THE PENNSLYVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF POLITICAL SCIENCE

IS INTEREST GROUP DENSITY A FUNCTION OF THE POPULATION OF INTEREST?: USING THE POPULATION ECOLOGY MODEL TO TEST STATE-LEVEL INTEREST GROUP DENSITY

MICHAEL PARETTI
Spring 2012

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Political Science
with honors in Political Science

Reviewed and approved* by the following:

David Lowery
Professor
Thesis Supervisor

Gretchen Casper
Associate Professor
Honors Advisor

* Signatures are on file in the Schreyer Honors College.

ABSTRACT

Objective. This paper examines the effects of interest group density as a function of the population of interest. Specifically, three sectors (agriculture, manufacturing/ industrial, and mining) of each state's economy will be examined to see if a relationship exists between the density of interest groups in the state and the population of the state. *Methods*. Each sector has a model designed using the basic premises of the population ecology model, testing the number of interest groups in that state as a function of the gross state product in the respective economic region. Each model also includes the variable of political competition as measured by the Ranney index of the level of political competition in each state (and accordingly, issue salience). *Conclusions*. The proposed models show strong relationships between interest group density and populations of interest; all three-regression models produced statistically significant results, showing that the number of interest groups in a particularized sector can be predicted by the state's economic prowess in that sector.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

IS INTEREST GROUP DENSITY A FUNCTION OF THE POPULATION OF INTEREST?: USING THE POPULATION ECOLOGY MODEL TO TEST STATE-LEVEL INTEREST GROUP DENSITY

Interest groups are paramount to the American government system; today, thousands of interest groups thrive at both the state and national level representing a vast array of public and private issues. However, contrary to popular presumption, the amount of representation a specific issue receives is extremely varied; while some interest groups such as the National Rifle Association boast millions of supporters, others like the American Long Rifle Association struggle to mobilize enough support to even garner public recognition. This has lead to an incredibly central question in American politics: why are some interests highly represented by interest groups while others have virtually no support?

Although on the surface this question may seem relatively simple, the variables that cause the disparity in interest group support are much more complex. Answering this question would provide great insight into the inner workings of American politics, information that would be vital to both the politicians whose support is sought by the interest groups and the citizen supporters of each group alike. For example, identifying why a specific interest group has had success in meeting its goals and gaining large quantities of members could provide justification to a citizen considering membership or support in that organization. In addition, and more importantly, understanding the central themes to the formation and success of interest groups can help us to understand how the American public tends to solve political and social problems. If key factors in the formation and success of interest groups can be identified, we can hypothesize how the public will handle certain political phenomena in the future.

The most logical explanation for the extreme variance in the representation of political issues by special interest groups at the state level is the diversity of each individual state.

Although all fifty states share an extremely similar political structure, they are comprised of incredibly different cohorts of people, and even more importantly, vastly different economies. For example, we may see more interest groups representing social security and retirement-related issues in states like Florida where the over sixty-five population is high. Likewise, we may see more gun control advocates in states with exceptionally high crime rates, while a plethora of second amendment interest groups prosper in rural states with a high percentage of the population being hunters. Each state's economic composition is a great representation of its diversity. The factors that make each state a unique contributor to the union are likely the same factors that explain the variation in the representation of public interests by interest groups.

This explanation makes sense because interest groups are reflections of the population they represent; it is common logic that if an interest group cannot acquire support from the citizens it intends to represent, the interest group will fail. It is the shared concerns of the public that necessitate collective action in the form of interest groups. In a utopian society, the government would address every citizen's issues and interest groups would be negligible. However, this is far from the case. Politics play a pivotal role in what issues are addressed and interest groups, in their ideal form, serve as liaisons of the public interest (Baumgartner and Jones, 1993). Logically, the most commonly shared concerns of a population will be directly related to the specific state population being observed; it is expected that a landlocked state like Oklahoma does not have a great deal of maritime interest groups, nor does a tropical one like Florida have interest groups lobbying for winter sports.

This logic does not remain without flaw. Many of the issues most commonly represented by interest groups transcend state boundaries. In addition, the similarities between states vastly overwhelm their differences. No matter how big or small the population of concern, citizens and

corporations have the power to unite and form and/or support interest groups. If, for example, a state had a very small population affected by a specific concern and contrastingly saw a large number of interest groups representing that concern, the above hypothesis would be hard to argue. The null hypothesis then represents the anomalies—states with small populations of interest and respectively large numbers of interest groups, as well as states with large populations of interest and a dearth of interest groups. If it is found that states with small populations of potential supporters of interest groups have an equal number of interest groups in the policy area respective to the state's population, the substantive hypothesis will be void. As an alternative hypothesis, the most logical explanation for such a finding would be a result of economies of scale.

Economies of scale refer to the economic advantages that can be obtained due to expansion. In regard to my observations, economies of scale would suggest that the number of interest groups in a sector would increase as the gross state product increased, regardless of the existing number of interest groups in that economic sector. Because the economy of scale is different for each state, we may find that the economic capacity of the state is more important to interest group density than is the population of interest.

In order to test my hypothesis, it is first necessary to review the existing articles on interest group density as well as the population ecology model. Understanding the existing literature will not only help support the basis for my hypothesis, it will also show a clear gap in research performed in this area thus far. After thoroughly reviewing the literature, I will state my hypothesis and the theories on which it is based. This theory will then lead to the development of a substantively testable hypothesis. I will then explain the variables I selected and present my results. Lastly, I will review the results and formulate a conclusion based on the findings.

Literature Review

In "Federal Policy Activity and the Mobilization of State Lobbying Organizations" (2008), Baumgartner, Gray, and Lowery found a strong linkage between federal and state level interest groups. While this provides insight into the formation and success of interest groups at the state level, it fails to recognize the disparities in populations of interest at the state and national level. Even though federal lobbying may draw more concern to the state level, I intend to delve further into this issue and examine whether a relationship exists not only between the states and the nation, but also across the states within the populations of interest. Furthermore, Baumgartner, Gray, and Lowery (2008) found that a significant lag exists between negative congressional hearings and state interest group action.

In order to understand the interest agenda, it is first important to analyze how interest groups mobilize at the state level. In "Sisyphus Meets the Borg: Economic Scale and Inequalities in Interest Representation," Lowery, Gray, and Fellowes (2005) made several important and influential claims about the state lobbying agenda. First, they disputed the conclusions of the existing literature that organizations that are broadly representative of the public interest become relatively larger components of interest communities as economies become larger and more diverse. Accordingly, because I am dealing with similar variables of interest, their findings are central to my hypothesis. Lowery, Gray, and Fellowes (2005) also address the issue of salience, using both empirical and theoretical data to show that interest organizations have little importance when an issue is prominent to the public.

