

TRAVEL TRENDS AND ENERGY

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Abstract.--This paper utilizes available data sources to construct a picture of adjustment patterns in vacation/recreation travel with respect to both past and prospective fuel price/availability developments. The increases in fuel prices coupled with supply uncertainties that have occurred during the 1970's have strained the traditional vacation patterns of many American households. Changes in the location of outdoor recreation centers will follow as a consequence of the new travel patterns.

INTRODUCTION

A geographer, Prof. Wilbur Zelinsky, incisively suggested that one of the four major attributes of the American ethos was excessive mobility. This mobility consists of many components including the ubiquitous journey to work, the journey for vacation and recreation and residential relocation. It should be noted, however, that when Zelinsky wrote his book, Americans had not experienced the trauma of the 1973 OPEC oil embargo, nor was the nation under the constant spectre of increasing fuel prices, and the ever pervasive gloomy forecasts, by various organizations, of impending shortages. Basically, therefore, the environment within which American mobility patterns are generated has changed from an almost frictionless space to a constrained high-friction space. The resultant spatial patterns have to be different. The aim of this paper is to briefly identify recent changes in recreation travel within the United States and the socio-economic foundations of those changes.

CONCEPTUALIZATION OF CONSTRAINED RECREATION TRAVEL

The present pattern of recreation travel is constrained at two interrelated levels: the national availability of gasoline and the financial reallocations by individual households. The national availability of gasoline has affected travel behavior by intermittent shortages due to supply cut-offs and by more effective control over the quantity available.

While the latter has caused a gradual rise in the price of fuel, the former has occasionally created rapid price increases from which the general trends in fuel prices never completely recover. The impact of fuel price increases over a period of time has led to a change in attitudes. Gradually, more and more Americans now believe that the fuel crisis is real indeed and that technological solutions are many years from fruition. This attitude change has necessitated the search by families for ways of adjusting to these higher financial demands on the family budget.

The income of the average American family has been increasing at a rate that is below that of general inflation as well as fuel price increases. Consequently, since budgetary reallocations have not been sufficient to alleviate the financial burdens incurred by families because of these fuel price increases, many households have had, and will in the future have, to make spatial adjustments in their travel. Basically, the types of adjustments fall into four broad categories: activity space reduction, activity mode change, activity frequency reduction, and activity type change. Naturally, the combinations of these adjustment packages which an individual household adopts vary by the stage in the life cycle, the socio-economic status, the region of residence, and the changes in the price of fuel. In this paper, we will attempt to discuss the changes in vacation/recreation travel behavior using these four types of adjustments as our framework. The specific

research questions that emerge from these discussions constitute our research foci: (a) What are the trends in the changes in the recreation activity space?; (b) What are the trends in mode shifts for recreation?; (c) What are the trends in the frequency of participation?; and (d) What are the shifts in the types of activities? Together these cover the broader topic of travel trends and energy.

THE DATA

One of the most frustrating things for researchers without the funds to collect their own data is the availability of the 'right' data. In such instances, the researcher has to use the best available data and in many instances such data may not be quite adequate for the specific questions under investigation. As a result, conclusions may be tenuous and may lack comparability of scale and geography. In spite of this, the findings may be useful for the identification of basic trends.

In our search for data, the authors investigated many data sources, and finally decided that they would use information from the following sources:

1. Data from the 1975 Southeastern Wisconsin Regional Planning Commission (SEWRPC) Energy Use Travel Survey in which the authors were involved. That questionnaire was developed to determine how shortages and higher prices of gasoline have, in the past, influenced and may, in the future, influence the travel habits and patterns of households. The questionnaire was mailed to a random sample of 9,881 individuals in the Southeastern Wisconsin region during November 1975. Over 1,461 or 14.8 percent usable returns were received (Corsi and Harvey, 1978, 1979).

