

The Structure of Environmental Policy Among the American States

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Abstract

This paper examines environmental policy at the state level through the examination of statutes, executive orders and administrative decisions during the time period 1994-2009. The research conducted seeks to determine whether climate change policy adoption fits into an overall environmental policy dimension. This analysis provides information to address the question of whether a state that passes stringent policy in regards to climate change will also pass other strong environmental policies. There is reason to suspect that states will treat brownfield policy differently than climate change policy given the latter is global in nature. It is also conceivable that if a state is generally liberal or favorable to strong environmental protection policies they may pass stringent policy in all sub-areas related to the environment. This paper conducts a scaling analysis on a sample of state environmental policy. This study provides insight into how states address important public problems and determines whether this subset of environmental policy has an underlying structure. The results speak to state innovation in the area of environmental policy and the resulting scale can be utilized as a dependent variable in future research. Findings indicate that climate change policy innovation is often accompanied by other environmental policy innovation within states.

Despite the reality that environmental policy among the American states incorporates a variety of different sub-policies and tactics the average observer understands the term as a catchall that can be considered as a whole, rather than the sum of its parts. Climate change policy in particular has become a hot bed of activity among the states and it is unclear whether these policies stand out among other environmental policies. Do states that become extremely innovative when it comes to issues of climate change also consistently innovate in regards to sustainable development, or other environmental issues? While it is very possible that various sub-areas are strongly linked there is little empirical evidence to date. Though research has been conducted on a variety of environmental sub-policies, questions remain as to whether environmental policy can be considered unidimensional and whether climate change policy fits with other environmental

problems. Whether this policy domain maintains an underlying structure has important implications for how states address public problems. There is reason to suspect that states may treat the large range of environmental policies differently than policy specific to climate change given the latter is global in nature. It is also conceivable that if a state is generally liberal or favorable to strong environmental protection policies they may pass stringent policy in all environmental sub-areas. The states may have a high degree of “innovativeness,” that leads them to be particularly active when it comes to environmental policy. If there is a consistent link between these various policies then it is likely that the field will be unidimensional and fit into one scale. If this were an accurate portrayal of the policy domain a state that passes stringent standards on the use of renewable energy sources would also be inclined to pass policy that strongly encourages sustainable development.

One might question why it matters if a state passes a set of potentially related environmental policy versus one or few. Schneider and Ingram (1997) argue that a less coherent policy area leads to disjointed policy. When it comes to making changes in environmental quality it is important to tackle a variety of policy changes in order to produce results. For instance, scientists argue that in order to curb climate change a number of policies should be passed including encouragement to use renewable energy sources, a clearly delineated plan of action (such as a climate action plan), and efforts to reduce auto emissions, among others. Passing only one policy that relates to climate change may not be enough to solve the problem. This is

especially true if only states are active in addressing climate change, as opposed to the federal government.

Climate Change Connection to other Environmental Problems

Climate change is a global problem that requires a significant amount of action from numerous countries to properly address the issue. This international characteristic of the problem could make it unique when considered alongside more domestic issues in the United States. On the other hand, if global issues like climate change can be framed so that it is clear the problem has local consequences there is a glue that links a variety of policy actions. Despite the fact that climate change extends far beyond the borders of the United States, politicians and scientists have linked these policies to other environmental problems within states. By framing climate policy as something that can also provide improvements in air quality and public health, individuals and interest groups have connected a broad set of environmental issues. Interest groups, politicians, the media, policy entrepreneurs and scientists all play an important role in framing environmental policy (Kingdon, 1993) This framing can further link various sub-areas of environmental policy. With regard to climate change it is common for policies to be framed as both beneficial to the global problem as well as beneficial to the state (or country).

Significant effort is made by political figures to demonstrate to the public that passage of climate change policy will have direct consequences for their constituency. Governor Schwarzenegger has often noted the direct effect of climate change for California including a rise in sea level, forest fires, air pollution and damage to the economy (Chrisman, 2006). It is also common to link climate policy

with air pollution and energy issues. The Commission on Sustainable Development has argued that air pollution, climate change, and energy problems are “cross-cutting issues” that can be addressed as one (Sustainable Development, 2007). If policy is tackled in each of these areas there are likely to be co-benefits. The linking of these issues increases the likelihood that the policy domain coheres and that states will pass a set of related environmental policies rather than just one.

