REFERENCE copy

REPORT NO. DOT-TSC-OST-75-36

THE SOCIAL IMPACTS OF THE ENERGY SHORTAGE: BEHAVIORAL AND ATTITUDE SHIFTS

Mary D. Stearns

RETURN TO
DOT/TSC
TECHNICAL INFORMATION CENTER

RETURN TO
DOT/TSC
TECHNICAL INFORMATION CENTER

SEPTEMBER 1975
FINAL REPORT

DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161

Prepared for
U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF THE SECRETARY
Office of the Assistant Secretary for
Policy, Plans and International Affairs
Office of Transportation Energy Policy
Washington DC 20590

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT-TSC-OST-75-36		

4. Title and Subtitle	5. Report Date
THE SOCIAL IMPACTS OF THE ENERGY SHORTAGE: BEHAVIORAL AND ATTITUDE SHIFTS	September 1975
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Mary D. Stearns	DOT-TSC-OST-75-36
9. Performing Organization Name and Address	10. Work Unit No.
U.S. Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 20590	OP502/R6815
	11. Contract or Grant No.
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address U.S. Department of Transportation Office of the Secretary Office of the Asst. Sec. for Pol., Plans and Int'l. Affairs Office of Transportation Energy Policy Washington DC 20590	Final Report July 1973 - February 1974
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

An analysis of the social impacts of the energy shortage; specifically, an analysis of shifts in social behavior, or trip-making characteristics, and shifts in social attitudes towards the energy shortage and conservation policies. Data were obtained from the November and December, 1973 and February, 1974 administrations of the Continuous National Survey, a full probability National Opinion Research Center random sample survey.

The findings suggest, first, that energy shortage impacts need to be disaggregated by selected social characteristics such as income level and, second, that the relationship between attitudes towards the energy shortage and trip-making behavior is very complex.

17. Key Words	18. Distribution Statement
Energy Shortage, Social Impacts, Trip Characteristics, Attitudes, Household	DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	128	

Form DOT F 1700.7 (8-69)

PREFACE

This report was performed under PPA OP 502, Transportation Energy Policies Program, sponsored by the Office of Transportation Energy Policy, TP1-50, Myron Miller, Acting Director. It is an analysis of the data obtained from the national random sample survey of households during 1973 and 1974 performed by the National Opinion Research Center under contract DOT-TSC-745

The study was designed to measure the energy shortage (winter of 1973-74) impact on trip-making characteristics and attitudes. Analysis indicates that energy shortage effects on trip-making characteristics, although minimal overall, became apparent when disaggregated by household income level. Analysis of attitudinal shifts suggests that households became less tolerant of conservation policies and that household socio-economic characteristics influenced evaluation of the energy shortage.

The report suggests that it is useful to examine selected population segments in order to estimate the dimensions of the social impacts of the energy shortage.

Robert Murphy, Raytheon Service Company, provided technical editing assistance for this report. V. Christiansen, RSC, provided the technical typing.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

LIST OF TABLES

LIST OF TABLES (CONT'D)

LIST OF TABLES (CONT'D)

1. INTRODUCTION

1.0 EXECUTIVE SUMMARY

This study measures selected household responses to the energy shortage, specifically, shifts in behavior, or trip-making characteristics, and in attitudes towards the energy shortage and conservation alternatives. It is based on an analysis of the National Opinion Research Center survey data collected at the onset and peak of the national energy shortage during the winter of 1973-1974.

The following are some of the points noted:

Analyses of household trip-making shows:

Below poverty level household members report significant modal shifts away from auto-driver trips, which decreased from 59% to 46% of all trips, compared with no change for above poverty level household members in the percent of auto-driver trips.

Above poverty level household members decreased average daily trip frequency from 4.2 to 3.6 trips, compared with a constant average number of daily trips by below poverty level household members of 2.2 trips per day.

Analyses of household attitudes shows:

Household social status was significantly related to its perception of the energy shortage; higher social status was related to an abstract understanding of energy shortage impacts which did not focus on personal effects.

Households expressed more tolerance of strict conservation policies prior to the energy shortage and were increasingly less receptive to onerous potential policies during the energy shortage.

Attitudes towards the energy shortage were significantly related to measures of financial satisfaction.

Negative evaluations of household energy shortage impacts were significantly related to negative evaluations of conservation policies.

Analyses of trip-making and attitudinal interrelationships show:

Average daily trip frequency per person was not related to expressed attitudes towards the energy shortage either before, or during, the energy shortage.

Average daily trip frequency per person was significantly related to household socio-economic and, at the energy shortage peak, work trip characteristics.

1.1 OVERVIEW

Past energy availability and its relatively stable price structure in the United States has fostered increasing dependence of residential and work locations and industrial development on automotive based transportation modes.

It is expected, therefore, that the energy shortage, characterized by price increases and decreased availability, has affected social structures as a function of their energy dependence. This study describes the impacts reported by one category of social structures, households, in response to the energy shortage.

This exploratory study identifies the impacts of the energy shortage on households by measuring household shifts in two areas; behavior and attitudes. In this study, household behavior is measured as trip making frequency, mode and purpose. Household attitudes are defined as attitudes towards the energy shortage and towards enacted and proposed conservation policies.

Previous research has examined impacts of the energy shortage on households but most analyses have been aggregate level and reported minimal impacts (Ref. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

11, 12). This study describes disaggregate, as well as aggregate impacts, to locate impacts and determines their distribution by socio-economic characteristics.

This study is based on the following components:

a description of aggregate and disaggregate energy shortage impacts on household members' trip making frequency, mode, and purpose

a description of aggregate and disaggregate energy shortage impacts on household attitudes towards the energy shortage and conservation policies

an evaluation of the association between household attitudes and trip making.

The findings of the above analyses are contained in the following chapters. Chapter 2 describes aggregate and disaggregate trip making behavior as impacted by the energy shortage. It indicates that most household members reported fewer trips during the peak of the energy shortage and that their work and shipping trips were the most reduced trip purposes. Below poverty level and non-white household members reported a reduced number of auto-driver trips but maintained a constant number of trips. By contrast, above poverty level household members reported reduced trip frequency with no modal shift.

Chapter 3 describes analyses of aggregate and disaggregate household attitudes towards the energy shortage and conservation policies as impacted by the energy shortage. Results indicate that although most households anticipated more negative consequences of the energy shortage than they actually experienced, households with lower social status characteristics perceived the shortage in terms of its personal impacts. It appears that the energy shortage was a novelty to most households and they did not have preconceived preferences about policy solutions for it. Households became less supportive of severe restrictions on energy use. There are several possible interpretations of this shift; it may have been because the experienced shortage did not match warnings, or households became disillusioned with practicing austerity.

In disaggregating attitudinal responses, Chapter 3 shows that the more households evaluated the energy shortage as hurting them, the more dissatisfied they were with government energy conservation policies, with their ability to use their cars, and the greater their expectation that the energy shortage will have a long duration. It also appears that subjectively perceived financial satisfaction influences households' response to the energy shortage.

Chapter 4 explores interrelationships between behavioral and attitudinal impacts. It was found that trip making behavior is unrelated to attitudes towards the shortage and conservation policies. Trip making behavior is best predicted by socio-economic and work trip characteristics at the peak of the energy shortage. Attitudes toward the energy shortage are best predicted by a combination of socio-economic and additional variables. Overall, the multivariate statistical procedures explain relatively little of the behavioral and attitudinal shifts, suggesting the complexity of the issue.

Finally, Chapter 5 summarizes what is known about the nature and extent of energy shortage impacts on households.

1.2 RESEARCH DESIGN

1.2.1 Variables

To conceptualize and measure the impact of the energy shortage, it is necessary to use two major classifications of variables, household behavioral shifts and attitudinal shifts in response to the energy shortage. Household behavioral shifts measure frequency, mode, and purpose of household trip making. Household attitudinal shifts measure evaluations of the severity of the shortage and of proposed and enacted energy conservation policies.

Therefore this study focuses on:

Household behavior defined as trip-making, in terms of
- frequency
- mode
- purpose

Household attitudes in terms of
- evaluation of the severity of the energy shortage
- attitudes towards enacted energy conservation legislation
- attitudes towards proposed energy conservation policy alternatives

The analysis also uses selected socio-economic and demographic household characteristics to disaggregate these measures. Appendix C, Variable Descriptions, contains the actual interview format and response codes used to measure the variables. Appendix C is organized according to the above categories.

1.2.2 Focus of Analysis

Analysis of the social impacts of the energy shortage focuses on the household because it is a social unit strongly affected by energy availability. Most households depend on energy availability for trip-making to meet needs and for residential heating.

A household is defined as all the residents of one dwelling unit, whether constituted of a husband, wife and children, an individual living alone, or unrelated individuals.[1] All residents of a dwelling unit constitute a recognized social unit because their repeated interactions within a shared setting develop , over time, regular patterned interrelationships and shared norms. This is the basis for the assumption that one respondent can describe the household's operation and normative structure.

---

[1] Responses were obtained from one pre-selected respondent, eighteen years old or over, per household. Responses were weighted for household size prior to analysis except for correlation and regression analyses.

1.2.3 Data

The data are obtained from the National Opinion Research Center's Continuous National Survey. This sample survey of the eighteen year old and over non-institutional, contiguous United States population was carried out in monthly cycles between April 1973 and February 1974. However, this analysis is limited to Continuous National Survey data collected in the monthly cycles between November 23 and December 20, 1973 (Cycle 8) and between February 1 and February 28, 1974 (Cycle 10) which are assumed to represent the onset and the peak of the energy shortage as perceived by consumers. (See Appendix A for a description of the sampling procedure and the respondents.)

The chronology of events in Table 1-1, characterizing the development of the energy shortage, shows the following sequence. There were early warnings of the impending crisis in the spring of 1973 and, again, in October, with the Arab oil embargo. Cycle 8 corresponds with the appearance of nationwide policies that would impact behavior. Cycle 10 represents a subsequent period of behavioral adaptation when all citizens had experienced the shortage and conservation policies for at least two months.

Different respondents were questioned in each cycle. However, it is assumed, on the basis of the random sampling procedures, that response levels on repeated measures represent shifts, analyzable in terms of socio-economic and demographic characteristics.

Additional information on sample selection, respondent characteristics, and the format of the questions asked during the interviews is contained in Appendices A and C. Understanding of the methodological techniques employed in collecting data used in the analyses reported in subsequent chapters will be most helpful in interpreting these analyses.

TABLE 1-1. SIGNIFICANT DATES AND EVENTS IN THE 1973-74 ENERGY SHORTAGE

18 April 1973	-	President Nixon's Energy Message urges conservation and warns of higher prices and shortages.
21 October 1973	-	Complete Arab oil embargo in effect.
23 November 1973	-	Cycle 8 Begins, N.O.R.C. Continuous National Survey.
27 November 1973	-	Official Government Allocation Plan for gasoline and home heating fuel. (President Nixon signs emergency Petroleum Allocation Act of 1973).
3 December 1973	-	Truckers' strike begins.
9 December 1973	-	Official government voluntary ban on Sunday gasoline sales.
19 December 1973	-	Federal Energy Administration under William Simon is established.
20 December 1973	-	Cycle 8 ends, N.O.R.C. Continuous National Survey.
2 January 1974	-	Federal 55 mph speed limit is established under the Emergency Highway Energy Conservation Act.
6 January 1974	-	Effective date of the change to nation-wide daylight savings time.
9 January 1974	-	Oregon first state to implement voluntary odd/even gasoline rationing plan.
1 February 1974	-	Cycle 10 begins, N.O.R.C. Continuous National Survey.
28 February 1974	-	Cycle 10 ends, N.O.R.C. Continuous National Survey
13 March 1974	-	Arab Oil Embargo Lifted.

In comparing Cycle 8 data (November 23-December 19, 1973) with Cycle 10 data (February 1-28, 1974), the amount of shifting due solely to monthly variation must be recognized. Inter-monthly comparisons were made using unadjusted figures for national transit usage, vehicle miles traveled, size of the non-agricultural and non-government labor force, labor force separations, weekly hours per non-agricultural worker, occupancy of hotel and motel rooms, and retail and restaurant sales. These statistics measure areas expected to be impacted by monthly fluctuations due to holiday shopping and entertainment, and by week-long February school vacations in some parts of the United States.[2] They are referenced in the text as appropriate to understand results of the analysis.

The intent of this study is to describe aggregate and disaggregate behavioral and attitudinal shifts due to the energy shortage. It is therefore expected that monthly differences must affect the measures of aggregate shifts. Shifts, disaggregated by respondents' socio-economic and demographic characteristics, ought to reveal relative differences at least, with monthly variations impacting all socio-economic and demographic population segments equally.

1.2.4 Data Analysis and Hypotheses

The data are analyzed using the following procedures: frequency distributions, Pearson product-moment correlation coefficients, and step-wise multiple regression techniques. (Ref. 12).

The research design applied in this study recognizes the varied and potentially interactive characteristics of the social impacts of the energy shortage. All analyses therefore evaluate

[2]This data and subsequent references to these national figures was obtained from the Survey of Current Business, Volume 51, No. 2 and 11; Volume 52, No. 12; Volume 53, No. 10; Volume 55, No. 1; and the FHWA monthly publication, Traffic Volume Trends. November and December figures were averaged to create an estimate comparable with the Cycle 10 interval. Vehicle mile traveled was based on December figures only.

all potential behavioral and attitudinal shifts due to the energy shortage, both separately and jointly.

The data analysis explores the following hypotheses:

1. The energy shortage has differential impacts according to a household's social status; it is a quantitative shift for middle class households and a qualitative shift for lower class households. This hypothesis, addressed in Chapter 2, examines whether differential socio-economic characteristics mute energy shortage impacts and suggests that the shortage does not similarly impact all households.

2. The likelihood of subjectively perceiving the energy shortage as having a personal impact is directly related to a household's social status. This hypothesis, examined in Chapter 3, explores attitudinal responses to the energy shortage impacts.

