Roll Call Voting Behavior of the U.S. Senate on Selected Health Legislation 1973-1982: Implications for Health Education

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INTRODUCTION

Health promotion is defined as ". . . the maintenance and enhancement of existing levels of health, through the implementation of effective programs, services, and policies."[1] One of the most important and most neglected aspects of this definition deals with the implementation of effective health policies.[1-3] There is consensus among politicians, health policy specialists and health professionals that the United States has no coherent health policy.[4-7]

At present, we face a fundamental reorientation of thought in health care. The motivating force is political and economic. The net result has been greater emphasis on health education as a cost effective means to help people change their self-created risk behavior. Health education has been called upon to make contributions toward amelioration of recalcitrant health problems as diverse as cardiovascular disease, drug abuse and AIDS. Health educators must be aware that unless comprehensive changes are also made in the health policy arena, their educational interventions will be circumvented.

For example, the success of a national alcohol abuse prevention program can be nullified by massive media advertisements by the beverage industry.

Health educators must recognize the diversity of conflicting interest in the health arena. It is generally impossible to find any form of health policy which is not a threat to some participant in the health arena. As Evans[5] states ". . . it would be naive in the extreme to assume that all participants are wholly or even primarily, committed to a struggle against disease and death." Brown[6,7] advocates the view that inoculations are highly cost effective, that health education is a necessity, and that the mass media can be used to reinforce individual cost benefit efforts in health promotion, yet ". . . each of these [are] opposed to our present system of health care cost reimbursement." To acknowledge the political nature of health is to recognize the political forces for which illness is economically beneficial. This economic incentive will be reflected in public policy ". . . either as active opposition to specific legislation or to programs at the formulation or implementation stage, or as the ability

to fix the boundaries of the political agenda."[1] According to Neubauer and Pratt[2] "in our society the most important aspects of the 'health problem' are fundamentally political (as opposed to 'economic' or 'social' or 'scientific'). To accept this is to acknowledge that some organized interests are dependent upon illness as a direct or indirect outcome of what they do."

Policy conflict results, for example, when the Department of Agriculture delivers price supports to the tobacco interests while simultaneously the Department of Health and Human Services mounts a campaign against cigarette smoking. In addition to the massive Federal bureaucracy, there are a multitude of voluntary organizations, like the American Cancer Society, and professional organizations, like the American Public Health Association which exist to deal with some aspect of consumer input into health promotion and disease prevention. Brown[6] states, ". . . it is little wonder that no consistent program either of prevention or of health education can be launched in this country." The history of the federal government's role in health is characterized by an unfocused approach.[4] Within this context, health educators will be challenged to demonstrate that the health promotion orientation is effective in shaping local, state and federal health policy.

The present economic crisis in health care may serve as the catalyst for the next major wave of federal health legislation. In 1968 the federal expenditure in health care accounted for 24 percent ($14.1 billion) of all health expenditures in the United States. Federal spending was $16.6 billion in 1969 and $18.8 billion in 1970.[4] By 1983, total national health expenditures were reported to be $355 billion annually. This figure represented a record high of 10.8 percent of the gross national product. It was reported that this expenditure represented ". . . $1,495 for every American, of which $611 was paid by federal, state and local

governments. Medicare and Medicaid outlays totaled $91 billion in 1983, up from $83 billion in 1982. Hospitals received $54 billion of that amount, compared to $48 billion in 1982."[9] In 1985 national spending for health rose 9.1 percent, the lowest annual jump in 20 years.[10] The escalating costs of health care and the vast expansion of the health care sector are seen as attributable to social welfare policies of the past fifty years which are now being called into question.[11]

The Legislative Process

The first systematic investigation into the voting behavior of the U.S. Congress was completed by Lowell.[12] Since that time great strides have been made in the application of qualitative and quantitative methods to the legislative process.[13] For example, Clausen[14-16] conducted a longitudinal analysis of legislative decision making on policy issues from 1953 to 1970. He identified the following five major policy dimensions which served as a stable continuum across the course of his study period: 1) Civil Liberties, 2) International Involvement, 3) Agricultural Assistance, 4) Social Welfare, and 5) Government Management.

Within the context of the present study, health legislation was considered policy content from the social welfare dimension. Clausen used the following definition of the Social Welfare Policy content dimension: "Legislation on the welfare dimension involves a relatively direct intercession of the government on behalf of the individual, cushioning him against the jolts administered by the economy, assisting him in coping with more powerful economic elements, and aiding him in getting the equal chance that the ideal of equal opportunity demands."[14]

This definition is consistent with the historical conceptualizations of health within the federal government. Social Security, Medicare and Medicaid, and other major health legislation were aimed at improvement of the

social welfare of selected populations.[17]

PURPOSE OF THE STUDY

The primary aim of the study was to make a contribution toward an understanding of how selected political process variables may influence voting behavior on health legislation. An additional aim was to provide a conceptual framework for the selection and evaluation of health legislation from the perspective of health promotion as well as from the perspective of the legislator. The purpose of the present study was to analyze the voting behavior of legislators in the United States Senate on selected health roll call votes to determine the degree to which political party, region and ideology accounted for variance in voting behavior. The study focused on votes taken during the 93rd (1973) through the 97th (1982) regular sessions of Congress.

Historically, the legislative branch of the Federal government has demonstrated an ability to make major decisions which have a direct effect on individual and public welfare of the American people. This is accomplished primarily through the act of voting on various pieces of legislation proposed in each house of Congress. The primary aim of the legislative researcher is to explain the policy output of legislative bodies. The most sensible strategy is for research to focus on the output of legislatures — votes.[18] Roll call votes are recorded policy decisions; they constitute a valuable source of policy data that can be correlated with political process variables (party membership, region, ideology, etc.). Roll call votes are taken on relatively major and relatively controversial issues. Few major decisions are made without benefit of at least one recorded vote. The method of roll call analysis utilizes empirical techniques to identify patterns of voting behavior from which the researcher may test hypotheses.[19-21]

Research Questions

Research questions are focused on

Table 1

Regional Classification of States[22]

Northeast (12 States)	Midwest (12 States)	South (13 States)	West (13 States)
Connecticut	Illinois	Alabama	Alaska
Delaware	Indiana	Arkansas	Arizona
Maine	Iowa	Florida	California
Maryland	Kansas	Georgia	Colorado
Massachusetts	Michigan	Kentucky	Hawaii
New Hampshire	Missouri	Louisiana	Idaho
New Jersey	Minnesota	Mississippi	Montana
New York	Nebraska	North Carolina	New Mexico
Pennsylvania	North Dakota	Oklahoma	Oregon
Rhode Island	Ohio	South Carolina	Utah
Vermont	South Dakota	Tennessee	Washington
West Virginia	Wisconsin	Texas	Wyoming
		Virginia	Nevada

selected classification and political process variables: 1) the classification of health legislation; 2) the role of political party; 3) the role of geographic region; and 4) the role of political ideology. These political process variables are believed to influence legislative decision making. Political party is limited to Democrat and Republican parties. The United States is classified into four regions, Northeast, Midwest, South and West, (see Table 1) based upon the theory of Trade Areas advocated by Bensel.[22] Ideology is measured by the Americans for Democratic Action Index (ADA) reported in appropriate issues of *Almanac of American Politics*.[23] Only the 93rd through the 97th (1973-1982) regular sessions of the United States Senate are considered in the empirical analysis. The research questions to accomplish the stated purpose of the study are listed below:

1. What percentage of roll call votes, within each of the health roll call scales, can be classified into each of the four domains of the Health Field Concept (defined below)?