Research on climate change policy in the states to date is somewhat limited, though, some has been conducted by Barry Rabe (2004) and Daniel Matisoff (2008). The authors provide ample reason for the necessity of studying this type of policy at the state level. The absence of meaningful climate change legislation at the federal level is stark while activity at the state level is very alive. The research conducted by both authors on climate change typically includes legislation that is very specific to climate change in addition to more general energy legislation. While combining these areas of environmental policy is theoretically justified it has not been empirically tested. For example, it is still unclear whether climate action plans are strongly linked to net metering or appliance standard policies.

The Study of State Environmental Policy

There are many questions of interest regarding the linking of environmental sub-areas. Are all environmental policies created equal when it comes to state policy innovation? Will a state that is likely to pass stringent climate change policies also be likely to pass strong brownfield programs?

To consider these environmental policy structure and policy passage questions this paper reports research conducted at the state level on a set of

environmental policies. There are a number of reasons why it is important to study environmental policy at the state level. Scholars and journalists have recently noted the relatively high level of environmental policy activity within American states (e.g. Rabe 2004, Ringquist 1994). In fact, the Bush administration often reported the efforts of states in regards to global warming as evidence for the strong effort the United States was engaging in to reduce greenhouse gases. Despite surveys conducted in the United States that indicate the public largely views environmental problems as concerns that should be dealt with by the federal government, states are taking the lead on many key environmental issues and have been for over a decade. Scholars have often noted the idea that states can act as “laboratories of democracy.” States have the potential to produce innovative policy that is later used on a grander scale at the federal level. A federal system allows policy entrepreneurs and interest groups to select a level of government that is most conducive to their goals (Baumgartner and Jones 1993).

States have gradually increased their policy innovation capacity during the past decade through growing institutional professionalism (Morehouse and Jewell 2004). Devolution from the federal government to states has meant that states are becoming increasingly important when it comes to environmental policy generally (Potoski and Woods 2002). Given this devolution of public policy to state and local governments it is important to fully understand how the broader area of environmental policy is structured at the state level. While devolution contributes to policy activity in the states, climate change policy is somewhat unique in that high innovation appears to be the result of a complete lack of attention to the policy

problem at the federal level. The federal government has not been able to pass meaningful legislation addressing climate change in the last two decades. With the federal government asleep at the wheel, states began to become quite innovative in the policy area beginning in the mid- 1990's (Rabe 2004). In fact, states have passed a significant number of policies that relate to climate change, as indicated in the graph below.

There are several factors that need to be considered when hypothesizing about how the environmental policy area will be structured at the state level. Some sub-areas of environmental policy are more related than others. The literature on state environmental policy provides a background and understanding of the intricacies associated with this policy area. Consideration has been given to the distinct nature of various sub-areas of environmental policy and work has been done to look at issues ranging from hazardous waste to air pollution policy. Much of the early state environmental literature had a primary focus on how states implemented federal mandates (Williams and Matheny 1984; Wood 1992), and it is common for this literature to focus on very narrow areas of environmental policy. Studies have examined mining oversight (Hedge and Scicchitano 1994), air and water pollution (Potoski and Woods 2002; Ringquist 1993a, 1994), hazardous waste (Williams and Matheny 1984; Ringquist 1994), and overall state environmental effort (Bacot and Dawes 1996; Bacot and Dawes 1997; Hays et al. 1996). Findings by Ringquist (1994) suggest that various sub-areas of environmental policy have different determinants of policy passage and thus should not be examined together, but as distinct sub-policies.

Theory

Important to the consideration of state environmental policy adoption is whether states act as specialists and focus in on particular policy areas when it comes to innovation. Gray (1973) theorizes that "innovativeness" is not a characteristic that defines a state across policy areas. In addition, it is not typically accurate to say that a state will be innovative within a particular issue area either. In her well known study on state policy innovation Gray examines a set of questions about innovation, one of which is interested in whether states are innovative over time, at a specific time point, or for certain issues. Gray finds that, "'Innovativeness' is not a pervasive factor; rather, it is issue and time specific at best." Of the three issues examined in her work, Gray finds that only civil rights issues are highly intercorrelated in terms of state adoption. This finding is in part because the policy area of civil rights is highly politicized. Consistent with this argument, it is expected that environmental issues will demonstrate a level of "innovativeness" among the states. Many environmental issues are politicized and, as previously discussed, more ideologically liberal states tend towards adopting these policies. Also relevant are the characteristics that lead to state innovation. Scholars have noted the importance of state wealth for innovation (e.g. Walker 1969, Gray 1973). If the determinants of policy adoption were purely driven by state capacity factors, like economics or professionalization, then a state with strong capacity would be likely to adopt across all issue areas and within an issue domain, simply because they are capable. Of