"The Population Ecology of Gucci Gulch, or the Natural Regulation of Interest Group Numbers in the American States" (1995) provides the framework model under which the hypothesis will be tested. In this innovative publication, Lowery and Gray (1995) introduced the

Energy, Stability, and Area model, a model often exclusively reserved for the natural sciences, as a means of determining interest group density. This model, based on the biological population ecology model, will be central to my research. This theory stands in contrast to the previously held Pluralist Perspective (Truman, 1951) that group mobilization arises naturally out of shared public concerns, as well as the Transactions Perspective (Olson, 1965) that sees group mobilization as a biased community in favor of the elites and dependent on selective incentives. Instead, this theory claims that energy, stability, and area are the three central factors controlling interest group density. Energy represents both the resources available to interest groups as well as the likelihood that their contributions can produce a change in policy. The second variable is stability, that is, the absence of environmental fluctuations that can stress the interest groups. Lastly is the variable area, the amount of existing room an interest group has to function. Lowery and Gray's ESA model represents area as curvilinear, beginning with interest groups struggling to form. When the interest becomes legitimized, interest groups began to expand rapidly. This expansion necessitates that interest groups become more specialized and develop a particular niche. The interest community then reaches its capacity with numerous specialized interests, and very few original groups join the community.

This research was supported by Nownes' (2004) article "The Population Ecology of Interest Group Formation: Mobilizing for Gay and Lesbian Rights in the United States, 1950-98." Nownes' research supported the curvilinearity of the population ecology model by testing the number of gay and lesbian rights groups in the time between 1950 and 1998. In the early stages of this time period, groups struggled to form and gain membership, as homosexuality was not a salient public issue. The civil rights movement and other social changes brought gay rights to the forefront and interest groups in this field increased exponentially. This necessitated the

formation of narrower niches within the gay and lesbian rights groups in order to continue growth. As each group became more particularized in its niche, the area available for new groups became so limited that growth ceased. "This finding supports the general argument that legitimation, which dominates at low densities, works to increase the number of groups founded within an organizational population; while competition, which dominates at high densities, constrains the number of groups founded and thus the total number of organizations within a given interest group population. In all, the data provide a great deal of support for the theory of density dependence in particular and the organizational ecology approach in general" (Nownes, 2004).

In my research, I intend to look primarily at the area variable in the ESA model. Stability, in almost all circumstances, will not have a significant amount of variation among the states (Lowery and Gray, 1995). It is my belief that as the Gross State Product of a state increases, the area available for interest groups to form will also increase. Accordingly, a larger area allows for more interest group specialization and thus more particularized niches, ultimately resulting in an increase in the number of interest groups (Nownes, 2004).

I will hypothesize that the size of the population of interest upon which interest organizations are constructed is the most crucial element of interest group mobilization success, and is perhaps an antecedent of resources. For this reason, we should find that political energy is devoted to the areas most encompassing of public concern.

Although a great deal of research has been done on interest groups, there remains a gap in the explanation for why groups form at the state level. In fact, most analysis of state level interest groups bases findings on this assumption without ever providing evidence that a correlation

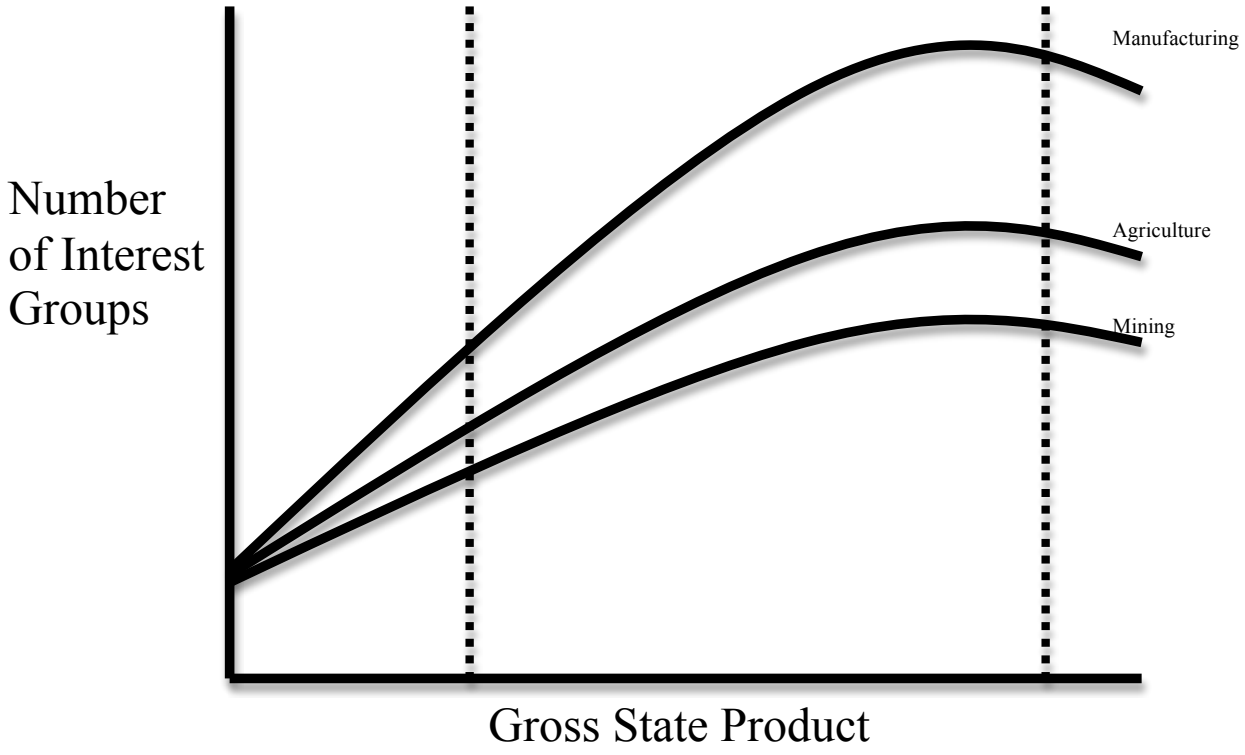
exists. It is my goal to show that the demographic composition of the population of a state is the most important factor in the type of interest groups that will form and the success they will have.