2. Data from the 1977 Nationwide Outdoor Recreation Survey's General Population Survey on outdoor recreation were also used. These data are based on a national sample of 4,029 households surveyed by telephone in June 1977. For this paper, we are interested in the questions dealing with the impact of present gasoline prices on the number of trips, the length of the trip, the frequency of trips, the mode used for outdoor recreation activities and the effect of possible gasoline price doubling in the next six months on the number of trips. The survey was conducted by Opinion Research Corporation of Princeton, New Jersey under contract with the Heritage Conservation and Recreation Service (formerly

the Bureau of Outdoor Recreation).¹

3. Data from the 1977 Nationwide Outdoor Recreation's Federal Estate Survey were also used. This survey, which focussed on some of the questions in the National General Population Survey, was conducted at selected recreation areas within the Federal Estate (i.e. all federally-owned land managed at least in part for public outdoor recreation activity) during the winter, summer, and fall months of 1977 by the Heritage Conservation and Recreation Service (HCERS). A total of 13,729 interviews were completed.

4. The authors also employed data from the National Travel Survey, one component of the Census of Transportation conducted by the U.S. Bureau of the Census. Its purpose is to provide statistical data on the volume and characteristics of all non-commuting trips totalling 100 miles or more from origin to destination. All surveyed households provided information on the trips taken (such as mode of travel, trip purpose, trip expenditures, etc.) by every member of the household during the relevant year as well as on the general socio-economic characteristics of the household. The results from the three surveys conducted thus far for the years 1967, 1972, and 1977 are now available (U.S. Bureau of the Census, 1977, 1979).

5. Data from a survey of households in six metropolitan centers (Chicago, Dallas-Fort Worth, Los Angeles, New York City, Phoenix, and Salt Lake City) conducted in April and May 1979 was used. Approximately 1500 randomly-selected households received the survey in the mail. After follow-up efforts, the response rate was 23.1 percent. The direct focus of the survey was on actual and potential changes in recreation travel in response to the availability and price of fuel (Burke and Williams, 1979).

6. The authors considered a sampling of 1500 residents in the State of New York during November 1979. The survey assessed

¹Both the General Population Survey and the Federal Estate Survey are components of the 1977 Nationwide Outdoor Recreation Survey. The 1977 Survey is the sixth in a series of national household surveys conducted by the Heritage Conservation and Recreation Service and its predecessors, the Bureau of Outdoor Recreation and the Outdoor Recreation Resources Review Commission. The primary purpose of the 1977 Survey was to provide background information for the Third Nationwide Outdoor Recreation Plan of which it is an appendix. The Plan's will be published by the HCERS, U.S. Dept. of the Interior in early 1980.

actual travel behavior response to the huge increases in fuel prices and supply interruptions experienced during the summer of 1979 and anticipated changes in response to additional fuel price increases and supply restrictions. Although the survey emphasis was not specifically on recreation travel, it was included as an important travel category.²

THE ANALYSIS - TRENDS IN ACTIVITY SPACE

Although the SEWRPC survey was restricted to Milwaukee, its results concerning activity space reduction recreate a backdrop for analyzing the trends in this process. Elsewhere, and using the SEWRPC data, we observed that the number of households who said they would either cancel vacation plans or take a vacation of a shorter distance increases as they were questioned about their perspective responses to increasingly higher fuel prices.

Since 1975, the price of fuel has continued to rise, and if the intended adjustment patterns reported by Corsi and Harvey hold, the proportion of the population who have effected some modifications in their recreation space should be increasing. The 1977 Nationwide Outdoor Recreation's General Population Survey of 1977, reported that 49 percent of the sample population said that the price of gasoline at that time had caused them to make shorter trips for outdoor recreation activities. In contrast 47 percent said it did not. The 49 percent positive response indicates that a reduction in the activity space for outdoor recreation is increasing. From present data we cannot accurately determine the rate of spatial shrinkage in this activity space. However, we do have information about regional and socio-economic variations in this process. Basically, the data indicate that:

i. The percent of the sample population, in each of the ten Federal regions, who said they made shorter trips than normal because of the gasoline prices at the time of the survey, was higher than 44 percent. Overall, the high ratios of people who took shorter trips is encouraging indeed; it indicates the consistent reduction in the activity space.

ii. Regarding income, the data revealed that although all income categories exhibit appreciable percentage of people who took shorter distances, lower and lower-middle income families, with incomes of up to \$15,000, showed a greater tendency to take shorter trips than families with higher incomes. For example, while 56 percent of the households with incomes between \$6,000 and \$10,000 said they took shorter outdoor recreation trips as a result of fuel prices at the time of the survey, the corresponding figure among households in the \$25,001 to \$50,000 income range was only 33 percent.

iii. The above pattern is reinforced by the data for various occupational groups. While under 50 percent of the households in the professional, managerial and clerical (sales) groups took shorter trips for outdoor recreation activities, the proportion was considerably higher for the other occupations.

iv. Reinforcing the dichotomy between higher and lower status families in activity space modification is the tendency for a higher percentage of those with under 12 years of education to take shorter trips in response to fuel prices than of those with more than 12 years of education. The respective percentages are 57 (among those with between 9 and 11 years of education) and 39 (among those with 17 years or more of education).

v. Other interesting results from that survey include the greater tendency for people in rural areas, households with larger families and non-whites to take shorter trips because of the price of gasoline.