course, research has demonstrated that other variables related to politics and diffusion can also play a role (Berry and Berry 1990). When considering environmental policy innovation over time one would expect adoption levels, or innovativeness, to shift along with political factors. The concept of coherence is also relevant in regards to the interconnectedness of environmental issues. May et al (2005) argue, "Various components of policies correspond because they share a set of ideas or objectives." In other words, if a policy area has a high degree of overlapping components then it is likely to demonstrate a high level of coherence. The authors identify a set of factors that lead to a reduction in coherence. Policies that have networks of interest groups and issue publics will tend to be more coherent than those with small interest groups or no issue publics. This is due to the ability of interest groups to bring together shared interests. May, Sapotichne and Workman (2006) make a number of arguments about what makes a policy domain coherent. First, a diverse policy area will tend to be less coherent unless the issues are easily linked. In addition, regional policies and those targeted at particular groups will be less coherent, on average, than substantive policy areas. The authors note that a policy domain does not necessarily have to have a limited number of issues, but rather a clear link between issues to cohere.

Given this characterization, it is likely that the environmental policy domain will be coherent. It meets several criteria set out by May et al (2005) and May et al (2006) including that it is a substantive policy area with a strong interest group population. Given that there is often a clear connection between sub-areas of environmental policy then a state that enacts legislation in regards to one policy in

the domain would be likely to do so for another related issue, given commonality of goals.

To address questions related to how states create policy and whether a set of environmental policies are pursued in tandem, a scale is created based on which policies states have adopted. This scale provides a number of uses including the ability to determine whether environmental policy can be examined as a whole, or whether adoption varies depending on the particular type of environmental policy in question. Climate change policy may stand out among other environmental policies given its global nature and the variance of the potential impact climate change may have on each state. It is also an issue of high salience, which often impacts the way policy is created. On the other hand, states that are inclined to pass strong environmental policy in general may be just as likely to pass climate policy based on ideology. Liberal states are expected to be more likely to pass environmental policy in general while conservative states are more likely to pass policy only if they have a very strong incentive to do so. In support of this argument, Dunlap et al (2001) find that over the past 30 years Republicans have consistently become less likely to vote pro-environment while Democrats have become more likely to do so.

For environmental policy there are issues that are highly related, such as energy and climate change. On the other hand there is also an extremely diverse set of environmental issues out there that are very narrow in focus. Exemplifying this is the characteristics of the environmental interest group population. For instance, while broad groups like the Sierra Club exist there is also a multitude of

organizations that focus on narrow areas like sustainable development, brownfield cleanup, water pollution, endangered species protection and so on. The broad so-called “glue” is the protection and cleanup of the environment; however, smaller and more intricate goals exist that could make the policy area less coherent as groups compete for scarce resources. When considering the interest group population regarding the environment it seems that the policy area may cohere well. The number and size of environmental groups increased substantially from 1960-1970 and continued to grow during the Reagan years. Many national environmental groups, like the Sierra Club, National Wildlife Federation, and the National Audubon Society, consider a broad array of environmental policy issues. This implies that environmental problems have connecting elements that could make it likely for a state to adopt a series of policies rather than just one. On the other hand, several single (or few) issue environmental groups exist, and this is even more common when examining state and local organizations. Scholars have also noted that environmental groups began to divide into factions in the 1980's (e.g. Vig and Kraft 2006). Mitchell (1989) argues that environmental groups became increasingly divided, varying in terms of who they represent. Bosso and Guber (2006) also argue that this division has continued into the 21st century. While environmental groups number in the thousands this does not necessarily mean they do not work together and share a common purpose. Milne et al (1996) examine the alliances formed between environmental groups. Of the 197 groups surveyed almost 60% were allied with other environmental organizations and the government. Duffy (2003) argues that environmental groups are increasingly forming coalitions with other

environmental organizations. Duffy's research finds that from a sample of environmental groups two-thirds of the organizations studied form coalitions with similar types of groups. Of course it is logical for similar environmental organizations to work together. For example, several groups associated with water pollution in central Texas are brought together in a coalition called the Greater Edwards Aquifer Alliance. Groups focused on water pollution may still be competing with other environmental interest groups concerned with other sub areas. Extant research on the environmental interest group population leads to the expectation that despite some issue niches, there is a lot of interconnectivity.