Theory

My hypothesis claims that it is the demographic/ economic composition of the population of interest that groups represent that accounts for the variation in interest group density at the state level. As mentioned, density represents the number of interest groups prevalent in that field of issue advocacy. This hypothesis should be valid because interest groups exist to serve the population and address their policy needs. The size of the economy in a given area of interest in each state is likely to be the largest determining factor in the number of interest groups. Therefore, as the size of the state economy increases and issues increase respectively, the number of interest groups mobilized to address these concerns will grow. Similarly, as the size of the state economy increases, more citizens will be employed in specific sectors and will need more interest groups to represent their concerns. If my research produces statistically significant results, this model will provide a better answer than previous existing explanations. Figure 1A below shows the predicted results of the models to be tested. As can be seen by this figure, I expect a positive correlation between the number of interest groups in each sector and the gross state product in that sector. It has already been established that as the area available for interest groups increase, niche formation and specialization increases (Nownes, 2004). This increase, however, does not occur at the same rate across economic sectors; specialization is not all equal (Lowery, 2004). For example, the mining sector is very homogenous; a small elite without much variation runs each state's mining industry. Contrastingly, the manufacturing sector in a state is very heterogeneous. Manufacturing exists in a vast range of industries from pharmaceuticals to textile; this means there is a huge opportunity for specialization. Agriculture is more heterogeneous than mining, but not nearly as diverse as manufacturing and thus should fall somewhere between the two in my model. As represented by the dotted lines, I expect that

increase in the number of interest groups to substantially differ between each economic sector as a result of the availability to specialize in each market. All three lines, however, abide by the population ecology model and begin to decrease when the interest group area has become completely saturated. The other previously existing explanations do not account for these factors.

Figure 1A: Predicted Results



For example, the Transactions Perspective (Olson, 1965) almost entirely omits the import of interest organizations and instead focuses on the will of the elites. Under this outlook, an interest group would be able to succeed if it provided selective incentives to the public, whether that issue was salient to the population or not. The Pluralist Perspective agrees with my proposed

hypothesis in that interest groups form to address public concerns. However, it does not account for the fact that once a concern is addressed by an interest group it will lose salience, leading to demobilization (Lowery and Brasher, 2004). The Energy Stability Area model provides a much better explanation, with interest group density constantly reflecting the public concern.

To test my hypothesis I propose the following model(s):

1. Number of Mining IGs= a+bMiningGSP+bMiningGSP^2+bPoliticalComp.
2. Number of Agricultural IGs= a+bAgGSP+bAgGSP^2+bPoliticalComp.
3. Number of Manufacturing IGs= a+bIndGSP+bIndGSP^2+bPoliticalComp.

Where the dependent variable is the number of interest groups in each state in each respective sector. For example, in the first model, Number of Mining IGs would equal the number of mining interest groups in the fifty states, with agriculture and manufacturing following respectively. The coefficient a represents the intercept for each of the models, or the value the dependent variable would take on if the independent variables have values of zero; MiningGSP represents the gross state product of the mining sector in each of the fifty states, and MiningGSPsq is the same term squared (per the population ecology model). Lastly, PoliticalComp is the control variable, the amount of political competition in each state as measured by the Ranney index. The agricultural and manufacturing/industrial models follow the same variable coding, where the GSP and GSPsquared terms represent that sector's economy in each of the fifty states respectively. The b's represent the slope coefficients for each independent variable, or the unit change in the dependent variable when all other independent variables are held constant.

Each of these three models will be tested across all fifty states to determine if the population of interest is a determining factor in interest group density, according to the energy

stability area model. It is important to look at state level interest groups when testing the hypothesis because of their variety and reliability. In "The Comparative Advantage of State Interest and Organization" (2003), Lowery and Gray found that, "the range of research on state interest organizations in terms of theory and methods now more completely matches the range traditionally found at the national level." Furthermore, the states provide variation in individually measurable fields of data that can be translated back to the national level. Not only are the states reflective of the national policy agenda, they have a great deal of variation in the population of interest—an essential element needed for testing the stated hypothesis.

I expect that the mining sector will have the smallest slope, as it is the most particularized field affecting only a few states with little availability for interest specialization. Similarly, I expect the slope of the agricultural sector regression line to be intermediate, as agriculture is predominant in several states. Lastly, I expect the manufacturing sector to have the largest slope, as manufacturing tends to be a prominent field in many states and is highly heterogeneous; an increase in the area of the manufacturing model will produce the greatest increase in interest groups. In fact, manufacturing is so predominant that a linear line very well might better model it, as it is a very hard economic market to become completely saturated. Most importantly, I expect to find a significant correlation between respective independent variables and the states that have the largest gross state product in that sector.

Analysis

I have collected a great deal of data from each of the fifty states. First, and perhaps most importantly, I will use the number of interest groups in each sector in each state to represent the dependent variable. The nature of the research mandates a non-experimental statistical design in order to test for a relationship between variables. Observing the states and reproducing their economic and social factors is the most reliable method to test the relationships proposed by my models. Every state level interest group from the year of 2007 was recorded (Lowery, 2007), and then listed by state, and lastly listed by its major platform. These data were collected from lobbying registration lists from each of the fifty states. For my hypothesis' purposes, I have listed only the agricultural, manufacturing/industrial, and mining/milling interest groups. Next, the gross state product from the year of 2007 in each of these three sectors was recorded for every state. Furthermore, the gross state products of each sector of each state were then squared to represent the next variable of the model, pursuant the population ecology model to form a second order polynomial specification of sector GSP. Lastly, as a control, the Ranney index in the year of 2007 in each of the fifty states was included in this model. The Ranney index is a measure of political competition and was included in the model to potentially show that it is the economic factors mentioned above and not other social factors like political competition that produce the results we may see.

The dependent variable in each of the equations is the number of interest groups in that respective field (mining, agricultural, or manufacturing) in each state. The independent variables are the gross state products for each sector in each state. Another independent variable is the gross state product of each sector in the state squared. The purpose for squaring this value, coinciding with the energy, stability, area model, is to create a second order polynomial,

producing a curvilinear function so that once a sector becomes fully saturated, it will level off and interest group formation in that sector will cease. Thus, the nominal version of sector GSP should produce a positive coefficient and the square term a negative coefficient, together indicating density dependence. Furthermore, the Ranney index variable should produce a positive coefficient if, as I suspect, it does not have an impact; a negative coefficient would mean the Ranney index was, to some extent, swaying the results. Lastly, the value of political competition is added to the end of each model as a control variable. This will show that in spite of the varying levels of political competition in each state (as measured by the Ranney Index), the most central factor to interest group formation is the population of interest (i.e. the amount of the gross state product in that sector).

Table 1 listed below is the collection of raw data that will be used to test and analyze the hypothesis. In order to fully understand the functionality of my proposed models, it is first essential to know which specific variables are being tested and how they relate to the abstract concepts I am evaluating. It is important to note that all data recorded in this table and later tested were recorded from the year 2007. The first column provides each state, listed by postal abbreviation, in the United States. The following column lists the Gross Domestic Product for each of the fifty states (also known as Gross State Product) in the agricultural sector of that states economy. This GSP applies to agriculture, forestry, fisheries, and hunting and is listed in terms of millions of dollars in order to simplify the magnitude of the numbers. The next variable, directly related to the column before it, is the GSP in each of the states' agricultural sectors squared. In more simple terms, it is the squared value of the preceding column. Recall that the population ecology model on which my hypothesis is based asserts that interest group density is

curvilinear and growth will slow and eventually halt when the particular sector becomes heavily saturated. The GSP squared values in this table will account for such an expectation.

