Public Response To

PEACETIME USES OF ATOMIC ENERGY

VOLUME I

Community Differences

By

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USES ATOMIC PEACETIME OF ENERGY

A study of people reactions and information based on a sample interview survey in comparable communities with and without major atomic energy activitives

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THE PUBLIC AFFAIRS PROGRAM

OF THE SURVEY RESEARCH CENTER

Scope

The Center's three major programs of research are in the areas of human relations in organizations, consumer behavior, and public affairs. The last program has encompassed such research as: a series of surveys on determinants of attitudes toward foreign affairs, studies of public use of the library, information and attitudes on cancer and its control, public reactions pertinent to community mental health programs, the 1948 presidential vote, public attitudes toward Civil Defense and big business as the people see it.

The Public Affairs Program is principally devoted to research on different sorts of populations — the nation and the community. The groups it treats are defined in terms of common attitudes, expectations, roles, social status or identifications. Its orientation is toward social problems and institutional functions affecting the wider society. In the study of the attitudes, motivations, and behaviors of groups of individuals, and the factors affecting these, it is hoped to provide illumination of these problems and some guidance to social action.

Staff

The present study was conducted under the general supervision of Dr. Burton R. Fisher. Dr. Fisher, Dr. Charles A. Metzner, and Mr. Benjamin J. Darsky cooperated in the preparation of Volume I of this report. Volume II was prepared by Mr. Darsky after the departure of Dr. Fisher and Dr. Metzner from the Survey Research Center. Other members of the group who contributed ideas were Dr. George Belknap and Dr. Murray Horwitz. Janet Jackson provided administrative assistance to the group.

Leslie Kish, assisted by Horace W. Mooney, was responsible for sampling plans and procedures, which involved many difficult problems. Shirley Jean Heinze, administrative assistant in the Center's Field Office, gave considerable help in formulating and pretesting the questionnaire and field instructions. The quasi-experimental design of the research required the hiring, training and supervision of many new interviewers at a number of new sample points. This work was efficiently performed under the direction of Charles Cannell by the field staff's supervisors -- Marian J. Brody, Elizabeth Cain, James Culp, Dorothy Fredenhagen, Dorothy Hendee, Mina C. Hockstad, Lillian Kleinberg, Elsie V. McKenzie, Robert Peebles, Goldina W. Powell, and Chloie Sergeant. Nancy Johnson aided in preparing the interview code and supervised coding operations.

The research reported here was conducted under contract with the United States Atomic Energy Commission. The support of the A.E.C. and the cooperation of Messrs. Morse Salisbury, John A. Derry and Howard Brown of the Commission's staff are gratefully acknowledged. Mr. Richard O. Niehoff (now of the Tennessee Valley Authority) initiated A.E.C. interest in this study while Deputy Director of its Public and Technical Information Service. He saw how social science research could be used to illuminate problems in the relations of the people to the Commission's program, and the independent value of studying public reactions to one of the many complex problems of our times.

This volume is the first of two which present different aspects of the data obtained in the Center's sample interview survey of public reactions and information with respect to peacetime uses of atomic energy. The over-all research design and study objectives are detailed in the first and second chapters of the following report. The questionnaire used is reproduced as an appendix. The present volume deals with the broad outlines of the topic -- responses to key interview questions in different communities. The aim of this part of the analysis is to test for basic differences between people in communities with a nearby atomic energy installation, and in communities selected to match the first type except for the absence of major atomic energy activity. Volume II presents the detailed analysis of individual or group differences, stressing the personal or group correlates of information, attitudes and opinions, as contrasted to the community correlates.

CONTENTS

Chapter 1

INTRODUCTION

Our society is most notable, in distinction to others which have existed, in the number and pervasive nature of the shifts which occur in it, concomitant with the introduction of new technological advances. It can scarcely be said that stable adjustments have yet been achieved to the impact of the automobile, at a time when the airplane is highly developed and itself advancing from reciprocating engines to jet propulsion. Into this society at a time of experimentation and crisis in world organization comes atomic energy, a force new to man with a potential for technological change equalled only by fire itself, and forcing recognition that some of the basic postulates of our most well developed sciences have been reformulated. How have people adjusted to this?

This is not an abstract question of social science, but like the formulations of nuclear physicists has important implications for everyday living, particularly for the new Promethei in whose hands the practical development of applications lies, and who are responsible for the introduction of these developments into the general social field of industry, war, and community living. History does not record a uniform acceptance of new things. Heliocentrism was opposed by medieval rulers, early machines were destroyed by workmen, but the wheel seems to have been widely copied without resistance, and radio made a sweeping advance into our homes -- although Darwinism and even buttons are not yet uniformly accepted in the United States. An evaluation of how atomic energy is received cannot now be predicted on the basis of present knowledge, yet this reception and the factors involved are crucial for the future of the development program.

With these broad considerations in mind, a study of information about atomic energy and reactions to it was formulated to furnish a basis for administrative decisions and to contribute to our understanding of the processes of acceptance of technological change. Obviously the direction of an information program needs these kinds of data. Also, for the planning of future work in a democratic society it is well to know what people expect or fear from such activity, especially with respect to the realism of such reactions. Particularly, if there is any fear of working with atomic energy or having an atomic energy project nearby, there is need for knowing about and understanding the bases of this reaction, because it must somehow be coped with.

The chief issues to which this study is addressed are, then:

1. Is there a social problem issuing from the nature of people's perceptions of atomic energy?

2. What are the relationships, if any, of the presence of a nearby atomic energy installation to these perceptions?

3. What other socio-psychological factors are associated with these perceptions?

It is only the first two of these that are treated in this report, which is restricted to an analysis of the data on a community basis. A second report will deal with the analysis on an individual basis to get at personal motivations and reactions.

The design used reflected the importance of the presence of an atomic energy installation to the conception of the problem by being based on areas within twenty-five miles of seven major atomic energy installations. To each of these installation areas were matched two other areas comparable in size, proportion of industrial workers, average rental, and geographic section, but not having a major atomic energy project nearby. Interviews were conducted in each area with respondents selected on a probability basis, excluding installation workers. In all, 1,276 interviews were taken in the homes of respondents, half of these being in installation areas, approximately equally divided among the seven areas, and half being in matched areas, again about equally divided among the fourteen of these. Interviewing was done in August, 1950. Additional details of the design and handling of interviews are given in succeeding chapters.

The analysis focuses on relationships and processes rather than absolute percentages because these latter may be momentary and shifting and can be understood only on the basis of as complete a picture of the structure of the situation as is permitted by the detail of the data obtained. The attempt is made to present an evaluation that will be of some lasting value, and will enable a response to the dynamics of the situation rather than to symptoms.

Chapter 2

STUDY OBJECTIVES AND RESEARCH DESIGN

A principal objective of the study of public responses to atomic energy uses was to determine what influences, if any, the presence of a nearby major atomic energy activity had on the information, opinions and reactions of people living in the surrounding area. In accordance with this objective, people living in seven areas were first selected for interview. They all lived within twenty-five miles of one of seven major atomic energy installations. For the people in each of these areas, people in two other areas having no installation were selected for interview. These two "matching areas" were chosen for their similarity to one of the "installation areas" in size, industrial composition, average rent, and section of the United States.1/ In line with the purposes of the research, employees of the Atomic Energy Commission or its contractors, as well as members of their households, were excluded from the sample.2/

PLAN OF THE SAMPLE

Communities and Community Comparisons

Selection of communities

In several cases the installation was located in an outlying section of a metropolitan area, or in a restricted area near several towns. In these situations, several communities which are part of the larger area delimited by the twenty-five mile radius from the atomic energy establishment were selected as "installation areas" and similar groups of communities matched with them. For purposes of reference throughout this report these communities are grouped under one name, the name of a principal installation in the one case and usually a county name in the case of the "matched areas".3/

The full list of reference names and the communities within which interviewing was conducted follows in Table 1. Matchings are indicated by numbers; for example: "1. Oak Ridge" is matched with "1. Chattanooga" and "1. Cincinnati".

1/ Appendix B describes in some detail the matching procedure and the considerations involved in matching. See Appendix Tables 1 and 2, pages 115-116, for the extent of matching on these community characteristics that was accomplished.

2/ Less than twenty such persons came into the sample. All were interviewed, but their responses did not appear to be distinctive in any case.

3/ Since it would be impossible to match them reasonably, and because of their very high proportion of Atomic Energy Commission contract employees, communities under A.E.C. sponsorship were not used as sampling points.

Table 1. List of Installation and Matched Areas

Installation	Number of interviews	Installation Area
1. Oak Ridge (National Laboratory, Oak Ridge, Tennessee)	94	Knoxville, Tennessee
2. Argonne (National Laboratory, Du Page County, Illinois)	112	Downer's Grove, Du Page County, Illinois LaGrange, Cook County, Illinois Lemont, Cook County, Illinois Hodgkins, Cook County, Illinois Willow Springs, Cook County, Illinois
3. Brookhaven (National Laboratory, Upton, Long Island, New York)	107	Patchogue, Suffolk County, New York River Head, Suffolk County, New York Yaphank, Suffolk County, New York Port Jefferson, Suffolk County, New York Center Moriches, Suffolk County, New York
4. Los Alamos (Scientific Laboratory, Santa Fe, New Mexico)	96	Santa Fe, New Mexico
5. Hanford (Plutonium Works, Richland, Washington)	76	Pasco, Franklin County, Washington Kennewick, Benton County, Washington
6. Berkeley (Radiation Laboratory, Berkeley, California)	84	Berkeley, California
7. Ames (Laboratory, Ames, Iowa)	88	Ames, Iowa
	657	
First Matched Area		Survey Communities
1. Chattanooga	46	Chattanooga, Tennessee
2. Cook	52	Skokie Village, Cook County, Illinois Northbrook Village, Cook County, Illinois Lake Zurich Village, Lake County, Illinois
3. Fairfield	44	Shelton, Fairfield County, Connecticut Bethel Borough, Fairfield County, Connecticut Newtown Borough, Fairfield County, Connecticut Zoar Bridge, Fairfield County, Connecticut
4. Phoenix	40	Phoenix, Arizona
5. Grays Harbor	45	Hoquiam, Grays Harbor County, Washington Montesano, Grays Harbor County, Washington
6. Pasadena	39	Pasadena, California
7. Ann Arbor	42	East section, Ann Arbor, Michigan
	308	
Second Matched Area		Survey Communities
1. Cincinnati	39	Cincinnati, Ohio
2. Oakland	46	Oak Park Village, Oakland County, Michigan Farmington, Oakland County, Michigan Birmingham, Oakland County, Michigan
3. Passaic	45	Totowa, Passaic County, New Jersey West Paterson Borough, Passaic County, New Jersey Little Falls Township, Passaic County, New Jersey
4. Lubbock	47	Lubbock, Texas
5. Idaho	44	Orangeville, Idaho County, Idaho
6. San Francisco	43	San Francisco, California
7. Iowa City	47	Iowa City, Iowa
	311	
Grand Total	1,276	

Selection of respondents

Within each community, individuals were selected for interview by objective probability techniques.4/ The method of selection consists of a multi-stage procedure involving selection of blocks, households, and individuals in successive steps. No free selection of respondents by interviewers was allowed, nor were "substitutions" for unavailable potential respondents permitted.5/

The primary statistical test of community differences

This quasi-experimental design allows a comparison of people from presumably similar areas, except for the presence or absence of an installation nearby. The "matching areas" are as similar to their respective "installation areas" as was permitted by the natural variety of American communities and their characteristics, the accuracy and amount of available information on the two types of communities, and the judgment and information of the research staff on the more subtle sociological factors involved in the matching. Obviously, it was impossible either to create (or "contrive") matching communities or to select them at random. Since no randomization procedure could be introduced in the selection of the matching or "control" areas, (although selection of respondents within areas was random), statistical procedures dependent on the assumption of independent selections are invalid. However, the selection of two matched areas for every installation area does give an estimate of the residual variation after matching. Thus the data and the efficiency of the matching may be evaluated, albeit somewhat roughly, by the comparison of the data for the three areas which were matched. It should be noted (and constantly remembered in interpreting the data) that the number of respondents for any single area -- and hence in any single set -- is exceedingly small. The percentages of respondents in any category of response for any single area are of very limited reliability. Therefore, in evaluating both the efficiency of matching (Chapter 3) and the differences in response (Chapters 4 and 5) between the two types of area, the data for differences within all seven sets must be considered simultaneously, and checked against the differences in the totals for the group of installation areas compared to the totals for the two matched area groups.

One method of evaluating comparisons within matched sets may be made on a very simple probability basis. Since there are three areas in a matched set (one installation area and two matching areas), if there is no systematic difference between installation and non-installation areas, the probability that a given installation will have the highest (or lowest) proportion of responses in a given category is one out of three. This is true regardless of the efficiency of the matching. For all seven matched sets, then, the probability that in five or more cases the installation areas are first (or last) is less than five chances out of a hundred. This proportion is conventionally accepted as the risk of being wrong that statisticians (and administrators) may be willing to take. Thus, if data from five or more installation communities differ in the same direction from data gathered in both of their respective matches, we may accept this as a situation in which the presence of the installation is associated with the response or factor under consideration. While not very powerful, since it does not make a full use of available information to distinguish improbable events, this test is straightforward and involves no assumptions that are untrue or unknown.6/

4/ The number of interviews conducted and the number of non-interviews, by reason for non-interview, are given in Appendix Table 3, page 117.

5/ For an account of the selection procedures followed in general by the Survey Research Center, which were followed with modifications only in detail for the intra-community sampling, see: Roe Goodman, "Sampling for the 1947 Survey of Consumer Finances", Journal of the American Statistical Association, September, 1947, pp. 439-448.

6/ For a more complete discussion of the binomial test, see: R.A. Fisher, Statistical Methods for Research Workers, 10th edition, 1946, page 63 et seq.

Numbers of Respondents

Equal sample size for each area of the same type

As has been stated, a main purpose of the present study is to compare installation and matched areas. That is, we were interested in comparing data for communities of different types. Hence, each installation community or area is of equal importance for this analysis, regardless of the relative number of people resident in it. For this reason, samples of equal size were desired from each installation area. This means that when data from installation areas are combined by simple addition, without weighting for the relative number of people represented by the data for each area, they do not represent the total population of the seven installation areas as a whole. Each area, rather than each person in the areas, has been given equal weight.

As far as the matched areas go, the same basic considerations obtain. The total number of interviews for the two groups of matched areas combined was intended to equal the total for the installation areas as a whole. It was thus planned to have the sample for each of the two matched areas approximately one-half the size of the installation area sample.

Table 1 (above) gives the obtained numbers of interviews for individual areas and for totals. The sample size conditions stated above were fairly reasonably approximated. For technical reasons of sampling selection, and for chance reasons which led to no interview of a selected respondent, the sample sizes are not exactly equal where they should be. Appendix Table 3, page 117, presents a fuller picture of the sample, including numbers selected and not interviewed, with reasons for the latter.

Influence of sample size differences on comparisons

Differences in obtained sample size for areas within a group (e.g., the installation group of areas, or first matched group, etc.) are not biasing, when comparison is made by percentages in some response category within a set of three areas, one of them being the installation area and the others its two matches. The only possible bias in the way the data are treated in this report rises in connection with comparing the three totals for the three groups of areas. Each area in a group will contribute to the total percentage for the group in proportion to the actual number of interviews taken in that area; yet it is desired to have each area contribute equally.

However, this bias is not substantial, as is indicated by the proportionally minor size of differences in the samples for individual areas in a group. For example, taking the installation area group, e may examine an extreme case. Argonne has 112 respondents (highest number) and Hanford 76 (lowest number).7/ Suppose the percentages in the same category were 10 percent and 40 percent respectively (a rather unusual difference for these data). Giving equal weight to Argonne and Hanford would yield a mean (total) of 25 percent. Using their actual sample size as weights (what occurs in totaling) yields a total of 27.9 percent.

Hence, totals for groups of areas are used throughout this report, because they essentially treat each area as equal, and are themselves useful for other purposes. In any case, whenever comparisons of total percents for types of area are made in the analysis, comparisons within sets are also made.

7/ See Table 1.

Interpreting totals

For most comparisons the approximately equal size of sample for each area in a group of areas of the same type is exactly what is wanted, since it equalizes the effect (if any) of each installation or matched area. However, few statistics can serve several purposes, and the "total" figures given here could not be applied to any general population. They serve well for the specific comparison of types of area, but primarily for that. In fact, no weighting of the data by relative size of individual areas would give a total figure applicable to a larger population, since the choice of areas did not lead to a sample of any easily defined population. Weighting can give a better estimate for proportions of the lumped population of the seven (or all twenty-one) areas, but since this seldom serves any useful purpose here and is of little interest in itself, statistics derived in this way will not be presented.

Nevertheless, totals are used for what they are worth, and they are worth much if properly and cautiously interpreted. It was mentioned, in Chapter 1, that one objective of this research was to discern whether the Atomic Energy Commission had any special or sizeable public reaction problem in its installation areas as a group. If each area is recognized as approximately equally contributing to the total percentages in a table (no one area being of absolutely unique interest to the Commission), the data in the various categories for all the people in the installation areas (unadjusted for population size) make some sense. One can also proceed to inspect the differences among data for installation areas, to observe how characteristic of the areas the total is.

In similar fashion, recognizing the essential absence of definition of any population when unweighted data for the people in the purposively selected matched areas are combined, we can at least get some clues from the preponderance of the evidence as to how people in some non-installation areas are thinking. A continuing check on generalization can come from inspection of the variability of responses within the group of matched areas. More than this would be misinterpreting the population reference of the data. The reader is reminded, then, that when the term "population" is used in succeeding chapters of this report, it is used as a convenience, and its definition is highly arbitrary.

Interpreting percentages for a single area

It cannot be over-emphasized that these data are presented for analysis primarily by type of area. The presentation by single areas is only to facilitate this, and does not imply that percentages for single areas are very reliable. As a matter of fact, even with the type of sampling used here, a sample figure of 20 percent in a certain category for one installation area represents a range of figures of from 9 percent to 34 percent that might be obtained if everyone in the area were interviewed. This is at the 0.95 confidence level, i.e., the chances are estimated at 95 in 100 that the population value will fall within this range around the obtained sample value. The width of the interval around the sample figure in which the true figure might fall would vary both with the level of confidence desired and with the size of the sample percent itself. A sample figure of 50 percent, for instance, represents the widest interval of population values, from 36 percent to 64 percent. For a single matched area, in which the sample size was half that used in installation areas, these intervals are even wider. If it were not that many of these figures are used simultaneously, very few conclusions, indeed, could be drawn concerning differences between types of areas.

An increase in sample size from the 1,276 used in the study would have made the use of single area data more reliable, but only if the size of the sample was made much larger. In simple random sampling, the sampling error varies with the square root of the sample number. Thus the sample size need be quadrupled in order to reduce the sample error by one half. Budget considerations made such an increase impractical. Since the problems in this study are investigated by combining data, an increase of sample size to even 3,600 cases would have resulted in substantially the same distributions of the combined data as obtained.

SURVEY PROCEDURES

Interviewing took place during August, 1950. Each respondent was personally interviewed in his home for from twenty minutes to an hour by trained and supervised interviewers using a standardized questionnaire.8/ In the main, the questions permitted free responses on the part of the person interviewed.

The questionnaire was developed in a pretest period, during which questions were devised and tested which elicited from respondents the kind of information necessary to fulfill the study objectives. The objectives represented the information needs of the Atomic Energy Commission staff. Staff members concerned with public responses, both in Washington and in the field, reported on their observations, ideas and problems. One of the places for pretesting the questionnaire was an installation area, and the Survey Research Center team had an opportunity to do some "scouting" on its own.9/ In some few cases the questionnaire content objectives were very specific, and then multiple-choice answer categories were listed in the questionnaire. In other cases the aims were quite exploratory (e.g., the misinformation or beliefs concerning radioactivity) and in this situation the questions stimulated free answers and were recorded more or less verbatim.

Special problems were found during the pretest which not only dictated the form of the questionnaire but also represent background material for the entire study. Apparently the technical nature of the basic information concerning nuclear reactions is such that few respondents have an integrated picture of atomic energy. Some information will be known concerning hazards and possible uses for atomic energy, for instance, but this will very seldom be fitted into a coherent picture of mass-energy transformations. Not only does a technical frame of reference or integration seem lacking (which is not surprising), but no other kind of organization for thought on atomic energy is apparent.

For these reasons, such information tends to be haphazard. It cannot be depended on that getting a respondent started on the topic will enable him to continue talking under his own steam. Repeated questions are necessary. This problem is contributed to further by the fact that the whole subject is new and does not fit any obvious class of subject matter to most respondents. "New industries" will get people to think of plastics or jet planes, but there is no widely used product of atomic energy. "Science" gets little response, and "war developments" makes the bomb loom large. For all these reasons, something of a "shot-gun" approach is necessary, because what is being considered is itself quite fragmented. Additional analysis of this phenomenon will constitute part of Volume II.

Those free answers which were recorded approximately verbatim were categorized by the Center's content analysis staff, and coded for statistical analysis. The coded information was transfered to punch cards for the necessary tabulations which are the bases of the data in the tables of this volume.10/

8/ The questionnaire is reproduced in Appendix A. A set of sample interviews has been published by the Survey Research Center under the title, Five Selected Interviews from a Study of Public Thinking Regarding Atomic Energy.

9/ It may be that there are differences between types of communities on responses to some aspect of atomic energy and its use which was not explored in this study. The careful gathering of information from competent on-the-spot observers, sensitized to the problem, as well as the research staff's own explorations of the subject in very free interviews with respondents, were designed to guard against such significant omissions.

10/ A general treatment of Survey Research Center procedures may be found in an article by Eleanor E. Maccoby and Robert R. Holt, "How Surveys Are Made", The Journal of Social Issues, May, 1946, Vol. II, No. 2, pp. 45-57.

PLAN OF THIS REPORT

Regardless of success in matching by means of the overall community data mentioned on the first page of this chapter, comparisons of people in different communities on opinion and attitudinal and informational material might be vitiated by sizeable differences in demographic characteristics of individuals in the sample. For example, if an installation area has more people of high income than its matched areas, differences in reactions might be ascribed to this, rather than to the presence of the atomic energy installation. In a real sense, comparison of the demographic characteristics of individuals in the samples from installation and matched areas is also a test of matching efficiency. Accordingly, our first topic will be the consideration of data for age, income, and related subjects, in the next chapter. Comparison of data on information and information sources constitutes the second major section, and comparison of data on reactions to atomic energy the third. The final chapter contains a summary and discussion of conclusions.

This report stresses a major objective of the whole study of public response to peacetime use of atomic energy -- the comparison of communities to determine the influence of the presence of an atomic energy installation on the information and attitudes of people. Knowledge of this influence or its absence is of some significance not only to the information and education activities of the Atomic Energy Commission, but also to planning on procedures for opening new installations. If the installation were the only factor or even a major factor determining differences in public information and reactions to using and working with atomic energy, the present report would be sufficient. However, the income, education, attitudinal and interest variables associated with the spread of information preclude this. There are differences that cannot be explained without reference to these more personal factors. Not even everyone living near an installation knows about atomic energy and has high hopes or grave fears for its future development. Even the effect of the installation is screened by people's differing receptivity, so that a person six blocks away may be entirely absorbed by the processes of making a living in some other industry and unaware of the new developments near him, while someone six hundred miles distant may have been sensitized to and have the leisure for reacting to this new phenomenon. These correlates, then, remain for further investigation and separate analysis. The results of this will be presented in Volume II.

Chapter 3

CHARACTERISTICS OF RESPONDENTS IN INSTALLATION AND MATCHED AREAS

A TEST OF THE MATCHED SAMPLE DESIGN

The valid ascription of possible similarities or differences in thinking among people in installation and non-installation areas to either the influence or lack of influence of an atomic energy project depends on this assumption: the presence of the project represents the sole or at least major difference between the different types of communities. The matching process was designed to ensure that this would be so as far as it was naturally or administratively possible. But an examination of some of the data concerning these areas must be made in order to assure ourselves that the similarities hold for characteristics not available for matching, but known to be related to opinion and information. This chapter will make comparisons of areas on distributions of age, sex, education, family income, occupation, length of residence in the community, reasons for coming to the community, and satisfaction with the community, in the order of topics listed here.