Although the exact yes/no ratios were consistently lower, the above general tendencies emerged from the Federal Estate Survey conducted in the same year.

Comparison of results from the 1972 and 1977 National Travel Surveys indicate convincingly the increasing importance of shorter-distance trips in the travel patterns of American households as the country moved away from an era of inexpensive fuel and abundant supplies (1972) to an era of higher prices and supply uncertainties (1977).

In 1972 trips (for all purposes, including vacation, recreation, business, etc.) with a round trip distance of between 200 and 399 miles accounted for 39.59 percent of all trips, while the comparable figure

²Mr. Davis T. Hartgen, Director of the Planning Research Unit, New York State Department of Transportation, made the results of the 1500 household survey available to the authors for this analysis. This assistance was greatly appreciated.

in 1977 was 49.51 percent -- an increase of 9.92 percentage points. Trips in all mileage categories greater than 399 miles accounted for a smaller percentage of total trips in 1977 than in 1972.

The results are even more striking when the focus is outdoor recreation trips exclusively. In 1972 trips between 200 and 399 miles made up 47.8 percent of all outdoor recreation trips, while the comparable percentage in 1977 was 60.4 percent -- an increase of 12.6 percentage points. Trips in the 400 to 599 mile category fell by 3.43 percentage points from 20.99 percent of outdoor recreation trips in 1972 to 17.56 percent in 1977. In all other mileage categories, there were a smaller percentage of the total trips in 1977 than in 1972 (Table 1).

The above patterns are repeated when either vacation trips or weekend trips are analyzed. As opposed to the Milwaukee data or the Outdoor Recreation Survey, the National Travel Survey data gives the only concrete evidence of the actual reduction in mileage driven by Americans for various trip purposes.

In a more general way, the survey of six metropolitan areas during the spring of 1979 indicated that the substantial price increases as well as supply restrictions that occurred in that year further influenced trip distances for vacation/recreation travel. In addition, the results suggested that further adverse changes in price and supply of fuel would exacerbate the trend toward shorter vacation/recreation trips.

Table 2 shows the relationship between varying fuel price levels/supply restriction programs and vacation travel distances. About one half of the respondents who had travel plans at the time of the survey said they would not travel if fuel prices increased dramatically and/or restrictions were placed on supplies. Of those continuing to travel, a higher percentage would take shorter as opposed to longer trips. At currently pricing levels, 8.6 percent of the respondents said that their vacation trips involved less than 100 miles. However, if gasoline prices rose to \$2.00 a gallon or rationing occurred, the corresponding percentages would be 12.1 and 11.2, respectively, including the approximately 50 percent who would stop traveling. Thus, among the travelers, the percentage of all trips accounted for by those under 100 miles would be approximately twice the 12.1 and 11.2 figures cited above. In contrast, at current pricing levels, 21.2 percent of the respondents have vacation plans involving trips of 2000 miles or more. However, that figure drops to 4 percent as gasoline prices rise to \$2.00 a gallon and 4.4 percent under a rationing plan. Again, these

figures would approximately double if non-travelers were excluded.

Finally, the New York State survey, taken in the immediate aftermath of a period in which gasoline prices rose 35 cents per gallon and supply shortfalls reached 13 percent for limited periods, showed a willingness among households to respond by taking shorter vacation trips. Approximately 16 percent of the households said that in response to the 1979 situation of price increases/supply interruptions they had moved their vacation destinations closer to home. Households were then asked what their response would be to gasoline prices of \$1.50 per gallon and a 20 percent supply reduction (but no formal rationing program). In response to the higher price situation and in response to the supply shortfall, 22 percent of the households said they would vacation closer to home.