2. How much does political party membership account for variance in voting behavior patterns on health roll call scales within each Senate under investigation?

3. How much does region account for variance in voting behavior patterns on health roll call scales within each Senate under investigation?

4. How much does ideology account for variance in voting behavior patterns on health roll call scales within each Senate under investigation?

METHODS

Over the time span of the study period (1973 to 1982) there were literally thousands of roll call votes taken in the Senate. The first task of the research was to select a preliminary universe of roll call votes related to health which could then be used as the basis for voting behavior analysis. It was deemed important to select legislation from the health promotion perspective. To accomplish this task the Health Field Concept[24] provided the conceptual orientation used to examine the written description of all roll call votes and to identify health legislation to be analyzed.

The Health Field Concept was used by Lalonde[25] to formulate strategies for improving the health of Canadians. According to Terris:

The Lalonde report was the first official government statement of policy that recognized the beginning of a new era in public health, the era of the

second epidemiologic revolution which, just as the first epidemiologic revolution conquered infectious diseases, will, during the next few decades, achieve the conquest of some of the most important noninfectious diseases.[26]

The essence of the Lalonde Report was the Health Field Concept which categorized the determinants of health into four broad domains: 1) Human Biology, 2) Environment, 3) Lifestyle, and 4) System of Health Care Organization. These four domains were identified through an examination of the causes and underlying factors of sickness and death in Canada. Briefly stated, the *Human Biology Domain* encompassed the health outcomes directly derived from human biology, e.g., genetics, growth and aging. This domain was characterized by limited corrective intervention by the individual or community. The *Environment Domain* included all factors related to health which were external to the human body, e.g., safe food and water, effective sanitation, noise pollution and safe social environment. This domain was characterized by limited individual control and relatively greater community control over corrective intervention. The *Lifestyle Domain* dealt with individual decisions which have an impact on health, e.g., seat belt use, drug/sub-

stance abuse, stress management and physical fitness. This domain was characterized by a maximum of individual corrective intervention and limited community control. The *System of Health Care Organization Domain* included public and private institutions devoted to delivery of health services, e.g., medical care, dental care, nursing homes, pharmacy services and mental health services. This domain has received the most attention and money with the expectation that these services will bring about major improvements in the health status of the American population. This domain is characterized by minimum potential for individual intervention and relatively maximum potential for corrective social-political intervention.[27]

Dever[28] based his Epidemiology Model of Health Policy Analysis on the Health Field Concept. According to Dever, each domain of the Health Field Concept could be further refined as follows: 1) Environment included Social, Physical and Psychological components; 2) Life Style (self-created risks) included Consumption Patterns, Leisure Activity Risks and Employment Participation and Occupational Risks components; 3) Human Biology included Complex Internal Systems, Maturation and Aging, and Genetic Inheritance components; and 4) System of Health Care Organization included Restorative, Curative and Preventive components.

The Lalonde Report and its Health Field Concept was recognized as a major contribution toward the advancement of a conceptual framework within which to develop rational health policy in the United States. In 1979, the first U.S. Surgeon General's Report on Health Promotion and Disease Prevention, *Healthy People,*[29] advocates the concepts and adopts the goal-setting strategy advanced in the Lalonde Report. In 1980, the Surgeon General issued a second report, *Promoting Health Preventing Disease: Objectives for the Nation,*[30] which established quantitative objectives

necessary for the attainment of the broad goals advocated in *Healthy People.*[29] In 1983, *Public Health Reports*[31] published a collection of articles titled "Promoting Health/Preventing Disease: Public Health Service Implementation Plans for Attaining the Objectives for the Nation" (1983) which focused on progress toward achieving the objectives for the nation. In 1984, the Office of Disease Prevention and Health Promotion (ODPHP) published *Proceedings of Prospects for a Healthier America: Achieving the Nation's Health Promotion Objectives.*[32] In 1986, ODPHP published *The 1990 Objectives for the Nation: A Midcourse Review*[33] which described substantial progress being made toward goal attainment. This evidence provided support for use of the Health Field Concept as the conceptual framework to select the preliminary universe of roll call votes to be analyzed in this study.

The roll call vote represents one among many methods of voting used by legislators and has been described in the following terms: ". . . The roll-call is the most common type of public vote . . . the term has come to be associated with all voting procedures that provide a public record of positions taken by individual legislators."[34] Roll calls are considered to be dependent upon many factors that, when considered as independent variables, can be used to test research hypotheses.

Clausen's[34] Policy Dimension Model provided a theoretical framework within which to examine results of the study. The policy dimension theory is based on the premise that legislators reduce the time and energy requirement of policy decision making by sorting policy proposals into selected content categories and establishing a position for each general content category. The technique of focusing roll call studies upon policy dimensions facilitates historical as well as comparative research. Thus, in preparation for the statistical analysis of roll call voting, preliminary conceptual definitions of policy domains are used to sort roll

calls into broad policy categories.[36,37]

Another preliminary task of the research was to specify the variables used to describe the legislators' voting behavior, for example, a health roll call vote scale. According to Anderson,[34] scale analysis was ". . . initially developed by Louis Guttman as a means of determining whether a series of attitude questions on interview schedules measured a common underlying attitude." If an investigator is interested in racism he assumes individuals in the population differ in the degree of their racism. The investigator would devise a set of questions, the response to which he believed would measure these variations. The methodological question is: Do all the questions relate to racism, or are they tapping a variety of different attitudes? "Guttman developed his scaling procedure to deal with this type of problem."[34]

The same type of problem exists in roll call analysis. The investigator examines a population of roll calls from which to select a preliminary universe believed to measure a common dimension. The methodological question is: Do the selected roll calls belong together in that each relates to a common, underlying dimension? "The researcher cannot know simply from examining the content of roll calls whether his assumption about commonality is correct. His assumption should be empirically tested . . ."[34]

Cluster analysis[38] was used to create unidimensional roll call scales within each Senate. The cluster procedure allowed for a simple summative score to be coded for each senator. Thus, the preliminary selection of roll call votes, using the Health Field Concept and the Epidemiology Model of Health Policy Analysis, was supplemented with statistical analysis of the relationship between roll call votes. This analysis provided the basis for construction of scale scores which measured voting behavior on selected health legislation. The cluster procedure created homogeneous groups of roll call votes which

reflected the legislator's perspective. The roll call cluster scales, within each respective Senate, were used as discriminating variables to measure variations in voting behavior. Senators were assigned numerical scores on each roll call vote, and the result was subjected to discriminant function analysis. Political party, region, and ideology served as independent political process variables to answer the research questions of the study. The following discussion will focus on specific empirical methods used to create the unidimensional health roll call scales used to measure Senate voting behavior.

