CONTINUOUS NATIONAL SURVEY

Final Report

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OVERVIEW

This document summarizes the activities and accomplishments of the Continuous National Survey, a national weekly survey conducted through the National Opinion Research Center during the period of April 1973 through May 1974. The collection of CNS data and subsequent analyses discussed in this report were supported by National Science Foundation Grant # GI-34796 which included supplementary funds from the National Institute of Education and Department of Housing and Urban Development, Department of Transportation Contract # DOT-TSC-745, and Federal Energy Administration Contract # 14-01-0001-2001. The major goals of the CNS were threefold: (1) provide multiple federal agencies with a timely and flixible shared resource for gathering social data relevant to program and policy issues; (2) contribute knowledge to basic social science theory and research in the areas of community and life satisfaction; and (3) develop and implement new techniques in survey methodology that would overcome some of the pervasive problems of "onetime" surveys and also construct procedures that would support the successful administration of a continuous national monitoring system. (A detailed discussion of these goals is presented in "A National Evaluation of Community Services," Davis, 1972.)

To a certain extent, each of the three goals stated above was achieved. With respect to the first goal--collection of data relevant to social policy--the CNS was used by eight federal agencies for obtaining information on public attitudes toward issues relevant to both short-term and long-term policy planning; and the CNS data had at least one noticeable direct impact on policy making--the decision to adopt a revised Daylight Saving Time schedule. The second goal--contribution to basic social science research--was accomplished through analyses of the dynamics of satisfaction that were presented in the form of papers and numerous conferences:

"The Causes of Satisfaction" (Murray, 1974), "The Structure of Well-Being: Form and Stability Over Time" (Burt, Minor, and Murray, 1975), "Subjective Indicators of the Quality of Life in U.S. Communities" (Morgan, 1975), "A National Evaluation of Local Delivery Systems: Analysis of Community Services" (Becker and Minor, 1975), and "Methodological Problems in Trend Data: The Dependence of Subjective Well-Being Measures on the Economy" (Murray, 1975). Achievement of the third goal--new survey methodology--was indicated by the ability of the CNS staff to develop procedures that provided for a nine-week timetable that consisted of questionnaire development, administration of interviews in the field, coding, keypunching, data cleaning, file construction, data analysis, and finally, report writing or oral presentations to clients in the form of weekly meetings. This schedule was successfully maintained during a major portion of the CNS. Another key component of the methodology was utilizing the continuous format of the survey to experiment with the structure of items. By rephrasing questions of similar substantive content, we were able to assess the influence of these changes on respondent's answers. This information should be of great value to survey research, because although most investigations do not use items that have been developed previously, they assume that similar items measure the same attitudes or behaviors. This assumption is not necessarily a priori justified, however, and there have been only a few studies that have analyzed the effects of changes in question wording (refer to Sudman and Bradburn, Response Effects in Surveys, 1974).

In the following pages the CNS will be described in detail, and in the conclusion section we will summarize the major contributions of the project.

DESCRIPTION OF CNS DATA SET

Sample Design

The selection of households and individuals for the CNS was based on the NORC Master Probability Sample of Households--a multistage, stratified, full-probability sample of all persons, 18 years of age and older, living in households within the 48 contiguous United States. In the first

stage of sampling, which took place in 1972, 101 Primary Sampling Units (counties or groups of counties) were selected. Within each of these selected PSUs, two additional stages of sampling were employed to select six ultimate segments (portions of enumeration districts or block groups).

Within each ultimate segment, a listing of all dwelling units (DUs) was made by the NORC field staff. Specific sample addresses were selected by appropriately sampling from these ultimate segment listings. To insure against "frame bias" arising from DUs being missed at the time of listing, or coming into existence after that time, NORC regularly employs a half-open interval technique that uniquely links each unlisted DU to a DU for which there is a listing. Within each selected DU, a single respondent is selected with equal probability from a listing of all eligible respondents.

Each week, interviewing was conducted in approximately one-quater of the 606 ultimate segments. The allocation of these segments was done in such a way that: (1) each segment fell into the sample every fourth week; (2) each week, interviews were conducted in either one or two ultimate segments of each PSU; and (3) within any consecutive two-week period, exactly three segments from each of the 101 PSUs were in the sample.

