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**MILLAGE ELECTION OUTCOMES IN MICHIGAN PUBLIC SCHOOL  
DISTRICTS: A TEST OF THE RATIONAL CHOICE AND  
SOCIAL PSYCHOLOGICAL VOTING MODELS**

by

**Christopher Petras**

A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
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School of Public Affairs and Administration

Western Michigan University  
Kalamazoo, Michigan  
December 1996

# MILLAGE ELECTION OUTCOMES IN MICHIGAN PUBLIC SCHOOL DISTRICTS: A TEST OF THE RATIONAL CHOICE AND SOCIAL PSYCHOLOGICAL VOTING MODELS

Christopher Petras, D.P.A.

Western Michigan University, 1996

In this study, the author tests two models of voting behavior to predict the likelihood of a public school millage passing. They are: (1) a rational-choice model, and (2) a social psychological model. The rational-choice model asserts that the likelihood of a school millage passing is a function of the millage's economic benefit as perceived by the voter. The social psychological model asserts that support for the local school millage is a function of the voter's political attitudes and/or the salience of the ballot issue.

The author analyzed every millage election in the 561 (K–12) Michigan public school districts during the month of June for the years 1990, 1991, and 1992. The logit regression findings show that the rational-choice model is successful in predicting school millage outcomes in two of the three years studied. The social psychological model, however, is successful in predicting school millage outcomes for all three years.

Specifically, the likelihood of a school millage passing is a function of the number of persons living in rural farm areas, the number of civilians unemployed within the school district, the amount of the millage renewal requested, the amount of the millage increase requested, and the past success rate of the school district in passing a millage referendum. Suggestions for future research are offered.

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Christopher Petras



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## CHAPTER I

### INTRODUCTION

Public school superintendents perform many managerial tasks such as motivating employees to perform and empowering the employees. Managerial models such as total quality management and strategic planning help the superintendent in developing support among their employees for school affairs and operations. Public school superintendents are taught a variety of managerial models in educational administration programs. Some superintendents receive this managerial education in public administration and business administration courses. Hence, superintendents have a very clear understanding of employee behavior and performance outcomes. What public school superintendents lack, however, is a clear understanding of voting behavior models and school millage outcomes. Public school superintendents, however, serve as policy implementors.

Serving as a policy implementor, the superintendent knows what funding is necessary to deliver school programs effectively. In order to raise funds for policy implementation, the school superintendent is often called upon to serve as the school millage campaign strategist. Therefore, a public school superintendent should have a clear understanding of voting behavior models and their use in predicting election outcomes.

Why is an understanding of voting behavior models and school millage outcomes quintessential for superintendents? I believe that the electorate is an integral part of the superintendent's work. They are often called upon to financially

support the administrative goals of the school board, vis-à-vis, the millage election. Public school superintendents must harness the political attitudes and economic interests of voters and funnel those dynamics into a “yes” vote at the polls.

Acting primarily as campaign managers for local school millage elections, public school superintendents must pull-together numerous resources and develop campaign strategies that will lead voters to pass the millage request. This parallels campaign management activities for presidential and Congressional campaigns. The campaign manager must understand the political attitudes and economic interests of voters and execute an election strategy that reconciles those attitudes and interests.

Voting behavior models can facilitate a superintendent’s understanding of voters’ political attitudes and economic interests and the effect of those dynamics on school millage outcomes. The field of political science provides a robust literature base on voting behavior models and Congressional and presidential election outcomes. Unfortunately, voting behavior models are not typically incorporated with educational or public administration programs. Therefore, I will explain voting behavior models and their application to presidential, Congressional, and school millage elections. There are three objectives for this study.

The first objective of my study is to explain the evolution of voting behavior theory and its application to Congressional, presidential, and school millage elections. I construct three epochs from the literature, which trace the development of voting behavior theories. They are: (1) the foundational tenets period (pre-1960), (2) the concrete development period (1960–1976), and (3) the modern expansion period (1977–present). Voting behavior scholars established the two primary voting behavior models—social psychological and rational-choice—during these periods.

Social psychological voting theory asserts that elements such as political attitudes within voters impact Congressional, presidential, and school millage outcomes. Feelings, such as trust in our government officials, and their effect on election outcomes are what social psychological voting scholars address.

Rational-choice voting theory asserts that the voter casts his or her ballot as a utility maximizer. The voter compares the economic benefits of supporting a candidate or policy to the costs of voting for a candidate or policy. If the voter sees a large economic differential in a candidate or policy and determines that the costs of voting for the candidate and/or policy are low, the voter will cast his or her ballot of support for the candidate or policy with the greatest economic return-on-investment.

My second objective is to empirically answer the research question: “What is the likelihood of the voters’ economic interests and political attitudes impacting the success of a public school millage referendum?” To answer this question, I construct and test two logit models of voting. They are: (1) a rational-choice model and (2) a social psychological model. The dependent variable is the outcome of each (K–12) public school millage election during the month of June for the years 1990, 1991, and 1992. School millage outcomes are coded dichotomously as either “1” the millage passed or “0” the millage failed.

The rational-choice model comprises the following independent variables: (a) median household income within the school district, (b) levels of education within the school district, (c) levels of urbanization within the school district, (d) the number of households within the school district with children ages 5–17, (e) the ethnicity of the school district, and (f) the number of civilians unemployed within the school district.

The social psychological logit model comprises the following independent variables: (a) amount of millage renewal, (b) amount of additional mills requested, and (c) the current millage success ratio.

I generate nine hypotheses that assert the likelihood of certain social psychological and rational-choice variables affecting the outcome of a millage referendum. I analyze the 561 (K–12) public school districts in the state of Michigan for a three-year period (1990–1992). School districts are stratified by their student enrollment size into the categories of very small, small, medium, and large.

My final research objective is to determine if campaign strategies provided in school millage campaign publications are congruent with social psychological and rational-choice assumptions of voting. I examine a sample of school millage campaign publications to determine what symmetry, if any, in political attitudes and economic interests is assumed among voters regardless of a school district's size. If voters vary in their political attitudes and economic interests across school districts, millage campaign strategies should reflect those variances.

This study is a departure from previous school millage research because it analyzes school millage outcomes on a macro-level. Research on school millage outcomes is usually case specific. The unit of analysis is one school district. This study, however, provides a broad profile of school millage outcomes for an entire state. Hence, Michigan public school superintendents will know what impacts the likelihood of school millages passing on a state-wide basis versus a case-specific basis. In other words, public school superintendents will see the impact of rational-choice and social psychological voting behaviors on public school millage outcomes in their state. This will provide a more robust picture of voting behavior and its impact on school millage outcomes.



This study integrates both quantitative and qualitative research methods. By empirically testing voting behavior models and school millage outcomes, I provide public school superintendents with a look at the degree to which political attitudes and the economic interests of voters impact the outcome of a school millage election. Analyzing campaign strategies and comparing them to rational-choice and social psychological assumptions will provide public school superintendents with a look at the congruency between voting behavior assumptions and millage campaign strategies.

If congruency between voting behavior theory and published millage campaign strategies is missing, public school superintendents must build a level of congruency into their campaign work. This is especially true if voting behavior dynamics vary by school district size. For example, if symmetry in political attitudes and economic interests is true for all voters, differences in school district size should not matter, and therefore neither should the millage campaign strategy. However, if the political attitudes and economic interests of voters vary by school district and school district size does matter, superintendents can expect differences in voters' attitudes and interests as they advance among school districts. Hence millage campaign strategies should be designed to accommodate the differences in political attitudes and economic interests among school district voters by district size.

The state of Michigan is a ripe source for this study. Recently, the voters of Michigan approved of a state-legislative proposal to reform the way in which school districts generate revenues for school operations. Between 1990 and 1994, the state of Michigan brought before its citizens two proposals to reform the method by which local school districts generate revenue from the local property tax. The first request

failed. However, the second request, in the form of Proposal A, succeeded by a plurality of the voters.

I believe it is too early to conclude if Proposal A has accomplished its legislative goal. Michigan public school districts financed a substantial portion of their school operations from the school millage. Since Proposal A was passed, Michigan public school districts must continue to finance their building construction, remodeling, and technology programs from local millages. Therefore, public school superintendents must understand the impact of voters' political attitudes and economic interests on school millage outcomes and then design appropriate millage strategies.

Three points are stressed in this study. First, voting behavior assumptions developed for estimating Congressional and presidential election outcomes may be helpful in estimating school millage outcomes. Second, I contend that voters' political attitudes and economic interests are an integral part of understanding school millage outcomes. Third, millage campaign strategies should reflect voting behavior assumptions if superintendents want to increase the likelihood of the millage referendum passing.

Public school superintendents must know what shapes voters' support for the school millage request and harness that support into a "yes" vote at the polls. I believe models of voting behavior can provide a useful contribution to our knowledge of school millage outcomes and serve as a useful guide when designing campaign strategies.

## CHAPTER II

### A HISTORICAL LOOK AT RATIONAL-CHOICE AND SOCIAL PSYCHOLOGICAL MODELS OF VOTING AND ELECTION OUTCOMES

#### Why Vote?

Explaining why voters turnout at the polls and support or oppose political candidates and public policies is a concern to both campaign strategists and local government officials. Voters cast ballots for a number of proposals and referenda. Campaign strategists and local government officials need cues from their respective electorates to increase the likelihood of their candidate or policy winning in an election. If local government officials, such as public school superintendents, know what shapes the electorates' degree of support for a millage request, they can design a campaign strategy that will increase the likelihood of passing the millage.

To explain voter turnout and participation, we must first examine the theoretical assumptions from which voting behavior is derived. We currently know that voters possess political attitudes and economic interests which shape their degree of support for political candidates and public policies. This chapter focuses on when these assumptions of voting behavior developed, and in turn, how they affect election outcomes.

Theories of voting are classified primarily into two models. The first model, social psychological, focuses upon sociological dimensions of voting, the political

attitudes of voters, issue salience, and the effect of those three dynamics on electoral outcomes.

Work on social psychological models of voting behavior began with assumptions about the social status of voters and electoral turnout. Later, sociological assumptions about voters developed into complex attitudinal and behavioral theories derived primarily from the field of psychology. Political attitudes such as apathy and efficacy are now analyzed with election outcomes to determine the degree to which feelings such as alienation affect electoral outcomes. How voters feel about their role in politics and the salience of a policy issue impacts the degree to which they support political candidates and policies.

The second voting model is more popularly called the rational-choice or rational-action model. Rational-choice models examine an individual's economic self-interest (the pocket-book issue), an individual's overall concern for society's economic well-being (sociotropic voting), and the effect of those economic interests on electoral outcomes.

Rational-choice models are derived primarily from utility maximization assumptions developed in the field of economics. Utility maximization precepts suggest that individual decisions represent a cost/benefit function for the voter. The greater the economic differential (benefit) from selecting a particular political candidate or policy, when compared to the cost of voting for a particular political candidate or policy, the greater the likelihood of that voter supporting a particular policy or political candidate.

Voting behavior models are rarely discussed as an evolution of assumptions. Instead, most treatises on the subject are presented in a survey of the seminal works (Niemi & Weisberg, 1993a, 1993b). Dalton and Wattenberg (1993), however,

discuss voting behavior models as paradigm shifts which I believe is more appropriate. Many of the precepts found in rational-choice and social psychological models of voting are derived from economic and psychological assumptions about consumer behavior. The way we view the consumer and their purchasing decisions has evolved from changes in consumer interests. We must therefore view the development of voting behavior models as an evolution of the changes in voter decision-making processes.

I construct three epochs of voting behavior theory development. They are: (1) the foundation period (pre-1960), (2) the concrete development period (1960-1976), and (3) the modern expansion period (1977-present). Several key assumptions are addressed from these eras which helped shape the way we think about voters, their decision-making processes, and electoral outcomes.

My review of the literature on voting and Congressional and presidential election outcomes evolves into a model of voting and school millage outcomes. School millage outcomes are explained in a manner similar to Congressional and presidential outcomes. They are a function of (a) the political attitudes held by voters, and (b) the economic interests of voters. Public school superintendents need to know what induces their electorate to support a school millage request. By reviewing the evolution of voting behavior models, I will show parallels between the determinants of Congressional and presidential election outcomes and school millage election outcomes.

## The Foundational Period (Pre–1960)

### Social Psychological Voting

Social psychological voting theory explains election outcomes as a function of a voter's belief about their role in politics, the attitudes they formulate toward political candidates and public policies, and the salience of an issue. Various political attitudes develop within voters from their experience (or inexperience) with government institutions and processes. Political institutions and activities, such as political party activism and election canvassing, shape the political attitudes of voters, which in turn, shape various degrees of support for political candidates or policies. The social psychological voting models of today evolved from sociological assumptions of voting developed in the early part of the 1940s.

These socioeconomic assumptions about voters were posited by Lazarsfeld, Berelson, and Gaudet (1944) and Berelson, Lazarsfeld, and McPhee (1954). They asserted that socioeconomic variables such as income and education were correlated with voter turnout. They found that higher income, higher education, and higher status occupations were in fact correlated with higher voter turnout rates.

If campaign strategists wanted to increase the likelihood of electoral success, they would have to first target voters with higher incomes, higher education levels, and higher status occupations because this segment of the electoral population would have a higher likelihood of voting during a presidential or Congressional election. This finding did not, however, help the campaign strategist determine what would induce a voter to turnout at the poll and cast a supporting ballot. The findings merely showed a correlation between the demographic and economic characteristics of the

voter and turn out numbers. Nonetheless, a phenomenon known as cross-pressure, surfaced in the early sociological research on voting .

Cross-pressure theory suggests that when voters of higher income levels, higher education levels, and higher job occupational status encounter differences in their political views among their socioeconomic cohorts, their differences form, in the mind of the voter, a state of cognitive dissonance where the individual voter cannot decide which public policy or political candidate to support. As a result, the voter will abstain from casting a ballot rather than risk voting against or for a policy or candidate that is contrary to another cohort's value. During this stage in the development of voting behavior theory, data were readily available, in secondary form, through Census documents and then analyzed using correlation analysis.