The Health Roll Call Scale

The Health Field Concept and the Epidemiology Model of Health Policy Analysis served as the conceptual orientation used to examine the Inter-University Consortium for Political and Social Research (ICPSR)[39] written description of roll call content and select the health related preliminary universe of roll call

votes. For example, a roll call vote on abortion would be selected as being from the System of Health Care Organization Domain (curative, restorative and/or preventive). Votes on tax credits for corporations that provide health promotion programs for employees would be selected as being from the Life-Style Domain (occupational risks, consumption patterns and/or leisure risks). Votes on regulation of toxic waste would be selected as being from the Environmental Domain (physical, social and/or psychological). On the other hand, votes on arms control would not be selected as health related legislation even though the issue of nuclear war has serious implications on both physical, mental and environmental health.

The preliminary universe of selected health related roll call votes was further refined by elimination of all unanimous and nearly unanimous votes as well as votes with large abstentions or absences. Thus, in order for a vote to be included in the

study, 80 percent of the total Senate must have participated with at least ten percent of the voting members being opposed to the majority.

In order to achieve homogeneous clusters of roll calls, the average Gamma correlation among all roll call pairings was set to be .70 or greater before a roll call was admitted to the cluster. The resulting cluster of roll calls constituted an issue domain that could be further analyzed. Cluster analysis caused the large number of roll call votes in the preliminary universe to be condensed into unidimensional scales or variables. By reducing the number of roll calls to summary measures such as scales, manageability is enhanced.[20,15]

DATA ANALYSIS

The voting record of each senator was examined to calculate a summative scale score. Each senator's voting record was scored as follows: Support = $+1$, Absence = $+2$, and Opposition = $+3$. The coding

Table 2

**93rd-97th Senate Classification of 424 Roll Call Votes
Into Health Field Concept Domains**

Congress	Total Clusters	Environment	Life Style	Human Biology	System of Health Care	Other
93rd	6	12 (22.2%)	22 (40.7%)	1 (1.8%)	18 (33.3%)	1 (1.8%)
94th	13	62 (45.6%)	43 (31.6%)	0	17 (12.5%)	14 (10.3%)
95th	9	21 (26.6%)	22 (27.8%)	0	33 (41.8%)	3 (3.8%)
96th	12	43 (41.3%	27 (26.0%)	1 (1.0%)	23 (22.1%)	10 (9.6%)
97th	6	13 (18.8%)	28 (40.6%)	1 (1.4%)	24 (34.8%)	3 (4.3%)
TOTALS		151	142	3	115	31
Percent of Total		34.2%	32.1%	0.7%	26.0%	1.6%

Roll Call Vote Classification
Percentage of Roll Call Votes in Each Health Field Concept Domain

of absences (missing values) as the middle score is consistent with Clausen's[15] assumption that they represent a function of the legislator's indifference or abstention. A mean score was computed for each senator with the resulting scores ranging between 1.0 and 3.0. Scale scores were considered as ordinal data. Discriminant function analysis was used to examine differences among political parties, regional and ideological groups with respect to several variables simultaneously (health roll call scales). In discriminant analysis, groups must be defined so that each case belongs to one and only one group.[46]

RESULTS

Research Question One

In order to answer the first question, a description of roll call content, provided by the ICPSR, was used to classify individual roll calls into an appropriate domain of the Health Field Concept. Cluster analysis procedures were applied to the 442 roll call votes selected as the preliminary universe. A total of 46 clusters were generated over the entire study period. Table 2 contains a list of the raw numbers and percentage of roll calls classified into each of the four domains of the Health Field Concept.

Table 2 shows an almost total absence of items in the Human Biology Domain. Most issues related to Human Biology (aging process, complex internal systems and genetics), were addressed by legislators as issues from within the System of Health Care Organization Domain. This suggests that human biology as conceived in the Health Field Concept was not a separate legislative domain. From the total 442 individual roll calls identified over the entire study period 1973-1982, the largest percentage was classified into the Environmental Domain (34.2%) followed by Life Style (32.1%) and System of Health Care Organization

Table 3

Political Party Analysis, 93rd through 97th Senate Classification Results

Senate	Actual Group	Number of Cases	Predicted Group Membership		Percentage of "Grouped" Cases Correctly Classified
			Democrat	Republican	
Senate 93rd	Democrat	57	52	5	85.9%
	Republican	42	9	33	
	Ungrouped Cases	2	0	2	
			Predicted Group Membership		Percentage of "Grouped" Cases Correctly Classified
			Democrat	Republican	
Senate 94th	Democrat	61	59	2	90.9%
	Republican	38	7	31	
	Ungrouped Cases	2	1	1	
			Predicted Group Membership		Percentage of "Grouped" Cases Correctly Classified
			Democrat	Republican	
Senate 95th	Democrat	65	59	6	86.4%
	Republican	38	8	30	
	Ungrouped Cases	1	0	1	
			Predicted Group Membership		Percentage of "Grouped" Cases Correctly Classified
			Democrat	Republican	
Senate 96th	Democrat	59	56	3	95.0%
	Republican	41	2	39	
	Ungrouped Cases	1	0	1	
			Predicted Group Membership		Percentage of "Grouped" Cases Correctly Classified
			Democrat	Republican	
Senate 97th	Democrat	46	46	0	100.0%
	Republican	54	0	54	
	Ungrouped Cases	1	0	1	

(26.0%). Most of the roll calls classified as Other were issues related to the Consumer Protection Agency in the 94th Senate and the Office of Consumer Affairs in the 96th Senate. A brief description of the roll call content and the classification of individual roll call votes for each cluster within respective Senates is available from the corresponding author.

