Attitude and Behavior Correlates of Voting Intentions on the 1976 Michigan Non-Returnables Ban

Working Paper 164

by

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Introduction

In the 1976 General Election, the voters of Michigan approved by a substantial margin (64 percent to 36 percent) a proposal (known as Proposal A) which would require refundable cash deposits for soft drink and beer containers. The law will go into effect in November 1978. Other states with similar statutes include Oregon, Vermont, South Dakota, and Maine.

The importance of the Michigan law extends beyond its impact on local sellers and consumers. According to Leigh and Warshaw (1977), proponents of this kind of legislation believe the success in Michigan will stimulate the passage of similar laws in other states and will eventually lead to a national law. National "bottle bills" have been introduced in the U.S. Congress for two consecutive years. Michigan is the first of the large, industrialized states to adopt such a deposit system.

This report summarizes the results of a statewide Michigan survey conducted just prior to the 1976 election. Adults who were eligible to vote were asked about their purchasing habits for soft drink and beer containers, their voting intentions, and their ecological attitudes. The object of the survey was to understand and try to explain voting behavior on the proposal.

Marketing academics seldom have a strong interest in voter decision-making. The factors which influence voters' decisions are usually left for the political scientist to investigate. The Michigan bottle bill, however, has presented a rare opportunity to study the behavior of individuals acting in their roles as both voters and consumers.

Research Issues and Hypotheses

To some, the outcome of the Michigan election was unexpected. Consumers may have completely reversed themselves in rejecting the dominant packaging form for soft drinks and beer - namely, throwaways. At the time of the election, returnables accounted for less than 15 percent of consumer container purchases for beer and less than 25 percent for soft drinks (Rideout and Reyes, 1976). Thus, in the marketplace the demand for throwaways was strong. In the voting booths, however, a different picture emerged. On the surface, at least, it appears that dollar "votes" in the marketplace were providing an inadequate indication of the consumers' preferences.

Further, the margin by which the deposit law was passed in Michigan would not have been predicted by the findings of research on the ecologically concerned consumer (ECC). The ECC is defined as an individual whose purchasing behavior is influenced by a concern for the environment.

The ECC has been variously characterized as a traditionally socially responsible person (Anderson and Cunningham, 1972), as socially conscious and a member of the "upper middle class counter-culture" (Webster, 1975), as self-actualizing, in Maslow's terminology (Booker, 1976), and as a middle-class liberal searching for a new way to express his or her values (Mayer, 1976). Research by Kinnear et. al. (1973; 1974 a,b) demonstrated that ecological attitudes, buyer behavior, and the perception of the ecological attributes of products are related. A consistent finding of all such research has been that the ECC segment of the population is probably not very large. In fact, one researcher was led to conclude the following:

> A large portion of the sample is not motivated to perceive products on the basis of concern for the ecology...it is unlikely that the purchasing pattern of consumers will shift enough to nonpolluting products to force those products that do pollute off the market ... concern for the ecology is not a universally strong enough dimension to complete this task by itself. (Kinnear, 1973)

This conclusion is certainly consistent with the level of market demand for throwaways over returnables. However, it is inconsistent with the election results. The recent success of a similar bottle bill in Oregon might be explained by the prominence of environmental protection as a public issue in that state. This attitude toward environmental protection does not seem to characterize Michigan, however.

Furthermore, at least 64 percent of Michigan's population could not be described as members of the "upper middle class counter culture."

This report will consider a number of hypotheses in its attempt to understand the motives and behavior of voters in this election. These hypotheses are:

H1: The margin of victory by which the deposit law was passed overstates the true level of its support by the population of Michigan.

H2: Passage of the proposal was made possible by a high degree of behavior-behavior inconsistency among consumers. In other words, many consumers were voting to modify their own behavior in the marketplace.

H3: Voting intentions on the deposit law were related to the amount of added inconvenience that would be experienced by consumers.

H4: In addition to the obvious issues of environmental protection and general convenience, voters were strongly influenced by economic and political considerations.

H5: Social influence played a prominent role in the passage of the deposit law.

H6 (A): Voting intentions were related to ecological concern, but

H6 (B): A high level of ecological concern was not a necessary prerequisite for favoring the deposit law.

These hypotheses are sufficiently general that no single finding can either prove or disprove them. Therefore, in the following analysis they are treated informally, with evidence presented which seems either to support or refute them. Our concern was whether the positive evidence outweighs the negative.

A constant strategy of statistical analysis was employed throughout the study. For details, see Appendix I, "Note on the Statistical Analysis."

The Sample

Telephone interviews were conducted with 306 eligible voters in the state of Michigan between October 23-30, 1976. The last interview was obtained three days before the day of the election.

Respondents were selected using a random digit dialing method similar to Waksberg's Two-Stage Procedure (See: Frankel and Frankel, 1977). This method affords an equal probability sample of all telephone numbers, listed and unlisted, while minimizing the number of unproductive dialings. A randomization procedure was used to select from multiple eligible adults within the same household.

The calling was done from a central location to maintain control over sample selection and over the quality of each interviewer's work.

Tables 1, 2, and 3 compare selected demographic characteristics of the respondents with census statistics. The data indicate similar distributions on sex and area of residence. The data suggest that the sample may be slightly biased toward younger adults, those 21 - 45 years old. However, the age categories used in the survey question are not identical to those used in the census tabulation.

Table 1

Comparison of Respondents' Demographic Characteristics with Census Data (Sex of Respondent)

Sex	Survey	Michigan 1970[a]
Males	48%	49%
Females	52	51
Total	100%	100%
Base:	(305)	

[a] Source: U.S. Bureau of the Census, Statistical Abstract of the U.S., 1977. (98th ed.) Washington, D.C., 1977.

Table 2

Comparison of Respondents' Demographic Characteristics with Census Data (Area of Residence)

Area of Residence	Survey	Michigan 1970[a]
Inside SMSA	78%	77%
Ann Arbor	4%	3%
Bay City	1	1
Detroit	45	47
Flint	6	6
Grand Rapids	9	6
Jackson	--	2
Kalamazoo	1	2
Lansing	3	4
Muskegon	4	2
Saginaw	3	3
Monroe County	2	1
Outside SMSA	22	23
Total	100%	100%
Base:	(297)	

[a]Source: David I. Verway and William Grier (eds.) Michigan Statistical Abstract, Division of Research, Graduate School of Business Administration, Michigan State University, 1977.

Table 3

Comparison of Respondents' Demographic Characteristics with Census Data (Age of Respondent)

Age Interval	Survey	Age Interval	Michigan 1976[a]
18-20 years	6%	18-20 years	9%
21-45 years	57	21-44 years	49
46-65 years	27	45-64 years	29
over 65 years	10	65 years and over	13
Total	100%		100%
Base:	(306)		

[a] Source: U.S. Bureau of the Census, Statistical Abstract of the U.S., 1977. (98th edition) Washington, D.C., 1977.

Current figures for the income and educational attainment of the state's population were not available for comparison.

The degree to which the data predict the outcome of the election is one particularly relevant test of the appropriateness of the sample. Table 4 compares voter intentions obtained in the survey with the actual results of the Michigan election. On the Presidential preference, the survey indicated that 54 percent favored Gerald Ford over Jimmy Carter, while 53 percent of the electors actually voted that way. The survey predicted that Proposal A would win 61 percent to 39 percent, while it was actually supported 64 percent to 36 percent. The survey results are within normal sampling error in both cases.

Table 4

Comparison of Voter Intentions
with Actual Election Results

Presidential Preference	Survey Findings[a]	Michigan Election Results[b]
Ford	54%	53%
Carter	46	47
Proposal A Preference		
For	61%	64%
Against	39	36

[a] Among those who said they would "definitely vote" and had a preference on the question.

[b] Source: Michigan Secretary of State's Office, Elections Division.

Summary of Significant Findings

This discussion is organized around the six hypotheses in the Introduction, with the objective of uncovering evidence in the survey which will either support or refute each hypothesis.

Hypothesis 1

The margin of victory by which the deposit law was passed overstates the true level of its support among the entire population of Michigan.

According to the Elections Division of the Michigan Secretary of State's Office, only about 65 percent of the registered voters and 54 percent of the eligible adults voted on the deposit proposal. This means that (.64 x .54 =) 35 percent of the adults over 18 years of age were able to significantly affect the buying behavior of the state's entire population of consumers.

We might question whether the preferences of this 35 percent of the adult population adequately represent the opinion of the entire population. Simply comparing the voting results with the survey findings would not be sufficient since both "polls" are subject to non-response error.

The results in Table 5 indicate a positive association between likelihood of voting and support for the proposal. These data provide direct support for Hypothesis 1. While the sentiments of the entire population cannot be known for sure, the proposal was favored by a margin of 14 percent (57 percent to 43 percent) among the entire sample (n=306).

Table 5

Proposal A Preference by
Likelihood of Voting

Likelihood of Voting in the Election	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Will definitely vote	61%	39%	100%	(229)
Will probably vote	39	61	100%	(23)
Will probably not vote	25	75	100%	(8)
Will definitely not vote	43	57	100%	(21)

$\chi^2 = 9.289$, d.f. = 3, $\rho < .05$

Gamma = .40

These findings imply that the 28 percent victory margin (64 percent to 36 percent) somewhat overstates the popularity of the deposit law among the population of consumers whose behavior will be affected by its passage. In fact, as many as half of the consumers may be currently opposed to the deposit system. This could lead to difficulties when the system is implemented in late 1978. This underscores the importance of designing a system for returning the containers that is as palatable as possible for consumers, many of whom may have a negative predisposition toward it. A high customer service level may serve to "sell" them on the system in the end.