The allocation of segments to weeks was accomplished by procedures that permit a sample from a single week to be treated as an individual probability sample of all U.S. households. In addition, the sum of any number of weekly samples (say, from week t to week t + k) can be viewed as a proper probability sample of all U.S. households.

Each weekly sample of households constitutes an essentially self-weighting sample of all U.S. households. When the unit of analysis is the individual, the sample must be weighted to yield unbiased estimators because the probability of selection for individuals within households depends on the total number of eligible individuals within the household.

Sampling errors. We use the concept of design effect to discuss the sampling errors of estimates derived from the CNS. Design effect (DEFT) is the ratio of the actual sampling variability of the sample-derived estimate to the sampling variability that would have resulted if the sample design had been simple random element sampling. Although DEFT is influenced by all of the departures of the sample design and

estimation procedures from self-weighting simple random sampling (that is, stratification, clustering, weighting, and so forth), we have found that the major influence on DEFTs (for single proportions) in the CNS design seems to be effective ultimate cluster size. Numerous computations have confirmed our expectation that most of the reported attitudes and experiences show rather high intraclass (cluster) correlations. Fortunately, effective ultimate cluster size is close to unity for both single weeks and successive periods of four weeks. Since interviewing was administered in the same ultimate cluster every four weeks, the design effect for differences between monthly periods was appreciably lower than the design effect for a single four-week period.

Field Period and Completed Cases

The field period of the CNS extended from April 13, 1973 to May 30, 1974. Approximately 170 interviews were completed each week, or 680 in each cycle. (A cycle is an aggregation of four weeks that usually corresponds to a specific calendar month.) Although an interview with a specific respondent had to be completed during the week he or she fell into the sample, we were able to obtain an average completion rate of approximately 75 per cent.[1] This relatively high percentage maintained the full probability nature of the sample structure. Also, with the exception of sex, comparison of the distributions of demographic characteristics of CNS respondents with the demographic characteristics of the American population, as measured by the 1970 Census, indicates only minimal discrepancies (see pages 157-163, NORC Report No. 126, Murray, 1974). Findings from the analysis of data from the CNS sample should therefore be generalizable to the entire U.S. population.

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[1] Refer to the Appendix for a distribution of completed cases across PSU-segments and also by week.

Content of the Interview

The CNS questionnaire required approximately seventy-five minutes to administer. Each questionnaire contained three distinct parts: (1) a set of items referred to as the "screener," consisting of information about the interviewer's attempts to contact the respondent, and also the household enumeration; (2) interviewer ratings, a series of questions answered by the interviewer about the characteristics of the respondent's dwelling unit and neighborhood, such as the availability of community services and the physical quality of specific attributes (e.g., roads); and (3) the main section of the questionnaire, which contained questions answered by the respondent.[2]

Almost 60 per cent of the main section of the questionnaire was changed every four weeks (cycle). The items that appeared in all cycles included questions about demographic characteristics, general quality of life, neighborhood conditions and community services (see "NORC" items in NORC Report No. 125). The portion of the questionnaire that changed every four weeks consisted of items developed for various government agencies. The specification of topics and informational needs was the responsibility of the participating agencies, whereas the development of the actual questions was the responsibility of the CNS staff. Government agencies that participated in the data collection phase of the CNS were: the U.S. Department of Agriculture, the Food and Drug Administration, National Institute of Education, U.S. Department of Housing and Urban Development, U.S. Department of Transportation, Commission on the Review of the National Policy Toward Gambling, Office of Management and the Budget, and the National Science Foundation-RANN. NORC Report No. 125 (Murray, 1974) presents the questions used in the CNS categorized by the federal agency that initiated the topic. Table 1 shows the distribution of agency-specified items over the twelve field periods.

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[2] A complete listing of the items included in the CNS questionnaires is presented in NORC Report No. 125, A Compendium of Questionnaire Items: Cycles 1 Through 12, Murray, 1974.

