	-.012	.009	-1.396	.174
Education	-.580	.361	-1.608	.120
Party ID	.151	.393	.385	.703
Real PCI	-.032	.012	-2.562	.017
Real PCI^2	6.85E-.007	.000	2.407	.023
% Farm	-2.476	8.882	-.279	.783
% FFA	59.066	64.511	.916	.368
% Construction	-11.511	197.467	-.058	.954
R^2	.668		F-Statistic	5.809
Adj. R^2	.553		P-Value	.000

5. Effects of Individual Model Attributes for 2000's Measure 7

The result of the regression for 2000's Measure 7, shown in Table 13 on the next page, indicate that party identification and education are significant predictors of voting outcomes. For each percentage point increase in the population in each county that has at least a bachelors degree the predicted support for Measure 7 declines by about two percentage points. For each percentage point increase in Democrats in each county the predicted support for Measure 7 declines by 0.776 percentage points. Education and party identification are statistically significant with p-values of 0.006 and 0.013 respectively.

Table 13

Results of Ordinary Least Squares (OLS) Regression for 2000's Measure 7

	Coefficient	S.E.	T-Statistic	P-Value
Constant	144.935	45.130	3.212	.006
Growth	-.163	.078	-2.098	.053
Density	.004	.004	1.010	.328
Education	-1.999	.621	-3.218	.006
Party ID	-.776	.275	-2.820	.013
Real PCI	-.004	.003	-1.093	.292
Real PCI^2	7.39E-008	.000	1.298	.214
% Farm	.059	.253	.234	.818
% FFA	.631	.628	1.006	.330
% Construction	.755	.895	.844	.412
R^2	.792		F-Statistic	6.356
Adj. R^2	.668		P-Value	.001

5. Effects of Individual Model Attributes for 2004's Measure 37

Measure 37, voted on in 2004, marks the first land-use ballot initiative in Oregon in which party identification plays a statistically significant role, Table 14, again on the next page, shows the results of this regression. For each additional percentage point that Democrats represent of total voters it is predicted that a county's percentage of "yes" votes for Measure 37 will decrease by 0.739 percentage points, ceteris paribus. Education and support are, again, inversely related, with each percentage point increase in a county's population who have spent at least four years in college associated with an expected decline in the percentage of "yes" votes of 1.154 points.

Table 14

Results of OLS Regression for 2004's Ballot Measure 37

	Coefficient	S.E.	T-Statistic	P-Value
Constant	121.215	27.887	4.347	.000
Growth	-.046	.044	-1.055	.301
Density	.000	.003	-.140	.890
Education	-1.154	.200	-5.778	.000
Party ID	-.739	.155	-4.765	.000
Real PCI	-.001	.002	-.687	.498
Real PCI^2	3.27E-.008	.000	.982	.335
% Farm	-17.088	11.513	-1.484	.150
% FFA	-13.929	26.794	-.520	.608
% Construction	-13.208	35.812	-.369	.715
R^2	.806		F-Statistic	12.032
Adj. R^2	.739		P-Value	.000

C. Effects of Individual Model Attributes for the Pooled Data

The two regressions run on the consolidated data benefit from the fact that data sets are five times larger than the regressions for each individual year. As such, they tend to have larger numbers of statistically significant independent variables. An additional benefit that the pooling of data provides is the ability to include two distinct sets of dummy variables that capture part of the larger context in which each election takes place. Table 15 shows the results of the regression when including policy type dummy variables and Table 16 shows the results when including year dummy variables.

Education, income, and employment in a farming, fishing, or related occupation in determining levels of county support for land-use ballot initiatives are all statistically significant.

If statistical significance is expanded to an α of 0.1, then the income-square effect and political identification become significant predictors.