It will be noted in examining the tables of data that several kinds of comparisons may be made, since areas are classified both by type of area (whether installation or first or second match) and by membership in a set of matched areas (the one installation area and two matched areas of similar characteristics). The communities selected to represent the areas are listed in Table 1, the preceding chapter. In general, it will be seen from the data of the present chapter that the matching was reasonably successful; that is, the installation area was as much like either of the matched areas as the two matches are like one another, although the amount of variation within a matched set is not at all uniform. There are cases in which all areas present a similar pattern of responses, and others in which differences between matched sets are relatively large.

The essential point, of course, with regard to the objective of looking for diff[illegible] the presence of the

Table 2. Distribution of Ages by Type of Area

Age (years)	Type of Area: Installation	First Match	Second Match
21-29	23%	23%	28%
30-44	35	35	31
45-59	24	25	25
60 and over	17	16	15
Not ascertained	-	-	-
	100%	100%	100%

What differences there are could very easily arise because of sampling variability within areas. Clearly, we would not be justified in saying that on the whole the population of the areas near installations was different in age composition from the population in the matched areas not near atomic energy installations.

This becomes even more clear if we examine matched sets in Table 3.

Table 3. Age

Percent in each category, for each area*

Age	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
Installation Area								
21-29 years	21%	22%	18%	27%	26%	17%	30%	23%
30-44 years	35	39	35	35	42	32	24	35
45-59 years	23	24	22	30	23	27	24	24
60 years and over	18	15	24	8	8	24	18	17
Not ascertained	3	-	1	-	1	-	4	1
	100%	100%	100%	100%	100%	100%	100%	100%
First Matched Area								
21-29 years	35%	17%	14%	17%	18%	21%	36%	23%
30-44 years	35	48	34	35	33	36	24	35
45-59 years	17	27	25	35	27	20	24	25
60 years and over	11	8	27	13	22	23	12	16
Not ascertained	2	-	-	-	-	-	4	1
	100%	100%	100%	100%	100%	100%	100%	100%
Second Matched Area								
21-29 years	33%	22%	22%	19%	27%	28%	45%	28%
30-44 years	21	30	40	38	30	42	17	31
45-59 years	33	35	18	26	23	16	23	25
60 years and over	13	11	18	15	20	14	15	15
Not ascertained	-	2	2	2	-	-	-	1
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

The differences within matched sets are about the same for the matched areas as between installation areas and matched areas. Differences between matched sets are large. There are, in fact, characteristic distributions for different kinds of sociologically classified populations. For instance, the Brookhaven area is suburban and long established, having relatively many in the upper age brackets, and the same is true of the two matched areas.

Table 4

	Matched Set #3		
Age	Brookhaven	Fairfield	Passaic
21-29	18%	14%	22%
30-44	35	34	40
45-59	22	25	18
60 and over	24	27	18
Not ascertained	1	-	2
	100%	100%	100%

The college town areas in the last matched set are in striking contrast, having many younger people, but, again, the three members of this set are quite alike.

Table 5

	Matched Set # 7		
Age	Ames	Ann Arbor	Iowa City
21-29	30%	36%	28%
30-44	24	24	31
45-59	24	24	25
60 and over	18	12	15
Not ascertained	4	4	1
	100%	100%	100%

SEX

The sex distribution of respondents, shown in Table 6, generally follows the expected pattern -- slightly more females than males are included in the sample.

Table 6. Sex

Percent in each category, for each area.*

Sex	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Male	42%	48%	44%	54%	49%	46%	43%	47%
Female	58	52	56	46	51	54	56	53
Not ascertained	-	-	-	-	-	-	1	-
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Male	37%	48%	50%	32%	51%	33%	36%	42%
Female	63	52	50	66	49	67	64	58
Not ascertained	-	-	-	2	-	-	-	-
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Male	38%	39%	42%	43%	55%	61%	46%	45%
Female	62	61	58	55	45	39	54	55
Not ascertained	-	-	-	2	-	-	-	-
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

On the whole, the matching of communities was reasonably consistent; for all three types of areas, summary measures indicate this slight female bias. Deviations from the expected pattern are, however, noted for some communities. Los Alamos, an installation community, and Grays Harbor, Idaho and San Francisco, matched communities, have sex ratios opposite to the expected pattern -- more males appear in the sample than females. This is particularly pronounced for San Francisco, with 61 percent males. Also, Chattanooga, Phoenix, Pasadena and Ann Arbor in the first match and Cincinnati and Oakland in the second match show a greater female bias than would be expected for all communities taken as a whole.

Three explanations could describe these facts: either our sampling was inaccurate, or these communities are reflecting demographic idiosyncrasies, or this is due to sampling fluctuation, when small numbers of interviews are taken in each of 21 communities. The first explanation appears untenable on the basis of the reasonably successful matching demonstrated on the other characteristics analyzed in this chapter. The second view reflects the fact that efficiency of matching is limited by the geographic variation or similarity of areas. Thus, the extent to which communities do vary demographically on variables other than those used for matching, and the extent to which these differences appear in the sample, is, of course, an indication of a successful sampling procedure, though matching be naturally limited. Is this the case? Large urban or cosmopolitan areas generally have a high female:male sex ratio — more females inhabit these areas than do males. This is noted in Chattanooga, Phoenix, Pasadena, Ann Arbor, Cincinnati, and Oakland. San Francisco is an inexplicable in this regard; the extremely low sex ratio here is contrary to this urban expectation. We would, further, expect a lower sex ratio with increased ruralization. This is reasonably the case for those areas that show more males than females -- Grays Harbor and Idaho. Much of this is speculative. The similarity of totals suggests that on the whole groups of areas match, and that variations for individual areas are in large part a consequence of chance sampling fluctuations, when the individual samples in installation areas range in size from 76 to 112 respondents, and in matched areas from 39 to 52. As would be expected from the relative sizes of samples, the variability of percentages is greater for the matched than for the installation areas. This supports the expected sampling fluctuation explanation. In general, then, the sex ratios shown in Table 6 may tend to follow the ecological characteristics of their communities -- but perhaps more likely reflect the expected "accidents" of the probability sampling.

In any case, the differences point to what was stated in Chapter 2 -- distributions of data for individual areas are unreliable because of small sample sizes for individual areas. The data must be viewed as a whole. Thus, when examining differences within sets, the installation area ranks first in percentage of males twice (sets 1 and 4), ties for first rank once (set 2), is second three times (sets 3, 6, and 7) and third once (set 5). In only one case (set 1) is the difference between the installation area and one of the matched areas greater than the difference between the two matched areas — and this by four percentage points to one percentage point.

EDUCATION

The data on education show considerable variation, not only within sets but also between matched sets.

Table 7. Education of Respondent

Percent in each category, for each area.*

Education	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Grade school or less	47%	44%	34%	33%	24%	24%	15%	33%
Some high school	18	14	16	18	22	13	10	16
Completed high school	17	25	29	24	30	30	16	24
Some college or more	18	15	19	25	23	31	59	26
Not ascertained	-	2	2	-	1	2	-	1
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Grade school or less	32%	17%	25%	23%	27%	15%	7%	21%
Some high school	35	8	11	17	20	15	10	17
Completed high school	24	29	41	30	24	31	21	29
Some college or more	9	44	23	30	27	39	60	32
Not ascertained	-	2	-	-	2	-	2	1
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Grade school or less	46%	22%	40%	32%	32%	33%	15%	31%
Some high school	18	22	24	23	25	23	4	20
Completed high school	26	28	16	17	25	30	19	23
Some college or more	10	28	20	26	16	14	62	25
Not ascertained	-	-	-	2	2	-	-	1
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

There are cases here, such as the Argonne-Cook-Oakland set, in which it seems that the two matched communities possess more people of higher education, but in general the variation is high, and all three members of matched sets are almost as much alike as are the two non-installation areas within the set.

FAMILY INCOME

Family income distributions also vary considerably from area to area, and there are some high variations between members of a matched set.

Table 8. Family Income.

Percent in each category, for each area.*

Family Income	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Under $2,000	18%	11%	14%	23%	7%	1%	14%	13%
$2,000-$2,999	34	14	19	22	14	19	16	20
$3,000-$3,999	19	33	25	24	30	32	24	27
$4,000-$4,999	13	23	7	8	30	14	16	15
$5,000 and over	14	16	29	21	16	20	29	21
Not ascertained	2	3	6	2	3	14	1	4
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Under $2,000	11%	2%	5%	18%	-%	26%	19%	11%
$2,000-$2,999	28	4	25	15	27	15	19	19
$3,000-$3,999	28	9	7	27	31	31	29	23
$4,000-$4,999	11	29	20	8	22	15	17	18
$5,000 and over	7	56	41	32	20	13	16	27
Not ascertained	15	-	2	-	-	-	-	2
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Under $2,000	33%	9%	4%	21%	14%	7%	15%	15%
$2,000-$2,999	10	13	29	15	29	28	23	21
$3,000-$3,999	21	17	34	6	25	28	21	22
$4,000-$4,999	8	24	13	21	16	19	13	16
$5,000 and over	23	35	18	28	11	18	28	23
Not ascertained	5	2	2	9	5	-	-	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

Still, the installation communities do not stand out as distinguishable members of these sets. For instance, there are great differences in the proportions of persons in the $5,000-and-over category among the areas in set 2: Argonne (16 percent), Cook (56 percent), and Oakland (35 percent). There are great differences in the proportions of respondents the income of whose families was under $2,000 in set 6: Berkeley (1 percent), Pasadena (26 percent), and San Francisco (7 percent). The differences between the two non-installation communities, however, are as large as the installation versus non-installation differences. This lack of consistent differences is borne out by the data summed for all people in different types of areas.

Table 9. Distribution of Family Income by Type of Area

	Type of Area		
Family Income	Installation	First Match	Second Match
Under $2,000	13%	11%	15%
$2,000-2,999	20	19	21
$3,000-3,999	27	23	22
$4,000-4,999	15	18	16
$5,000 and over	21	27	23
Not ascertained	4	2	3
	100%	100%	100%

The relatively high variation on this characteristic within matched sets should point a warning about drawing conclusions concerning particular areas, although informational and reaction differences which consistently favor one type of area in five or more sets in spite of these variations would be even more impressive.

OCCUPATION

A pattern with considerable variation, yet indicating good matching, is that for occupational groups.

Table 10. Occupation of Respondent

Percent in each category, for each area.*

Occupation of respondent**	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
White collar	16%	18%	31%	34%	18%	36%	39%	27%
Blue collar	32	34	16	28	34	31	11	27
Farm	-	-	2	1	-	-	-	-
Housewife	48	45	39	31	41	25	43	39
Other	4	2	12	5	4	8	6	6
Not ascertained	-	1	-	1	3	-	1	1
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
White collar	17%	40%	32%	45%	20%	41%	50%	35%
Blue collar	41	13	23	23	40	26	12	25
Farm	-	-	-	-	-	-	-	-
Housewife	33	47	34	28	38	28	21	33
Other	7	-	11	2	2	5	17	6
Not ascertained	2	-	-	2	-	-	-	1
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
White collar	18%	30%	24%	32%	16%	42%	32%	28%
Blue collar	38	13	38	28	41	40	8	29
Farm	-	-	-	-	2	-	2	1
Housewife	31	52	29	34	36	7	45	34
Other	13	5	2	4	2	11	13	7
Not ascertained	-	-	7	2	3	-	-	1
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

** The occupations included under the designations "White collar" and "Blue collar" are discussed in the text.

There are really sizeable differences among matched sets, as would be expected from the income distributions, but within matched sets the variation is largely that between non-installation areas. This may be seen clearly, for example, in looking at the data for the Los Alamos-Phoenix-Lubbock set.

Table 11

Occupation of respondent	Matched set #4		
	Los Alamos	Phoenix	Lubbock
White collar	34%	45%	32%
Blue collar	28	23	28
Housewife	31	28	34
Other	6	2	4
Not ascertained	1	2	*
	100%	100%	100%

In most major categories here the installation area falls between its two matched areas.

The white collar occupational group includes managerial, professional, semi-professional, and clerical occupations; the blue collar group includes skilled and unskilled laborers, operatives, and service trades; and the "other" category comprises farmers, students, unemployed and retired. These broad categories must be used because finer categories divide the relatively small number of respondents in any one area into small numbers in any one category. It is still clear that sets may be usefully characterized into three types: highly white collar -- the Los Alamos, Berkeley and Ames sets; industrial -- Oak Ridge and Hanford; mixed -- Argonne and Brookhaven. These characterizations, except the last, hold true for the three members of the set, with no consistent deviation of the installation areas within the sets.

LENGTH OF RESIDENCE

With respect to length of residence in the community, the matching within sets is less good.

Table 12. "How long have you lived here?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Under one year	6%	7%	2%	6%	13%	6%	7%	7%
One up to 5 years	10	27	17	18	51	17	29	23
5 up to 10 years	13	15	10	15	11	23	11	14
10 up to 15 years	10	5	11	15	5	13	6	9
15 years or more	61	46	60	46	20	41	47	47
Not ascertained	-	-	-	-	-	-	-	-
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Under one year	9%	10%	2%	8%	-%	10%	12%	7%
One up to 5 years	15	35	23	15	22	26	24	23
5 up to 10 years	13	17	5	22	11	5	14	13
10 up to 15 years	9	17	9	8	9	23	14	13
15 years or over	54	21	61	47	58	36	36	44
Not ascertained	-	-	-	-	-	-	-	-
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Under one year	3%	20%	4%	7%	7%	9%	15%	9%
One up to 5 years	3	28	27	19	23	9	26	20
5 up to 10 years	5	7	16	21	20	28	13	16
10 up to 15 years	10	26	11	19	2	12	6	12
15 years or over	79	19	42	32	48	40	40	42
Not ascertained	-	-	-	2	-	2	-	1
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

However, the data by type of area are very close, reflecting the lack of uniformity of deviations within sets.

Table 13. Distribution of Length of Residence by Type of Area

Length of residence	Type of Area: Installation	First Match	Second Match
Under one year	7%	7%	9%
One year up to 5 years	23	23	20
5 years up to 10 years	14	13	16
10 years up to 15 years	9	13	12
15 years or over	47	44	42
Not ascertained	-	-	1
	100%	100%	100%

It is also true that, with the exception of the Hanford area, none of the installation areas shows the pattern of heavy recent in-migration that might have been expected. (Taking all sets, as a matter of fact, there is a suspicion that on the whole people in installation areas have lived in these areas somewhat longer than in the matched areas.) This shows the value of having taken respondents from the area defined by a twenty-five mile radius. These are long established citizens who might be influenced by the building of an atomic energy installation near them, but they are not a special group of interested people closely connected with the project itself.

As an additional check on the in-migration factor, the reasons for coming to the community were ascertained. The question, "How did you happen to come here?", was asked only of those who had moved in within the last ten years. The others could not have come because of the atomic energy installation and many would have given unreliable responses based on distant memory in any case. The data obtained are given in Table 14.

Table 14. Reasons for coming to community. (If lived here less than ten years).

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
To work in atomic installation	3%	-	1%	1%	4%	-	1%	1%
Employment opportunities, other than atomic energy	6	13%	5	14	33	6%	19	13
Job transfer	5	2	1	2	5	2	2	3
Education	2	-	-	1	-	4	16	3
Selected aspects of city: convenience, climate, etc.	1	21	6	7	8	12	1	8
Family, relatives	9	13	13	8	18	17	7	12
Don't know	-	-	-	-	-	-	-	-
Inapplicable (lived here more than ten years)	73	51	70	62	25	55	53	57
Not ascertained	1	-	4	5	7	4	1	3
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
To work in atomic installation	-	-	-	-	-	-	-	-
Employment opportunities, other than atomic energy	22%	10%	2%	8%	9%	5%	12%	10%
Job transfer	-	2	5	3	2	-	-	2
Education	-	-	-	-	-	-	31	4
Selected aspects of city: convenience, climate, etc.	4	35	11	20	7	13	-	13
Family, relatives	7	8	11	8	13	23	7	11
Don't know	-	-	-	-	-	-	-	-
Inapplicable	63	37	71	53	65	59	50	57
Not ascertained	4	8	-	8	4	-	-	3
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
To work in atomic installation	-	-	-	-	-	-	-	-
Employment opportunities, other than atomic energy	5%	2%	7%	15%	34%	14%	4%	12%
Job transfer	-	2	2	6	-	-	-	2
Education	-	-	-	4	-	-	26	4
Selected aspects of city: convenience, climate	-	37	16	11	2	21	2	13
Family, relatives	3	11	18	9	9	7	19	11
Don't know	-	-	-	-	-	-	-	-
Inapplicable	89	46	53	51	50	51	47	55
Not ascertained	3	2	4	4	5	7	2	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

While only the installation areas have people who say they came specifically for work connected with the installation, in no case is the percentage above four, and no interviews are included here with people who are now working in an installation. However, this minor factor will have to be considered in those comparisons in which other differences are found, since people who came to work at or on an installation may either be very enthusiastic about the job prospects or disappointed because they did not get a job there.

No other significant differences appear in the table, although there is a suspicion that community factors attracted relatively fewer people to the installation areas. While such items as 33 percent having come to the Hanford area because of other employment opportunities stand out in contrast to the nine percent in Grays Harbor, it is very like the 34 percent in the Idaho area, the other match. These variations cancel one another on the whole, as the total figures show, and there are cases of striking similarity -- as the community attractiveness of all three members of the Argonne-Cook-Oakland matched set.

SATISFACTION WITH COMMUNITY

The data in Table 15 concerning satisfaction with community do not indicate any great success in matching, and the installation areas do have consistently more people who would much rather live elsewhere, although the proportions are low and not upheld by other data in the table. The variation in reactions to different communities is striking, but apparently idiosyncratic, and certainly not associeted in general with the presence of an atomic energy operation.

Table 15. "Would you say you're pretty satisfied with living here or would you rather live somewhere else?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Very satisfied here	20%	29%	27%	37%	23%	38%	22%	28%
Pretty satisfied here	64	45	55	47	49	44	49	50
Neutral, pro-con	2	9	6	4	4	4	4	5
Rather live elsewhere	11	9	5	4	18	8	15	10
Much rather live elsewhere	-	2	1	2	1	1	2	1
Not ascertained	3	6	6	6	5	5	8	6
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Very satisfied here	20%	34%	43%	35%	33%	36%	38%	34%
Pretty satisfied here	54	54	36	48	54	46	31	46
Neutral, pro-con	4	4	9	5	4		14	6
Rather live elsewhere	7	4	7	5	2	18	14	8
Much rather live elsewhere	2	2	-	-	-	-	-	1
Not ascertained	13	2	5	7	7	-	3	5
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Very satisfied here	13%	41%	18%	36%	18%	21%	25%	25%
Pretty satisfied here	51	35	56	45	43	54	49	47
Neutral, pro-con	3	11	4	9	11	2	15	8
Rather live elsewhere	-	6	11	4	23	14	11	10
Much rather live elsewhere	-	-	-	-	-	-	-	-
Not ascertained	33	7	11	6	5	9	-	10
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

SUMMARY OF DATA ON MATCHING

In the same manner as the joint consideration of comparisons within all of the seven matched sets allows conclusions which would not be justified for any one set, a brief review of the data from all of the tables presented in this chapter may permit more firm generalization concerning these area characteristics. The reasoning underlying the choice of five or more uniform deviations of installation areas from their matches as the point at which the hypothesis of equality of areas would be unacceptable was that under this hypothesis the occurrence of a deviation of five or more areas had a probability of less than five chances in a hundred. It is thus improbable, in any one particular case, that this event would occur. This occurrence should, however, also be approached from the opposite viewpoint. The same reasoning implies that in about every twenty-two cases finding five or more uniform deviations would be expected once. An apparent difficulty in thus looking at these data is that the percentages in different categories for a given area are not independent (since they add to 100), and therefore the ranks for an area in the different categories of a single table are not independent. This may be seen most easily by looking at the summary table of ranks of installation areas within matched sets for demographic characteristics.

Table 16. Summary Table of Ranks of Installation Areas within Matched Sets, for Demographic Characteristics*

Demographic Characteristics	Installation Area						
	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames
A. Age:							
21-29 years	3	1.5	2	1	2	3	3
30-44 years	1.5	2	2	2.5	1	3	2.5
45-59 years	2	3	2	2	2.5	1	2.5
60 years and over	1	1	2	3	3	1	1
B. Sex:							
Men	1	1.5	2	2	3	2	2
Women	3	2.5	2	2	1	2	2
C. Education:							
Grade school or less	1	1	2	3	3	2	1.5
Some high school	2.5	2	2	2	2	3	1.5
Completed high school	3	3	2	2	1	2.5	3
Some or completed college	1	3	3	3	2	2	3
D. Income:							
Under $2,000	2	1	1	1	2	3	3
$2,000-2,999	1	1	3	1	3	2	3
$3,000-3,999	3	1	2	2	2	2.5	2
$4,000-4,999	1	3	3	2.5	1	3	2
$5,000 and over	2	3	2	3	2	1	1
E. Occupation of respondent:							
White collar	3	3	2	2	2	3	2
Blue collar	3	1	3	1.5	3	2	2
Housewives	1	3	1	2	1	2	2
Other	3	2	1	1	1	2	3
F. Length of residence in community:							
Under 1 year	2	3	2.5	3	1	3	3
1 to 5 years	2	3	3	2	1	2	1
5 to 10 years	1.5	2	2	3	2.5	2	3
10 to 15 years	2.5	3	1.5	2	2	2	2.5
15 years and over	2	1	2	2	3	1	1
G. Reason for coming to community:							
To take atomic energy job	1	2	1	1	1	2	1
Other employment	2	1	2	2	2	2	1
Job transfer	1	2	3	3	1	1	1
Education	1	2	2	2	2	1	3
Community factors	2	3	3	3	1	3	2
Family reasons	1	1	2	2.5	1	2	2.5
H. Satisfaction with community:							
Very satisfied	2.5	3	2	1	2	1	3
Satisfied	1	2	2	2	2	3	1.5
Neutral	3	2	2	3	2.5	1	3
Rather live elsewhere	1	1	3	2.5	2	3	1
Much rather live elsewhere	2.5	1.5	1	1	1	1	1

* Percentages equal to the nearest whole percent are considered tie ranks, and are designated by ranks of 1.5, 2, or 2.5 according to whether the tie was among the highest two percentages, all three, or the lowest two percentages.

In part B. Sex, it is obvious that if an installation area ranks first in its set for proportion of men, it must rank last (third) in proportion of women. This is not so obvious when there are more than two categories, but is still true. This correlation, however, is only between categories for a particular variable, and does not hold for the distribution of ranks in sets, each of which is independent of the other.

A comparison may then be made between our predictions, assuming each rank equally probable, for the proportion of times we would expect no first ranks among installation areas out of seven sets, one first rank, and so forth, and the proportions actually found. The same expectations would hold for third ranks. Ties in the results are treated by assigning a mid-rank which is counted as half an accurrence in each of the two alternatives. The expected proportions and actual proportions for ranks one and three are:

Number of designated ranks out of seven sets	Percent expected if probability is one in three	Percent found for first ranks	Percent found for third ranks
0	6%	7%	7%
1	20	34	23
2	31	26	37
3	25	22	20
4	13	6	12
5	4	4	1
6	1	1	0
7	0	0	0
	100%	100%	100%

These data indicate that everything that happened is quite consistent with chance expectations, so that none of the results may safely be considered as associated with the installation. The discrepancies that are present, fewer findings of the larger frequencies of first and third ranks, and somewhat greater proportions of low frequencies, imply that second ranks occur more frequently among installation areas than would by expected by chance. Second ranks do occur about two times out of five instead of once out of three. Since this is exactly what the matching process attempted to do, it is not remarkable, although comforting, that it is true.

One further assurance of the validity of further analysis is that for no individual installation area is there a wide departure from these same expectations when considered for all characteristics. For thirty-five categories, we would expect just under thirteen first ranks and thirteen third ranks. In only one case (Brookhaven) does the number of first ranks fall as low as six, and in that case the number of third ranks is also low, being eight, as would be expected from the correlation between them in this direction in the table.

CONCLUSIONS ON MATCHING

All in all, the data concerning these communities indicate some success in matching on demographic data, so that later comparisons are sharpened, although in no case did the matching account for such a large proportion of variation that matched sets could be considered anywhere near identical. Most important, however, about the fact that there are no greater number of consistent differences separating the installation communities from the others than would be expected by chance is that comparisons on opinion data may be made in terms of the major variable, the presence of the atomic energy installation. The large variation between members of single sets of matched areas does mean, however, that comparisons among them with respect to other data must be made with caution and an eye on the possibility that differences may in some cases be associated with differences in the variables here discussed rather than the presence of the installation. This would not be true considering all sets together, and consistent differences on opinion items are properly considered most likely related to the installation.