Although these latter percentages are somewhat lower than responses given to similar questions in the 1977 Nationwide Outdoor Recreation survey, we might make two observations. First, the New York State results may not be representative of the response. Second, between 1977 (the date of the Nationwide Outdoor Recreation survey) and 1979 (the date of the New York State survey) a number of households had already shortened their vacation distances. As a result, the percentage able and willing to make further reductions would be lessened. Unfortunately, the lack of comparability among data sets makes more definitive statements impossible.

From the available evidence, we can tentatively and very cautiously conclude that the rising price in gasoline has resulted in the substitution of nearby places for far away places for outdoor recreation. This reduction in the activity space for vacation/recreation trips reflects, conceptually, the increasing patronization of intervening opportunities and the gradual evolution of a vacation/recreation activity space characterized by extreme distance friction. With continued gasoline price increases, we expect this shrinking to continue, at least, for the next few years. This statement needs clarification. Present trends in technology as manifested in more fuel efficient automobiles and the possibility of more abundant alternative fuels would, to a limited extent, counteract the influence of rising gasoline prices. Consequently, we believe that, over time, the interaction of all these forces would produce 'optimally' compact outdoor recreation activity spaces. However, more concrete research is needed before more concrete

empirically-based conclusions are possible.

ANALYSIS-TRENDS IN ACTIVITY MODE CHANGE

One of the most persistent tendencies in studies of mode change is the general unwillingness by the majority of Americans to give up the family automobile for recreation activities. The flexibility, privacy and comfort of the automobile over other modes explains, in part, this persistency. After the OPEC embargo, all the studies on mode change confirmed this persisting tendency. HCRS's 1977 surveys (the Federal Estate Survey and the General Population Survey) indicate that although the proportions of the population in various geographic and socio-economic groups that increased their use of public transportation for outdoor recreation are high, the shifts are not as dramatic as in the case of activity space reduction.

The results of the General Population Survey showed that only 15 percent of those surveyed said that the price of gasoline at the time of the survey had caused them to use public transportation for outdoor recreation in contrast to the 47 percent who made shorter trips. However, such variables as income, family, and race seem to influence the propensity to utilize public transportation more frequently. Individuals in the lowest income brackets were more likely than those in the higher income brackets to utilize public transportation for outdoor recreation travel. While 22 percent of individuals with family incomes under \$6,000 said they used public transportation more frequently as a result of higher prices, the matching figure among those with income between \$25,001 and \$50,000 was only 9 percent. In addition, while only 12 percent of those in family units of two members said they used public transportation more frequently, the comparable figure among those in family units of seven or more members was 27 percent. Finally, while only 12 percent of the white respondents said they used public transportation, the matching figure for blacks was 33 percent.

Results from the 1972 and 1977 National Travel surveys reinforce the argument that fuel price increases/supply uncertainties have not separated Americans from their automobiles. In 1972, 94 percent of all outdoor recreation trips were by the auto-truck mode. By 1977, this percentage had shown only a slight decline to 91 percent. This change was accounted for by slight gains by the bus, train, and airplane modes. In 1972 these modes were involved in 1.8, 0.1, and 3.2 percent, respectively, of the outdoor recreation trips. By 1977, these percentages increased to 3.6, 0.2, and 3.9 percent,

respectively. The doubling in the percentage of outdoor recreation trips accounted for by the bus and train modes, while of importance, are small in magnitude compared to total travel. The unmistakable overall conclusion from the two surveys is that through 1977 Americans preference for the automobile for vacation/recreation travel remained firm.

Results from the survey of households in six metropolitan areas during 1979 supports the proposition that the automobile/recreation vehicle is the dominant mode for vacation/recreation travel. Table 3 clearly shows that additional fuel price increases above the current levels at the time of the survey would bring about major changes in the decision of households to travel and only modest increases in the use of public transportation. Thus, the use of airplanes increases from 19.9 percent of the respondents with the level of gasoline prices at the time of the survey to 23.9 percent with gasoline at \$2.00 per gallon. At current gasoline price levels, 2 percent of the respondents use trains for vacation travel, according to survey results. This figure increases to 3.3 percent as the price of gasoline increases to \$2.00 per gallon. Somewhat surprisingly, data in Table 3 shows no increase in the percentage of respondents utilizing the bus for vacation travel as the fuel prices increase to the \$2.00 per gallon level. These results confirm the contention that public transportation modes will receive only modest increases in use as fuel prices increase with respondents preferring to cancel plans rather than to adopt alternative modes.