The following column is the Gross State Product in each of the fifty states' mining sector. Like the agricultural GSP, it is listed in terms of millions of dollars to reduce the magnitude of the numbers and make the table more readable. Adhering to this format, the following variable is the mining sector GSP squared. Similarly, the GSP for the manufacturing industry of each state (again in millions of dollars) and the GSP of the manufacturing sector squared are listed next.

The next independent variable listed is the Ranney index. This variable serves as a control on the previous independent variables. Each of the previous variables deals with economic conditions in the state (GSP and GSP squared); however, there may be other factors affecting the outcome of the data. To control for this, the Ranney index was included in each of the models. The Ranney index measures the level of political competition in each of the states, a more social measure. The Ranney score ranges from a value of zero to a value of one, where a zero represents complete Republican control of the government and a one represents complete Democratic power. The Ranney score is calculated in the following manner:

> The Ranney Index averages three indicators of party success during a particular time period: the percentage of the popular vote for the parties' gubernatorial candidates, the percentage of seats held by the parties in the state legislature, and the length of time plus the percentage of the time that the parties held both the governorship and a majority in the state legislature (Hershey, 2005).

Furthermore, this score was folded for each state to make the data more universally applicable to the table as a whole, and so ranges from 0.5 for perfect competition and 1.0 for one-party control.

The last three variables are the number of interest groups in the agricultural, mining, and manufacturing sectors of each state respectively. These three variables are the dependent

variables in the upcoming model. I posit that the number of interest groups in an economic sector will increase as the GSP in a particular economic sector of each state rises.

Table 1: Economic and Interest Group Values, by state

State Abb.	2007 Agric	07AgSq	2007 Mining	07MineSq	2007 Manuf	07ManfSq	Folded Ranney	Agric IGs	Mining IGs	Manuf IGs
AK	331	109561	12149	147598201	1447	2093809	0.692	2	34	27
AL	2192	4804864	2951	8708401	27988	783328144	0.582	19	18	84
AR	3118	9721924	1585	2512225	15849	251190801	0.769	47	28	100
AZ	2123	4507129	3918	15350724	21578	465610084	0.539	29	33	93
CA	27904	778633216	17726	314211076	203755	41516100025	0.570	85	30	239
CO	2479	6145441	9224	85082176	17277	298494729	0.685	23	31	65
CT	394	155236	62	3844	27467	754436089	0.668	15	13	78
DE	341	116281	8	64	5044	25441936	0.558	10	12	65
FL	6162	37970244	1243	1545049	39741	1579347081	0.714	66	42	222
GA	3511	12327121	504	254016	45856	2102772736	0.703	44	26	128
HI	391	152881	19	361	1144	1308736	0.666	8	4	36
IA	6403	40998409	96	9216	24868	618417424	0.670	38	7	54
ID	2888	8340544	451	203401	6207	38526849	0.772	35	13	46
IL	4860	23619600	1704	2903616	77890	6066852100	0.671	28	29	104
IN	3026	9156676	916	839056	73779	5443340841	0.590	10	8	54
KS	3342	11168964	1738	3020644	19354	374577316	0.615	36	29	54
KY	2080	4326400	3749	14055001	27379	749609641	0.547	20	27	84
LA	1736	3013696	22262	495596644	45649	2083831201	0.674	30	73	137
MA	781	609961	201	40401	35771	1279564441	0.828	17	13	117
MD	797	635209	317	100489	15409	237437281	0.742	18	17	78
ME	768	589824	7	49	5523	30503529	0.621	27	7	43
MI	2678	7171684	1108	1227664	69933	4890624489	0.551	40	15	126
MN	4769	22743361	385	148225	32676	1067720976	0.604	45	21	80
MO	3006	9036036	330	108900	30926	956417476	0.676	42	16	168
MS	2050	4202500	1276	1628176	16035	257121225	0.514	18	18	62
MT	1291	1666681	1694	2869636	2678	7171684	0.545	16	26	36
NC	3938	15507844	201	40401	79569	6331225761	0.686	32	7	94
ND	2462	6061444	876	767376	2615	6838225	0.732	26	24	32
NE	4826	23290276	99	9801	9468	89643024	0.755	24	10	37
NH	222	49284	24	576	6832	46676224	0.730	18	8	53
NJ	802	643204	92	8464	40724	1658444176	0.674	19	27	177
NM	1299	1687401	7547	56957209	4577	20948929	0.715	27	40	52
NV	238	56644	2755	7590025	6158	37920964	0.527	10	18	64
NY	2495	6225025	802	643204	64393	4146458449	0.633	29	31	240
OH	2822	7963684	1950	3802500	86063	7406839969	0.558	26	26	135
OK	1944	3779136	16553	274001809	15666	245423556	0.525	22	31	62
OR	3869	14969161	310	96100	35012	1225840144	0.648	46	10	79
PA	3125	9765625	4557	20766249	71089	5053645921	0.548	28	27	146
RI	85	7225	22	484	4218	17791524	0.713	8	4	45
SC	1077	1159929	210	44100	25915	671587225	0.677	17	4	72
SD	2699	7284601	79	6241	3534	12489156	0.731	14	7	21
TN	1057	1117249	256	65536	38282	1465511524	0.593	11	7	52
TX	8736	76317696	111209	12367441681	172046	29599826116	0.722	76	119	211
UT	570	324900	2532	6411024	12979	168454441	0.761	5	16	41
VA	1392	1937664	2043	4173849	32274	1041611076	0.581	23	18	76
VT	414	171396	34	1156	2676	7160976	0.616	15	5	43
WA	6391	40844881	583	339889	38605	1490346025	0.694	57	21	98
WI	4273	18258529	370	136900	46847	2194641409	0.553	43	10	76
WV	227	51529	5124	26255376	5730	32832900	0.758	11	35	58
WY	355	126025	10321	106523041	2163	4678569	0.613	12	32	28

To test my hypothesis, I then ran an ordinary least squares regression for each of the three models (agriculture, mining, and manufacturing). The first model included the independent variables: the agricultural gross state products of all the states, the agricultural GSPs squared of all the states, and the folded Ranney score for all the states with the dependent variable, the number of agricultural interest groups in each of the states. This process was then repeated for the mining model and the manufacturing models, respectively. The results of which are listed below in Table 2.