Research Question Two

How much does political party membership account for variance in voting behavior patterns on health roll call scales within each Senate under investigation? Political party membership accounted for the greatest amount of variance in voting behavior on health roll call scales

throughout the entire study period. By the 97th Senate (1981-1982) 100% of senators could be correctly classified as voting with their party coalition. Political party analysis was limited to the major political alignments, Democrats and Republican parties.

In the two party roll call analysis, discriminant analysis takes all of the scale scores within a Senate and mathematically combines them in a search for the one dimension (set of roll call scales) or function which separates the two predicted coalitions (Democrats and Republicans). Table 3 contains a summary of the party analysis classification and predictive accuracy for the 93rd through the 97th Senates. This analysis assumes that a senator will vote, or can be

"predicted" to vote with others from his/her political party.

As shown in Table 3, 85 of the 101 senators in the 93rd Senate could be classified correctly into predicted groups, that is, with others from their party. Fifty-two (91.2%) of the 57 Democrats were placed in the Democrat coalition and 33 (78.6%) of the 42 Republicans senators were placed in the Republican coalition.

In the 94th Senate, the percentage of "grouped" cases correctly predicted was 90.9%. Fifty-nine of the 61 Democrats (96.7%) were placed in the Democrat coalition and 31 of the 38 Republicans (81.6%) were placed in the Republican coalition.

The 95th Senate demonstrated less

Table 4

Region Analysis, 93rd through 97th Senate Classification Results

Senate	Actual Group	Number of Cases	Predicted Group Membership				Percentage of "Grouped" Cases Correctly Classified
			Northeast	Midwest	South	West	
93rd	Northeast	24	12	5	2	5	54.9%
	Midwest	25	4	14	4	3	
	South	26	0	2	18	6	
	West	27	4	4	7	12	

Senate	Actual Group	Number of Cases	Predicted Group Membership				Percentage of "Grouped" Cases Correctly Classified
			Northeast	Midwest	South	West	
94th	Northeast	25	16	5	3	1	54.5%
	Midwest	24	8	7	2	7	
	South	26	2	0	20	4	
	West	26	2	6	6	12	

Senate	Actual Group	Number of Cases	Predicted Group Membership				Percentage of "Grouped" Cases Correctly Classified
			Northeast	Midwest	South	West	
95th	Northeast	24	19	4	1	0	58.7%
	Midwest	25	5	10	6	4	
	South	28	0	3	17	8	
	West	27	0	7	5	15	

Senate	Actual Group	Number of Cases	Predicted Group Membership				Percentage of "Grouped" Cases Correctly Classified
			Northeast	Midwest	South	West	
96th	Northeast	25	17	5	2	1	55.5%
	Midwest	24	6	11	2	5	
	South	26	1	3	18	4	
	West	26	5	5	6	10	

Senate	Actual Group	Number of Cases	Predicted Group Membership				Percentage of "Grouped" Cases Correctly Classified
			Northeast	Midwest	South	West	
97th	Northeast	25	19	2	1	3	60.4%
	Midwest	24	2	13	4	5	
	South	31	1	1	20	9	
	West	26	4	5	8	9	

cohesiveness between the two party coalitions when compared to the 94th Senate. Fifty-nine of the 65 Democrats (90.8%) were placed in the Democrat coalition while 30 of the 38 Republicans (78.9%) were placed in the Republican coalition. Overall, 86.4% of the cases were classified correctly.

In the 96th Senate, Republicans and Democrats demonstrated almost equal cohesiveness. In Table 3, 39 of the 41 Republicans (95.1%) were placed in the Republican coalition while 56 of the 59 Democrats (94.9%) were placed in the Democrat coalition. Overall, 95.0% of the cases were classified correctly.

In the 97th Senate, all 46 Democrats (100%) were placed in the Democrat coalition and 54 Republicans (100%) were placed in the Republican coalition. Overall, 100% of the cases were classified correctly. It should be noted that the 97th Senate (1981-1982) represented the first time Republicans had gained Senate majority control during the study period of 1973 through 1982.

In summary, partisan voting behavior increased consistently over the entire study period with the exception of the 95th Senate (1977-1978). During the 97th Senate (1980-1981), with the Republican take-over, partisan voting behavior on health legislation peaked.

Research Question Three

How much does a senator's regional classification account for variance in voting behavior patterns on health roll call scales? The United States was classified into four regions (see Table 1) based upon the theory of Trade Areas advocated by Bensel.[22] Regionalism was a moderate predictor of voting behavior. The 95th Senate demonstrated the low point of regional cohesiveness with only 54.5% of senators classified correctly into their predicted regions. In the 97th Senate, 60.4% of the senators were predicted correctly as voting with their regional coalitions.

As shown in Table 4, 56 of the 102 senators in the 93rd Senate could be classified correctly in the predicted group, that is, with others from their region. Twelve (50.0%) of the northeastern senators were placed in the northeast coalition. Fourteen (56.0%) of the midwestern senators were placed in the midwest coalition. Eighteen (69.2%) of the southern senators were placed in the south coalition and twelve (44.4%) of the western senators were placed in the west coalition. Southern senators demonstrated the most cohesive voting coalition followed by the midwestern, northeastern and western coalitions.

Fifty-five of the 101 senators in the 94th Senate could be classified correctly in the predicted group. Sixteen of the northeastern senators (64.0%) were placed in the northeast coalition. Seven of the midwestern senators (29.2%) were placed in the midwest coalition. Twenty (76.9%) of the southern senators were placed in the south coalition and twelve (46.2%) of the western senators were placed in the west coalition. The southern senators represented the most cohesive group followed by the northeast, west and midwest coalitions. In the 94th Senate, midwestern senators were much less cohesive (29.2%) when compared to the 93rd Senate (69.2%).

Table 4 illustrates that 61 of the 104 senators in the 95th Senate could be classified correctly in their predicted regional coalition. Nineteen of the northeastern senators (79.2%) were placed in the northeast coalition. Ten of the midwestern senators (40.0%) were placed in the midwest coalition. Seventeen of the southern senators (60.7%) were placed in the south coalition and 15 of the western senators (55.6%) were placed in the west coalition. Senators from the southern region demonstrated the most cohesive voting behavior followed by senators from the northeast, west and midwest regions.

In Table 4, 56 of 101 senators in the 96th Senate could be classified cor-

rectly with others from their region. Seventeen (68.0%) of the northeastern senators were placed in the northeast coalition. Eighteen (69.2%) of the southern senators were placed in the south coalition and 10 (38.5%) of the western senators were placed in the west coalition. Southern senators demonstrated the most cohesive voting behavior, followed by the northeastern, midwestern and western coalitions.