Hypothesis 2

Passage of the proposal was made possible by a high degree of behavior-behavior inconsistency among consumers. In other words, many consumers were voting to modify their own behavior in the marketplace.

As might be expected, there was a strong statistical association between the present container purchase behavior of consumers and their voting intentions. This is summarized in Table 6 for soft drinks and in Table 7 for beer. Returnables-only users were the most likely to support the proposal. Obviously, were the proposal to pass, little adjustment of their behavior patterns would be required. In contrast, throwaway-only users were among the least likely to support the proposal. Passage of the proposal would necessitate a major adjustment in their behavior patterns.

Table 6

Proposal A Preference by Soft
Drink Container Usually Purchased Now

Soft Drink Container Usually Purchased	Proposed A Preference (excluding the undecided) For	Against	Total	Base
Throwaways only	46%	54%	100%	(187)
Both returnables and throwaways	54	46	100%	(13)
Returnables only	84	16	100%	(70)
Doesn't buy soft drinks	56	44	100%	(16)

$\chi = 28.929$, d.f. = 3, $\rho < .001$

Lambda = .10

Table 7

Proposal A Preference by Beer
Container Usually Purchased Now

Beer Container Usually Purchased	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Throwaways only	51%	49%	100%	(176)
Both returnables and throwaways	50	50	100%	(4)
Returnables only	92	8	100%	(13)
Doesn't buy beer	62	38	100%	(90)

$\chi^2 = 10.112$, d.f. = 3, $\rho < .025$

Lambda = 0.0

These tables indicate that 46 percent of those who buy only throwaway soft drink containers and 51 percent of those who buy only throwaway beer containers said they intended to vote yes on the proposal. In itself this suggests a high degree of behavior-behavior inconsistency. Further, the information for soft drinks and beer can be combined to identify two types of individuals: those who buy throwaways exclusively and those who don't. The "strictly throwaways" group buys throwaways in both products or buys throwaways in one and doesn't buy the other product. This group might be expected to have a strong commitment to throwaways with no existing habits for dealing

with returnables. The "not strictly throwaways" group are those who are currently buying returnables in one or both of the products. This experience should serve to lessen their commitment to throwaways. Table 8 summarizes the voting intentions of these two groups.

Table 8

Proposal A Preference by
Container Preference

	Proposed A Preference (excluding the undecided)			
Container Preference	For	Against	Total	Base
Strictly throwaways	47% "Inconsistent"	53% "Consistent"	100%	(201)
Not strictly throwaways	78 "Consistent"	22 "Inconsistent"	100%	(86)

$\chi^2 = 21.775$, d.f. = 1, $P<.001$

(Yate's correction employed)

As expected, the data show that consumers who buy throwaways exclusively were significantly less likely to support the proposal compared to those who sometimes buy returnables. Still, 47 percent of those who buy throwaways exclusively said they would vote yes on the deposit law.

Put another way, over half of those who supported the proposal are currently buying only throwaway containers. This evidence seems to confirm Hypothesis 2. One implication is that many of those who voted "yes" probably have little actual experience with returnable containers and may not have a clear idea of the behavioral implications of the law. The remainder of this report attempts to identify and understand the motivating factors which could cause such a large portion of the voters to behave inconsistently.

Hypothesis 3

Voting intentions on the deposit law were related to the amount of added inconvenience that would be experienced by consumers.

Instead of asking respondents directly how much they would be inconvenienced by the deposit law, an attempt was made to infer this from their buying behavior and from other characteristics. This approach was taken to avoid suggesting to respondents (especially those who intended to vote "no") that they were in any way "lazy" with respect to the environment.

The previously reported finding that voting intentions were related to present consumption habits tends to support this hypothesis. The learning of new consumption habits, as would be required of those presently using strictly throwaways, can be considered an "added" inconvenience. However, those who now buy returnables are already being inconvenienced to some extent. For this group, passage of the deposit law would not add to their inconvenience and might actually decrease it.

For instance, it might become easier to find desired brands and to return the used containers.

We might ask whether voting intentions were related to the inconvenience which the law would cause for the individual voter/consumer or for the household. Perhaps those who felt they would not be personally inconvenienced by the law were more likely to support its passage. For instance, returning the containers might be considered the responsibility of a different family member, possibly the one who does the grocery shopping, or it might be considered a household chore for the kids. In contrast, those family members who would be involved in returning the containers and who would be more inconvenienced by its passage might be less inclined to support it. Tables 9 and 10 report voting intentions by anticipated role in returning the containers. They indicate no significant statistical association for either soft drinks or beer.

Table 9

Proposal A Preference by Role in Returning Soft Drink Containers

If Proposal A were passed, soft drink containers would be returned.	Proposal A Preference (excluding the undecided) For	Against	Total	Base
By respondent only	57%	43%	100%	(169)
By respondent and other family member(s)	70	30	100%	(30)
Not by respondent	53	47	100%	(61)

$\chi^2 = 2.579$, d.f. = 2, $\rho > .25$

Lambda = 0.0

Table 10

Proposal A Preference by Role in
Returning Beer Containers

If Proposal A passed, beer containers would be returned	Proposal A Preference (excluding the undecided) For	Against	Total	Base
By respondent only	52%	48%	100%	(121)
By respondent and other family member(s)	68	32	100%	(25)
Not by respondent	56	44	100%	(41)

$\chi^2 = 2.148$, d.f.=2, $\rho > .25$

Lambda = 0.0

It is interesting to note that in both of these tables those respondents who would share the responsibility for returning the containers with another family member were most inclined to support the proposal. This suggests a notion of "shared inconvenience." If the burden for returning the containers did not fall on any one family member alone, then the law would be easier to live with.

Another factor determining the amount of added inconvenience is the volume of soft drinks and/or beer consumed by the household. Volume, in turn, is related to the number of persons living in the household. Children living at home would probably lead to a higher volume of beverage consumption and of containers to be returned to the store, (if the law were passed). Tables 11 and 12 support this (line of reasoning).

Voters living in households with children were less likely to support the proposal. On the average, there was 1 child living at home among those who favored the proposal and 1.4 among those who opposed it.

Table 11

Proposal A Preference by Presence of Children Living at Home

	Proposal A Preference (excluding undecided)			
Children living at home	For	Against	Total	Base
Yes	50%	50%	100%	(147)
No	64	36	100%	(135)

$\chi^2 = 5.087$, d.f.=1, $\rho<.025$

(Yate's correction employed)

Gamma = -.28

Table 12

Proposal A Preference by Number of Children Living at Home

	Voting Intentions on Proposal A		
Number of children living at home	Vote Yes	Vote No	p(1 Tail)
Mean	.994	1.384	p <.05
Std. Dev.	1.362	1.635	
D.F.	161	124	

Another finding, possibly related to this hypothesis, is that men were more likely to support the deposit law than were women. As indicated in Table 13, 63 percent of the men said they intended to vote yes compared to 51 percent of the women.

Table 13

Proposal A Preference by Sex

	Proposal A Preference (excluding undecided)			
Sex of Respondent	For	Against	Total	Base
Male	63%	37%	100%	(136)
Female	51	49	100%	(150)

$\chi^2 = 3.593$, d.f. = 1, $\rho < .10$

(Yate's correction employed)

Lambda = 0.0

The finding of sex difference was a bit unexpected, as it had been established that voting intentions were unrelated to role in returning the containers. To confirm that the sex difference in voting intentions was not a function of women having to shoulder more of the responsibility for returning the containers (possibly due to their traditional role as grocery shoppers), a special analysis was conducted. Tables 14 and 15 report voting intention by anticipated role in returning the containers

separately for men and women. As the tables indicate, men were more likely to support the proposal than women, regardless of their role in returning the containers.

Table 14

Proposal A Preference by Sex
and Role in Returning Soft Drink Containers

If Proposal A passed, soft drink containers would be returned	Proposal A Preference (excluding the undecided) For	Against	Total	Base
By respondent only				
Males	64	36	100%	(64)
Females	52	48	100%	(104)
By respondent and other family member(s)				
Males	78	22	100%	(18)
Females	58	42	100%	(12)
Not by respondent				
Males	60	40	100%	(38)
Females	39	61	100%	(23)

Table 15

Proposal A Preference by Sex
and Role in Returning Beer Containers

If Proposal A passed, beer containers would be returned	Proposal A Preference (excluding the undecided) For	Against	Total	Base
By respondent only				
Males	58%	42%	100%	(55)
Females	46	54	100%	(65)
By respondent and other family members				
Males	79	21	100%	(14)
Females	55	45	100%	(11)
Not by respondent				
Males	67	33	100%	(24)
Females	41	59	100%	(17)

These results are consistent with the finding that voting intentions were unrelated to grocery shopping role (no table). Together they lead to the conclusion that the sex difference is not due to an (anticipated) unequal division of labor for returning the containers.