1. Consolidated Set With Policy Variables

Table 15

Results of OLS Regression for All Years With Policy Variables

	Coefficient	S.E.	T-Statistic	P-Value
Constant	112.302	10.415	10.783	.000
Growth	-.020	.035	-.578	.564
Density	-.002	.003	-.745	.457
Education	-.984	.140	-7.046	.000
Party ID	-.216	.125	-1.727	.086
Real PCI	-.002	.001	-2.537	.012
Real PCI^2	2.40E-008	.000	1.714	.088
% Farm	-6.390	4.235	-1.509	.133
% FFA	64.665	31.601	2.046	.042
% Construction	34.376	42.699	.805	.422
Prevent	-21.000	3.567	-5.888	.000
Repeal	-13.064	3.202	-4.080	.000
R^2	.599		F-Statistic	22.775
Adj. R^2	.572		P-Value	.000

Each policy dummy variable, one for a policy type that seeks to prevent state-wide comprehensive land-use planning and one for a policy type that seeks to repeal this type of planning once it is place, are predicted to be associated with lower voter support when compared to a payment-for-regulation policy formulation. That is, holding other variables constant, a county's support for a policy is expected to be a full 21 percentage points lower when regarding

votes to prevent state-wide comprehensive land-use planning than for votes to support or reject payment-for-regulation planning. In addition, a county's level of support for a land-use initiative is expected to be 13 percentage points lower when voters are asked to repeal state-wide comprehensive land-use planning than when they are asked if the state should adopt the payment-for-regulation policy scheme.

For each percentage point increase in the proportion of a county's population that has spent at least four years in college there is an expected decrease of 0.984 percentage points in support of a land-use initiative due to education effects. For each percentage point increase of the total workforce engaged in forestry or fishing related occupations there is an increase in support of such an initiative of 0.66 percentage points. In both cases, the support increase assumes that all other variables are held constant. Additionally, with each increase in per capita income of $1,000 there is an expected decrease in support of a land-use initiative of two percentage points. However, for each subsequent $1000 increase in income the associated decline in support for the ballot measure is tempered by the non-linear nature of the income affect. This is evident with the significance of the positive coefficient associated with the squared real per capita income variable.

When borderline statistically significant explanatory variables (those with an alpha-level of .1 or lower) are included, the income effect becomes more complex. The income-squared control variable is significant at an alpha-level of 0.1. Including this effect means that while income and support are inversely related the effect is tempered as income increases because of the negative coefficient associated with PCI^2. That is to say, the higher a county's mean per capita income the more likely it will have a higher percentage of its population voting

"yes" on a land-use ballot initiative. There is, however, a statistically borderline explanatory variable with an inverse relationship with support of land-use initiative ballots. Party identification has a p-value of 0.086 and it is predicted that for each additional percentage point of Democrats among voters in each county that the support for a given ballot initiative will decline by 0.216 percentage points.

2. Consolidated Set With Year Variables

Table 16

Results of OLS Regression for All Years With Year Variables

	Coefficient	S.E.	T-Statistic	P-Value
Constant	112.055	9.172	12.217	.000
Growth	-.062	.029	-2.096	.037
Density	-.004	.002	-1.519	.130
Education	-1.049	.117	-8.981	.000
Party ID	-.337	.104	-3.259	.001
Real PCI	-.001	.001	-2.512	.013
Real PCI^2	2.17E-008	.000	1.950	.052
% Farm	-7.527	3.705	-2.031	.043
% FFA	51.428	23.043	2.232	.027
% Construction	40.865	30.459	1.342	.181
1970	-17.367	3.006	-5.777	.000
1976	-7.927	2.988	-2.653	.009
1978	-15.235	2.840	-5.365	.000
1982	-5.477	2.712	-2.019	.045
2000	-13.378	1.805	-7.412	.000
R^2	.661		F-Statistic	30.144
Adj. R^2	.639		P-Value	.000

When all cases are included and year dummy variables are included, then population growth, education, party identification, per capita income, % farm, % ffa, and all year dummy variables are statistically significant. If statistical significance is expanded to to an α of 0.1, then the per capita income squared variable also becomes significant.

All year dummy variables were statistically significant. Compared to the Measure 37 election in 2004 all previous year's elections had less voter support. For 1970's election there is a predicted decline of just over 17 percentage points when compared to the results of the 2004 election. In 1976, this value is approximately eight percentage points. For 1978 it is predicted that, when compared to 2004, the percentage of "yes" votes would decline by just over 15 percentage points. The election of 1982 is closest to the election of 2004 in which the decline of support for the ballot measure is predicted to by 5.44 percentage points if all other variables are held constant. Finally, *ceteris paribus*, the 2000 election is predicted to garner 13 percentage points less than the 2004 election.

Ten year population growth, education, party identification, per capita income, percent of workers employed in farming, and percentage of the workforce employed in fishing and forestry related jobs are statistically significant predictors of support for land-use ballot initiatives.