As shown in Table 4, 61 of 101 senators in the 97th Senate could be classified correctly in their predicted group. Nineteen (76%.0) of the northeastern senators were placed in the northeast coalition; 13 (54.2%) midwestern senators were placed in the midwest coalition; 20 southern senators (76.9%) were placed in the southern coalition; and nine (34.6%) western senators were placed in the west coalition. Southern senators demonstrated the most cohesive voting pattern followed by the northeastern, midwestern and western coalitions.

Research Question Four

How much does ideology (ADA score) account for variance in voting behavior patterns on health roll call scales in each Senate under study? Ideology was operationalized as a political belief system measured by the Americans for Democratic Action (ADA) index. ADA members push for economic legislation designed to reduce inequality, curtail rising defense spending, prevent encroachments on civil liberties, and promote international human rights.[23]

Each year the ADA selects legislation considered important to the organization's goals and rates legislators according to their voting record. ADA scores range from 0 to 100. In the present study, three cut points were used along the ideological continuum: 1) senators with ADA mean scores less than or equal to 33 were designated conservatives; 2) senators with ADA mean scores greater than or equal to 34 and less than or equal

Table 5

Ideology Analysis, 93rd through 97th Senate Classification Results

Senate	Actual Group	Number of Cases	Predicted Group Membership			Percentage of "Grouped" Cases Correctly Classified
			Conservative	Moderate	Liberal	
93rd	Conservative	31	25	3	3	83.2%
	Moderate	14	2	6	6	
	Liberal	44	0	1	43	

Senate	Actual Group	Number of Cases	Predicted Group Membership			Percentage of "Grouped" Cases Correctly Classified
			Conservative	Moderate	Liberal	
94th	Conservative	30	29	1	0	91.5%
	Moderate	16	1	11	4	
	Liberal	36	0	1	35	

Senate	Actual Group	Number of Cases	Predicted Group Membership			Percentage of "Grouped" Cases Correctly Classified
			Conservative	Moderate	Liberal	
95th	Conservative	27	22	4	1	97.4%
	Moderate	26	3	20	3	
	Liberal	10	0	2	8	

Senate	Actual Group	Number of Cases	Predicted Group Membership			Percentage of "Grouped" Cases Correctly Classified
			Conservative	Moderate	Liberal	
96th	Conservative	33	29	4	0	87.8%
	Moderate	31	1	29	1	
	Liberal	18	0	4	14	

Senate	Actual Group	Number of Cases	Predicted Group Membership			Percentage of "Grouped" Cases Correctly Classified
			Conservative	Moderate	Liberal	
97th	Conservative	47	40	7	0	81%
	Moderate	27	7	16	4	
	Liberal	26	0	1	25	

to 66 were designated moderates; and 3) senators with ADA mean scores greater than or equal to 67 were designated liberals. Legislators with missing ADA scores for both years of the Senate under investigation were excluded from analysis.

Political ideology was a consistent and powerful influence over senatorial voting behavior through-out the study period. The ideological low point was the 95th Senate where only 79.0% of voting behavior among ideological coalitions could be predicted correctly; the ideological high point was the 94th Senate where 91.5% of the voting behavior among ideological coalitions was predicted correctly.

Examination of the discriminant

analysis group classification summaries for the 93rd through 97th Senates, Table 5, illustrates the degree of cohesion among the three ideological groups.

Voting behavior of 74 of 89 senators included in the 93rd Senate ideological analysis could be predicted. Twenty-five of the conservative senators (80.6%) were placed in the conservative coalition, six (42.9%) moderate senators were placed in the moderate coalition and 43 (97.7%) liberal senators were placed in the liberal coalition. Liberal senators represented the most cohesive group followed by conservatives and moderates.

Voting behavior for 75 of the 82 senators included in the 94th Senate were predicted correctly. In Table 5, 29 of the conservative senators (96.7%) were placed in the conserva-

Table 6

Predictive Accuracy of Subject Variables
Percentage of Senate Votes Accurately Predicted by
Political Party Affiliation, Region, and Political Ideology

Senate	Party	Region	Ideology
93rd	85.9%	54.9%	83.2%
94th	90.9%	54.5%	91.5%
95th	86.4%	58.7%	79.4%
96th	95.0%	55.5%	87.8%
97th	100.0%	60.4%	81.0%

tive coalition. Eleven of the moderate senators (68.8%) were placed in the moderate coalition; 35 (97.2%) liberal senators were placed in the liberal coalition. Conservative senators represented the most cohesive group, followed by liberals and moderates. When compared to the 93rd Senate, both conservative and moderates demonstrated an increase in cohesive voting behavior during the 94th Senate.

In Table 5, 50 of 63 senators included in the 95th Senate could be classified as voting with their predicted coalition. Twenty-two conservatives (81.5%) were classified with the conservative coalition; 20 moderates (76.9%) were classified with the moderate coalition; and eight liberals (80.0%) were classified with the liberal coalition. When compared to previous Senates, both conservatives and liberals demonstrate a decrease in cohesiveness while moderates demonstrate a distinct increase in cohesive voting behavior.

Seventy-two of the 82 senators included in the 96th Senate ideological analysis could be classified as voting with their predicted ideological coalition. Twenty-nine (87.9%) conservatives, 29 (93.5%) moderates and 14 (77.8%) liberals were classified correctly. Moderates demonstrated a distinct increase in cohesive voting behavior when compared to previous Senates under study.

Eighty-one of the 100 senators included in the 97th Senate ideological analysis could be classified correctly as voting with their predicted coalition. Voting behavior for 40 of 47 conservative senators (85.1%), 16 of 27 moderates (59.3%) and 25 of 26 liberals (96.2%) were predicted correctly.

In summary, political ideology proved to be a powerful predictor of senatorial voting behavior on health legislation throughout the study period. Ideology was a much better predictor than region and ranked closely behind political party as the best predictor. Table 6 provides a summary of predictive accuracy throughout the study period for each of the political process variables under investigation. All scales within each Senate were used to determine predictive accuracy. Data in Table 6 demonstrates an alternating low to high pattern in predictive accuracy accounted for by party and ideology from the 93rd to the 96th Senates while the contribution of region remains relatively stable.

In the 95th Senate the data demonstrates a distinct decrease in predictive accuracy accounted for by party and ideology, while the contribution of region has a distinct increase. The 96th Senate represents an increase in partisan and ideological voting behavior and a decrease in regionalism. By the 97th Senate voting behavior had become highly partisan as demonstrated by the 100% predictive accuracy accounted for by party. Also, in the 97th Senate, ideology remained a strong factor with 81.0% predictive power and the 60.4% predictive accuracy accounted for by region represented the highest degree of regional cohesion of any Senate under study. The 97th Senate represented emergence of the Republican party as dominant.