Almost 20 years later, another group of scholars would expand beyond the sociological dimensions of voting by examining the political psychology, or attitudinal dimensions, of the voter. For example, Campbell, Converse, Miller, and Stokes (1960) would tap political feelings of voters through survey research and then profile the American voter on attitudinal dimensions such as political alienation, political identification, and political efficacy. They discovered that voters have feelings about politics that are not necessarily positive and that shape their degree of support for political candidates and public policies.

Social psychological modeling eventually made us aware of the need to collect data from voters such as their feelings about political participation, government access, and registration processes. Pollsters would use methods such as survey research and focus group interviews to collect the data. Campaign strategists could then create a barometer of political attitudes, whether negative or positive, and then attribute those attitudes to a candidate or public policy.

While the foundation of social psychological voting was developing, the rational-choice theorists were constructing an economic theory of voting that would explain voting and election outcomes as a function of the economic interests of the voter. Instead of tapping voter attitudes about issues and candidates, rational-choice theorists would correlate the costs and benefits of voting with election outcomes.

### Rational-Choice Voting

Rational-choice theories of voting explain election outcomes as a function of voters' economic self-interest or the person's overall interest in society's economic well-being (sociotropic). Elections translate into economic gains or losses to the voter who seeks to maximize his or her economic benefit while minimizing the costs associated with voting. This explanation of election outcomes finds support as far back as the middle 1800s. In a democracy, the feeling was the majority will elect candidates who promise the greatest benefits from the public treasury. Voting for public officials and policies for economists is thus considered a function of utility maximization.

Utility maximization theory provides the impetus for most rational-choice assumptions. For example, when consumers purchase goods or services, they conduct a cost/benefit analysis. The costs of purchasing a good or service are factored against the perceived benefits of having the good or service. The costs must be less than the perceived benefits before the consumer will make the purchase. Translated into elections, voters seek to increase their return-on-investment when casting a ballot. The investment equals the cost of an individual's effort to cast a ballot (e.g., the time spent on registering to vote) while the return equals the economic benefit received from supporting a policy or political candidate.



The formal development of rational-choice voting assumptions began with treatises by Hotelling (1929) and Schumpeter (1950). Both scholars argued that voting is a function of the perceived economic differential one will receive by supporting a particular political candidate or policy. Downs (1957, 1960), however, provided the first robust application of utility maximization theory to voting.

Downs (1957) examined the perceived costs and benefits associated with voting and the concomitant strategies political parties must develop for enticing voters into their coalitions. He argued that the economics of politics was such that political parties had to create policy platforms to win elections instead of winning elections to create policy platforms. Downs (1957) showed that by creating policy platforms before the election, political parties could create economic differentials for the voters who could then calculate the costs and benefits of supporting a particular party. Voters will support the political party that promises the greatest economic utility. Using the Downsian model, for example, voters enter into the coalition (political party) that uses the state for redistributing benefits to the other coalition. The costs are allocated by the winning coalition to those individuals belonging to the higher income coalition. Hence, voters will cast a vote of support for the political party that promises the largest economic utility.

By using our redistributive policy example, we find that in a two-party system, if the bottom 50% on the income continuum plus one (the median voter) voted for a referendum, they would be the winning party. This would permit a greater redistribution of income than if the upper 50% plus one formed the majority coalition. The key voter in this situation is the one making just at or above the median income. This person (the median voter) must be enticed into the lower income coalition to ensure a majority coalition. The minimum income taxed must be fixed just above this

person's income; furthermore, this person must be included in the redistributive benefit. The relationship between the economic interests of voters and election turnout is expressed as follows:

$$\text{Let } R = PB - C$$

where:  $R$  = net rewards (benefits) to turning out;

$B$  = expected candidate (or party) or issue differential;

$C$  = costs of turning out;

$P$  = probability turning out will affect the outcome;

turnout if and only if  $R > 0$ .

Downs (1957, p. 40) stressed that the size of the voter's current party differential is the key, that is, the difference between the utility income he or she actually received in period  $t$  and the one he or she would have received if the opposition would have been in power. He further emphasized the importance of information costs and the strategies used by voters to reduce those costs. For example, voters attempt to reduce information costs by relying upon their own evaluation of past and future performance of a candidate. Retrospective and prospective models of voting, which I address later, evolved from this assumption.

Downs' (1957) economic interpretation of voting greatly influenced the way we think about the rationality of electoral politics. In order for turnout to lead to support at the polls, voters would have to perceive an economic benefit that exceeded the cost of the effort to vote. Furthermore, voters would have to perceive that their vote mattered in an election and that the information underlying their decisions is credible enough for them to rationally cast a ballot.

The research conducted during the foundational period was ripe for expansion. Social psychological scholars began to develop survey instruments that

would measure voters' political attitudes. Once those political attitudes were measured, analysts could then assess the extent to which political attitudes, whether negative or positive, shaped the outcome of electoral contests. Rational-choice scholars, on the other hand, began developing and testing models of voting that would attempt to correct for some methodological limitations discovered after Downs' (1957) study entitled *An Economic Theory of Democracy* was published.

### The Concrete Development Period (1960–1976)

#### Social Psychological Voting

The study of political attitudes of voters, the salience of political issues, and their effect on election outcomes took the forefront during the early part of the concrete development period. Campbell et al. (1960) published the first comprehensive study of political attitudes and their correlation with election outcomes. Their social psychological model of voting expanded from what had previously been merely a socioeconomic approach to voting. Their profile of the American voter emphasized socioeconomic status, political participation, political knowledge, and concern for political issues.

After analyzing national election data from 1948, 1952, and 1956, Campbell and his colleagues (1960) concluded that American voters were unconcerned, uneducated, and passive with regard to politics. Furthermore, the primary cue for electoral decision-making was the political party. The results of this study provided campaign strategists with new considerations when designing electoral strategies. For if Downs' (1957) assertion of economic interests and voting were correct and Campbell et al.'s (1960) assertion of voters following the party were sustained,

campaign strategists would have to develop election strategies that differentiated the economic benefits of their candidate or policies while at the same time convincing voters that support for a candidate or policy was support for the political party.

Unlike the research of political sociologists such as Berelson et al. (1954), *The American Voter* study suggested that socioeconomic correlates of voter turnout were insufficient as an explanation of voter support for policies and candidates. Instead, if voters were educated about the issues and candidates and could differentiate the economic benefits of a policy or candidate and factor costs associated with supporting a policy or candidate, campaign strategists could link negative political attitudes to the opposition party. This, in turn, would increase the likelihood of a voter casting a ballot in support of the other candidate or policy.

Voters, however, would have to feel involved in politics and that their vote mattered. Election outcomes were considered a function of political party affiliation during the early to mid 1960s. This became important to understanding the impact of Downs' (1957) model on election outcomes. The political party would have to entice the voter into their coalition by tapping their economic interests and educating them on the issues.

The theme of political illiteracy came under fire in the research of Nie, Verba, and Petrocik (1976). They analyzed U.S. Congressional and presidential election data from 1956, 1958, 1964, 1968, 1970, and 1972. Nie et al. (1976) concluded that the American voter was actually well aware of, and sensitive to, political issues. It was the salience, or importance, of the issue that mattered to the voter and not their party identification when deciding to participate in politics or cast a ballot at the polls.

It was now speculated that the political party was playing a lesser role in election outcomes while the candidate centered campaign became larger. This finding

changed the way campaign strategists would eventually focus their methods. The political attitudes and economic interests of voters would now shape a candidate's stance on issues. Hence, campaign strategists worried less about the attitudes and economic interests espoused by the political parties and focused more on the attitudes and economic interests of the candidate while at the same time bonding the candidate with the electorate.

The assumptions of social psychological voting that developed during the concrete development period were used primarily to construct models of voting that correlated socioeconomic factors with national election outcomes. Research consistently showed that socioeconomic factors, such as income and education, were strongly correlated with election turnout. This, however, led some to criticize the social psychological approach for focusing too narrowly on demographic and economic characteristics of voters and neglecting their political attitudes. Criticism, such as failing to incorporate interpersonal communication processes among voters into their social psychological voting assumptions, surfaced.

Knoke (1990) thus argued that failing to include elements such as whether or not a voter participated in an election suggests that voters are "atomized actors floating unanchored in a homogenized stream of national mass-media stimuli, their perceptions unfiltered by constraining and validating personal relationships" (p. 1058). Other criticisms focused upon the inability of scholars to establish whether or not political attitudes precede political participation or whether political participation precedes political attitudes.

Leighley (1995) explains the temporal precedence issue by arguing that "misspecifying the relationship between individual's attitudes and political participation . . . [made] causes of participation impossible to draw" (p. 187). This

criticism eventually subsided when social psychological voting scholars refocused their attention toward the construction of survey instrumentation that would measure political feelings. The order of individual political attitudes and behaviors became a secondary thought. Measuring those political attitudes and feelings came first. Once attitudes and behaviors were measured, their impact on election outcomes could be determined.

The newer social psychological voting models showed that the political psychology of the voter is very complex. Linking political attitudes to support for policies and political candidates would require the use of sophisticated survey instrumentation or concomitant proxy variables. The rational-choice scholars, on the other hand, discovered theoretical and methodological issues that challenged their approach.

#### Social Psychological Voting and School Millage Outcomes

Assumptions about political attitudes and school millage outcomes were the focus of theorists such as Jennings (1973) during the concrete development period. They found that attitudes on issues such as school system quality matter somewhat in determining school millage success.

Social psychological assumptions expanded into areas such as the taxpayer revolt and community conflict. For example, during the early part of the concrete development period, Lamb (1972) and Alexander and Bass (1974) found that voting in school millage elections often translates into a protest against higher taxes by voters. In other words, voters will cast a “no” vote for a school millage request as a sign of protest.

Later studies of tax proposals, however, showed no linkages between social psychological or rational-choice voting assumptions and tax proposal outcomes. Lowery and Sigelman (1981) developed eight explanations (self-interest, tax-level, tax distribution, economic pinch, political ideology, political disaffection, tax efficiency, and information explanation) of the tax revolt. Their analysis found no statistical support for any one of these explanations. Later, they expanded their model by proposing eight revised explanations (Sigelman & Lowery, 1983).

Their revised explanations are: (1) tax level, (2) tax distribution, (3) cost/benefit, (4) political ideology, (5) political participation, (6) political culture, (7) diffusion of innovations, and (8) a rules-of-the-game. Again, they found little empirical support for their tax revolt explanations with the exception of the diffusion of innovations explanation. Sigelman and Lowery (1983) found that the tax revolt comes from what they call a “contagion” into neighboring states.

Tax revolt fever spreads from citizen interactions among neighboring states and not by administrative interactions. What makes this finding interesting is that it is the inverse of the findings in the policy diffusion research by Walker (1969), Gray (1973) and Press and Verburg (1979). Tax revolt limitations would later be examined by Downes (1993) during the modern expansion period.

The cultural values of a community were studied by Hahn and Almy (1971) and Acock and Haley (1975) to determine their effect, if any, on support for the school millage request. They found that race affects support for the public school millage request. Giles, Gatlin, and Cataldo (1976) discovered, during the later part of the concrete development period, that the social status of the voter and feelings of powerlessness toward school officials affect voter support for school millage requests. Voters with a higher socioeconomic status are more likely to support the

school millage; voters who feel they have no control over their school system are unlikely to do so.

During the concrete development period, social psychological voting research taught public school superintendents that they would have to design millage campaign strategies that involved citizens in the campaign process. Furthermore, voters would have to be involved in school issues throughout the school year to build feelings of political efficacy and control over their school system.

If voters felt that they were involved in school functions and controlled the destiny of their school, they would be more likely to support the school millage request.

#### Rational-Choice Voting

Voting behavior theory took an unusual twist during the concrete development period when rational-choice scholars faced the unpleasant discovery that voting was not a rational act for anyone. The paradox of voting would force rational-choice scholars to reconsider their assumptions about voting.

The paradox of voting posits that voters may support policies and political candidates who show great promise of an economic return-on-investment. However, the probability of one voter turning out and affecting an election outcome will approach zero as the electoral population increases. Hence, any economic benefit multiplied by zero will most likely produce a non-rational result. The voter should therefore abstain from voting. Many voters, however, still turnout at election time and vote even though it is a nonrational act. Olson (1965) applied rational-choice assumptions to interest group participation and found similar limitations to rational-choice precepts.



Interest groups, such as labor unions and political parties, comprise what Olson (1965) called collective action. He asserted that individuals join these groups if their activities produce collective benefits that outweigh the costs of participation.

Olson's (1965) model of political participation could be expressed as follows:

$$A_i = P_i B - C_i$$

where:  $A_i$  = the level of activism of individual  $i$

$P_i$  = the probability that individual  $i$ 's participation will bring about the collective good or policy goals of the group;

$B$  = the collective benefits or public goods resulting from the implementation of a group's program;

$C_i$  = the costs to individual  $i$  of contributing to the collective good.

Downs (1957), Olson (1965), and Riker and Ordeshook (1968) challenged the rationality of interest participation and voter turnout by arguing that " $B$ " could easily exceed " $C$ ," but that in any reasonably large group or electorate population, " $P$ " will approach zero. Thus, it is more rational to abstain from participating in interest groups or voting in elections. However, abstaining occurs very rarely for many voters. Large numbers of citizens vote, for example, during elections, including a disproportionate number of those with higher levels of education and information, who should supposedly know better.<sup>1</sup>

To address the paradox of voting, Downs (1957), Olson (1965), and Riker and Ordeshook (1968) added a consumptive benefit term to the rational-choice model. This newer version of the rational-choice model could be expressed as follows:

$$\text{Let: } R = PB - C + D$$

where:  $D$  = consumptive benefits.

Similarly, a neo-rational-choice model of interest group participation could be expressed as follows:

$$\text{Let: } A_i = P_i B - C_i + D$$

where:  $D$  = consumptive benefits.