Table 2: Regression Model Results

	Independent Variables							
Dependent Variable	Constant	GSP (in dollars)		GSP Sq. (in dollars)		Ranney Comp	Rsq.	N
Agriculture	1.11	8022	***	-1880	***	11.78	0.78	50
		(816)		(-310)				
Mining	5.2	2111	***	-1070	***	14.74	0.78	50
		(318)		(-290)				
Manufacturing/ Industrial	-5.13	1719	***	-4000	**	69.15	0.59	50
		(349)		(-206)				

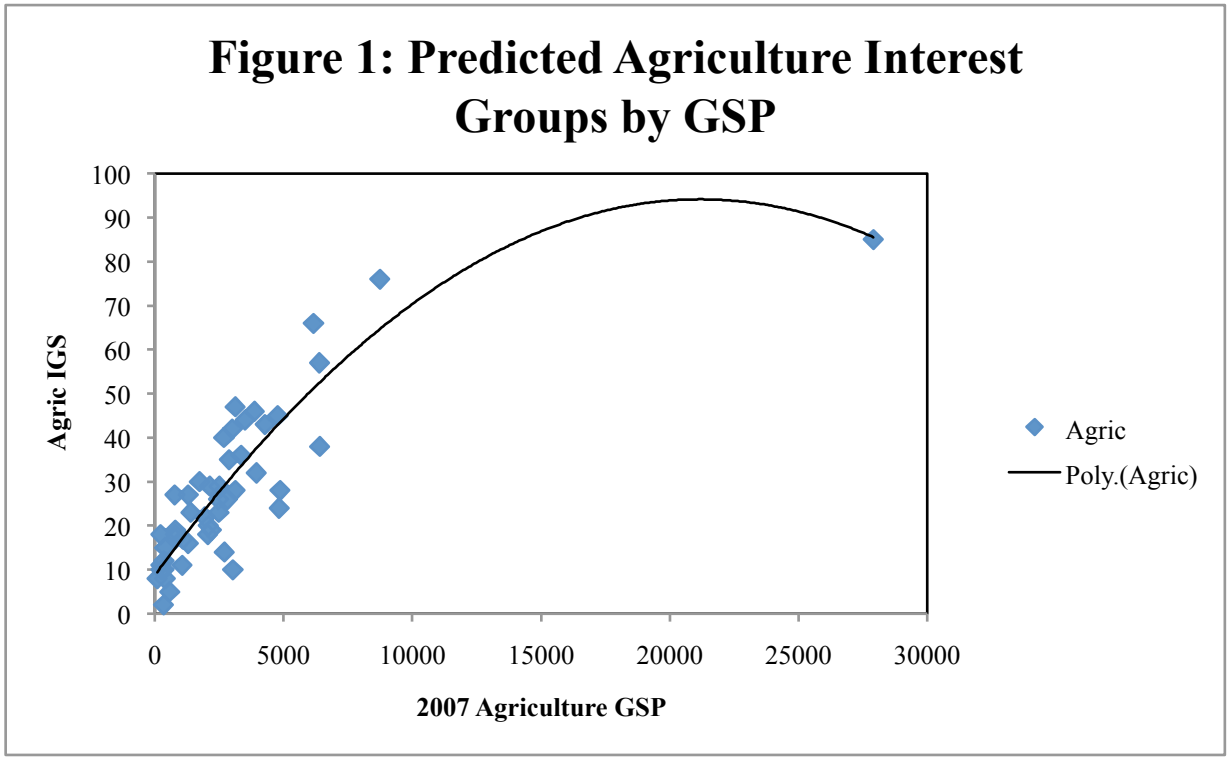
*=p<.10, **=p<.05, ***=p<.001, one-tailed tests;
(Standard Error)

It is important to analyze each component of this table in depth to effectively determine the results of my test. Beginning with the agriculture model, we observe a constant of 1.11. This number tells us the amount of expected interest groups in the agricultural sector if all other components of the model were equal to zero. The next, and perhaps most essential number in the

table is the coefficient for the GSP term, 8022. According to the model, from this coefficient we learn that for every $8,022 a state's agricultural sector GSP increases, one additional agricultural interest group will be formed. A one-tailed significance test produced a p-value of less than .001, meaning that there is less than a one-one thousandth of a chance that this relationship would exist if the two variables were not related. Using a standard alpha level of .05, we see that the p-value is much below and is statistically significant. The next value is the coefficient of the GSP squared term for the agricultural sector, -0.188. This negative coefficient may seem troubling; it is in fact what was predicted based on the population ecology model. This coefficient states that for every $18,000 the GSP squared decreases in the agricultural sector of a state, one agricultural interest group will be gained in the respective state. Although this effect does not seem large, it is enough to produce the curvilinearity to halt the growth of interest groups at the point of saturation. This coefficient also produced a p-value less than .001, showing that it is very statistically significant. Next is the coefficient of the Ranney index, the control variable, of 11.78. Because this value is positive, we see that the Ranney index does not have an effect on the number of interest groups and thus is not influencing the results. No statistically significant relationship is found between the Ranney index and the number of agricultural interest groups, showing that the economic factors listed before are a far more credible predictor of interest group density. The agricultural model produced an R-squared value of .78. The R-squared term tells us the proportion of variance in the dependent variable explained by all of the independent variables. Where an R-squared value of 1.0 would be a perfect model of the relationship, a .78 shows a very strong correlation between the states' agricultural GSPs and the number of agricultural interest groups in each state. Lastly is the value of N, the number of observations.

Because data could be obtained from each state, in all three models we observe an N of 50 representing each of the fifty states.

Figure 1 below is the visual representation of the relationship between the agricultural GSP variable and the number of agriculture interest groups in the state. The y-axis shows the number of agricultural interest groups and the x-axis represents the agricultural GSP for each of the fifty states. A polynomial line of best fit has been added to the graph to show the curvilinear nature of the relationship. This graph clearly shows the positive relationship that exists between interest group density in the agricultural sector and the agricultural GSP.