In an effort to understand why men supported the deposit law more than women did, the data were further analyzed for possible age differences. Table 16 reports voting intentions by age, separately for men and for women. There is an apparent interaction of age and sex in the table. Disregarding the category of males over 60 (too few in number to be reliable), the only large sex difference in voting intentions occurs in the 30-and-under age category. In that age group, 64 percent of the men supported the proposal compared to 40 percent of the women. This difference is statistically significant ($t = 2.42$, $p < .01$).

Table 16

Proposed A Preference by Sex and by Age

	Males			
	Proposal A Preference (excluding undecided)			
Age of Respondent	For	Against	Total	Base
30 years or under	64%	36%	100%	(47)
31-45 years	55	45	100%	(44)
46-60 years	64	36	100%	(33)
over 60 years	83	17	100%	(12)

Females

Age of Respondents	Proposal A Preference (excluding undecided) For	Against	Total	Base
30 years or under	40%	60%	100%	(53)
31-45 years	56	44	100%	(41)
46-60 years	57	43	100%	(23)
over 60 years	59	41	100%	(32)

Summary Stats: Voting Intention by Age

	χ^2	d.f.	$\rho >$	Gamma
Males	3.464	3	.3	.09
Females	4.350	3	.2	.24
Total Sample	3.579	3	.3	.17

Perhaps the most relevant issue is not which member of the household will most often take the containers back. Rather, it may be the character of the trips on which the containers will be returned. Many of the women under 30 would have to make these trips accompanied by small children. They might feel that handling the containers and the children at the same time would make these trips very inconvenient.

Of course, the consumer could completely avoid all inconvenience simply by not returning the containers and foregoing the deposit. If many consumers did this, it would destroy the effectiveness of the deposit system and perhaps lead to its repeal. Based on the results of this survey, though, there appears to be little chance of this happening. Less than 3% indicated they would not return the containers (see Table 17).

Table 17

Behavioral Resistance
to Proposal A

If Proposal A passed, respondent would not return soft drink containers	2.29%
If Proposal A passed, respondent would not return beer containers	2.29%
Base:	(306)

To summarize this section, evidence strong enough to support or reject Hypothesis 3 could not be found. The findings that those who would have to modify their purchase habits and those who have children were more opposed to the proposal seem to support the inconvenience theory. On the other hand, those who would actually have a role in

returning the containers (and would experience the greatest inconvenience) were just as likely to favor the proposal as those who would not have this role. One interpretation of these results is that Hypothesis 3 is basically correct except that the inconvenience for the household, not the individual, was the determining factor.

Hypothesis 4

In addition to the obvious issues of environmental protection vs. inconvenience, voters were strongly influenced by economic and political considerations.

Regardless of the way they intended to vote on the deposit law, most of the sample considered litter a major source of pollution. This is evident in Table 18. As a source of pollution, litter was considered on a par with factories, power plants, and automobiles. More respondents thought litter was a major source of pollution than either aerosal spray cans or laundry detergents, both of which have received special attention in the press in recent years. Despite this generally high level of concern about litter, those who intended to vote yes for the deposit law were even more inclined to see litter as a major source of of pollution as compared to those who intended to vote no (78 percent versus 67 percent). These differences were even more pronounced on the two specific forms of litter: beer and soft drink containers.

Table 18

Proposal A Preference by Perceived

(Relative) Importance of Pollution Sources

Percent who consider item a major source of pollution[1]:	Among Total Sample	Among those who would vote: Yes on Proposal A	Among those who would vote: No on Proposal A
Litter (χ^2= 5.120, df = 2, ρ< .10, Gamma = .27)	73%	78%	67%
Power Plants and Factories (χ^2= 5.013, df = 2, ρ< .10, Gamma = -.26)	72	69	78
Automobiles (χ^2= 1.188, df = 2, ρ> .30, Gamma = .07)	71	71	70
Beer Containers (χ^2= 30.259, df = 2, ρ<.001, Gamma = .59)	62	77	45
Aerosal Spray Cans (χ^2= 5.421, df = 2, ρ< .10, Gamma = .26)	52	57	46
Soft Drink Containers (χ^2= 27.518, df = 2, ρ< .001, Gamma = .51)	51	65	34
Laundry Detergent (χ^2= 4.147, df = 2, ρ> .10, Gamma = .24)	29	33	23
Plastic Milk Cartons (χ^2= 2.211, df = 2, ρ> .30, Gamma = .08)	15	18	12
Newspaper (χ^2= 1.666, df = 2, ρ> .30, Gamma = .13)	14	12	16
Grocery Bags (χ^2= 2.403, df = 2, ρ> .30, Gamma = .06)	5	7	12
Base	(306)	(162)	(125)

[1] Respondents rated each source as a major, a minor, or a negligible source of pollution

Perceptions about the importance of beer and soft drink containers as sources of pollution were statistically related to voting intentions on the proposal. This gives a clear indication that voters acted in accordance with specific environmental beliefs. It is interesting to note that those who intended to vote no were more likely to identify industrial facilities as major contributors to pollution than litter. This may reflect a tendency to ascribe responsibility for the state of the environment to large, impersonal sources whose behavior the individual consumer cannot easily affect. This is consistent with the findings of Henion and Wilson (1976), that consumers who are not ecologically concerned tend to be more externally controlled. Tables 19 and 20 further illustrate the importance of ecological considerations in respondents' voting intentions. These tables summarize responses to an open-ended question asking respondents why they were for or against the proposal. Statements about decreasing litter, improving the environment in general, and preserving our scarce resources tended to dominate the responses of those who favored the deposit law. However, among those who opposed it, the issues of cost and convenience were most prominent.

Table 19

Major Reasons for Being
in Favor of Proposal A

	Percent of Total Mentions
To decrease litter in general	36%
To decrease roadside litter	16
To improve the environment	10
To preserve scarce resources	6
To decrease litter on own property	6
To give people an incentive to pick up the bottles	5

Table 20

Major Reasons For Being
Opposed to Proposal A

	Percent of Total Mentions
It would increase costs to the consumer	26%
It would be inconvenient	26
It would not be effective in decreasing litter	18
It would be better to enforce existing anti-litter laws	5
It would be unjust because it penalizes those who don't litter	4

In many cases the reasons given for supporting or opposing the proposal represent a "playback" of arguments that voters acquired from information sources (both personal and media). On the other hand, most of the important ecological benefits of switching to returnables appear to have filtered through. This is with the possible exception of how returnables could contribute to energy conservation, which may reflect some confusion in the "ecology camp" over the impact of the deposit law on energy consumption.

Economic Beliefs

The influence of economic considerations on voting intentions is more clearly indicated in Table 21. There was a very strong statistical association between voting intentions and expectations about the effect of the law on beverage costs. Furthermore, as only about 14 percent thought costs would decrease, the influence of cost expectations was mainly in a negative direction. The more that respondents thought beverage costs would go up, the less likely they were to support the proposal. "Beverage cost" is a crucial term in this context. Respondents were specifically instructed to think in terms of what the consumer would have to pay in the end, assuming the return of the deposit.

Table 21

Proposal A Preference by
Expected Effect on Beverage Costs
(Net of Deposit)

If Proposal A is passed, consumers will pay	Proposal A Preference (excluding the undecided) For	Against	Total	Base
A lot less	86%	14%	100%	(14)
A little less	96	4	100%	(23)
About the same	82	18	100%	(87)
A little more	46	54	100%	(93)
A lot more	13	87	100%	(54)

$\chi^2 = 87.442$, d.f. = 4, $\rho < .001$
Gamma = -.78

It is too early to tell exactly what effect the deposit law will have on beverage costs in Michigan. This effect will depend largely on the behavior of consumers and the extent to which retailers comply with this law. Obviously, a decrease in costs would present no problem. However, the data suggest that even a modest increase in costs may turn a significant portion of consumers against the deposit system. Also, it is likely that some consumers will confuse inflationary cost increases with the effects of the deposit law. In short, this puts bottlers and retailers in something of a bind. Perhaps it would not be

advisable to pass on to consumers all the costs of converting to a returnables system, because this could inspire them to rebel. Such a rebellion carries with it the threat of lost sales if consumers withhold their purchases for any extended period of time. Worse, if consumers then sought a repeal of the deposit law, the investment in a returnables system would be lost. Leigh and Warshaw (1977) have advanced similar arguments. The apparent solution is a gradual phasing-in of the returnables system by bottlers and retailers who wish to avoid this risk.

Political Ideology

Mayer (1976), in a reinterpretation of Webster's data, advanced the hypothesis that the socially/ecologically concerned consumers is a middle-class liberal. References were cited which found a strong relationship between political liberalism and environmental concern. Mayer recommended that measures of political preferences be included with standard demographic and psychological variables. He also suggested that researchers explore the conditions under which ecological and social consciousness are expressed in either political or consumption behaviors.

As a dependent variable, voting intentions on the deposit law would seem to express ecological consciousness in both political and consumption behaviors. To test the Mayer hypothesis, respondents' presidential voting intentions might be considered an indicator

of political liberalism-conservatism. Although both candidates, Jimmy Carter and Gerald Ford, held similar views on many issues, their party identifications alone should have served to differentiate persons on the basis of political ideology.