Table 1

Cycle	Date	Agency
1	April 13, '73 - May 10, '73	USDA, NIE, HUD, DOT, OMB
2	May 11, '73 - June 7, '73	USDA, NIE, HUD, DOT, OMB
3	June 8, '73 - July 5, '73	USDA, NIE, HUD, DOT, OMB
4	July 6, '73 - August 2, '73	USDA, NIE, HUD, DOT, OMB
5	August 31, '73 - September 27, ' 73	USDA, NIE, HUD, DOT, OMB, GAMBLING COMM.
6	September 28, '73 - October 25, '73	USDA, NIE, HUD, DOT, OMB, GAMBLING COMM., FDA
7	October 26, '73 - November 22, '73	NIE, HUD, DOT
8	November 23, '73 - December 20, '73	NIE, DOT, OMB
9	January 4, '74 - January 31, '74	NIE, DOT
10	February 1, '74 - February 28, '74	DOT
11	March 15, '74 - April 11, '74	NIE, HUD, DOT
12	May 3, '74 - May 30, '74	NIE, HUD, DOT, NSF-RANN

Dimensions of the Data Set

Four dimensions best characterize the CNS data set: units, geographical aggregations, time, and source. The defining aspects of each of these dimensions are listed below.

1. Units	2. Geographical Aggregations	3. Time	4. Source
Individual	Segment	Week	Interviewer
Household	Primary Sampling Unit	Month	Respondent
Neighborhood	Census Region	Season	Other
	Nation	Year	

The complex structure of the CNS allowed for maximum flexibility in the nature and purpose of data collection and analysis. The multi-unit approach yielded data of an ecological nature and permitted a systems analysis, where exogenous variables (attributes of the environment) can be related to endogenous variables (such as individual attitudes). The national probability structure provided for several geographical aggregations for purposes of examining the possibility of various

dynamics operating at each different level--for example, residential preferences (see Morgan, 1975). The flexibility in the monthly questionnaire design permitted the development of new questions based on information collected in previous months. The time dimension also facilitated the development of causal modeling, scrutiny of stability issues, and the examination of the effects of external events and seasonal factors. The advantages of collecting data from multiple sources are obvious. Knowledge about the time and location of interviews allowed for the establishment of data sets that consist of supplementary information about communities and the nation, such as characteristics of local delivery systems and economic data (e.g., unemployment rates and consumer price indices).

Data Files

The construction of the CNS data files was guided by two major considerations. The first was the complex nature of the original data. Since there were over 2,800 questions, or parts of questions, asked in the 12 cycles--some of which required variable-length responses, and some of which were embedded within complicated "skip patterns"-- it would have been virtually impossible for an individual not intimately familiar with the data base to process the original cards or data tapes. The second consideration was the nature of the analytic demands. These consisted not only of internal objectives, but also of lengthy feedback programs to government agencies. For these reasons, it was decided to construct "system files" that would be substantially self-documenting for a relatively well-known statistical program. The SPSS (Statistical Package for the Social Sciences, Nie et al., 1975) program was chosen both because we had access to the SPSS project staff based at NORC and because the program provides for writing out cases in a user-defined format for analysis by other statistical programs. The SPSS files also have the advantage of containing "self-documenting" information such as variable names and category labels, and the program automatically processes missing values, thus saving the user from tedious and confusing documentation.[3]

[3]The overall structure of the CNS system files is completely documented in a system files manual presented in the Appendix. It is sufficient to note here that the system files were organized according to groups of items as requested by the participating agencies and are, therefore similar in structure to sections in NORC Report No. 125.

PAPERS, REPORTS, ARTICLES AND CONFERENCES

The analysis of the data collected from the Continuous National Survey (CNS) was organized within three general areas: (1) the examination of a spectrum of policy issues as defined by specific governmental agencies that participated in the data collection phase of the CNS, such as the National Institute of Education, the Department of Housing and Urban Development, and the Department of Transportation; (2) public reaction to the energy shortages of the winter of 1973-1974; and (3) reports of satisfaction with various aspects of life, such as leisure activities, financial situations, and community attributes, for example, health services and physical characteristics of the neighborhood.

Statistical Reports

Eight federal agencies utilized the CNS as a vehicle to collect public opinion data for input into short-term and long-term policy planning. The most commonly employed form of agency feedback was statistical reports that consisted of extensive investigations of relationships between policy items, demographic profiles, and other relevant variables. The statistical techniques utilized in these reports included marginals, cross-tabulations, multiple regressions, and multivariate analysis of variance. Agencies that received these reports, persons who served as major contacts in these agencies, and the policy topics analyzed are listed below:

1) Food and Drug Administration
   (Deanne Knapp)

   Knowledge about food and nutrition; use of dietetic drugs; experiences with diagnostic procedures that employed radioactive drugs or chemicals.