It is expected that policies examined in this paper will fit into an integrated scale given that the policy domain meets a number of criteria important to innovation and coherence: It is a substantive policy domain, has a significant interest group base that can link issues, and has the connecting goal of preserving the natural environment. Environmental issues are also often politically divisive which can lead to a state pursuing multiple adoptions of related issues, or none, depending on its political leanings. In addition, while climate change is a global problem, policymakers have been able to frame the problem in such a way as to link it to other environmental concerns.

Data

Data were collected on 18 environmental policies during the time period 1994-2009: Mercury laws, greenhouse gas targets, advanced coal technology, smart growth policy, green pricing programs, green power purchasing, appliance efficiency standards, biofuel incentives, the creation of a climate change advisory

board, vehicle emission standards, brownfield voluntary action programs, climate action plans, regional climate initiatives, renewable portfolio standards, commercial building standards, green building standards for public buildings, net metering and public benefit funds.

Table 1 about here

As one can see by the policy descriptions, the majority of these policies consider energy related issues and policy specific to climate change. This does provide some limitation in the ability to determine how interrelated environmental policies are; however, this data can still tell us something about whether a state is consistent in passing policies among this subset.

The policies consist of executive orders, rule making by administrative agencies and the passage of legislation, though a majority of the policies were created through legislation. The policies address energy issues, climate change, brownfields, sustainable development and air pollution. The policies were chosen for a number of reasons: First, they are considered current in that a majority of state policy adoption occurred in the last two decades. In addition, policies were selected in an effort to include a variety of environmental measures that tap into different sub-areas of environmental policy. Availability of data that provided accurate dates of adoption was also a consideration.¹

There is a great deal of variation across states with regard to the number of policies passed. The figure below demonstrates this variation.

¹ The majority of the policies consider energy and climate change, in part, because of data availability.

Figure 1 about here

Mississippi is on the low end, having only enacted one out of the 18 policies, a voluntary brownfield cleanup program. On the high end, with 16 policies adopted, is Connecticut, which is closely followed by Oregon, California and Washington with 15 policies passed each. An overall examination of these descriptive data indicates that it is more typical for ideologically liberal states to pass a large number of policies than conservative states. In fact, every state that has 4 or fewer policies passed (17 states) was a state won by McCain in the 2008 presidential election and nearly every state with 11 or more policies passed (16 states) was won by Obama². States in the middle range tend to be ideologically moderate states that are traditionally considered to be battleground states in close presidential elections³. There is also considerable variation in how many states have passed each policy. The figure below provides descriptive data on how many states have passed each policy.

Figure 2 about here

Most of the policies under consideration vary in adoption between 10 and 35 states having adopted the policy. Brownfield voluntary programs have been passed by nearly all states, as have net metering programs, while relatively few states have passed commercial building standards.

The data collected on the 18 policies are broken down by state and year for the time period 1994-2009. Data are coded such that once a state passes a given

² The exception here is Arizona

³ Nearly every battleground state is in the middle range of policies passed including Missouri, North Carolina, Florida, Pennsylvania, Indiana, Nevada, Ohio and Michigan

policy it receives a 1 for every year after that policy is adopted and a 0 if it has yet to adopt the policy. A description of each policy is also documented.

Data are also in the form of pooled policies, indicating whether or not a state has passed a given policy. This, in effect, removes the time element and provides a simplified set of information. States receive a 1 if they have passed a policy and a 0 if they have not.

Data Collection

The sources for these data are numerous. Information on several of the climate change policies was obtained from the PEW research organization (*Statewide Action Maps*). Energy policy information comes primarily from the Database of State Incentives for Renewable Energy (DSIRE). The information regarding voluntary brownfield cleanup programs was gathered from a report conducted by the Environmental Law Institute (Pendergrass, 2001) and was brought up to date through state by state examinations and updates from the EPA.