Chapter 4

KNOWLEDGE OF ATOMIC ENERGY, INSTALLATIONS AND SOURCES OF INFORMATION

The investigation of the informational domain in the interview proceeded in a manner that can be most aptly described as a "searching" approach. Our intensive interview techniques, during the pretests of the questionnaire, could not uncover any sufficiently unambiguous and generally subscribed to frame of reference within which the pursuit of information about atomic energy could be fitted. This was probably a necessary function of the exploratory nature of the study, and of the complexity, comparative novelty, and psychological remoteness of the topic to most citizens. The field of atomic energy seemed to exist as bits of information, varying interests and reactions that related to one or another specific uses, problems, or policies. It clearly did not exist as a rather well-structured phenomenon that fitted within a relatively well-defined area of interest for the overwhelming number of pretest respondents. These were interviewed in both an installation and a matched area. Results of interviewing in the study proper strongly confirmed this early hypothesis.

Since the design of a questionnaire for intensive personal interviewing depends considerably on the extent to which the topic is meaningful and organized for potential respondents, a variety of questions were utilized that tapped as many and various facets of information and misinformation as possible. This situation did not permit us to arrange our informational items in the questionnaire in any consistent context corresponding to the reality of the situation for respondents; since the realities of information about atomic energy consisted of bits and pieces in many different areas, our questions were modeled rather directly to gather as many of these bits in as many of these areas of information as we were able to.

For similar reasons, the installation and matched areas are not compared on the basis of composite indices or measures summarizing informational responses, since these responses on the whole hung together comparatively poorly. In form, the data presented here consist of comparisons of categorized responses to individual questions. As it is, these questions call upon rather primitive knowledge for reply -- they are "least common denominator" items, which tap what minimal information does exist. More complex questions would present difficulties to all but a very small proportion of respondents.

Thus, in this chapter we shall consider as discrete the various kinds of informational responses elicited in the interview. Our concern is with a comparison of data on each of these aspects of information in the installation areas with data from the matched areas. Our purpose is to evaluate the hypothesis that the level or kind of information or misinformation is a function of the presence of an atomic energy installation. In a later report, the analysis of relationships between these different kinds of information will be presented in some detail.

Measures were obtained on information about:

- uses of atomic energy;
- general nature of atomic energy;
- radiation and its detection;
- atomic energy installations;
- sources of information.

Related to the informational process and presented in this chapter are data on misinformation or rumor acceptance.

The analyses in this chapter are arranged in the above order of aspects of information. For each aspect of information, the analysis of community differences is made in terms of:

1. Sets. a. Within each of the sets, how do .e responses of the people in the installation area compare with those of people in its two matched areas? What is the overall picture for the seven sets — i.e., how many times out of seven (the number of sets) does the installation area rank first, second or third when compared to its two matched areas on the frequency of responses in some meaningful category? In terms of the test of significance stated in Chapter 2, is the consistent highest (or lowest) position of the installation area on proportions of respondents in a category unlikely as a random event -- i.e., would it occur by chance only five times or less out of 100 times?

b. What is the variability among sets — i.e., do some sets as a whole show a different result from other sets? In the cases where this occurs, it may sometimes be related to the special characteristics of the set. This analysis is reported only when meaningful.

c. At times, the sets are considered in these terms: are the differences between the installation member of a set and its matching members greater than the difference between the two matching members? In general, this additional sort of analytic procedure is to be used only when the procedure of 1a. above indicates that installation communities are different from matched ones.

2. Types. a. Does the distribution of responses for all respondents in installation areas differ significantly from the distribution for all respondents in the first matched and second matched areas respectively? This analysis utilizes the three "totals" in the tables.

b. Is the variability of proportions of respondents in a given response category within one type of area different from the variability within another type? If the presence of an installation is of any effect, the installation areas as members of a type may be more homogeneous within themselves than the matched areas within themselves, other things presumably being equal. The simple measure of variability used is the range of proportions in a category, evaluated with respect to the median and the possible chance influence of an extreme case.

It should be noted that sometimes numerical details and computations for these analyses are not explicitly reported in the text, which is of necessity already weighty. The basic data are included, the text tables, and the reader may very easily satisfy himself as to the interpretations of data. All modes of analysis indicated above are not always used, but enough are utilized to bring out the meaning of the data.

USES OF ATOMIC ENERGY

Knowledge of the Existence of Something Called "Atomic Energy"

The lowest level of information about uses of atomic energy is the knowledge of the existence of the phenomenon itself. The question was asked, "Have you ever heard of atomic energy?" If the respondent said, "No" or "I don't know", he was asked further, "Have you ever heard of the atom bomb?" This question series divided the populations studied into those who:

had heard of atomic energy;

had heard only of atomic bomb;

had not even heard of atomic bomb;

didn't know, or did not give an ascertainable response.

Analysis of the distributions of percentages of respondents in each of these categories by types of areas reveals that, in general, the installation areas as a whole differ little from the matched areas.

Table 17. "Have you ever heard of atomic energy? (If "No" or "Don't know") Have you ever heard of the atomic bomb?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Heard of atomic energy	95%	92%	92%	81%	97%	92%	100%	93%
Heard only of atomic bomb	4	4	7	15	1	4	-	5
Have not even heard of atomic bomb	1	3	-	4	1	-	-	1
Don't know or not ascertained	-	1	1	-	1	4	-	1
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Heard of atomic energy	81%	98%	89%	87%	94%	95%	98%	92%
Heard only of atomic bomb	15	-	11	8	4	5	2	6
Have not even heard of atomic bomb	2	-	-	5	-	-	-	1
Don't know or not ascertained	2	2	-	-	2	-	-	1
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Heard of atomic energy	87%	96%	93%	91%	98%	98%	100%	94%
Heard only of atomic bomb	-	4	7	-	-	2	-	3
Have not even heard of atomic bomb	13	-	-	-	2	-	-	1
Don't know or not ascertained	-	-	-	9	-	-	-	2
	100%	100%	100%	100%	100%	100%	100%	100%

* The number of respondents in each area is given in Table 1.

For all areas, the percentage having heard of atomic energy included most of the sample. No large differences between any of the installation areas and their matched areas within sets or between the sets of areas are apparent. It is concluded that the presence of an atomic energy installation is not a consideration affecting information about the mere existence of atomic energy.

This conclusion is further substantiated when the small differences that do exist between installation and matched types of areas are compared with differences existing within each of the types of area separately. Thus it is noted that the percentages of those who said they had heard of atomic energy vary within the installation group from a low of 81 percent for the Los Alamos area to 100 percent for Ames.1/ The variability for the first matched areas is about the same, from 81 percent to 98 percent, and for the second matched areas from 87 percent to 100 percent. Variation is, therefore, as great (if not greater) among the installation areas as it is between installation and their matched areas.

1/ It may be well to repeat here that interviewing was done in communities within a twenty-five mile radius of the installation. The actual communities are listed in Table 1.

It should be noted that Los Alamos and Chattanooga, the areas containing the lowest percentages of respondents informed on this item, had the highest percentages of persons who had heard only of the atomic bomb. In the case of Los Alamos (Santa Fe) this finding might be a resultant of the presence in the area of an atomic energy installation with a special function, since both its matched areas have percentages considerably lower for this category (eight percent and zero percent). The strength of this assumption is weakened, however, by the presence of the same phenomenon in Chattanooga, a non-installation area. This suggests that the reasons for the presence of some persons with relatively low level of information about the existence of atomic energy as such in Los Alamos and Chattanooga is perhaps related to some unknown factors, similar or different.

Of some interest is the overall picture of the distributions of responses to this very simple information item. This indicates that between 80 and 100 percent of the population in the various areas sampled had heard of atomic energy, about 1 to 15 percent had heard only of the atomic bomb, and, with the exception of an abnormal situation in Cincinnati (13 percent), five percent or less in the various areas had heard of neither atomic energy nor the bomb.* When differences between distributions for both types and sets of areas are considered, the frequency of different responses in installation areas is sufficiently similar to that of responses in matched areas to indicate that the same factors are probably operating in both types of areas, i.e., that the atomic energy communities and non-atomic-energy communities are essentially similar on this item.

Minimal Awareness of Peacetime Uses

The question designed to select out those who had heard of atomic energy, or at least had heard of the bomb, served as a "filter" for the next simple level of information, concerning impressions of possible uses for atomic energy. All respondents who had this minimum information (the total sample reported here — 1,276 persons minus those few who had not even heard of the atomic bomb) were asked, "Have you ever heard of atomic energy in connection with anything besides the bomb?" If they replied, "No" or "I don't know", the question was raised, "Do you have the impression that it could be used for things besides the bomb?"

This very elementary item permitted the separation of those respondents who perceived atomic energy only in relation to the bomb from those who had heard or believed that other uses were possible. We note in Table 18 that for each of the individual areas, the greatest proportion is in the category: "Heard of atomic energy in connection with things other than the bomb", with most showing decreasing proportions for categories indicating decreasing levels of awareness of peacetime uses. The analysis of the data for categories, by types of areas, shows the variation in the installation areas for the first category response to be quite similar to that in the matched areas.

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* At this point the research staff's strong impression of a significant change over the past year in public perception of atomic energy should be noted. In August 1949, extensive informal "scouting" interview studies were made in a large city preparatory to the present research. Respondents almost invariably and automatically centered their discussions on the atomic bomb, so that even though the questions were clearly pointed at peacetime uses, the conversation would veer to the bomb. The interview questionnaire structure designed then had to begin with a rather long discussion of the atomic bomb, in order to let the respondent get his bomb reactions "out of his system" and to help clearly differentiate the latter "peacetime aspects" discussion from the bomb. Secondly, when asked whether they would want to know more about atomic energy, respondents quite frequently said "no" because for security reasons the topic should not even be discussed.

In August 1950, the time of interviewing for the current study, the ability of the population to distinguish between the bomb and atomic energy and to discuss them apart was very apparent. As a result, the questionnaire structure was changed to the present form in the pretest, with the former beginning questions eliminated. In addition, within a year perceptions of atomic energy have moved from a point where many people considered the whole subject completely barricaded from them to a point where only infrequently were security aspects voiced.

Table 18. "Have you ever heard of atomic energy in connection with anything besides the atom bomb?" (If "No" or "Don't know"): "Do you have the impression that it could be used for things besides the bomb?" *

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Heard of in connection with things other than bomb	61%	62%	77%	50%	70%	63%	82%	66%
Has not heard but has impression of uses other than bomb	24	15	10	18	16	20	12	16
Has not heard and has no impression of uses other than bomb	10	7	6	17	1	11	1	8
Don't know, uncertain	5	11	6	14	8	6	3	8
Not ascertained	-	5	1	1	5	-	2	2
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Heard of in connection with things other than bomb	60%	86%	80%	71%	65%	69%	86%	74%
Has not heard but has impression of uses other than bomb	7	4	14	16	9	21	-	10
Has not heard and has no impression of uses other than bomb	16	4	2	8	11	3	2	7
Don't know, uncertain	11	-	2	3	9	4	7	5
Not ascertained	6	6	2	2	6	3	5	4
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Heard of in connection with things other than bomb	68%	72%	58%	53%	79%	79%	77%	69%
Has not heard but has impression of uses other than bomb	12	15	18	17	9	9	10	13
Has not heard and has no impression of uses other than bomb	9	9	4	11	7	5	9	8
Don't know, uncertain	6	2	16	15	5	7	2	7
Not ascertained	5	2	4	4	-	-	2	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based upon the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total of 1,258. The derivation of this figure is given in Appendix Table 4.

Considering sets, Argonne and Berkeley are the only installation areas exhibiting sizeably lower proportions of informed responses than both of their matched communities. However, as a whole these differences are not outstanding nor are these two cases sufficient to warrant the generalization of a difference between installation and non-installation areas as a whole.

The category of lowest information, "Has not heard and has no impression of uses other than bomb", does show some possibly chance differences between the installation and non-installation areas in two of the sets. Los Alamos (17 percent) and Berkeley (11 percent), both installation areas, have a slightly higher proportion of the uninformed than do their matched groups, Phoenix (8 percent) - Lubbock (11 percent), and Pasadena (3 percent) - San Francisco (5 percent). However, these two differences within sets again are not large and again the two cases are not sufficient to illustrate the existence of significant differences between the types of areas. They do point out that although the atomic energy installation does not have a consistent, overall effect upon responses to this item, certain communities containing installations may have peculiarities in their distributions that require explanation on an individual basis, although we do now know this reliably.

The following may serve to summarize the within-set analysis. Considering percentages in the "has heard of" category, the installation area ranks second four times and third three times in the seven sets; for the "has impression" category, it ranks first four times, second twice, and third once. Combining percentages in these two categories, it ranks first twice, second twice, and third three times. In the category of "no impressions of use other than the bomb", the installation area ranks first three times, second once, and third three times. In most cases the difference between types of areas within sets are small. The overall conclusion is that type of area as such has no general effect for this sort of information.

That the installation areas Los Alamos, Argonne and Berkeley are being reflected as individual areas and not as types is shown by the summary data for types of areas in Table 19.

Table 19. Distribution of Awareness of Uses for Atomic Energy by Type of Area

Type of Awareness	Type of Area: Installation	First Match	Second Match
Heard of uses other than bomb	66%	74%	69%
Has impression of uses other than atomic bomb	16	10	13
Has not heard and has no impression of uses other than atomic bomb	8	7	8
Don't know	8	5	7
Not ascertained	2	4	3
	100%	100%	100%

The similarity of the overall percentages results from the fact that the other installation areas are either sufficiently similar to their matched areas or, if varying, are varying opposite from the direction shown by Los Alamos, Berkeley and Argonne. Hence, variations within the installation areas are almost, but not quite, wiped out in the total figures. However, from the total figures, we may say that, under the conditions of our sample, about eight out of ten people were to some degree aware that atomic energy is not simply of military use, and probably less than one out of twenty either were aware of military use only or didn't know. Even though the information discerned here is minimal, for the overwhelming number "atomic energy" is more than just "the bomb". To study something more of the depth of information on uses, awareness of specific uses was explored.

Information on Specific Uses

The specific kinds of peacetime uses mentioned by those respondents who heard or had the impression of uses of atomic energy besides the bomb were determined by two items which followed the previous questions of this section in sequence:

"What kinds of things have you heard about?"

"What kinds of things do you think it might be used for?"

Responses to these questions were categorized by the kinds of utility the uses signified: power, motive power, heat, medical, agricultural, military, and general industrial-scientific. A category of "odd or unusual" responses was added as illustrative of the unrealism with which some respondents viewed the uses of atomic energy.

Table 20. "What kinds of things have you heard about? What kinds of things do you think it might be used for?"

Percent in each response category, for each area.**

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Means of power, energy	26%	33%	36%	27%	41%	31%	40%	34%
Means of motive power, fuel	15	25	18	36	25	29	20	24
Means of heat	9	10	13	4	10	9	19	11
Medical purposes	69	43	43	49	34	45	40	46
Agricultural purposes	3	2	6	1	9	-	10	4
Military: other than bomb	1	1	1	1	1	3	-	1
Scientific, industrial	5	5	13	4	12	12	14	9
Odd or unusual	3	1	3	3	-	3	2	2
Don't know	13	14	6	16	4	7	4	9
Not ascertained	-	6	5	-	6	8	6	4
	*	*	*	*	*	*	*	*
	First Matched Area							
Means of power, energy	28%	19%	29%	44%	53%	36%	53%	37%
Means of motive power, fuel	25	40	12	12	14	36	18	23
Means of heat	6	19	17	6	8	-	10	10
Medical purposes	59	29	40	38	42	25	48	40
Agricultural purposes	-	-	-	-	-	3	5	1
Military: other than bomb	-	-	-	-	-	3	-	-
Scientific, industrial	13	23	24	15	3	14	18	16
Odd or unusual	-	-	-	3	-	6	-	1
Don't know	-	10	7	9	11	17	5	9
Not ascertained	16	8	10	3	8	3	8	8
	*	*	*	*	*	*	*	*
	Second Matched Area							
Means of power, energy	31%	29%	45%	34%	51%	63%	46%	43%
Means of motive power, fuel	21	20	14	26	36	17	22	22
Means of heat	3	12	14	3	3	3	12	8
Medical purposes	41	46	24	24	26	40	34	33
Agricultural purposes	-	-	2	-	-	3	-	1
Military: other than bomb	3	-	2	3	-	-	-	1
Scientific, industrial	21	5	10	8	8	9	22	11
Odd or unusual	7	-	-	3	-	-	2	2
Don't know	3	17	14	18	10	11	12	13
Not ascertained	10	7	10	13	3	3	2	7
	*	*	*	*	*	*	*	*

* Columns total more than 100 percent because some respondents gave more than one possible use.

** This table includes only the 1,096 respondents who had heard of the atomic bomb and conceived of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

The kinds of uses mentioned show no startling relations to differences in both sets and types of areas, although there are some interesting suggestions. For all types of areas, the use of atomic energy for medical purposes and as a means of power and energy were the most popular responses; and use as a motive power or fuel was the next largest category. This was also true for most of the individual areas.

For most of the categories, the differences in percentages between the sets of areas are sizeable, as are the differences within the individual sets. For some sets differences within sets in some of the categories are in the same direction; in general, however, the differences between the installation and matched areas of the sets are not greater than those among the members of the matched areas themselves. This can be illustrated by noting the sets that have fairly large differences in any of the response categories among the members, the differences between installation and matched areas being in the same direction.

If this is not a chance finding, its meaning may lie in a more realistic appraisal given the process by installation area respondents. Those who are closer to the locus of the various possible uses may be able to exercise more discrimination between what could be verified as a use and what is generally romanticized or projected as a use. Atomic energy as a source of power or energy, while possible, is presumably removed from the kinds of uses to which the process is put in the installations near to the respondents.

Table 21

Response category: Means of power, energy	Type of Area					
Set number	Installation		First Match		Second Match	
1	(Oak Ridge)	26%	(Chattanooga)	28%	(Cincinnati)	31%
4	(Los Alamos)	27	(Phoenix)	44	(Lubbock)	34
5	(Hanford)	41	(Grays Harbor)	53	(Idaho)	51
6	(Berkeley)	31	(Pasadena)	36	(San Francisco)	63
7	(Ames)	40	(Ann Arbor)	53	(Iowa City)	46

Yet even so, we may observe that in set number 4, Los Alamos (the installation member) shows a considerable deviation of 17 percentage points from its first matched area (Phoenix), but the difference between Los Alamos and Lubbock (its second matched area) is only 7 percentage points. That the differences for this set between installation and non-installation areas are not clearly favorable to one or the other of the types of areas is further noted by the greater difference between the matched areas (10 percent) than between the installation and the second matched area (7 percent). This same general situation exists in the other sets, except for set number 5, Hanford - Grays Harbor - Idaho. Here the matched areas are consistent with each other (51 and 53 percents) and different from the installation area (41 percent). In sum, there seems to be a distinct but comparatively small tendency for fewer people in installation areas to refer to power and energy uses. In four of the five sets, however, the two matched areas are more different from each other than they are from the installation areas. It must be stated that if this is not a chance finding, little meaning can be seen in it.

Analysis of the category, "medical purposes", the only response showing a higher overall percentage for the installation areas as a type than for the matched areas, again illustrates the above conclusion that in a few sets the members are deviating in a consistent direction. Oak Ridge (69 percent) and Los Alamos (49 percent) have a larger percentage of medical use responses than their respective matched members, Chattanooga (59 percent) - Cincinnati (41 percent), and Phoenix (38 percent) - Lubbock (24 percent); two other sets (the Brookhaven and Berkeley sets) show the same sort of differences by type, but these differences are smaller. In the same vein, installation areas in four of the seven sets show higher percentages in the "means of heat" category. Neither category shows enough consistency of differences within sets to meet our criterion of statistical significance. However, comparing the very small percentages in the "agricultural purposes" category, we find that these are mentioned more frequently by people in installation areas in six of the seven sets.

Considering types of area only, Table 22 summarizes totals for each type. Of the differences, the one on medical uses approaches statistical significance, although the size of the difference is hardly great.2/

Table 22. Distribution of Uses of Atomic Energy Mentioned, by Type of Area**

Uses	Type of Area		
	Installation	First Match	Second Match
Medical	46%	40%	33%
Power	34	37	43
Motive power	24	23	22
Scientific-industrial	9	16	11
Heat	11	10	8
Agricultural	4	1	1
Military - other than bomb	1	-	1
Odd or unusual responses	2	1	2
Don't know	9	9	13
Not ascertained	4	8	7
	*	*	*

* The columns total more than 100 percent because some respondents mentioned more than one use.

** The table includes only the 1,096 respondents who had heard of the atomic bomb and conceived of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

For almost every category the percentage point deviations between the installation and one or the other of the matched communities are small with the differences between the two matched areas as great or greater than those between the matched areas and the installation area.

It is apparent that many of the same conditions which produce or result in the selection of a particular use for mention exist in areas that do not contain installations as well as in those that do. This obviates any conclusion that the presence of the installation or its associated activities is performing a unique function. What differences are found are not easy to interpret.

The possibility of some kind of medical and power uses was recognized by about a third of the people studied, even without bringing up these specific sorts of uses in direct questions on them. Sizeable minorities of the whole sample had at least the bare idea that there might be motive power, scientific-industrial and heat uses. In the primarily urban or congested rural areas in which interviews were taken, very few mentioned agricultural uses. Happily, very few people had notions of unrealistic or bizarre ways in which atomic energy might be utilized.

2/ The reader is again reminded at this point of the limitations (a) involved in calculating an adequate measure of reliability, and (b) on the reliability of differences in percentages, due to the design of the sample and the restricted numbers of cases.

However, it must be recorded that about one in ten of these people, who had at least not denied any impression that there were other uses than the bomb, did not report the vaguest concept of even general areas in which atomic energy could be used in peacetime.3/ We may add to them the respondents not included in the computations for Tables 20 and 22, because they "had not heard and had no impression of uses other than atomic bomb" -- some seven or eight percent of the total samples for each type of area.4/ This brings those who did not report any slightly differentiated idea of peacetime uses closer to two in ten.

In summarizing this whole section on elementary information about uses, it cannot be said that living near a major atomic energy activity makes any meaningful difference in this respect. From inspection of the interview reports proper, it is clear that information on uses did not go very deep, even for people who were aware of them, no matter where people lived. Perhaps the somewhat more complex aspects of information examined in later sections may show such community effects.

What can be said is that the people interviewed by and large were at least minimally aware that atomic energy is useful in peacetime, and know of one or more technical or productive areas of use. There still remain some few who think only of uses in the atomic bomb, or who presume that atomic energy has peacetime utility, albeit unknown. What we have here is a clue that the informational and educational activities of the Commission might be directed more to types of persons rather than to types of communities -- insofar as it is important to the Commission's program to spread more differentiated information of peacetime uses more widely.

WHAT IS ATOMIC ENERGY?

The data dealt with so far in this chapter were concerned with the simplest information about atomic energy: knowledge of its existence and awareness of possibilities of peacetime use. But what notions and ideas are held about "it"? In reading over the detailed reports of the intensive interviews, it becomes strongly apparent that to most of our respondents atomic energy was a variously interpreted "something", largely of unknown nature, known only through its uses and manifestations. Nevertheless, the terms of reference applied to this "thing" might represent a still vague but more complex level of information, differentiating people in installation and non-installation communities. Furthermore, communities may show differences not only in depth of information in some area of content but also in specific kinds of information content.

In order to ascertain the nature of information about what is in reality an extremely technical and abstract subject, the respondents were asked, "We've been talking a lot about working with atomic energy and living near it -- how it might be used and so forth. What would you say atomic energy is like?" This topic was raised late in the interview, when the respondent was presumably maximally involved in thinking of atomic energy.

The question is, of course, an extremely difficult one, particularly for the extremely well-informed or for the totally uninformed. Analysis of the responses revealed that the very well-informed group could be reliably isolated by phraseology and/or content of their comments and put into a category called "technical responses". These described the process of atomic energy within technical frames of reference. A less informed group were those who had an intelligent layman's understanding of the process but lacked the technical knowledge of the process; their replies were called "informed" responses. The largest group responded to the item in purely descriptive terms.

3/ See footnote **, Tables 20 and 22.

4/ See Table 19.

Although this represented the lowest level of information, certain of the descriptive phrases had connotations beyond the informational ones. Thus some respondents used words to describe atomic energy that had fear referents, such as: "it's terrible", "it's something beyond our control", "it's too horrible to describe", "it's like suffocation", etc. Others described it in terms of wonder: "it's amazing", "it's beyond description", "it's fantastic", etc. Belonging to another sort of these descriptive responses were those that seemed to have no affective connotation; these were termed "neutral" — "it's energy", "it's force", "it's electricity", "it's like an explosion", "it's tremendous power", "chemicals", etc.5/

We thus have not only an informational continuum concerning the nature of atomic energy but some indication of the way in which the subject is viewed by the respondent. Table 23 presents these data.