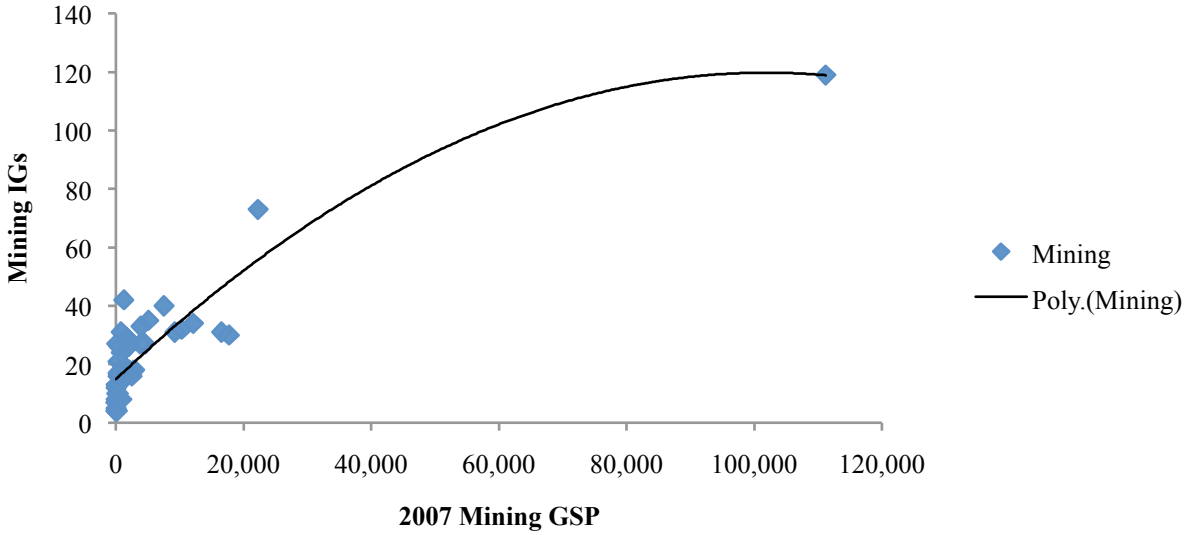


The mining model produced positive results similar to the agricultural model. This model produces a constant of 5.20, the number of interest groups expected if all other independent variables remain at zero. The GSP variable tells us that for every $2,111 a state's GSP in the mining sector increases, one more mining interest group will be formed in that state. Again, a one-tailed significance test produced a p-value of less than .001, showing that the relationship

was statistically significant. Like the agricultural model as well, we observe a negative coefficient for the GSP squared term of -.107. This coefficient states that for every $10,700 the GSP squared decreases in the mining sector of a state, one mining interest group will be gained in the state. This coefficient produced a p-value less than .001, showing strong statistical significance. The Ranney index again showed no significance, meaning, as expected, political competition was not a contributing factor to the results. Lastly, the R-squared value of .78 shows a strong correlation between the mining GSPs of the states and the number of mining interest groups in the states.

A visual representation of the mining model can be seen in Figure 2, showing the strong relationship between the mining GSP variable and the number of mining interest groups in each of the states. The y-axis shows the number of mining interest groups and the x-axis represents the mining GSP for each of the fifty states. Again, a polynomial line of best fit has been added to the graph to show the curvilinear nature of the relationship.

Figure 2: Predicted MiningInterest Groups by GSP



Lastly, the manufacturing model tells us significant and perhaps even more telling results. The manufacturing model produces a constant of -5.13, the number of interest groups expected if all other tested values remain at zero. The GSP variable tells us that for every $1,719 a state's GSP in the manufacturing sector increases, one manufacturing interest group will be formed in that state. A one-tailed significance test produced a p-value of less than .001, showing that the relationship was statistically significant. Like the preceding two models, we observe a negative coefficient for the GSP squared term of -.004. This coefficient states that for every $4,000 the GSP squared decreases in the manufacturing sector of a state, one manufacturing interest group will be gained in the state. This coefficient produced a p-value less than .05, though slightly not as strong as the other models, still statistically significant at an alpha of .05. The Ranney index again showed no significance, meaning, as expected, political competition was not a contributing factor to the results. Lastly, the R-squared value of .59 shows a strong, yet weaker than the other two models, correlation between the manufacturing GSPs of the states and the number of manufacturing interest groups in the states.

The manufacturing model can be better understood by viewing Figure 3, a graph of the relationship between the manufacturing GSP variable and the number of manufacturing interest groups in each of the states. The y-axis shows the number of manufacturing interest groups and the x-axis represents the manufacturing GSP for each of the fifty states. Here, both a polynomial line of best fit (black) and a linear line of best fit (red) have been added to the graph to show the possible linear relationship of the model. The fact the manufacturing model has a less strong correlation than the other two models is exactly as predicted. While all three models produced significant results, this shows us that the more particularized an economic sector is, the stronger the relationship will be to the number of interest groups representing it. Perhaps a better model

for the manufacturing sector would be linear and omit the GSP squared term, to be discussed in the conclusion section.