Information on Renewable Portfolio Standards was found in Rabe's, *Statehouse and Greenhouse* (2004) with updated information through individual state websites. While the Pew data are comprehensive in terms of current climate change policy they do not detail passage of laws that were not passed in recent years. Supplementary data were obtained from a variety of sources including the EPA and individual state websites that pinpoint when policies were passed in the various areas of environmental policy.

Preliminary Findings of Pooled Data

Analysis was conducted on the pooled policy data that includes simply whether or not a state has passed each of the 18 policies. The n for this set of data is 400 policies. A calculation of Cronbach's alpha is done to determine whether the policies in question could be combined into a reliable scale of environmental policy. Alpha in this case measures the intercorrelation among the standardized data. While the alpha does not provide a direct test of dimensionality it can provide some information to this end. Items that do not seem to fit in with other items that make up the scale can be identified. If the resulting alpha is high this may still mean that multi-dimensionality exists through separate groupings of the items utilized. This scale will provide a number of uses including the provision of evidence regarding whether environmental policy can be examined as a whole, or whether policies vary depending on the particular area of the environment they are protecting. In addition, it can be utilized as a dependent variable in future analyses.

The scale utilizing all 18 policies yields a strong alpha of .8784. This is well above the typical social science cutoff for this type of scale at .7. The variables that seem the most out of place in the scale, given their slightly higher alpha and lower item- test correlation, are advanced coal technology and voluntary brownfield programs. A potential reason that advanced coal technology does not fit in with the other policies is that states likely to seek this kind of technology are those that have a large coal industry and these same states may not be likely to pass other progressive environmental policy. Brownfield policy also has less in common with the other policies. In addition, there is less variation among states within this policy,

with most states having enacted a voluntary brownfield program. Examination of the data over time may provide a better understanding of brownfield policy as it fits among the others. Though brownfield policy may be substantively different from the other policies examined it has the potential to still fit in with the others when examining the full, non-pooled data. Brownfield policy still has a shared goal with the other policies of environmental protection.

The Fit of Climate Change Policy

In order to investigate whether policy specific to climate change should be considered separate from the other policies examined an alpha is calculated for just the following: renewable portfolio standard, climate action plan, regional climate agreement, creation of an advisory board on climate change, vehicle emission standards, and greenhouse gas emission targets. These policies have been consistently viewed in scholarly work as directly related to climate change (Rabe 2004; Matisoff 2008). The results yield an alpha of .8343. While this is still a strong alpha it is not as strong as the full set of environmental policies. This arguably demonstrates that climate change policy can be considered alongside other environmental policy.

The results thus provide evidence that this subset of environmental policies is relatively coherent and that climate change policy is not apart in its own dimension. The inclusion of additional environmental policy variables may identify other, more narrow policies, that would not fit in with those examined here.

Discussion and Future Research

Preliminary research that pools the 18 policies indicates support for the notion that climate change, energy policy and sustainable development are issues that are intrinsically linked. These findings are consistent with expectations and the implications of this are positive for those that view this interrelation as a way of ensuring that a strong set of policies are passed to get at particular environmental objectives. If states that pass climate action plans are also consistently passing policy that encourages sustainable development this could provide a more significant environmental impact than if a state were only passing one type of policy. The findings suggest that combining these types of policies into one scale is acceptable and encouraged when attempting to use the data as a dependent variable. It is clearly evidenced here that climate change policy is strongly tied to other types of environmental policy, in particular policies related to energy usage. Political figures and interest groups have been able to frame these policies in such a way that encourages states to innovate.

Future research can utilize this scale in the pursuit of understanding the determinants of environmental policy innovation. The data collected include policy passage over time. While the preliminary analysis provides some information regarding the structure of environmental policy among the states, time series data presents a richer picture than simply looking at whether a state has passed a policy. This allows for understanding how policy adoption changes over time and will be a useful dependent variable in understanding the determinants of state

environmental policy passage. Future work will examine both of these issues in depth.