5/ It should be pointed out that many of the "neutral" responses may have been suggested by an earlier question series. See Appendix A, the Questionnaire, Question 3. There is no reason for believing, however, that this bias should differentially affect the people in different types of communities.

Table 23. "What would you say atomic energy is like?"

Percent in each response category, for each area*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Technical responses	-	1%	-	-	-	-	1%	-
Informed responses	9%	5	3%	4%	-	8%	12	6%
Descriptive: fear	9	4	11	9	5%	7	5	7
Descriptive: wonder, interest	-	7	6	4	5	-	5	4
Descriptive: neutral	23	38	38	27	19	32	50	33
Don't know	59	44	39	53	55	49	25	46
Not ascertained	-	1	3	3	16	4	2	4
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Technical responses	-	-	-	3%	2%	-	2%	1%
Informed responses	-	6%	16%	-	7	5%	26	9
Descriptive: fear	16%	8	2	3	2	3	17	7
Descriptive: wonder, interest	4	6	5	5	27	-	2	7
Descriptive: neutral	38	40	23	39	20	28	21	30
Don't know	40	38	48	45	38	54	29	41
Not ascertained	2	2	6	5	4	10	3	5
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Technical responses	3%	4%	2%	-	-	-	2%	2%
Informed responses	3	4	7	2%	-	2%	6	4
Descriptive: fear	9	7	20	9	2%	5	4	8
Descriptive: wonder, interest	3	-	4	2	2	7	-	3
Descriptive: neutral	47	37	33	30	14	37	43	34
Don't know	32	43	34	57	65	33	36	43
Not ascertained	3	5	-	-	17	16	9	6
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based upon the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total number of 1,258. The derivation of this figure is given in Appendix Table 4.

For both installation and matched areas, from half to over three-quarters of the respondents had heard of radiation. The variation within sets over this range does not favor either the installation or the non-installation areas; that is, either the percentages for all members of a set are similar or, when different, show as much variation between matched areas in a set as between the matched areas and the installation areas. That the direction of the differences that do exist within sets is not consistent is demonstrated by the overall figures for types of areas. These show an almost identical distribution, confirming the analysis of differences within sets; when broken down by types of area, these exist in an almost random fashion.

Possibility of Detection

Those respondents who had heard of radioactivity (850 in number) were asked two questions concerning its detection. The first question of this series was: "Is there any way at all of finding out whether these rays are around?" (If the reply was "Yes") "How?" It was designed to assess the extent to which the population was aware that persons dealing with atomic energy had techniques for the detection of radiation dangers. The data derived from this question are listed in Table 25 and are ordered from the most informed response -- i.e., naming a detection device currently employed (Geiger counters, film, etc.) -- through responses of persons unable to specify a detection method but acknowledging that detection is accomplished, to the least-informed responses -- those who indicated that no way of detecting radiation was available or possible.

Table 25. "Is there any way at all of finding out whether these rays are around?" ("Yes.") "How?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Yes: names a recognized method	45%	37%	63%	51%	45%	53%	51%	50%
Yes: don't know or not ascertained how or names unrealistic method	28	15	12	11	12	18	17	16
No	6	13	11	20	10	10	9	11
Don't know	21	34	10	13	29	16	21	20
Not ascertained	-	1	4	5	4	3	2	3
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Yes: names a recognized method	57%	53%	58%	50%	46%	53%	59%	54%
Yes: don't know or not ascertained how or names unrealistic method	13	16	23	21	39	17	5	19
No	4	16	8	11	11	7	14	10
Don't know	4	15	8	14	4	7	8	9
Not ascertained	22	-	3	4	-	16	14	8
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Yes: names a recognised method	18%	34%	43%	50%	66%	58%	55%	48%
Yes: don't know or not ascertained how or names unrealistic method	18	31	10	8	17	12	23	18
No	12	6	33	19	4	10	5	12
Don't know	29	23	10	12	13	10	15	15
Not ascertained	23	6	4	11	-	10	2	7
	100%	100%	100%	100%	100%	100%	100%	100%

* This table includes only the 850 respondents who had heard of atomic rays, radiation, or "something like that". The derivation of this figure is given in Appendix Table 4.

Once more, information about the detection of radiation is not generally related to differences in types of communities. Totals for types of area are closely comparable. Considering totals, regardless of type of area about one of every two persons who were asked this question were able to mention a known detection device. Something like one out of six thought detection possible, but didn't really know of a method; about one in ten was clearly ignorant of the possibility of detection. Thus, only a small proportion of the people who at least knew of the existence of radiation (whatever that was) did not know or even surmise whether radiation was detectable.

The "reasonable" assumption that more respondents in installation areas as against matched areas would show higher degrees of information is not borne out by further analysis of the data. Matched areas have approximately the same limits of variation as the installation areas. For the most-informed category, "Yes, names a recognized method", the Brookhaven - Fairfield - Passaic set shows a difference between the installation and two non-installation areas in which the matched areas both have lower percentages than the installation area. However, even here the difference between Brookhaven with 63 percent and the matched area Fairfield, with 58 percent, is so small that the difference could be explained by sampling variation. Other sets, except the Los Alamos one, do not show such a direction of difference; for the Los Alamos set, the difference is one percent. Essentially the same situation exists for the two less informed categories of response. It thus appears that the communities are idiosyncratic with reference to information about detection of radiation, among those who knew radiation existed, since the data by types of area show no consistency. There seems to be some exception to this for the "Don't know" category. There is some evidence that the installation areas contain more persons unsure of their knowledge about detection than is found in non-installation areas. In four of the seven sets, differences are consistent; however, with the exception of the Hanford - Grays Harbor - Idaho set, the differences, though consistent, are small.

Can the Average Person Detect It?

Table 26. "Is there any way the average person can tell when the rays are around?" ("Yes.") "How?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Yes: names a recognized method	4%	4%	21%	7%	8%	20%	15%	12%
Yes: don't know, not ascertained how, or names unrealistic method	4	4	2	4	4	3	1	3
No	83	69	66	76	69	66	67	70
Don't know	9	19	6	8	14	10	12	11
Not ascertained	-	4	5	5	5	1	5	4
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Yes: names a recognized method	9%	3%	15%	21%	18%	10%	16%	13%
Yes: don't know, not ascertained how, or names unrealistic method	4	-	8	4	11	3	8	5
No	61	78	58	57	50	63	46	59
Don't know	-	19	19	11	14	10	14	13
Not ascertained	26	-	-	7	7	14	16	10
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Yes: names a recognized method	-%	6%	30%	8%	21%	19%	18%	16%
Yes: don't know, not ascertained how, or names unrealistic method	-	6	10	4	-	3	5	4
No	47	63	57	69	67	55	50	58
Don't know	35	14	-	8	8	13	25	14
Not ascertained	18	11	3	11	4	10	2	8
	100%	100%	100%	100%	100%	100%	100%	100%

* This table includes only the 850 respondents who had heard of atomic rays, radiation, or "something like that". The derivation of this figure is given in Appendix Table 4.

Of those who knew of the existence of radiation, from two-thirds to over three-fourths in the various installation areas did not believe there was any way the average person could tell when rays were around.6/ From half to three-quarters and from half to two-thirds of the various first and second matched areas respectively also gave this response. The proportions in this category contrast to the data in Table 25, and suggest that for most of the respondents who knew that radiation existed the detection of radiation was a matter for experts and that the average person could do little if left to his own devices. Significantly, not only is this idea more widely held among respondents in installation areas than in the matched areas (70 percent to 59 and 58 percents), but the variability of the proportions giving this response is less among the installation communities.

With these leads, the data are now examined in more detail, by set. Table 27 (derived from Table 26) rearranges some of the data for more easy inspection.7/

Table 27. Proportions of Respondents Who Have Heard of Radiation and Who Believe the Average Person Cannot Detect It, by Matched Sets of Communities

Type of Area	Set Number 1	2	3	4	5	6	7	Total
Installation (I)	83%	69%	66%	76%	69%	66%	67%	70%
First Match (M_1)	61	78	58	57	50	63	46	59
Second Match (M_2)	47	63	57	69	67	55	50	58

Table 27a. Rank Position of Community in Each Set

	1	2	3	4	5	6	7	Mean rank
Installation	1	2	1	1	1	1	1	1.1
First Match	2	1	2	3	3	2	3	2.3
Second Match	3	3	3	2	2	3	2	2.6

Table 27b. Percentage Differences Among Members of a Set

	1	2	3	4	5	6	7	Differences in Total %s
$I - M_1$	22%	-9%	8%	19%	19%	3%	21%	11%
$I - M_2$	36	6	9	7	2	11	17	12
$M_1 - M_2$	14	15	1	12	17	8	4	1

Table 27c. Relative Size of Differences in Proper Direction Between and Within Types of Areas for Each Set*

	1	2	3	4	5	6	7	Total
Both $I - M_1 + I - M_2 > M_1 - M_2$	X		X				X	3
Either $I - M_1$ or $I - M_2 > M_1 - M_2$				X	X	X		3
$M_1 - M_2 > I - M_1 + I - M_2$		X						1

* "Proper Direction" means in the direction indicating relatively higher position for the installation area.

6/ The question was: "Is there any way the average person can tell whether the rays are around? (How?)" The query was phrased in this way because pretest experience showed that a direct question about experts was not feasible -- i.e., if they are "experts" they obviously can detect radiation.

7/ As background, let us recall that approximately two-thirds of the respondents in each of the three groups of areas had heard of radiation (Table 23), and that the above data are only for these relatively informed people. Among them, in addition, about two-thirds thought radiation could be detected,, with half naming a recognized method (Table 25).

It is quite clear from this table that the presence of an installation is related to belief that the average person cannot ordinarily detect the presence of radiation. To the extent that this belief is realistic, it represents information. In six of the seven sets, the installation member ranks first in proportion of people responding in this category. (Set # 2 is the exception, but even here it ranks second.) While it is true that for two of these six sets (# 5 and # 6) the percentage differences between the installation community and the highest ranking matched community are only two and three percents, statistical significance depends more on consistency of direction of differences than on their size. It will be noted from the "mean rank" column that the two groups of matched areas are similar in rank, both being at least one rank position below the group of installation areas. The more exacting criterion represented in Table 27c, which takes account of relative size of differences, does not discourage confidence in these conclusions.

What interpretation can be attached to this finding? When examining sets there is no easily recognizable positive or negative relation between residence in installation community and belief that the average person can detect radiation (whether or not a method for doing so is stated), although a quite small and possibly chance negative relation may be discerned -- if one looks hard and long at the data. The same situation exists in the analyses of the differences within sets for the "don't know" and the combined "don't know" - "no ascertainable response" categories. What is obviously most likely is that no single other information or belief category is exceptionally lower in the installation communities as a whole (as contrasted with the matched communities), to compensate for the higher proportion of those responding "No" to the question under discussion. Rather, all of the other categories are slightly lowered to supply this "bulge" in the "No" category. The difference we have found, in short, is an outstanding one and not incidental to a more primary difference in another single category. There is, then, a greater tendency for people in installation areas (who know radiation exists) to surmise that it takes something more than the average man is equipped or bestowed with to detect radiation -- although we can see, from Table 25, that the types of area do not differ in the proportions of people who thought there were <u>ways</u> of detecting radiation.

A simple figure may serve to summarize again some useful aspects of the earlier data in this section. The percentages are approximate.

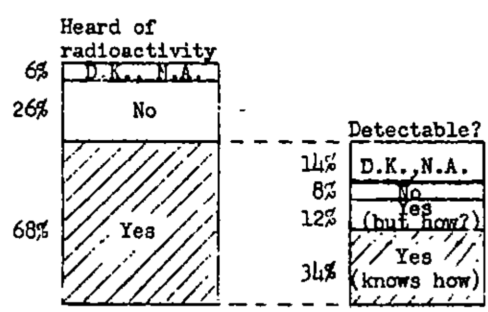

Figure includes data from both types of areas combined, since there were only minor differences between totals for types of areas.

It must be recalled that it is uncertain exactly what population we have sampled. Whatever it is, about a third of its people both know radiation exists and have a realistic idea of means of detecting it.

IDENTIFICATION OF AN ATOMIC ENERGY INSTALLATION

Knowledge of where an atomic energy installation is located was considered an obvious means of differentiating people in the two types of areas. The main purpose of seeking such information was for the analysis of individual and group difference in Volume II. Moreover, it cannot be taken for granted that all people in an installation area know that an installation exists (in fact, they do not), or that people in other locations differ from them on this.

The responses to the question, "Do you know of any places in this part of the country where they're working with atomic energy or atomic materials?", are of some interest for studying community differences, as will appear in this section. Responses were classified into "right" - "wrong" categories, on the basis of known locations of atomic energy installations. Thus code categories were devised for responses correctly identifying the installation closest to the respondent's community -- the most "informed" response to the question -- for those who named any installation other than the closest, and for those who did not name or locate any atomic energy installation whatsoever.

Table 28. "Do you know of any places in this part of the country where they're working with atomic energy or atomic materials?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford**	Berkeley	Ames	Area
	Installation Area							
Correctly names nearest atomic energy installation	92%	74%	88%	90%	89%	75%	86%	85%
Names or locates an atomic energy installation	4	9	2	3	2	10	9	6
Don't know any place	4	12	8	7	9	14	4	8
Not ascertained	-	5	2	-	-	1	1	1
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Correctly names nearest atomic energy installation	78%	13%	11%	42%	62%	3%	2%	30%
Names or locates an atomic energy installation	9	22	30	26	4	51	40	26
Don't know any place	13	63	52	32	31	41	58	42
Not ascertained	-	2	7	-	3	5	-	2
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Correctly names nearest atomic energy installation	38%	-%	11%	30%	49%**	44%	23%	27%
Names or locates an atomic energy installation	18	31	-	21	35	12	28	21
Don't know any place	41	69	87	49	16	37	49	50
Not ascertained	3	-	2	-	-	7	-	2
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

** For set # 5 (Hanford) a special circumstance existed. Idaho and Grays Harbor were selected as matches for the Hanford installation area. However, an atomic energy activity was, at the time of the study, being initiated at Arco, Idaho. Respondents in the Idaho area quite often, and perhaps correctly, identified Arco as the nearest installation. Therefore, either Arco or Hanford was considered to be a correct naming of the "nearest installation" for the Idaho respondents.

In the distributions for this item it is hardly surprising to find clear-cut and unambiguous differences between types of areas. On the average, knowledge of atomic energy installations is higher in regions within twenty-five miles of major atomic energy activities than in non-installation areas, in the order of almost three to one for the category "correctly names nearest atomic energy installation". Similarly, the matched areas have a much higher percentage of persons ignorant of the name or location of any installation by better than five to one. In all cases, the sets of areas show more people with less information in their matching members than in their installation members, and the differences are large.

Total percentages in various categories for the types of areas summarize the situation.

Table 29. Distribution of Knowledge of Installation Location by Type of Area

Knowledge of Installation Location	Type of Area: Installation	First Match	Second Match
Correctly names nearest atomic energy installation	85%	30%	27%
Names or locates an atomic energy installation	6	26	21
Don't know any place	8	42	50
Not ascertained	1	2	2
	100%	100%	100%

That these results are of course related to the presence of the installation is noted by the similarity between the matched areas, as distinct from the comparative data for the installation areas.

That about half of the people in the matched areas, as a whole, knew of the presence or name of some installation somewhere, and about half of these knew the nearest one, should not be taken as an excessively encouraging sign of the extent of information among the people. This may well depend upon the manner in which the matching was done. Thus, an interesting ordering of the percentages appears in the distributions within sets of areas in Table 28. It seems that knowledge of the nearest installation is uniformly related, in each of the seven sets, to the physical distance between the respondent's community and the nearest atomic energy installation; correctly identifying the nearest installation seems to be inversely related to the distance between the community and the installation. Conversely, ignorance of any installation is directly related to this distance. Matching areas were selected in the same general region as the installation area, but the two best matches in a region were not equally close to the installation.

Taking the responses to the first category, this can be illustrated by ordering the matched communities within sets according to distance from the installation area.

Table 30. Proportion in Area Naming Nearest Atomic Energy Installation, by Type of Area and Distance from Nearest Installation

Set No.	Type of Area: Installation	Closest Match	Farthest Match
1	92%	78%	38%
2	74	13	—
3	88	11	11
4	90	30	42
5	89	49	62
6	75	44	3
7	86	23	2

The same distance relationship is also apparent when the response, "Don't know of any place", is considered. Here we would expect those matched areas closest to the installation to exhibit the lower percentage of lack of information. The distribution verifies this expectation.

Table 31. Proportion in Area Unable to Name Any Atomic Energy Installation, by Type of Area and Distance from Nearest Installation

Set No.	Installation	Closest Match	Farthest Match
1	4%	13%	41%
2	12	63	69
3	8	52	87
4	7	49	32
5	9	16*	31*
6	14	37	41
7	4	49	58

* The reversal of the relative size of "don't know" responses for "closest match" as against the "farthest match" area occurs here because for Idaho (16 percent "don't know"), publicity of the developments at Arco have made that area well known in the state. Arco was accepted as a correctly named installation, although Idaho was taken as a match for Hanford.

In passing, two minor points may be mentioned. The tables of this section indicate that the variability of the responses within the group of installation communities is less than that within both of the groups of matched areas; this we may reasonably expect. The point is made because it helps interpret the overall figures for matched areas in Table 29. They are less reliable than the data for installation areas as a whole. Secondly, even for the group of areas within twenty-five miles of a major activity of the Commission or its contractors, approximately one in eight people did not know of the nearest or of any location where atomic energy work was going on (weighting each area approximately equally).

In sum, it is apparent that people in the installation areas are significantly more informed on the presence of atomic energy installations than are those in non-installation communities and it appears that this information decreases with distance. How important this factor of proximity is in the information - interest - reaction patterns of individuals is not assessed here. This will be one subject in a forthcoming report.

SOURCES OF INFORMATION

The series of questions in this section was designed to determine recency and sources of information, as well as what media the respondents saw as useful means of getting information. The kinds of questions we were interested in studying were: Did people in the two types of area differ in information sources they used? Are the media from which the respondent had recently "heard" about atomic energy the same or different from those where he said he got most of his information about the subject, or those to which he would go to get some desired information?

Recency

The distributions of responses to the question, "Have you heard or seen atomic energy mentioned anywhere at all lately?" (If "No") Is there any time in the last year you can recall having seen or heard anything about atomic energy?", are shown in Table 32.

Table 32. "Have you heard or seen atomic energy mentioned anywhere at all lately?" If "No:" "Is there any time in the last year you can recall having seen or heard anything (else) about atomic energy?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Has heard or seen lately	44%	61%	75%	55%	51%	70%	79%	63%
Thinks probably has heard or seen lately	3	3	2	5	3	4	6	4
Not lately, but during past year	16	17	6	11	17	9	5	11
Not lately, but thinks probably during past year	2	5	2	4	3	5	1	3
Not seen or heard during past year	33	13	15	24	20	12	8	18
Don't know	2	-	-	-	1	-	-	-
Not ascertained	-	1	-	1	5	-	1	1
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Has heard or seen lately	62%	74%	68%	69%	80%	89%	61%	72%
Thinks probably has heard or seen lately	5	-	2	6	-	-	10	3
Not lately, but during past year	16	18	14	8	8	9	-	11
Not lately, but thinks probably during past year	-	-	2	6	5	-	2	2
Not seen or heard during past year	11	8	7	11	5	-	15	7
Don't know	-	-	-	-	-	-	-	-
Not ascertained	6	-	7	-	2	2	12	5
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Has heard or seen lately	67%	66%	63%	60%	56%	77%	76%	65%
Thinks probably has heard or seen lately	-	-	-	5	5	3	2	.2
Not lately, but during past year	10	12	14	17	15	10	15	14
Not lately, but thinks probably during past year	7	2	-	5	5	3	5	4
Not seen or heard during past year	13	20	23	12	19	5	2	14
Don't know	-	-	-	1	-	-	-	-
Not ascertained	3	-	-	-	-	2	-	1
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

Analysis by comparing totals for areas or variation in percentages within types of areas is not expecially revealing. For all individual areas except Oak Ridge, over half the respondents remembered having heard or seen some mention of atomic energy recently, but a not insignificant number in both installation and non-installation areas reported not having seen or heard mention of the subject during the last year. "Seeing" and "hearing" something, as well as the degree of continuing saliency of what was seen or heard so that it would be remembered and reported — all of these are based on psychological functions, to a certain extent independent of the amount of information transmitted by the communication media.

These considerations become important in interpreting the results of analysis of the data in Table 32 by sets. For both the category "has heard or seen lately" and a combination of this category with the "probably has heard" one, the installation area in five of the seven sets has a lower proportion than either of its matches. In four of these five instances the size of the difference is about five percent (only the Oak Ridge set being deviant in this respect); in the main, the size of differences between matched areas in sets is greater than the size of differences between the installation area and the matched areas. Nevertheless, the installation areas seem slightly but definitely to have had proportionally fewer people who stated they "lately" heard or saw something about atomic energy. Examination of within-set differences for the two "past year" categories separately and combined, and for the "not during past year" category, shows that on the whole the same results are reflected principally in the latter category, although the relation between residence in installation community and recall of seeing no information in the past year does not quite reach our criterion of statistical significance.

In any case, only about 18 percent are included in the total in this category for installation areas. Two thirds still report awareness of recent mention of atomic energy. The differences between types of areas can hardly be interpreted to mean that the presence of an appreciably large atomic energy activity suppresses mention or note of atomic energy events reported via communications media. What is probably true is that for most people atomic energy is now more or less "old stuff", but in the installation areas it is psychologically "older stuff". Supporting this hypothesis is the fact that relatively more people in the areas of the first established installations — Oak Ridge, Hanford, Los Alamos — than in other installation areas reported not "having seen or heard anything in the past year". That on the whole differences between installation and non-installation areas are small is probably due both to the high development of our national communications system and to the fact that much about atomic energy is considered to be news anywhere by press and radio.

Media of Atomic Energy Information

For those persons who had seen or heard something about atomic energy lately or during the past year, Table 33 presents the distribution of the source as spontaneously reported. The high percentages in the "not ascertained" category exist because the source for this item was not specifically requested.

Table 33. Source of What Was Seen or Heard Recently, in Last Year

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Percent in each response category, for each area**							
	Installation Area							
Newspapers	31%	30%	31%	44%	44%	54%	33%	37%
Radio	11	15	16	10	5	25	13	14
Magazines	5	7	14	16	5	13	11	10
Personal contact	8	5	8	11	11	10	16	10
Talks, exhibits	-	3	6	-	-	3	1	2
Pamphlets	2	-	-	-	-	2	-	1
Television	-	3	-	-	-	2	1	1
Movies	-	1	1	-	2	-	-	1
Books	-	-	-	-	-	-	-	-
Don't know	3	5	-	-	-	-	-	1
Not ascertained	52	43	41	37	40	15	39	38
	*	*	*	*	*	*	*	*
	First Matched Area							
Newspapers	61%	26%	20%	31%	32%	17%	46%	32%
Radio	21	11	15	19	26	11	20	17
Magazines	12	11	20	16	18	14	23	16
Personal contact	3	7	10	13	11	3	9	8
Talks, exhibits	-	2	-	-	3	-	6	2
Pamphlets	-	-	-	3	-	3	-	1
Television	-	2	5	-	-	-	-	1
Movies	-	-	2	3	-	-	-	1
Books	-	-	2	-	-	-	-	-
Don't know	-	2	5	-	-	-	-	1
Not ascertained	24	54	24	28	26	60	31	36
	*	*	*	*	*	*	*	*
	Second Matched Area							
Newspapers	23%	55%	19%	33%	42%	30%	50%	37%
Radio	8	9	3	14	30	5	30	15
Magazines	8	21	9	8	21	27	30	18
Personal contact	8	6	9	3	15	5	5	7
Talks, exhibits	-	-	-	-	-	-	-	-
Pamphlets	4	-	-	-	-	-	-	-
Television	-	6	9	-	-	-	-	2
Movies	-	3	3	-	-	8	2	2
Books	-	-	-	-	-	3	5	1
Don't know	4	-	-	-	-	-	-	-
Not ascertained	54	27	59	50	18	32	16	35
	*	*	*	*	*	*	*	*

* Columns total more than 100 percent because some respondents gave more than one source.