For spatial variables the only statistically significant is ten year population growth. The results of the model predict that when a county's population increases by a percentage point over a ten year period that support for a land-use ballot initiative will decrease by 0.062 percentage points.

Among socioeconomic variables, statistically significant predictors include education

and real per capita income. For each percentage point increase in a county's population with four years of education, support for land-use ballot initiatives is predicted to decrease by 1.05 percentage points.

The lone political variable used in this study is also a significant predictor of support or opposition to land-use ballot initiatives. For each percentage point increase in the proportion of registered Democrats among a county's voting population support for these land-use ballot initiatives is predicted to decrease by 0.337 percentage points.

D. Summary of Results

Table 17 shows a summary of the results. Education is statistically significant in seven of the eight models. Education coefficients range from -0.961 of -0.559. For each percentage point increase in the number of individuals in any given county, age 24 and over who have completed at least four years of college, there is a corresponding decrease in the percentage of "yes" votes for that ballot measure of -0.559 in 1970, -0.961 in 1976, -1.999 in 2000, -1.154 in 2004, -0.984 for the joint model with policy type variables, and -0.943 for the joint model with year variables. Percent of the workforce engaged in forestry or fishing occupations is a significant predictor in four models. All % FFA coefficients were positive and ranged from 181.386 in 1978 to a low of 60.575 in the joint model with year dummy variables. Real PCI is significant in three of the models. For the two joint year models all dummy variables are statistically significant.

Table 17

Summary of Results for All Regressions

Year	***Sig. Variable***	***Coefficient***	***S.E.***	***T-Statistic***	***R^2***
1970	Education	-.559	.234	-2.383	.489
	% FFA	159.747	73.840	2.163	
1976	Education	-.961	.358	-2.685	.539
1978	% FFA	181.386	71.636	-2.532	.468
1982	Real PCI	-.032	.012	-2.562	.668
	Real PCI^2	6.85E-.007	.000	2.407	
2000	Education	-1.999	.621	-3.218	.792
	Party ID	-.776	.275	-2.820	
2004	Education	-1.154	.200	-5.778	.806
	Party ID	-.739	.155	-4.765	
Joint Policy	Education	-.984	.140	-7.046	.599
	Real PCI	-.002	.001	-2.537	
	% FFA	64.665	31.601	2.046	
	Prevent	-21.000	3.567	-5.888	
	Repeal	-13.064	3.202	-4.080	
Joint Year	Education	-1.049	.117	-8.981	.675
	Party ID	-.337	.104	-3.259	
	Growth	-.062	.029	-2.096	
	Real PCI	-.001	.001	-2.512	
	% FFA	51.428	23.043	2.232	
	1970	-17.367	3.006	-5.777	
	1976	-7.927	2.988	-2.653	
	1978	-15.235	2.840	-5.365	
	1982	-5.477	2.712	-2.019	
	2000	-13.378	1.805	-7.412	

VI. Discussion

The purpose of this analysis is to explore factors that affect land-use policy preferences in Oregon. This exploration was done via statistical models that includes spatial, socioeconomic, and political factors. The six ballot initiatives that were explored offer a useful way to perform this statistical analysis. Given the broad and far reaching consequences of differences in land-use management, it is imperative to understand which socioeconomic, political, and spatial factors play a role in determining what shapes county-level preferences for land-use policies.

The first conclusion is that county level voting results are influenced by different factors at different times. Two different aspects are inferred. First, the model's explanatory power ranges from 46% to 80% of variation in the dependent variable. Second, there is a lack of consistency from ballot initiative to ballot initiative in statistically significant predictor variables, even for the years of 1976, 1978, and 1982 in which the same type of initiative was on the ballot. In three regressions party identification was statistically significant. In three of the eight models adjusted PCI was statistically significant. It is possible that voting results are subject to year by year variations which do not appear in statistical analysis which account for variation in which independent variables are statistically significant. It is, however, important to note that when these variables were statistically significant they were consistent with hypotheses and with the literature.