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Policy	Description
Public Benefit Funds (PBF)	Dedicated dollars for energy efficiency and renewable energy projects.
Green Public Building Standards	New construction of public buildings follow LEED standards and that older buildings attempt to increase their energy and water efficiency.
Green Commercial Building Standards	New construction of private buildings follow LEED standards and that older buildings attempt to increase their energy and water efficiency.
Renewable Portfolio Standard (RPS)	Takes the general form of a requirement that utility companies generate a certain percentage of their energy from renewable sources by a specified date.
Climate Action Plan	Typically set out goals or steps for a state to take in reducing their contribution to climate change.
Regional Climate Initiative	Set out carbon emission reduction targets or cap in trade programs in conjunction with other states along with other goals to reduce impact on climate change.
Voluntary Brownfield Cleanup Program	These programs typically offer incentives for brownfield cleanup to developers and/or grants from the government for redevelopment.
Vehicle Emission Standards	Require new vehicles to reduce emissions by a given percentage by a target year.
Climate Advisory Board	Establishment of a board or commission to investigate climate change solutions.
Biofuel Incentives	Tax exemptions and/or grants to promote the use of biofuels.
Green Power Purchasing	States purchase of “green” power for state facilities. This green power typically comes from solar panels or wind farms.
Green Pricing Program	Requirement that utility companies offer customers the ability to have their electricity provided by renewable energy resources.
Appliance Efficiency Standards	Standards that require or incentive improvement in the efficiency of appliances (that go beyond federal requirements).
Vehicle Miles Traveled (VMT) and Smart Growth	Provide incentives and plans to reduce the number of miles traveled by vehicles per capita and encouragement of regional development planning, improved mass transit.
Advanced Coal Technology	Laws that provide funding or tax credits towards the advancement of clean coal technology.
GHG Emission Reduction Targets	Emission reduction goals that states intend to achieve by a given date.
Mercury Laws	Controls on how mercury is disposed of and what products it can be used in.
Net Metering	Provides incentives for consumers to generate energy through renewable sources.