2) Department of Agriculture
   (Lynn Daft)

   Sources of information about food and nutrition; expenditures on home improvements; food stamps; inflation, specifically food prices; international food aid programs; agricultural publications; national subsidy of farmers.

3) Commission on the Review of the National Policy Toward Gambling
   (James Ritchie)

   Attitudes toward legalization and gambling behaviors.

4) Office of Management and Budget
(Paul Planchon, Susan Hickey)

Statistical Policy Division--leisure activities.
Energy Task Force--complete set of energy-related issues.

5) National Institute of Education
(Paul Hill)

Goals for public high school education; community control of public education; career counseling programs; courses taken outside regular school programs; job skills learned in high school that were useful in one's first full-time job; child's experiences with problems in school; public concepts of the values and costs of higher education.

6) Department of Housing and Urban Development
(Harold Goldblatt)

Evaluations of the physical and social attributes of neighborhoods; local population growth; residential preferences; perceptions of local and national governments.

7) National Science Foundation-RANN
(James Cowhig)

Attitudes toward alternative energy sources; evaluations of "local delivery systems"--community services.

8) Department of Transportation
(Allan Pisarski)

Complete set of energy-related issues and transportation behaviors use of public transportation, trips to work, daily trips (purpose and mode), car pools, parking, and daylight saving time.

In addition to the above statistical reports, we have also supplied agencies with papers that contain discussions of the empirical findings and implications of these results for policy recommendations.

National Institute of Education

In the last cycle of the CNS (May 1974) several items were included that had been previously asked in a survey developed at ISR, University of Michigan (Campbell and Eckerman, 1964). These items focused on the public's perceptions of the costs and values of higher education. The reuse of this exact set of items, ten years later, provided us with a rare opportunity to examine changes in public attitudes toward a central institution of this society. The original data collection and subsequent analysis of these issues occurred during a period in which higher educational institutions were experiencing strong social and economic support. Since the boom years of the early 1960s, however, there

have been numerous indications that this support has diminished, and other societal events have occurred which suggest that there have been changes in the public's perception of higher education. We have completed a preliminary analysis of the changes in the distributions of responses to these items (Minor and Murray, 1974) and plan to further analyze these data in an attempt to explain changes in public attitudes by examining not only economic factors, such as trends in tuitions, expenditures, unemployment, and enrollments, but also social factors, such as student demonstrations and the women's liberation movement.

Department of Housing and Urban Development

We have developed three papers for H.U.D. The first paper, "The Causes and Effects of Expressed Preference for Residential Location," (Morgan and Murray, 1974) discusses factors that are associated with the desire to live elsewhere. The data employed in this analysis were responses to several questions about preferences for residential location with regard to region, type of community, and other characteristics of the desired place to live. Using a system of multiple regression models, we discovered that the desire to live elsewhere is strongly associated with dissatisfaction with neighborhood and dwelling unit, but only slightly related to physical characteristics of the respondent's community. Findings from this analysis have been presented at the Mid-Continent Regional Science Association Annual Meeting, April 1974, Champaign-Urbana, Illinois, and at the Association of American Geographers, October 1974, Ball State University, Muncie, Indiana. A revision of this paper has recently been published under the title of Patterns of Population Distribution: A Residential Preference Model and Its Dynamic (Morgan, 1975).

A second paper, "Subjective Indicators of the Quality of Life in U.S. Communities" (Morgan, 1975), examines the distributions of four sets of "quality of life" indicators over different types of communities (e.g., large central cities, small cities, and open places). The purpose of this paper was to rank the types of communities in terms of overall "quality of life" as measured by residents' subjective evaluations of life areas, physical attributes, municipal services, and facilities and amenities of

the local community. Morgan found that although there is large variance in the satisfaction domains across communities, the people residing in large central cities tend overall to be the most dissatisfied group.