Summary of Results

The purpose of the study was to analyze roll call voting behavior of legislators in the 93rd-97th (1973-1982) Senates on selected health legislation. The Health Field Concept and Dever's Epidemiology Model of Health Policy Analysis were used to select the preliminary universe of 442 health roll call votes to be analyzed. A description of content for each roll call vote was used to classify legislation into appropriate domains of the Health Field Concept. The majority of legislation was classified into the Environment Domain followed by Lifestyle, Organization of Health Care and Human Biology.

Throughout the study period political party consistently accounted for the greatest amount of variance in voting behavior. In the 97th Senate 100% of the senators were classified correctly as voting with their political party (Democrat and Republican). Ideology was about the second best predictor of voting behavior. In the 94th Senate 91.5% of the senators were classified correctly as voting with their predicted ideological coalition (conservative, moderate and liberal). Region was a moderate prediction of voting behavior. In the 97th Senate 60.4% of the senators were classified correctly as voting with their predicted regional coalition (northeast, midwest, south and west).

DISCUSSION

The interrelationship among party, region and ideology will be discussed in an effort to explain why individual senators failed to vote as predicted. The Health Field Concept and Clausen's Policy Dimensions Model will provide a context to discuss voting behavior on selected health legislation. Finally, a proposed Roll Call Voting Behavior Model of Health Policy Analysis will be presented as a viable perspective from which to understand Senate voting behavior on health legislation.

Political Party as a Predictor of Voting Behavior

The existence of strong partisan voting behavior on health legislation should come as no surprise considering the bipartisan nature of our legislative system. Through observation alone one would expect Democrats and Republicans to differ on how best to provide public health service as they do on other legislative issues. An important finding from the present study was the identification of empirical evidence in support of partisan voting behavior on health legislation. For example, roll call scales which contained legislation designed to maintain, expand and/or cut back on Health and Human Services (HHS) programs provided

strong evidence of partisan voting behavior. HHS roll call scales contained a collection of legislation classified into each of the Health Field Concept domains. From the perspective of Clausen's Policy Dimension Model, most of the roll call votes in HHS scales would be classified into the Government Management Domain. Throughout the study period most of the HHS scales were dominated by legislation to cut back on existing programs by limiting appropriations and restricting eligibility; in other words, limiting the federal government's role in large scale social programs like food stamps and Medicare-Medicaid. Republicans were on the offensive, with scale scores placing them in the support HHS cut-back category. Democrats, the 93rd-96th Senate majority, were on the defensive holding off the Republican attack with scale scores placing them in the oppose HHS cut-back category.

The identification of individual senators who did not vote with their predicted group, that is, Democrats who voted with Republicans and vice versa, provides additional insight into the complex nature of partisan voting behavior. For example, in the 93rd Senate, Republican support for HHS cut-back legislation was led by Jesse Helms (southern conservative) of North Carolina while Democrat opposition was led by Hubert Humphery (midwestern liberal) of Minnesota. Examination of 93rd Senate scale scores (available from the author) indicates that several Democrats, Sam Ervin of North Carolina, Robert Byrd (northeastern moderate) of West Virginia and John Stennis (southern conservative) of Mississippi, had scale scores which placed them with the Republican majority. Additionally, several Republicans broke rank with their party majority. Harrison Williams (northeastern liberal) of New Jersey, Edward Brook (northeastern liberal) of Massachusetts and Richard Schweiker (northeastern liberal) of Pennsylvania, had scale scores which placed them with the Democrat

majority. Regional and ideological coalitions across party lines may provide one explanation why some senators demonstrated voting behavior patterns unlike other members of their party. By the 97th Senate (1981-1982), with the Reagan landslide and emergence of Republican dominance, there had been created a legislative body polarized into ideological party coalitions, i.e., conservative Republicans versus liberal Democrats.

Region as a Predictor of Voting Behavior

Region was a moderate predictor of voting behavior when compared to political party and ideology respectively. The important finding was the identification of health roll call scales where regional voting behavior dominated. For example, in the 93rd, 94th and 97th Senates, roll call scales with legislation classified into the Lifestyle Domain made the greatest discriminatory contribution. These lifestyle scales were dominated by agricultural legislation, i.e., price controls on raw vegetables and meats, reform of the national food stamp program and protection of the tobacco price support program. From the Health Field Concept perspective, these lifestyle issues impact on consumption patterns. From the perspective of Clausen's Policy Dimension Model, these issues belong in the Agricultural Assistance Domain.

Throughout the same period (1973-1982) reductions in predictive accuracy accounted for by region was due largely to midwestern senators who broke rank and voted with the northeastern majority and western senators who voted with the southern majority. During the 97th Senate, voting behavior on legislation to protect the tobacco price support program demonstrated the highest degree of regional cohesiveness. The majority of midwestern senators voted with the northeastern majority to oppose tobacco price supports, while a majority of western senators voted with the southern majority in

support of the tobacco price support program.

Southern and western senators who supported tobacco price support legislation were led by John Melcher (conservative western Democrat) of Montana, Walter Huddleston (moderate southern Democrat) of Kentucky, and John East (conservative southern Republican) of North Carolina. These senators were joined by several northeastern and midwestern senators like Robert Byrd (moderate northeastern Democrat) of West Virginia, Robert Dole (conservative midwestern Republican) of Kansas and Paul Sarbanes (liberal northeastern Democrat) of Maryland.

The West Virginia borders with strong tobacco production states and the moderate ideological position of Senator Byrd help to explain his voting behavior. Party and ideology help to explain the voting behavior of Senator Dole who voted his ideological and party majority. The behavior of Paul Sarbanes is more difficult to explain. He broke rank with his party, ideological and regional majority. It could be that Sarbanes exchanged a positive vote on tobacco price support legislation for political support from conservative Republicans on another issue. It is more likely that Sarbanes responded to the tobacco producing sectors of the state of Maryland. While Maryland is most often associated with the industrial northeast, its history "below the Mason Dixon Line" and its agricultural base form strong bonds with southern states. Additionally, it would appear that Republican dominance in the 97th Senate would provide incentive for some Democrats to compromise and build bipartisan support where possible.