3. Acceptance of energy conservation behavior is directly related to perceptions of an energy shortage. (Ref. 5)

4. Attitudinal evaluations of the energy shortage are more related to household socio-economic and demographic characteristics.

5. Household trip-making is more strongly influenced by attitudes towards the energy crisis than by socio-economic and demographic characteristics.

Hypotheses 3, 4, and 5 are addressed in Chapter 4 using multivariate statistical procedures.

2. BEHAVIORAL IMPACTS

2.0 OVERVIEW

These analyses estimate behavioral, or trip-making, impacts of the energy shortage, overall, and disaggregated by household socio-economic characteristics. This information offers an understanding of Hypothesis 1 and the chapter concludes with this assessment.

2.1 TRIP-MAKING SHIFTS

Household members' trip-making behavior in Cycles 8 and 10 is compared to determine if there have been shifts between the onset and the peak of the energy shortage. Shifts are disaggregated by the households' socio-economic and demographic characteristics. Trip-making behavior is measured as daily trip-making frequency, purpose, and mode.

2.1.1 Trip Frequency

Household members reported fewer daily trips in response to the energy shortage. The mean number of daily trips per person per household by all modes, including walking, decreased from 4.7 to 3.9, or 17%, between the onset and the peak of the energy shortage. This decrease was larger than the mean 9% inter-monthly decrease between December and February in vehicle miles traveled nationally. Excluding walking trips, mean daily trips per household member decreased from 3.4 to 2.7 during the same time span. Auto-driver trips decreased from 3.2 to 2.6 per household member, or from 69% to 66% of all household trips including walking trips, and from 76% to 75% of all trips, excluding walking trips. (Ref. 7)

It is difficult to assess what proportion of these shifts are directly attributable to the energy shortage due to the simultaneous influence of inter-monthly shifts. For example, inter-monthly comparisons of November, December, and February levels of hotel and motel room occupancy and restaurant sales since 1969 show a 15% and a 10% increase respectively between the mean

for November and December compared with February.

Increased leisure industry business suggests some of the February decline in trip-making may be attributed to vacation traveling, as well as the energy shortage. To clarify the relative impact of these exogeneous variables, it would be useful to have analyses of energy shortage impacts in February 1974 use weekly data to eliminate the influence of the national holiday, weekend and the school vacation week, as regionally applicable.

2.1.2 Trip-Making By Purpose and Mode

Shifts in trip-making frequency were not equally distributed by purpose and mode; some purposes and associated modes are very elastic.

Comparing all trip purposes, the largest frequency of shifts reported were decreases in shopping and work trips from .59 and .62 to .28 and .45, respectively. (Table 2-1) These figures measure shifts in mean incidence of trip purpose per household member.

TABLE 2-1. MEAN NUMBER OF DAILY TRIPS PER HOUSEHOLD MEMBER BY TRIP PURPOSE*

Trip Purpose	Cycle 8	Cycle 10
Going to Work	.62	.45
Shopping	.59	.28
Social-Recreational	.43	.40
Personal Business	.27	.27
Transporting Another Person	.17	.21
Dining Out	.14	.12
School	.04	.05
Getting to Another Means of Transportation	.04	.02
Medical-Dental	.03	.03

*A trip was measured as any travel by any mode to any destination which occurred during one randomly selected day within the week previous to the interview of the respondent. The trip information was obtained from the respondent for the household, an eighteen year old or older household member. Appendix C contains the interview question format.

The decreased mean incidence of shopping trips reflects their discretionary nature as well as the expected marked inter-monthly decline in retail sales characteristic of this time period. Comparing total unadjusted retail sales for the November-December period, using a mean figure, with February, for each year since 1969, shows a mean annual decrease of 21%. The decrease in 1973-74, for the period of the energy shortage was 20%.

Interpretation of the 53% decline in the incidence of shopping trips per household member suggests while the actual number of trips made for this purpose declined dramatically, retail sales approximated the expected inter-monthly pattern. Respondents appear to have made more efficient shopping trips.

By contrast, the decreased mean incidence of work trips probably reflects multiple influences such as winter vacations, seasonal and energy shortage induced unemployment. The interview question recorded all trips taken by the respondents on a given day, previously randomly assigned by the research staff, within the previous week. (Appendix C contains question format.)

Examination of annual and inter-monthly labor force trend data suggests that, in February, compared with a mean figure for the November-December period, there are shifts which might contribute to the decreased daily work trip incidence. The February 1974 non-agricultural, non-government, seasonally unadjusted labor force declined 3% from the mean November-December 1973 figure, compared with a mean annual decline of 2.5% from 1969 to 1973. This change occurred despite a 4% increase in the size of this labor force segment in the years between November-December 1972 and November-December 1973.

Surprisingly, social and recreational trips showed almost no shift in incidence; household members averaged .43 social and recreational trips per day at the onset of the energy shortage and .40 at its peak.

The low incidence of school trips occurs because the respondents are 18 years old at minimum.

Overall, mode shifts show a slight decline in auto-driver, an equivalent increase in auto-passenger, and slight increases in mass transit and walking. (Table 2-2) The summary figures must be disaggregated by trip purpose to locate differential levels of change.

Modal shifts for all trip purposes are analyzed in Table 2-2. Trip purposes with the least modal shift include trips made to go to work and to transport another person. The characteristics of these purposes may be inflexibly related to mode service characteristics, such as the need for a car and driver to transport another person.

By contrast, trip purposes with most modal elasticity include medical-dental, school, and personal business trips. Respondents showed a decreased use of auto driver, mass transit and walking modes and increased use of the auto passenger mode for medical-dental trips. This may reflect a neighborliness phenomena in the form of an effort at "ad hoc" carpooling. School trips show a marked decrease in car as driver trips and increased mass transit and walking. Personal business trips show a slightly decreased use of auto driver and an increased use of auto-passenger and mass transit.

It appears that mode selection is relative inflexible for certain trip purposes, probably due to unavailability of an alternative, the level of service required for that trip purpose, and the existence of household equilibriums based on prior trade-off decisions involving residential location and perceived need for services. (Ref. 13)

TABLE 2-2. PERCENTAGE DISTRIBUTION OF TRIP PURPOSE BY MODAL SPLIT, CYCLE 8 AND CYCLE 10*

Trip Purpose	Cycle 8				Cycle 10			
	Auto Driver	Auto Passenger	Mass Transit	Walk	Auto-Driver	Auto-Passenger	Mass Transit	Walk
Going to Work	72	11	04	12	73	21	04	09
Shopping	71	18	01	10	61	19	01	18
Social-Recreational	59	24	01	13	47	32	04	14
Personal Business	68	20	01	09	65	23	03	09
Transporting Another Person	95	01	02	93	93	06	00	00
Dining Out	49	26	01	22	54	24	00	17
School	78	14	00	09	41	09	33	17
Getting to Another Means of Transportation	18	18	31	27	42	19	31	8
Medical-Dental	51	21	21	8	44	47	9	0
Modal Split All Trips	69	16	2	10	66	19	04	11

*Row percentages do not equal 100% because minor modes were omitted from the table. Mass transit 0% and 1% is "little used".

2.1.3 Disaggregation of Trip-Making: Frequency, Mode, and Purpose

Trip frequency, frequency by mode, and purpose, is disaggregated by socio-economic characteristics to evaluate the magnitude of the disturbance experienced by selected population segments due to the energy shortage. The general view is that the energy shortage reduced gasoline usage overall. However, modal usage by population segments is examined to determine if reduced gasoline usage was widespread or localized.

Analysis of disaggregated trip frequency by mode is based on the intuitive expectation that the energy shortage reduces overall levels of auto usage. Specifically, differences in the proportion of auto driver trips in the disaggregated categories ought to be larger at the onset of the energy shortage than during its peak, and, the magnitude of the change in proportion, by category, ought to be greater than the proportional difference, between categories, during the peak of the energy shortage. These analyses reveal which segments of the society experienced a change greater than the average change due to the energy shortage. Because this logic directs attention to relative shifts in modal usage by disaggregated social characteristics of the sample, the inter-monthly changes due to exogeneous factors ought to be diminished. However, as mentioned previously, all analysis in this study are unavoidably subject to inter-monthly differences.

2.1.3.1 Influence of Poverty

Households are disaggregated by economic level to determine shifts in trip frequency, mode, and purpose. Using a previously developed definition of household poverty level,[3] disaggregation shows that poor households report a relatively constant number of

[3]The definition of poverty level combines total household income and household size. Newman and Wachtel modified the federal government's 1972 definition of poverty to create a definition with the following characteristics. Poverty level households are under the following thresholds: under $3,000 for 1-2 people, under $5,000 for 3-4 people, under $7,000 for 5-6 people and under $9,000 for 7 of more people. (Ref. 14)

slightly more than two trips per household including walking trips. This contrasts with the decrease in the number of daily trips per household for above poverty level households, from 4.2 to 3.6. (Table 2-3)

TABLE 2-3. INCIDENCE OF DAILY TRIPS PER HOUSEHOLD MEMBER BY ECONOMIC LEVEL

Economic Level	Cycle 8	Cycle 10
Below Poverty Level Households	2.1	2.2
Above Poverty Level Households	4.2	3.6

It is also interesting that 33% of the poverty level respondents report making no trips at all outside their home on the selected day during both the onset and the peak of the energy shortage.[4] This level contrasts with only 13% and 16% of above poverty level household members who reported no trips on the designated day, at the onset and peak of the energy shortage, respectively. Comparison indicates the much greater social isolation of poverty level household members.

Poverty level household members are poor in trip-making relative to the rest of the society and, their relatively constant level of trip frequency suggests their trips are essential.

Analyses of trip frequency by purpose and mode also supports the essential quality of poverty level household trips. Poverty level households report sizable modal shifts, generally away from increasingly expensive car use. Modal shifts for all trip purposes

[4] In the data collection, N.O.R.C. interviewers asked respondents to record all their household trips for a given day of the previous week which was randomly selected. The data reflects daily incidence of trips per adult household member, 18 years of age or older.

are much more marked for poverty level households; their proportion of auto-drivers decreased significantly from 59% to 46%[5] as compared with a modest decline from 71% to 69% for all other households. (Table 2-4)

At this point it may be useful to consider one potential influence of the previously presented differences in travel, employment, and leisure activities. The poverty level households' constant level of trip frequency and probable economic constraints on mode choice suggest their life style and activities may be based on obtaining necessities which permit little monthly or seasonal influence. By contrast, the reduction in trip frequency and selective reduction in trips by purpose, with little corresponding mode shift, makes it difficult to determine whether the above poverty level households were impacted by the energy shortage or whether their shifts represent monthly or seasonal differences. The constancy of poverty level households' behavior suggests their life style is too constrained to be influenced by monthly variations. It is possible that monthly variations chiefly impact above poverty level households because they have more choices about trip behavior.

To further explore the differential modal shifts by poverty level, modal shifts by poverty level are disaggregated by trip purpose. Table 2-5A, B, C, and D separates modal shifts by trip purpose and the table values present the percentage of distribution of the total trips with a designated purpose using a designated mode. The below poverty level household members reduced their auto driving work, shopping, personal business, social-recreational and dining out trips. Above poverty level household members reported smaller and more sizeable shifts in auto-driving by trip purpose; specifically, they increased auto-driver trips for work and dining out, and had small decreases in auto driving for shopping, personal business and transporting others. Interestingly, above poverty level household members reported their largest decrease in auto-driving trips for social-recreational trips and their largest increase in auto-driving trips to get to another

[5]This difference is statistically significant ($p \leq .05$).

TABLE 2-4. PERCENTAGE DISTRIBUTION OF MODAL CHOICE BY TIME INTERVAL FOR SELECTED SOCIO-ECONOMIC AND DEMOGRAPHIC HOUSEHOLD CHARACTERISTICS

MODAL CHOICE (ALL TRIPS PER HOUSEHOLD)	CHARACTERISTICS							
	POVERTY LEVEL				TOTAL HOUSEHOLD ANNUAL INCOME			
	BELOW POVERTY LEVEL		ALL OTHERS		<$10,000		>$10,000	
	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10
Auto-driver	59	46	71	69	57	56	76	72
Auto-passenger	20	24	16	18	22	25	14	15
Public transportation (Includes bus, streetcar, train, subway and elevated)	3	5	2	3	2	5	2	3
Walk	18	22	9	9	8	13	14	9

TABLE 2-4. PERCENTAGE DISTRIBUTION OF MODAL CHOICE BY TIME INTERVAL FOR SELECTED SOCIO-ECONOMIC AND DEMOGRAPHIC HOUSEHOLD CHARACTERISTICS (CONTINUED)

MODAL CHOICE (ALL TRIPS PER HOUSEHOLD)	CHARACTERISTICS											
	NUMBER OF WORKERS PER HOUSEHOLD				NUMBER OF CARS PER HOUSEHOLD				RACE OF RESPONDENT			
	0		≥1		1		>1		NON-WHITE		WHITE	
	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10
Auto-driver	47	48	74	69	67	63	78	73	64	52	70	67
Auto-passenger	33	20	13	19	18	24	14	16	19	21	16	19
Public transportation (Includes bus, streetcar, train, subway, and elevated)	2	8	3	3	2	3	1	3	6	9	2	3
Walk	15	21	9	9	11	11	7	7	10	18	10	10

TABLE 2-4. PERCENTAGE DISTRIBUTION OF MODAL CHOICE BY TIME INTERVAL FOR SELECTED SOCIO-ECONOMIC AND DEMOGRAPHIC HOUSEHOLD CHARACTERISTICS (CONTINUED)

MODAL CHOICE (ALL TRIPS PER HOUSEHOLD)	CHARACTERISTICS							
	EDUCATIONAL LEVEL COMPLETED				OCCUPATIONAL STATUS			
	<12 YEARS		>12 YEARS		BLUE COLLAR		WHITE COLLAR	
	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10
Auto-driver	57	59	73	68	68	65	74	69
Auto-passenger	22	19	14	19	17	17	13	18
Public transportation (Includes bus, streetcar, train, subway and elevated)	2	6	2	3	2	4	3	3
Walk	15	14	9	10	10	12	10	9

TABLE 2-4. PERCENTAGE DISTRIBUTION OF MODAL CHOICE BY TIME INTERVAL FOR SELECTED SOCIO-ECONOMIC AND DEMOGRAPHIC HOUSEHOLD CHARACTERISTICS (CONTINUED)

	CHARACTERISTICS							
	"TROUBLE GETTING GAS"				"CUT DOWN BUYING GAS"			
	YES		NO		YES		NO	
	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10	Cycle 8	Cycle 10
Auto-driver	70	68	74	71	Not available	69	Not available	72
Auto-passenger	21	20	14	17		19		16
Public transportation (Includes bus, streetcar, train, subway and elevated	0	3	2	3		3		2
Walk	9	9	8	8		8		10

TABLE 2-5. PERCENTAGE DISTRIBUTION OF HOUSEHOLD MEMBERS' TRIP PURPOSES BY ECONOMIC LEVEL BY MODE[abc]

A. AUTO-DRIVER MODE				
	Cycle 8		Cycle 10	
Trip Purpose	Below Poverty Level Using Auto-Driver Mode	Above Poverty Level Using Auto-Driver Mode	Below Poverty Level Using Auto-Driver Mode	Above Poverty Level Using Auto-Driver Mode
Going to work	.65	.73	.57	.75
Shopping	.59	.73	.35	.67
Social-Recrational	.47	.61	.42	.48
Personal Business	.68	.68	.56	.66
Transporting Another Person	.73	.97	.54	.96
Dining out	.73	.47	.58	.54
Getting to Another Means of Transportation	.00	.20	.00	.46
Medical-Dental	.80	.47	.00	.44

[a]The school trip purpose is omitted because the respondents are eighteen years old or older and the absolute number is very small.