A third paper, (Jacobsen, 1975) focuses on local population growth issues. This analysis examines perceptions of present and future growth, evaluations of these perceptions, and positive and negative reasons for these evaluations. In this paper we explored the relationships among these population-growth variables and initiated attempts to link systematic associations with other variables, such as demographic and geographic characteristics, into a model that can be utilized in growth policy decisions. Perceptions of population growth were shown to be statistically related to evaluations of neighborhood characteristics and, therefore, may prove to be an important set of variables in the analysis of community satisfaction.

National Science Foundation-RANN

A significant portion of the CNS was related to the characteristics and evaluations of "local delivery systems," or community services. Services about which we collected extensive information included health centers, recreational facilities, police and fire departments, grocery stores, transportation facilities, and public schools. Our analysis (Becker and Minor, 1975) of these data focuses on three questions: (1) "What are the patterns of use of these services?"; (2) "What are the distributions of the evaluations of these services?"; and (3) "Is it possible to construct an empirically testable model that explains the distribution of evaluations?" This paper includes not only an empirical analysis of these three questions, but also a general discussion of conceptual and methodological issues facing investigators who attempt to establish a set of community indicators, and in particular, service-related indicators. Several of the preliminary findings from these data were discussed at the New Communities Policy Applications Workshop, November 1974, University of North Carolina, Chapel Hill, North Carolina. Community services are an important aspect of neighborhood life, and the analysis of this set of data provided valuable information for the examination of an overall structure of satisfaction.

Public Reaction to Energy Shortages

A large part of the analytic efforts of the CNS staff has been an examination of public reaction to the energy shortages of the winter of 1973-74. Questions focusing on public reaction to energy shortages were included in CNS questionnaires from June/July 1973 to May 1974. During the period of November 1973 to April 1974, over half of the content of the questionnaires was related to such issues as exposure, expectation, evaluations, policy preferences, and conservation behaviors. The data set generated from these questionnaires provided the most thorough and systematic perspective on the impact of the energy shortages on the public during this period. Our analysis and presentation of the CNS energy-related data has taken the form of reports, articles, papers, conferences, and a monograph.

Weekly and Monthly Reports. In the first weeks of December 1973, there was a demand from the Department of Transportation, the Office of Management and Budget Energy Task Force, and the Energy Policy Office of the Department of Treasury for quick analysis and comprehensive but succinct interpretation of the energy data. In the early stages of data collection and subsequent analyses, the delineation of conceptual areas and specifications of important issues within these areas was often exploratory--the incidence and severity of shortages and the consequent public reactions were totally unpredictable. However, as the experience and awareness of shortages became a reality to a large segment of the American population, and we became more familiar with the nature and impact of the shortages, six major areas of concern were defined: exposures, evaluations, personal reactions, policy preferences, expectations, and voluntary conservation behaviors. These issues provided the organizing guidelines for the development of the weekly and monthly reports.[4]

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[4]Refer to the Appendix of NORC Report No. 126 for an example of this type of report and to the list of CNS papers for the exact dates of these reports.

Articles. The first article published about the energy data, "Evolution of Public Response to the Energy Crisis" (Murray et al.), was solicited for presentation in a special issue of Science (April 19, 1974) devoted entirely to energy-related topics. Unlike the other articles in the Science issue, which deal primarily with policy statements from government officials or discussions of the physical characteristics of energy systems, our paper presents an analysis of survey data collected from November 1973 through February 1974. The existence of the CNS permitted the collection of data during the "crisis" period rather than some time after the event, as is typical of most social science data collection efforts. The mode of analysis is exploratory, although log linear modeling (Goodman, 1973) was employed in an attempt to explain reports of conservation behaviors. The findings reveal little restructuring of the high-energy consumption lifestyle manifested by most Americans, as well as pervasive public expectations that the energy shortages were only short-term inconveniences.