Consumptive benefits include various forms of satisfaction derived from voting, such as a higher sense of civic duty, political efficacy, or a desire to avoid social ostracism. Therefore, feelings of a high sense of civic involvement will increase the likelihood of voting. Riker and Ordeshook (1968) found that the more voters feel a sense of a civic duty to vote, the higher the turnout becomes for electoral contests.

By adding the consumptive benefit term to the rational-choice model, rational-choice scholars lessened the theoretical distinctions between social psychological and rational-choice models. Nonetheless, a new issue arose where if the probability of a voter's ballot affecting the election outcome and the benefits received from a candidate or policy were less than the cost of voting ( $PB < C$ ), voter turnout was now made rational by habit and not by judgements about candidates and electoral situations (Riker & Ordeshook, 1968). The costs and benefits associated with voting would no longer matter if voting were habitual. Another issue arose as to whether voters could accurately estimate the impact of their vote on an election outcome. This led to a new stream of voting behavior research.

### Alternative Rational-Choice Models

Ferejohn and Fiorina (1974) introduced the "minimax regret" model as an alternative to estimating the impact of an individual's vote on an election outcome. Their model suggests that voters are guided by a preference to minimize the

probability that a least preferred outcome will occur. In other words, voters try to minimize the possibility that the least preferred candidate will win the election.

The minimax-regret model did not provide campaign strategists with a realistic view of voter decision-making. As Mueller (1989) points out, voter indifference between two candidates should result in an abstention from voting, according to minimax regret assumptions. However, if an undesirable candidate enters the race, voters must go to the polls to prevent the undesirable candidate from winning the election by one vote. The unlikelihood of such an event moved rational-choice scholars to reexamine vote impact.

Vote impact was examined by scholars such as Beck (1975) who discarded the "P" factor altogether. While the impact of the vote mattered theoretically, in reality Beck (1975) showed that voters could not adequately determine the impact of their vote on an election outcome but cast ballots anyway.

If voters did calculate the closeness of an election, campaign strategists would have to convince voters that failing to vote might give the opposition a one vote victory margin during the election. The problem, however, is that many elections are not close. Instead, they result in landslide victories usually for incumbents.

Other solutions to the paradox of voting included the use of game-theory techniques such as the prisoner's dilemma. Discussion of this dilemma is intended to enhance cooperation among group members who know nothing about the other members' decisions. Cooperation is obtained by manipulating event (election) conditions.

There are four ways in which campaign strategists could obtain cooperation using the prisoner's dilemma technique. They are: (1) not discounting future events,

(2) repeating the events over time, (3) maintaining uncertainty for how the event ends, and (4) punishing defectors without punishing cooperators (Hardin, 1971).

Game-theory proved unrealistic for real-life political situations. For example, political party activists rarely punish non-activists within the same party in the American political party system. Doing so might jeopardize membership enrollments. Unlike political party systems in countries such as Great Britain, where members pay dues, political party membership in the United States is free. Therefore, sanctions against members for nonparticipation may discourage voluntary membership.

The economic self-interest of voters surfaced again during this period in the rational-choice camp. This time rational voting scholars focused on the economic concern a voter has for other voters. Mueller (1989) explains that this altruistic concern for other voters was believed to induce voters into participating in elections. However, the model did not fare well because critics, such as Mueller, argued that voters cannot determine if their participation will make any difference.

Such reconciliation of the paradox of voting and participation also led to other problems. Barry (1970) and Niemi (1976) argued that calculating the costs and benefits of elections was irrational. Costs and benefits are too small to calculate and therefore should be eliminated from rational models. Furthermore, as Whiteley (1995) argues, this reconciliation solves the paradox of voting by eliminating the rational-choice model. If costs and benefits are too small to calculate, the rational model is no longer useful in solving rational-choice problems.

Reconciling of the paradox of voting carried into the early years of the modern expansion period of voting behavior theory development and continues today. Factoring the costs and benefits of voting is still an essential component of rational-choice modeling. Campaign strategists must convince voters that supporting

a particular candidate or policy will bring economic benefits far greater than the benefits of not voting.

The concrete development period of voting behavior theory taught us that the economic self-interest of voters and their political attitudes are much more than correlates of election outcomes; they are determinants of election outcomes. It became clear by the end of the concrete development period that voting behavior assumptions are important and that campaign strategists and public officials must understand how to apply those assumptions to their election strategies.

For the most part, studies of voting and election outcomes during the next period, modern expansion, refined some of the earlier models found in rational-choice and social psychological research. However, new research on institutional contexts within the American political system and voter turnout (e.g., Powell, 1986) showed that political attitudes are shaped by the levels of encouragement given by government institutions. Citizens develop attitudes toward government based in part on the encouragement given to vote during elections.

### Rational-Choice Voting and School Millage Outcomes

Development and application of rational-choice voting assumptions to school millage outcomes peaked in the mid 1960s and early 1970s. The economic self-interest of the voter was analyzed by scholars such as Boss (1973, 1976), who asserted that support for a school millage request is a function of the economic self-interest of the voter. Relying heavily upon Downs' (1957) median voter theory, Boss argued that voting for the supply of school goods is found at the equilibrium between supply and median preference. He found that collective demand for education increases as the tax-price per unit of education decreases.

Jennings (1973) examined the tax capacity of the school district and support for public school millage requests. He found that as the tax capacity of the district decreases, so does support for school millage requests. When voters have fewer resources available to support school functions, they tend not to support the local school millage request.

The rational-choice model continued to flourish in the research of Hall and Piele (1976). They asserted that voting during the public school millage election is an act of economic self-interest and that various socioeconomic characteristics of the voter, such as occupation and household income, are best estimates of support for a public school millage request. They found that support for the school millage request is a function of a voter's income, occupational status, and level of education. However, they noted that these variables are not as important as the past pattern of millage support within the school district.

Public school superintendents have to consider the ability of the voter to pay additional taxes for school operations when their capacity is reached. Designing a campaign strategy under these conditions requires the superintendent to build previous levels of support to ensure that the current millage will pass.

### Modern Expansion Period (1977–Present)

#### Social Psychological Voting

The study of institutional structures and their processes (e.g., voter registration) opened a new chapter on the social psychological assumptions of voting in the early 1980s. Crewe (1981) and Powell (1986) showed that stringent registration requirements lead to lower turnout rates among industrialized

democracies, including the United States. This is attributed to feelings of political alienation developed from attempts to participate in the registration process. When voters must jump institutional hurdles, such as registration processes and residency requirements, they feel, among other things, alienated from the political system.

Social psychological scholars studied the preference ranking of issues among voters in the late 1980s. By finding a fixed ranking of preferences among voters, election campaign strategists and public officials could narrow their campaign focus and costs. Rivers (1988) argued that attitudinal dimensions, such as political party preference and issue salience, are values that rank in importance, individually, by each voter. No fixed aggregate rankings of political attitudes and salient issues exist because the context of the voter's environment determines the volatility of their political attitudes. This argument is supported in the work of Miller and Shanks (1990) and Shanks and Miller (1991).

If campaign strategists seek consistent rankings of political attitudes by voters, they will be hard-pressed to find them. Political attitudes change with the times and the context of the voter's environment. Campaign strategists must assess the context of the voter's environment for each election.

#### Social Psychological Voting and School Millage Outcomes

Kowalski (1977) developed a social psychological model showing that positive political attitudes increase the likelihood of support for the school millage request. He found some strength in his hypothesis but not enough to warrant any change in the way we view political attitudes and their effect on school millage outcomes.

A relatively new addition to social psychological theory is found in the research on “psychological sense of community (PSC).” Davidson and Cotter (1993) explain that PSC is a strong attachment that people experience toward others based on factors such as where they live, where they work, where they go to school, or with which groups they affiliate. People high in PSC orientation possess the following characteristics: (a) a feeling of belongingness, (b) the belief that they influence and are influenced by their referent group, (c) the belief that their needs are met by the collective capabilities of the group, and (d) a feeling of emotional connectedness. When aggregated, these attributes are believed to induce higher levels of community participation and thus increase the likelihood of support for a school millage request (Davidson & Cotter, 1993).

Davidson and Cotter (1993), though, found that psychological sense of community has little impact on voter support during public school millage elections. They concur with Hall and Piele (1976) that economic conditions are more important in predicting the likelihood of support for a school millage request.

Current research on social psychological voting and school millage outcomes has focused on the elderly and their impact on school millage elections as voters. This literature was influenced by the concept of public regardingness (Wilson & Banfield, 1964) where tenure within the community determines support for local policies. The longer citizens live in a community, the stronger their attachment to the community becomes. Hence, residents with longer tenure feel a greater need to support policies that benefit their community’s well-being. The research of Beck and Dye (1982) and Appleton and Williams (1986) shows that elderly voters are much less opposed to local taxes than conventional wisdom might dictate.



Elderly voters who migrate to areas such as the South from northern areas of the country believe that higher taxes for goods and services are concomitant with more effective good and service delivery. Does this mean that these transplanted elderly have a higher level of public regardingness for their local school districts? According to the research of Button (1992), this is not the case. To the contrary, elderly voters are more driven by their economic self-interest to the detriment of younger persons. The elderly tend not to support school millage or bond requests. Therefore, no clear indication of public regardingness exists when social psychological assumptions of voting are applied to school millage support.

Social psychological studies of voting have most recently examined the cumulative influence of school officials on voters' attitudes and the impact of those attitudes on support for school millage requests. Brokaw, Gale, and Merz (1990) tested a model of the cumulative influence of school officials on voters attitudes and the impact of those attitudes on support for a school bond referendum. They found that the informational campaign implemented by school officials has a positive influence on voters' attitudes. This positive influence takes the form of a positive attitude within the voter who then tends to favor the school referendum request.

Downes (1993) examined the effect of tax-revolt limitations on equalizing education burdens and student performance by school district. What makes this approach interesting is that Downes extended the equalization question from tax burden to student effect. He found that while the tax-revolt equalized tax burdens for property owners in California, it failed to equalize student performance.

Does any one model of social psychological or rational voting best explain or predict support for a school millage request? My review of the literature suggests not. Similarly, we are afforded one study (Cataldo & Holm, 1983) that ambitiously

tests five explanations of school millage outcomes to determine which explanation(s) best estimate the likelihood of support for the school millage request. The five explanations are: (1) rational self-interest, (2) socioeconomic status, (3) political attitudes, (4) tax payer revolt, and (5) community conflict. They found that all five explanations are statistically weak in predicting support for school millage requests. The only significant explanation of school millage outcomes here pertains to community conflict.

Rational-choice scholars entered the modern expansion period of voting behavior theory by redefining how a voter calculated the costs and benefits of supporting a particular candidate or policy. The consumptive benefits term was redefined while past and future economic conditions were studied to determine a voter's support for a candidate or policy.

### Rational-Choice Voting

Rational-choice scholars spent most of the late 1970s and early 1980s replicating voting models and attempting to solve the paradox of voting. Palfrey and Rosenthal (1983) approached the paradox of voting by treating voting decisions as a strategic calculus game where voters consider the actions of others when deciding to cast a vote. If a voter anticipates that other voters will abstain on election day he or she will consequently choose to cast a ballot.

Palfrey and Rosenthal (1983) asserted that when voters anticipated the abstention of other voters this would increase their perceived impact of their own vote. They found that if voters are uncertain about the costs of voting for a candidate or policy and the electoral population is large, voters will only cast ballots if their "psychic benefits" exceed the costs of voting (Palfrey & Rosenthal, 1985).

The strategic calculus model reminded campaign strategists of the need to design strategies that would build high levels of perceived economic benefits. If benefits are perceived as being greater than voting costs, campaign strategists will thus have increased the probability of victory at the polls.

The relationship between economic conditions and election outcomes was analyzed in the early part of the modern expansion period with retrospective and prospective voting models. These models assert that past and projected economic conditions impact voters' attitudes toward political candidates and policies. When voters feel that past economic conditions were favorable during the incumbent's term in office, they will most likely vote for the incumbent. However, if past economic conditions are viewed unfavorably by the voters, they will tend not to vote for the incumbent. These same precepts hold true when examining projected economic conditions and incumbent reelection rates.

Several scholars (Fair, 1978, 1988; Fiorina, 1981; Kuklinski & West, 1981; Lewis-Beck, 1988; Lockerbie, 1991; MacKuen, Erikson, & Stimson, 1988) argue that the past and projected performance of the economy is a strong determinant of voter choices during an election. Rice (1985) argues, however, that economic factors, such as affirmative action and job training are often neglected in rational modeling and that they should be factored into such calculations because they alter wealth without transferring income. Currently, few studies address this issue.

The past and projected performance of the economy has become a potentially strong strategic weapon for campaign strategists. When voters perceive past economic hardship as an attribution of the incumbent, the challenger can create an economic benefit differential that will increase the probability of a voter supporting them. On the other hand, economic prosperity can create an economic benefit

differential for the incumbent that will increase the candidate's likelihood of reelection.

Redefining the consumptive benefits portion of the rational model has enhanced our understanding of election outcomes. Scholars, such as Moon (1992), have adjusted the rational-choice model by re-specifying the meaning of consumptive benefits. Moon's consumptive benefits term includes variables such as political education, political efficacy, and citizen duty to vote. Furthermore, he includes an information processing variable to establish the impact of information usage by voters on election outcomes. Moon concludes that voters information processing capacities have little impact on election outcomes. For campaign managers, this means educating the electorate. Informational campaigns are required to teach voters about the issues so they understand the economic benefit in supporting a particular candidate or policy.

#### Rational-Choice Voting and School Millage Outcomes

In the early part of the modern expansion period, Rubinfeld (1977) enhanced the use of the rational voter model by examining the relationship between the number of children a household has in public school, the level of household income, the price of public schooling, and previous support for the school millage request. He concluded that support for a school millage request is largely a function of the number of children a voter has in public schools.

Lankford (1985) developed an integrated model of rational and social psychological voting. He constructed a demand-preference model of school expenditures which depicted an economic self-interest relationship between preference and demand and support for school millage requests. He found that school

enrollment and school district employment moderately impacted support for school millage requests. By adding a social psychological component, voter perceptions of the quality of education, Lankford showed that voter perceptions of the quality of education have a greater impact on support for school millage requests than does the economic self-interest of the voter.