There are two exceptions to the seeming inconsistency of the model, however. Education, and to a lesser extent, the percentage of the workforce employed in forestry and fishing occupations, are relatively stable predictors of county-level voting outcomes on land-use

ballot initiatives. In all but one of the models education played a statistically significant role in predicting county-level voting results. The coefficients for education range from -0.984 to -0.559. This indicates that for each percentage point increase in the population of a county, aged 25 or higher, that has spent at least four years in college, county level support for that particular ballot measure decreases between 0.984 and 0.559 percentage points, depending on the initiative. This finding is consistent both with the stated hypothesis and with other research. In four models forestry and fishing occupation played a significant role. The relationship between % FFA and county-level voting returns also is consistent with what the literature suggests and with the hypothesis. Counties with more members of their workforce employed in this sector are more likely to support a particular land-use ballot initiative than those counties with fewer residents in this occupational sector.

Third, for whatever reason spatial variables were rarely significant, being of importance in only a single regression. The use of counties as the unit of analysis may undermine the usefulness of using spatial variables. The manner in which population density and growth variables may be poorly operationalized are discussed in the section detailing the limitations of the study.

A. Policy Implications

Among variables examined in this paper only education and job sector employment are the only mutable variables. So they provide two of the most interesting policy implications of this study. The results of the statistical analyses show that changes in the level of education and industry sector employment are likely to alter support and opposition to land-use planning

policies. However, education and industry sector employment change slowly, rather than quickly.

There are a wide variety of policies that affect the percentage of voters who have a bachelors degree in any particular county. These policies are not strictly limited directly to education policies such as financial assistance or the price of tuition and fees. Policies, or lack of policies, affecting differential enrollment in universities for students from rural or urban areas also affect the percentage of each county's population with a bachelors degree. Similarly, policies affecting rural brain-drain to urban areas also affects county education levels.

Likewise, policies affecting job sector employment in a county are likely to affect aggregate preference for land-use policies in that county. One limit to drawing this conclusion from this statistical analysis is that industry sector employment is likely to covary with variation in land-use policy regimes. For instance, a county that has stringent land-use policies that help preserve farmland is also likely to have a higher percentage of its population in the farming employment sector. Even with this limit, however, it is likely that policies that favor or disfavor one of the industry sectors examined in this study will change policy preferences for land-use.

B. Limitations

This analysis suffers from a variety of methodological shortcomings. First, using counties as the unit of analysis limits what can be explained. Second, the use of the forestry and fishing sector variable is problematic. Finally, the inability to obtain county level results for 2000's Measure 7 limited what would have provided an excellent comparison with 2004's Measure 37.

The problem that using counties as the unit of analysis is that all non-dummy, dependent variables are unlikely to be distributed evenly within the counties. Lane County probably is the best example of this problem. Density, growth, party identification, education, employment type, and income are all unlikely to be the same in urban Eugene and in coastal Florence. The statistical problem is that within-county diversity is "evened out" and so statistical tests result in findings that are falsely insignificant. For instance, the use of census block data would provide a level of analysis that would capture the differences in employment, education, and income among Florence, Eugene, and Oakridge.

VII. Conclusion

This study examines possible socioeconomic, political, and spatial influences on county-level support for land-use ballot measures in Oregon. Education and industry sector employment play a consistent role in affecting support for and opposition to land-use ballot initiatives. In recent years, party identification has also come to have an affect in county-level support and opposition. Higher levels of generally result in less support by counties for land-use ballot initiatives that weaken statewide comprehensive land-use planning. Likewise, counties with voting populations having a higher percentage of Democrats are more likely than others to oppose weakening comprehensive planning via the initiative process. Finally, counties with larger proportions of citizens working in fishing and farming occupations are generally more supportive than of using the ballot initiative to limit state-wide planning. What these effects mean is that any change in economic policy or education policy might alter the long-term effects that influence ballot initiative voting outcomes.

References:

Abbot, C. Howe, D. & Adler, H. (1994). Planning the Oregon way: A twenty-year evaluation. Corvallis, OR: Oregon State University Press.

Alberti, M. (1999). Urban patterns and environmental performance: What do we know?. *Journal of Planning Education and Research, 19,* 151-163.

Althaus, S. L. (1998). Information effects in collective preferences. *The American Political Science Review, 92(3),* 545-558.

Anthony, J. (2006). State growth management and housing prices. *Social Science Quarterly, 87(1),* 122-141.