The questionnaire for those in the six metropolitan areas also examined the influence of higher fuel prices accompanied by a general rationing program limiting each vehicle to 40 gallons per month. The effects on mode choice for vacation travel reinforce the patterns observed in response to the price increases without a rationing program. The major differences are that the decision to cancel vacation plans is selected by a higher percentage of the respondents and that the decline in the rise of recreation vehicles is even more pronounced than the decline in automobile use. Indeed, with a rationing program and \$2.00 per gallon gasoline prices the percentage of respondents using pickup campers, motor homes, and travel trailers declines to 0.0, 0.3, and 0.7 percent, respectively. These findings have special significance to the recreational vehicle industry.

Finally, the New York State study showed that a moderate percentage of respondents

would utilize public transportation modes for vacations in view of recent and prospective fuel price increases and supply uncertainties. Thus, 15 percent of the respondents indicated that they used public transportation for vacations under current conditions at the time of the survey. It is important to note that the question did not indicate what percentage of these respondents would have utilized public transportation modes for vacation regardless of the energy picture. Nevertheless, the percentage suggesting they would use public transportation for vacations increased to 22 percent under a situation of \$1.50 gasoline prices and the separate situation of a 20 percent shortfall. These percentages seem to be in line with results obtained in the 1977 Nationwide Outdoor Recreation survey.

In summary, the evidence indicates that while many households may be willing to change from a large to a small compact car, or to reduce the use of recreation vehicles, the majority are not willing to sacrifice the flexibility, privacy and comfort of the individual automobile. It appears that they prefer the alternative of cancelling the trip. This trend should continue in the foreseeable future.

ANALYSIS - ACTIVITY FREQUENCY REDUCTION

In 1975, the study by Peskin and his co-workers in the upper income suburbs of Chicago observed that the gasoline shortage during the OPEC embargo caused trips to be reduced in frequency. They also observed a tendency for trips to be linked into multi-stop journeys. Expectedly, the rising price of fuel since the embargo has continued to cause many households to institute such trip modifications. This conclusion is supported by the General Population Survey which indicates that in 1977, about 47 percent of those interviewed reduced the number of their outdoor recreation trips. The geographic and socio-economic variations in the patterns of activity frequency reduction is similar to that discussed for activity space reduction. Briefly, people with higher than average reduced participation rates tend to be males, generally between 25-44 years of age, with a family income of \$15,000 or less, and with less than 13 years of education. Furthermore, they tend to be craftsmen (operatives), farmers, service-laborers and housewives. Geographically, they reside in rural areas, and tend to be non-white.

Some idea of intended reductions in the frequency of outdoor recreation activity can be interpolated from the responses given by the sample population in the General Population

Survey to the following question: "If the price of gasoline doubled within the next six months, would this be likely to limit or curtail the number of trips you might take by automobile for outdoor recreation activities?" Overall, 80 percent said they would. For all regions and socio-economic groups, at least 65 percent said they would either limit or curtail the frequency of trips; an increase of 32 percent over the situation in 1977. These changes are also evident from the Federal Estate Survey.

The survey of individuals in the six major metropolitan areas also establishes the rather dramatic effects that additional, substantial fuel price increases by themselves or combined with an overall rationing program will have on the frequency of vacation/recreation travel. Table 3 revealed that among respondents who had vacation plans, if fuel prices remained at the existing levels (Spring 1979), approximately 15 percent said they would not cancel those plans if fuel prices rose to \$1.00 per gallon. The matching percentages in the face of fuel prices at \$1.25 per gallon and \$2.00 per gallon were 32.7 and 48.4, respectively.

The combination of higher fuel prices and a rationing program would produce even more dramatic effects on travel decisions. Indeed, with the introduction of a rationing program and no change in fuel price levels, 20 percent of the respondents would cancel their vacation plans. As fuel prices increase to a level of \$1.25 per gallon and \$2.00 per gallon, the corresponding percentages increase to 44.4 and 55.5, respectively. Indeed, under a general rationing program, individuals noted a preference for using their fuel supplies for work travel rather than saving them for vacations. Over 63 percent of the respondents said they would utilize their supplies for work travel rather than for recreation travel, while only 28 percent said they would not use their limited supply in that fashion. Unfortunately, the survey did not question respondents about the existence of alternatives for using their limited supplies for the journey to work. We might hypothesize that a higher percentage of those with alternatives would save fuel for recreation travels than of those with no alternatives.