Since the number of children a voter has in public schools and the voter's perception of quality education influences school millage outcomes, public school superintendents have to convey a message to the voter that his or her child will receive a quality education and that this quality will bring future economic benefits to the child.

Federalism also emerged in the rational-choice studies of school financing. However, the application of federalism models to voting behavior was not that clear. For example, Kearney and Kim (1990) examined the impact and distributional effects of changes in grant funding for local public school districts. They conclude that the switch from the categorical grant to the block grant method of funding by the federal government during the 1980s shifted resources from less advantaged groups in Michigan public school districts to those not requiring financial assistance. Hence fewer resources reached the needier districts. Furthermore, this shift in grant funding decreased overall funding to districts (a) with large percentages of poor children, (b) in highly urbanized areas, and (c) with smaller school districts.

Voting behavior assumptions have taught us how to look at voting from micro and macro perspectives. Table 1 shows the evolution of voting behavior variables for the rational-choice and social psychological models of voting. The cross-over of voting behavior variables begins in the Concrete Development Period (1960–1976). This illustrates the integration of voting behavior models.

Table 1  
Summary of Voting Behavior Indicators

Time Period	Rational-Choice	Social Psychological
Foundational Period	Monetary benefit from policy or candidate Costs of registering to vote	Personal income Level of education Job status
Concrete Development Period	Monetary benefit from policy or candidate Costs of registering to vote Sense of civic duty	Feelings toward government and politics Party affiliation
Modern Expansion Period	Monetary benefit from policy or candidate Costs of registering to vote Sense of civic duty Information processing	Feelings toward government and politics Party affiliation Psychological sense of community (PSC)

To recapitulate the key findings of voting behavior studies, I will summarize the development of rational-choice and social psychological voting models.

#### Summary of Voting Behavior Models

Voting and election outcomes were first analyzed with sociological models during the foundation period (pre 1960). Researchers examined the correlation between the socioeconomic characteristics of voters and voter turnout. Higher socioeconomic status is strongly correlated with higher turnout rates. The

sociological model, however, failed to capture the psychological components of voting. Cross-pressure was the psychological state found to occur within voters who encountered conflicting political views among their socioeconomic characteristics. This created within the voter a state of voting dissonance which led the voter to abstain from voting.

Sociological modeling offered little to campaign strategists when designing campaign strategies. Measuring the political attitudes of the voter and attributing them to the political party was later considered more important than examining the correlation between socioeconomic characteristics of the voter and election turnout. The study of political attitudes would later become the focus of most social-psychological voting studies.

The study of rational-choice voting debuts in the work of Downs (1957). Downs applied assumptions found in utility maximization theory to voter turnout. He argued that voters support political candidates and policies from the political party that provides the greatest economic return-on-investment.

Political parties must converge on the median voter who has one-half of the electorate to his or her left and one-half of the electorate to the right. The party must then adopt policy platforms close to the position of the median voter. This targeting strategy will draw the median voter into the majority coalition.

A key concern to rational-choice theorists arose when voting and participation were found to be irrational activities. Voters have to perceive that their vote will significantly impact the election outcome before they will cast a ballot. Mathematically, the probability of one vote significantly impacting an election outcome approaches zero as the electoral population increases. Therefore, voting and participation are non-rational activities in large electorates. However, many voters

still vote even though it is irrational to do so. This phenomenon is referred to as the paradox of voting.

As voting behavior research moved into the concrete development period (1960–1976), much of the research on voting and election outcomes was devoted to measuring political attitudes, finding linkages between political attitudes and election outcomes, and increasing the benefit differential among candidates and public policies. This was accomplished primarily by redesigning the rational-choice model of voting and constructing survey instruments that would measure political attitudes and the importance of political issues to the voter.

The paradox of voting was addressed by adding a consumptive benefits term to the rational model equation. Consumptive benefits include various forms of satisfaction derived from voting. Feelings of political efficacy and civic duty will increase the likelihood of voting. This, however, lead rational voting scholars into another trap. If voting costs were greater than economic benefits and the probability of one vote affecting the election were zero, voting and participation could be made rational by habit and not by judgments about candidates.

Game-theory, factoring the closeness of the election, and discarding “P” altogether from the rational model were just a sample of the solutions offered during this time-period to reconcile the paradox of voting. None of these solutions seemed to solve the paradox, however, without eliminating the rational model altogether. Voting behavior scholars would have to address voting costs, economic benefits, and the significance of the vote when designing rational models of voting.

Campaign strategists use rational-choice assumptions when designing election strategies. Voters are enticed into the coalition that promises the greatest economic return-on-investment for the vote. Since voters cannot accurately estimate the impact



of their vote on the election outcome, the economic benefits of supporting a candidate or policy have to be stressed.

Social psychological scholars grappled with survey validity and reliability during the concrete development period. Furthermore, they realized that voters are not atomized creatures. Voters develop political attitudes that are influenced by economic factors and other macro-level variables. Examining the economic environment of the voter is necessary to explain voter attitudes toward political candidates and policies. The context of the voter's environment shapes his or her political attitudes. Shaping behaviors, attitudes, and the degree of issue importance became the focus of social psychological voting scholars.

To address these issues, social psychological scholars developed models that simultaneously funneled macro-level and micro-level variables into a decision to vote. Identifying the determinants of political attitudes and the shaping of those attitudes into voter support for political candidates and policies came through the use of questionnaires developed by social psychological scholars. The significance of political parties diminished along with their impact on election outcomes. Voters assess the candidate and the salience of the issue when voting.

Campaign strategists must bond the candidate or issue with the voter and not the party. If campaign strategists can develop an attribution of prosperity to the candidate in the voter's mind, this becomes another way they can alter the political attitudes of the voter and influence the election outcome.

During the modern expansion period (1977–present), researchers somewhat reconciled the paradox of voting by accounting for information processing capabilities of the voter and factoring altruism into the rational-choice model. For example, Dunleavy (1991) argues:

The informational pre-requisite of choosing between parties are simpler than those for potential interest group members. With very few parties or candidates in competition being accorded saturation coverage by the mass media, almost everyone is aware that the main parties exist and stand for some distinctive policies. (Dunleavy, 1991, pp. 83–84)

Altruism, on the other hand, requires voters to estimate the economic benefits and costs for other voters. When voters cannot accurately estimate costs for others, they must alternatively perceive some form of psychic benefits to guide them in their ballot decisions (Mueller, 1989).

From the mid 1970s into the 1980s, researchers examined more closely the effect of the economy on voting and electoral outcomes. Retrospective voting models examined the attribution of past economic conditions to incumbent candidates. Prospective voting models examined the attribution of perceived future economic conditions on incumbent candidates during election contests. Research support for models emphasizing retrospective voting is greater than support for prospective voting in the voting literature.

Campaign strategists must bond candidates and policies with the voter. Not only must they measure political attitudes within the voter, but campaign strategists must also match those attitudes with the values of political candidates or policies. Political attitudes are formed by many contextual elements, such as institutional structures, the state of the economy, and access to government officials. The economic benefits of selecting a candidate or policy must still exceed the costs of voting and participation. Voters must feel attached to candidates and policies, and believe that this attachment will bring about greater economic benefits to themselves or the electorate.

Hatley and Croskey (1977) argued in the mid 1970s that a compelling need existed to apply Congressional and presidential models of voting to the study of

public school millage outcomes. This carry-over to school district millage elections has produced mixed findings. The differences between school millage requests and Congressional and presidential elections is most frequently cited as the reason.

For example, West (1991) argues that the nonpartisan nature of school millage elections poses a problem for modeling application. Party identification has little relevance as a voting cue when voters are deciding whether or not to vote in favor of the school millage. Partisanship plays a somewhat more important role in political candidate elections. In addition, West (1991) argues that school millage referenda create less of an information-gathering burden on voters and are therefore less costly to support than candidates.

I believe that these arguments are somewhat weak because the research on party identification and candidate support contradict West's points. For example, partisanship has played a lesser role in the research even on presidential and Congressional election outcomes since the work of Nie et al. (1976). Many voters identify with candidates on a personal level based on their political values and attitudes. Voting for the candidate and not the party has prevailed for over two decades. My second critique of West's (1991) argument concerns his premise that school millages have less of an information- gathering burden.

School millages require voters to calculate economic benefits assuming they understand questions of taxation and budgeting. This creates more of an information-gathering burden on voters because they must calculate the tax effects and budget implications. Therefore, I see little support for the reduction of information-gathering argument.

I believe that more substantive explanations exist. For example, the data base compiled from National Election Studies on Congressional and presidential election

outcomes is well established. The University of Michigan's Institute for Social Research and opinion polling organizations, such as Gallup, have a long history of developing and perfecting a sound methodological system of polling. There is no national data base, however, of local school millage election outcomes. Researchers of school millage outcomes rely on survey instruments developed from a hybrid of national election questionnaires. A more intuitive approach is used at the local school district level. If one holds the assumptions about voting behavior constant, public school superintendents should be able to determine school millage outcomes by using rational-choice and social psychological voting analysis.

The findings on voting and school millage outcomes during the concrete development and modern expansion periods parallel the findings on voting and election outcomes for Congressional and Presidential candidates. Voters make millage election decisions in the same way they do for Presidential and Congressional elections. From a rational-choice perspective, the benefits obtained by supporting a school millage must outweigh the costs of casting the ballot. The voter must see an economic differential that justifies the cost of information-gathering and provide a future payoffs to the voter. Rational-choice variables that reflect the economic interests of voters and increase the likelihood of support for the school millage include median household income, education-level of the school district, the school district unemployment rate, and number of children in public schools.

The social psychological approach to explaining school millage outcomes shows that political attitudes voters have toward their school district and the past patterns of millage support are just some of the factors having a strong impact on school millage outcomes. Where these attitudes develop and how they affect school

millage outcomes are reflective of the research findings on political socialization and presidential and Congressional election outcomes.

In Chapter III, I construct two logit models of voting to explain school millage outcomes in Michigan public school districts. They are: (1) a rational-choice model, and (2) a social psychological model.

## CHAPTER III

### TWO LOGIT MODELS OF VOTING AND SCHOOL MILLAGE OUTCOMES

#### Why Logit Modeling?

I chose the logit modeling technique because of its appeal in “transforming the problem of predicting probabilities within a (0,1) interval to the problem of predicting the odds of an event’s occurring within the range of the entire real line” (Pindyck & Rubinfeld, 1981). Pindyck and Rubinfeld note that “changes in independent variables will have their greatest impact on the probability of choosing a given option at the mid-point of the distribution” (p. 289).

Further evidence in support of the logit technique is offered by Wolfinger and Rosenstone (1980) who state that “. . . the impact of most demographic variables on the probability of voting is not constant across all types of individuals. Rather, the effect of a variable depends on the probability that the individual will vote . . . ”

(p. 11). Wolfinger and Rosenstone (1980) further explain that

the OLS (ordinary least squares) model assumes a linear relationship between the parameters and the probability of voting; a unit increase in an independent variable has the same impact on the probability of voting, regardless of the values of the other independent variables . . . with an OLS equation the predicted probability of voting will not necessarily be confined to the 0–1 interval. That is, with OLS some of the values of the independent variables may yield estimated probabilities that are less than 0 or greater than 1. (pp. 121–122)

With OLS,

the error variance is not constant across all observations and the variance of the residuals will be small for predicted probabilities close to either 0 or 1,

while the variance will be much larger for predictions between .4 and .6. As a result, OLS estimates are inefficient. (Wolfinger & Rosenstone, 1980, p. 122)

Kramer (1983) argues that the tentative nature of individual attitudes on issues such as the economy make inferences from survey data risky. He states:

straight forward multiple regression . . . analysis of vote intentions on a set of economic and control variables will not do the job and is likely to yield only spurious estimates, which are virtually unrelated to the true effects. It would therefore seem prudent to regard cautiously any finding in this area based on individual-level survey data . . . (p. 94)

With regard to using aggregate data versus survey methodologies, Kramer (1983) states that “there is nothing inherently wrong or suspect about aggregate data, and findings based on such data are not per se any more (or less) in need of independent corroboration than those based on any other kind of data” (pp. 94–95).

#### Precautions of Inference

Before I test the three logit models, the ecological fallacy of inferring individual behavior from aggregate data must be addressed. Several indicators in this study tap macro-level dimensions of voting, such as civilian unemployment, from which I assert a relationship with support for a school millage referendum.

The plausibility of inferring individual behavior from macro-level data is supported in the research of Kramer (1983). He states that “the discrepancies between the macro and micro-level studies are basically statistical artifact and do not show any real disagreement about the true values of the underlying behavioral parameters of interest” (p. 93).

## Hypotheses

The previous discussion of voting behavior models leads me to three assertions. First, support for a school millage is a function of the economic benefit found in the school millage request. If voters perceive that a greater economic benefit will come from supporting a public school millage than the cost of voting, they will be more likely to support the millage request (Lankford, 1985; Piele & Hall, 1973; Rubinfeld, 1977). For example, households with children who are of elementary and secondary public school age (5–17) will tend to increase the likelihood of a public school millage passing. This is attributed, in part, to a greater economic differential associated with school-aged children and their future economic status.

The ethnicity of the school district is another factor from which we can predict the likelihood of the school millage passing. Ethnicity shapes the perception of the economic differential found in a school millage request. Voters of ethnic backgrounds find the short and long-term benefits of education to be associated with an enhanced economic position in the future (Acock & Haley, 1975; Hahn & Almy, 1971; Piele & Hall, 1973).

### Rational-Choice Voting and School Millage Outcomes

My first model provides estimates of the likelihood that six socioeconomic characteristics of the school district (median household income, level of education, urbanization, households with children ages 5–17, school district unemployment, and ethnicity) will have an impact on the success of a school millage referendum. Six hypotheses are constructed and then tested to determine the strength of rational-



choice voting assumptions in estimating the likelihood of a public school millage referendum passing. They are:

1. *Median household income.*  $H_0$ : Public school districts with higher median household incomes will more likely see their school millages pass. Piele and Hall (1973), Piele (1983), Giles et al. (1976), and Rubinfeld (1977) argue that median household income reflects an ability to pay on behalf of the school district. Voters understand that higher median household incomes are associated with school education.