Table 22 reports respondents' presidential preferences according to how they intended to vote on the deposit law. No relationship was found. These data do not appear to support the Mayer hypothesis. Presidential preference, however, may not be an ideal indicator of liberalism-conservatism.

Table 22

Proposal A Preference and
Presidential Preference

Preferred Presidential Candidate	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Carter	57%	43%	100%	(113)
Ford	58	42	100%	(132)

$\chi^2 = 0.000$, d.f. = 1, ρ = very large
(Yate's Correction Employed)

To summarize this section, the findings indicate that environmental and economic considerations played an important role in voters' decisions. It is not clear from the data that voters were casting ballots on the basis of political ideology.

Hypothesis 5

Social influence played a prominent role in the passage of the deposit law.

It is widely recognized in social psychology and marketing that reference groups are an important determinant of the individual's judgements, beliefs, and behavior (Kassarjian and Robertson, 1973). The reference group has certain beliefs, values, and norms (an "ideology") to which its members are expected to conform. Norms specify the behavior that is expected of members under certain circumstances.

According to Deutch and Gerard (1955), groups have two types of influence on individuals: informational influence and normative social influence. Informational social influence encourages members to adopt a particular viewpoint because of the appeal of the arguments provided by other group members. These other members are referred to as opinion leaders, those to whom the group turns for information and advice in particular interest areas. On the other hand, normative social influence attempts to achieve conformity to the expectation of others.

It has been hypothesized that such social processes played a definite role in molding voter opinion on the bottle bill. The level of public controversy over the proposal suggests that it was a topic that few groups could avoid discussing. In many groups certain members probably assumed the role of "ecological opinion leader," providing other members with information on the issues in a two-step flow of communication (Katz and Lazarsfeld, 1955). Likewise, normative social influence may also have played a part, especially in those groups sharing an interest in outdoor activities.

Other groups no doubt existed in which informational and normative social influence worked against passage of the proposal. Groups especially concerned about the economic consequences of the deposit law may have encouraged members to vote against the proposal.

It is difficult to measure quantitatively the extent to which such social processes might have influenced voting intentions on the deposit law. However, it is possible to determine whether certain indicators exist which coincide with these processes. For example, if the deposit law was a topic often discussed by the reference group, then members might be expected to have a fairly clear idea of where the other members stood on the issue. Also, if social influence processes did take place within the group, members' attitudes and voting intentions would tend to be fairly homogeneous. The data in Table 23 seem to support these notions. On the one hand, two-thirds of the respondents felt they knew their friends' preferences regarding the deposit law. Among those who felt they knew where their friends stood, there was a strong

association between their own voting intentions and their perception of their friends' position.

Table 23

Proposal A Preference by
Perception of Friends' Position

Respondents who feel their friends	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Favor the proposal	87%	13%	100%	(111)
Oppose the proposal	15	85	100%	(81)
Don't know friends' position	57	43	100%	(95)

$\chi^2 = 97.854$, d.f. = 2, $\rho < .001$

Lambda = .46

According to Festinger (1954) people have a need to evaluate their opinions. Often this means comparing one's opinions with those held by others. It is likely that such comparisons often occur among members of the same reference group. However, on important issues like the bottle bill, group opinion is likely to be somewhat homogeneous (partly due to social influence). Under these conditions, then, the results of the social comparison process should be quite predictable: the individual's opinion will tend to agree with the opinions of the other group members. Consequently, the individual is led to conclude that his

opinion and the majority opinion coincide. Despite the lack of representativeness, there might also be a temptation to extrapolate these results well beyond one's reference group. Table 24 suggests that a process of this kind may have occurred with respect to the deposit law proposal. Voting intentions were strongly associated with the expected election outcome.

Table 24

Proposal A Preference by
Expected Election Outcome

Respondents who think Proposal A is	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Very likely to pass	79%	21%	100%	(38)
Likely to pass	71	29	100%	(56)
Too close to call	66	34	100%	(74)
Unlikely to pass	41	59	100%	(64)
Very unlikely to pass	21	79	100%	(29)

$\chi^2 = 37.507$, d.f. = 4, $\rho < .001$
Gamma = .51

When considered together, the results in Tables 23 and 24 seem to provide strong support for Hypothesis 5, that social processes were in effect.

Hypothesis 6A

Voting intentions were related to ecological concern.

In the 1970s marketers began to explore ways for business to exploit the ecological concern of consumers in an attempt to increase profits. Although this aim has a negative connotation for some, such an approach holds great promise for achieving real environmental gains. As Dolan (1971) has put it, self-restraint and self-sacrifice will not solve the environmental crisis, because altruism is a notoriously weak force for social change. The crisis can be solved only if strong human emotions like greed, avarice, and self-interest can be harnessed for ecological purposes. This is exactly the concern of ecological marketing. "Ecological Marketing" pertains to the efforts of companies and non-profit entities including government to market products, services, and ideas whose ecological attributes constitute an appeal to the buyers or adopters (Henion, 1976).

Ecological Marketing entails the pursuance of a segmentation strategy; that is, identifying a homogeneous cluster of consumers at which the ecological appeal can be targeted. In order for the strategy to be successful this ecological segment of consumers must be measurable, accessible, and substantial. Most of the research in Ecological Marketing to date has been directed at determining whether these criteria can be met. The question is: can the Ecologically Concerned Consumer (ECC) be identified and isolated and is it worthwhile for businesses to attempt to do so?

It should not be at all surprising that much of the research in Environmental Marketing so far has concentrated on the characteristics of the ECC. As is the case with most research of this nature, the first task has been the development of a satisfactory measure of ecological concern in order to identify such persons. In this attempt, researchers first sought direction and support from the other social sciences.

In the first reported study of this type, Anderson and Cunningham (1972) chose the Social Responsibility Index (SRI) as their dependent variable, a measure which had been developed by Berkowitz, Daniels, and Lutterman (1964, 1968) for another purpose. According to Berkowitz, et. al. the scale measures an individual's traditional social responsibility, i.e., the willingness of an individual to help other persons (even when there is nothing to be gained for himself.) Anderson and Cunningham assumed that "Socially (responsible) individuals...would (also) manifest social consciousness in consumption decisions" and set out to describe these persons in terms of their psychological and demographic characteristics. Their findings generally confirmed those of Berkowitz, et. al. Those scoring high in social responsibility tended to have higher status occupations and to be of higher socioeconomic status. They were more cosmopolitan but less dogmatic, conservative, status-conscious, personally competent , and alienated. It should be stressed that the SRI measures attitude only - it does not measure buying behavior.

Kinnear in his doctoral dissertation (1972) developed the Ecological Concern Index (ECI) in order to identify the ECC. His measure, in contrast with the SRI, contained both attitudinal and self-reported behavioral questions and had a definite consumer/buyer orientation. Subsequent research by Kinnear and Taylor (1974) showed that attitudes about the environment were very highly related to purchasing behavior for products with ecological implications. Individual items in the ECI were related to the type of laundry product, gasoline, and soft drink container purchased. They were also related to the extent to which glass containers were recycled and the nature of the respondent's shopping pattern.

As an independent variable, the ECI was found to be related to consumers' brand perceptions (Kinnear and Taylor, 1973). Those scoring high in ecological concern tended to perceive greater similarity between ecological brands and to attach greater importance to the ecological dimension in evaluating alternative brands. When the ECI was employed as a dependent variable (Kinnear, Taylor, and Ahmed, 1974), those scoring high in ecological concern tended to be more tolerant, understanding, and harm-avoidant. They tended to have higher incomes and were more inclined to believe that an individual consumer can be effective in pollution abatement (perceived consumer effectiveness).

Another major effort to identify the ECC was made by Webster (1975). In addition to the SRI, he used an actual measure of recycling behavior (R) and a score on the Socially Conscious Consumer Index (SCC). The

SCC was purely a behavioral measure of whether respondents reported recycling, disconnecting automotive pollution equipment, reusing grocery bags, conserving energy, and refusing to buy a product involved in a labor dispute. The last item reflects the broader definition of the Socially Conscious Consumer used by Webster: "a consumer who takes into account the public consequences of his or her private consumption or who attempts to use his or her purchasing power to bring about social change." Webster's basic findings are summarized below in terms of the variables found significantly related to SCC, SR, and R.

Social Consciousness (SCC)	Social Responsibility (SR)	Recycling (R)
Perceived Consumer Effectiveness	Perceived Consumer Effectiveness	Perceived Consumer Effectiveness
Dominance	Responsibility	Tolerance
Tolerance	Community Activities	Education
Sex		Income
Income		SCC
Power of Big Business		SR

The conclusion drawn from the Webster research which was later supported by Anderson, Henion, and Cox (1974) was that the Socially Responsible Consumer (as measured by Webster, Anderson, and Cunningham using the SRI) and the Ecologically Concerned Consumer (as measured by Webster's SCC) were not the same sort of person. The socially responsible person was one who tended to be constructive and to embrace the traditional values of society. The SCC, on the other hand, was described as usually female and as "a member of the upper middle class counter-culture." The recycler was somewhere in between.

Webster's conclusions about the SCC are consistent with Kinnear's findings regarding the ECC. Both Webster and Kinnear found tolerance and perceived consumer effectiveness to be positively related to social/ecological concern. Henion and Wilson's (1976) interpretation of the PCE result is that the social/ecologically concerned consumer has an internal locus of control.