Ideology as a Predictor of Voting Behavior

The 93rd-97th Senate ADA scores, sorted in ascending order from most conservative to most liberal, are available upon request from the au-

**Figure 1
The Government Management
Health Roll Call Model**

E = Environment
LS = Life Style
SHO = System of Health Care Organization
HB = Human Biology

PSY = Psychological
P = Physical
S = Social

OR = Occupational Risk
CP = Consumption Patterns
LR = Leisure Activity Risk

M = Maturation Aging Process
CS = Complex Internal Systems
G = Genetic Inheritance

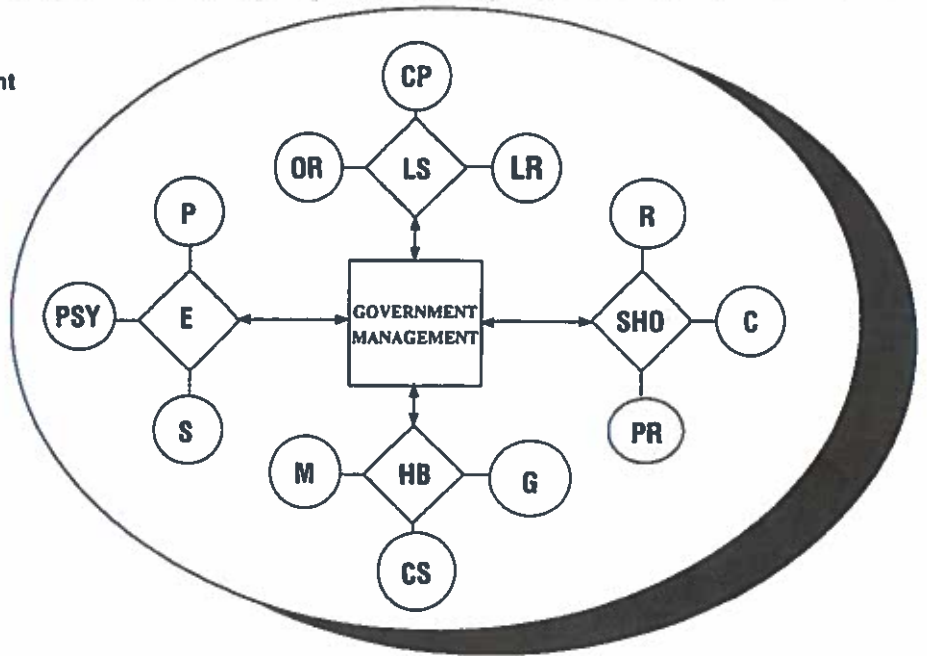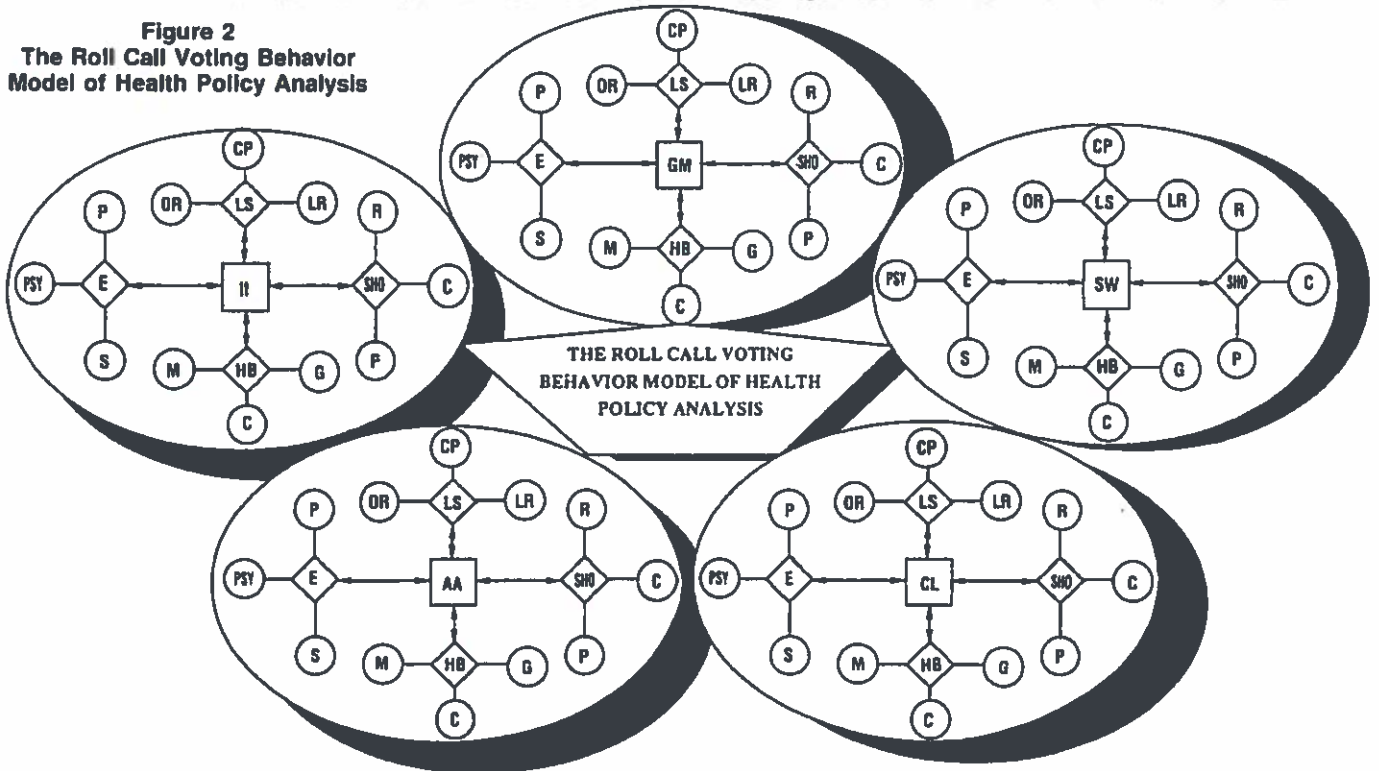R = Restoration
PR = Preventive
C = Curative

**Figure 2
The Roll Call Voting Behavior
Model of Health Policy Analysis**

THE ROLL CALL VOTING
BEHAVIOR MODEL OF HEALTH
POLICY ANALYSIS

II = International Involvement
GM = Government Management
SW = Social Welfare
CL = Civil Liberties
AA = Agricultural Assistance

E = Environment
LS = Life Style
SHO = System of Health Care Organization
HB = Human Biology

PSY = Psychological
P = Physical
S = Social
OR = Occupational Risk
CP = Consumption Patterns
LR = Leisure Activity Risk

M = Maturation Aging Process
CS = Complex Internal Systems
G = Genetic Inheritance
R = Restoration
PR = Preventive
C = Curative

thor. Ideology followed closely behind party as the best predictor of voting behavior on health legislation. Therefore, it was of no surprise to find conservative and liberal senators on different sides of issues with moderates split between the two extremes. An important finding was evidence to support the predictive accuracy of the ADA index as a measure of political ideology. Ideological voting behavior was related closely to political party. During the 93rd and 94th Senates, HHS roll call scales made the greatest discriminatory contribution in both political party and ideological discriminant function analysis. Thus, most liberals were Democrats and most conservatives were Republicans.