Wolfinger and Rosenstone (1980) concur with this assertion in their study of Congressional and presidential election turnout. Median household income is operationalized here as the 1990 Census calculation of median household income per Michigan public school district.

2. *Levels of education.*  $H_0$ : Public school districts with higher levels of education among their residents will more likely see their school millage requests pass. Persons with higher levels of education see the benefits of education more clearly than those persons with lower levels of education. Furthermore, higher wages are generally associated with higher levels of education. Therefore, voters with higher levels of education will perceive a greater economic benefit differential from supporting a school millage referendum.

This hypothesis is sustained in the school millage research of Piele and Hall (1973) and Piele (1983). Wolfinger and Rosenstone (1980) concur with regard to Congressional and presidential election turnout. Level of education is operationalized as the number of residents determined by the 1990 Census to be living within a Michigan public school district, 20 years or older, with (a) a 12th grade or less/no

diploma level of education, or (b) a completed high school diploma, or (c) some college but no degree, or (d) a bachelor degree or higher.

3. *Urbanization*.  $H_0$ : Residents who reside in rural areas of a school district will be less likely to support a school millage request. Piele and Hall (1973) argue that rural areas contain residents of less diverse ethnic backgrounds and of a more conservative ideology than residents living within urban areas. Therefore, support for a school millage request is less likely to come from rural areas.

Urbanization is operationalized as the number of persons, as determined by the 1990 Census, within a Michigan public school district who reside (a) inside urban areas, or (b) outside urban areas, or (c) in rural farm areas, or (d) in nonfarm rural areas.

4. *Households with children ages 5–17*.  $H_0$ : As the number of households with children ages 5–17 increases, so will the likelihood of a school millage request passing. Piele and Hall (1973), Giles et al. (1976), and Rubinfeld (1977) show that voters with school aged children have a greater likelihood of supporting a public school millage request.

Households with children ages 5–17 are operationalized as the number of households within a Michigan public school district, as determined by the 1990 Census, with children 5–17 years old.

5. *Ethnicity of the school district*.  $H_0$ : As the number of ethnic minorities within a public school district increases, so will the likelihood of the school millage request passing. Ethnic minorities have more to gain in both short-term (improved school conditions) and long-term (improved status) benefits from a successful school millage outcome, according to Piele and Hall (1973), Jennings (1973), and Piele

(1983). Wolfinger and Rosenstone (1980) concur with this finding in their analysis of Congressional and presidential election turnout.

Ethnicity is operationalized by the 1990 Census as the number of (a) non-Hispanic Caucasian persons, (b) non-Hispanic Black persons, (c) Native American persons, (d) Asian or Pacific Islander persons, and (e) persons non-Hispanic/other living within a Michigan public school district.

6. *School district unemployment.*  $H_0$ : As the number of unemployed individuals within the public school district increases, the less likely it is that a public school millage referendum will pass. Residents of the local school district foresee greater costs associated with supporting a public school millage request when they are unemployed. Unemployed residents receive little payoff from a school millage unless their support for the millage brings them benefits such as job training.

The impact of state and federal economic conditions on election outcomes is strong in the research on Congressional and presidential election outcomes. Several studies (e.g., Fair, 1978; Kuklinski & West, 1981; Lewis-Beck, 1988; Lockerbie, 1991) find that the state of the economy has a strong impact on election outcomes. Davidson and Cotter (1993) and Lankford (1985) concur in their analysis and findings on employment conditions and public school millage outcomes.

I operationalize public school district unemployment as the number of persons, determined by the 1990 Census, 16 years of age or older in a Michigan public school district defined as unemployed.

The relationship between the economic interests of the school district and the likelihood of the school millage request passing is expressed in the following logit equation:

$$M_1 = L_1 = \log \frac{\text{Prob(millage)}}{1 - \text{Prob(millage)}}$$

$$= B_0 + B_1R_1 + B_2R_2 + B_3R_3 + B_4R_4 + B_5R_5 + B_6R_6;$$

where:  $M_1$  = rational-choice logit model;

$L_1$  = the logit or the log of the odds ratio, where “Prob (millage)” represents the probability of a voter supporting the school millage referendum;

$B_0$  = constant;

$B_1...B_7$  = the standardized coefficients for rational- choice variables  $R_1$  through  $R_7$ ;

$R_1$  = 1990 median household income within the Michigan public school district (MEDHOI90);

$R_2$  = 1990 level of education of residents 20 years of age or older in Michigan public school districts (NODIP90, DIPLOM90, SOME90, & GRADU90);

$R_3$  = 1990 urbanization of residents in Michigan public school districts (PERURB90, PERURO90, PERFAR90, & PERNOF90);

$R_4$  = 1990 Households with children ages 5–17 (HOKIDS90);

$R_5$  = 1990 ethnicity of residents in Michigan public school districts (CAUCA90 and MINORI90);

$R_6$  = 1990 Michigan public school district unemployment (CIVUNM90).

Data for the rational-choice logit model were obtained from the National Center for Education Statistics (1995) and the Michigan Department of Education (1996).

The dependent variable in the rational-choice logit model is the June millage request for the years 1990, 1991, and 1992. The millage request variable is operationalized in a dichotomous form as 1 = the millage request passed, or 0 = the

millage request failed. Data for the dependent variable were obtained from the Michigan Department of Education (1996).

My second assertion is derived from the social psychological model of voting. Support for the school millage is a function of the level of previous support in local school millage elections. Positive attitudes toward the school district are reflected in trends such as past patterns of millage support (Hall & Piele, 1976). Higher levels of commitment to the school district will increase the likelihood of a school millage request passing (Piele & Hall, 1973).

My third assertion is a cross-over of the two primary voting models but is tested as a social psychological factor. I believe that a request for a millage renewal has a greater likelihood of support than a request for additional mills (Piele & Hall, 1973). This I attribute, in part, to the notion that voters reach a monetary threshold of support for their school district which diminishes as the number of millage requests increases (Lankford, 1985).

#### Social Psychological Voting and School Millage Outcomes

The social psychological logit model provides an estimate of support for the school millage request by analyzing two dimensions of Michigan public school district residents. They are: (1) commitment by residents to their respective school systems, and (2) the amount of millage renewal or increase sought. Commitment to the school system is measured by calculating the ratio of millage referenda requested to millage referenda passed. The closer the ratio is to 100%, the more committed the school district residents are to their respective school systems. The second dimension of the social psychological logit model is the amount of the millage request. The amount of

millage request refers to the amount of millage renewal or increase requested by the local public school board.

The social psychological logit model poses some interesting challenges and limitations with regard to data collection. Unlike the National Election Studies, in the case of Presidential and Congressional elections, there are no national data bases of political attitudes collected by researchers using survey research methods to measure the attitudes of local public school district residents. The nature of this study limits the use of the survey research and explains why issue salience is not addressed.

In order to reconstruct the political attitudes of voters in each June millage election, for example, I would have to mail questionnaires to residents and require them to recollect their feelings from over five years ago. Sampling poses another issue. I would have to assume zero mobility by Michigan residents if I were to accurately capture the feelings of voters in their environment during the millage election. Citizens, however, do move to other school districts which makes contacting them very difficult. Furthermore, Duncan (1981) explains that measurement problems can arise when comparing attitudes across groups. For example, attitudes among group members are affected by different factors within an individual's environment. To assume that the attitudes in one environment are affected by the same dynamics in another environment creates an unreasonable assumption about variations among group member attitudes. Attitudes held by one group cannot be extrapolated to another unless both groups interact in the same environmental context.

The only feasible solution for addressing these issues is to use a proxy indicator of political attitudes. Kramer (1983) argues that the use of proxy measures is no less statistically valid than the use of actual surveys. He maintains that

“individual-level survey data, at least when analyzed with the usual methods, are not really very useful for studying the effects of short-term economic fluctuations on individual voting decisions” (p. 94).

While support does exist for the use of proxy indicators, there are important limitations to their use. For example, proxy indicators attempt to capture multiple dimensions of a concept with one measure. Nevertheless, due to the necessity of measuring some form of political attitudes, I use one proxy indicator, commitment to the school district, as a measure of positive attitudes of voters toward the school system.

I construct the following hypotheses, albeit moderate in strength, to test social psychological assumptions of voting and public school millage outcomes:

1. *Commitment to school system.*  $H_0$ : The closer to 100% the millage success ratio is, the more likely it is that the public school millage request will pass. Piele and Hall (1973), Rubinfeld (1977), and Hall and Piele (1976) show this assumption to be consistent in the research on school millage outcomes. Wolfinger and Rosenthal (1980) also support this assumption when analyzing Congressional and Presidential election outcomes. The more a political party successfully attains electoral office in each election, the more likely it is to attain office in the next election. Commitment to the school system is operationalized as the ratio of the number of millage referenda requested to the number of millage referenda passed.

2. *Millage renewal.*  $H_0$ : As the amount requested for a school millage renewal increases, the likelihood of support for the school millage referendum will decrease. Voters will be more likely to support a school millage if the number of mills levied remains unchanged. There is no added economic burden to the voter unless, for example, that person's median household income decreases, one's personal

income tax increases, or other voting costs increase. I operationalize the amount of the school millage renewal as the amount requested by the local Michigan public school board for a school millage.

3. *Millage increase.*  $H_0$ : As the amount requested for a school millage increases, the likelihood of the millage passing will decrease. The ability to pay more taxes reaches a threshold. When the school tax requested then increases, voters must see greater benefit differentials to off-set the increased cost to the voter. This assertion is supported in the research of Piele (1983). Millage increase is operationalized as the amount requested for an increase in the current number of mills levied.

Some studies (Piele & Hall, 1973) have analyzed millage content by examining the wording of the millage referendum. Piele and Hall (1973) find that the purpose of the millage has no significant effect on support from the electorate. However, a greater methodological limitation exists for this study in analyzing the effect of the school millage content.

In order to replicate the research of Piele and Hall and others, I would have to obtain the original school referenda from over 400 Michigan public school districts. This would require the author to content analyze over 1,200 pieces of legislation over the three periods (1990–1992). Therefore, I correct for this prohibitive workload by finding a next best method. That is to analyze the face effect of the amount of the proposed millage, as either a renewal or increase, on its success at the polls.

The dependent variable in the social psychological logit model is: (a) passage of the June millage request for years 1990, 1991, and 1992 (PASS90, PASS91, and PASS92). Data were made available for the social psychological variables from the Michigan Department of Education (1996).



The relationship between the social psychological dimension of commitment to the school system and support for the school millage request is expressed in the following logit equation:

$$M_2 = L_1 = \log \frac{\text{Prob(millage)}}{1 - \text{Prob(millage)}}$$

$$= B_0 + B_1S_1 + B_2S_2 + B_3S_3$$

where:  $M_2$  = social psychological logit model;

$L_1$  = the logit or the log of the odds ratio, where “Prob (millage)” represents the probability of a voter supporting the school millage referendum;

$B_0$  = constant;

$B_1...B_3$  = the standardized coefficient for social psychological variables

$S_1...S_3$ ;

$S_1$  = commitment to school system ratio (SURAT91 and SURAT92);

$S_2$  = amount of millage renewal (RENEW90, RENEW91, and RENEW92);

$S_3$  = amount of millage increase (ADDIT90, ADDIT91, and ADDIT92).

Each model is estimated for a three-year period (1990–1992). My unit of analysis is Michigan (K–12) public school districts. Every public school district that placed a school millage request on the June ballot between 1990 and 1992 is analyzed.<sup>2</sup> A complete listing of the variables used in this study is provided in the Appendix A.

### Controlling for District Size

An additional objective of this study is to determine if the size of the school district, in terms of pupil count, matters when estimating support for a school millage

referendum. Lankford (1985) and Henry (1987) show that student enrollment affects school millage outcomes. To test this proposition, I control for the size of the school district in terms of the number of students who were counted during the state's official student count day.

Classifying Michigan public school districts by their size was determined by the classification schemes offered by Educational Research Service, Inc. (1986, 1987). Very small school districts are operationalized as those having one to 2,499 students. Small school districts are operationalized as having 2,500–9,999 students. Medium-sized school districts have 10,000–24,999 students while a large school district is operationalized as having 25,000 or more students.

The size of the school district was recoded into an ordinal scale of 1 = very small, 2 = small, 3 = medium, and 4 = large. The variable SIZE is controlled for in each of the two logit models.

### Linking the Logit Estimates

Profiling the rational-choice and social psychological logit estimates will provide public school superintendents with a more robust explanation of school millage outcomes. For example, if increases in levels of education and commitment to the school system, along with the school board's request for a millage renewal decrease the likelihood of support for a school millage referendum, the superintendent may need to consider launching a campaign to build confidence in the voters about the capability of school officials.

## CHAPTER IV

### THE FINDINGS

#### Intercorrelation

The correlation matrix presented in Table 2 shows little or no intercorrelation among the independent variables. The correlations that do exist, however, are expected and reflect the correlations found by Wolfinger and Rosenstone (1980) in their research on voting and presidential and Congressional elections. Overall, the following correlations exist among the independent variables.

#### Median Household Income

Median household income is negative or weak in correlation with urbanization, ethnicity, number of households with children ages 5–17, and school district unemployment. The correlations that exist are expected. For example, median household income is reflective of an individual's level of education. Higher levels of education are correlated with higher median household incomes.