Considering the way that Webster chose to operationalize the Socially Concerned Consumer, it is likely that it measures the same construct as Kinnear's ECI. Seven of the eight components of the SCC relate to either environmental or energy issues. As a measure of ecological concern, however, the SCC suffers from a particular drawback: it is purely behaviorally oriented and does not directly address or measure the respondent's belief or value system. As a consequence of this orientation, it could easily become outdated, since the most relevant behaviors change over time. For example, an item dealing with the use of aerosol spray cans would seem appropriate today but is not included in the SCC scale,

Actually, in the light of his original definition, Webster's operationalization of the SCC concept was somewhat narrow. It might be worthwhile to restructure the SCC to measure a construct distinct from ecological concern and from social responsibility. There may be a segment of social activist consumers who use their purchasing power in an attempt to bring about broader social change, rather than improvements in the environment. For instance, they may use their purchasing

power to influence marketing practice, to advance racial or sexual equality, or even to stimulate the economy. This may be a key topic for further research.

Returning to the problem of measuring ecological concern, Maloney, Ward, and Braucht's Ecology Scale (1975) is an alternative to Kinnear's ECI. This scale comprises four subscales measuring verbal commitment, actual commitment, affect, and knowledge. However, research conducted by Henion and Wilson (1976) has found that the ECI and ES are highly correlated. The ECI explained about 54 percent of the variance in the ES. These authors concluded that the ES and ECI measure the same construct. The ES has the advantage of giving scores on the four subscales, while the ECI is much shorter and could more easily be included in a survey of voting intentions on the deposit law.

There is reason to expect that ecological concern should be related to respondents' voting intentions. Throwaways are a major contributor to pollution. Due to careless littering these containers are found in city streets, deep in the forest, and at the bottom of lakes. They mar the countryside and, in the case of broken glass bottles, may be dangerous. Throwaways also waste scarce resources. Aluminum cans are haphazardly discarded although aluminum is a finite resource and a material which retains much of its value when recycled. Throwaways also waste energy resources. For example, throwaway bottles use about three times the energy of returnable bottles. Finally, throwaways are a problem for waste disposal. More and more cities are finding it difficult to handle such solid wastes as throwaway containers.

In considering the hypothesis that voting intentions were related to ecological concern, proposal supporters and opponents were compared on each component of Kinnear's ECI. These results are summarized in Tables A-H, Appendix II. One component of the ECI that was not analyzed separately asked the following question:

> Do you think that all consumers should be interested in the pollution aspects of products that they purchase?

This question was not helpful in explaining voting intentions because 98 percent of the sample responded affirmatively.

One departure from the original formulation of the ECI concerns the brand of laundry soap the respondent usually buys for washing clothes (see Table A). In the past, brands named in response to this question were categorized according to their phosphate content. Unfortunately, the manufacturers of detergent brands change the level of phosphates from time to time. This means that the researcher has to make a re-determination of phosphate contents each time the scale is used. In order to circumvent this problem and make the scale more convenient to use, verbal responses were accepted in place of actual measurements.

Another modification of the ECI concerns the scaling of responses to the question (see Table E):

> How much less white or bright would you be willing to have your laundry to be sure you were using a non-polluting laundry product?

Originally, responses to this question were measured on a six-point scale. At the time when the ECI was constructed, the phosphate content of laundry detergents was probably the most salient Ecological Marketing issue. While this level of discrimination may have been appropriate at

the time, the shift of public attention to a variety of ecological issues suggests the use of a less discriminating scale. The original six-point scale and the four point scale used in this survey are compared below:

Original Scaling	Scaling Used in This Survey
Not at all less white or bright	Not at all less white or bright
A very little less white or bright	Very little less white or bright
A little less white or bright Moderately less white or bright	Somewhat less white or bright
A great deal less white or bright A very great deal less white or bright	Quite a bit less white or bright

Five of the seven ECI components analyzed were found to be statistically associated with voting intentions at the alpha = .10 level of confidence. These five components are ranked below in terms of the strength of their association with voting intentions as measured by the statistic Gamma.

RANK	ECI COMPONENT	GAMMA
1.	Urge friends not to use polluting products	.50
2.	Amount of laundry whiteness/brightness would sacrifice	.37
3.	Perceived importance of pollution problem	.34
4.	Changed shopping pattern to buy non-polluting product	.31
5.	Own interest in pollution aspects of products	.21

The relatively strong association of voting intentions with the component "a person should urge his or her friends not to use polluting products" might be explained in social-psychological terms. First,

other evidence in this survey suggests that social influence may have played an important role in the outcome of the election. The deposit law is the sort of topic that was probably discussed by the individual's reference group or groups, at which time norms regarding voting behavior might have been communicated. Assuming that strong behavioral norms did exist, it is unlikely that the individual would voice arguments against these norms to other members of the group. To the extent that a group viewed throwaways as a polluting product, this may explain the reluctance of "no" voters to urge their friends not to use polluting products and why "yes" voters felt this was acceptable behavior.

The two components of the ECI that did not appear strongly associated with voting intentions were the phosphate content of respondents' laundry products and their belief that "the government should force all products that pollute off the market." However, for the government control belief there was a mild association (Gamma = .13) in the expected direction. In future research, there may be an opportunity to improve the explanatory power of this item by removing the modifier "all". This statement may be too strong as virtually all products pollute to some extent. If the government were to remove all polluting products from the market, consumers would be left with nothing to buy.

Kinnear and Taylor (1974) investigated the relationship between the individual ECI items and various purchasing behaviors with ecological implications. These behaviors were:

Detergent Type - whether the respondent used a phosphate or non-phosphate laundry product

Gas Type - whether the respondent purchased lead-free gasoline or not

Soft Drink Container Type - whether the respondent purchased returnable bottles or not

Unusual Shopping Pattern - whether the respondent's shopping pattern indicated a special effort to obtain non-polluting products or not.

Glass Recycling - the extent to which the respondent recycled glass containers

The results obtained by these researchers are combined with the findings of the present survey in Table 25.

The measures of association between the individual ECI items and voting intentions on the deposit law exhibit an interesting pattern in comparison with the other ecological behaviors. The Gamma's associated with voting intentions were very near the mean Gamma's obtained for the other behaviors, with two exceptions. Voting intention Gamma's were lower on "willingness to have government force products off the market" and "self-interest level." In these two cases, Gamma's were closer in magnitude to those obtained for the "soft drink container" and "recycle glass" behaviors. The behavioral similarity between voting for the deposit law, using returnables, and recycling glass containers is obvious. The statistical pattern may mean that these three behaviors are less a function of ecological concern as measured by the ECI.

Respondents' scores on the ECI were based on their answers to the individual items. Points were assigned to the response categories according to the method used by Kinnear and Taylor (1973), with the exception of items modified for reasons previously discussed. Appendix III compares the point allocation system used by Kinnear with the system used in this survey. The range of possible points remained 0-25. As before, respondents received sub-scale scores on the behavioral portion (range 0-8) and the attitudinal portion (range 0-17).

In spite of the scaling changes in the ECI and changes in the point allocation system, the distribution of ECI scores for the total sample very closely resembled the results obtained by Kinnear. Table 26 compares these distributions.

The new distribution has a lower central tendency and less dispersion than the original distribution. In addition, the new distribution seems to have a lesser upward skew. A t-test revealed that the mean ECI score for this survey was significantly lower (alpha < .01) than that previously obtained. Several factors may account for this:

(1) changes in the scaling and point allocation

(2) changes in the environmental attitudes from 1972-76

(3) differences between the trans-Canadian and Michigan samples

Although the two distributions differ slightly, it appears that this application of the ECI was about as effective as the original in differentiating between respondents on the basis of their ecological attitudes.

Table 25

Relationship Between Attitudes and Behavior (Gammas)

	Behavioral Measures						Present Study
Attitudinal Measures	Detergent Type	Gas Type	Soft Drink Container Type	Unusual Shopping Pattern	Recycle Glass	Mean Gamma	Voting Intentions
Rating of pollution as a problem	.414	.558	.150	.488	.020	.33	.34
Willingness to have less white laundry	.403	.643	.270	.598	-.002	.38	.37
Willingness to have government force products off the market	.265	.623	-.019	.482	.090	.30	.13
Extent willing to urge friends	.502	.941	.179	.592	.614	.57	.50
Self interest level	.668	.944	.307	.742	.204	.57	.21

Table 26

A comparison of Kinnear's Original Distribution of ECI Scores with the Distribution Obtained in this Survey

Score	Original Frequency	New Frequency	Original Percent	New Percent
0	0	1	0.0	0.3
1	3	0	0.6	0.0
2	11	3	2.2	1.0
3	9	3	1.8	1.0
4	14	8	2.8	2.6
5	23	15	4.6	4.9
6	24	29	4.8	9.5
7	28	32	5.6	10.5
8	52	30	10.4	9.8
9	34	26	6.8	8.5
10	39	25	7.8	8.2
11	44	21	8.8	6.9
12	30	19	6.0	6.2
13	23	22	4.6	7.2
14	30	14	6.0	4.6
15	30	21	6.0	6.9
16	32	7	6.4	2.3
17	10	11	2.0	3.6
18	18	7	3.6	2.3
19	9	6	1.8	2.0
20	9	5	1.8	1.6
21	7	1	1.4	0.3
22	6	0	1.2	0.0
23	5	0	1.0	0.0
24	5	0	1.0	0.0
25	3	0	0.6	0.0
	498	306	100.0%	100.0%
Mode	8	7		
Median	11	9.74		
Mean	11.31	10.327		
Standard Deviation	5.06	4.191		

To determine whether respondents' voting intentions were related to their level of ecological concern, the mean scores on the ECI of the proposal supporters and opponents were compared. Separate comparisons were made for the attitude portion, the behavioral portion, and the combined score. The general hypothesis tested was as follows:

H_0 : $\mu_{yes} - \mu_{no} \leq 0$ "null hypothesis"

H : $\mu_{yes} - \mu_{no} >$ "alternate hypothesis"

where μ = mean ECI score for the population

A one-tailed test of the hypothesis was used in each case. Table 27 shows the results.