** This table includes only the 1,001 respondents who had seen or heard mention of atomic energy recently or within the past year. The derivation of this figure is given in Appendix Table 4.

For all areas, newspapers provided the most popular referent for the information gained ; magazines and the radio were the next most frequent media reported. This order was present in both the installation and matched areas. Although sizable variations within sets of areas are present, the differences are small and, except in a few sets for some categories of response, in no consistent or significant direction. There is some indication that magazines are less likely to be referred to as sources in installation areas, but this is so to a small extent.

A comparison of these data with the distributions of media mentioned as giving the most information to the respondent gives substantially the same picture.

Table 34. "Of the various things you've heard and read and talked about, where would you say you've gotten most of your ideas about atomic energy?"

Percent in each response category, for each area**

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
Installation Area								
Newspapers	74%	50%	51%	40%	49%	49%	45%	51%
Magazines, pamphlets	9	25	26	23	24	30	38	25
Radio, television	27	25	20	7	4	21	20	18
Friends, relatives	15	10	15	20	14	11	15	14
Reading (not ascertained what)	-	4	1	2	6	7	8	4
Movies	1	3	3	2	3	3	2	2
Official sources	2	3	3	-	1	5	5	3
Books	6	-	1	1	-	3	5	2
Talks, exhibits, panels	1	-	2	2	-	-	3	1
Don't know	1	-	-	6	1	1	-	1
Not ascertained	1	6	8	14	13	5	-	6
	*	*	*	*	*	*	*	*
First Matched Area								
Newspapers	53%	61%	43%	39%	40%	54%	44%	48%
Magazines, pamphlets	13	37	27	42	25	29	39	31
Radio, television	13	10	27	22	25	14	20	19
Friends, relatives	13	8	9	11	12	11	7	9
Reading (not ascertained what)	-	2	5	3	8	14	5	5
Movies	3	-	7	-	5	6	-	2
Official sources	-	-	2	-	-	3	2	1
Books	3	2	2	3	-	-	7	2
Talks, exhibits, panels	-	-	2	-	2	3	-	1
Don't know	-	-	2	-	-	-	-	-
Not ascertained	14	8	11	6	-	6	17	9
	*	*	*	*	*	*	*	*
Second Matched Area								
Newspapers	53%	68%	44%	45%	51%	56%	38%	51%
Magazines, pamphlets	47	32	21	24	27	23	29	28
Radio, television	20	17	30	19	27	8	24	21
Friends, relatives	13	5	14	12	17	23	11	14
Reading (not ascertained what)	-	7	2	2	2	10	4	4
Movies	7	5	5	7	5	3	2	5
Official sources	-	2	2	2	-	-	7	2
Books	-	-	-	2	-	-	-	-
Talks, exhibits, panels	-	-	2	-	-	-	9	2
Don't know	-	-	2	2	-	-	-	1
Not ascertained	10	-	2	7	-	10	-	4
	*	*	*	*	*	*	*	*

* Columns total more than 100 percent because some respondents gave more than one source.

** The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

Taking the data as a whole, newspapers provide the most information, magazines and radio occupy the second level of popularity (with magazines clearly second in order), and personal contact with friends, relatives, etc. the next sizeable proportion. These orders were expected on the basis of data gathered on the communication process in other studies.

Certain community idiosyncrasies do appear in this table. Note, for example, the low proportion of magazine readers in the Oak Ridge and Chattanooga areas as compared to magazine readership in Cincinnati. That this is not related to an atomic energy plant is noted by the similarity between the installation area, Oak Ridge (9 percent) and the matched area Chattanooga (13 percent) when compared to the second matched area of this set, Cincinnati (47 percent). Also, Los Alamos and Hanford exhibit peculiarities in radio listening. When compared to their matched areas, these installation areas have a sizeably lower percentage of listeners. It is reasonable that factors other than the installation are operating here, such as the number of clear signals available. We have the evidence that there is no consistently lower radio listening in the installation areas, Los Alamos and Hanford being the only cases. In the other five sets, differences among areas are either extremely small or do not favor any one type of area.

It should be noted that in both Tables 33 and 34 recourse to media that require specialized interests and strong motivations are negligibly reported. Books, official sources, and formal oral presentations are very minor informational channels, although talks and exhibits would seem more important for this topic than for many others. The situation with respect to movies should also be noted.

Where Information May Be Had

There remains one further aspect of our discussion of sources of information: where would people go to get some desired piece of information? Table 35 presents responses to the question, "Is there any place that you know of where you can get that (desired) information?" This question followed an inquiry into what the respondent wanted to know about atomic energy.

Table 35. "Is there any place that you know of where you can get that information?"

Percent in each response category, for each area*

Response categories	Oak Ridge	Argonne	Brookhaven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Books, library	1%	11%	5%	5%	4%	8%	7%	6%
Official sources	4	5	12	6	1	11	8	7
Newspapers	-	1	1	-	-	4	-	1
Personal contact	-	1	2	1	-	3	-	1
Radio, television	-	-	-	1	-	-	-	-
Magazines	-	2	1	-	1	-	1	1
Talks, exhibits, panels	-	1	-	-	-	-	-	-
Semi-official sources	-	1	-	-	-	-	-	-
Don't know	1	2	1	-	-	-	5	1
Knows of no place	21	25	15	17	32	21	22	22
Nothing wondered about	69	46	56	65	59	45	48	55
Not ascertained	4	5	7	5	3	8	9	6
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Books, library	18%	16%	7%	8%	3%	14%	12%	11%
Official sources	3	10	7	14	-	6	7	7
Newspapers	3	-	-	-	-	3	-	1
Personal contact	-	-	-	-	-	6	-	1
Radio, television	-	-	-	-	-	-	-	-
Magazines	-	-	-	-	-	-	-	-
Talks, exhibits, panels	-	-	5	-	-	-	-	1
Semi-offical sources	-	-	2	-	-	-	-	-
Don't know	-	-	-	-	5	-	-	1
Knows of no place	33	26	18	22	12	31	2	20
Nothing wondered about	35	46	50	45	77	31	47	48
Not ascertained	8	2	11	11	3	9	32	10
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Books, library	10%	15%	5%	5%	-	8%	4%	6%
Official sources	-	3	7	2	12%	8	11	6
Newspapers	3	-	-	-	-	-	2	1
Personal contact	-	-	-	-	-	-	-	-
Radio, television	-	-	-	-	-	-	-	-
Magazines	-	-	2	-	5	3	-	1
Talks, exhibits, panels	-	-	-	-	-	-	-	-
Semi-official sources	-	-	-	-	-	-	-	-
Don't know	3	-	2	-	5	3	-	2
Knows of no place	27	22	37	38	36	20	9	27
Nothing wondered about	50	60	38	55	37	50	70	52
Not ascertained	7	-	9	-	5	8	4	5
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

The percentages given in Table 35 for the various sources are low because they are based on a sample that includes those persons who did not want any further information. Thus, the large numbers in this uninterested group resulted in uniformly smaller percentages for the other categories. The responses to this source item were not tabulated as percentages of those who wanted to know something. This was because of the comparatively small size of this group; were this group taken as a base (100 percent) and distributed by categories of response, the percentages would be larger but their unreliability because of small numbers would be concealed.

About half the population studied expressed no specific concern for further information and approximately one-fourth of the sample, while wanting some specific kinds of information, knew of no place to go for their data. Only about one-sixth of the population expressed any source choice. This implies that one-half of the population studied are either satisfied with or indifferent to information about atomic energy, and of those who did wonder about some aspect of the subject, about half knew of no place to go to satisfy their interest, while slightly less than half could specify particular sources.

An interesting shift in evaluation of media occurs in this question. Official sources and books or libraries, almost totally disregarded as sources from which the population does receive information, are the most popularly perceived repositories when people are looking for information they want. Newspapers, the radio, and magazines, the most popular sources for the respondents' information, are considered negligible sources for the kinds of information wanted by those who are interested in more information. It appears that motivation to know something relating to atomic energy, plus the knowledge of the various routes (media) available toward that knowledge, function to select the kinds of media that require more personal effort or participation.

This summary of the distributions in Table 35 is not unique to areas containing installations. Some inconsistencies between installation and non-installation areas are noted in the much lower percentage of "books, library" responses in the Oak Ridge area (1 percent) than in the matched areas for this set, Chattanooga (18 percent) and Cincinnati (10 percent). Also, Ames contains a high group of respondents (22 percent) ignorant of where to go to get their information when compared with the matched groups Ann Arbor (2 percent) and Iowa City (9 percent). The unique distributions for these areas are exceptions, though, and not general cases. In almost all other cases, for all areas in all categories, the percentages for the types of areas as a whole are quite similar, indicating that no consistent differences exist between the installation and non-installation communities.

ACCEPTANCE OF ODD OR UNUSUAL INFORMATION

The reasons for including a series of items dealing with odd and unusual information are twofold. First, the extent of confused thinking about manifestations of atomic energy or phenomena presumably caused by atomic energy can be approximated. The acceptance as true of information that has no factual relation to atomic energy, or only a very tenuous one, indicates an unrealistic, vague or disorganized structuring of the subject for the respondent. That is, the factors that determine for the individual what to believe or reject about atomic energy are not grounded in logically related, empirical fact. At the beginning of this chapter we referred to the general absence of a well structured core of information or frame of reference within which pertinent data on atomic energy could be fitted and which could serve as a criterion for the exclusion of irrelevant or inconsistent information. Without this central core, data are accepted or believed as a function of information needs not supplied by the formal, more reliable channels or as a function of a set of misleading or false frames of reference into which rumor or scare items, of the type dealt with here, logically and consistently fit. For whatever reasons odd or unusual information is accepted, the result appears (at least in the responses to the statements presented here) as confusion -- the assimilation of data inconsistent with or contradictory to realistic information, understanding, and attitudes about atomic energy.

Chapter 5

INTEREST AND OTHER REACTIONS TO ATOMIC ENERGY

This chpater contains three main sections. These concern interest in atomic energy matters, reactions to working with atomic energy, and general reactions of a more or less emotional sort.

INTEREST

Interest is, of course, an important variable to understand in the study of public thinking about atomic energy. The extent to which a given level of interest is exhibited by the population is, with due regard to other modifying factors, likely to be the extent to which information-seeking goals will be pursued. Interest is likely to be related to the kinds of behavior evinced toward public discussion of atomic energy programs in our society. Although we do not conceive interest to be a sufficient condition for the kind of behavior we would call "adaptive" in living with the phenomenon of atomic energy and participating in influencing public policy on it, the absence of interest would make a realistic behavior pattern toward this new force in our life more difficult.

A measure of interest was approached from more than one direction, that is to say, interest in atomic energy as a whole was not seen as a unitary but as a generic thing, covering many specific areas and indicated by responses to questions concerning different aspects in the relationship of the individual vis a vis atomic energy. These measures of aspects of interest could be broadly classified into "behavioral" and "attitudinal" indices. In the six questions relating to interest, two were concerned with the behavior of the individual in specific situations and the remaining four dealt with attitudes in areas which we posited as indicators of interest.

Behavioral Aspects of Interest

Going on to read about atomic energy

Following the question on whether the respondent had seen or heard any mention of atomic energy recently or during the past year (data for which were reported in the previous chapter), the question was asked: "Did you go on to listen or read about it?" This question was put to everyone who had not definitely stated that he had seen or heard nothing recently or in the past year. Table 37 presents the percentages for the various responses to this question. The "hasn't seen or heard lately" category represents those who were not asked the question.

Table 37. "Did you go on to listen or read about it?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Yes	28%	35%	50%	34%	25%	45%	52%	39%
Sometimes	-	1	8	6	6	5	-	4
No	10	16	14	14	21	22	21	16
Hasn't seen or heard lately	51	34	24	40	41	25	14	32
Don't know	1	1	-	-	1	-	-	1
Not ascertained	10	13	4	6	6	3	13	8
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Yes	19%	48%	50%	42%	58%	49%	22%	41%
Sometimes	-	2	-	3	5	-	7	2
No	8	18	7	11	8	40	15	15
Hasn't seen or heard lately	30	28	25	25	18	9	20	22
Don't know	3	-	2	-	-	-	-	1
Not ascertained	40	4	16	19	11	2	36	19
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Yes	50%	39%	44%	31%	39%	56%	43%	43%
Sometimes	-	5	-	5	2	-	11	4
No	13	12	16	14	12	23	13	15
Hasn't seen or heard lately	30	34	37	36	39	18	22	31
Don't know	-	-	-	-	-	-	-	-
Not ascertained	7	10	3	14	8	3	11	7
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had some impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

Of the 1,170 respondents asked about the recency of any notice of the subject, from about 10 to about 20 percent (all of whom had at least not denied notice) in the installation areas did not evince sufficient interest to continue reading or listening.1/ From one-fourth to half of the respondents in these areas said they did continue and less than 10 percent reported they did so irregularly. Whether this extent of interest in the subject was influenced by the presence of an atomic energy installation in these areas can be determined by a comparison with the non-installation areas. With only one exception, the differences within sets of areas for the category connoting the most interest are either small, as illustrated by the Brookhaven (50 percent) - Fairfield (50 percent) - Passaic (44 percent) set, or equally great between matched areas as between the matched areas in the set and the installation area, e.g., Oak Ridge (28 percent) - Chattanooga (19 percent) - Cincinnati (50 percent). The sole and therefore insignificant exception is the Hanford (25 percent) - Grays Harbor (58 percent) - Idaho (39 percent) set in which Hanford shows less indication of interest than either of its matched areas.

Correspondingly, the category indicating the lowest interest level, "Did not go on to listen or read about it", contains no outstanding and consistent differences between installation and matched areas, again with the exception of the Hanford set. As might be expected by the relatively low indication of interest elicited from this community, Hanford contains a relatively high proportion of non-interested respondents when compared to its matched areas. Generally, installation areas show about the same kind and amount of variation as the non-installation areas for all responses to the item. Hanford appears to be responding uniquely from the other installation areas in the sample.

Frequency of discussion

The second question in the behavioral class of interest items was concerned with frequency of discussion of atomic energy. It is supposed that a subject of interest engenders a relatively frequent amount of discussion among the interested members. The questions here were: "Some people talk over things about atomic energy with their family and friends. Do you ever do that?" (If "Yes") "Would you say you did that rather often, just once in a while, or hardly ever?"

1/ The figure of 1,170 respondents excludes from the basic number of interviews (1,276) the 18 people who had not even heard of the atomic bomb, and the 88 people who conceived of no uses for atomic energy other than for the bomb.

Table 38. "Some people talk over things about atomic energy with their family and friends. Do you ever do that?" If "Yes:" "Would you say you did that rather often, just once in a while, or hardly ever?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Frequently	-%	1%	4%	1%	3%	5%	3%	2%
Often, fairly often	5	5	11	6	-	4	6	5
Once in a while	16	32	21	39	32	37	38	30
Hardly ever, rarely	12	11	25	7	11	9	15	14
Never	64	46	35	41	54	42	33	46
Don't know	-	-	-	1	-	-	-	-
Not ascertained	3	5	4	5	-	3	5	3
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Frequently	-%	4%	2%	6%	3%	3%	-%	2%
Often, fairly often	3	12	11	-	12	17	7	9
Once in a while	35	32	25	28	38	20	20	28
Hardly ever, rarely	24	16	9	14	17	14	29	18
Never	32	34	48	50	30	37	24	37
Don't know	-	-	-	-	-	-	-	=
Not ascertained	6	2	5	2	-	9	20	6
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Frequently	-%	-%	2%	2%	2%	5%	2%	2%
Often, fairly often	7	2	14	5	2	15	7	8
Once in a while	37	37	43	19	32	23	31	30
Hardly ever, rarely	13	15	10	17	27	21	16	17
Never	43	37	31	52	34	33	40	39
Don't know	-	-	-	-	-	-	-	-
Not ascertained	-	9	-	5	3	3	4	4
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

The first result that Table 39 presents is that about one-half the particular population we have here is disinterested in further data about atomic energy; there is nothing further that they are wondering about. Of those who are unsatisfied with their present knowledge (some 40 percent of the table), about two-thirds are interested in various peacetime uses of items of information and about one-fifth (or some 10 percent of the total sample) were directly interested in data about the bomb. Approximately 5 percent of those interested, or about 2 percent of the sample, responded in terms of the political or moral connotations of the subject.

The installation areas Oak Ridge and Los Alamos have higher proportions in the "uninterested" response category (nothing wondered about) than either of their matched areas. For the other sets, the variations are not meaningfully devisable into an installation - non-installation pattern. A community peculiarity is noticed for Grays Harbor; in this category, 78 percent of its respondents, a higher proportion than exists in any other area, exhibit no curiosity for further data. This interesting fact does not, however, have immediate relevance to the absence of an installation in this area -- Idaho, the other non-installation member of the set to which Grays Harbor belongs, has a lower proportion in this category than Hanford, the installation member of the set.

The kinds of things wondered about, the indicated categories of interest, show no outstanding differences between types of areas. Peacetime uses and effects are the more popular response for all areas except Passaic, which seems more concerned with data relating to the bomb. Summary measures indicate that differences within sets of areas are not reacting to the presence or lack of installations; communities appear to be ordered independently of this, or, if affected, are not being affected by the same pattern of influence.

Importance to young people

The second attitudinal question dealing with interest in atomic energy recognized that importance of atomic energy to the individual respondents may be vitiated by a number of factors such as the respondent's age, education, immediate problems, extreme technicality of the subject, etc. This allows for the possibility that although his interest in the subject may be low because of these factors, the interest he sees the subject having for others may be considerable. Thus, a latent expression of interest is possible by projecting the importance of atomic energy onto those whose relationship with the subject is or might be more immediate. To the extent that the respondent recognizes the future (and thus not immediately relevant for him) importance of the subject, we have some indication of his interest: interest is lowest (that is, even a latent interest is lacking) for those respondents who do not think it important even when projected upon another group or into the future; some interest is present when its importance is accepted albeit not for the respondent. Importance to young people of high school age was selected because this poses the investigation in terms of the near future and because of the generality of this population -- the common acceptance of the fact that "the youth of today are the citizens and leaders of tomorrow".

With this understanding of the question, "How important do you think it will be for these young people (of high-school age) to understand atomic energy?", the data in Table 40 reveal an importance of atomic energy not demonstrated in the other interest items.

Table 40. "How important do you think it will be for those young people (of high-school age) to understand atomic energy?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Very important	36%	48%	48%	62%	40%	43%	43%	46%
Important	42	29	27	19	41	29	35	31
Neutral, pro-con	2	6	8	3	4	4	7	5
Not important	4	2	1	-	3	2	2	2
Not at all important	4	-	1	1	-	1	1	1
Don't know	5	7	5	-	3	8	3	5
Not ascertained	7	8	10	15	9	13	9	10
	100%	100%	100%	100%	100%	100%	100%	100%
	First Installation Area							
Very important	42%	31%	48%	55%	31%	56%	40%	42%
Important	38	34	39	21	40	31	38	35
Neutral, pro-con	2	10	2	3	4	-	12	5
Not important	9	6	2	-	-	-	5	3
Not at all important	-	-	-	-	-	-	-	-
Don't know	2	2	2	3	5	3	2	3
Not ascertained	7	17	7	18	20	10	3	12
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Very important	38%	55%	49%	40%	51%	42%	45%	46%
Important	29	26	27	28	40	16	30	28
Neutral, pro-con	6	4	4	9	7	9	15	8
Not important	-	4	7	2	-	7	2	3
Not at all important	-	-	-	-	-	2	-	-
Don't know	9	-	4	-	-	7	2	3
Not ascertained	18	11	9	21	2	17	6	12
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based upon the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total number of 1,258. The derivation of this figure is given in Appendix Table 4.

Slightly less than half the population consider it very important for high-school age people to understand atomic energy, with decreasing proportions for lower levels of importance. The "not at all important" group is almost negligible. Generally, about three-quarters of the sample occupy a position in the "important - very important" combination. Less than 5 percent are on the "not important" end of the scale. It is interesting to note that attitudes toward this kind of importance are decisive -- few persons are doubtful or neutral. The clear-cut indication of importance given this item holds true regardless of the type of area sampled. Differences within sets are generally small, and variations between sets, although not large, appear to be reflecting demographic or other unique characteristics of their communities since these differences exist generally for each member of the sets.

Summary measures show this consistent demonstration of importance without regard to type of area.

Table 41. Distribution of "Importance for Young People", by Type of Area

Importance for Young People	Type of Area Installation	First Match	Second Match
Very important	46%	42%	46%
Important	31	35	28
Neutral, pro-con	5	5	8
Not important	2	3	3
Not at all important	1	-	-
Don't know	5	3	3
Not ascertained	10	12	12
	100%	100%	100%

General interest in science

The last attitudinal item used to assess interest in atomic energy placed the subject in the larger frame of reference of science in general. Interest in science is hypothetically a likely modifying variable in reactions toward atomic energy. For the purposes of this report, an item concerning interest in science serves another purpose: it affords us an oblique measure of interest in atomic energy by concerning itself with the genus of activity of which atomic energy is a species. It seems reasonable that interest in the general area of science allows for a greater interest in the specific subject — atomic energy

The question asked was: "Would you say you were more interested or less interested in scientific things than people in general?" Responses to the question were ordered along a five point continuum, from "much more interested", "more interested", "average", to "less interested" and "much less interested". Note that the question is posed in comparative terms; respondents are asked to evaluate their interest against evaluations of the interests of people in general. This permits the expression of apathy ("about average") to be made without loss of prestige and further allows for greater confidence in evaluating the uninterested group, since these are admittedly uninterested despite the perceived existing level of interest.

Table 42. "Would you say you were more interested or less interested in scientific things than people in general?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Much more interested	-%	2%	1%	1%	-%	1%	1%	1%
More interested	26	27	23	39	32	26	46	31
Average, pro-con	31	15	22	11	13	20	26	20
Less interested	30	38	35	34	35	32	25	33
Much less interested	2	2	5	-	1	-	-	1
Don't know	6	3	1	1	3	6	-	3
Not ascertained	5	13	13	14	16	15	2	11
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Much more interested	-%	-%	2%	-%	-%	-%	2%	1%
More interested	16	29	25	40	31	44	43	32
Average, pro-con	7	19	18	18	27	20	19	18
Less interested	53	44	32	16	29	20	26	32
Much less interested	2	2	14	-	-	-	-	3
Don't know	2	-	4	-	-	3	7	2
Not ascertained	20	6	5	26	13	13	3	12
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Much more interested	-%	4%	2%	-%	-%	5%	4%	2%
More interested	18	22	25	19	21	35	36	25
Average, pro-con	6	15	25	17	37	9	22	20
Less interested	17	40	13	36	28	28	17	26
Much less interested	6	4	4	-	5	7	4	4
Don't know	3	2	2	9	9	-	2	4
Not ascertained	50	13	29	19	-	16	15	19
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total number of 1,258. The derivation of this figure is given in Appendix Table 4.

In Table 42 we see that proportions in the extremes of self-expressed interest or disinterest in science are very small. Almost all the responses were categorized in the middle three categories: "more interested", "average", "less interested". (An exception is evident in Fairfield where 14 percent felt themselves to be on the lowest end of the scale.) The total data indicate a bimodal distribution — the percentages in the categories on either side of neutral are about the same and a little larger than the proportion in the neutral or middle position. For the sampled population as a whole, then, interest in science seems to range around an "average" or neutral value with approximately equal proportions above this value and below it.

A within-set analysis of the distributions reveals a fairly narrow band of variation with no clear differences between types of areas. Differences within sets do exist, but these are not borne out when the sets are compared to each other, and are in no consistent direction. For example, in the response category, "more interested", Oak Ridge and Berkeley have percentages that are sizeably different from their matched areas, and within each of these sets the differences are in the same direction. However, Oak Ridge has a higher proportion in this category than either of its matched areas, whereas Berkeley has a lower proportion than either of its matched areas. The installation areas are not responding as a unique group. The differences just described cannot be said to relate to any peculiarities associated with atomic energy installations.

In general, installation and matched communities are similar with respect to three indicators of interest. The <u>individual</u> differences in interest, however, represented by groups of people with similar degree of interest (regardless of residence) may be meaningful in terms of differential relation to information and reactions.

REACTIONS

The reactions to atomic energy reported here range from the specific to the general. Data are presented on reactions to the specific problem areas of working in an atomic energy plant and having an atomic energy installation built near the respondent's home, and on reactions to atomic energy in general.