[b]The percentages represent the proportion of the total number of a given trip purpose which employed the designated mode.

[c]Percentages summed along rows for all four tables, for appropriate economic levels, approach 100%, usually are 99%, but never equals it because modal alternatives, such as a motorcycle, taxi, were omitted from the tables.

TABLE 2-5. PERCENTAGE DISTRIBUTION OF HOUSEHOLD MEMBERS' TRIP PURPOSES BY ECONOMIC LEVEL BY MODE (CONTINUED)

B. AUTO-PASSENGER MODE[ab]				
	Cycle 8		Cycle 10	
Trip Purpose	Below Poverty Level Using Auto-Passenger Mode	Above Poverty Level Using Auto-Passenger Mode	Below Poverty Level Using Auto-Passenger Mode	Above Poverty Level Using Auto-Passenger Mode
Going to Work	.18	.10	.22	.11
Shopping	.20	.18	.18	.19
Social-Recreational	.20	.25	.33	.32
Personal Business	.22	.20	.12	.24
Transporting Another Person[c]	.00	.01	.46	.04
Dining Out	.27	.26	.37	.22
Getting to Another Means of Transportation	.00	.20	1.00[d]	.13
Medical-Dental	.00	.24	.00	.47

[a]The school trip purpose is omitted because the respondents are eighteen years old or older and the absolute number is very small.

[b]The percentages represent the proportion of the total number of given trip purpose which employed the designated mode.

[c]The trip purpose, transporting another person, when reported by a respondent utilizing the auto-passenger mode, measures the intention of the trip and may more accurately mean accompanying another person. The respondent subjectively defined the trip's primary intent as taking another person to a given destination.

[d]When the value 1.00 appears in a percentage distribution format it means that all respondents reporting a given trip purpose, at a given time, used the designated mode.

TABLE 2-5. PERCENTAGE DISTRIBUTION OF HOUSEHOLD MEMBERS' TRIP PURPOSES BY ECONOMIC LEVEL BY MODE (CONTINUED)

C. PUBLIC TRANSPORTATION[ab]				
	Cycle 8		Cycle 10	
Trip Purpose	Below Poverty Level Using Public Transportation Mode	Above Poverty Level Using Public Transportation Mode	Below Poverty Level Using Public Transportation Mode	Above Poverty Level Using Public Transportation Mode
Going to Work	.01	.04	.06	.04
Shopping	.00	.01	.02	.00
Social-Recreational	.06	.00	.05	.04
Personal Business	.00	.01	.11	.01
Transporting Another Person[c]	.13	.01	.00	.00
Dining Out	.00	.02	.00	.01
Getting to Another Means of Transportation	.00	.34	.00	.33
Medical-Dental	.00	.24	.00	.09

[a]The school trip purpose is omitted because the respondents are eighteen years old or older and the absolute number is very small.

[b]The percentages represent the proportion of the total number of a given trip purpose which employed the designated mode.

[c]See footnote c, Table 2-5B.

TABLE 2-5. PERCENTAGE DISTRIBUTION OF HOUSEHOLD MEMBERS' TRIP PURPOSES BY ECONOMIC LEVEL BY MODE (CONTINUED)

D. WALKING[ab]				
	Cycle 8		Cycle 10	
Trip Purpose	Below Poverty Level Using Walking Mode	Above Poverty Level Using Walking Mode	Below Poverty Level Using Walking Mode	Above Poverty Level Using Walking Mode
Going to work	.16	.12	.19	.09
Shopping	.20	.08	.41	.13
Social-Recreational	.28	.10	.20	.13
Personal Business	.11	.09	.16	.07
Transporting Another Person[c]	.13	.01	.00	.00
Dining Out	.00	.24	.05	.19
Getting to Another Means of Transportation	1.00[d]	.20	.00	.00
Medical-Dental	.20	.06	.00	.00

[a]The school trip purpose is omitted because the respondents are eighteen years old or older and the absolute number is very small.

[b]The percentages represent the proportion of the total number of a given trip purpose which employed the designated mode.

[c]See footnote c, Table 2-5b.

[d]See footnote d, Table 2-5B.

means of transportation. Below poverty level household members made so few medical, dental, transporting another person, and getting another means of transportation trips that the percentage shifts are exaggerated and,therefore, are not interpreted in this discussion.

Overall, Tables 2-4 and 2-5 indicate below poverty level household members made much greater alterations in their modal choice for most of their trip purposes. By contrast, above poverty level household members selectively and minimally altered typical mode choice by trip purpose.

Below poverty level household members also have a markedly different mix of trip purposes and a different alteration response due to the energy shortage compared with above poverty level households. (Table 2-6) For example, below poverty level household members reduced social and recreational trips compared with a slightly increased incidence of them in other households. Trips to transport another person had an increased incidence only for more affluent household members confirming that this trip purpose is the suburban "chauffeur" trip.

In summary, the energy shortage was perceived by poverty level households as a marked economic burden increasing the differences between their trip-making characteristics and those of other households in the society. The increasingly large differential in auto use supports this. At the onset of the energy shortage, poverty level household members made 12% fewer auto-driver trips than above poverty level households. At the peak of the energy shortage, the differential in auto-driver trips increased to 23%.

The differential shifts in trip-making patterns of poverty level households are supported by a 1973 national study of comparative energy use by income group. The Washington Center for Metropolitan Studies reported that poverty level households, 20% of the national population, use only 5% of national consumption of gasoline, compared with households earning $16,000 or more a year, which consume one third of the gasoline. (Ref. 4)

TABLE 2-6. INCIDENCE OF DAILY TRIP PURPOSE PER PERSON BY ECONOMIC LEVEL OF HOUSEHOLD*

Trip Purpose	Cycle 8		Cycle 10	
	Below Poverty Level	Above Poverty Level	Below Poverty Level	Above Poverty Level
Going to Work	.28	.70	.16	.56
Shopping	.38	.66	.19	.32
Social-Recreational	.36	.44	.22	.47
Personal Business	.15	.30	.16	.31
Transporting Another Person	.06	.20	.04	.27
Dining Out	.05	.17	.05	.14
School	.01	.05	.05	.05
Getting to Another Means of Transportation[a]	.02	.04	.04	.27
Medical-Dental	.02	.04	.00	.03

*This table is based on a procedure using the total occurrence of trip purpose standardized by number of households.

[a]This trip purpose measures trips made by the respondents with the intent of changing to another mode of transportation.

This differential gains added significance when it is realized that 37% of all United States petroleum use is gasoline for vehicles.[6]

Previous research suggests poor households use their automobiles chiefly for the work trip and, interestingly, the urban poor use their autos more because of their longer reverse commute to jobs. (Ref. 4) These findings provide a baseline which intensifies the severity of the impact of the changes in trip-making patterns reported in this data.

[6]Based on "Energy Statistics - DOT - TSC - OST - 74 - 12 and 1973 figures.

The increased costs of the energy shortage markedly altered poor households' trip-making patterns, in terms of mode and purpose, while minimally influencing the trip-making of other households.

2.1.3.2 Influence of Other Socio-Economic Characteristics

Household members' trip-making frequency and mode choice is also disaggregated by the following characteristics: total annual household income, educational level completed and occupational status, number of workers and cars per household, race of respondent, perception of gasoline availability and changed driving frequencies. (Table 2-4)

Analyses confirm that the energy shortage had a greater impact on the level of auto driving in the more advantaged households according to the previously listed categories. The reduced amount of auto driving reported by members of more advantaged households had the overall effect of reducing the differences between the amount of auto driving in the more and less advantaged households. This reduction therefore made the modal split relatively more similar in all population segments of the society.

However, this increasingly similar modal split does not apply when households are disaggregated by poverty level as discussed above, and by race. For poverty level and non-white households, the energy shortage decreased their level of auto-driver trips more sharply relative to other households. (Appendix B, Table B-1)

2.2 SUMMARY

The energy shortage has had very different impacts on the modal shift according to the socio-economic and demographic characteristics examined. There appears to be an increasingly similar societal level of gasoline usage when households are analyzed by total household annual income, highest educational level completed, and occupational status of the respondent, number of workers per household, number of cars per household reported difficulty obtain gasoline and reported reduced gasoline

consumption. However, when analyzed by economic level and race, the energy shortage has increased the differences in frequency of auto usage. Locating this divergence in auto usage specifies the impacts of the energy shortage and suggests that the increased costs, the economic component of the energy shortage, rather than gasoline unavailability, may have placed additional burdens on already overburdened segments of the society.

Analyses support Hypothesis 1, that the energy shortage has differential impacts according to a household's social status. The energy shortage is associated with a trip-making frequency reduction for above poverty level households; they apparently only needed to selectively reduce some discretionary trip-making. By contrast, below poverty level households experience more frequent modal shifts for most trip purposes without any decrease in trip frequency. The modal shift is made probably because their trips are mandatory and related to survival needs.

3. ATTITUDINAL IMPACTS

3.0 OVERVIEW

This chapter discusses shifts in households' attitudes towards the energy shortage, specifically evaluations of its severity and of proposed and enacted remedial policies. Understanding of attitudinal evaluations provides an understanding of Hypotheses 2 and 3 and the chapter concludes with an assessment of these hypotheses which posits that first, the likelihood of subjectively perceiving the energy shortage as having a personal impact is directly related to a household's social status, which is an amalgam of income, educational and occupational characteristics and, second, that acceptance of energy conservation behavior is directly related to perceptions of an energy shortage. (See Appendix C, Variable Descriptions, for the interview question format used to measure attitudinal responses.)

3.1 ATTITUDES TOWARDS THE ENERGY SHORTAGE

Overall, it appears that respondents believed warnings of the impending severity of the energy shortage. Respondents maintained relatively the same evaluation of the magnitude of the energy shortage as a problem despite recording marked differences in perceived availability of gasoline. Most respondents constantly reported that they viewed the energy shortage as an important problem but not the most important problem they faced. (Appendix B, Table B-12)

There is a lack of interactive effect between attitudes towards various energy sources suggesting respondents do not have an understanding of the inclusive concept energy. Respondents did reduce energy usage in areas where they personally experienced a shortage such as driving, electricity, and heating oil. However, these are also areas where they experienced price increases and the reason for decreased usage was likely due to economy as well as deliberate energy conservation, although this issue was not addressed in the data analysis. The absence of an inclusive

concept of energy is also shown by the paradoxical reports of decreased frequency of conserving electric lighting while deliberately running appliances less frequently.

Influence of Socio-Economic Characteristics

Household evaluations of the severity of the energy shortage at its onset and peak are related to selected socio-economic and demographic characteristics. These relationships designate population categories responding most strongly to the energy shortage. (Tables 3-1 and 3-2)

Characteristics most frequently statistically related to evaluations of the energy crisis are educational level of the household head, age of the respondent, and household size.[7] Better educated household heads expected a higher unregulated price of gasoline, reported less severe personal experiences with the energy shortage, but viewed the energy shortage as very important. The older respondents foresaw a lower unregulated price of gasoline, expected the energy shortage would not be a long lasting problem, and reported the energy shortage had little effect on their lives. Finally, the smaller the respondent's household, the less serious and less enduring he expected the energy shortage to be. These relationships suggest better educated respondents anticicipated the potential severity of the energy shortage but were less personally affected. The older respondent did not view the energy shortage as a major issue, and respondents in smaller households were less worried about the severity of the energy shortage.

The following are additional statistically significant relationships. The perception of the severity of the personal impact was inversely related to income, household size, and education level. Respondents with less education and lower income levels perceived people like themselves suffering more from the energy crisis.

[7] These relationships are indicated by Pearson product-moment correlation coefficients computed with Data-Text Program (Ref. 12). They are statistically significant as $p \leq 05$.

TABLE 3-1. CORRELATION MATRIX OF ATTITUDINAL AND SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES, CYCLE 8[abcd]

	PRICE GAS MIGHT BECOME + = higher	SIGNIFICANCE OF CRISIS + = more important problem
No. of cars/household, + = more		
Total household annual income, + = more	-09	
No. of workers, + = more		
Age of household head, + = older		
Occupation, + = less skilled		
Household size, + = larger	09	
Educational level completed, + = more education	14	

[a]Decimals omitted from correlation coefficient matrix in this and subsequent correlation matrices.