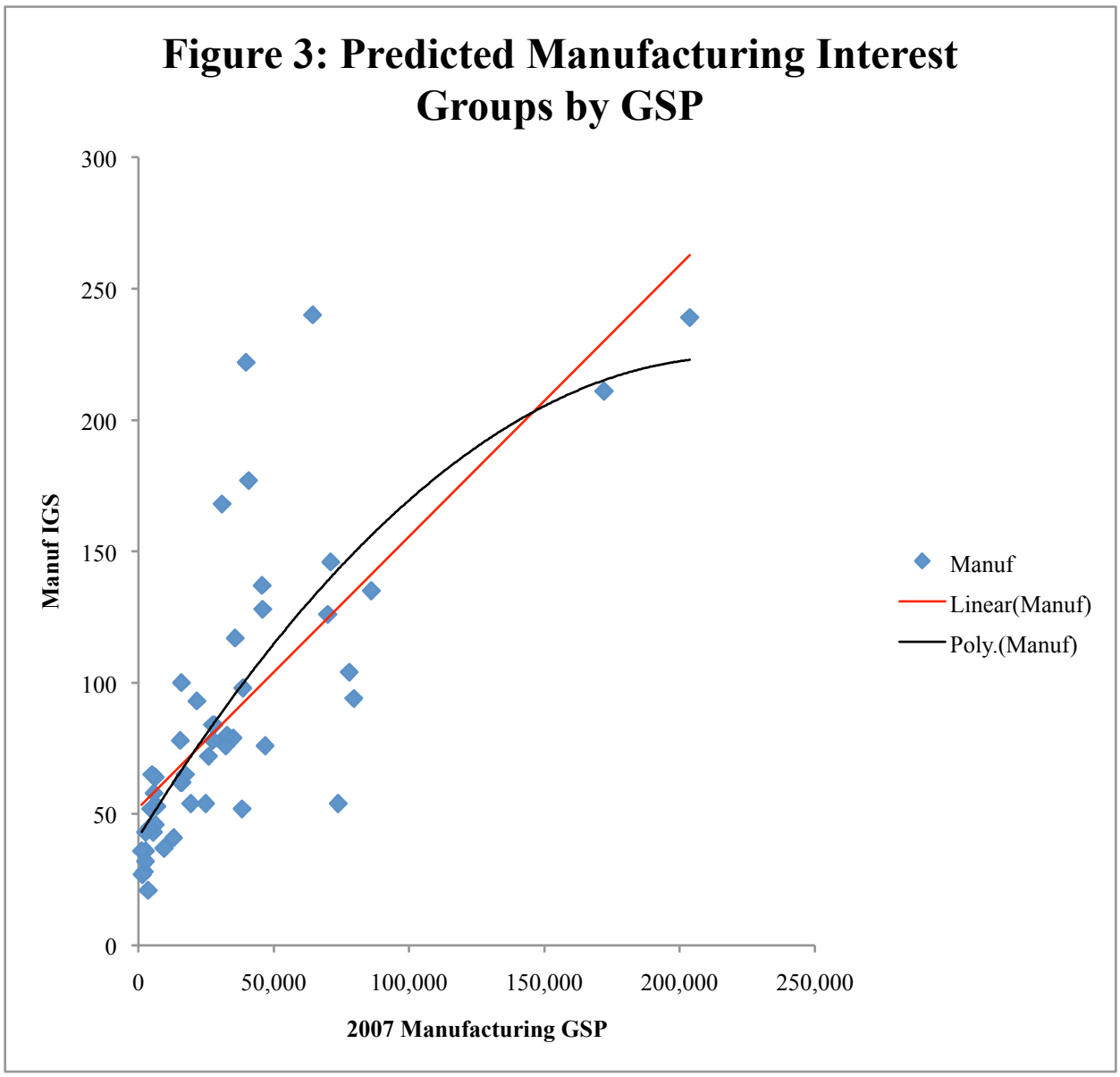
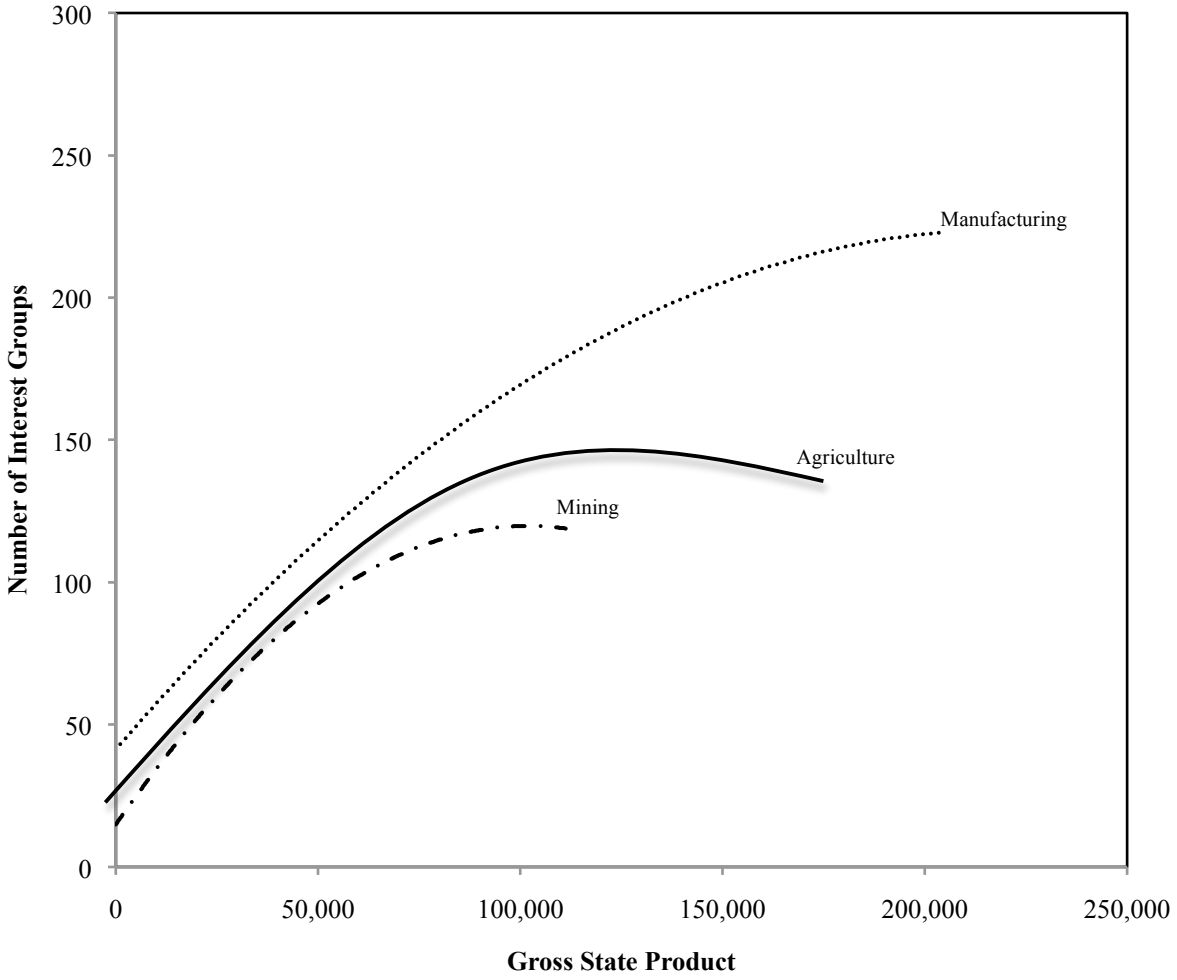


Figure 4 below shows all three regression lines together, over the GSP. Figure 4 greatly resembled Figure 1A which was the predicted graph based on my hypothesis, before the data was actually tested. It makes sense, therefore, that because I found significant results, my hypothesized graph matches the actual findings. Here we can see that the manufacturing regression line has a greater slope than the other two sectors because of the availability for

specialization and niche formation. Furthermore, as mentioned in analyzing Figure 3, the line of best fit is much more linear than for the other two models, as expected. When viewing all three sectors together, we can see that more widespread economic sectors, like manufacturing, have a larger impact, yet have less of the variation described simply by the Gross State Product. This is why we found a lower value of r-squared for the manufacturing model regression than the other two models.

Figure 4: Agricultural, Manufacturing, and Mining Regression Lines



Conclusions

The proposed models in the analysis and theory sections above have shown a strong relationship between interest group density and the population of interest. All three-regression models produced statistically significant results, showing that the number of interest groups in a particularized sector can be predicted by the state's economic prowess in that sector. Furthermore, as proposed, a stronger relationship was observed between more particularized sectors such as agriculture and mining, and a less strong, but still significant relationship in a more ubiquitous economic sector like manufacturing. Similarly, economic sectors with more room for interest specialization, like manufacturing, have greater increases in interest group formation when the Gross State Product increases. A statistically significant relationship was also found between all three sectors number of interest groups and the GSP squared for each state, supporting the validity and reliability of the population ecology model in this context; interest group density increases up until the point of saturation in that particular sector, when interest groups become so numerous and particularized that new groups struggle to form unless either old groups die out, or a large social or economic change occurs creating the need for more interest groups.