Specific Reactions: Working with Atomic Energy

In this report the principal concern with items dealing with atomic energy in terms of a job is to get an evaluation of the individual's perceptions of this intimate relationship with the subject as hopeful or fearful. By posing situations in which the respondent can select any factor that seems most important to him as a basis for his evaluations, some knowledge is acquired of the frame of reference with which he views atomic energy. Are his references, with regard to this domestic aspect of atomic energy, ones of opportunity in a growing industry, or danger, or fear, or what?

A second but important objective of these questions was to raise specifically the topic of work and residence near an atomic energy activity. What, if anything, have the residents of installation areas learned, what reactions do they have, that are different in some way? Potentially, this is a useful facet of information for atomic energy program planning.

Considerations in atomic energy work

The first question posed a job situation to the respondent. Two jobs are matched on various characteristics and the respondent is asked to give his considerations and choice for one or the other. One job involves working with atomic energy, the other does not. The respondents were asked for the factors that they would consider in making such a decision. Responses were grouped into major categories: danger, interest and aptitude, job future, patriotism, security restrictions, work associates and conditions, moral considerations, and a category for the group that saw no difference between the alternatives offered -- for them no objective difference in the jobs existed. The data for the <u>first</u> response of the interviewees are listed in Table 43.

Table 43. "Suppose that a friend of yours should come to ask your advice. He is a family man and has to get a job. He's offered two jobs that are exactly alike—in pay, hours, distance and so forth—except that one calls for his working with atomic energy and the other doesn't. What do you think he ought to consider in making up his mind?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Dangers	24%	13%	19%	28%	16%	12%	18%	18%
Interest, aptitude	18	14	34	18	23	33	45	27
Job future	29	31	22	26	27	14	12	23
Patriotism	12	6	-	10	1	8	3	6
Security restrictions	-	-	1	-	-	4	2	1
Work associates, conditions	1	2	3	2	6	-	2	2
Moral considerations	-	-	-	2	-	1	-	1
No difference in jobs	2	-	4	2	7	5	2	3
Don't know	6	4	-	2	8	4	-	3
Not ascertained	8	30	17	10	12	19	16	16
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Dangers	49%	26%	25%	11%	33%	11%	23%	26%
Interest, aptitude	8	28	32	44	15	46	47	31
Job future	22	14	16	31	30	17	10	19
Patriotism	3	8	-	6	8	9	8	6
Security restrictions	-	2	-	-	-	-	-	-
Work associates, conditions	3	4	2	-	5	-	-	2
Moral considerations	-	-	-	-	-	3	1	1
No difference in jobs	-	4	5	-	2	3	-	2
Don't know	-	2	-	-	2	3	-	1
Not ascertained	15	12	20	8	5	8	11	12
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Dangers	40%	32%	35%	40%	29%	33%	24%	34%
Interest, aptitude	20	32	26	17	39	13	43	27
Job future	20	24	19	21	17	28	12	20
Patriotism	3	6	7	5	2	-	2	4
Security restrictions	-	-	-	-	-	-	2	-
Work associates, conditions	3	-	2	2	-	3	4	2
Moral considerations	-	-	2	-	-	-	-	-
No difference in jobs	3	2	2	-	-	-	4	2
Don't know	3	2	-	5	-	8	-	2
Not ascertained	8	2	7	10	13	15	9	9
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

These data show that the major considerations stated are dangers, the interest or ability of the hypothetical job-seeker, and the job opportunities such as advancement, learning something new, etc. Some difference does exist between installation and non-installation areas in the way these categories are ordered. For the installation areas in toto, interest-aptitude is the greatest consideration (27 percent), and the job future, with 23 percent, is next. Both are somewhat more frequent considerations than the dangers (18 percent). For the matched areas, dangers are given consideration more frequently and the future of the work has the lowest proportion of these three kinds of response.

A finding of some significance, even though dealing with small differences, emerges when we follow the leads suggested by the data noted in the previous paragraph, and make detailed within-set comparisons.

Table 44. Proportions of Respondents Mentioning "Dangers" as a Consideration in Working with Atomic Energy, by Matched Sets of Communities

Type of Area	Set Number 1	2	3	4	5	6	7	Total
Installation (I)	24%	13%	19%	28%	16%	12%	18%	18%
First Match (M_1)	49	26	25	11	33	11	23	26
Second Match (M_2)	40	32	35	40	29	33	24	34

Table 44a. Rank Position of Community in Each Set

	1	2	3	4	5	6	7	Mean rank
Installation	3	3	3	2	3	2	3	2.7
First Match	1	2	2	3	1	3	2	2.0
Second Match	2	1	1	1	2	1	1	1.3

Table 44b. Percentage Differences Among Members of a Set

	1	2	3	4	5	6	7	Differences in Total %s
$M_1 - I$	25%	13%	6%	-17%	17%	-1%	5%	8%
$M_2 - I$	16	19	16	12	13	21	6	16
$M_1 - M_2$	9	6	10	39	4	22	1	8

Table 44c. Relative Size of Differences in Proper Direction Between and Within Types of Areas, for Each Set*

	1	2	3	4	5	6	7	Total
Both $M_1 - I + M_2 - I > M_1 - M_2$	X	X			X		X	4
Either $M_1 - I$ or $M_2 - I > M_1 - M_2$			X					1
$M_1 - M_2 > M_1 - I + M_2 - I$				X		X		2

* "Proper Direction" means in the direction indicating relatively lower position for the installation area.

In five of the seven sets, the installation community ranks third in proportion of respondents mentioning "dangers" as a work factor; in no case is the installation community first, but twice it is second. In the five sets showing a consistent direction of difference, the size of differences between members of the two types is generally appreciable. In four of the five sets sizes of the two installation - matched area differences are greater than the differences between the matched areas; in the fifth set, this is true for one of the two installation - matched area comparisons.

The two "inconsistent" sets are the Los Alamos - Phoenix - Lubbock set and the Berkeley - Pasadena - San Francisco set. Actually, Berkeley has the lowest proportion mentioning "dangers" of all the installation communities (12 percent) but it is one percent higher than its match, Pasadena. The Los Alamos set seems the most "deviant". The Los Alamos (Santa Fe) area has the highest proportion mentioning "dangers" among the installation areas (23 percent) and its match, Phoenix (along with Pasadena) has the lowest proportion of persons mentioning "dangers". The Santa Fe high proportion may well be due both to the concentration of many atomic energy activities in the area and to their specialized functions with respect to atomic weapons.

For the rest of the categories, no differences obviously related to type of community appear, by any of the tests for relationship utilized in this report. The finding of a negative relation between presence of an installation and relative frequency of references to dangers in working with atomic energy is most likely a result of educational activities, and lack of contrary experience or information. There have been no major catastrophes in installations. Their safety records are excellent; extra precautions are taken. Nothing in the experience of our installation respondents (except near Los Alamos, perhaps) points particularly to danger; educational attempts in the areas have stressed safety measures devised by experts; indeed, the finding with respect to higher frequency of belief that the ordinary person can't detect the presence of radiation may be related to this education on safety.

Should a person work with it?

After discussing these considerations, the respondent was asked: "Taking these things into account, what should he do?" A five-point scale was devised to order the responses suggesting the action the hypothetical job-seeker should take. The midpoint of this scale was defined by those whose attitudes toward some action -- either accept or reject the atomic energy job -- were not sufficiently structured to permit a recommendation, and the end points by groups who gave comparatively clear, unconditional responses in favor of or against taking the job.

Table 45. "Taking these things into account what should he do?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Take atomic energy job	48%	50%	27%	40%	39%	29%	30%	38%
Take atomic energy job: with conditions	18	17	9	22	6	18	24	16
Neutral, pro-con	12	6	32	6	28	21	21	18
Take non-atomic energy job: with conditions	2	4	4	4	1	1	2	3
Take non-atomic energy job	12	15	23	25	20	17	10	18
Don't know	4	1	-	-	3	1	2	1
Not ascertained	4	7	5	3	3	13	11	6
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Take atomic energy job	30%	30%	30%	53%	65%	40%	20%	37%
Take atomic energy job: with conditions	16	20	25	14	13	20	32	20
Neutral, pro-con	12	10	7	17	3	20	20	12
Take non-atomic energy job: with conditions	5	8	9	6	-	6	-	5
Take non-atomic energy job	24	20	16	3	15	3	10	13
Don't know	5	4	2	-	2	3	5	3
Not ascertained	8	8	11	7	2	8	13	10
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Take atomic energy job	24%	27%	49%	31%	27%	33%	33%	32%
Take atomic energy job: with conditions	30	17	23	12	20	15	27	20
Neutral, pro-con	13	15	-	24	12	23	13	14
Take non-atomic energy job: with conditions	3	2	12	7	7	-	-	5
Take non-atomic energy job	20	32	16	19	32	26	18	23
Don't know	-	-	-	-	-	-	-	-
Not ascertained	10	7	-	7	2	3	9	6
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

For the 1,170 persons asked the item (the total sample minus the relatively small groups who had never even heard of the bomb and who conceived of no uses for atomic energy besides the bomb), about half were on the favorable end of the scale ("Take atomic energy job" plus "Take atomic energy job, with conditions"), about 20 to 25 percent were favorable to taking the other job, and about 15 percent were undecided or neutral. Of course, these relative proportions were very likely influenced by the subject matter of the interview. The objective of the analysis here, however, is to see whether there are community differences.

Totals and variations in percentages within types of communities were not markedly different. A set by set analysis discloses that the pattern of the variation does not follow the lines of the installation - non-installation dichotomy. The installation areas of Oak Ridge and Argonne have a higher proportion of favorable responses than their matched areas and a consequently lower percentage of unfavorable replies. Another community peculiarity occurs in the neutral response for Brookhaven, Hanford and Los Alamos. Each of these installation areas is consistently different from its matched sets, but they are inconsistent with each other in the direction the percentages take. Brookhaven and Los Alamos, with 32 and 28 percent of their sample in the neutral category are higher than their matched areas by a considerable amount; Los Alamos, in the opposite direction, has only 6 percent neutral responses, a low proportion when compared to its matched areas Phoenix (17 percent) and Lubbock (24 percent). These data indicate that the installation communities are not acting uniquely as types. Although some communities are outstandingly different from the general pattern, their deviations (if reliable deviations they be) bear no clear relation to their position near atomic energy plants. Reactions in the context of this interview are generally high in favor of working in atomic energy industry and the same relative extent of this favor is demonstrated by all types of areas.

Dangers

One basis for reactions toward working with atomic energy expressed in response to the hypothetical job situation was clarified by the direct question, "Do you think there might be special ways in which it would be unhealthy or dangerous to work in a place where atomic energy was being used?" Coders who categorized the responses were trained to evaluate the interviewee's discussions of this question in terms of the respondent's certainty of the danger involved. Responses were ordered along a three point continuum -- an unambiguous perception of danger, a doubtful or probable statement of the existence of danger, and a clear-cut rejection of danger.

With respect to this direct question, Table 46 substantiates the relatively low level of "danger" responses found in the other reaction items. The perception of a clear danger is held by less than one-fifth of the sample, whereas about a third were equally certain that no danger was involved. Approximately the same proportion, a third of the sample, thought that the work could or might involve some hazards.

Table 46. Certainty of response to: "Do you think there might be (other) special ways in which it would be unhealthy or dangerous to work in a place where atomic energy was being used?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
	Installation Area							
Is dangerous	15%	11%	17%	19%	11%	12%	11%	14%
Might or could be dangerous	30	36	20	36	31	43	40	33
Not dangerous	39	42	46	37	46	35	36	40
Don't know	10	9	14	8	11	9	10	11
Not ascertained	6	2	3	-	1	1	3	2
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Is dangerous	22%	14%	25%	8%	18%	20%	12%	17%
Might or could be dangerous	40	45	20	31	30	41	41	36
Not dangerous	27	23	34	44	48	30	28	33
Don't know	8	18	16	17	2	6	7	11
Not ascertained	3	-	5	-	2	3	12	3
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Is dangerous	20%	17%	26%	19%	17%	36%	9%	20%
Might or could be dangerous	33	34	37	17	32	26	56	34
Not dangerous	30	42	28	41	37	25	22	32
Don't know	10	7	9	21	12	8	11	11
Not ascertained	7	-	-	2	2	5	2	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

The amount of variation among members of the types of areas is generally similar for each response category, and fairly narrow. The distributions of percentages by types do, however, show a slightly greater proportion of responses in the two danger categories for non-installation areas than for the installation communites, and the reverse situation for the "not dangerous" category.

Table 47. Distribution of Certainty of Danger in Working at an Atomic Energy Plant, by Type of Area

Certainty of Danger	Type of Area: Installation		First Match		Second Match	
Is dangerous	14%	47%	17%	53%	20%	54%
Might or could be dangerous	33		36		34	
Is not dangerous	40		33		32	
Don't know	11		11		11	
Not ascertained	2		3		3	
	100%		100%		100%	

Analysis of proportions in these categories within sets shows that in five or more of the seven sets the direction of differences is toward less frequent certainty of danger in the installation areas. The size of the differences among the members is relatively small whether in the "proper" direction or in the direction indicating larger proportions of those more certain of danger (or smaller proportions of the less certain) for the two matched areas. The results of these small but generally unidirectional deviations can be seen in the overall values for types of areas in Table 47. Note that in the two extreme categories the installation areas differ slightly, but in the expected direction from the non-installation areas. Table 48 presents the picture by sets.

Table 48. Proportions of Respondents Indicating Different Degrees of Certainty of Danger in Working in an Atomic Energy Plant, and Rank Position of the Proportion in the Installation Area, by Sets of Areas

Type of Area	Set Number: 1	2	3	4	5	6	7	Mean rank
Table 48a: Category: "Is (definitely) dangerous"								
Installation	15%	11%	17%	19%	11%	12%	11%	2.6
First Match	22	14	25	8	18	20	12	1.7
Second Match	20	17	26	19	17	36	9	1.7
Installation rank	3	3	3	1-2	3	3	2	
Table 48b: Categories: "Is dangerous" + "Might be dangerous"								
Installation	45%	47%	37%	55%	42%	55%	51%	2.7
First Match	62	59	45	39	49	61	53	1.7
Second Match	53	51	63	36	49	62	63	1.7
Installation rank	3	3	3	1	3	3	3	
Table 48c: Category: "Not dangerous"								
Installation	39%	42%	46%	37%	46%	35%	36%	1.5
First Match	27	23	34	44	48	30	28	2.0
Second Match	30	42	28	41	37	25	22	2.5
Installation rank	1	1-2	1	3	2	1	1	
Table 48d: Categories: "Not dangerous" + "Don't know"								
Installation	49%	51%	60%	45%	57%	44%	46%	1.3
First Match	35	41	50	61	50	36	35	2.3
Second Match	40	49	37	62	49	33	33	2.4
Installation rank	1	1	1	3	1	1	1	

Since no precise statistic is available for testing the significance of these small but recurring deviations between areas within each of the sets, the relatively minor size of these and their resultant summary values by type of area leads to the suspicion that the differences between areas in sets could be accounted for by sampling variation. However, taking the group of seven sets, the differences (however small) in a given direction are consistent for enough of the sets to meet our criterion of statistical significance. Further, these are similar to the other data on perception of danger, so there is probably a small but definite lessening of the generally low feeling of danger in installation areas, compared with the matched communities.

The findings stated above, confirming findings from the much less direct question, are subject to much of the same interpretation. The slight differences between types of communities are viewed as depending upon lack of information about major accidents in atomic energy plants -- if this were true it would be widely spread. As it is, in the absence of evidence to the contrary, and possibly because of positive information too, few people in all areas see the situation as definitely dangerous.

Respondents sometimes stated that any large industrial plant is dangerous and that an atomic energy plant is not unique in this way; sometimes the question under discussion here was greeted with the reply that there might be potential dangers, but that obviously the government would not permit the plant to exist if the potential dangers were not rigorously guarded against. Many survey results on a variety of subjects indicate that on the whole Americans are trusting people, especially with respect to governmental actions. If the government itself is acting in some way, and this is known, the action tends to be accepted. In areas of non-governmental action, there seems to be a popular assumption that if there were any major threats to the people in the activity, the government would see to it that people were protected. Some of this sort of thinking may lie behind the distributions of responses analyzed in this section; since this is likely to be a general factor, it operates in both types of areas. The small but definite differences between types of areas suggests that the more direct experience and information within each of the installation areas accounts for the difference. It is important enough that relatively more people in installation areas do not perceive danger in working with atomic energy than people farther away from such activities. Added weight to this comes from the finding that if the areas are different, it is that relatively fewer people in installation areas feel this way.

Incidentally, the Los Alamos set is again the most "deviant" of the sets. The installation area (Santa Fe) itself has the highest or next to highest proportion in the two "dangerous" categories, comparing just installation areas. With respect to its matched areas in the set, it is unique among installation areas in consistently being higher on the "danger" side than its matches. A suggestion has been made why this may be so, based on the type of atomic energy activity in the Los Alamos area. The alternative always exists that in this case the selection of matching areas in the set was poor. The consistent data on Los Alamos compared to other installation areas, however, leads one to suspect that it is probably the unique character of the activity in the area.

Specific Reactions: Living Near an Atomic Energy Installation

If any differences in reactions to atomic energy are to be expected between types of areas, it is most reasonable to suppose that reactions toward the possibility of living near an atomic energy plant would produce the most clear-cut differences. This seems logical because the sample contains respondents in sample areas with existing installations; if the installation is an important correlate of reactions, it would appear to be most influencial in this context. Since over three-quarters of the respondents in the installation areas know of the existence of an atomic energy plant in their area (Table 28, page 48) a question about their reactions to this fact is not an academic one for them. Their response is actually a reaction to their present position. The extent to which the presence of the installation influenced reactions on this most immediate level was determined by the question, "Suppose they were going to begin working with atomic energy close to where you live, how would you feel about it?" (If safety not mentioned) "What would you think about the safety of it?"

The results are contained in Table 49.

Table 49. "Suppose they were going to begin working with atomic materials close to where you live: how would you feel about it?" (If not mentioned): "What would you think about the safety of it?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
Installation Area								
Positive	9%	1%	8%	1%	4%	4%	2%	4%
Neutral: makes no difference, wouldn't mind	57	69	66	63	80	70	80	69
Negative	25	22	24	30	6	22	13	21
Don't know	3	2	1	-	1	1	-	1
Not ascertained	6	6	1	6	9	3	5	5
	100%	100%	100%	100%	100%	100%	100%	100%
First Matched Area								
Positive	5%	2%	-%	11%	5%	3%	5%	4%
Neutral: makes no difference, wouldn't mind	62	52	41	67	58	66	61	57
Negative	24	44	45	22	35	20	15	30
Don't know	3	2	9	-	-	3	4	3
Not ascertained	6	-	5	-	2	8	15	6
	100%	100%	100%	100%	100%	100%	100%	100%
Second Matched Area								
Positive	-%	-%	5%	7%	10%	3%	4%	4%
Neutral: makes no difference, wouldn't mind	61	59	51	40	73	64	56	57
Negative	33	32	40	38	15	28	33	31
Don't know	3	5	-	2	2	-	3	2
Not ascertained	3	4	4	13	-	5	4	6
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

These data indicate almost no differences by types of area in the most favorable response group -- those who have expressed positive attitudes about living near an installation. The summary percentages in this category are identical for all types -- 4 percent of each of the three types of areas. Further, the variation among members of the types of areas is almost identical; the range for installation, first and second matched groups is from about 0 to 10 percent. A within-set analysis shows no marked deviations among the members with the exception of the Los Alamos - Phoenix - Lubbock set. Here Los Alamos (1 percent) has a lower proportion of positive responses than either Phoenix (11 percent) or Lubbock (7 percent). This is the only set in the "positive" category to exhibit any consistent differences.

The modal group of responses to this question were those who gave no strong positive or negative reactions but indicated acceptance of the arrangement as far as its safety went -- it made no real difference to them. Slightly over two-thirds of the total installation area sample gave this kind of response. A comparison of the aggregate percentages by type of area for this response shows that the matched areas had a lower proportion, by 12 percentage points, than the installation areas. This difference in summary measures between the types of areas is not the result of a few installations having much higher percentages of "neutral" responses than their matched areas but of most of the installation areas showing differences from their matched areas in a consistent direction. This conclusion is illustrated in Table 50, which presents data by sets for the "neutral" response category.

Table 50. Distributions of Proportions of Persons Giving "Neutral" Responses in an Area, and Ranks of Areas within Sets, by Types of Area and Sets

	Type of Area					
	Installation		First Match		Second Match	
Set Number	%	Rank	%	Rank	%	Rank
1	57	3	62	1	61	2
2	69	1	52	3	59	2
3	66	1	41	3	51	2
4	63	2	67	1	40	3
5	80	1	58	3	73	2
6	70	1	66	2	64	3
7	80	1	61	2	56	3
Percent for all areas, or number of first ranks	69	5	57	2	57	0

Five of the seven sets exhibit differences in a given direction -- the installation areas have higher values than their matched groups. In two of these sets, the differences, though consistent, are small. In set number 4 the difference between the installation and its most similar matched area is only seven percentage points; in set number 6 the difference is only 4 percentage points. Even for the other three sets exhibiting consistent deviations (sets 2, 3, and 7) the percentages are not outstandingly large. Therefore, the summary measures may not represent a difference general for installation areas as a group (although this is doubtful), but rather may be seen to reflect certain more outstanding particular community deviations. It is true, however, that this is an unusual situation from chance considerations, and it is probable that people in installation communities are more frequently "neutral" on this subject. In short, they do not see the safety factor as making a difference in residence, one way or another.

The same conditions seem to be operating in the category of negative responses -- i.e., those which imply rejecting living near an atomic energy activity primarily because of the safety factor. The summary data by type of area suggest that the installation communities as a whole have relatively fewer respondents who expressed negative attitudes about living near an installation than do the matched areas (21 percent compared to 30 and 31 percents). A within-set analysis of the data, however, points to four (Argonne, Brookhaven, Hanford and Ames) of the seven sets substantiating this appraisal while the other three sets show differences among the members existing primarily among the matched areas of the set. The installation - matched area difference in the Ames set is small. Argonne, Brookhaven and Hanford are sufficiently unique in the size and direction of their deviations to result in a summary measure that could be misleading if generalized to all installation areas in the sample. Hanford, in particular, shows the smallest proportion of negative responses for any individual area.

The reactions to living near an atomic energy installation (as far as safety goes) were thus not clearly related to the installation variable except for "neutral" reactions. These reactions, a sort of "I can take it or leave it" approach, are desirable from the Commission's viewpoint. By far the greatest proportion of respondents took this position, particularly in installation areas as a whole.

General Reactions to Atomic Energy

Feelings about each of the specific, selected aspects of atomic energy analyzed so far may or may not be a sufficient basis from which a statement of the general reaction to the existence of the phenomenon itself can be deduced. Only reactions to certain facets of the problem were investigated and the possibility exists that had other areas of concern been selected, patterns of reactions might have been different. The fact that from both a fact-finding and a problem-solving point of view the specific reactions selected for investigation were of major importance does not mean that for the respondent these were necessarily the most crucial in his evaluation of the subject.

Partly to test whether the reactions to the specific areas of the problem chosen were sufficient and indicative of a general evaluation of atomic energy, and partly to obtain a relatively uncomplicated statement of general reactions, regardless of the component parts involved, a series of general attitudinal questions was asked. There is always the possibility that the relation (or lack of relation) of type of area to type of reaction may vary, depending on whether a general or a more specific reaction is called for.

Responses to two general questions

"When you run across something about atomic energy somewhere or hear about it, how would you say you feel?" Responses to this question were classified and ordered into three categories: positive, neutral, and negative. Positive responses included expressions of hopefulness, security feelings, and enthusiasm. Statements expressing apathy, ambivalence, awe and lack of understanding, or simple descriptions of atomic energy were called "neutral". The negative category contains statements of fear, anxiety, worry, rejection, and flight from a consideration of the subject. Note that this question does not specifically mention peacetime uses of atomic energy, but rather raises the topic generally. Connotations of military uses as well could easily be present

Table 51. "When you run across something about atomic energy somewhere or hear about it, how would you say you feel?"