[b]Only statistically significant correlation coefficients, $p \leq .05$, are included in this and subsequent correlation matrices. Blank cells represent non-statistically significant correlation coefficients. This analysis measures association between variables.

[c]Absence of a sign before the value indicates a positive direct association between the variables, negative sign indicates an inverse relationship between the variables.

[d]Magnitude of statistically significant correlations reflects strength of relationship

TABLE 3-2. CORRELATION MATRIX OF ATTITUDINAL AND SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES, CYCLE 10[a]

	PRICE GAS MIGHT BECOME + = higher	SUFFERING BY INCOME LEVEL + = less suffering	MONTHS IMPACT + = more impact	AFFECT LIFE + = very much	SATISFACTION WITH CAR USE + = dissatisfied	SIGNIFICANCE OF CRISIS + = more important problem
No. of cars/household, + = more						
Total household annual income, + = more		22				
No. of workers, + = more				13		
Age of household head, + = older	-11		-16	-18		
Occupation, + = less skilled		-21				
Household size, + = larger			09	08		
Educational Level Completed, + = more education	09	14				14

[a]See legends with Table 8; all apply here.

By contrast, however, the number of cars per household was not significantly related to evaluations of the energy crisis at either the onset or peak of the energy shortage.

In summary, there seem to be two basic types of relationships. Better educated, older respondents analyzed the energy shortage in specific objective terms, such as likely changes in gasoline prices. By contrast, the lower income, less educated, and the blue collar respondent had a more subjective response; he reported feeling markedly affected by the energy crisis in diffuse personal terms.

3.2 RESPONSES TO CONSERVATION POLICIES

This section analyzes households' responses to enacted and proposed energy conservation policies to provide a basis for understanding reactions to energy conservation policies.

3.2.1 Responses to Enacted Policies

Many of the government energy conservation policies urged voluntary conservation. They achieved differential levels of cooperation, perhaps due to the elasticities of various energy uses. (Appendix B, Tables B-13 to B-16)[8]

Most respondents reported reducing their electricity use which further analysis shows is actually reduced appliance use. This reduction was not equally distributed throughout all households because of the marked differences in the use of electricity between income levels.

Pre-energy shortage national data reports poor households consume only 50-60% of the average household's electricity consumption and renter households use two-thirds as much as homeowners (Ref. 4, 10). The number of workers also affects energy usage; households with an employed wife use "11% more electricity

[8] Comparison of Tables B-13 to B-16, Appendix B shows that the differential shifts means the reduced electricity use was for appliances rather than for lighting.

and gas." Finally, non-white households use 85% of the electricity used by white households when income level is held constant. (Ref. 4, 10).

A large proportion of households lowered their thermostat at the peak of the energy shortage; the proportion increased from 55% to 87% of the households. (Appendix B, Table B-15)

The proportion reporting they had reduced their amount of auto driving was less than those reducing electrical appliance usage or home thermostat. This suggests there is less perceived flexibility associated with auto use than with appliance use or home heating. (Appendix B, Tables B-10, 15, 16)

Evidence of marked differential energy use by social class suggests energy conservation efforts ought to specifically recognize this differential use. Newman and Wachtel reported that there is a "stairstep pattern of energy consumption with increments differing as income rises... Well off households use five times as much gasoline, two times as much electricity and one and one half times as much natural gas as poor households." (Ref. 23, pg. 8ff) When energy shortage appeared, it seems, from this analysis, that greater efforts were made to conserve electricity and natural gas than gasoline, despite the much wider usage of the latter energy source. (Appendix B, Tables B-10, 15, 16)

Disaggregated Responses to Enacted Energy Policies

Interestingly, the respondents most dissatisfied with the job done by the federal government in energy conservation were from more affluent households. (Table 3-3) Households with higher total incomes and more workers were significantly dissatisfied with the federal government's energy conservation policy efforts at the peak of the energy shortage.[9]

[9]Evaluation of state and federal efforts at energy conservation was not asked of respondents in Cycle 8.

TABLE 3-3. CORRELATION MATRIX OF ENACTED POLICY EVALUATION AND SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES, CYCLE 10[a]

	SATISFACTION WITH JOB DONE IN WASHINGTON + = more satisfied	SATISFACTION WITH JOB DONE BY STATE GOVERNMENT + = more satisfied
No. of cars/household, + = more		
Total household annual income, + = more	-11	
No. of workers, + = more	-13	
Age of household head, + = more		08
Occupation, + = less skilled		
Household size, + = larger		
Educational level completed, + = more education		

[a]See legends with Table 3-1; all apply here.

Respondents evaluated state efforts with less intensity. Only the age of the respondent was significantly related directly to evaluations of state efforts at energy conservation; the older respondent was more satisfied with state conservation efforts.

3.2.2 Responses to Policy Alternatives

Because respondents recognized the potential severity of the impending energy shortage in late 1973, they were more favorable to harsher policies before the shortage actually developed. (Appendix B, Tables B-17 to B-20)

Support for the thesis that respondents had more negative anticipations regarding the magnitude of the anticipated energy shortage is provided by the decrease in the expected mean uncontrolled price per gallon of gasoline. The mean expected price was less in February, 1974, at the height of the energy shortage, than at its onset in December, 1973. Correspondingly, the proportion of respondents believing gas rationing would be necessary decreased to 31% at the peak of the energy shortage from 35% at its onset.

Respondents' perceptions of equitable allocation strategies for limited energy resources were measured during the summer of 1973 as well as at the onset and at the peak of the energy shortage. Respondents' priorities remained constant; heating homes and farm operations were priority allocations in both Cycles 8 and 10. It is interesting, however, that a priority is recognized for factory operations at the peak of the energy shortage, suggesting increased sensitivity to the economic implications of the energy shortage.

Analysis of the shifts in priority allocations for gasoline users provides further support for a public anticipation of the impending energy shortage as initially very serious which subsequently became less gloomy. In July and December, 1973, the majority of respondents believed pleasure driving was not an important energy use. However, at the peak of the energy shortage, only 33% of the respondents stated it was unimportant energy

use. There were corresponding and equally marked shifts reported for the relative priority of recreational uses of energy. (Appendix B, Table B-19)

In recommending conservation measures to ameliorate the energy crisis's impact, the respondents in July 1973 most frequently recommended improved public transportation. Subsequently, however, as the energy shortage grew, respondents perceived additional alternatives. At the peak of the energy shortage, a 50 m.p.h. speed limit was the most frequently recommended measure, and public transportation retired to second place.

Disaggregated Responses to Policy Alternatives

In examining disaggregated responses to energy allocation priorities, many of the significant relationships support a previously mentioned interpretation that households with more resources in terms of income, age, education, reacted to the shortage in specific analytic terms. For example, older and more educated respondents believed factory operations should receive priority in energy allocation. (Tables 3-4 and 3-5)

It is also interesting that no disaggregated characteristics are significantly related to establishing priorities for "pleasure driving". However, priority allocation for energy for "other recreational trips" is significantly supported by lower income, less educated, and smaller households. This latter trip purpose includes visiting friends and may reflect importance of personal contacts, rather than formal, club-like contacts to these respondents.

Behavioral measures had no statistically significant relationship to particular priority allocations for energy. Differential household trip-making frequency levels were not related to assigning a priority for an energy use.

Disaggregated responses to policy alternatives were less distinct than previously shown in other sections of this study. This probably reflects the strong influence of mass media and informational efforts in developing understandings of and responses to energy conservation policy options. It may be that

TABLE 3-4. CORRELATION MATRIX OF POLICY ALTERNATIVES AND SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES, CYCLES 8 AND 10

Cycle 8 / Cycle 10	HEATING HOMES, + = more essential	COMMERCIAL FREIGHT TRANSPORTATION, + = more essential	PLEASURE DRIVING, + = more essential	OTHER RECREATION USES, + = more essential	FARMING OPERATIONS, + = more essential	AIR CONDITIONING, + = more essential	PUBLIC TRANSPORTATION, + = more essential	FACTORY OPERATIONS, + = more essential	BUSINESS DRIVING, + = more essential
No. of cars/household, + = more	-11			06		-08		-06	-09
Total household annual income, + = more	-06	06	-06	08				-06	
No. of workers, + = more	08				-09			-06	
Age of household head, + = older	06 11	11 12	-08	-09	13 11		09	13 17	12
Occupation, + = less skilled			09	09	08	-11			
Household size, + = larger	-09	-09 -09		09	-08 -10		-06		
Educational level completed, + = more education				10	-09			-06 -11	

[a]See legends with Table 3-1; all apply here.

the energy shortage was a new experience for households for which they lacked an existing set of responses.

3.3 SUMMARY

This analysis does not support Hypothesis 2 that a crisis view of the energy shortage is directly related to the household's social status position.[10] It suggests an opposite interpretation with modifications. Households with fewer social status attributes perceived the energy shortage as having a greater and more immediate personal impact but they did not view it as enduring and as a major national problem. It appears that lower social status households had a personal response to the energy shortage, as contrasted with the more analytical attitudes of higher social status households.

Respondents' attitudes towards enacted and proposed energy conservation policies showed an initial willingness to tolerate travel restrictions. However, this willingness subsequently evaporated perhaps because the actual severity of the shortage did not equal anticipations and respondents became less accepting of the idea of rationing or, alternatively, respondents became less tolerant of restrictions with increased experience.

Expectations regarding changes in the price of gasoline support an interpretation of an initial serious evaluation of the impending energy shortage. Most respondents lowered their estimation of the expected price of gasoline between Cycles 8 and 10.

Households with more income and workers were less satisfied with the government's policy responses to the energy shortage.

---

[10] Social status is used as a summary term to indicate level of possession of what this society views as resources. Higher social status respondents are those with higher relative educational, occupational skill, and income levels. No value judgment is implied.

When policy alternative responses were disaggregated, there were relatively few differences between the responses of population categories. More advantaged households believed in priorities for the industrial sector of the society, whereas, by contrast, less advantaged households supported a priority for social trips to visit friends. Actual household trip-making frequency for all households, however, was not affected by their opinions about priority allocations.

4. INTERRELATIONSHIPS OF ATTITUDINAL AND BEHAVIORAL IMPACTS

4.0 OVERVIEW

This chapter focuses on Hypotheses 3, 4 and 5 which can be summarized as stating that energy conservation behavior is directly related to evaluations of the energy shortage. Possible relationships between behavior and attitudes are analyzed in this chapter.

4.1 RELATIONSHIPS BETWEEN IMPACTS

It is anticipated that relationships exist between energy related attitudes and conservation behavior because of the previous research finding of "discretionary conservatism" which argues that perceived difficulty of obtaining gasoline decreased car travel more than the actual experience of difficulty in obtaining gasoline. This analysis explores Hypothesis 3 which states that energy conservation behavior is directly derived from perceptions of an energy shortage.

Trip-making frequency was not related to expectations about the duration of the energy shortage and potential gas price, to satisfaction with car use, or to perceptions that one's life has been affected or of the magnitude of the significance of the crisis. (Tables 4-1 and 4-2) "Discretionary conservatism" did not appear in the relationship between attitudes and trip frequency.

There was a relationship between evaluations of the energy shortage and attitudes towards government responses to the energy crisis. The more households perceived themselves as being negatively affected by the energy shortage, the more dissatisfied they were with enacted energy conservation policies. Specifically, expressed dissatisfaction with the job done in Washington was related to experiencing much change due to the energy shortage, expecting a long duration for the energy shortage, perceiving others of one's income level very affected by the energy shortage, and dissatisfaction with the opportunity to use one's car. Similar but weaker relationships existed between these variables and dissatisfaction with state level energy conservation efforts (Table 4-3)

TABLE 4-1. CORRELATION MATRIX OF ATTITUDINAL AND BEHAVIORAL VARIABLES, CYCLE 8[a]

	SIGNIFICANCE OF CRISIS + = more important problem	PRICE GAS MIGHT BECOME + = higher
Time to work, + = more		14
Distance to work, + = more		
Distance to store, + = more		
Satisfaction with store, + = more satisfied		
Satisfaction with work, + = more satisfied		
Evaluation of health, + = good		
Financial satisfaction, + = more satisfied		
No. of trips/ household, + = more trips		

[a]See legends with Table 3-1; all apply here.

TABLE 4-2. CORRELATION MATRIX OF ATTITUDINAL AND BEHAVIORAL VARIABLES, CYCLE 10[ab]

	SUFFERING BY INCOME LEVEL, + = less suffering	MONTHS IMPACT, + = more impact	AFFECT LIFE + = very much	SATISFACTION WITH CAR USE, + = dissatisfied	SIGNIFICANCE OF CRISIS, + = more important problem	GAS PRICE MIGHT BECOME, + = higher	SATISFACTION WITH JOB IN WASHINGTON + = more satisfied	SATISFACTION WITH JOB DONE BY STATE GOVERNMENT, + = more satisfied
Price Pay for Gas, + = more	N.A.	N.A.	N.A.	N.A.	N.A.	41	09	
Time to work, + = more		15		-18				
Distance to work, + = more		11						
Distance to store, + = more								
Influence national decisions, + = very much	08						17	11
Satisfaction with store, + = more satisfied	10	-11	-10	11				
Satisfaction with work, + = more satisfied				13				12
Evaluation of health, + = good				12				09
Satisfaction with recreation, + = more satisfied				22				
Financial satisfaction, + = more satisfied	29	-10	-13	25		-12	11	
No. of trips/household, + = more trips								

[a]See legend with Table 8; all apply here.

[b]When data was not collected or correlational analyses not performed, the appropriate cell contains N.A. (not available)

TABLE 4-3. CORRELATION MATRIX OF ATTITUDINAL AND ENACTED POLICY EVALUATION VARIABLES, CYCLE 10[a]

	SATISFACTION WITH JOB DONE IN WASHINGTON, + = more satisfied	SATISFACTION WITH JOB DONE BY STATE GOVERNMENT + = more satisfied
Price gasoline might become, + = higher		
Suffering by income level, + = less suffering	11	-10
Months impact, + = more	-09	-10
Affect life, + = very much	-18	09
Satisfaction with car use, + = dissatisfied	17	
Significance of crisis, + = more important problem	08	

[a]See legends with Table 3-1; all apply here.