Arnold, C., & Gibbons, J. C. (1996). Impervious surface coverage: The emergenc of a key environmental indicator. *Journal of the American Planning Association, 62,* 243-259.

Bengston, D. N., Fletcher, J. O., & Nelson, K. C. (2004). Public policies for managing urban growth and protecting open space: policy instruments and lessons learned in the United States. *Landscape and Urban Planning, 69,* 271-286.

Blair, R. (2004). The effects of urban sprawl on birds at multiple levels of biological organization. *Ecology and Society, 9(5).*

Bowler, S. & Donovan, T. (2000). *Demanding choices: Opinion, voting, and direct democracy*. Ann Arbor, MI: University of Michigan Press.

Bromley, D. W. (2000). Private property and the public interest: Land in the American ideal. In W. G. Robbins & J. C. Foster (Eds.), Land in the American west: Private claims and the common good (pp. 23-36). University of Washington Press, Seattle, WA.

Burchell, R. W. & Mukherji, S. (2003). Conventional development versus managed growth: The costs of sprawl. *American Journal of Public Health, 93(9),* 1534-1540.

Bureau of the Census. (1973). *1970 census of the population: Volume 1 characteristics of the population: Detailed population characteristics: Part 37 Oregon.*

Bureau of the Census. (1983). *1980 census of the population: Volume 1 characteristics of the population: Detailed population characteristics: Part 37 Oregon.*

Bureau of the Census. (n.d.). *1990 summary tape file 3 (STF 3) sample data.* Retrieved June 15, 2006 from http://factfinder.census.gov/servlet/DatasetMainPageServlet ? _program=DEC&_tabId=DEC2&_submenuId=datasets_1&_lang=en&_ts= 199236145109.

Bureau of the Census. (n.d.). *Census 2000 summary file 2 (SF 2) 100-percent data.* Retrieved June 15, 2006 from http://factfinder.census.gov/servlet/DatasetMainPageServlet ? _program=DEC&_tabId=DEC2&_submenuId=datasets_1&_lang=en&_ts= 199236145109.

Carruthers, J. I., & Ulfarsson, G. F. (2003) Urban sprawl and the cost of public services. *Planning and Design, 30,* 503-522.

Clucas, R. A., & Henkels, M. (2005). A state divided. In Clucas, Henkels, & Steel (Eds.), Oregon Politics and Government (pp. 16). University of Nebraska Press, Lincoln, NE.

Condit, J. G. (2000). *Ballot Measure 7: Status and prognosis*. Retrieved May 23, 2007, from http://www.orcities.org/Portals/17/A-Z/millernash.pdf.

Eccheverria, J. D. (2001). *Reflections on Measure 7*. McCall Speakers Series, Salem, OR.

Elazar, D. J. (1975). The American cultural matrix. In Elazar, D. J. (Ed.), The ecology of American political culture (pp. 13-30). Thomas Y. Crowell Company, New York, NY.

Emerson, K. & Wise, C. R. (1997). Statutory approaches to regulatory takings: State property rights legislation, issues, and implications for public administration. *Public Administration Review, 57(5),* 411-422.

Flick, W. A., Barnes, A., & Tufts, R. A. (1995). Public purpose and private property: The evolution of regulatory taking. *Journal of Forestry, 93(6),* 21-24.

Frumkin, H. (2002). Urban sprawl and public health. *Public Health Reports, 117,* 201-217.

Gerber, E. R., & Phillips, J. H. (2003). Development ballot measures, interest group endorsements, and the political geography of growth preferences. *American Journal of Political Science, 47(4),* 625-639.

Gilens, M. (2001). Political ignorance and collective policy preferences. *American Political Science Review, 95(2),* 379-396.

Grossman, G. M. & Krueger, A. B. (1991). Environmental impacts of a North-American free trade agreement. NBER Working Paper 3914.

Green, R. P., & Harlin, J. M. (1995). Threat to high market value agricultural lands from urban encroachment: A national and regional perspective. *Social Science Journal, 32(2),* 75-81.

Green, R. P., & Stager, J. (2001). Rangeland to cropland conversions as replacement land for prime farmland lost to urban development. *Social Science Journal, 38,* 543-555.

Hahn, H. & Kamieniecki, S. (1987). *Referendum voting: Social status and policy preferences*.

New York: Greenwood Press.