#### Ethnicity

Negative or weak correlations exist between the ethnicity of the school district, median household income, urbanization (persons living in non-urban areas), and school district employment level. However, stronger correlations exist between

Table 2  
Coefficients of Intercorrelation: Independent Variables

Variable	MEDHO190	HOKIDS90	PERURO90	PERFAR90	PERURB90	PERNOF90
MEDHO190	1.0000 (561) P=.	.0886 (561) P=.036*	.0086 (561) P=.840	.0484 (561) P=.253	.0851 (561) P=.044*	.1197 (561) P=.005*
HOKIDS90	.0886 (561) P=.036*	1.0000 (561) P=.	.0349 (561) P=.410	-.0736 (561) P=.081	.9845 (561) P=.000*	-.0108 (561) P=.799
PERURO90	.0086 (561) P=.840	.0349 (561) P=.410	1.0000 (561) P=.	.1455 (561) P=.001*	.0755 (561) P=.074	.3681 (561) P=.000*
PERFAR90	.0484 (561) P=.253	-.0736 (561) P=.081	.1455 (561) P=.001*	1.0000 (561) P=.	-.1463 (561) P=.001*	.4621 (561) P=.000*
PERURB90	.0851 (561) P=.044*	.9845 (561) P=.000*	-.0755 (561) P=.074	-.1463 (561) P=.001*	1.0000 (561) P=.	.1478 (561) P=.000*
PERNOF90	.1197 (561) P=.005*	-.0108 (561) P=.799	.3681 (561) P=.000*	.4621 (561) P=.000*	-.1478 (561) P=.000*	1.0000 (561) P=.

Table 2—Continued

Variable	MEDHOI90	HOKIDS90	PERURO90	PERFAR90	PERURB90	PERNOF90
CAUCAS90	.3288 (561) P=.000*	.7332 (561) P=.000*	.1217 (561) P=.004*	-.1141 (561) P=.007*	.7529 (561) P=.000*	.0492 (561) P=.244
AFRAM90	-.0573 (561) P=.175	.9442 (561) P=.000*	-.0216 (561) P=.610	-.0516 (561) P=.222	.9227 (561) P=.000*	.0583 (561) P=.168
NATIVE90	-.0593 (561) P=.161	.7113 (561) P=.000*	.1917 (561) P=.000*	-.1161 (561) P=.006*	.6958 (561) P=.000*	.0288 (561) P=.496
ASIAN90	.2445 (561) P=.000*	.6635 (561) P=.000*	-.0224 (561) P=.597	-.1389 (561) P=.001*	.7135 (561) P=.000*	-.1096 (561) P=.009*
NOHISO90	-.0265 (561) P=.531	.9360 (561) P=.000*	-.0155 (561) P=.714	-.0920 (561) P=.029*	.9376 (561) P=.000*	-.0853 (561) P=.043*
HISPAN90	-.0012 (561) P=.977	.9169 (561) P=.000*	.0047 (561) P=.912	-.0749 (561) P=.076	.9160 (561) P=.000*	-.0599 (561) P=.157
CIVEMP90	.1880 (561) P=.000*	.9649 (561) P=.000*	.0466 (561) P=.270	-.1059 (561) P=.012*	.9698 (561) P=.000*	-.0185 (561) P=.662

Table 2—Continued

Variable	MEDHOI90	HOKIDS90	PERURO90	PERFAR90	PERURB90	PERNOF90
CIVUNM90	-.0255 (561) P=.547	.9785 (561) P=.000*	.0061 (561) P=.886	-.0602 (561) P=.154	.9594 (561) P=.000*	-.0377 (561) P=.373
NODIP90	-.0137 (561) P=.746	.9838 (561) P=.000*	.0068 (561) P=.873	-.0655 (561) P=.121	.9671 (561) P=.000*	-.0412 (561) P=.331
DIPLOM90	.0830 (561) P=.049*	.9908 (561) P=.000*	.0424 (561) P=.316	-.0747 (561) P=.077	.9782 (561) P=.000*	-.0042 (561) P=.920
SOMECO90	.1489 (561) P=.000*	.9755 (561) P=.000*	.0484 (561) P=.253	-.1057 (561) P=.012*	.9777 (561) P=.000*	-.0195 (561) P=.644
GRADU90	.3367 (561) P=.000*	.7290 (561) P=.000*	.0524 (561) P=.216	-.1452 (561) P=.001*	.7669 (561) P=.000*	-.0449 (561) P=.288

Table 2—Continued

	CAUCAS90	AFRAM90	NATIVE90	ASIAN90	NOHISO90	HISPAN90
MEDHOI90	.3288 (561) P=.000*	-.0573 (561) P=.175	-.0593 (561) P=.161	.2445 (561) P=.000*	-.0265 (561) P=.531	-.0012 (561) P=.977
HOKIDS90	.7332 (561) P=.000*	.9442 (561) P=.000*	.7113 (561) P=.000*	.6635 (561) P=.000*	.9360 (561) P=.000*	.9169 (561) P=.000*
PERURO90	.1217 (561) P=.004*	-.0216 (561) P=.610	.1917 (561) P=.000*	-.0224 (561) P=.597	-.0155 (561) P=.714	.0047 (561) P=.912
PERFAR90	-.1141 (561) P=.007*	-.0516 (561) P=.222	-.1161 (561) P=.006*	-.1389 (561) P=.001*	-.0920 (561) P=.029*	-.0749 (561) P=.076*
PERURB90	.7529 (561) P=.000*	.9227 (561) P=.000*	.6958 (561) P=.000*	.7135 (561) P=.000*	.9376 (561) P=.000*	.9160 (561) P=.000*
PERNOF90	.0492 (561) P=.244	-.0583 (561) P=.168	.0288 (561) P=.496	-.1096 (561) P=.009*	-.0853 (561) P=.043*	-.0599 (561) P=.157
CAUCAS90	1.0000 (561) P=.	.4754 (561) P=.000*	.6218 (561) P=.000*	.7525 (561) P=.000*	.6518 (561) P=.000*	.6846 (561) P=.000*

Table 2—Continued

	CAUCAS90	AFRAM90	NATIVE90	ASIAN90	NOHISO90	HISPAN90
AFRAM90	.4754 (561) P=.000*	1.0000 (561) P=.	.6226 (561) P=.000*	.5250 (561) P=.000*	.9069 (561) P=.000*	.8603 (561) P=.000*
NATIVE90	.6218 (561) P=.000*	.6226 (561) P=.000*	1.0000 (561) P=.	.4656 (561) P=.000*	.7116 (561) P=.000*	.7224 (561) P=.000*
ASIAN90	.7515 (561) P=.000*	.5250 (561) P=.000*	.4655 (561) P=.000*	1.0000 (561) P=.	.6526 (561) P=.000*	.6238 (561) P=.000*
NOHISO90	.6518 (561) P=.000*	.9069 (561) P=.000*	.7116 (561) P=.000*	.6526 (561) P=.000*	1.0000 (561) P=.	.9457 (561) P=.000*
HISPAN90	.6846 (561) P=.000*	.8603 (561) P=.000*	.7224 (561) P=.000*	.6238 (561) P=.000*	.9457 (561) P=.000*	1.000 (561) P=.
CIVEMP90	.8744 (561) P=.000*	.8380 (561) P=.000*	.7162 (561) P=.000*	.7795 (561) P=.000*	.9015 (561) P=.000*	.8924 (561) P=.000*
CIVUNM90	.5892 (561) P=.000*	.9887 (561) P=.000*	.6779 (561) P=.000*	.5788 (561) P=.000*	.9313 (561) P=.000*	.8996 (561) P=.000*



Table 2—Continued

	CAUCAS90	AFRAM90	NATIVE90	ASIAN90	NOHISO90	HISPAN90
NODIP90	.6252 (561) P=.000*	.9778 (561) P=.000*	.6919 (561) P=.000*	.5763 (561) P=.000*	.9006 (561) P=.000*	.9071 (561) P=.000*
DIPLOM90	.7731 (561) P=.000*	.9138 (561) P=.000*	.7249 (561) P=.000*	.6376 (561) P=.000*	.9176 (561) P=.000*	.9103 (561) P=.000*
SOMECO90	.8420 (561) P=.000*	.8686 (561) P=.000*	.7246 (561) P=.000*	.7526 (561) P=.000*	.9176 (561) P=.000*	.9043 (561) P=.000*
GRADU90	.8622 (561) P=.000*	.5540 (561) P=.000*	.5316 (561) P=.000*	.9274 (561) P=.000*	.6934 (561) P=.000*	.6724 (561) P=.000*

Table 2—Continued

	CIVEMP90	CIVUNM90	NODIP90	DIPLOM90	SOMECO90	GRADU90
MEDHOI90	.1880 (561) P=.000*	-.0255 (561) P=.547	-.0137 (561) P=.746	.0830 (561) P=.049*	.1489 (561) P=.000*	.3367 (561) P=.000*
HOKIDS90	.9649 (561) P=.000*	.9785 (561) P=.000*	.9838 (561) P=.000*	.9908 (561) P=.000*	.9755 (561) P=.000*	.7290 (561) P=.000*
PERURO90	.0466 (561) P=.270	.0061 (561) P=.886	.0068 (561) P=.873	.0424 (561) P=.316	.0484 (561) P=.253	.0524 (561) P=.216
PERFAR90	-.1059 (561) P=.012*	-.0602 (561) P=.154	-.0655 (561) P=.121	-.0747 (561) P=.077	-.1057 (561) P=.012*	-.1452 (561) P=.001*
PERURB90	.9698 (561) P=.000*	.9594 (561) P=.000*	.9671 (561) P=.000*	.9782 (561) P=.000*	.9777 (561) P=.000*	.7669 (561) P=.000*
PERNOF90	-.0185 (561) P=.662	-.0377 (561) P=.373	-.0412 (561) P=.331	-.0042 (561) P=.920	-.0195 (561) P=.644	-.0449 (561) P=.288
CAUCAS90	.8744 (561) P=.000*	.5892 (561) P=.000*	.6252 (561) P=.000*	.7731 (561) P=.000*	.8420 (561) P=.000*	.8622 (561) P=.000*

Table 2—Continued

	CIVEMP90	CIVUNM90	NODIP90	DIPLOM90	SOMECO90	GRADU90
AFRAM90	.8380 (561) P=.000*	.9887 (561) P=.000*	.9778 (561) P=.000*	.9138 (561) P=.000*	.8686 (561) P=.000*	.5540 (561) P=.000*
NATIVE90	.7162 (561) P=.000*	.6779 (561) P=.000*	.6919 (561) P=.000*	.7249 (561) P=.000*	.7246 (561) P=.000*	.5316 (561) P=.000*
ASIAN90	.7795 (561) P=.000*	.5788 (561) P=.000*	.5763 (561) P=.000*	.6376 (561) P=.000*	.7526 (561) p=.000*	.9274 (561) P=.000*
NOHIS090	.9015 (561) P=.000*	.9313 (561) P=.000*	.9306 (561) P=.000*	.9176 (561) P=.000*	.9176 (561) P=.000*	.6934 (561) P=.000*
HISPAN90	.8924 (561) P=.000*	.8996 (561) P=.000*	.0071 (561) P=.000*	.9103 (561) P=.000*	.9043 (561) P=.000*	.6724 (561) P=.000*
CIVEMP90	1.0000 (561) P=.	.8989 (561) P=.000*	.9132 (561) P=.000*	.9687 (561) P=.000*	.9948 (561) P=.000*	.8546 (561) P=.000*
CIVUNM90	.8989 (561) P=.000*	1.0000 (561) P=.	.9956 (561) P=.000*	.9602 (561) P=.000*	.9240 (561) P=.000*	.6200 (561) P=.000*

Table 2—Continued

	CIVEMP90	CIVUNM90	NODIP90	DIPLOM90	SOMECO90	GRADU90
NODIP90	.9132 (561) P=.000*	.9956 (561) P=.000*	1.0000 (561) P=.	.9748 (561) P=.000*	.9335 (561) P=.000*	.6248 (561) P=.000*
DIPLOM90	.9687 (561) P=.000*	.9602 (561) P=.000*	.9748 (561) P=.000*	1.0000 (561) P=.	.9764 (561) P=.000*	.7117 (561) P=.000*
SOMECO90	.9948 (561) P=.000*	.9240 (561) P=.000*	.9335 (561) P=.000*	.9764 (561) P=.000*	1.0000 (561) P=.	.8250 (561) P=.000*
GRADU90	.8546 (561) P=.000*	.6200 (561) P=.000*	.6248 (561) P=.000*	.7117 (561) P=.000*	.8250 (561) P=.000*	1.0000 (561) P=.

\* \*. \* is printed if a coefficient cannot be computed.

\* Significant at the .05 level.

ethnicity of the school district and persons living in urban areas and higher levels of education.

### Urbanization

There is a weak or zero correlation between the urbanization of the school district and median household income. Stronger negative and positive correlations exist between the urbanization of the school district and levels of education.

### School District Employment

Strong correlations exist between school district employment and unemployment rates and levels of education. This finding is expected, given that employment is a function of education levels.

The variables in this study pose no problem with regard to intercorrelation. All statistically significant correlations are either weak, negative, or expected. Therefore, the variables used for this analysis are valid and reliable indicators of the concepts they measure. The next stage of my data analysis involves interpreting the logit model coefficients.

## **The Rational-Choice Model Logit Coefficients**

### June Millage Elections 1990

Table 3 shows the outcome from the rational-choice analysis for the June 1990 millage elections. The overall model predicted 78% of the school millage outcomes correctly. When we use the .10 level of significance, we find that an association does exist between median household income, households with children

Table 3

**Likelihood of Rational-Choice Voting Characteristics Predicting  
School Millage Outcomes in June of 1990**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Median household income 1990	-1.8E-05	2.495E-05	.5498	1	.4584	.0000	1.0000
Households w/ children ages 5-17 1990	.0017	.0012	2.2158	1	.1366	.0254	1.0017
Persons living inside urban areas 1990	-.0001	.0004	.1053	1	.7456	.0000	.9999
Persons living outside urban areas 1990	-.0002	.0004	.1988	1	.6557	.0000	.9998
Persons—rural farm 1990	.0013	.0007	3.3622	1	.0667	.0639	1.0013
Persons—rural non-farm 1990	-.0002	.0004	.2069	1	.6492	.0000	.9998
Persons non-Hispanic White 1990	5.19E-05	.0001	.1227	1	.7261	.0000	1.0001
Minority population 1990	-.6593	1.0976	.3608	1	.5481	.0000	.5172
Size of the school district 1990	-.1225	.5638	.0472	1	.8280	.0000	.8847
Persons 20 years or older w/ 12 grade or less w/ no diploma 1990	-.0006	.0007	.7058	1	.4008	.0000	.9994
Persons 20 years or older w/ a high school diploma 1990	-.0002	.0006	.0692	1	.7925	.0000	.9998

Table 3—Continued

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Persons 20 years or older w/ some college but no degree 1990	-.0002	.0007	.6078	1	.8054	.0000	.9998
Persons 20 years or older w/ a bachelor degree or higher 1990	.0001	.0005	.0518	1	.8200	.0000	1.0001
Civilians unemployed 1990	.0013	.0013	1.0237	1	.3117	.0000	1.0013
Constant	2.6456	1.3561	3.8059	1	.0511		

Overall performance of the rational-choice model

Percent of school millage elections  
correctly predicted in June of 1990 = 78.10%

$\chi^2$  = 21.739

df = 14

Sig. = .0841

between ages 5–17, urbanization, ethnicity, education levels within the school district, the size of the school district, and whether or not a school millage passes (sig. = .08).