Figure 1

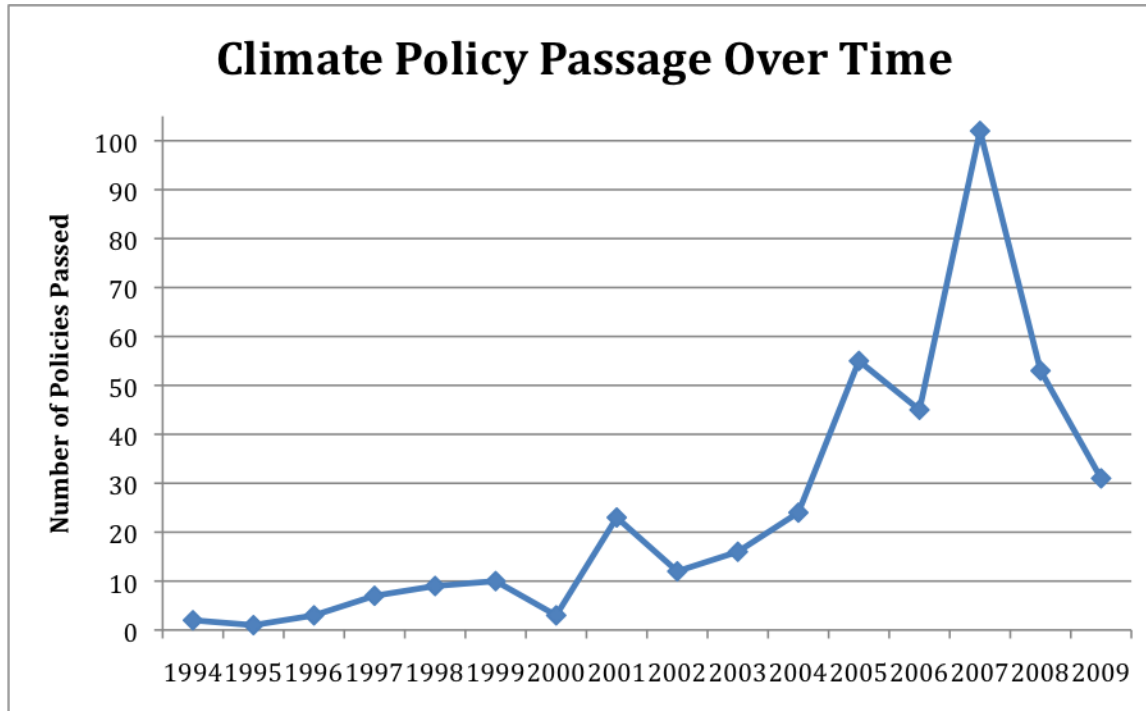


Figure 2

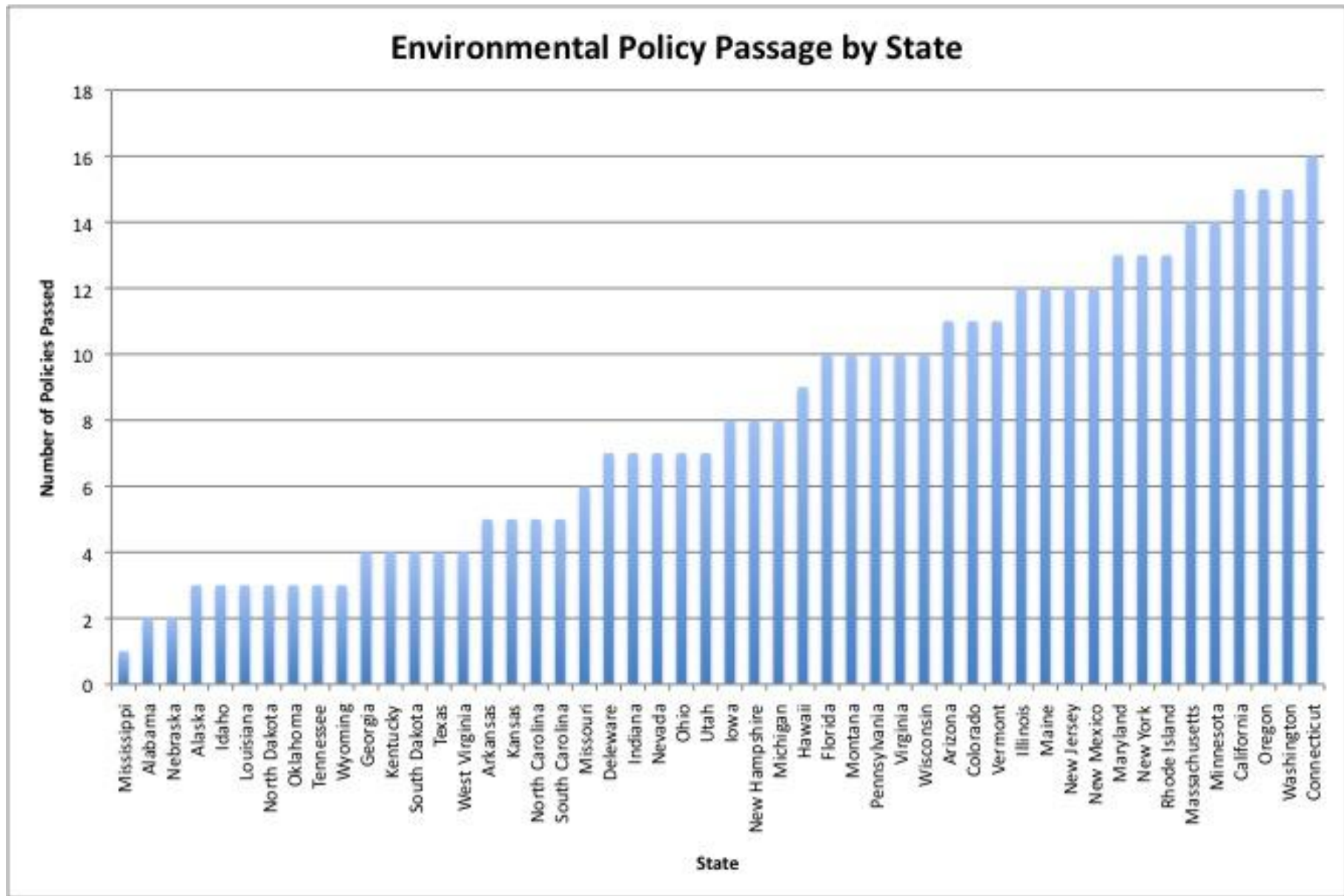


Figure 3