Table 27

Proposal A Preference by Components of the Ecological Concern Index

	Voting Intentions on Proposal A		
	Vote Yes	Vote No	P (1 Tail)
ECI Score - Attitude Portion			
Mean	8.765	7.280	.001
Std. Dev.	2.459	2.526	
D.F.	161	124	
ECI Score - Behavioral Portion			
Mean	2.630	1.984	.05
Std. Dev.	2.698	2.584	
D.F.	161	124	
ECI Score - Combined			
Mean	11.395	9.264	.001
Std. Dev.	4.096	4.044	
Dev.	161	124	

As the data indicate, it was possible to reject the null hypothesis of no difference for the attitude portion, behavioral portion, and total ECI score. As measured by the ECI, those who favored the deposit law were more ecologically concerned than those who were against it. These results clearly support Hypothesis 6A.

Hypothesis 6B

A high level of ecological concern was not a necessary prerequisite for favoring the deposit law.

While Hypothesis 6A is a question of statistical significance, Hypothesis 6B is more a matter of practical significance. What does a difference of 2.13 points between the mean ECI scores of "yes" and "no" voters imply? One interpretation is that the two groups are not very different in ecological concern. While ecological concern may account for some of the differences in voting behavior, it does not explain the 28 percent margin (64 percent to 36 percent) by which the deposit law was passed. In other words, the success of the deposit law did not depend on a radical shift in public sentiment toward greater ecological awareness. If anything, the success depended on the fact that many of those who did not score high in ecological concern still voted in support of the deposit law. Based on the frequencies reported in Table 28, about 44 percent (71÷162) of those who were in favor of the proposal scored below the grand mean on ecological concern. Given that those who favored the proposal were more likely to vote in the election anyway (see Table 5), it is clear that this 25 percent (71÷287) of the eligible voters played an important role in the passage of the deposit law.

Table 28

Proposal A Preference by
ECI Score

(Above or below the mean)

Respondents whose combined ECI Score was ...	Among those who would vote... Yes	No	Totals
10 or below	71 (25%)	87 (30%)	158 (55%)
Above 10	91 (32%)	38 (13%)	129 (45%)
	162 (57%)	125 (43%)	287 (100%)

These results may support the conclusion that ecological concern was just one of several factors which influenced voting behavior. As discussed earlier, factors of convenience and economic and social factors appeared to be important too.

Related Beliefs

We may more fully understand the motives of voters by examining their responses to a series of statements about their values, beliefs, and social attitudes. Tables 29, 30 and 31 summarize these statements and their association with voting intentions.

Rokeach (1968) has provided psychological definition of a value:

> A value is a centrally held, enduring belief which guides actions and judgments across specific situations and beyond immediate goals to more ultimate end-states of existence.

Marketers (Vinson, et. al., 1977) have further classified values into three groups: global values, domain-specific values, and evaluative beliefs. Global values are the most abstract and evaluative beliefs the least. Table 29 indicates responses to two value statements. Statement A ("Generation Responsibility") represents a global value which would guide actions across specific situations. Statement B ("Economic/Environment Tradeoff") represents a domain-specific value, one that guides actions only in specific types of situations. For example, such value could be helpful in guiding behavior only in those circumstances in which economic and environmental goals were at odds.

Table 29

Proposal A Preference by Agreement
with Selected Value Statements

Percent Agreeing with These Value Statements[1]	Among Total Sample	Among those who would vote: Yes on Proposal A	Among those who would vote: No on Proposal A
A. Every generation is responsible for the kind of world it hands down to its children	84%	85%	82%
(χ^2 =9.024, ρ<.05, d.f. = 3, Gamma = .26)			
B. I would favor a slower rate of economic growth if that would help improve the environment	74	80	71
(χ^2 = 6.638, ρ<.10, d.f. = 3, Gamma = .14)			
Base:	(306)	(162)	(125)

[1] Respondents indicated whether they strongly agreed, agreed, disagreed, or strongly disagreed with each statement.

The data indicate that Generation Responsibility was widely held by respondents, regardless of their voting intentions on the deposit law. Still, when the different levels of agreement were considered, this statement differentiated between the "yes" and "no" voter groups. Similar results were obtained for Economic/Environmental Tradeoff. As expected, respondents who were inclined to vote against the proposal were less likely to agree that the protection of the environment should have a higher priority than economic growth. Comparing the degree to which the two statements were associated with voting intentions, the global value, Generation Responsibility, appears to be more influential in guiding behavior in this situation than the domain-specific value Economic/Environment Tradeoff (Gamma of .26 versus .14).

There are many belief statements which could be related to voting intentions. However, as the purpose of this study was not to create another scale of social/ecological concern, respondents were asked only two additional belief statements. Statement C (Economic Impact) relates to an argument by the opponents of the deposit law that many people in the bottling industry would lose their jobs as a result of the passage of the bottle law. Statement C was purposely phrased more generally so that it might stimulate voters to recall other circumstances in which workers lost their jobs because of some environmental protection measure. As Table 30 indicates, opponents of the proposal were much more inclined to agree with the statement, which was strongly associated with voting intentions (Gamma = -.42).

Table 30

Proposal A Preference by Agreement
with Selected Belief Statements

Percent Agreeing With These Belief Statements[1]	Among Total Sample	Among those who would vote: Yes on Proposal A	Among those who would vote: No on Proposal A
C. There is no doubt that many people will lose their jobs if we try to clean up the environment too quickly. (χ^2 = 18.414, ρ<.001, d.f. - 3, Gamma = .42)	35	27	50
D. If things keep going the way they are, the earth won't be liveable by the year 2000. (χ^2 = 3.213, ρ>.30, d.f.=3, Gamma = .04)	33	36	31
Base:	(306)	(162)	(125)

[1] Respondents indicated whether they strongly agreed, agreed, disagreed, or strongly disagreed with each statement.

Belief statement D (Doomsday) attempted to measure respondents' acceptance of the dismal projections of some environmentalists and economists, to the effect that population and environmental problems, unless checked immediately, will soon bring an end to civilization as we know it. An extreme belief such as this could be a powerful motivator toward acceptance of all forms of positive environmental efforts. However, as Table 30 indicates, "yes" and "no" voters did not differ significantly in their agreement with this statement.

The last series of statements concerns the social attitudes of consumers. One recurrent finding of research on the environmentally concerned consumer is the belief that the consumer can be effective as an individual in helping to stop pollution (Kinnear, Taylor, and Ahmed, 1974; Webster, 1975) This construct is generally referred to as Perceived Consumer Effectiveness (PCE). It was felt that PCE would be related to voting intentions in that casting one's ballot in favor of the proposal was one way the consumer could do something about pollution. As reported in Table 31, most respondents tended to disagree with Statement 3, which implied that they felt they could be personally effective. However, there was a statistical association between agreement on this statement and voting intentions, which is consistent with the previous findings.

Alienation is another social attitude of interest. In their research, Anderson, Henion, and Cox (1974) found the ECC to be more alienated than the less ECC person. On the other hand, Nelson (1974) found the ECC to be less alienated. Anderson and Cunningham (1972) found the socially responsible person to be less alienated. We might question whether these authors are employing the same definition of alienation and whether differences could be due to different measurement scales. The sociologist Middleton (1963) noted that alienation is not unidimensional but rather multi-dimensional. He conceptualized a number of different "types" of alienation. These were Powerlessness, Meaninglessness, Normlessness, Cultural Estrangement, Social Estrangement, and Estrangement from Work. The present study investigated this hypothesis of multidimensional alienation with measures of Powerlessness (Statement F), Meaninglessness (Statement G), and Cultural

Table 31

Proposal A Preference by Agreement
With Selected Social Attitude Statements

Percent Agreeing on Perceived Consumer Effectiveness[1]	Among Total Sample	Among those who would vote: Yes on Proposal A	Among those who would vote: No on Proposal A
E. It is futile for the individual consumer to try to do anything about pollution.	17%	15%	18%
(χ^2 = 7.922, ρ< .05, d.f. = 3, Gamma = -.24)			
Percent Agreeing with These Statements about Alienation from Society[1]			
F. There is not much I can do about most of the important problems that we face today.	28	25	34
(χ^2 = 8.656, ρ< .05, d.f. = 3, Gamma = -.27)			
G. Things have become so complicated in the world today that I really don't understand what is going on.	44	38	50
(χ^2 = 7.283, ρ< .10, d.f. = 3, Gamma = -.25)			
H. Sometimes I feel like I have little in common with the majority of people who live in this country	24	24	26
(χ^2 = 3.324, ρ> .30, d.f. = 3, Gamma = .03)			
Base:	(306)	(162)	(125)

[1]Respondents indicated whether they strongly agreed, agreed, disagreed, or strongly disagreed with each statement.