Hasse, J. E., & Lathrop, R. G. (2003). Land resource impact indicators of urban sprawl. *Applied Geography, 23,* 159-175.

Hill, R. C., Griffiths, W. E., & Judge, G. G. (1997). Undergraduate econometrics. 2nd Ed. New York: John Wiley & Sons, Inc.

Hogan, D. & Hammond, B. N.Y. cash colors Oregon Ballot. *The Portland Oregonian,* p. A01. *Institute of Portland Metropolitan Studies*. (2007). Retrieved May 23, 2007, from http://www.pdx.edu/ims/m37database.html.

Irwin, E. B., & Bockstael, N. E. (2004). Land use externalities, open space preservation, and urban sprawl. *Regional Science and Urban Economics, 34,* 705-725.

Johnston, R. J., Swallow, S. K., & Bauer, D. M. (2002). Spatial factors and stted preference values for public goods: Considerations for rural land use. *Land Economics, 78(4),* 481-500.

Kahn, M. E. (2000). The environmental impact of suburbanization. *Journal of Policy Analysis and Management, 19(4),* 569-586.

Kahn, M.E., & Matsusaka, J. G. (1997). Demand for environmental goods: Evidence from voting patterns on California initiatives. *Journal of Law and Economics, 40,* 137-174.

Kline, J. D. (2006). Public demand for preserving open space. *Society and Natural Resources, 19,* 645-659.

Kline, J. & Wichelns, D. (1994). Using referendum data to characterize public support for purchasing development rights to farmland. *Land Economics, 70(2),* 223-233.

Knapp, B. (1985). The price effects of of regional land use controls in Oregon: A theoretical and empirical review. *Review of Regional Studies, 18,* 37-45.

Knutson, M. G., Sauer, J. R., Olsen, D. A., Mossman, M. J., Hemesath, L. M., & Lannoo, M. J. (1999). Effects of landscape composition and wetland fragmentation on frog and toad abundance and species richness in Iowa and Wisconsin, U.S.A. *Conservation Biology, 13(6),* 1437-1446.

Landis, J. (1992). Land regulation and the price of new housing: Lessons from three Californian cities. *Journal of the American Planning Association, 52,* 9-21.

Leonard, H. J. (1983). Managing Oregon's growth: The politics of development planning. Washington D.C.: The Conservation Foundation.

Livanis, G., Moss, C. B., Brenman, V. E., & Nehring, R. F. (2006). Urban sprawl and farmland prices. *American Journal of Agricultural Economics, 88(4),* 915-929.

Magnani, E. (2000). The environmental Kuznets Curve, environmental protection policy and income distribution. *Ecological Economics, 32,* 431-443.

Mapes, J., Pulaski, A., & Hill, G. K. (2003, Nov 2) The nine states of Oregon. *The Oregonian.* Retrieved 15 Dec. 2007 from http://www.oregonlive.com/special/ninestates/.

McCarthy, J. (2002). First world political ecology: Lessons from the Wise Use movement". *Environment and Planning, 34,* 1281-1302.

Medley, K. E., McDonnell, M. J., & Pickett, S. T. (1995). Forest-landscape structure along an urban-to-rural gradient. *Professional Geographer, 47(2),* 159-168.

Moore Information. (2007). Survey commissioned by 1,000 Friends of Oregon. Retrieved May

23, 2006 from http://friends.org/issues/M37/documents/moore_survey_0207.pdf.

Nelson, A. C. (1999). Comparing states with and without growth management: Analysis based on indicators with policy implications. *Land Use Policy, 16,* 121-127

Oregon Elections Division. (1970). Official Abstract of Votes: General Election 1970.

Oregon Elections Division. (1976). Official Abstract of Votes: General Election 1976.

Oregon Elections Division. (1979). Official Abstract of Votes: General Election November 7, 1978.

Oregon Elections Division. (1982). Official Abstract of Votes: General Election November 2, 1982.

Oregon Elections Division. (2000). Official Abstract of Votes: General Election November 7, 2000.

Oregon Elections Division. (n.d.). November 2, 2004 General election abstract of votes: State measure no. 37. Retrieved November 9, 2006 from http://www.sos.state.or.us /elections /nov22004/abstract/m37.pdf

Oregon Secretary of State. (1960). Oregon Blue Book 1959-1960.