When examining the independent variables as determinants of the likelihood that the school millage will pass, we find that the number of persons within the school district living in farm areas (sig. = .07) has the greatest impact on the success of a school millage request during the June 1990 millage elections. This finding parallels that of the research by Piele and Hall (1973), Giles et al. (1976), and Rubinfeld (1977). Here we find that for every one-unit increase in the number of persons living in farm areas, the log-odds increase in favor of the millage passing by .0013%.

There is very little or no intercorrelation among the independent variables in this model. Therefore, we can safely assume that median household income, levels of education, urbanization, households with children ages 5–17, ethnicity of the school district, and school district unemployment would have independent effects on the outcome of the millage election for this time-period.

#### June Millage Elections 1991

The rational-choice model does not perform as well in explaining school millage outcomes for the year 1991 as it did for the year 1990. Table 4 shows a marginal increase of 1% in the model's predictive capacity from 1990. Overall, 79% of the millage elections during the month of June in 1991 were correctly predicted by the rational-choice model compared to 77% in 1990. However, no single variable within the rational-choice model for 1991 is statistically significant in increasing the likelihood of the school millage passing.

The Pearson  $r$  coefficients show no intercorrelation among the independent variables within the rational-choice model for the June 1991 school millage elections.

#### June Millage Elections 1992

The rational-choice model performs exceptionally well when analyzing school millage outcomes in June of 1992 when compared to the previous two years. Table 5 shows that the model correctly predicts 88% of the school millage elections for that year. While an association does exist between all independent variables within the model and school millage outcomes (sig. = .04), no variable alone is statistically significant in predicting a school millage outcome.



Table 4

**Likelihood of Rational-Choice Voting Characteristics Predicting  
School Millage Outcomes in June of 1991**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Median household income 1990	-3.1E-05	2.756E-05	1.2572	1	.2622	.0000	1.0000
Households w/ children ages 5-17 1990	.0013	.0017	.5883	1	.4431	.0000	1.0013
Persons living inside urban areas 1990	-.0005	.0006	.5710	1	.4499	.0000	.9995
Persons living outside urban areas 1990	-.0005	.0006	.6112	1	.4343	.0000	.9995
Persons—rural farm 1990	.0004	.0008	.2837	1	.5943	.0000	1.0004
Persons—rural non-farm 1990	-.0005	.0006	.6506	1	.4199	.0000	.9995
Persons non-Hispanic White 1990	5.4E-05	.0002	.0483	1	.8261	.0000	.9999
Minority population 1990	-5.6324	13.8128	.1663	1	.6834	.0000	.0036
Size of the school district 1990	-.1447	.5471	.0699	1	.7915	.0000	1.1557
Persons 20 years or older w/ 12 grade or less w/ no diploma 1990	-.0009	.0008	1.2146	1	.2704	.0000	1.0009
Persons 20 years or older w/ a high school diploma 1990	-6.0E-05	.0007	.0075	1	.9309	.0000	.9999

Table 4—Continued

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Persons 20 years or older w/ some college but no degree 1990	.0006	.0009	.5433	1	.4611	.0000	1.0006
Persons 20 years or older w/ a bachelor degree or higher 1990	.0008	.0006	1.5538	1	.2126	.0000	1.0008
Civilians unemployed 1990	.0006	.0016	.1611	1	.6881	.0000	1.0006
Constant	7.8620	13.8414	.3226	1	.5700		

Overall performance of the rational-choice model

Percent of school millage elections correctly predicted in June of 1991 = 79.26%

$\chi^2$  = 14.337

df = 14

Sig. = .4249

Intercorrelation within the rational-choice model is minimal for the 1992 school millage analysis. The Pearson  $r$  coefficients show very weak correlations among the independent variables within the model.

Social Psychological Model Logit Coefficients

June Millage Elections 1990

The social psychological model performs similarly to the rational-choice model when predicting school millage outcomes during the month of June in 1990. Table 6 shows that 79% of the school millage elections during June of 1990 were

Table 5

**Likelihood of Rational-Choice Voting Characteristics Predicting  
School Millage Outcomes in June of 1992**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Median household income 1990	2.82E-05	3.237E-05	.7588	1	.3837	.0000	1.0000
Households w/ children ages 5-17 1990	-.0029	.0021	1.9108	1	.1669	.0000	.9971
Persons living inside urban areas 1990	.0006	.0008	.5502	1	.4583	.0000	1.0006
Persons living outside urban areas 1990	.0006	.0008	.6522	1	.4193	.0000	1.0006
Persons—rural farm 1990	.0007	.0011	.4108	1	.5215	.0000	1.0007
Persons—rural non-farm 1990	-.0005	.0008	.4967	1	.4810	.0000	1.0005
Persons non-Hispanic White 1990	-4.2E-05	.0003	.0266	1	.8703	.0000	1.0000
Minority population 1990	-4.4380	16.3717	.0735	1	.7863	.0000	.0118
Size of the school district 1990	-.4297	.7408	.3364	1	.5619	.0000	.6507
Persons 20 years or older w/ 12 grade or less w/ no diploma 1990	-.0010	.0011	.8402	1	.3594	.0000	.9990
Persons 20 years or older w/ a high school diploma 1990	-.0004	.0010	.1137	1	.7360	.0000	.9996

Table 5—Continued

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Persons 20 years or older w/ some college but no degree 1990	-.0005	.0011	.2480	1	.6181	.0000	.9995
Persons 20 years or older w/ a bachelor degree or higher 1990	.0002	.0009	.0284	1	.8661	.0000	.9998
Civilians unemployed 1990	.0033	.0019	3.0419	1	.0811	.0714	1.0033
Constant	6.8454	16.4008	.1742	1	.6764		

Overall performance of the rational-choice model

Percent of school millage elections  
correctly predicted in June of 1992 = 88.10%

$\chi^2$  = 24.586

df = 14

Sig. = .0389

correctly predicted by the model. Overall, we find that an association does exist between the amount of a school millage renewal requested, the amount of additional mills requested, the size of the public school district, and the outcome of the school millage election (sig. = <.001).

We tested for the independent effects of the size of the school district, the amount of millage renewal requested, and the number of additional mills requested on school millage outcomes. The findings show that: (a) as the amount of renewal increases, the likelihood of the school millage passing increases (sig. = <.001), and (b) as the amount of additional mills requested increases, the likelihood of the school

Table 6

**Likelihood of Social Psychological Voting Characteristics Predicting  
School Millage Outcomes in June of 1990**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Amount of millage renewal requested	.0686	.0165	17.3296	1	.0000	.2155	1.0710
Amount of additional mills requested	-.4922	.0983	25.0891	1	.0000	-.2644	.6113
Size of the school district	-.3879	.2929	1.7539	1	.1854	.0000	.6785
Constant	1.5751	.4472	12.4074	1	.0004		

Overall performance of the social psychological model

Percent of school millage elections  
correctly predicted in June of 1990 = 79.23%

$\chi^2$  = 60.072

df = 3

Sig. = .0000

millage passing decreases (sig. = <.001). These findings are congruent with the research findings of Piele (1983).

With regard to the impact of a school millage renewal request on the likelihood of the millage passing, we find that as the renewal numbers increase, the likelihood that the school millage will pass increases by .069%. However, requests for additional mills poses a threat to public school superintendents when estimating the likelihood of the school millage passing. For every one-unit increase in the number of additional mills requested there is a .49 decrease in the likelihood that the school millage will pass.

The Pearson  $r$  coefficients show little or no intercorrelation among the size of the school district, the amount of millage renewal requested, and the number of additional mills requested.

### June Millage Elections 1991

Table 7 shows that the social psychological model increases in its ability to predict school millage outcomes in June 1991. Approximately 81% of the school millage elections for this time period are correctly predicted by the model. There is clearly an association between the size of the school district, the amount of millage renewal requested, the number of additional mills requested, the success ratio of previous school millage elections, and the likelihood of the school millage passing (sig. = <.001).

When examining the individual impact of the independent variables on the likelihood of the school millage passing, we find that: (a) as the amount of millage renewal increases, the likelihood of the school millage passing also increases (sig. = .000); (b) as the number of additional mills increases, the likelihood of the school millage passing decreases (sig. = .0037); and (c) as the school millage success ratio increases, the likelihood of the school millage passing increases (sig. = .046).

For every one-unit increase in the amount of mills renewed there is a .0915 increase in the likelihood that the school millage will pass. With regard to the number of additional mills requested we find that for every one-unit increase in additional mills requested there is a .3842 decrease in the likelihood that the school millage will pass. The success ratio of previous school millages results in a .0065 increase in the likelihood that the school millage will pass.

Table 7

**Likelihood of Social Psychological Voting Characteristics Predicting  
School Millage Outcomes in June of 1991**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Amount of millage renewal requested	.0915	.0176	27.0730	1	.0000	.2866	1.0959
Amount of additional mills requested	-.3842	.1323	8.4294	1	.0037	-.1451	.6810
Size of the school district	-.1965	.3651	.2898	1	.5903	.0000	.8216
Success ratio of previous school millage requests	.0065	.0033	3.9637	1	.0465	.0802	1.0065
Constant	.5921	.5674	1.0891	1	.2967		

Overall performance of the social psychological model

Percent of school millage elections  
correctly predicted in June of 1991 = 80.94%

$\chi^2$  = 60.181

df = 4

Sig. = .0000

The Pearson *r* coefficients show little or no correlation among the size of the school district, the amount of millage renewal requested, the number of additional mills requested, and the school district millage success ratio.

June Millage Elections 1992

During the month of June in 1992, the social psychological model increased in its predictive capacity from the previous two years by 7%. Table 8 shows that 87%

of the school millage elections were correctly predicted by the social psychological model. There is an association between the size of the school district, the amount of millage renewal requested, the number of additional mills requested, the school district millage success ratio, and the likelihood of the school millage passing (sig. = <.001).

Three variables within the model have a statistically significant impact on the likelihood of the school millage passing. They are: (1) the size of the school district (sig. = .0241), (2) the number of additional mills requested (sig. = .0001), and (3) the school district millage success ratio (sig. = .0168). The size of the school district decreases the likelihood of the school millage passing by .8395 for every one-unit increase in student enrollment. For every one-unit increase in the number of additional mills requested, there is a .5214 decrease in the likelihood of the school millage passing. However, for every one-unit increase in the school millage success ratio, there is a .0141 increase in the likelihood of the school millage passing.

The Pearson  $r$  correlation coefficients indicate little or negative correlation between the size of the school district, the amount of millage renewal requested, the number of additional mills requested, and the school district success ratio.

### Summary of Findings

#### Rational-Choice Voting and School Millage Outcomes

The rational-choice model of voting and school millage outcomes varies in its ability to predict school millage outcomes during the years 1990, 1991, and 1992. Overall, the model correctly predicts over 75% of the millage elections. However, the association between median household income, households with children ages 5–17,



Table 8

**Likelihood of Social Psychological Voting Characteristics Predicting  
School Millage Outcomes in June of 1992**

Variable	B	S.E.	Wald	df	Sig	R	Exp (B)
Amount of millage renewal requested	.0307	.0192	2.5383	1	.1111	.0513	1.0311
Amount of additional mills requested	-.5214	.1346	15.0102	1	.0001	-.2524	.5937
Size of the school district	-.8395	.3721	5.0897	1	.0241	-.1230	.4319
Success ratio of previous school millage requests	.0141	.0059	5.7150	1	.0168	.1349	1.0142
Constant	2.4547	.7436	10.8974	1	.0010		

Overall performance of the social psychological model

Percent of school millage elections  
correctly predicted in June of 1992 = 87.36%

$\chi^2$  = 43.428

df = 4

Sig. = .0000

urbanization, ethnicity of the school district, school district unemployment, and school millage outcomes varies among June millage elections for the years 1990, 1991, and 1992.

The impact of the independent variables on the likelihood of the school millage passing parallels the findings of previous research on school millage elections in some cases but not all. For example, the number of persons living in farm areas

shows a statistically significant impact on the likelihood of a school millage passing for millage elections in June of 1991 but not for the other two years in the study.

### Social Psychological Voting and School Millage Outcomes

The social psychological model of voting and school millage outcomes correctly predicts over 75% of the school millage outcomes in school millage elections during the month of June in 1990, 1991, and 1992. The model consistently shows that an association does exist between the amount of the renewal requested, the number of additional mills requested, the size of the school district, the school millage success ratio, and the outcome of the school millage election.

Increases in the amount of the renewal increase the likelihood of the school millage passing in June of 1990 and 1991. As the size of the school district increases in June of 1992, the likelihood of the school millage passing decreases. When the number of additional mills increases, the likelihood of the school millage passing decreases in June of 1990, 1991, and 1992. My final discovery is that as the school millage success ratio increases, so does the likelihood of the school millage passing in June of 1990, 1991, and 1992.

Chapter V provides a summary and discussion of the key findings and their implications for public school superintendents. In addition, future research considerations are addressed.