Estrangement (Statement H). The measures of Powerlessness and Meaninglessness were those suggested by Middleton. Powerlessness may be a more general statement of the social attitude being tapped by PCE.

As the data in Table 31 indicate, Powerlessness and Meaninglessness were statistically associated with voting intentions while Cultural Estrangement was not. Of course voting intentions are not always synonymous with ecological concern, but these findings indicate the importance of distinguishing the separate dimensions of alienation in attempting to predict ecologically relevant behavior.

Related Behaviors

The extent to which respondents engage in other behaviors with environmental implications gives insight into their level of commitment to the ecological cause. The attempt to relate these behaviors to voting intentions on the deposit law serves two purposes. First, it indicates whether voting "yes" for the deposit law was considered to be an extreme form of environmental action, engaged in only by those who are prepared to make major sacrifices to achieve ecological goals. Second, it provides evidence regarding the consistency of ecological behaviors. To what extent do consumers perceive the connection between various behaviors and to what extent do they feel compelled to achieve consistency in them? Clearly, this issue has both knowledge/information and psychological dimensions. It indicates the extent to which an "ecological ideology" has been communicated to consumers and to which they have cognitively accepted it.

Experience with recycling seems the behavior most closely related to willingness to return bottles. Respondents with some experience in recycling are more likely to understand what would be involved in handling returnables. In fact, it was the efforts of some of these present-day recyclers which placed the deposit law proposal on the ballot. As expected, there was an association between prior recycling experience and voting intentions. These data appear in Table 32.

Table 32

Proposal A Preference by
Recycling Experience

	Proposal A Preference (excluding the undecided)			
In the past	For	Against	Total	Size
Have taken containers to special collection centers for recycling	64%	36%	100%	(109)
Have not recycled	52	48	100%	(178)

$\chi^2 = 3.826$, d.f. = 1, $\rho = .05$
(Yate's correction employed)
Gamma = .25

Compared to the strength of association between voting intentions and some of the attitude items, the association with recycling experience seems to be modest (Gamma - .25). One reason for this might be that 36 percent of the recyclers had sufficiently negative experience to incline them to vote "no" on the proposal. This may not be too surprising, however, considering the state of present-day collection centers. Many have inconvenient locations and hours, and their demand for recycled materials fluctuates.

It is likely that when the deposit system is fully implemented many of these sources of dissatisfaction will be eliminated. On the other hand, many of the "customers" will not be as positively predisposed toward recycling.

A similar level of association was found for another ecologically related behavior, the type of deodrant used by the respondent (see Table 33). Fluorocarbons and their impact on the ozone layer received major national attention in the mid 1970s, especially in Michigan, as University of Michigan researchers were among the first to detect the problem. Probably as a direct result of this attention, 72 percent of the sample reported using non-aerosols. This compares with only 34 percent of the sample who reported having recycled, a behavior which requires more time and effort.

Table 33

Proposal A Preference by
Type of Deodrant Used

Type of deodrant used	Proposal A Preference (excluding the undecided) For	Against	Total	Sample Size
Non-Aerosol	61%	39%	100%	(193)
Aerosol	46	54	100%	(74)

$\chi^2 = 4.436$, d.f. = 1, $\rho < .05$
(Yate's correction employed)
Gamma = .30

Somewhat surprisingly, 46 percent of those continuing to use aerosols were in favor of the deposit law. Switching to a non-aerosol container requires very few sacrifices of the consumer, who might not even have to change brands, since many brands are available in both aerosol and non-aerosol containers. Why these individuals would agree to the inconvenience of the deposit law remains something of a puzzle, unless they lack a clear understanding of how it will affect them.

As pointed out earlier, the passage of the deposit law has certain implications for energy conservation. Generally, collecting and recycling returnable containers consumes less energy than manufacturing new containers from virgin materials. As in many such issues, concerns for the environment and for energy conservation are intimately related at the scientific/technical level. Whether these associations are communicated to consumers is another question. If they are, then some degree of consistency might be expected between environmental behaviors on the one hand and energy behaviors on the other. However, the data in Table 34 shows little evidence of such a relationship. A comparison between means revealed no significant differences on Thermometer Setting or Expressway Speed between those intending to vote yes and those intending to vote no on the proposal.

Table 34

Ecologically Related Behaviors

	Voting Intentions of Proposal A		
	Vote Yes	Vote No	Sign.
Home thermometer setting during winter months while awake			
Mean	69.168	69.752	$\rho > .05$
Std. Dev.	3.769	3.099	
D.F.	154	120	
Home thermometer setting during winter months during bedtime			
Mean	67.252	67.851	$\rho > .05$
Std. Dev.	4.388	3.889	
D.F.	154	120	
Usual speed on expressway			
Mean	56.623	57.213	$\rho > .05$
Std. Dev.	4.076	4.483	
D.F.	150	107	

Demographic Differences

Based on the ECC research reported earlier, the two demographic variables of income and education seemed very likely to be related to voting intentions on the deposit law. Of the two, however, only education was found to be significantly associated with voting intentions. As summarized in Table 35, respondents with some training beyond high school (but not a college degree) and those with advanced college degrees were most likely to vote for the proposal.

Table 35

Proposal A Preference by Education

Level of education	Proposal A Preference (excluding undecided) For	Against	Total	Sample Size
High school graduate or less	51%	49%	100%	(154)
Some training beyond high school	62	38	100%	(77)
College graduate	55	45	100%	(29)
Training beyond a bachelor's degree	79	21	100%	(19)

$\chi^2 = 7.114$, d.f. = 3, $\rho < .10$
Gamma = .23

One demographic variable was unexpectedly related to voting intentions: the respondent's area of residence. Those who lived outside any of the state's SMSA's were more likely to vote for the proposal. As Table 36 indicates, 75 percent who did not live in an SMSA said they intended to vote "yes."

One ex-post interpretation of this result seems to have particular merit. Other than its southeast corner, Michigan is a state composed largely of farmlands, lakes, and forests. Urban dwellers not only from Michigan but from the surrounding industrial states flock to its woods and beaches for vacation. Many bring with them poor habits with regard to the disposal of trash. However, when they return to their homes it is the residents of those non-SMSA

vacation areas who must live with the mess and who must shoulder a large part of the financial burden for cleaning it up. Clearly, these residents may benefit from a law which promises to decrease litter.

Table 36

Proposal A Preference by Area of Residence

Area of residence	Proposal A Preference (excluding undecided) For	Against	Total	Sample Size
Detroit/Ann Arbor SMSA	52%	48%	100%	(136)
Outstate SMSA	49	51	100%	(83)
Non-SMSA	75	25	100%	(59)

$\chi^2 = 10.530$, d.f. = 2, $\rho<.01$
Lambda = .01

Non-Significant Findings

Too often researchers tend to bury the results of analysis which failed to produce statistically significant results. To a large extent this is one shortcoming of the incentive system for research publication which rewards only positive findings. Often, the researcher has had a good logical reason for expecting a positive finding where, as he discovers, one cannot be found. As a result of the failure to report negative findings, other researchers attempting to replicate or extend the work simply repeat some of these errors. The purpose of this section is to prevent such futile repetition.

Listed below are variables that were cross-tabulated with voting intentions. Based on a χ^2 analysis of the resulting contingency tables, the hypothesis of independence could not be rejected at an alpha level of .10. Other negative findings not in this list have already been reported.

1. presidential preference by likelihood of voting
2. deposit law preference by grocery shopping role
3. deposit law preference by role in purchasing soft drinks
4. deposit law preference by role in purchasing beer
5. deposit law preference by age
6. deposit law preference by income
7. deposit law preference by marital status

A word of caution in interpreting these results: first, the significance of the χ^2 value depends on the number of degrees of freedom available. This is determined by the equation:

$$d.f. = (R-1)\ (C-1)$$

For any given question a change in the categories of the variables may change the significance level of χ^2. This could be accomplished by combining categories, for example. This report did not use that approach because it seemed equivalent to an ex-post modification of the hypothesis to fit the data. The only exception to this concerns the "don't know" categories in many of the questions. These were usually deleted from the analysis because of a high incidence of small (<5) expected frequencies. The results of χ^2 become unreliable when more than 20-30 percent of the cells in a contingency table have an expected frequency of less than five.

In dealing with negative results caution should be exercised for another reason--namely, that this analysis has been concerned mainly with simple bivariate contingency tables. Due to an interaction with a third variable, the simple bivariate analysis may mask a significant association among some subsample. Also, certain categories of response to a question may have strong predictive power which may be "watered down" by the many degrees of freedom associated with the entire table.

Finally, no multivariate analysis was attempted in this report. It may be that several variables, when taken in some combination, can predict the criterion variable with a high degree of accuracy. This joint predictive power cannot be uncovered by the analysis of individual bivariate tables.