Additional analyses suggest household level of financial satisfaction may mediate perceptions of the severity of the energy shortage. Significant relationships were associated with the household's evaluation of its financial status: the less financially satisfied, the longer the expected duration of the energy shortage, the more serious the expected impact, the less satisfaction with car use, and the higher the expected unregulated price of

gasoline.[11] (Tables 4-1 and 4-2) Less financially satisfied households had fewer cars, larger size households, lower incomes, were older and employed in blue collar work,and had less education.

There are other interesting relationships with the household's perceived financial satisfaction. At the onset of the energy shortage, there was a direct relationship between the number of cars per household and perceived financial satisfaction. However, this relationship was no longer significant at the peak of the shortage, perhaps due to the increased financial burden of car ownership and decreased ability to use the cars.

There was also a significant relationship between the number of cars and the number of trips per household. This relationship disappeared at the peak of the energy shortage probably due to the decreased discretionary use of cars.

There was also a significant direct relationship between the number of workers per household and household trip frequency at the onset of the energy shortage. This relationship also disappeared during the peak of the energy shortage, again probably due to decreased discretionary car use.

Summary

Perceived severity of the energy shortage is related to expressed satisfaction with modal choices available and ability to travel, but not to actual trip-making frequency. Hypothesis 3 is not supported.

[11] Respondents' financial satisfaction was obtained through their responses to the following question:
"We are interested in how people are getting along financially these days. As far as you and your family are concerned, would you say that you are completely satisfied with your present financial situation, very satisfied, moderately satisfied, slightly satisfied or not at all satisfied?"

The respondents' perceived financial satisfaction mediated their response to the energy distribution shortage. This relationship may be part of a larger phenomenon relating a household's perceptions of immediate events to its overall satisfaction with its lifestyle.

The mediating influence of financially based variables has been reported for research conducted in Los Angeles to predicting energy shortage impacts using multiple regression techniques. (Ref. 1) This research discovered that "expected future impact on one's own employment" was related to taking energy conservation measures. This Los Angeles study supports relationships reported in this analysis between perceived economic impacts and reduced energy use.

4.2 PREDICTORS OF BEHAVIORAL AND ATTITUDINAL RESPONSES

4.2.1 Overview

To summarize the complexity of the influence on behavioral and attitudinal responses to the energy shortage, step-wise multiple regression techniques were applied to include simultaneously known predictors of selected behavioral and attitudinal responses to the energy shortage.[12] These analyses are reported for each behavioral and attitudinal response and are based on hypotheses 4 and 5.

The information reported in Tables 4-4 through 4-12 should be interpreted in the following way. All of the regression coefficients shown in these tables attained statistical significance indicating that each of the coefficients makes a significant contribution to the interpretation of the selected behavioral or attitudinal response. In analyzing these tables, particular attention is given to the raw regression coefficients since they contain the most direct substantive interpretations. However, to compare the relative contribution of each variable, the

[12] See Table 4-11 for a summary of the variables.

TABLE 4-4. PREDICTORS OF FREQUENCY OF TRIPS PER HOUSEHOLD MEMBER, CYCLE 8[a]

	B[b]	b[e]	se(b)
Education level completed, + = more education	.08[c]	.14	.02
Number of workers in household, + = more workers	.14	.13	.14
Age of household head, + = older	-.01[d]	-.10	.01

Multiple R = .25

[a]This format used in this and following tables represents the regression equations including only the significant predictors, ($p < .05$).

[b]B = raw regression coefficient, b = standardized regression coefficient, se(b) = standard error of b; format is used in Tables 4-4 through 4-11.

[c]All coefficients are rounded to two decimal places. This results in a .00 coefficient occasionally.

[d]Positive and negative values developed in a stepwise multiple regression procedure indicate the sign of the appropriate coefficient (represented in cell) as it would appear in the regression equation. Directionality of coefficients may be interpreted in terms of the variable predicted.

[e]The row order of variables reflects the magnitude of the b[e] value.

TABLE 4-5. PREDICTORS OF FREQUENCY OF TRIPS PER HOUSEHOLD MEMBER, CYCLE 10[a]

	B	b	se(b)
Age of household head, + = older	-.02	-.15	.01
Total annual household income, + = more	.09	.14	.03
Distance to work, + = more	-.11	-.10	.04

Multiple R = .23

[a]See legends with Table 4-4, all apply here.

standardized regression coefficient is used. In presenting the results of a step-wide multiple regression procedure , variables are ordered by the magnitude of their standardized regression coefficient.

4.2.2 Predictors of Behavioral Responses

The analyses in this section examine predictors of the number of trips per household member, at the onset of, and during, the peak of the energy shortage. (Tables 4-4 and 4-5). Examination of Table 4-4 shows that an increment of one year in the respondents' educational level resulted in a net increase of .08 in the frequency of trips per household member; similar change in the number of workers per household and the age of the household head resulted in a .14 increase, and a .01 decrease, in trip frequency, respectively.

Age of the household head was the only variable related to trip-making frequency in both cycles 8 and 10. The other predictors in both cycles represented social status proxies and appeared in a relatively similar form at both times. Additionally, at the peak of the energy shortage, the distance to work appears as a significant inversely related predictor which may represent the emergence of relatively similar gasoline consumption levels because of the increasing exclusive use of cars for longer work trips.

It was expected that household members' trip-making would be more influenced by attitudes than by household resources but this interpretation was not supported. An amalgam of social status, together with work trip requirements at the peak of the energy shortage, are the important predictors of household members' trip-making.

4.2.3 Predictors of Attitudinal Evaluations of the Energy Shortage

Subsequent statistical analyses explore the joint ability of both attitudinal responses towards enacted policies and household socio-economic and behavioral characteristics to predict attitudes

towards the energy shortage. Stepwise multiple regression determined the best predictors of the following five measures of attitudes toward the energy shortage: the amount people of the same income level are suffering due to a shortage of fuel, effect of energy shortage six months from now; how important a problem is the energy shortage; has the energy shortage changed your way of living; and satisfaction with the job done in Washington for energy conservation.

The largest multiple R was obtained at the peak of the energy shortage using the dependent variable which measured people's perception of how others of their income level were suffering due to a shortage of fuel. The prominent significant predictors were a composite of social status and social participation variables, suggesting that perception of suffering of people of the same income level was greater for the less favored households. (Table 4-6) Respondents who believed members of their income level suffered more, were lower in financial satisfaction, occupational or income levels, more dissatisfied with Washington's energy conservation job and with their local store.[13]

Analysis of the attitudinal measure rating the importance of the energy shortage produced an increased number of significant predictors and an increased explained variance between the onset and the peak of the energy shortage. This reflects emergent concern about the issue. (Tables 4-7 and 4-8) There were few relationships in Cycle 8. By Cycle 10, educational level and work trip variables combined to increase the variance explained. The emergence of these variables locates the population categories increasingly aware of the national significance of the shortage.

[13]The variable, satisfaction with one's local store, is used in this regression analysis to represent respondent's perceived accessibility which was expected to be related to the respondent's attitudinal evaluation of the energy shortage.

TABLE 4-6. PREDICTORS OF AMOUNT PEOPLE OF SAME INCOME LEVEL ARE SUFFERING DUE TO SHORTAGE OF FUEL, CYCLE 10[a]

	B	b	se(b)
Financial satisfaction, + = more satisfied	.11	.20	.02
Occupation of household head, + = less skilled	-.07	-.13	.02
Total annual household income, + = more	.03	.14	.01
Satisfaction with job done in Washington for energy conservation, + = more satisfied	.06	.10	.02
Satisfaction with local store, + = more satisfied	.05	.08	.02

Multiple R = .36

[a]See legends with Table 4-4, all apply here.

TABLE 4-7. PREDICTOR OF HOW IMPORTANT A PROBLEM IS THE ENERGY SHORTAGE, CYCLE 8[a]

	B	b	se(b)
Age of respondent, + = older	-.00	-.08	.00

Multiple R = .08

[a]See legends with Table 4-4, all apply here.

TABLE 4-8. PREDICTORS OF HOW IMPORTANT A PROBLEM IS THE ENERGY SHORTAGE, CYCLE 10[a]

	B	b	se(b)
Educational level completed, + = more education	.03	.14	.01
Distance to work, + = more	-.09	-.23	.02
Time to work, + = more	.11	.20	.03

Multiple R = .21

[a]See legends with Table 4-4, all apply here.

The stepwise multiple regression to predict whether the energy crisis has affected the respondent's life indicates that the more satisfaction the respondent reported with the job Washington is doing for energy conservation, the less of an impact the energy shortage is having on his life. (Table 4-9) Also, older respondents reported less effect on their lives when they perceived the federal government doing a good job.

By contrast, more variables were related to respondents' expectations about the duration of energy shortage. Respondents expecting the energy shortage to last a long time were young, made longer auto work trips, were less satisfied with their most frequently used store, were more satisfied with work and had low levels of financial satisfaction.

The final regression analysis generated the predictors of satisfaction with the federal government's energy conservation responses. (Table 4-11) Variables measuring respondents' perceived and actual social participation were among the significant predictors. The more the respondent perceived he had an influence over national decisions, the fewer workers in his household, and the more satisfied he is financially, the more satisfied he was with the federal government's energy conservation effort. It appears that respondents most satisfied with federal government conservation policies were more successful and socially active.

TABLE 4-9. PREDICTORS OF HAS THE ENERGY SHORTAGE CHANGED YOUR WAY OF LIVING , CYCLE 10[a]

	B	b	se(b)
Satisfaction with job done in Washington for energy conservation, + = more satisfied	-.11	-.17	.03
Age of household head, + = older	-.01	-.17	.00

Multiple R = .24

[a]See legends with Table 4-4, all apply here.

TABLE 4-10. PREDICTORS OF EFFECT OF ENERGY SHORTAGE SIX MONTHS FROM NOW, CYCLE 10[a]

	B	b	se(b)
Age of the household head, + = older	-.01	-.17	.00
Time to work, + = more	.08	.14	.02
Satisfaction with store, + = more satisfied	-.10	-.11	.04
Satisfaction with work, + = more satisfied	.08	.10	.03
Financial satisfaction, + = more satisfied	-.07	-.09	.03

Multiple R = .27

[a]See legends with Table 4-4, all apply here.

TABLE 4-11. PREDICTORS OF SATISFACTION WITH JOB DONE IN WASHINGTON FOR ENERGY CONSERVATION, CYCLE 10[a]

	B	b	se(b)
Influence over national decisions, + = very much	.19	.15	.05
Number of workers in household, + = more	-.22	-.13	.06
Financial satisfaction, + = more satisfied	.10	.10	.04

Multiple R = .23

[a]See legends with Table 4-4, all apply here.

Predictors of attitudinal responses are varied. Socio-economic variables are the most frequent predictors of attitudinal evaluations of the energy shortage but are not sufficient and other attitudinal measures are needed to increase the variance predicted in attitudinal responses.

In summary, a variety of types of predictors are necessary to predict attitudinal responses to the energy shortage.

4.3 SUMMARY

Regression analyses combined variables to develop a more inclusive picture of factors influencing severity of impacts. (Table 4-12)

In predicting trip-making frequency, socio-economic characteristics were significant predictors of differential response.

At the peak of the energy shortage, work trip characteristics also became significant predictors of trip-making frequency.

The significant predictors of attitudinal impacts were varied. Socio-economic and work trip characteristics, along with evaluations of policy adequacy, best predicted attitudinal impact on respondents. Evaluations of the energy shortage severity are related, in part, to evaluation of policy responses.

TABLE 4-12. SUMMARY OF STEP-WISE MULTIPLE REGRESSION OF BEHAVIORAL AND ATTITUDINAL IMPACTS OF THE ENERGY SHORTAGE

ADMINISTERED IN	CRITERION VARIABLES					
	FREQUENCY OF DAILY TRIPS/ HOUSEHOLD	AMOUNT PEOPLE OF SAME INCOME LEVEL ARE SUFFERING	HOW IMPORTANT A PROBLEM IS THE ENERGY SHORTAGE	HAS THE ENERGY SHORTAGE CHANGED YOUR WAY OF LIFE	EFFECT OF ENERGY SHORTAGE SIX MONTHS FROM NOW	SATISFACTION WITH JOB DONE IN WASHINGTON
Cycle 8	Educational[b] Level Completed Number of Workers in Household Age of Household Head	N/A[c]	Age of Household Head	N/A	N/A	N/A
Cycle 10	Age of Household Head Total Annual Household Income Distance to Work	Financial Satisfaction Occupation of Household Head Total Annual Household Income Satisfaction with Job in Washington Satisfaction with Local Store	Educational Level Completed Distance to Work Time to Work	Satisfaction with Job in Washington Age of Household Head	Age of Household Head Time to Work Satisfaction with Store Satisfaction with Work Financial Satisfaction	Influence over National Decisions Number of workers Financial Satisfaction

[a]Only statistically significant ($p \leq .05$) predictor variables are listed.

[b]Predictors appear in order of importance in regression equation.

[c]Criterion Variables not asked of respondent in this cycle, N.A. (not available).

It must be noted that the stepwise multiple regressions produced relatively low multiple R and r^2 values which suggests the reality is only minimally captured by the selected variables.

5. CONCLUSIONS

This study indicates that the energy shortage had a minor aggregate impact but significant disaggregate impacts. In some aspects, certain population categories were substantially affected by the energy shortage; for example, poverty level and non-white households reported significantly greater modal shifts.

Exploratory hypotheses enumerated in Chapter 1 were examined in the data analysis with the following results:

The energy shortage had differential impacts according to household social status; it was related to a decreased trip-making frequency for middle income households and a significant modal shift for lower income households.

While most households had expectations of the impact of the energy shortage prior to its onset more severe than actually developed, lower income, education, and occupational status households reported negative personal impacts due to the energy shortage.