These findings are important to our understanding of interest groups in the United States and can be used in many different ways. First and foremost, the models produced can be used to predict changes in interest group communities throughout the states. Using the regression lines, we can plug in predicted values for the Gross State Product and GSP squared in order to see what changes may occur in the interest group community. If we expect the GSP to greatly increase in a sector, these models will tell us with a high level of reliability how many interest groups we can expect to be gained in that economic sector. Being able to understand the interest group

community and the changes likely to occur in it is vital to both the politicians whose support is sought by the interest groups and the citizen supporters of each group alike.

Predicting changes in the interest group community helps us understand the way both the public and private sectors handle economic change. The more economically important a specific sector is, the more citizens will mobilize to form interest groups to support their concerns.

The proposed models can also be used to draw attention to anomalies and encourage further research. For example, if we observe a great deal of interest groups failing to form in a particular sector when the model proposes a period of growth, there will likely be some large confounding variables altering these findings. Similarly, if we see interest groups having great success after the point of saturation in the model, they can and should be observed to determine the causation for such success.

It must also be noted that there were several limiting factors in my analysis. Primarily, several of the variables used were observing slightly larger interest communities than anticipated. For instance, when trying to observe strictly the agricultural sector, data was grouped into agriculture, forestry, fisheries, and hunting. This provided a much wider variety community than originally anticipated, increasing the presence of interest groups and raising the GSP. Similarly, to measure the presence of mining, I used a variable measuring natural resources, a more ambiguous and prevalent variable.

Another limiting factor was the fact that all of the independent variables measured, aside from the control variable of the Ranney index, addressed the economic bases of interest group mobilization. It is possible that social factors can be skewing the results or even could be better predictors of interest group density than the economic factors tested. Economic factors, like GSP, could also be contributing to some social factors that lead to interest group density. For instance,

wealthier states might have more politically active citizens and thus more dense interest communities. For these reasons, I propose further testing on interest group density and the population ecology model using both economic and social factors. Political activism, election years, being termed a swing-state, and even social networking could be contributing to the density of interest groups in some sectors. Though social factors may be harder to observe and measure than economic determinants, testing them would either further validate my findings or provide justification for greater insight into the ever-changing world of interest groups.

References

Baumgartner, Frank R. and Bryan D. Jones. 1993. Agendas and Instability in American Politics. Chicago: University of Chicago Press.

Baumgartner, Frank R. and Beth L. Leech. 2001. Interest Niches and Policy Bandwagons: Patterns of Interest Group Involvement in National Politics. Journal of Politics 63: 1191–213.

Baumgartner, Frank R., Virginia Gray and David Lowery. 2008. "Federal Policy Activity and the Mobilization of State Lobbying Organizations." Political Research Quarterly. 62: 552-567.

Broder, David S. 2000. Democracy Derailed: Initiative Campaigns and the Power of Money. New York: Harcourt.

Campbell, Donald T. and Julian C. Stanley. 1963. Experimental and quasi-experimental designs for generalized causal inference. Boston: Houghton Mifflin.

Hershey, Marjorie R. 2005. Party Politics in America. Eleventh Edition. New York.

Lowery, David and Virginia Gray. 1998. "Representational Concentration and Interest Community Size: A Population Ecology Interpretation." Political Research Quarterly. 51: 919-944.

Lowery, David and Virginia Gray. 2001. The Expression of Density Dependence in State Communities of Organized Interests. American Politics Research. 29(4): 374–91.

Lowery, David and Holly Brasher. 2004. Organized Interests and American Government. Boston: McGraw Hill.

Lowery, David and Virginia Gray. 1995. "The Population Ecology of Gucci Gulch, or the Natural Regulation of Interest Group Numbers in the American States." American

Journal of Political Science. 39: 1-29.

Lowery, David, Virginia Gray, and Matthew Fellowes. 2005. "Sisyphus Meets the Borg: Economic Scale and the Inequalities in Interest Representation," Journal of Theoretical Politics, 17 (1): 41-74.

Nownes, Anthony. 2004. "The Population Ecology of Interest Group Formation," British Journal of Political Science. 34: 49-67.

Olson, Mancur. 1965. The Logic of Collective Action. Cambridge, MA: Harvard University Press.

Truman, David B.1951. The Governmental Process. NewYork: Knopf.

Michael Paretti
141 S. Garner Street Apt. 206, State College, PA 16801
Mxp5074@psu.edu

EDUCATION

Schreyer Honors College
The Pennsylvania State University, University Park
College of the Liberal Arts *Exp. Grad. May 2012*
Candidate for Bachelor of Arts Major in Political Science, minor in Sociology
Study Abroad Semester: Temple Rome Lazio, Italy Spring 2011

HONORS AND AWARDS

Dean's List 7/7 Semesters
Excellence in Communication Award *2011*
- Recognized as demonstrating superior skill in oral, written, visual, and electronic communication

Penn State Liberal Arts Scholarship Recipient *2011, 10, 09*
- Awarded scholarship for exemplary performance in the college of Liberal Arts

Candidate in inaugural class of the Paterno Liberal Arts Fellowship Program
- Completed ethics based courses to expand on social issues
- Participated in numerous service and leadership activities
- Proved excellence in communication by submitting a portfolio of various works
- Studied abroad for one semester to increase international and intercultural awareness
- Fulfilled a 26 credit minor in Sociology

ASSOCIATION MEMBERSHIPS

Member of Phi Beta Kappa Honor Society
Member of National Society for Collegiate Scholars
Member of Phi Eta Sigma Honor Society

PROFESSIONAL EXPERIENCE

Committee on Education and the Workforce, U.S. House of Representatives
Intern *Summer 2011*
- Aided legislative assistants in preparing for committee hearings
- Attended various hearings and reported pertinent information to the Deputy Director of Workforce policy
- Edited and proof-read committee reports and memos
- Actively researched pending legislation for the committee staff

LEADERSHIP EXPERIENCE

Sigma Alpha Epsilon Fraternity
Vice President *Fall 2010*
- Delegated tasks for brothers in maintaining house order and function
- Acted as a leader and representative for fellow brothers
- Served as voting member of the Executive Board
- Trained fraternity brothers for future positions of leadership

Eminent Correspondent *Spring 2010*
- Acted as a liaison between alumni and active brothers
- Established events to improve alumni relations

Philanthropy and Community Service Chair *Fall 2009-2010*
- Coordinated numerous philanthropic events
- Raised over $2,500 for the Cure Tay-Sachs Foundation
- Assisted in fundraising and organizing community events including the Penn State IFC/ Pahnhellenic Dance Marathon
- Established hourly service requirements for brothers to fulfill

CURRENT RESEARCH

I am currently working on my honors thesis, examining interest group density as a function of the population of interest. Specifically, I am using the population ecology model to test interest group density at the state level in agricultural, mining, and manufacturing economic industries.