The New York State survey revealed that 16 percent of the respondents said that cancellations of vacation plans was one change they had made in response to the fuel price increases during 1979. The percentage indicating that they would cancel vacation plans remained at 16 percent

in the event of fuel prices at \$1.50 per gallon and increased to only 18 percent in the event of a 20 percent supply reduction.

Again, these results differ somewhat from those presented in the six metropolitan area survey. Indeed, the percentage noting an intention to cancel vacation plans in New York State is quite a bit lower than the percentage of respondents in the six metropolitan areas giving such an indication. Yet, between the Spring of 1979 (when the six major metropolitan area survey was taken) and October of 1979, \$1.00 per gallon fuel prices became a reality. As a result, in October 1979, \$1.50 gasoline prices did not seem as drastic as they might have in May 1979. Indeed, the differences may reflect the general tendency for households to be more likely to indicate changes in response to hypothetical higher gasoline prices than to actually make those changes when the higher prices become a reality. In addition, the differences may be due to the differences between New York State residents and those in the six metropolitan areas.

The above discussion indicates that we would expect, with future increases in the price of gasoline and/or with the adoption of rationing programs, that activity frequency reduction would continue, although the specific magnitude of the reduction has not been definitively established. In many urban areas, such reductions may necessitate more pressure on urban forest resources and urban neighborhood parks.

ANALYSIS - ACTIVITY TYPE CHANGE

Activity substitution usually occurs either because of changes in the life cycle or because of economic factors such as cost of the equipment, cost of transportation and cost of participation. It can also occur because of changes in occupation or residential relocation. For the topic under study, cost of transportation, which directly impacts on other costs, is the primary consideration. Because of the increasing gasoline prices, we expect an increase in the number of people who have changed their outdoor recreation activity set. However, very little data are available on this very important topic. The following paragraphs summarize some of the facts that have been established.

Table 4 presents data from the National Travel Surveys regarding mode selected for outdoor recreation in 1972 and 1977. The data indicate that a substantially lower percentage of such trips involved an auto/truck with camping equipment in 1977 than in 1972. This mode accounted for 30.09 percent

of the trips in 1972, but only 17.85 in 1977 - a decline of 12.24 percentage points. The decline in significance of the auto/truck mode with camping equipment, largely offset in the growth of the auto/truck mode without camping equipment, might be explained in part by the increasing importance of shorter trips for outdoor recreation in 1977 over 1972. Perhaps, with reduced trip distance there was a lessened tendency to bring camping equipment along. Unfortunately, more definitive statements about the significance of these findings concerning changing types of recreation activities is impossible given the data limitations.

A second fact concerning changing types of recreation activities in response to higher fuel prices/uncertain supplies is the decline in recreation vehicle sales in response to dramatic shifts in the price/availability picture. Thus, in the immediate post-embargo days, the sale of recreation vehicles fell by 40 percent (1972 vs. 1974 sales). Although sales gradually increased in 1974/1975, it was not until 1976 that they reached pre-embargo levels. The same shock waves hit the industry during the early part of 1979 as fuel prices increased sharply and spot shortages developed. Sales plummeted 50 percent in 1979 over the 1978 period.³ Although there are projections of slight sales increases during 1980, it appears that the rebound process will be slow and dependent upon the avoidance of additional shock waves.

Yet, this scant data does not directly address the important question of how individuals have changed their activity patterns in response to recent events. This remains a major research gap as yet unaddressed in the existing literature.

CONCLUSIONS

During the 1970's, the nation faced two traumatic experiences with respect to fuel prices and availability. First, during the Fall of 1973 and Winter of 1974 in the aftermath of the Arab oil embargo, gasoline prices nearly doubled and lines developed as significant supply shortfalls occurred. Then, during the Spring and Summer of 1979,

³Data on recreation vehicle sales and forecasts taken from: "Marketing Report," Recreation Vehicle Industry Association, Chantilly, Va., 1979. Mr. W.R. Garpow provided a copy of the report to the authors. His insights concerning the recreation vehicle industry were also most informative.

after four years of relatively minor price increases and limited supply problems, gasoline prices increased by at least 35 cents per gallon and supply shortfalls of 20 percent occurred in some areas. By utilizing available data sources, we have attempted to construct a picture of adjustment patterns in vacation/recreation travel with respect to both past and prospective fuel price/availability developments.