Trip-making was unrelated to attitudes expressed about the energy shortage. Respondents reporting themselves negatively affected by the energy shortage were dissatisfied with the federal government's conservation efforts, expected the shortage to have a long duration, and were dissatisfied with their ability to use their car. Respondents' level of financial satisfaction appears to have influenced their evaluations of the energy shortage.

Household trip-making is best predicted by its members education, income, age, and work trip characteristics, rather than by expressed evaluations of the energy shortage. By contrast, household attitudes towards the energy shortage are best predicted by a combination of socio-economic and other attitudinal measures.

The results of this analysis are similar to previous analyses of energy shortage impacts in that this analysis also reports small aggregate shifts in behavior and attitudes. But small aggregate shifts are not a basis for concluding that the energy shortage had little impact. Disaggregation of the shifts revealed marked differences between population categories.

The energy shortage enlarged the trip making differences between poverty level and non-white households and the rest of the society. All trips do not have the same modal attachments and frequencies for different population segments.

Analysis of shifts in attitudes towards the energy shortage suggests variables measuring household financial satisfaction are important underlying influences. It might be hypothesized that respondents' new awareness of car ownership as a financial burden is overcoming its prior social status associations.

The novelty of the energy shortage was revealed by the relative lack of differential response or preference shifts for alternative potential energy conservation policies. These findings suggest the hypothesis that respondents have not sufficiently conceptualized the meaning and consequences of an energy shortage to state policy preferences other than already known or publicized alternatives.

Overall, it appears that the energy shortage substantially affected certain population categories behaviorally and attitudinally. There are also indications that households' subjective financial satisfaction importantly mediated energy shortage impacts. It is likely public response was relatively open and tolerant because of their unfamiliarity with the concept of an energy shortage.

APPENDIX A
RESULTS OF NATIONAL SURVEY

The National Opinion Research Center at the University of Chicago conducted a Continuous National Survey on a weekly basis from May, 1973 through February, 1974, sampling approximately 680 different households monthly. The sampling of the eighteen year old and older, non-institutional, contiguous United States population is based on a full probability sample to the respondent level. All non-institutionalized adult residents of the continental United States had an equivalent chance of being selected as a respondent. The criteria of random selection was applied throughout removing the influence of deliberate bias in sample selection. Roughly 173 persons were interviewed each week and four weeks of interviews aggregated define a cycle.

The ten cycles of data correspond to the following time periods:

Cycle No.	Dates
1	13 April 73 to 10 May 73
2	11 May 73 to 7 June 73
3	8 June 73 to 5 July 73
4	6 July 73 to 2 August 73
5	31 August 73 to 21 September 73
6	28 September 73 to 25 October 73
7	26 October 73 to 22 November 73
8	23 November 73 to 20 December 73
9	4 January 74 to 31 January 74
10	1 February 74 to 28 February 74

All surveys contained questions measuring the following socio-economic and demographic characteristics of the respondent: race, marital status, highest educational level completed, type of community, family income, amount of employment of respondent and spouse, number of cars per household, dwelling unit type, housing tenure.

Cycles 8 and 10 were selected for analysis of the impacts of the energy shortage because they span the period, just prior to, and the onset of, major national awareness of the energy shortage and the peak of the severity of the energy shortage. Because these two cycles are close chronologically, some of the influence of seasonal variation and the risk of shifts in variable levels due to exogeneous variables was diminished. All interviews were conducted in the respondent's home. (Ref. 20)

Table A-1 indicates that the distribution of the respondent's place of residence was very similar in both cycles with slightly more than half the respondents living in a city or a suburb. In both cycles, approximately one quarter of the respondents lived in a rural area, either farm or non-farm.

Table A-2 suggests that Cycle 10 contained slightly more professionals, technicians, managers, and white collar workers, while Cycle 8 had a slightly higher percentage of blue collar workers. Respondents with no occupations increased 2% in Cycle 10.

Although relatively similar, the income distribution in Table A-3 showed fewer respondents with a total family income between $8,000-14,999 and 5% more respondents with an income of $20,000 or more. This difference parallels differences reported in Table A-2 and is due to the greater number of highly skilled and white collar workers.

The racial composition of respondents presented in Table A-4, is fairly constant between the cycles.

The largest difference between the characteristics of respondents in Cycle 8 and Cycle 10 occurs in Table A-5. Cycle 10 respondents had more multi-car households than reported in Cycle 8.

Work trip characteristics were fairly similar for Cycle 8 and Cycle 10 respondents. The magnitude of the shifts in work trip mode in Table A-6 may be somewhat depressed considering the differences in cars per household in Table A-5.

Overall, respondents in Cycle 8 and Cycle 10 were fairly similar. The major difference is the larger proportion of skilled, white collar workers, with higher incomes, and more cars per household in Cycle 10.

TABLE A-1. TYPE OF PLACE RESIDENCE, CYCLE 8 AND CYCLE 10[a]

PLACE OF RESIDENCE	CYCLE 8 % (N)	CYCLE 10 % (N)
City	33 (194)	31 (197)
Suburb	22 (127)	21 (134)
Town	20 (120)	22 (146)
Rural-Nonfarm	20 (126)	19 (121)
Farm	5 (32)	7 (43)
SUBTOTAL	100% (594)	100% (641)
Blank	(110)	(53)
TOTAL	(704)	(694)

[a]All geographic areas were represented relative to their size due to the random sampling procedure. (See Ref. 6)

TABLE A-2. OCCUPATION OF RESPONDENT, CYCLE 8 AND CYCLE 10

OCCUPATION	CYCLE 8 % (N)	CYCLE 10 % (N)
Professional technical, managerial	24 (133)	29 (147)
White collar, salaried	24 (136)	25 (127)
Blue collar skilled	14 (78)	13 (62)
Blue collar, unskilled	38 (213)	33 (167)
SUBTOTAL	100% (560)	100% (503)
No occupation, Blank	(144)	(191)
TOTAL	(704)	(694)

TABLE A-3. TOTAL ANNUAL HOUSE INCOME, CYCLE 8 AND CYCLE 10

TOTAL ANNUAL HOUSEHOLD INCOME	CYCLE 8 % (N)	CYCLE 10 % (N)
Less than $4,000	18 (115)	19 (110)
$4,000-7,999	24 (145)	22 (129)
$8,000-14,999	34 (216)	26 (154)
$15,000-19,999	13 (84)	16 (95)
$20,000 or over	11 (70)	17 (100)
SUBTOTAL	100% (630)	100% (586)
Blank	(74)	(108)
TOTAL	(704)	(694)

TABLE A-4. RACE OF RESPONDENT, CYCLE 8 AND CYCLE 10

RACE	CYCLE 8 % (N)	CYCLE 10 % (N)
White	89 (516)	90 (567)
Black and other	11 (62)	10 (73)
SUBTOTAL	100% (578)	100% (640)
Blank	(126)	(54)
TOTAL	(704)	(694)

TABLE A-5. NUMBER OF CARS PER HOUSEHOLD, CYCLE 8 AND CYCLE 10

NUMBER OF CARS PER HOUSEHOLD	CYCLE 8 % (N)	CYCLE 10 % (N)
0	13 (88)	3 (19)
1	45 (311)	39 (222)
2	34 (236)	42 (243)
3 or more	9 (61)	16 (90)
SUBTOTAL	100% (696)	100% (574)
Blank	(8)	(120)
TOTAL	(704)	(694)

TABLE A-6. WORK TRIP MODE, CYCLE 8 AND CYCLE 10

WORK TRIP MODE	CYCLE 8 % (N)	CYCLE 10 % (N)
Car, driver	77 (281)	72 (273)
Car, passenger	11 (41)	13 (49)
Bus and street car	3 (12)	6 (21)
Subway and elevator	1 (4)	1 (4)
Train	1 (3)	1 (3)
Walk	6 (24)	6 (25)
Taxi	1 (2)	1 (2)
SUBTOTAL	100% (367)	100% (377)
Blank	(337)	(317)
TOTAL	(704)	(694)

TABLE A-7. DISTANCE TO WORK IN MILES, CYCLE 8 AND CYCLE 10

DISTANCE TO WORK IN MILES	CYCLE 8 %	(N)	CYCLE 10 %	(N)
Less than 1	10	(41)	13	(47)
1 to less than 2	11	(46)	11	(40)
2 to less than 5	21	(86)	20	(71)
5 to less than 10	22	(88)	20	(72)
10 to less than 15	13	(51)	14	(51)
15 to less than 20	6	(22)	5	(20)
20 or more	17	(66)	17	(62)
SUBTOTAL	100%	(400)	100%	(363)
Blank		(304)		(331)
TOTAL		(704)		(694)

APPENDIX B
TABLES

TABLE B-1 PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY ECONOMIC LEVEL OF HOUSEHOLDS

CYCLE 10

	BELOW POVERTY LEVEL HOUSEHOLDS						ABOVE POVERTY LEVEL HOUSEHOLDS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	18	7	2	10	1	38	26	7	1	3	0	36
Go to work	6	2	1	1	1	10	11	2	0	1	0	15
Other	22	15	3	11	1	52	32	10	2	5	1	49
TOTAL	46	24	5	22	3	100%	69	18	3	9	1	100%

CYCLE 8

	BELOW POVERTY LEVEL HOUSEHOLDS						ABOVE POVERTY LEVEL HOUSEHOLDS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	18	7	2	5	0	32	24	5	0	3	1	33
Go to work	8	2	0	2	0	13	12	2	1	2	0	17
Other	33	11	1	11	0	55	34	9	1	5	1	50
TOTAL	59	20	3	18	0	100%	71	16	2	9	2	100%

TABLE B-2 PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY HOUSEHOLD INCOME

CYCLE 10

	INCOME < $10,000						INCOME ≥ $10,000					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	22	8	2	6	0	38	27	6	1	2	0	36
Go to work	7	3	1	0	0	11	13	1	1	2	0	17
Other	27	14	2	7	1	51	33	8	1	5	1	47
TOTAL	56	25	5	13	1	100%	72	15	3	9	1	100%

CYCLE 8

	INCOME < $10,000						INCOME ≥ $10,000					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	20	8	1	4	1	33	26	4	0	2	0	33
Go to work	9	3	0	2	0	15	13	1	1	2	0	17
Other	28	13	1	8	2	52	37	7	1	4	1	50
TOTAL	57	24	2	14	3	100%	76	12	2	8	1	100%

TABLE B-3 PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY EDUCATIONAL LEVEL

CYCLE 10

TRIP PURPOSE	EDUCATIONAL LEVEL, LESS THAN 12 YEARS						EDUCATIONAL LEVEL, 12 YEARS OR MORE					
	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	22	7	2	5	1	38	26	6	1	3	0	36
Go to work	9	3	1	1	0	14	11	1	1	2	0	15
Other	28	8	3	8	1	48	31	11	1	5	1	49
TOTAL	59	19	6	14	2	100%	68	19	3	9	1	100%

CYCLE 8

TRIP PURPOSE	EDUCATIONAL LEVEL, LESS THAN 12 YEARS						EDUCATIONAL LEVEL, 12 YEARS OR MORE					
	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	21	7	1	5	1	36	24	5	1	2	0	32
Go to work	10	4	0	3	0	17	13	1	0	2	0	16
Other	26	11	1	7	2	47	37	9	1	5	1	52
TOTAL	57	22	2	15	3	100%	73	14	2	9	1	100%

TABLE B-4. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY OCCUPATIONAL STATUS

CYCLE 10

	BLUE COLLAR OCCUPATIONS						WHITE COLLAR OCCUPATIONS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	25	7	2	4	1	38	26	6	0	2	0	35
Go to work	10	2	0	1	0	15	13	2	1	2	0	18
Other	30	8	2	6	2	47	30	10	2	5	1	47
TOTAL	65	17	4	11	3	100%	69	18	3	9	1	100%

CYCLE 8

	BLUE COLLAR OCCUPATIONS						WHITE COLLAR OCCUPATIONS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	24	5	1	3	1	34	24	4	1	2	0	31
Go to work	12	3	0	2	1	18	14	1	1	2	0	18
Other	32	9	1	5	1	48	36	8	1	5	1	51
TOTAL	68	17	2	10	3	100%	74	13	3	9	1	100%

TABLE B-5. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY NUMBER OF WORKERS PER HOUSEHOLD

CYCLE 10

	NO WORKERS						ONE OR MORE WORKERS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	19	7	3	9	1	39	25	7	1	2	0	35
Go to work	1	0	0	0	0	1	12	2	1	2	0	17
Other	28	13	5	12	2	60	31	10	1	5	1	48
TOTAL	48	20	8	21	3	100%	68	19	3	9	1	100%

CYCLE 8

	NO WORKERS						ONE OR MORE WORKERS					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	16	11	1	5	2	35	25	4	1	2	0	32
Go to work	1	0	0	0	0	1	14	2	1	2	0	19
Other	30	21	1	10	2	64	35	7	1	5	1	49
TOTAL	47	32	2	15	4	100%	74	13	3	9	1	100%

TABLE B-6. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY NUMBER OF CARS PER HOUSEHOLD

CYCLE 10

	NUMBER OF CARS PER HOUSEHOLD ≤ 1						NUMBER OF CARS PER HOUSEHOLD > 1					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	24	8	1	3	0	36	27	6	1	2	0	36
Go to work	8	3	1	1	0	13	13	1	0	1	0	15
Other	31	12	1	7	0	51	33	9	2	4	1	49
TOTAL	63	23	3	11	0	100%	73	16	3	7	1	100%

CYCLE 8

	NUMBER OF CARS PER HOUSEHOLD ≤ 1						NUMBER OF CARS PER HOUSEHOLD > 1					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	23	6	0	3	1	33	26	4	0	1	0	31
Go to work	11	2	1	2	0	16	13	1	0	2	0	16
Other	33	10	1	6	1	51	39	8	1	4	1	53
TOTAL	67	18	2	11	2	100%	78	13	1	7	1	100%