Oregon Secretary of State. (1966). Oregon Blue Book 1965-1966.

Oregon Secretary of State. (1968). Oregon Blue Book 1967-1968.

Oregon Secretary of State. (1970). Oregon Blue Book 1969-1970.

Oregon Secretary of State. (1972). Oregon Blue Book 1971-1972.

Oregon Secretary of State. (1976). Oregon Blue Book 1975-1976.

Oregon Secretary of State. (1978). Oregon Blue Book 1977-1978.

Oregon Secretary of State. (1982). Oregon Blue Book 1981-1982.

Oregon Secretary of State. (1984). Oregon Blue Book 1983-1984.

Oregon Secretary of State. (2000). *Measure 7.* Retrieved May 24, 2007, from http://www.sos.state.or.us/elections/nov72000/guide/mea/m7/m7.htm.

Oregon Secretary of State. (2004). Oregon Blue Book 2003-2004.

Pollakowski, H. & Wachter, S. (1990). The effects of contstraints on housing prices. Land Economics, 66, 15-24.

Ramos, T. (1995). Wise use in the West: The case of the Northwest timber industry. In J. D. Escheverria & R. B. Eby (Eds.), Let the people judge (pp. 82-118). Island Press, Washington D.C.

Robbins, W. G. (2004). Oregon: This storied land. Portland, OR: Oregon Historical Society Press.

Rohse, M. (1987). Land-use planning in Oregon: A no-nonsense handbook in plain English. Corvallis, OR: Oregon State University Press.

Romero, F.S. & Liserio, A. (2002). Saving open spaces: Determinants of 1998 and 1999 "antisprawl" ballot measures. *Social Science Quarterly, 83(1),* 341-352.

Rose, L. (1989). Urban land supply: Natural and contrived restrictions. *Journal of Urban* Economics, 25, 325-345.

Sahr, R. (n.d.). *Inflation conversion factors for dollars 1665 to estimated 2017.* Retrieved May 10, 2007 from http://oregonstate.edu/cla/polisci/faculty/sahr/sahr.htm.

Salka, W. M. (2001). Urban-rural conflict over environmental policy in the Western United States. *The American Review of Public Administration, 31(1),* 33-48.

Solecki, W. D., Mason, R. J., & Martin, S. (2004). The geography of support for open-space

initiatives: A case study of New Jersey's 1998 ballot measure. *Social Science Quarterly, 85(3),* 624-639.

Stern, D. I. & Common, M. S. (1996). Economic growth and environmental degradation: The environmental Kuznets Curve and sustainable development. *World Development, 24(7),* 1151-1160.

Sturm, R. (2002). The effects of obesity, smoking, and drinking on medical problems and costs. *Health Affairs, 21(2),* 245-253.

Thompson, F. & Green, M. T. (2004). Vox Populi? Oregon tax expenditure limitation initiatives. *Public Budgeting and Finance, 24(4),* 73-87.

White, R. (2000). Contested Terrain: The business of land in the American west. In W. G. Robbins & J. C. Foster (Eds.), Land in the American west: Private claims and the common good (pp. 190-206).. University of Washington Press, Seattle, WA.

Wu, J. (2001). Environmental amenitites and the spatial patterns of urban sprawl. *American Journal of Agricultural Economics, 83(3),* 691-697.

Van Liere, K. D. & Dunlap, R. E. (1980). The social bases of environmental concern: A review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly, 44(2),* 181- 197.

Vorkinn, M. & Riese, H. (2001). Environmental concern in a local context: The significance of place attachment. *Environment and Behavior*, *33(2)*, 249- 263.

Yandle, B. (2000). Property rights, freedom, and evolving social order. In W. G. Robbins & J. C. Foster (Eds.), Land in the American west: Private claims and the common good (pp. 37-52). University of Washington Press, Seattle, WA.

Zaller, J. R. (1992). The nature and origins of mass opinion. Cambridge: University of Cambridge Press.