Percent in each response category, for each area*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Positive	19%	18%	14%	14%	13%	13%	20%	16%
Neutral	52	50	56	49	56	56	62	54
Negative	26	27	26	36	21	24	15	26
Don't know	3	1	-	1	1	3	1	1
Not ascertained	-	4	4	-	9	4	2	3
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Positive	5%	10%	20%	22%	-	26%	17%	13%
Neutral	66	56	50	67	63	37	59	57
Negative	24	30	23	8	35	29	15	24
Don't know	-	-	2	3	-	-	2	1
Not ascertained	5	4	5	-	2	8	7	5
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Positive	10%	17%	5%	12%	7%	10%	20%	12%
Neutral	43	54	40	50	83	56	61	56
Negative	40	27	53	31	7	21	13	27
Don't know	-	2	-	-	3	8	2	2
Not ascertained	7	-	2	7	-	5	4	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

14 56 26

15 57 27

The distributions for these responses contained in Table 51 reveal a generally more negative than positive feeling toward the entire subject. The largest percentage of responses is in the middle or neutral category; about half the population sampled were in this little-affected group. Negative feelings were expressed by about a quarter of the sample and a proportion in the order of 15 percent gave positive expressions to the question.

These general conclusions for totals hold regardless of the types of areas sampled. Although the installation areas demonstrat a more even distribution -- less variation is exhibited among them -- than the matched groups, the amount of variation in the matched areas is not large enough on the whole to cause concern. Actually, only a few areas in the matched communities are causing most of the variation. In the "positive" category Chattanooga and Grays Harbor are outstandingly low compared to the other matched areas and in the second matched group Passaic and Idaho are contributing the most marked deviations. For the neutral group, too, only few of the matched areas are seriously out of line with their other members. Pasadena (low) in the first matched areas and Idaho (high) in the second matched areas are accounting for the greater variation. The negative end of the scale shows the same explanation for the greater variation in the matched than in the installation areas. Here, Phoenix in the first matched group is "abnormally" low, with Idaho similarly deviant from the other areas in the second matched group. Thus, with the exception of relatively few areas, the variation of responses between the types of areas is not outstanding -- the people being conditioned to respond in the various categories within the same general limits regardless of the community's position relative to an atomic energy plant.

Since the variations are similar for both types of areas, do the variations within sets follow an installation - non-installation pattern? A within-set analysis of Table 51 shows that this is not the case. In the positive response category only two sets exhibit consistent differences, between the installation area and the match closest to it in percentage, of more than five percent. These are: Oak Ridge (19 percent) - Chattanooga (5 percent) - Cincinnati (10 percent); and Hanford (13 percent) - Grays Harbor (0 percent) - Idaho (7 percent). In both these sets the installation areas, Oak Ridge and Hanford, have a higher percentage of favorable statements toward atomic energy than their matched areas. For the rest of the areas in the category, the percentages are distributed independently of type of area, except that in no instance does the installation area rank third in a set.

This general lack of consistency also appears for the neutral and negative groups of responses. Therefore, the analysis of the distributions within the sets of areas leads to the same general conclusions as the analysis of the variations by types -- certain few sets of communities are behaving consistent with the presence or absence of an installation, but the more general situation is for the distributions to be ordered without regard to this.

The last item in the questionnaire asked for an evaluation of atomic energy in the widest and most general terms of all. The subject, after the extended discussion of the interview, was raised in broad perspective. "Considering all its uses in peace and war, do you think we will be better off for having discovered atomic energy, or would we be better off if no one had discovered it?"

The scale used to order the responses to this item categorized the answers according to the extent that "we" are or will be better off as a result of the discovery. "Much better off" was the most extreme favorable classification, followed by "better off", "neutral or ambivalent", "worse off", and the extreme unfavorable evaluation, "much worse off".

The distributions in Table 52 show a generally favorable evaluation by the population as a whole.

Table 52. "Considering all its uses in peace and war, do you think we will be better off for having discovered atomic energy or would we be better off if no one had discovered it?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for Area
Installation Area								
Much better off	3%	6%	5%	5%	7%	6%	10%	6%
Better off	62	45	49	56	55	51	53	53
Neutral, pro-con	10	17	19	12	15	12	14	14
Worse off	17	25	15	23	17	19	12	19
Much worse off	1	-	6	1	1	1	-	1
Don't know	5	5	2	1	4	6	5	4
Not ascertained	2	2	4	2	1	5	6	3
	100%	100%	100%	100%	100%	100%	100%	100%
First Matched Area								
Much better off	-%	-%	2%	5%	2%	5%	7%	3%
Better off	69	48	50	58	60	54	48	55
Neutral, pro-con	11	12	16	24	11	15	21	16
Worse off	11	36	21	8	20	18	17	19
Much worse off	2	-	2	-	2	-	-	1
Don't know	7	4	7	3	2	5	2	4
Not ascertained	-	-	2	2	3	3	5	2
	100%	100%	100%	100%	100%	100%	100%	100%
Second Matched Area								
Much better off	3%	4%	4%	7%	2%	9%	6%	5%
Better off	38	48	51	51	75	47	47	51
Neutral, pro-con	17	17	16	17	7	7	13	14
Worse off	12	20	27	17	14	28	19	20
Much worse off	-	-	-	-	-	5	4	1
Don't know	27	7	-	2	-	2	2	5
Not ascertained	3	4	2	6	2	2	9	4
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based upon the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total number of 1,258. The derivation of this figure is given in Appendix Table 4.

Somewhat more than five in ten people had positive reactions to the general effect of the discovery, whereas about two in ten were pessimistic or negative. The ambivalent group accounted for approximately 15 percent of the total. The totals for each of the categories, in each of the three groups of areas, are very close in size. The range of variation in all response categories by types of area is generally about the same. Outstanding deviations are noted for only very few communities. For example, in the positive response category, the range of variation of the percentages in the installation and first matched areas is about the same and relatively small. In the second matched areas it is also about the same except that Cincinnati and Idaho extend the limits. Deviations from the general pattern of variation occurred rarely and did not follow the patterns of their other type-members.

Not only is the variation by type of area quite similar, but within the sets whatever differences occur for individual categories are generally either not large or favor no particular type of community. When percentages for the categories, "much better off" and "better off" are summed in an overall "favorable" category, or when the values in the "worse off" and "much worse off" categories are similarly combined, comparisons within the seven sets again yield no consistent pattern of differences. Hence, it must be concluded that as far as general reactions go, as we have measured them, the presence of an atomic energy installation in an area produces no specialized effect. This should not obscure the finding that the people interviewed in this survey by and large felt that atomic energy, all things considered, was a good thing for mankind.

Reactions to statements expressing different emotional positions

Nine statements posing various reactions to atomic energy were given the respondent for evaluation. The interview responses were categorized primarily in terms of the respondent's agreement or disagreement with each of the stated reactions, or his neutrality toward the views expressed. The nine statements were selected to illustrate the various reactions that were thought to be of the greatest applied and psychological importance to an examination of reactions to atomic energy. The reactions considered were: hope; lack of understanding; escape into other areas; fear; flight from the subject; disinterest; and interest. Agreement with the statement connoting the specific reaction was taken as an indication of the presence of that reaction in the respondent.[2] The statements are listed in Table 53 together with the reactions they connote and the proportions of respondents in agreement with that reaction. They are numbered in the order in which they were presented to the respondent. For convenience, the discussion will use these numbers instead of the statements themselves.

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[2] It was hypothesized that these statements would show a scalar relationship and exhibit a definite pattern so that a summary measure of reaction would be available. This hypothesis, however, needs necessarily to be examined on an individual basis and not on a community one, so the present report will be concerned only with the statements as discrete reaction propositions. Their interrelationships are reserved as a topic for the second report.

Table 53. Agreement with Reactions Statements

Percent agreeing to each statement, for each area.*

Statement	Reaction	Installation Area: Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
1. It's wonderful, think of all the new things that will come of it.	Hope	78%	71%	67%	65%	85%	61%	74%	71%
2. Why don't they save that for people who know what it's all about?	Lack of understanding	28	23	25	46	24	25	13	26
3. Why bother with all this? These aren't the things that count.	Escape into other areas	16	9	8	13	3	7	5	9
4. Hope they don't bring any of that around here.	Fear	29	27	22	19	13	18	15	21
5. For pity's sake why don't they leave that stuff alone?	Fear	9	13	14	20	3	12	9	12
6. I wish they'd quit talking about it.	Flight from subject	20	17	20	20	13	12	13	17
7. There are too many other things to do to keep track of atomic energy.	Disinterest	18	29	30	34	31	22	14	26
8. Enjoy yourself, it's later than you think.	Escape into other areas	24	52	33	34	23	34	30	33
9. I'd like a chance to really find out about this stuff and work with it.	Interest	57	60	50	59	48	53	53	54

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

Table 53. Agreement with Reactions Statements (cont.)

Percent agreeing to each statement, for each area.*

Statement	Reaction	First Matched Area: Chattanooga	Cook	Fairfield	Phoenix	Grays Harbor	Pasadena	Ann Arbor	Total for area
1. It's wonderful, think of all the new things that will come of it.	Hope	65%	68%	75%	81%	65%	77%	73%	72%
2. Why don't they save that for people who know what it's all about?	Lack of understanding	27	18	23	22	33	20	27	24
3. Why bother with all this? These aren't the things that count.	Escape into other areas	5	16	-	6	5	-	5	6
4. Hope they don't bring any of that around here.	Fear	24	26	36	8	35	20	17	24
5. For pity's sake why don't they leave that stuff alone?	Fear	16	6	7	6	8	-	5	7
6. I wish they'd quit talking about it.	Flight from subject	14	2	7	8	10	9	10	8
7. There are too many other things to do to keep track of atomic energy.	Disinterest	22	30	16	11	18	9	10	17
8. Enjoy yourself, it's later than you think.	Escape into other areas	22	36	50	25	33	37	22	33
9. I'd like a chance to really find out about this stuff and work with it.	Interest	70	58	61	81	53	60	51	61

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

Table 53. Agreement with Reactions Statements (cont.)

Statement	Reaction	Percent agreeing to each statement, for each area*							
		Second Matched Area							
		Cincin-nati	Oakland	Passaic	Lubbock	Idaho	San Francisco	Iowa City	Total for area
1. It's wonderful, think of all the new things that will come of it.	Hope	70%	83%	60%	71%	71%	64%	56%	68%
2. Why don't they save that for people who know what it's all about?	Lack of understanding	7	20	28	21	15	36	27	22
3. Why bother with all this? These aren't the things that count.	Escape into other areas	3	7	12	12	5	10	7	8
4. Hope they don't bring any of that around here.	Fear	27	39	47	33	32	28	27	33
5. For pity's sake why don't they leave that stuff alone?	Fear	10	7	28	12	-	21	7	12
6. I wish they'd quit talking about it	Flight from subject	10	12	9	7	5	23	7	10
7. There are too many other things to do to keep track of atomic energy.	Disinterest	10	10	23	26	20	49	22	23
8. Enjoy yourself, it's later than you think.	Escape into other areas	3	27	42	21	[illegible]	21	38	28
9. I'd like a chance to really find out about this stuff and work with it.	Interest	27	66	51	64	46	64	64	56

* The percentages in this table are based on responses of the 1,170 respondents who had heard of the atomic bomb and had the impression of uses for atomic energy other than the bomb. The derivation of this figure is given in Appendix Table 4.

The general pattern of the distributions in Table 53 discloses, first, a more popular acceptance of those statements that express positive reactions than of those that express negative ones. Statements 1 and 9, connoting "hope" and "interest", are the items most frequently agreed with, by a sizeable margin. The first statement particularly, with about 70 percent of the 1,170 persons asked this series giving agreement, is outstandingly higher than any of the others. The perception of atomic energy in terms of its potentialities for discovery and invention seemed to be fairly common. Likewise the popularity of wanting to know more about atomic energy and to work with it is greater than any of the adverse reactions to it. Slightly more than half the sample expressed this interest.

The second important fact brought out in Table 53 is the relative independence of this more positive reaction and the nearness of an installation. The range of variation for communities is generally similar for the three groups of areas, and the variation among the seven members of a type of area is larger than the variation between the types -- the communities within a type differ more among themselves than they do from the communities in the other types of areas. For the first statement this is quite clear. In the installation areas, the range of variation is from 61 to 85 percent, in the first matched areas 65 to 81 percent, and in the second matched areas, 56 to 83 percent. Note that in no case does the difference of limits between any types exceed the variation within a type. For statement number 9 this is also the case, but less clear- c . Here the installation communities appear more homogeneous than the communities in the two matched types of areas. It should be noted, though, that only one community in each of the matched type areas produces this result. Phoenix in the first matched area is unusual and Cincinnati in the second matched area is far different from the other members of its type.

A within-set analysis for the first and last statements further shows no apparent consistency of differences within a set of communities of sufficient frequency to warrant consideration of an atomic energy plant as an important variable for this reaction. In statement number 1 the members in four of the sets exhibit differences of a constant direction -- i.e., rank first or last in percentages. Of these, Oak Ridge, Hanford and Ames (by one percent) have a higher proportion of agreement with the hopeful aspects of atomic energy than their matched areas, whereas Los Alamos, also an installation area, has a lower proportion. Summary measures for this statement by types of area further show the lack of consistency; the installation value is quite similar to and falls between the values for the matched areas. Essentially the same sort of thing holds true in the analysis for statement number 9. Summary data on this statement put the installation areas at a slightly lower level of agreement than the matched areas, but it should be noted that a greater difference exists between the matched areas (61 and 56 percent) than between the installation and second matched group (54 and 56 percent). The conclusion, then, is that the positive statements ("hope" and "interest") are more popularly agreed with than negative statements, and that this holds true without much regard for the location of the community.

The other statements (numbers 2 through 8), which express negative reactions, were variously agreed with by from about 10 to 25 percent of the sample, with no ordering by specific type of reaction apparent. Statements number 2, 4, 7 and 8 received agreement from about a quarter of the 1,170 respondents and statements 3, 5 and 6 were accepted the least, by about 10 percent of the sample.3/

3/ Statement number 8 is not considered in the rest of this analysis because of the large amount of ambiguity detected in the responses to the item. The sentence was quite apparently viewed by the respondents in so many different ways not relating to the content of the study that its worth in the analysis was considered doubtful.

Considering first the negative statements that had the higher acceptance -- statements 2, 4 and 7 -- little evidence is given in Table 53 to justify the belief that differences exist between the types of areas. In the first place, for each of these statements the values for each group of areas vary over approximately the same range, and the variation among communities of a given type is more pronounced than that between the types. This means that the variation within each group of seven areas is proceeding in a common pattern, the community's position relative to an atomic energy installation notwithstanding. Further, a within-set analysis for these reaction sentences does not demonstrate a sufficient number of within-set consistent differences per statement to attribute whatever differences that do exist to other than chance factors. Since the distributions are arranged in Table 53 according to the decidedly non-chance factor -- the presence or absense of an installation -- the values given cannot be considered the result of this influence.

It should be stressed, however, that this does not necessarily mean the installation is not having a more or less overall effect on its proximal communities. It does mean that non-installation communities are giving substantially the same responses either because the influences of the installation have generalized to them or because the other factors in their common situation are operating to produce the same result. The point is stressed here because for some of the statements in this group of items we would expect differences between types of communities. The striking example is statement 4, "Hope they don't bring any of that around here". By definition, the installation communities already have "that around here", so the interpretation of the sentence for these respondents would logically be different from those of the non-installation area respondents. In a sense this statement should be non-sensical to the former people. However, in only four of the seven sets are the proportions of agreement with the statement lower for installation communities than for their matched areas. For another installation community, Oak Ridge, the proportion is actually (though unreliably) slightly higher. This illustrates that a more complex pattern of variables is operating than the simple installation - non-installation division of responses discloses. One possibility could be the different interpretation given to the individual statements by members of the installation communities from that given by the other communities. Another possibility, and more reasonable in light of the above data, is that for most communities, regardless of their geographical position, the psychological meaningfulness or non-meaningfulness of the installation is similar; physical proximity and psychological relevance are quite distinct. The point of reference, "here", cannot be taken as defined by the sampling design, but rather its use by the respondent must be analyzed. This interpretation, of course, is reasonably well attested to by the results for most of the items in the study.

Of the negative items which received the lowest agreement, statements 3, 5 and 6, the pattern of responses for statements 3 and 5 results in the same conclusions as discussed above -- communities varied independently of their location near or more distant from an installation. For statement 6 we have a special case. This statement, "I wish they'd quit talking about it", was the only one out of the nine presented that showed consistent differences between installation and non-installation areas, even though the maximum proportion in any individual area did not exceed 23 percent. Six of the seven sets exhibited this unidirectional difference, making it extremely improbable that the slightly higher proportions in the installation areas were due to chance. Clearly, the installation areas are quite different from the matched areas on agreement to this statement.

Table 54. Proportions of Respondents Indicating Agreement with "I wish they'd quit talking about it", and Rank Position of the Proportion in the Installation Area, by Sets of Areas

Type of Area	Set Number 1	2	3	4	5	6	7	Total
Installation (I)	20%	17%	20%	20%	13%	12%	13%	17%
First Matche(M_1)	14	2	7	8	10	9	10	8
Second Match (M_2)	10	12	9	7	5	23	7	10
Table 54a. Rank Position of Community in Each Set								Mean rank
Installation	1	1	1	1	1	2	1	1.2
First Match	2	3	3	2	2	3	2	2.4
Second Match	3	2	2	3	3	1	3	2.4
Table 54b. Percentage Difference among Members of a Set								Difference in total %s
$I - M_1$	6%	15%	13%	12%	3%	3%	3%	9%
$I - M_2$	10	5	11	13	8	-11	6	7
$M_1 - M_2$	4	10	2	1	5	14	3	2
Table 54c. Relative Size of Differences in Proper Direction Between and Within Types of Areas for Each Set*								Total
Both $I - M_1 + I - M_2 > M_1 - M_2$	X		X	X				3
Either $I - M_1$ or $I - M_2 > M_1 - M_2$		X			X		X	3
$M_1 - M_2 > I - M_1 + I - M_2$						X		1

* "Proper direction" means in the direction indicating relatively higher position for the installation area.

Why should differences in proportion of responses only to this item appear as statistically significant? A possible answer is that this sentence states the most immediate and direct behavior resulting from proximity to a plant — i.e., talk. The other statements are concerned with derived behaviors — evaluations, ideas, wishes, etc. that relate to the fact of an atomic energy plant, if at all, in a most tenuous or complex way. Talk, discussion, rumor, etc., on the other hand, appear to be more immediate, readily perceivable phenomena, and thus are present to a greater extent in the installation areas than in the others. Reasons for the comparatively high percentage of agreement to the "quit talking about atomic energy" idea that is evident in these communities are not too clear. It is, though, consistent with some other data already discussed in this report. Installation communities on the whole tended to discuss atomic energy less frequently than other types of areas and a significantly lower proportion saw or read information about atomic energy recently than in non-installation areas. This fits the pattern -- more installation area respondents evidently reject the choice of reading recent information; they discuss atomic energy less frequently and then agree, in significantly higher proportions, that to "quit talking about it" would be a good idea. Running through all these items seems to be the concept, "We've had enough". Most of our other data show the whole subject of atomic energy to be basically an unclear, vague, unstructured phenomenon for most of the population, including those in installation communities. It is reasonable, therefore, that for the installation area respondents, subjected as they are to greater pressures to perceive atomic energy, these pressures when related to the unstructured perception of the subject produce a lower limit of tolerance.

This is somewhat further indicated when all the reaction statements are considered together. Although only the often small differences for statemen 6 are significant by our standards, for the negative statements taken together a greater tendency is noticed for the installation areas to agree to the statements than is true for the non-installations (except number 4, a special case). A within-set analysis for all sentences (except number 4) shows that the positions taken by the installation areas in the sets (whether higher, in between, or lower) are not equally probable -- more "higher" positions are taken by these communities than would be expected on a random basis. Except for statement 6, within-set differences for no single statement depart sufficiently from what would be expected, assuming equal probability of acceptance in each type of area, to question the truth of this assumption. But so many depart from this expectation in the same way that for the entire group of statements the basis of expectation cannot be sustained -- it is too frequently wrong. While the implications of this are not altogether clear from the evidence so far available, it does appear that more people in installation areas have reactions to atomic energy of the strength represented by these statements than do people in matched areas. This is consistent with the view that people in these communities have been in an atmosphere more heavily charged with communications on the subject -- a heavier barrage, in fact, than their interest in the subject will sustain, so that a few more of them now turn away from "news" with some emotion, at least of annoyance.

Again, it must be emphasized that the size of the differences between types of community are small. The percentages of negative reactions, in both types of area, are also comparatively small. The Commission has no problem of negative reactions of sizeable proportions -- nor are the avoidance reactions intense. Nevertheless, there is a definite indication that in installation areas there is a small tendency for more people to be satiated with the subject of atomic energy.

Can the ordinary person understand it?

The question, "Do you think that the average person can understand enough about atomic energy to make it worthwhile for him to read things about it?", was asked of 1,258 respondents, the total sample minus the 18 persons who said thev had never even heard of the atomic bomb. The question essentially tries to answer the question: Does the respondent perceive atomic energy as something within his capabilities of understanding, or is it viewed as such a complex and esoteric phenomenon that there is little if any purpose for him to become involved or interested in it?

If the respondent feels that no matter how much effort the average person expends to become minimally literate about atomic energy the result is still not worthwhile, we can reasonably expect little, if any, effort toward understanding to be initiated. This would then assume a complete withdrawal from the subject, either shutting out the subject completely from one's field of interest or uncritical acceptance or rejection of the effects of the phenomenon on the respondent, by whatever means this effect is made known to him. If, on the other hand, atomic energy is viewed as a phenomenon sufficiently within the ken of the average person to make it potentially worthwhile for him to pursue (however "worthwhile" is defined by the respondent), then we have a base from which to consider ways in which the subject may be made more relevant to him.

Table 55. "Do you think that the average person can understand enough about atomic energy to make it worthwhile for him to read things about it?"

Percent in each response category, for each area.*

Response categories	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for area
	Installation Area							
Yes, can understand	37%	28%	25%	24%	17%	19%	38%	27%
Yes, can understand, with qualifications	22	22	27	22	22	24	22	23
Neutral, pro-con re understand	2	2	5	2	1	-	2	2
No, cannot understand, with qualifications	2	11	6	10	5	7	8	7
No, cannot understand	29	24	27	30	43	39	24	30
Yes, worthwhile	5	4	4	8	8	4	3	5
Neutral, pro-con re worthwhile	-	-	2	-	-	-	-	-
Not worthwhile	1	1	1	-	-	1	-	1
Don't know	1	2	2	1	3	2	-	2
Not ascertained	1	6	1	3	1	4	3	3
	100%	100%	100%	100%	100%	100%	100%	100%
	First Matched Area							
Yes, can understand	11%	32%	27%	13%	27%	36%	17%	23%
Yes, can understand, with qualifications	38	31	23	37	33	15	33	30
Neutral, pro-con re understand	-	-	-	3	2	-	2	1
No, cannot understand, with qualifications	18	6	11	8	11	10	10	11
No, cannot understand	22	27	30	34	18	23	31	27
Yes, worthwhile	7	4	7	3	7	13	5	6
Neutral, pro-con re worth while	-	-	-	-	-	-	-	-
Not worthwhile	-	-	-	-	-	-	-	-
Don't know	4	-	2	2	-	-	-	1
Not ascertained	-	-	-	-	2	3	2	1
	100%	100%	100%	100%	100%	100%	100%	100%
	Second Matched Area							
Yes, can understand	29%	30%	22%	13%	25%	28%	32%	25%
Yes, can understand, with qualifications	21	28	34	19	21	14	38	25
Neutral, pro-con re understand	6	-	-	-	-	-	-	1
No, cannot understand, with qualifications	3	7	2	11	5	2	2	6
No cannot understand	32	24	27	32	37	48	15	30
Yes, worthwhile	-	7	11	6	-	2	9	5
Neutral, pro-con re worthwhile	-	-	-	-	-	-	-	-
Not worthwhile	-	2	-	3	-	2	2	1
Don't know	6	-	4	10	5	2	-	4
Not ascertained	3	2	-	6	7	2	2	3
	100%	100%	100%	100%	100%	100%	100%	100%

* The percentages in this table are based upon the number of respondents in each area who had heard of atomic energy or of the atomic bomb, a total number of 1,258. The derivation of this figure is given in Appendix Table 4.

The data in Table 55 present the distributions of responses to this question. Responses were categorized into five groups:

"yes, can understand";

"yes, can understand", but certain conditions to the response stipulated, such as "if they tried hard enough", "if they had an education", etc.;

"neutral, pro-con";

"no, cannot understand", again with conditions, such as "unless properly trained", etc.; and last,

"no, cannot understand".