TABLE B-7. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY RACE

CYCLE 10

	RACE = BLACK AND OTHER						RACE = WHITE					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	16	10	3	7	0	36	25	6	1	3	1	35
Go to work	8	3	2	1	0	14	11	2	0	1	0	14
Other	28	8	4	10	0	50	31	11	2	6	1	51
TOTAL	52	21	9	18	0	100%	67	19	3	10	2	100%

CYCLE 8

	RACE = BLACK AND OTHER						RACE = WHITE					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	21	7	2	3	1	34	24	5	0	3	1	33
Go to work	9	4	1	1	0	15	12	1	1	2	0	16
Other	34	8	3	6	0	51	34	10	1	5	1	51
TOTAL	65	19	6	10	1	100%	70	16	2	10	2	100%

TABLE B-8. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY EXPERIENCED TROUBLE GETTING GAS

CYCLE 10

	EXPERIENCED TROUBLE GETTING GAS = NO						EXPERIENCED TROUBLE GETTING GAS = YES					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	25	6	1	3	0	35	26	7	1	2	0	36
Go to work	12	2	0	1	0	15	11	2	1	1	0	15
Other	34	9	2	4	1	50	31	11	1	5	1	49
TOTAL	71	17	3	8	1	100%	68	20	3	8	1	100%

CYCLE 8

	EXPERIENCED TROUBLE GETTING GAS = NO						EXPERIENCED TROUBLE GETTING GAS = YES					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	25	5	0	2	1	33	23	6	0	3	0	32
Go to work	12	1	1	1	0	15	13	2	0	2	0	17
Other	37	8	1	5	1	52	34	13	0	4	0	51
TOTAL	74	14	2	8	2	100%	70	21	0	9	0	100%

TABLE B-9. PROPORTION OF TRIP PURPOSE BY MODE DISAGGREGATED BY REPORTED CUTTING DOWN ON GAS

CYCLE 10

	REPORTED CUTTING DOWN ON GAS = NO						REPORTED CUTTING DOWN ON GAS = YES					
TRIP PURPOSE	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL	MODE CAR, DRIVER	CAR PASSENGER	MASS TRANSIT	WALK	OTHER	TOTAL
Go home	26	6	1	3	0	36	26	6	1	2	0	35
Go to work	13	1	1	2	0	17	11	2	0	1	0	14
Other	33	9	0	5	0	47	32	11	2	5	1	51
TOTAL	72	16	2	10	0	100%	69	19	3	8	1	100%

TABLE B-10. DISTRIBUTION OF SHIFTS IN SHUTTING OFF LIGHTS[a]

RESPONDENTS "SHUTTING OFF LIGHTS"	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	69.4 (404)	57.3 (342)
No	30.6 (178)	42.7 (255)
TOTAL	100% (582)	100% (597)

[a]Total is less than total cycle size because information lacking from some respondents.

TABLE B-11. DISTRIBUTION OF RESPONSES TO TROUBLE GETTING GAS[a]

RESPONDENTS REPORTING "TROUBLE GETTING GAS"	CYCLE 4* %	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	22.5	15.8 (192)	57.3 (342)
No	65.9	84.2 (490)	42.7 (255)
TOTAL	98.4%	100% (582)	100% (597)

*Responses are available for Cycle 4 only in percentage format.

[a]See legend Table B-10.

TABLE B-12. DISTRIBUTION OF RESPONSES TO SHORTAGES,[a] HOW IMPORTANT A PROBLEM

RESPONDENTS RATING FOR "SHORTAGES, HOW IMPORTANT A PROBLEM"	CYCLE 8 % (N)	CYCLE 10 % (N)
Not a problem	8.1 (48)	5.1 (35)
Fairly important	11.1 (66)	14.4 (99)
Very important	52.9 (315)	53.6 (369)
Most important	27.9 (166)	26.9 (185)
TOTAL	100% (595)	100% (688)

[a]See legend Table B-10.

TABLE B-13. DISTRIBUTION OF SHIFTS IN ELECTRICITY [a] CONSERVATION*

RESPONDENTS "TRYING TO CUT DOWN ON ELECTRICITY"	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	79.9 (480)	85.7 (595)
No	20.1 (121)	14.3 (99)
TOTAL	100% (601)	100% (694)

*Numbers in parentheses in this and all subsequent tables represent frequencies.

[a]See legend Table B-10.

TABLE B-14. DISTRIBUTION OF REPORTING RUNNING MAJOR APPLIANCES LESS [a]

RESPONDENTS "RUNNING MAJOR APPLIANCES LESS"	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	25.3 (147)	41.4 (287)
No	74.7 (437)	58.6 (407)
TOTAL	100% (582)	100% (694)

[a] See legend Table B-10.

TABLE B-15. DISTRIBUTION OF REPORTED LOWERED TEMPERATURE [a]

RESPONDENTS "LOWERING TEMPERATURE"	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	55.4 (293)	86.6 (499)
No	44.6 (236)	13.4 (77)
TOTAL	100% (529)	100% (576)

[a] See legend Table B-10.

TABLE B-16. DISTRIBUTION OF SHIFTS IN REPORTING REDUCED DRIVING [a]

RESPONDENTS "CUT DOWN ON DRIVING"	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	60.4 (296)	71.7 (428)
No	39.6 (194)	28.3 (169)
TOTAL	100% (490)	100% (597)

[a] See legend Table B-10.

TABLE B-17. EXPECTED PRICE OF A GALLON OF GASOLINE IN ONE MONTH, IF NO GOVERNMENT CONTROLS [a]

PRICE	CYCLE 8 % (N)	CYCLE 10 % (N)
30¢ or less	0 (2)	0 (2)
31-40¢	1 (7)	1 (5)
41-50¢	17 (96)	7 (45)
51-60¢	8 (42)	18 (113)
61-70¢	6 (34)	11 (70)
71-80¢	12 (68)	16 (105)
81-90¢	1 (5)	2 (10)
91¢-$1.00	27 (143)	36 (232)
$1.01-$1.25	2 (13)	2 (11)
$1.26-$1.50	12 (68)	3 (20)
$1.51-$1.75	1 (3)	0 (1)
$1.75-$2.00	8 (42)	3 (17)
$2.01-$3.00	3 (18)	0 (2)
$3.01-$5.00	2 (13)	1 (5)
$5.00-$10.00	0 (2)	0 (2)
TOTAL	100%(556)	100%(640)
MEAN	$1.06	87¢

[a]See legend Table B-10.

TABLE B-18. OPINION REGARDING WHETHER GAS RATIONING IS NECESSARY[a]

OPINION	CYCLE 8 % (N)	CYCLE 10 % (N)
Yes	35 (236)	31 (214)
No	50 (333)	57 (393)
Do not know	15 (101)	12 (84)
TOTAL	100% (670)	100% (691)

[a]See legend Table B-10.

TABLE B-19. DISTRIBUTIONS OF FUEL PRIORITY ALLOCATION PREFERENCES[a] [b]

PRIORITY ALLOCATION PREFERENCES	ABSOLUTELY ESSENTIAL			IMPORTANT			NOT AT ALL IMPORTANT		
	CYCLE 10	CYCLE 8	CYCLE 4	CYCLE 10	CYCLE 8	CYCLE 4	CYCLE 10	CYCLE 8	CYCLE 4
Heating homes	56 (393)[b]	59 (395)	61	44 (283)	01 (7)	38	01 (6)	00 (0)	01
Commercial freight transportation	37 (262)	29 (194)	30	62 (399)	70 (468)	68	01 (6)	01 (7)	02
Pleasure driving	01 (8)	01 (7)	01	66 (424)	30 (201)	58	33 (212)	49 (328)	41
Farming operations	59 (405)	56 (371)	55	41 (264)	44 (294)	44	00 (0)	01 (7)	00
Mass transit	33 (234)	28 (185)	27	65 (412)	72 (482)	69	02 (12)	01 (7)	04
Factory operations	50 (347)	41 (272)	42	50 (322)	59 (394)	68	00 (0)	00 (0)	01
Business driving by private citizens	23 (155)	19 (129)	17	75 (482)	76 (508)	76	03 (19)	04 (27)	08

Sample Size = Cycle 10: 643
Cycle 8: 669

[a]Table adapted from Ref. 16, pg. 28.
[b]Numbers in parenthesis are absolute numbers.

TABLE B-20. DISTRIBUTIONS OF RESPONDENTS' EVALUATION OF POLICY ALTERNATIVES[a]

MOST LIKED POLICY ALTERNATIVE	CYCLE 4* %	CYCLE 8 % (N)	CYCLE 10 % (N)
60 M.P.H. speed limit	14	11 (73)	15 (103)
50 M.P.H. speed limit	21	34 (225)	31 (209)
Ration gas	7	9 (61)	9 (61)
Increase gas tax	2	2 (11)	1 (6)
Commuter parking tax	1	1 (5)	0 (1)
Restrict cars in central city	1	2 (11)	2 (14)
Improve public transit	27	18 (122)	18 (125)
Encourage car pools	8	8 (56)	8 (57)
Tax big cars	3	2 (11)	2 (14)
Restrict weight of new cars	10	6 (42)	7 (48)
Relax anti-pollution devices	4	5 (34)	5 (35)
Do nothing	1	0 (3)	0 (2)
Other	1	2 (11)	2 (10)
TOTAL	100%	100% (665)	100% (685)

*Responses are available for Cycle 4 only in percentage format.

[a]See legend Table B-10.

APPENDIX C
VARIABLE DESCRIPTIONS

The variables used in this analysis can be referenced in this appendix using their abbreviated name in the left hand column that was originally assigned to them in the preceding text. The variables are presented according to the substantive variable classifications of:

1. Travel behavior
2. Evaluation of the severity of the energy shortage
3. Attitudes towards enacted energy conservation legislation
4. Attitudes towards proposed energy conservation policies
5. Selected socio-economic and demographic household characteristics

(See Section 1.2.1 of this report for the discussion of this classification).

1. Travel Behavior

Abbreviated Variables Names	N.O.R.C. Continuous National Survey Items - Interview Format
"Distance to Store"	About how far away is the store (where your family did most of its grocery shopping during the past month/you shopped at most recently)? Responses: Code Less than 1/4 mile..... 1 1/4 to less than 1/2 mile 2 1/2 to less than 2 miles 3 2 to less than 5 miles... 4 5 to less than 10 miles.. 5 10 to less than 20 miles. 6 20 miles or more..... 7
"Satisfaction with Store"	How satisfied are you with this store--would you say you are completely satisfied, very satisfied, moderately satisfied, slightly satisfied, or not at all satisfied? Responses: Code Completely satisfied..... 4 Very satisfied..... 3 Moderately satisfied..... 2 Slightly satisfied..... 1 Not at all satisfied..... 0
"Time to Work"	How long does it usually take you to travel between home and work? Responses: Code <5 min..... 01 5 to <15 min..... 02 15 to <1/2 hr..... 03 1/2 hr. to <45 min..... 04 45 min. to <1 hr..... 05

"Time to Work" continued	Responses: Code 1 hr. to <1 hr. and 15 min..... 06 1 hr. and 15 min. to <1 1/2 hrs..... 07 1 1/2 hrs. to <1 3/4 hrs. 08 1 3/4 hrs. to <2 hrs..... 09 2 hrs. or more..... 10
"Distance to Work"	Approximately how far do you live from where you work? Responses: Code <1 mile..... 1 1 mile to <2 miles..... 2 2 miles to <5 miles..... 3 5 miles to <10 miles..... 4 10 miles to <15 miles.... 5 15 miles to <20 miles.... 6 20 miles +..... 7
"Mode to Work"	How do you usually get to work? Responses: Code car, driver..... 01 car, passenger..... 02 bus, streetcar..... 03 subway, elevated..... 04 train..... 05 walk..... 06 taxicab..... 07 bicycle, motorcycle..... 08 works at home..... NA
"Trip Frequency, Purpose, and Mode"	We'd like to know about the kind of places people go and the things they do on various days of the week. We've chosen a day at random so that you can give us a list of all of the places you went, why you went there, and how you go there and back. Your day is _____.

"Trip Frequency, Purpose, and Mode" continued	Please think back over all the places you went last _____ (DAY), beginning in the morning and ending at night. We are interested in every place you went, even if just down to the store and back. Let's start with the first place you went after you got up. A. Where did you go? UNLESS CLEAR: Why did you do there? RECORD AND CODE. B. How did you get there? (What kind of transportation did you use?) REPEAT A AND B FOR EACH TRIP: A.) Where did you go from there? OR Where did you go next? OR Did you return to _____ or did you go somewhere else then? BE SURE TO RECORD ALL TRIPS TO AND FROM EACH DESTINATION. B.) AS BEFORE. Now, have I recorded every place you went last _____ (DAY)? (PROBE UNTIL R HAS COMPLETELY DESCRIBED ALL TRIPS, INCLUDING ALL RETURN TRIPS HOME.) IF R MADE NO TRIPS ON SAMPLE DAY, CHECK HERE AND SKIP TO Q. 82. Information reported in block format.

2. Evaluation of the Severity of the Energy Shortage

Abbreviated Variable Name	N.O.R.C. Continuous National Survey Items - Interview Format
"Months Impact"	How do you feel the energy shortage will be affecting you six months from now? Do you think that six months from now the energy shortage will be causing you very serious problems, moderately serious problems, some problems that are not serious problems at all?