Appendix A: County Characteristics for 1970, 1976, 1978, 1982, and 2004

Table A1

Mean, Median, and Range of County Characteristics in 1970

	Mean	Median	Minimum	Maximum
Growth	9.99%	11.58%	-34.44%	33.82%
Density	60.55	14.00	0.73	1,195.05
Education	9.80%	8.65%	5.9%	29.63%
Party ID	53.74	54.53	42.69	66.51
PCI	$17,936.28	$17,546.00	$15,565.85	$29,073.17
% Farm	17.31%	13.37%	0.48%	97.82%
% FFA	1.44%	1.29%	0.00%	6.95%
% Construction	3.95%	3.75%	0.00%	11.59%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A2

Mean, Median, and Range of County Characteristics in 1976

	Mean	Median	Minimum	Maximum
Growth	12.90%	12.08%	-42.38%	68.74%
Density	64.73	15.05	0.71	1,171.83
Education	14.53%	13.15%	6.90%	36.60%
Party ID	55.25%	56.00%	47.00%	68.00%
PCI	$22,178.61	$21,391.50	$18,199.00	$32,850.00
% Farm	15.02%	10.28%	0.52%	97.88%
% FFA	1.73%	1.35%	0.00%	7.25%
% Construction	4.16%	3.99%	1.55%	7.55%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A3

Mean, Median, and Range of County Characteristics in 1978

	Mean	Median	Minimum	Maximum
Growth	14.18%	14.92%	-30.48%	56.80%
Density	66.44	15.78	.73	1,189.25
Education	14.53%	13.15%	6.90%	36.60%
Party ID	53.94%	54.00%	44.00%	67.00%
PCI	$22,995.47	$22,206.50	$18,414.00	$39,202.00
% Farm	15.44%	9.99%	0.58%	97.61%
% FFA	1.96%	1.59%	0.00%	9.93%
% Construction	3.75%	3.65%	1.09%	6.23%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A4

Mean, Median, and Range of County Characteristics in 1982

	Mean	Median	Minimum	Maximum
Growth	26.80%	24.41%	-18.88%	106.29%
Density	72.48	18.67	0.81	1,202.15
Education	14.53%	13.15%	6.90%	36.60%
Party ID	49.13%	49.00%	41.00%	63.00%
PCI	$19,927.67	$19,247.50	$17,311.00	$25,857.00
% Farm	15.56%	10.51%	0.46%	97.76%
% FFA	2.24%	1.62%	0.00%	12.44%
% Construction	3.75%	3.65%	1.09%	6.23%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A5

Mean, Median, and Range of County Characteristics in 2000

	Mean	Median	Minimum	Maximum
Growth	17.05%	13.12%	0.11%	53.91%
Density	94.71	21.83	0.74	1420.40
Education	8.42%	8.12%	4.61%	15.31%
Party ID	37.29%	36.46%	28.86%	48.62%
PCI	$23,552.56	$22,769.00	$18,851.00	$36,554.00
% Farm	8.94%	7.11%	0.24%	35.05%
% FFA	2.90%	2.84%	0.00%	7.96%
% Construction	4.83%	5.41%	0.00%	9.72%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A6

Mean, Median, and Range of County Characteristics in 2004

	Mean	Median	Minimum	Maximum
Growth	16.16%	12.13%	-3.13%	63.98%
Density	99.20	22.27	0.75	1,475.16
Education	12.69%	10.83%	7.38%	31.29%
Party ID	34.79%	34.04%	26.68%	49.39%
PCI	$27,153.00	$26,688.00	$20,228.00	$38,187.00
% Farm	8.85%	6.63%	0.26%	33.33%
% FFA	1.72%	0.00%	0.00%	9.04%
% Construction	4.98%	5.17%	0.00%	10.72%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.

Table A7

Mean, Median, and Range of County Characteristics For All Years

	Mean	Median	Minimum	Maximum
Growth	16.01%	16.12%	-42.38%	106.29%
Density	72.68	16.24	0.71	1,475.16
Education	13.21%	12.20%	5.90%	36.60%
Party ID	49.41%	51.00%	26.68%	68.00%
PCI	$22,038.21	$21,325.50	$15,565.85	$39,202.00
% Farm	14.44%	9.46%	0.26%	97.88%
% FFA	1.82%	1.39%	0.00%	12.44%
% Construction	4.12%	3.90%	0.00%	11.59%

Note: Growth is meeasured over a ten-year period. Density is measured in individuals per square mile. Education is measured as the percentage of each county's population that has spent at least four years in college. Party identification is measured as the percentage of voters in each year's election that were registered as Democrats.

Note: Per capita income has been inflated to 2004 dollars.