A second article based on analysis of the energy data, "The Social Impact of Year Round Daylight Saving Time" (Minor et al.), appeared as a chapter in a U.S. Department of Transportation report to Congress, The Year Round Daylight Saving Time Study (Secretary of Transportation, 1974). This study provided the main source of information for the legislative decision that established a new national policy for Daylight Saving Time. Our chapter was a significant part of this report because it presented the only systematic collection of survey data spanning the period (September 1973 to May 1974) during which the American public experienced three different DST schedules, and also because it included data that focused on evaluations of YRDST, reasons for these evaluations, and reports of change in behavior attributable to YRDST. Analysis of the DST data suggested three major findings: (1) a majority of the public preferred a DST plan with eight months on DST and four months off DST (November to February); (2) opposition to Year Round Daylight Saving Time was primarily based on concern for the safety of school children; and (3) reported energy savings during the experimental Daylight Saving Time period were minimal.[5]

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[5]A more recent draft of this article appears as Chapter 3 in NORC Report No. 126.

The collection of DST data, the analysis and interpretation as presented in the report, and the consequent utilization of these findings in the establishment of energy policy afford a unique opportunity to examine the role of public opinion data in the policy-making process. Since the direct use of public opinion data in the development of social policy is such a rare occurrence, we are currently writing a paper that describes our experiences with the collection of the DST data and also our interactions with government officials who prepared the final report that was influential in determining the new DST schedule. A preliminary version of this paper "Social Data and Social Policy: The Case of Year Round Daylight Saving Time," Bradburn, 1975), was presented at the Annual Conference of the Mathematics, Computing and Statistics Applications Group of the British Sociological Association, March 1975, at the University of Kent, England.

Papers. The first interpretation of the findings from the energy data appeared as a paper entitled "The Household Impact and Response to the 'Energy Crisis'" (Murray et al., 1974). This paper summarizes the energy data collected during the last two months of 1973. The central focus of the paper is twofold: first, to assess the extent of the energy shortages, and second, to develop explanatory models for reports of discretionary conservation behaviors. The major findings of this analysis suggest that by the end of December 1973 the vast majority of the public was not only aware of the shortages, but also had direct experience with exposures to shortages (e.g., trouble purchasing gasoline), and only a very small segment of the population reported significant changes in energy consumption behaviors, such as a modal shift in use of transportation for trips to work.

A second paper, entitled "An Analysis of Conservation Behaviors" (Cotterman, 1974), was solicited by the Federal Energy Administration and subsequently incorporated into a chapter on economic and social impact which appeared in Project Independence (FEA, November, 1974). The purpose of this paper is threefold: first, to develop models that explain voluntary conservation behaviors; second, to provide information for the estimation of demand functions and price elasticities in terms of specific energy consumptions, such as gasoline, fuel oil, and electricity; and third, to

assess the relative impact of energy shortages on different income classes. The basic mode of analysis is multiple regression equations with specific examination of the shifts and differences of significant estimated parameters before, during, and after the Arab oil embargo. Four findings discussed in this paper are of particular importance: (1) large segments of the public reported conservation behaviors in areas of household consumption--heating, electricity, and in automobile use; (2) as might be expected, given the short time period under consideration and the uncertainty surrounding the future of the oil embargo, most conservation measures were of such a nature that they could be readily instituted and just as readily abandoned; (3) the effects of the crisis on more basic energy-related decisions, such as where to live, size of house, and size of automobile to purchase are largely unknown, though some clues do exist; and (4) there appear to be positive relationships between total family income and reports of conservation behaviors.[6]

Conferences. Many of the results mentioned above have been presented at three conferences. The first presentation, "Voluntary Conservation and Public Opinion from November 1973 to April 1974," was at a session entitled "Monitoring the Energy Crisis" at the American Association for Public Opinion Research Conference, June 1974, Lake George, New York. This discussion, which included the energy findings as summarized in the Science article and extended through May 1974, was structured from a social systems perspective. Examination of the public's preparedness and reactions to the energy shortages were interpreted in terms of system cohesiveness and feelings of equity. Our analysis of the data suggested that although a vast majority of the public were ignorant of the impending shortages and the possible effects of an oil embargo, the social system adapted adequately to the stresses of the "crisis" period because of widespread feelings of equity in suffering--that is, over 90 per cent of the population reported they were receiving a fair share of fuel for home heating and transportation. Only a small select segment of the population (e.g., the truckers) expressed major dissatisfaction with fuel prices and allocation procedures.

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[6]This paper is presented as Chapter 2 in NORC Report No. 126.