As summarized in Table 5, the four adjustment packages discussed in this paper have been and would be used in varying degrees. The most significant adjustments would be in the activity space reduction. An important component of these changes would be the gradual emergence of strong regional outdoor recreation centers resulting in the replacement of the present three-tier hierarchy (national, regional, and local recreation centers) by a two-tier hierarchy (regional and local recreation centers). In this process, the forest resources around large metropolitan areas would be in increasing demand.

As noted, data from existing surveys give a clear indication that there has been only a slight to moderate shift to various forms of public transportation for recreation travel. Yet, the data suggest that lower income households as well as younger individuals are willing to utilize public transportation for vacation/recreation travel. Unfortunately, affordable public transportation is generally not available to recreation sites. Thus, growth in public transportation among these population segments may be a function of government programs to provide energy-efficient forms of low-cost public transportation -- primarily bus transportation -- to increasingly more popular recreation sites in proximity to major metropolitan areas.

Also, prospects for recreation vehicles are not bright in the immediate future. Sharp fuel price increases coupled with supply interruptions have severely affected recreation vehicle sales. Long-term prospects for recreation vehicles are dependent upon improvements in their fuel efficiencies or changes in their use by households. For example, households may leave the vehicles in proximity to recreation sites and utilize their more fuel-efficient autos to travel to their recreation vehicles. This contrasts sharply with the current practice of driving the recreation vehicle from origin to destination. Such a practice would also limit the household to a specific recreation site. Other expected changes are summarized in Table 5.

The ability to forecast trends in recreation/vacation travel in response to higher fuel prices and/or supply uncertainties is hampered by limited data sources. Although certain trends emerge, many questions are left unanswered. Thus, survey respondents have been consistently stating that their vacation/recreation trip distances are decreases in response to fuel price increases. Indeed, the Census of Transportation showed that a substantially higher percentage of the recreation trips in 1977 than in 1972 were for shorter distances. Yet, the data give no picture of the specifics of the shorter trips. Are households focusing their recreation/vacation trips on regional/metropolitan sites exclusively? Alternatively, are they eliminating only the yearly trip to a national site, but traveling the same amount during the rest of the year? Do the changes in distance traveled for vacation/recreation travel mean a change in activities engaged in as well?

At present, although data sources have provided us with some basic information on trip distances, trip frequencies, and mode choice they do not enable us to answer the above questions. Yet, effective recreation planning during the 1980's requires answers to such detailed questions. To adequately answer such inquiries, data needs to be gathered about vacation patterns over time from the same households. In the absence of such detailed information, many of the planning assumptions and resource allocations may be inappropriate.

Americans place a high value on outdoor recreation. Results from the 1977 Nationwide Outdoor Recreation Survey showed that 57 percent of the respondents viewed outdoor recreation as very important while an additional 29 percent viewed it as somewhat important. However, the increases in fuel prices coupled with supply uncertainties that have occurred during the 1970's have strained the traditional vacation patterns of many American households. Alleviation or mitigation of such strains requires effective planning based upon data that is currently not available. Until such data gaps are closed, existing sources must be utilized to the extent possible to give indications of likely responses to continued fuel price increases and supply uncertainties.

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Table 1.--Outdoor Recreation Trips, Distance Traveled, 1972 vs. 1977.

Round Trip Distance	% of Trips		Difference 77 vs 72
	1972	1977	
200 to 399 mi.	47.80	60.40	+12.60
400 to 599 mi.	20.99	17.56	-3.43
600 to 799 mi.	10.60	6.23	-4.37
800 to 899 mi.	4.84	2.82	-2.02
1,000 to 1,999 mi.	6.82	5.35	-1.47
2,000 mi. and above	4.31	3.86	-0.45
Outside U.S.	4.64	3.78	-0.86

Source: U.S. Bureau of Census, 1977, 1979.

Table 2.--Relationship Between Fuel Price Levels/Supply Restriction Programs
and Vacation Travel Distances - Major Metropolitan Areas Survey.