A Roll Call Voting Behavior Model of Health Policy Analysis

It has been suggested that health legislation falls within the Social Welfare Domain of Clausen's Policy Dimension Model, and that the four domains of the Health Field Concept were a rational basis for classification of health legislation. Results of the study suggest that health legislation is multidimensional across all five of Clausen's policy dimension domains and that the Health Field Concept alone does not provide the best explanation of voting behavior on health legislation from the senator's perspective. For example, roll call scales which made the greatest discriminatory contribution on regional voting behavior in the 93rd, 94th and 97th Senates were dominated by legislation classified into the Lifestyle Domain. This legislation was concerned with agricultural programs, i.e., price controls on agricultural products, reform of the national food stamp program and protection of the tobacco price support program. From the Health Field Concept perspective, this legislation impacts on consumption patterns. From the perspective of Clausen's Policy Dimension Model, this legislation belongs in the Agricultural Assistance Domain because it is designed to provide economic support for the nation's farmers.

Health and Human Service scales, which made the greatest discriminatory contribution on political party and ideological voting behavior, contained legislation classified into each domain of the health field concept. The HHS scales consistently contained the largest number of roll call votes in each Senate under study. The majority of roll call votes in HHS scales concerned the appropriation of funds necessary to enforce regulation standards, establish new programs, and maintain, eliminate and/or expand existing programs. From the Health Field Concept perspective no one domain seemed to serve as the common underlying link which would explain why legislators considered the HHS scales unidimensional. From the perspective of Clausen's Policy Dimension Model, HHS scales would belong in the Government Management Domain because they required the federal government's intervention to provide economic support and disposition of natural resources for programs designed to protect consumers over producers, the poor over the rich and public interest over private interest.

Figure 1 presents the proposed relationship between domains of the Health Field Concept and Clausen's Government Management dimensions. Within this sphere, senators classify the diverse health and human service legislation which requires appropriation of federal funds and establishment of regulations.

Figure 2 presents the entire Roll Call Voting Behavior Model of Health Policy Analysis[41] which graphically demonstrates the relationship between the Health Field Concept and the Policy Dimension Model. In Figure 2, all four domains of the Health Field Concept are replicated within each of Clausen's five policy dimensions: International Involvement, Government Management, Social Welfare, Civil Liberties and Agricultural Assistance.

The Roll Call Voting Behavior

Model of Health Policy Analysis may provide one possible explanation of how some legislators vote in support of the tobacco price support program and simultaneously vote in support of a national smoking cessation program. Senators who would demonstrate such behavior may consider smoking cessation and tobacco price support separate issues. Legislation to appropriate funds for a national smoking cessation program would be classified first into Government Management and then into the Organization of Health Care Domain under prevention. Within this configuration, political party and ideological variables shape voting behavior. On the other hand, legislation to appropriate funds for the tobacco price support program would first be classified into Agricultural Assistance and then into the Lifestyle Domain under consumption patterns. Within this configuration, regional variables make a significant influence to shape voting behavior.

The proposed model may be used to identify decision making pathways used by senators and provide a better understanding of voting behavior on health legislation. Additionally, the model may help health promotion practitioners develop effective strategies and tactics necessary to influence voting behavior.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

One aim of this study was to make a contribution toward understanding how health issues are viewed from the legislator's perspective. This information may assist health educators develop social action strategies and tactics necessary to ensure that health promotion obtains high priority on the legislative agenda. Health educators may need awareness of how the political process operates and may need to develop skills necessary to be successful in the political environment, which has become a major arena for

dealing with health issues. Results of the study provide support for the following conclusions:

1. Domains of the Health Field Concept can be used effectively as a conceptual context from which to select and classify health legislation used for empirical and descriptive analysis. Classification of roll call votes into domains of the Health Field Concept does not provide a complete perspective on Senate voting behavior.

2. Political party membership was the best predictor of voting behavior on health legislation. Partisan voting behavior was greatest on roll call scales dominated by legislation concerned with the government management function of health and human service programs.

3. Ideology, as measured by the ADA index, was second to party membership as the best predictor of voting behavior on health legislation. Ideological voting behavior was greatest on roll call scales dominated by legislation concerned with the government management function of health and human service programs.

4. Regional membership was a significant predictor of voting behavior on health legislation. Regional voting behavior was greatest on roll call scales dominated by legislation concerned with agriculture price support programs and economic controls on consumer food products.

5. The proposed Roll Call Voting Behavior Model of Health Policy Analysis provides a sound theoretical framework from which to investigate voting behavior on health policy from the legislator's perspective.

Recommendations

The following recommendations are based on results and conclusions of the study:

1. The regional classification of states could be modified to increase predictive accuracy of voting behavior among regional coalitions. The consistent lack of cohesiveness demonstrated by midwestern senators suggests that a three region scheme (northeast, south and west) may be a better predictor of voting behavior. Population migration patterns from midwestern (rust belt) states into southern and western (sun belt) states, provides further support for a three region classification scheme. Future roll call voting behavior studies on health legislation should classify states into three regions.

2. Much legislation presented in the Senate is presented first in the U.S. House of Representatives. Roll call voting behavior in the U.S. House of Representatives could be investigated with many of the same health roll call scales used in the present study. This research could determine the degree to which selected political process variables influence voting behavior on health legislation in both houses of Congress.

3. The predictive accuracy accounted for by the ADA index provides support for development of a Health Promotion Political Rating Index (HPPRI). The American Public Health Association, Association for the Advancement of Health Education, American School Health Association and the Society for Public Health Educators should consider expending the necessary resources to develop a HPPRI.

4. The Roll Call Voting Behavior Model of Health Policy Analysis[41] should be the theoretical framework for future research on legislative voting behavior on health policy. In addition to the U.S. Congress, the model may be applied to state and local legislative bodies where roll call votes are recorded.

As Health educators become increasingly aware of the political nature of health issues, it will be necessary to examine health policy from the legislator's perspective. Roll call voting behavior research can make meaningful contributions toward development of conceptual models needed to understand the legislative decision making process.

The relative obscurity of legislative voting behavior studies within health education research literature[42] provided a point of departure into an investigation of roll call voting behavior among United States senators on selected health legislation. The health needs of the American people will be forged in a political arena characterized by partisan politics, regional differences, liberal versus conservative political ideologies, the influence of professional organizations, precedents of the past and other political process variables. Health education professionals, working in coalition with other groups interested in the promotion of health and prevention of disease for social progress, will be challenged to conduct research on the legislative decision making process and to translate the knowledge gained into a comprehensive effort to shape health policy in the interest of the consumer.

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promotion process by striking a healthy balance between health assessment and behavior change strategies.

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