The second conference at which the CNS energy data were discussed was the American Institute of Chemical Engineers annual meeting, December 1974, Washington, D.C. The session, entitled "Factors Limiting the Development of Alternatives in Energy Production, Storage, and Transmission" included an interdisciplinary panel of professionals from government, the energy industry, business, the physical sciences, and the social sciences. The CNS data presented was related to public attitudes toward alternative energy sources and was collected during May 1974 (refer to NORC Report 126, Statistical Appendix, Section I). Our contribution to this conference was the general acceptance by the audience (mostly engineers) of our suggestions that energy problems (and solutions) cannot be solely defined within a technological context, but must also include a political and social perspective. This recognition implies that the development and implementation of a successful national energy policy necessarily requires the utilization of data from behavioral scientists.

A third conference at which the CNS energy data was presented was entitled "Societal Implications of Energy Scarcity: Social and Technological Priorities in Steady State and Constricting Systems," June 1975, Portland, Oregon. Our presentation at this conference, "The Social Scientist's Role in Energy Policy," was a discussion of our numerous interactions with federal energy policy makers, including problems in developing and maintaining fruitful modes of communication and other general issues surrounding the use of social data in the establishment of social policy. We suggested that there are many obstacles to successful interactions between social scientists and policy makers and that these obstacles stem, in part, from the very nature of academic and policy making (government) environments. Our basic recommendation for overcoming these difficulties requires that social scientists become more aware of the dynamics of policy decisions and that policy makers become more alert to the productive utilization of social data in their decisions. These changes will only occur if an atmosphere of respectful continuous dialogue prevails between these two groups. The energy-related problems facing this country should provide ample opportunity for experimentation with this type of mutual learning and communication.

Monograph. All of the analyses of the energy data discussed above have been organized into one monograph, "The Impact of the 1973-1974 Oil Embargo on the American Household," NORC Report No. 126, (Murray et al. 1974). The monograph was developed to provide both social scientists and energy policy makers with a summary statement of our work in this area. As indicated above, the papers and statistical reports were written for diverse reasons and directed toward different audiences. The monograph is an attempt to bring together these various analytical efforts and to present a cogent discussion that offered both a variety of perspectives on the data and levels of sophistication, in terms of statistical analysis, from straightforward marginals to complex time trends and regression equations.

Research on Satisfaction

A significant portion of our analysis of the CNS data has been focused on the examination of evaluations of life experiences as expressed through ratings of satisfaction and happiness. In addition to the papers previously described, "Subjective Indicators of the Quality of Life in U.S. Communities" (Morgan, 1975), "A National Evaluation of Local Delivery Systems: Analysis of Community Services" (Becker and Minor, 1975), and Patterns of Population Distribution: A Residential Preference Model and Its Dynamic (Morgan, 1975), we have written three other papers that present analyses of the satisfaction data.

"Causes of Satisfaction" (Murray, 1974), describes a general conceptual schema for systematizing the satisfaction ratings into a domain-attribute model. The major theoretical supposition is that satisfaction evaluations are outputs of cognitive judgements that are not only based upon the objective characteristics of the environment and life circumstances, but are also influenced by such factors as personal history, aspiration level, and current emotional state. This paper includes some prelimnary findings from a multiple regression analysis and an examination of the stability of these equations over 12 time periods (cycles). We have discovered three interesting findings in the analysis of the causal structure and stability of satisfaction with life. First, it is possible to reduce the number of parameters from a possible 72 (6 variables x 12 time points) to 38 because of a set of linear constraints on certain coefficients over time.

Second, after some reparameterization, it seems that three pairs of variables--satisfaction with work and leisure, positive and negative affect, and satisfaction with dwelling unit and neighborhood--determine satisfaction with life via the value of their differences. Third, these three sets of variables are each mutually exclusive parts of "semantically" larger domains; that is, everyday activity, non-overlapping mood states, and separate divisions of daily living/residential space, respectively. The results discussed in this paper have been presented at two conferences: NSF Workshop on Social Indicators, October 1973, Washington,D.C., and American Association for Public Opinion Research Conference, June 1974, Lake George, N.Y.