Appendix I

A Note on the Statistical Analysis

The data from this study include a mixture of nominal-, ordinal-, interval-, and ratio-scaled variables. This report is essentially a bivariate analysis of these variables. The primary objective was to find variables associated with the respondents' voting intentions on Proposal A. Their voting intentions are assumed to have been measured on an interval scale (Favor: X1 = 1, Oppose: X1 = 0). Therefore, the choice of an appropriate statistic is determined by the scaling of the other variable (X2's) used in the analysis. A strategy of statistical analysis, suggested by Hays (1973), was used throughout this report.

X2 = Nominal (R Categories)

Essentially, this is the analysis of an R x 2 contingency table. First, a χ^2 test of the independence of the two variables was performed. When the hypothesis of independence was rejected, Goodman and Kruskal's Lambda (λ) statistic was used as a measure of the strength of (predictive) association.

An asymmetric Lambda statistic was usually reported on the assumption that voting intention was the dependent variable. In this case the interpretation of the statistic is that in predictions of voting intentions (X1) from the nominal variable (X2), information about the X2 category reduces the probability of an error by some Lambda percent on the average. The value of Lambda can range from 0.0 to 1.0.

The major limitation of Lambda is that its magnitude may be small even when there is a strong statistical association between the variables, provided that the "modal" category of X1 is the same regardless of the category of X2.

Lambda was selected over independence-based measures such as the Contingency Coefficient and Cramer's Statistic because the range of the C.C. is not constant (it depends on the number of categories used) and because Cramer's statistic lacks an interpretation in terms of a percentage reduction in error.

Other Variables = Ordinal

Under this condition, χ^2 is again an acceptable test for independence between the two variables. If the hypothesis of independence was rejected in this case, then Goodman and Kruskal's Gamma (λ) Statistic was computed as a measure of strength of association.

Like Kendall's Taus (τ), Gamma is a symmetrical statistic based on the proportion of concordant (P) and discordant pairs (Q) in the data. Specifically, the formula is:

$$\text{Gamma} = (P - Q) / (P + Q)$$

According to Hays, Gamma has an advantage over Tau in its interpretation when the analysis concerns ordered classes rather than strict rank orders (i.e. when there are a substantial number of ties involved). Gamma can be interpreted in this predictive sense: given two respondents selected at random from the sample, where one respondent's X1 score is higher than the other's, what is the likelihood they will have the same

ordering on the X2 variable (positive Gamma's) or a reverse ordering (negative Gamma's) The magnitude of Gamma expresses this likelihood, ranging from -1.00 to +1.00.

Other Variable = Interval or Ratio

Parametric statistics can be employed when this assumption is met. This analysis simply compared the means on the X2 variable for the two independent samples: those who Favor Proposal A (X1 = 1) and those who Oppose Proposal A (X1 = 0). In terms of accepting or rejecting the null hypothesis of no difference between means, the t-test gives the same results as one-way ANOVA. Parametric measures of association (e.g., product moment correlations) and measures of multivariate association were not computed. These will be dealt with in a subsequent report.

APPENDIX II

Table A

Proposal A Preference by

Phosphate Content of Laundry Product

(ECI component)

Uses a laundry product believed to be	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Low in phosphates	61%	39%	100%	(77)
Medium in phosphates	55	45	100%	(31)
High in phosphates	65	35	100%	(17)
Doesn't know phosphate content	54	46	100%	(162)

$\chi^2 = 1.661$, d.f = 3, $\rho > .50$

Gamma (excluding "don't knows") = .02

Table B

Proposal A Preference and

Shopping Pattern Change

(ECI component)

Changed shopping pattern to purchase a non-polluting product	Proposal A Preference (excluding undecided) For	Against	Total	Base
Yes	67%	33%	100%	(76)
No	52	48	100%	(201)

$\chi^2 = 4.677$, d.f. = 1, $p < .05$

(Yate's correction employed)

Gamma = .31

Table C

Nature of Shopping Pattern Change

	Percent of Total Mentions
Bought low phosphate detergent	54%
Switched to a non-aerosal container	36
Bought other non-polluting product	4
Shopped for other non-polluting product	4
Bought non-returnable bottles	3

Table D

Proposal A Preference by Perceived
Importance of the Pollution Problem

(ECI component)

Rating of Pollution	Proposal A Preference (excluding the undecided)			
	For	Against	Total	Base
The most important problem	60%	40%	100%	(20)
Extremely important	64	36	100%	(168)
A moderately important problem	44	56	100%	(82)
A little important[1]	31	69	100%	(13)

$\chi^2 = 13.042$, d.f. = 3, $\rho < .005$

Gamma = .34

[1]No responses were obtained for the next category, "not at all important."

Table E

Proposal A Preference by Amount of

Laundry Whiteness/Brightness Willing to Sacrifice

(ECI component)

To be sure laundry product is non-polluting, willing to have laundry	Proposal A Preference (excluding undecided) For	Against	Total	Base
Not at all less white or bright	45%	55%	100%	(114)
Very little	67	33	100%	(55)
Somewhat	68	32	100%	(66)
Quite a bit less white or bright	74	26	100%	(19)

$\chi^2 = 15.099$, d.f. = 3, $\rho < .005$

Gamma = .37

Table F

Proposal A Preference by Belief

That Government Should Force

Polluting Products Off the Market

(ECI component)

Level of Agreement	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Strongly agree	67%	33%	100%	(12)
Agree	62	39	100%	(78)
Disagree	53	47	100%	(161)
Strongly disagree	56	44	100%	(23)

$\chi^2 = 2.196$, d.f. = 3, $\rho > .50$

Gamma = .13

Table G

Proposal A Preference by Belief
That People Should Urge Their
Friends Not to Use Polluting Products

(ECI Component)

Level of Agreement	Proposal A Preference (excluding the undecided) For	Against	Total	Base
Strongly Agree	75%	25%	100%	(36)
Agree	63	37	100%	(168)
Disagree	33	67	100%	(70)
Strongly disagree	40	60	100%	(5)

$\chi^2 = 24.476$, d.f. = 3, $\rho < .001$

Gamma = .50

Table H

Proposal A Preference by Interest in
Pollution Aspects of Products Purchased
(ECI component)

Interest Level of Respondents	Proposal A Preference (excluding undecided) For	Against	Total	Base
Extremely interested	64%	36%	100%	(47)
Interested	57	43	100%	(241)
Uninterested	36	64	100%	(12)

$\chi^2 = 2.827$, d.f. = 2, $\rho > .10$

Gamma = .21

APPENDIX III

Definition of the Index of Ecological Concern

I. Behavioral Questions. (Range of points is 0 - 8)

Original Point System

1. What brand of laundry product do you usually buy for washing clothes?

   a) 4 points if she or he purchases a phosphate-free laundry detergent

   b) 3 points if she or he purchases a detergent with less than 10 phosphate units per wash-load

   c) 2 points if she or he purchases a detergent with less than 20 phosphate units per wash-load

   d) 0 points otherwise

2. Have you ever done anything that differed from your usual shopping pattern in order to purchase a product that was low in pollutants or had no pollutants? If yes, please describe what you did

   a) 4 points if the description of the shopping pattern was an acceptable change

   b) 0 points otherwise

New Point System

1. Do you know what brand of laundry soap your family usually buys for washing clothes?

   Is that brand high, medium or low on phosphate content?

   a) 4 points if low

   b) 2 points if medium

   c) 0 points otherwise

2. Have you ever done anything that differed from your usual shopping pattern in order to purchase a product that was low in pollutants or had no pollutants?

   a) 4 points if the answer was yes

   b) 0 points otherwise

   If the answer was yes, a description of the change was asked for.

APPENDIX III
(Cont.)

II. Attitudinal Questions. (Range of points is 0 - 17)

1. How important a problem do you consider pollution to be in ... (Canada/United States) today?

Response Category	Original Pts.	New Pts.
Not at all important	0	0
A little important	1	1
Moderately important	2	2
Extremely important	3	3
The most important problem	4	4

2. Would you be willing to have your laundry less white or bright in order to be sure (that you were using/it was being cleaned with) a non-polluting laundry product?

If yes, how much less white or bright would you be willing to have your laundry?

Original Response Category	Pts.	New Response Category	Pts.
A very great deal less white or bright	5	Quite a bit less white or bright	5
A great deal less white or bright	4	Somewhat less white or bright	3
Moderately less white or bright	3	Very little less white or bright	1
A little less white or bright	2	Otherwise	0
A very little less white or bright	1		
Otherwise	0		

3. The government should force all products that pollute off the market.

Response Category	Original Pts.	New Pts.
Strongly agree	2	2
Agree	1	1
Other	0	0

APPENDIX III
(Cont.)

4. I think that a person should urge (her/their) friends not to use products that pollute.

Response Category	Original Pts.	New Pts.
Strongly agree	2	2
Agree	1	1
Other	0	0

5. Do you think that all consumers should be interested in the pollution aspects of products that they purchase?

Response Category	Original Pts.	New Pts.
Yes	2	2
Other	0	0

6. To what extent would you describe yourself as being interested in the pollution aspects of products which you purchase?

Response Category	Original Pts.	New Pts.
Extremely interested	2	2
Interested	1	1
Other	0	0

(Total range of points on the ECI is 0 - 25)

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