Travel Distance*	Price Levels/Supply Restriction Programs						None Available on Weekend
	Current Pricing	\$1.00/ gallon	\$1.25/ gallon	\$1.50/ gallon	\$2.00/ gallon	40 gal./ vehicle/ month	
Less than 100 mi.	8.6**	8.5	7.6	8.5	12.1	11.2	13.4
100 - 249 mi.	9.5	12.9	8.9	6.7	7.1	9.4	9.4
250 - 499 mi.	21.3	18.8	16.1	13.4	10.7	13.8	12.5
500 - 999 mi.	18.1	17.0	14.7	9.4	6.7	8.0	7.2
1000 - 1499 mi.	12.7	10.7	6.3	4.9	2.7	3.6	4.0
1500 - 1999 mi.	8.6	7.2	4.0	1.3	1.8	1.8	3.1
2000 - 2999 mi.	11.3	8.9	3.1	1.3	1.3	2.2	2.7
3000+ mi.	9.9	8.0	6.0	3.6	2.7	2.2	2.2
Won't Travel	0.0	8.0	33.3	50.9	54.9	47.8	45.5

*Only respondents who had travel plans at time of the survey were included.

**Numbers indicate percent of households responding in the given categories.

Source: Burke and Williams, 1979.

Table 3.--Relationship Between Fuel Price Levels and Mode Choice for
Vacation Travel - Major Metropolitan Areas Survey.

Mode Choice*	Current Levels	Fuel Price			
		\$1.00/ Gallon	\$1.25/ Gallon	\$1.50/ Gallon	\$2.00/ Gallon
Automobile	60.5**	48.4	31.4	20.4	16.2
Pickup Camper	4.9	4.6	1.3	1.3	1.0
Motor Home	4.2	3.9	2.9	1.3	1.3
Travel Trailer	5.2	4.6	2.6	1.6	1.3
Motorcycle	1.0	1.9	2.0	2.3	2.3
Plane	19.9	18.3	21.9	23.5	23.9
Bus	2.3	1.3	2.3	2.6	2.3
Train	2.0	2.3	2.9	2.9	3.3
No Travel	0.0	14.7	32.7	44.1	48.4

*Only respondents who had travel plans at time of the survey were included.

**Numbers indicate percent of households responding in the given categories.

Source: Burke and Williams, 1979.

Table 4.--Outdoor Recreation Trips, Mode Selected, 1972 vs. 1977.

Mode of Transportation	% of Trips		Difference 1977 vs. 72
	1972	1977*	
Auto/Truck w/o Camping Equip.	63.96	73.31	+9.35
Auto/Truck w Camping Equip.	30.09	17.85	-12.24
Bus	1.82	3.59	+1.77
Train	0.10	0.21	+0.11
Airplane	3.17	3.93	+0.76
Other	0.86	1.11	+0.25

*In 1977 trips in which different modes were used going and coming were categorized separately. This procedure was not utilized in 1972. As a result, for comparability, such trips were excluded from tabular presentation.

Source: U.S. Bureau of Census, 1977, 1979.

Table 5.--Gasoline Prices/Availability and Outdoor Recreation Activities - The Future.

Type of Adjustment Package	Attribute	Present	Future
1. Activity Space Reduction:	Shape	Shrinking	Optimal Compact Shape
	Tendency	Intervening Opportunities	Distance Decay
	General Pattern	National/Regional Sites	Regional/Local Sites
	Mode Efficiency	Increasing Importance of Fuel-Efficient Cars	Further Increases in Fuel-Efficient Cars/Technological Breakthroughs
2. Activity Mode Change:	Bus	Trace	Moderate Increase, Primarily Among Lower-Income Households
	Carpooling	Slight Increase	Some Appreciable Increase
	Train	Trace	Trace
	Air	Slight Increase	Moderate Increase, Restricted to Higher-Income Households
	Recreation Vehicles	Decline	Further Declines
3. Activity Frequency Reduction:	Periodicity	Decrease	Further Decrease
	Duration of Activity	Slight Change	Increase
	Multi-Stop Trips	Increasing	More Future Increases
4. Activity Type Change:	Rate	Increasing	More Future Increases
	Tendency	Determined by Interest	Partly Determined by Availability Nearby