A second paper, "The Structure of Well-Being: Form and Stability Over Time," (Burt, Minor, and Murray, 1975) discusses a factor analytic approach to the issues of dimensionality and stability in the matrix of correlations among the satisfaction variables. A critical review of the literature presented in this paper suggests that the notion of unidimensionality of satisfaction as posited by utility theorists and similar alternative models of satisfaction are not adequate in explaining the full structure of these ratings. Employing methods of confirmatory factor analysis, we have discovered a four-dimensional model of satisfaction that best fits the data. The four dimensions are positive affect, negative affect, satisfaction with local issues and general satisfaction. Analysis of the stability of this model by jackknife techniques shows that these dimensions and the relevant parameter matrices are almost identical over a thirteen month period. We suggest that this type of analysis generally proves to be more informative than procedures and models that utilize unrestricted techniques in the search for latent structures. Segments of these data and analyses have been presented at a conference at the University of Michigan, Annual Conference on Social Indicators, May 1974, Ann Arbor, Michigan.

The third paper, "Methodological Problems in Trend Data: The Dependence of Subjective Well-Being Measures on the Economy" (Murray, 1975), examines the direct effects of the local economy on the subjective well-being of the local citizenry. To accomplish this analysis, we constructed a cross-sectional time-series data set in which economic and survey data are linked. The U.S. Bureau of Labor Statistics publishes consumer price

index measures and unemployment insurance statistics every month for major cities in the United States. We matched the set of cities for which both unemployment and CPI statistics were available on a monthly basis to the CNS set of metropolitan primary sampling units; 19 cities were in both the CNS and BLS sets. Using these 19 cities, we linked monthly estimates of well-being measures from the CNS with the BLS economic indicators. The resulting data file contains information on monthly estimates of aggregate subjective well-being measures that can be regressed on various economic indicators.

Four different sets of equations are estimated to predict satisfaction with financial condition, positive affect, negative affect, and happiness. Our exploratory analysis suggests that multiplicative models behave somewhat better than linear ones, and therefore the equations are presented in log form. Examination of the estimated parameters from these equations suggests that satisfaction with financial condition and negative affect are not a function of local labor market conditions for the community nor the price level of the entire market basket. Equations predicting positive affect and happiness, however, do contain significant coefficients, and these variables therefore appear to be partially dependent upon the local food price index.

Many of the findings discussed in these three papers are provocative and undoubtedly yield new insights into the dynamics of satisfaction. We consider these investigations preliminary, however, and have recently submitted a proposal, "Analytic Studies of Satisfaction and Happiness" (Bradburn, Minor, and Murray, 1975), for funds to support a more thorough analysis of this unique set of data.

CONCLUSION

We feel that this project has successfully accomplished the major objectives of the NSF-RANN grant, namely that significant social data can be collected by sample survey methods within a short time period and that the data and interpretation can be supplied to relevant governmental agencies as timely inputs to policy formulation and action. These accomplishments were particularly demonstrated with the involvement of the CNS in the collection of energy-related data. During the energy crisis, federal agencies outside the HEW conglomerate were forced to deal with domestic problems on a scale and with time pressures typically reserved for times of war or great economic upheaval. During this period, data on public experiences and opinion were needed on a continuous basis both to provide inputs to policy formulation and to monitor the consequences of governmental actions. The data-generating capabilities of the CNS were unique in being able to provide such data from a national probability sample on a continuous basis and in time to be responsive to the information needs of policy makers. Without such a tool, those involved with energy policy would have had to rely entirely on limited reports from the media based on the convenient samples with which they deal, the information afforded by energy suppliers such as the American Petroleum Institute, and other informal sources that might be available. While not denying the value of such data, they cannot provide information that is generalizable to the experiences or opinions of the entire country. A true probability sample, even when small, offers the only guarantee against sample biases that are inherent in other methods of data collection. We feel proud in our demonstration that a continuous sample survey can be conducted in close cooperation with federal agencies, and that the data that we collected could help in the difficult task of managing the national energy crisis.

In addition to contributions in the area of social policy, we have also provided some new insights into the understanding of the dynamics of satisfaction. Utilizing analytic and conceptual frameworks from the sciences of geography, economics, sociology, and psychology, we have written a set of papers that present new and unique knowledge to this

buregoning field of research. The CNS data is also being used for three Ph.D. dissertations and two M.A. theses written by graduate students in the departments of Geography, Psychology, Sociology, and Political Science at the University of Chicago.

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