"Months Impact" continued	Responses: Code Very serious problems.... 3 Moderately serious problems..... 2 Some problems that are not serious..... 1 No problems at all..... 0
"Affect Life"	How much do you think the energy shortage has changed your way of living? Would you say that the energy shortage has caused no change, some change, quite a bit of change, or a great deal of change in your way of living? Responses: Code No change..... 0 Some change..... 1 Quite a bit of change.... 2 A great deal of change... 3
"Significance of Crisis"	There has been a lot of talk recently about shortages of all types of energy. How important a problem do you feel this is for the country? Do you feel that this is the most important problem in the country today, a very important problem, a fairly important problem, or not really a problem at all? Responses: Code The most important problem in the country today..... 4 A very important problem. 3 A fairly important problem..... 2 Not really a problem at all..... 1

"Price Gasoline Might Become"	If the government decided to let people find gasoline wherever they can and at whatever price they were willing to pay, what do you think the price of one gallon of gasoline would be one month from now? Responses: ENTER: ☐☐ and ☐☐ DOLLARS CENTS
"Price paid for Gasoline"	About how much are you paying now per gallon for gasoline? Responses: ROUND TO THE NEAREST CENT: ☐☐ and ☐☐ DOLLARS CENTS
"Trouble Getting Gas"	In the past month, have you or anyone in your family had any trouble getting gas? Responses: Code Yes..... 1 No..... 2
"Able to Use Car"	We are interested in knowing whether the fuel shortage has affected how much people are able to use their cars. Are you able to use your (car/cars) as much as you want, or have you had to cut down on how much you have been using your (car/cars)? Responses: Code Able to use the (car/cars) as much as we want..... 1 Had to cut down on how much we have been using the (car/cars)..... 2

"Satisfaction with Car Use"	How satisfied are you with how much you are now able to use your (car/cars)? Are you completely satisfied, moderately satisfied, or not at all satisfied? Responses: Code Completely satisfied..... 1 Moderately satisfied..... 2 Fairly satisfied..... 3 Not at all satisfied..... 4
"Suffering by Income Level"	Do you feel people of your income level are suffering more, about the same, or suffering less than people of other income levels due to the shortage of fuel? Responses: Code Suffering more..... 1 About the same..... 2 Suffering less..... 3

3. Attitudes Toward Enacted Energy Conservation Legislation

Abbreviated Variable Name	N.O.R.C. Continuous National Survey Items - Interview Format
"Satisfaction with Job Done by Washington"	How would you rate the job being done by the government in Washington in handling the fuel shortage? READ CATEGORIES. Responses: Code Very good..... 4 Pretty good..... 3 Fair..... 2 Poor..... 1 Very poor..... 0
"Satisfaction with Job Done by State Government"	How would you rate the job being done by your state government in handling the fuel shortage?

"Satisfaction with Job Done by State Government" continued	Responses: Code Very good..... 4 Pretty good..... 3 Fair..... 2 Poor..... 1 Very poor..... 0 Don't know (IF VOLUNTEERED)..... 5
"Influence on National Decisions"	How much influence do you think people like you have over national government decisions--a great deal, a moderate amount, a little, or none at all? Responses: Code A great deal..... 3 A moderate amount..... 2 A little..... 1 None at all..... 0
"Cut Down on Electricity	Have you or anyone in your household been trying to cut down on the amount of electricity you have been using? Responses: Code Yes..... 1 No..... 2

4. Attitudes Towards Proposed Energy Conservation Policies

Abbreviated Variable Name	N.O.R.C. Continuous National Survey Items - Interview Format
"Gasoline Rationing	Do you think gasoline rationing throughout the nation is necessary? Responses: Code Yes..... 1 No..... 2 Don't know (IF VOLUNTEERED)..... 3

"Energy Conservation Policy Alternatives"	Now think just about transportation. If federal, state, or local governments wanted to do something to cut the amount of fuel used for transportation by private individuals, which of the things on this cars would you <u>most</u> like to see them do? What would be your next choice after that? And what would your third choice be? CODE ONE ONLY IN EACH COLUMN.

	A. First Choice	B. Second Choice	C. Third Choice
Impose a maximum speed limit of 60 miles per hour on all open highways...	01	01	01
Impose a maximum speed limit of 50 miles per hour on all open highways...	02	02	02
Ration gasoline.....	03	03	03
Increase gas taxes..	04	04	04
Put a commuter tax on all-day downtown parking.....	05	05	05
Restrict cars in the central business and shopping areas.....	06	06	06
Encourage the use of urban public transportation by improving the service or lowering the cost...	07	07	07
Encourage the use of car pools by making them cheaper or easier than driving alone.....	08	08	08
Impose a tax on new cars above a minimum weight and horse power.....	09	09	09

"Energy Conservation Policy Alternatives" continued

	A1 First Choice	B. Second Choice	C. Third Choice
Restrict the weight and horse power of new cars.....	10	10	10
Relax or eliminate the standards for anti-pollution device on cars.....	11	11	11
Do nothing.....	12	12	12
Other (SPECIFY).....	13	13	13

"Energy Allocation Priorities"

Suppose we knew that there wasn't going to be enough gas, oil, and electricity in this country for everyone who needed it, and the federal government was trying to decide what uses were most important. I will read you a list of possible uses. For each one, please tell me how important you think it is to guarantee an adequate amount of fuel or energy for that use.

EXAMPLE: First, for heating homes--how important is it that there be gas, oil, electricity for that--is it (READ CATEGORIES) absolutely essential, extremely important, moderately important, slightly important, or not at all important?

ASK FOR EACH ITEM, A-I.

	Absolutely Essential	Extremely Important	Moderately Important	Slightly Important	Not at all Important
Heating Homes	4	3	2	1	0
Commercial freight Transportation	4	3	2	1	0

"Energy Allocation Priorities" continued		Absolutely Essential	Extremely Important	Moderately Important	Slightly Important	Not at all Important
	Pleasure driving by private citizens	4	3	2	1	0
	Other recreation uses	4	3	2	1	0
	Farming Operations	4	3	2	1	0
	Air conditioning	4	3	2	1	0
	Public passenger transportation like buses, trains, and airlines	4	3	2	1	0
	Factory Operations	4	3	2	1	0
	Business driving by private citizens	4	3	2	1	0

5. Selected Socio-Economic and Demographic Household Characteristics

Abbreviated Variable Name	N.O.R.C. Continuous National Survey Items - Interview Format
"No. of Cars Household"	How many cars (do you/does your family) have?

"No. of Cars Household" continued	Responses: Code None..... 0 One..... 1 Two..... 2 Three..... 3 Four..... 4 Five or more..... 5
"Educational Level Completed"	What is the highest grade or year of <u>regular</u> school or college you have <u>completed</u>? ☐☐ REFER TO GRADE CODES
"Total Household Annual Income"	In which of these groups did your total <u>family</u> income, from <u>all</u> sources, fall last year--1972--before taxes, that is? Just tell me the letter. Responses: Code Under $1,000..... 01 $1,000 to 1,999..... 02 $2,000 to 2,999..... 03 $3,000 to 3,999..... 04 $4,000 to 4,999..... 05 $5,000 to 5,999..... 06 $6,000 to 6,999..... 07 $7,000 to 7,999..... 08 $8,000 to 9,999..... 09 $10,000 to 14,999..... 10 $15,000 to 19,999..... 11 $20,000 to 24,999..... 12 $25,000 or over..... 13 Don't know or refused.... 14

"Race"	Race of respondent: (Interviewer Completed) Responses: Code Black/Negro..... 1 White..... 2 Other (SPECIFY)..... 3
"Number of Workers"	And now a few questions about working. Did you work at any time last week, either full or part time, not counting work around the house? (By working we mean working for pay at a job, or running your own business or profession (or farm), or working without pay in your family's business (or farm).) PROBE: How many hours did you work altogether last week, at all jobs? Responses: Code Yes, 35 hours or more.... 1 Yes, 1-34 hours..... 2 No..... 3 Did your (husband/wife) work at any time last week, either full or part time, not counting work around the house? (By working we mean working for pay at a job, or running (his/her) own business or profession (or farm), or working without pay in (his/her) family's business (or farm).) PROBE: How many hours did your (husband/wife) work altogether last week, at all jobs? Responses: Code Yes (35 hours or more)... 1 Yes (1-34 hours)..... 2 No..... 3

	Responses from above items combined to yield: Responses: Code No workers..... 0 1 worker..... 1 2 or more workers..... 2
"Age and Household Size"	Information obtained from initial Household Membership Screener.
"Occupation"	ASK FOR JOB AT WHICH PERSON WORK(S/ED) MOST, IF MORE THAN ONE JOB. A. For whom (do/did) you work? (Probe for name of company, business, organization, or other employer.) B. What kind of business or industry (is/was) this? (PROBE: What (does/did) that (firm/organization/business) make or do? C. What kind of work (are/were) you doing? D. What (are/were) the most important activities or duties? E. (Are/Were) you . . . READ CATEGORIES Responses: Code An employee of a private business, or individual for wages, salary, or commissions?..... 1 A government employee (federal, state, county, local)?..... 2 Self-employed in your own business, professional practice, or farm?..... 3 Working without pay in family business or farm..... 4

"Satisfaction with Work"	On the whole, how satisfied (are/were) you with the work you (do/did) -- would you say you (are/were) completely satisfied, very satisfied, moderately satisfied, slightly satisfied, or not at all satisfied? Responses: Code Completely satisifed..... 4 Very satisfied..... 3 Moderately satisfied..... 2 Slightly satisfied..... 1 Not at all satisfied..... 0
"Satisfaction with Recreation"	How satisfied are you with the things you do in your leisure time or for recreation? are you ... (READ CATEGORIES)? Responses: Code Completely satisfied..... 4 Very satisfied..... 3 Moderately satisfied..... 2 Slightly satisfied..... 1 Not at all satisfied..... 0
"Evaluation of Health?	Compared to other people your age, would you say that your health is very good, good, fair, poor, or very poor? Responses: Code Very good..... 5 Good..... 4 Fair..... 3 Poor..... 2 Very poor..... 1
"Financial Satisfaction"	We are interested in how people are getting along financially these days. As far as you and your family are concerned, would you say that you are completely

"Financial Satisfaction" continued	satisfied with your present financial situation, very satisfied, moderately satisfied, slightly satisfied, or not at all satisfied? Responses: Code Completely satisfied..... 4 Very satisfied..... 3 Moderately satisfied..... 2 Slightly satisfied..... 1 Not at all satisfied..... 0

APPENDIX D
REFERENCES

1. Bartell, Ted, "The Effect of the Energy Crisis on Attitudes and Life Styles of Los Angeles Residents." Paper presented at the American Sociological Association Annual Meeting, August 1974. Montreal.

2. Continuous National Survey, "Energy-Related Data." Chicago: National Opinion Research Center, December 19, 1974.

3. Continuous National Survey, "Energy-Related Data." Chicago: National Opinion Research Center, April 18, 1974.

4. Metropolitan Bulletin, Washington Center for Metropolitan Studies, #13, August, 1974.

5. Murray, James R. et al., "Evolution of Public Response to the Energy Crisis," Science, Vol. 184, April 19, 1974, p. 257-263.

6. Murray, James R., et al., The Impact of the 1973-1974 Oil Embargo on the American Household. Chicago: National Opinion Research Center, University of Chicago, December 1974, N.O.R.C. Report No. 126.

7. Newman, Dorothy K., "The Energy Gap." Paper presented at the Citizen's Energy Conference, Washington, D.C., February 17, 1974.

8. Newman, Dorothy K. and Dawn Day Wachtel, "Gasoline Usage and the Poor." Report prepared for the Federal Energy Office by the Washington Center for Metropolitan Studies, April 24, 1974.

9. Newman, Dorothy D. and Dawn Day Wachtel, "Energy, the Environment, and the Poor." Paper presented at the Society for the Study of Social Problems, Annual Meeting, August 1974. Montreal.

10. Newman, Dorothy K. and Dawn Day Wachtel, The American Energy Consumer. Cambridge: Ballinger Press, 1975, p. 33-124.

11. Stanford Research Institute. Patterns of Energy Consumption in the United States. Washington, D.C. U.S. Government Printing Office, 1972, p. 235.

12. Armor, David J. and A.S. Couch, Data-Text Primer. New York: Free Press, 1972, p. 64-67, 71-72, 100-108, 183-191.

13. Lansing, John B. and Gary Hendricks, Automobile Ownership and Residential Density. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1967.

14. Washington Center for Metropolitan Studies, "Let Them Freeze in the Dark," Report prepared for the Office of Economic Opportunity, February, 1974.

15. Murray, James R. et al., "Initial Report - The Household Impact and Response to the Energy Crisis." Continuous National Survey. Chicago: National Opinion Research Center, January 9, 1974.

16. Continuous National Survey, "Energy-Related Data." Chicago: National Opinion Research Center, March 8, 1974.

APPENDIX E

BIBLIOGRAPHY

Cohen, Alan S. et al., Residential Fuel Policy and the Environment. Cambridge: Ballinger, 1974, p. 212.

Continuous National Survey, "A Compendium of Questionnaire Items, Cycles 1 Through 12." Chicago: University of Chicago, National Opinion Research Center, N.O.R.C. Report No. 125, July 1974.

Cook, Earl, "Flow of Energy in an Industrial Society," Scientific American, Vol. 224, #3, p. 134-147, September 1971.

"Exploring Energy Choices: A Preliminary Report." Washington, D.C.: Ford Foundation Energy Policy Project, 1974.

Freeman, S. David, Energy: The New Era. New York: Walker and Co. 1974, p. 201-226.

King, Benjamin F. and Carol Richards, The 1972 N.O.R.C. National Probability Sample. Preliminary Draft. August 9, 1972.

Lawrence, Robert M. and Norma Wengert (ed.), The Energy Crisis: Reality or Myth? Philadelphia: American Academy of Political and Social Science, November 1973, #410.

Macrakis, Michael S. (ed.), Energy: Demand, Conservation, and Institutional Problems. Cambridge: The MIT Press, 1974, p. 375-385, 425-443, 483-498.

Metropolitan Bulletin, Washington Center for Metropolitan Studies, #10, March-April 1973.

Perlman, Robert and Roland L. Warren, Energy Impact Study. Research Supported by the National Science Foundation Division of Social Sciences (Grant GS-431898X). Florence Heller School, Brandeis University, Reports 1 and 2, 1975.

Sacco, John F. and Hatim M. Hajj, "The Impact of the Energy Shortage on Travel Patterns and Attitudes." Paper presented at the Transportation Research Board, Annual Meeting, January 1975. Washington, D.C.