## CHAPTER V

### SUMMARY AND DISCUSSION

This study tested two voting behavior models of public school millage election outcomes. Research on presidential and Congressional election outcomes served as a theoretical base for this study. Two points are stressed throughout this study. They are: (1) that voting behavior models developed for estimating presidential and Congressional election outcomes are helpful in estimating the likelihood that a public school millage referendum will pass, and (2) that voters' political attitudes and economic interests are integral to understanding public school millage outcomes. A third point, that I will address later in this chapter, is that a congruency must exist between public school millage campaign strategy suggestions and voting behavior assumptions. If public school superintendents want to increase the likelihood of the millage passing, they must implement millage campaign strategies that account for differences in voting behaviors.

There were several key findings in this study that may help Michigan public school superintendents in understanding why their school millage referendum passes.

#### Summary of Key Findings

Two models of voting behavior were tested to estimate the likelihood of a public school millage referendum passing. They are: (1) a rational-choice voting model, and (2) a social psychological voting model. The author analyzed the 561

(K–12) public school districts in Michigan for a three-year period. They are: 1990, 1991, and 1992. The key findings were as follows:

1. Overall, rational-choice and social psychological models of voting behavior facilitate the public school superintendent's ability to estimate the likelihood of successful school millage election outcomes. Specifically, the rational-choice model in this study was moderately strong in its ability to estimate the likelihood of successful school millage outcomes for the years 1990 and 1992. However, during the month of June 1991, the rational-choice model did not perform well statistically. The entire model and its independent variables were statistically insignificant in determining the likelihood of a successful school millage outcome in June of 1991. This may be attributed, in part, to the recession that led into the 1992 Michigan elections. The recession effects may have been more prominent, during this time period, at the local school district levels. The social psychological model, however, was moderately strong in its ability to estimate the likelihood of successful school millage outcome for all three years.

2. As the number of persons living in rural farm areas increases, so does the likelihood of the school millage passing. Of the 315 school millage elections held in June of 1990, 78% passed in very small school districts (< 2,500 students). These public school districts were characterized by comparatively large rural-farm populations.

3. As the number of civilians unemployed within the public school district increases, so does the likelihood of the school millage passing. This finding, however, runs contrary to Lankford's (1985) finding. Perhaps this finding may be explained as a preponderance of local public school district voters in Michigan wanting to educate themselves for employment opportunities when a high number of civilians are

unemployed. This finding, however, should be viewed with caution because it proved statistically insignificant for the years 1990 and 1991.

4. As the amount of the millage renewal increases, so does the likelihood of the school millage passing. This finding is supported in the literature (e.g., Piele, 1983) and suggests that voters support their school millage more if there is no additional economic burden placed on them. Furthermore, renewal requests tend to be for maintaining current operations and not for expansion purposes. This finding did not materialize, however, when analyzing June millage elections in 1992.

5. As the number of additional mills increases, the likelihood of the school millage passing decreases. This suggests that voters reach a threshold in their support for the local public school district. When the number of additional mills increases, it becomes harder for the voter to find an economic benefit that justifies a “yes” vote.

6. As the size of the school district increases, support for the school millage will decrease. This finding is congruent with the findings of Lankford (1985) and Henry (1987). However, it surfaced in only one of the three years analyzed (1992).

One explanation of this may be that voters in larger school districts may feel lower levels of community attachment and closeness. Voters, therefore, may feel that the school millage has a personal economic cost greater than the overall economic benefit to themselves or the community.

7. As the success ratio of previous millage requests increases, so does the likelihood that the current school millage will pass. This finding is congruent with the findings by Rubinfeld (1977) and Hall and Piele (1976). Past commitment by the voters to their school millage request is the strongest estimator of the likelihood that the school millage will pass.

The key findings in this study raise an interesting question about voting behavior assumptions and campaign strategies. Do millage campaign strategies accommodate voting behavior assumptions? Public school superintendents need campaign strategies that address voting behavior issues. The superintendent needs to educate the school district voters about the millage and convince them of the benefits of supporting the referendum.

How well has the campaign strategy literature addressed this issue? I will examine the utility of this literature for designing school millage campaigns.

#### Finding Congruency Between Voting Behavior Assumptions and School Millage Strategies

Millage campaign strategies should reflect rational-choice and social psychological voting assumptions. For example, if individuals vote their pocketbooks, public school superintendents should focus upon the economic benefits obtained by supporting the school millage request. On the other hand, if previous experiences by the voters with their school district are negative, the superintendent must turn those negative attitudes into positive feelings toward the school district.

Several authors and organizations (e.g., Banach & Cass, 1977; Clearinghouse on Educational Management, 1977; Falkinham, 1976; Jones, 1977; Michigan State Board of Education, 1984) have published millage campaign strategies for school officials seeking to increase the likelihood of the millage passing. Their campaign suggestions are derived from assumptions about voters and their decision-making processes during an election.

How congruent are these millage campaign strategies with rational-choice and social psychological assumptions of voting? After content analyzing several campaign

strategy publications (e.g., Banach & Cass, 1977; Clearinghouse on Educational Management, 1977; Falkinham, 1976; Jones, 1977; Michigan State Board of Education, 1984), I found that a high level of congruency exists between the millage campaign strategies published by Banach and Cass (1977), Clearing House on Educational Management (1977), Falkinham (1976), Jones (1977), the Michigan State Board of Education (1984), and rational-choice and social psychological voting assumptions. Table 9 shows 12 criteria that should be integrated into the millage campaign if school officials want to increase the likelihood of passing the school millage.<sup>3</sup>

Over 60% of the criteria selected focus on social psychological dimensions of voting behavior. For example, several millage campaign strategies focus upon the elimination of negative political feelings, such as alienation from the local school system, while increasing positive political feelings through participation. Overall, school millage campaign strategy suggestions tend to focus more on social psychological dimensions of voting rather than rational-choice.

The overemphasis on addressing social psychological dimensions of voting behavior should not lead public school superintendents to underemphasize the importance of rational-choice considerations in their strategies. For example, smaller school districts have concomitantly smaller electoral populations. Hence these voters may feel more positive about the impact of their individual votes during the school millage election. Conversely, those voters from larger school districts will tend to feel less positive about the impact of their individual votes. The perceived impact of an individual's vote, according to rational-choice voting assumptions, decreases as the electoral population increases. Therefore, voters from small school districts have a distinct advantage in determining the impact of their vote over large school districts.

Table 9

## Millage Campaign Criteria as a Voting Behavior Dimension

Criteria	Rational-Choice	Social Psychological
Speaker bureaus		X
"Yes vote theme"		X
Business community support		X
Student, parent, teacher cooperation		X
Direct personal contact		X
Openness of information		X
Reduction in money requested from previous request	X	
Use of brochures		X
Personal conferences with businesses		X
Provide thorough explanation of why millage is needed	X	
Newsletter		X
Cost per day emphasized	X	

Sources: Banach, W. J., & Cass, F.. (1977). "You can pass that next financial issue—with proper planning." *Journal of Educational Communication*, 2(3), 4–14.

Clearing House on Educational Management. (1977). *School financial elections: Research action brief*. Eugene, OR: University of Oregon.

Falkenheim, K. (1976). "Organized work: The road to a successful referendum," *Phi Delta Kappan*, 57(9), 611–612.

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This is important to Michigan public school superintendents because the majority of Michigan public school districts are small (<2,500 students).

Although an overwhelming number of millage campaign strategies focus primarily upon shaping positive political attitudes, three rational-choice voting criteria permeate in every school millage campaign publication. They are: (1) reducing the amount of money requested from the previous millage that was defeated, (2) providing a thorough explanation of why the monies are needed, and (3) emphasizing the cost-per-day to the voter if the millage is passed (Banach & Cass, 1977; Clearinghouse on Educational Management, 1977; Falkinham, 1976; Henry, 1987; Jones, 1977; Michigan State Board of Education, 1984).

Public school superintendents must be cautious in their attempts to increase the millage request. We know from the findings in this study that increases in school millage requests decrease the likelihood that the millage will pass. Therefore, superintendents must carefully examine the past levels of support for their school millage requests and determine the closeness of the elections. For example, if the last millage request passed by a slim margin, the superintendent must be careful not to sway the voters away from supporting the current millage request by asking for too much funding.

To facilitate the voters' perception of little costs to obtain greater benefits, the superintendent can increase the likelihood of passing the current millage by showing voters how little the millage will cost them. For example, by demonstrating that the school millage will cost the voters only a few pennies per day, the superintendent will create a perception in the mind of the voters that this cost is relatively inexpensive when compared to the overall economic benefit from supporting the referendum. This, along with the superintendent staying within the

financial bounds of the voter, should increase the likelihood of the school millage passing.

### Considerations for Future Research

Historically, scholars of voting behavior have struggled with two issues. They are: (1) measuring political attitudes, and (2) calculating the rationality of casting a vote for a particular candidate or public policy. These issues reflect a continuing need by voting behavior scholars to increase the construct validity of social psychological and rational-choice voting theory. This study proved no different. Applying voting behavior models developed for presidential and Congressional election outcomes to school millage outcomes is still an issue for voting behavior scholars. For example, identifying the variables that reflect the economic interests of school district voters is challenging. We don't know for sure whether or not minority voters see schooling as a ticket to occupational success. Perhaps an examination of minority drop-out rates and their linkage to perceived schooling benefits would answer this question more accurately.

The National Center for Education Statistics has developed a comprehensive data base consisting of several demographic and economic characteristics of public school districts in the United States. This centralized data base has facilitated researchers in developing rational-choice voting models for millage election outcomes. For example, The National Center for Education Statistics provides data on the number of households with children ages 5–17. This indicator serves as a measure of an economic benefit derived from supporting a public school millage referendum.

We are lacking in a comprehensive data base on social psychological indicators. Currently, there is no national data base similar to that of the National Election Studies data provided by the University of Michigan. Political attitudes and issue salience are currently measured on a case study basis. We need a national data base of survey data that shows trends in public opinion by school district voters. This data could then be analyzed to determine the impact of political attitudes and the salience of an issue on school millage outcomes.

My final research consideration focuses upon the issue of the social cleavages that permeate urban and rural areas. In this study, the rational-choice model failed to predict, consistently, school millage outcomes in Michigan public school districts. School districts differ greatly in their ethnic and income distributions. Future research should focus on testing differences in the impacts of socioeconomic factors on school millage outcomes. Do larger income variances or racial dispersions within a public school district change the likelihood of a school millage passing? Superintendents with heterogeneous school district characteristics may find it more difficult to pass their school millages.

In order to win a millage election, public school superintendents must understand their voters and the factors that shape their support for a millage request. By understanding voting behavior models, the superintendent will increase the likelihood of passing the school millage request. This study has shown the value of voting behavior models in predicting school millage outcomes. Knowing your electorate is mandatory for passing a school millage.

## ENDNOTES

<sup>1</sup> At this point, I will explain my use of the concepts of participation and turnout. I refer to participation as the engagement of an individual in activities that are political in nature. For example, volunteering for canvassing activities during the election campaign or donating money to a particular political candidate are forms of political participation. Participation does not mean, however, that a voter will turn out on election day and cast a vote. Turnout could be construed as political participation. However, I avoid this interchangeability of terms to accommodate the rational model.

I refer to voter turnout as actually voting on election day. Some may argue that turnout does not reflect the actual act of casting a ballot. It is difficult, however, to conceive of a voter going to the polls on election day and not casting a ballot. In keeping with the tenets of rational voting theory, we must assume that turning out at the polls and doing nothing would incur costs well above the benefits received by not casting a ballot.

<sup>2</sup> The author selected June millage elections for two reasons. First, the data sets were incomplete for months other than June. In an effort to avoid partial data gathering, the author used complete data sets on June elections. Second, more public school districts in Michigan held millage elections in June than any other month. Therefore, a greater distribution of school district elections was provided.

<sup>3</sup> There were 18 criteria extracted from the literature deemed crucial to passing a school millage. Five of the criteria were administrative in nature and not related to the rational-choice or social psychological models. For example, strong campaign organization and positive media coverage are administrative factors and therefore are excluded from the table of successful millage criteria and voting frameworks.

## Appendix A

### Codebook

## CODEBOOK

<b>Variable</b>	<b>Description</b>
MEDHOI90	Median Household Income '90
HOKIDS90	Households w/ children 5–17 years old '90
PERURB90	Persons inside urban areas '90
PERURO90	Persons outside urban areas '90
PERFAR90	Persons—rural-farm '90
PERNOF90	Persons—rural-nonfarm '90
CAUCAS90	Persons non-Hispanic White '90
AFRAM90	Persons non-Hispanic Black '90
NATIVE90	Persons Native American '90
ASIAN90	Persons Asian or Pacific Islander '90
NOHISO90	Persons non-Hispanic other '90
HISPAN90	Persons Hispanic '90
CIVUNM90	Civilians 16 years of age or older unemployed '90
NODIP90	Persons 20 years of age or older w/ 12th grade or less/ no diploma '90
DIPLOM90	Persons 20 years of age or older w/ a high school diploma '90
SOMECO90	Persons 20 years of age or older w/ some college but no degree '90
GRADU90	Persons 20 years of age or older w/ a bachelor degree or higher '90
STUDEN90	Number of students enrolled in the school district '90
SIZE	Size of school district '90 1 = very small (300–2,499) 2 = small (2,500–9,999) 3 = medium (10,000–24,999) 4 = large (25,000–100,000 or more)

PASS90	Millage passed '90 0 = no    1 = yes
PASS91	Millage passed '91 0 = no    1 = yes
PASS92	Millage passed '92 0 = no    1 = yes
RENEW90	Amount of millage renewal '90
RENEW91	Amount of millage renewal '91
RENEW92	Amount of millage renewal '92
ADDIT90	Amount of additional mills '90
ADDIT91	Amount of additional mills '91
ADDIT92	Amount of additional mills '92
SURAT91	Millage success ratio '91
SURAT92	Millage success ratio '92
MINORI90	Total number of minorities within the school district that are not of Caucasian ethnicity, 1990

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