If these categories are conceived as a straight line the middle of which is the "neutral, pro-con" response with "yes" responses in one direction from this center and "no" responses in the other direction, we note a piling up of responses on the "yes" or positive end of the continuum. About 50 percent of the sample (split about equally between "yes" and "yes, with qualifications") thought that atomic energy could be sufficiently understood by the average person to be worthwhile for them. In only two of the twenty-one communities do the percentages in the first two categories combined sum to less than 40 percent (Hanford, Lubbock) and in only four do the proportions of negative responses exceed those for the positive responses (the two previously named plus Berkeley and San Francisco).

Slightly more than one third of the total thought that this amount of understanding was not possible for the average person. The reactions to this question were relatively well fixed in the respondents' minds -- expressions of vacillation, those in the neutral category, were rare; only about one to two percent were unable to state their opinions one way or the other; and similar proportions replied "don't know".

A small proportion of the population misinterpreted the context of the question (without reinterpretation by the interviewers) and responded in terms of the worth of the pursuit for understanding and not in terms of ability to understand. These are also shown in Table 55, but since their frequencies were relatively small and do not directly relate to this analysis, a discussion of them is omitted here.

The distributions for groups of areas, summed up above, were clearly not related to geographical position of the group. Summary measures for the two "yes" categories of responses are almost identical for all types of areas indicating that about the same percentage of all respondents in each type gave this response. The same is true for the combined "no" responses. Variations in proportions among the members of one type are similar to variations among members of the other type for each response category. A within-set analysis discloses no differences sufficient to confirm our hypothesis that installation areas are any different from the others.

This concludes the analysis of community responses to each of the questions considered in this study. In Chpaters 3, 4 and 5 certain demographic, information, interest and reaction patterns have been examined separately and conclusions briefly discussed. It remains to summarize and present conclusions on the various community response differences and distributions considered together -- as a system of responses. The following chapter will treat the conclusions from the data as a whole.

Chapter 6

REVIEW AND IMPLICATIONS OF THE STUDY

REVIEW OF THE RESEARCH DESIGN

This study reflects two major purposes. One was to determine whether the information about and reactions toward non-military uses of atomic energy were such as to be a problem for those in charge of projects involving the development of atomic energy; the second purpose was to determine whether these problems, if any, were associated with the nearby presence of an installation at which such work was carried out.

While the first of these objectives involves obtaining the responses of people to a wide variety of situations in a wide variety of places, the likelihood of a concentration of problems among those near installations made this latter special population of greater interest. Since there are few installations, a national survey would not have obtained enough of the latter group for useful comparisons, and since the installations were already in operation, an experimental before-and-after study was not feasible. For these reasons, a quasi-experimental design was used in which 1,276 interviews were taken, approximately half (657) among people within twenty-five miles of seven major installations, an attempt being made to interview equal numbers in each installation area. The remainder was divided, again as equally as possible, among fourteen non-installation areas. Two each of these latter were matched with one of the installation areas for community size, geographic area, proportion of industrial workers, and average rental. The matching process, by providing some control on important factors that might have obscured the main difference which lay in the presence or absence of an atomic energy installation, allowed for more close comparisons between matched areas. However, since the matching was neither perfect nor random, some check is necessary as to how well the matching process did enforce similarities.

Data concerning the matching were obtained for eight demographic and community variables: age, sex, education, income, occupation, length of residence in the community, reason for coming to the community, and satisfaction with it. In only two cases do as many as five of the installation areas have uniformly larger proportions in a given category than their matches. Five is taken as an important number, since under the assumption that the true proportions are equal except for random variations due to sampling, it would be expected that five or more installation areas would differ in the same direction from both of their respective matches less than five times in a hundred. When this happens, therefore, the "chance" explanation of the differences found is suspect, and we must consider the possibility that the installation areas do actually differ from their matches in the characteristics in question. The two cases in which this happens are in the very minor proportions stating they came to the community to get a job with the atomic project and the minor proportions stating they would be more satisfied living in some other community. The size of differences between different types of areas within sets was quite small in these two cases.

There are two cases in which four installation areas have uniformly higher proportions than their matches and three cases in which this number have lower proportions. The occasion of four areas differing uniformly in a given direction would be expected about thirteen times in a hundred, so the occurrence of five cases in two different directions out of the thirty-five comparisons made is actually somewhat fewer than would be predicted. Similar reasoning leads to an allaying of our suspicions concerning the two cases of uniform deviation of five installation areas, although giving the desire to work in an atomic installation as a reason for coming to the community must, of course, be related to the presence of an installation. Fortunately, this reason is given infrequently, never by over four percent in an area, so its effect as a distinct factor would not be great.

All in all, while checking on characteristics cannot be considered a substitute for a random procedure of selection, the number and basic importance of the characteristics here noted would lead to the conclusion that it is highly unlikely that systematic differences exist between installation and matched communities, although no strict assurance can be given that on some item not checked they do not so differ. The implication of this is that it is quite safe to attribute differences found on informational or reaction items to the variable of the presence of an installation, rather than to any other difference between the types of areas.

It should be clearly kept in mind, in this and all other parts of the report, that the data are to be interpreted in terms of types of areas or total results, not in terms of individual communities. The study was not designed to yield reliable values for single areas. Because of the small sample sizes used in the individual areas, the percentage values have a large range of variation from what the "true" values may be even at the minimally acceptable five percent level of confidence. Therefore acceptance of these values as "true" from the populations of the individual areas is hazardous.

In looking at these information and reaction items, there are two aspects to keep in mind: differences between types of areas, and also the results in general. Unfortunately, the selection of areas to make the major comparison by types implies that it is difficult to characterize the population to which the overall results might generalize. The areas comprise a group of middle-size communities with no rural population at all. Figures for the entire population of the United States would certainly differ somewhat from those presented here, although it might well be expected that if problems exist they would be reflected in these data. Conclusions cannot, therefore, be simply ascribed to "people", and the qualifying phrase, "in areas like these", is uncomfortably vague but proper, so that statements must be recognized as having circumscribed generality. Conclusions concerning the effect of the presence of an installation seem quite safe, and conclusions about the existence of a problem are reasonably so.

INFORMATION

A very important feature of the data is apparent from a consideration of the material concerning knowledge of uses of atomic energy. Even in installation areas, which showed no differences in this respect from the matched areas, there are yet one percent of the people who have not even heard of the atomic bomb and seven percent who have heard of no possible uses for atomic energy beyond the bomb. The extreme difficulty of communicating to all people is here emphasized. There are some people so isolated from our society that all of the immense volume of newspaper reports, magazine articles, books, motion pictures, talks, exhibits, and even conversation has all passed them by. It is to be expected that this isolation is not a discontinuous phenomenon, but that details and more technical material would find larger numbers impervious, screened not only by limited contact and ability but by limited interest and alternative concerns. There are people for whom a subject of utmost concern to people working with it and even to people hearing about it will be an immaterial trivium having no significance. To people, who have not heard of atoms, their fission is not news, and to people in debt a new way of blowing them up or of tracing their metabolites may not be of highest moment.

This, then, must be remembered: What is remarkable is that almost nineteen out of twenty people in these areas have heard that atomic energy may be used for industrial purposes, and most of these can name some specific use. Further, there are not many bizarre expectations. It is the widespread nature of this knowledge, probably, that accounts for the fact that people near where the work is going on are not more well informed than people in comparable areas more distant from the work.

No difference is notable either when people are asked concerning the nature of atomic energy. Almost half say they do not know, and most of the remainder (one in three) give a neutral descriptive account. Only one in eight indicated some emotion on the subject, although only one in fourteen can give an "informed" or a technical reply.

Of the most unique characteristic of atomic energy, radiation, nearly a quarter of the people had never heard, although two out of three in these areas had. Of those who had heard of radiation, about half could name a device for detecting it and two-thirds believed the average person cannot detect radiation. While there seems to have been some disparity of meaning of the question concerning the average person -- as to whether he could learn to detect it or whether anything were available to him to use — the general significance of a negative answer was that the average person was in this wise helpless. More people in installation areas said the average person could not tell when radiation was around than said so in matched areas.

With respect to knowledge about an installation, differences were high and clear between types of areas. Even on this rather obvious point, one person in twelve living within twenty-five miles of an installation did not know of it, although one in two people in non-installation areas did not know of any. On the whole it does seem that this is largely a matter of distance, even between non-installation areas.

Part of the explanation of this uniformity of information (except for direct knowledge of an installation and whether the average person could detect radiation) lies in the uniform saturation of both types of areas with sources of information. People in all areas report newspapers most frequently as a source of recent information, followed by magazines and radio. These are also reported in this order as the source of most information. Information that people wanted, however, would be looked for most frequently in books, then in official sources, and then in newspapers. A quarter of the people do not know where to look for information they want on atomic energy, but more important is the fact that half of the people in these areas do not want any further information. This satiation of whatever interest in the subject this large proportion has may account for a peculiarity in the use of information sources — namely, that people in installation areas <u>less</u> frequently report having "heard or seen atomic energy mentioned anywhere at <u>all</u> <u>lately</u>". Since it is hardly possible that there <u>were</u> fewer items in these areas, this must represent some psychological barrier to perception, particularly since it is true only of recent items and not of proportions reporting sources of most information. It is actually possible that some people, particularly in installation areas, now skip items concerning atomic energy in reading and listening in the same manner as they skip advertisements.[1]

The general good judgment of people in these areas concerning beliefs about atomic energy, in spite of low technical knowledge, is brought out by lack of acceptance of odd or unusual items such as odd weather changes and diseases, although one person in ten did believe that atomic energy can cause volcanic eruptions. In general, the proportion who believed an item is related to the probability of the event occurring, being highest for "things being dangerous to touch or be near". There were no systematic differences between installation and matched communities.

INTEREST

Those who had heard or seen an item concerning atomic energy recently did not all go on to read or listen to the item. Less than half did, some did occasionally, and one out of six did not. Frequency of discussion is another index of interest in a subject, but only a third said they talked of atomic energy at least once in a while, and half said they rarely or never did. It is possible that this latter proportion is slightly higher among people near installations. Only four out of ten want more information on atomic energy, and of these by far the largest proportion wanted information about peacetime uses and applications. About three people in ten said that they have a greater than average interest in science in general, and as many said their interest is less than average.

Even though interest in atomic energy is not high, three out of four consider it important that young people understand it, and only one in twenty said that it is not important for them. This factor of <u>future</u> relevance may explain other facets of reaction to the subject.

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[1] A very good recent treatment of such "perceptual blindness" is given in E. C. Tolman's Kurt Lewin Memorial Award Address, "The Psychology of Social Learning", <u>Journal of Social Issues</u>, Supplement Series, No. 3, 1949.

REACTIONS

When a job working with atomic energy is considered, dangers, interest and/or aptitude, and the job future are raised about equally often as factors determining whether this or another similar job not concerned with atomic energy should be taken. It is important that people in installation areas less frequently mention the danger as a factor, although about half of the people in each type of area would advise the person to take the atomic energy job, and only a fifth said he should take the other. When specifically questioned about the danger about one person in three said there is none, another third said there could or might be danger, and only a sixth said the danger is sure. A small but clearly greater proportion of people in installation areas said there is no danger.

The establishment of an atomic plant near the residence of the respondent was viewed favorably by very few people, although better than three in five said it would make no difference to them, and only a quarter looked on it with disfavor. Proportionally more people in installation areas felt it would make no difference to them, and a lower proportion felt negatively inclined toward the idea.

The impression that atomic energy has mainly a future reference for these respondents is borne out by the fact that half of the people felt neutral on running across an item concerning atomic energy, and slightly more felt negative than positive. But viewing the subject as a whole, half of these same people considered that "we will all be better off for having discovered atomic energy", and only one in five believed we would "be better off if no one had discovered it". No differences between installation and matched areas were found on either of these items.

The set of statements each expressing some reaction to atomic energy may be considered as a more sensitive check on these evaluations. Here again the more positive statements were agreed with by half and three-quarters of the population, while the remaining negative statements were much more frequently rejected than accepted. However, these negative statements were slightly more likely to be agreed to in installation areas than in matched areas, although for only one single statement can we be sure that this is true. The evidence is clear that more people in installation areas felt: "I wish they'd quit talking about it". Indicative of the fact that knowledge of an installation within twenty-five miles may be consistent with a <u>feeling</u> that it is not near, is the acceptance of the statement, "Hope they don't bring any of that around here", by the same small proportions in both installation and matched areas.

It is possible, with the small number of differences found out of a large number of situations examined, that some of those accepted as real differences between installation and matched areas are simply chance events due to the vagaries of sampling. It is also possible, under the same considerations, that some real differences did not show up. However, the principal fact still holds, that responses of people in the installation areas are remarkably like those of people in similar areas not near a major atomic energy project. The few differences found are consistent with one another; the sizes of differences are such that they are consistent with this general conclusion of similarity.

SOME FURTHER IMPLICATIONS

All in all, there seems to be a hopeful and rather realistic view of atomic energy in these areas, although the knowledge of details is slight. Interest, except in what atomic energy might someday accomplish, also seems low, although the absolute proportions cannot, of course, be readily interpreted. These data from a first study are much more useful as a baseline for comparisons with what may be found in the future than they are subject to immediate evaluation.

The comparison proper to the design is also more readily made meaningful in time perspective. The areas near atomic energy installations are not on the whole made distinctive by this factor at present. All of their information and viewpoints are shared with others in our culture. Even the proportions having some information or holding a particular viewpoint are so closely similar that in few cases are the installation communities distinguishable from the others.

In the main, then, the installation areas are not at all unique. The few differences that are perceptible are instructive, however. People in these communities are somewhat less likely to consider working with atomic energy dangerous, although this does not make them more hopeful or more positive in their feelings toward the subject. Apparently, they are even more convinced than most that it is simply another kind of industry. The subject of atomic energy is not more interesting to them, and there is evidence that the interest they do have is somewhat more than satisfied. They are less likely to report reading or hearing of something on the subject recently, and they slightly but clearly more frequently agree that "I wish they'd quit talking about it". A more ordinary reaction would be difficult to find.

The only possible problem, although a very real one, is that these attitudes are not founded on understanding but on faith. And good works are an evidence for faith. The extraordinary care and precautions exercised by those in charge of the atomic energy development program are an excellent investment. If there were any sort of evidence that not even the experts quite understand or could control this tremendous source of energy (which would be evidence that nobody could), attitudes might sharply incline to the negative. Psychologically, "danger" lies not simply in the presence of a hazard; a potentially destructive power is dangerous only when there is no means of coping with it, or when there is no faith that such means are being applied. While atomic energy is in good hands it is safe, and while it is safe it is in good hands.

In all likelihood, it would take but one highly dramatic and well publicized event -- a major plant catastrophe, the rapid and bizarre destruction of an individual -- to upset this faith. It is a false economy indeed which has led some to suggest that the cost of atomic energy operations could be decreased by reducing the amount of expensive hazard-reducing construction and procedures, still leaving a very wide margin of safety. The answer is simple -- however improbable the event of hazard turning into destruction, if it does occur a great deal may be lost in public faith and support. If the chances of an "accident" are one in a million, but the "accident" would be of great harm, it is not illogical to guard against its occurrence by expenditures that reduce the chances by half, or one in two million.2/

This interpretation is reasonable in light of the distribution of responses obtained via the interviews. Some event within the atomic energy program that would reach the proportions of a catastrophe or exhibit bizarre results, could not be interpreted rationally by large segments of the population insomuch as the basis of information or understanding for this is clearly not present. The placidity reflected in the attitudes about the subject are probably due not to any precise information or understanding, but rather to a general cultural trait of faith in those who do have the complicated knowledge needed to guide the process. It follows that some event, sufficiently unanticipated or catastrophic (real or imagined) would rock the elements upon which this placidity or non-involvement is predicated, in this case faith in the experts, government, or those whose job it is to insure public safety.

Another effective element in structuring the overall perceptions of the atomic energy program is the interpretation given to it as just another industry -- with the risks and technical problems known to exist in the industrial world generally. This habituation to the normal industrial processes removes atomic energy from an area of special concern or worry to the more inclusive and generally accepted area of hazards attending industrial work. To the extent that such an orientation exists, tolerances for accidents are present. What the extent or nature of a disaster would have to be in order to force perceptions out of this frame,

2/ The theory of statistical decision functions, developed most recently by the late Abraham Wald of Columbia University, is as applicable to the problems of industrial or installation hazards as it is to the problems of product acceptance or rejection in industry.

and into one that recognizes the hazards of atomic energy as unique, is difficult to assess. The point is that the principle elements that make up the perceptions of atomic energy are not those upon which stability can be predicted. Rather, the components are faith and industrial orientation, factors that by their nature can be assumed to be unstable under certain conditions. Were this exploratory study to give rise to further research, these aspects would be studied more thoroughly.

Within the limits of acceptance or unconcern set by these two elements, faith and industrial orientation, much activity of a relatively hazardous nature could in all probability occur. Tests of various applications of atomic energy, so labeled in advance, would have little negative repercussions even if accidents would happen. These would fit into the present perceptual schema of industrial hazards and experimental (or military) risks. The jocular comments reported to have been made by the residents of Las Vegas during recent experimentation in Nevada attest to this. If, however, unexpected consequences occur outside of areas geographically or perceptually considered as "risk areas", we may guess that the danger of strong negative reactions is highly probable.

These considerations for the maintenance of the maximum possible hazard-reducing procedures in this new program are supplemented by the margin of uncertainty currently known to exist in the assignment of safety limits because of lack of knowledge about possible delayed or concealed effects. Any one of the dire predictions given by the reputable geneticists, if eventuating, could be precisely the kind of event that would shake the unstable structure of faith. On the other hand, death or illness of an <u>individual</u> scientist in the current phase of work in this new field, may come under the popular concept of 'martyrs to science'. Had Fleming, for example, suffered some bizarre effect as a result of his experimentation with penicillin, such may well have been his epitaph, but it would probably not be noted by many for long. Should many atomic energy workers or their children verify some geneticist's dire warning, the sentiment of the population about atomic energy would be far less reassuring to continuation of public support or tolerance of A.E.C. activities.

The data also suggest some implications for the development of interest in atomic energy. People by and large are aware of atomic energy but have little understanding of it. In its peacetime aspects, it is seen neither as presenting untoward danger nor as a subject of great positive interest. In its uses, it promises to be important sometime in the future. People in installation areas are no more involved in the subject than others -- so interest, or involvement, seems to depend on characteristics of individual persons. A relatively high degree of involvement with work and national policy on atomic energy can probably be stimulated only in terms of individual awareness and experience of personally direct and significant uses. As it is, the minimal information most people have is enough to satiate their low level of interest in the subject. It is not surprising that this is so at present -- but the chances are that as applications increase, as there is increasing personal experience of the value of atomic energy to the individual, interest, and hence knowledge, will increase and be more widespread.

This report should not end without a final point being made. It may well be the most important conclusion of the present research. The point is this: in an obvious way, it would have been highly dramatic to have discovered a great many differences, of large size, between installation and matched areas. Instead, we have found few differences, and what differences there are are small in size. They merely indicate that somewhat fewer people in areas near atomic energy activities are concerned with potential dangers, and that somewhat more are perhaps bored with the subject of atomic energy.

Yet let us look at the realities. The people in installation areas are taking atomic energy in their stride. Perhaps this is not socially desirable but in this respect they are no different from those whose homes are distant. Within twenty-five miles of their homes a phase of one of our major national efforts is going on; a new force is being developed for use which objectively has already profoundly affected their lives and will do so more in the future. In plants and laboratories a great force is held in check and harnessed in the national interest. Yet they do not fear it more than people elsewhere — a job working with atomic energy is just a job; nor do they seem more interested or informed about it. Whether implying good or bad, however one cares to interpret this major finding, it is submitted that in its own way this is not an undramatic fact.

APPENDICES

Appendix A

THE QUESTIONNAIRE

---

1. Have you ever heard of atomic energy?

    NO 1a. Have you heard of the atom bomb?

    YES Well, atomic energy comes from the same stuff that goes into the bomb. ASK Q. 2

    NO TURN TO PERSONAL DATA SHEET

2. Have you ever heard of atomic energy in connection with anything besides the atom bomb?

    YES 2a. What kinds of things have you heard about?

    NO 2b. Do you have the impression that it could be used for things besides the bomb?

    YES 2b1. What kinds of things do you think it might be used for?

3. Do you think it might become possible to use atomic energy in connection with any of these? (Ask only those not previously mentioned)

1. gasoline	4. radar	7. steam power
2. electricity	5. medicine	8. X-rays
3. heat	6. fertilizer	9. explosives

ANY YES 3a. Have you heard or read anything about work being done so atomic energy could be used in connection with <u>(name each possibility respondent mentioned above)</u> ?

YES 3a1. What kinds of things have you heard about this? (Ask of each thing respondent has heard of or read about in 3a)

NO TO QUESTIONS 2, 2b, AND 3 (EXCEPT EXPLOSIVES) -- CONTINUE WITH QUESTION 23

4. Have you heard or seen atomic energy mentioned anywhere at all <u>lately</u>?

    YES 4a. Did you go on to listen or read about it?

    YES 4a1. What kinds of things did it tell about?

    NO 4a2. Why is that?

    NO 4b. Is there any time in the last year you can recall having seen or heard anything (else) about atomic energy.

    YES 4b1. What was it about?

Now let's discuss in more detail where the information you have came from.

5. Have you read anything (else) about atomic energy?

    YES 5a. Was that in a newspaper, magazine or government pamphlets or books?

    5b. What was it about?

    5c. Anything else?

6. Have you heard anything on the radio or seen anything on television about atomic energy?

    YES 6a. What was it?

    6b. Anything else?

7. How about the movies? Have you seen anything in them about atomic energy?

    YES 7a. What did you see?

    7b. Anything else?

8. Have you heard any talks or been to any exhibits on atomic energy?

    YES 8a. What do you recall about it?

    8b. Anything else?

9. Some people talk over things about atomic energy with their family or friends. Do you ever do that?

    YES 9a. Would you say you did rather often, just once in a while, or hardly ever?

    9b. What sort of thing comes up most often in talking it over?

    9c. Are there any other sorts of things that come up pretty often?

10. Of the various things you've heard and read and talked about, where would you say you've gotten most of your ideas about atomic energy?

    10a. Is there anything you've been wondering about atomic energy that you haven't run across in any of these places?

        YES 10b. What is that?

        10c. Is there any place that you know of where you can get that information?

11. Now thinking of atomic energy, have you ever heard it blamed for any unusual or odd or strange things?

    YES 11a. What kinds of things was it blamed for?

12. Do you recall its ever having been blamed for:

    1. odd weather changes
    2. people being blinded
    3. grass and other growing things being killed
    4. water being poisoned
    5. unexpected explosions
    6. things burning
    7. eruptions of a volcano
    8. things being dangerous to touch or be near
    9. diseases
    10. making some people dangerous to touch or be near

IF ANY MENTIONED — 12a. Now we want to be sure we understand what you mean. Have you heard (each item mentioned) blamed on atomic energy or on the atom bomb or both?

BOMB OR BOTH — 12a1. Do you think that's pretty true of what the bomb did?

12a2. Do you think atomic energy — without the bomb — could cause that?

ENERGY — 12a3. Do you think atomic energy could be to blame for that?

Now we'd like to talk over your feelings toward this whole business of atomic energy and using it.

13. When you run across something about atomic energy somewhere or hear about it, how would you say you feel?

    13a. Here are a number of statements people make that we've picked up. How do you feel about this one?

    (FIND OUT WHETHER THE RESPONDENT ACCEPTS, REJECTS, OR IS NEUTRAL ABOUT EACH STATEMENT AS APPLIED TO ATOMIC ENERGY)

    1. It's wonderful. Think of all the new things that will come of it.
    2. Why don't they save that for people who know what it's all about.
    3. Why bother with all this? These aren't the things that count.
    4. Hope they don't bring any of that around here.
    5. For pity's sake, why don't they leave that stuff alone?
    6. I wish they'd quit talking about it.
    7. There are too many other things to do to keep track of atomic energy.
    8. Enjoy yourself, it's later than you think.
    9. I'd like a chance to really find out about this stuff and work with it.

14. Suppose that a friend of yours should come to ask your advice. He's a family man and has to get a job. He's offered two jobs that are exactly alike -- in pay, hours, distance and so forth -- except that one calls for his working with atomic energy and the other doesn't. What do you think he ought to consider in making up his mind?

    14a. Taking these things into account, what should he do?

    14b. Why would you say that?

15. Suppose he took the job that didn't require him to be around atomic energy and worked there for a couple of years. Then he finds out they're going to begin using atomic energy in his department. What would you advise him to do then? (IF NECESSARY) Should he quit, ask to be transferred to a different department, demand a pay raise, try to find out more about it so he can qualify to work with it, ignore the whole thing, or what?

16. Do you think there might be (other) special ways in which it would be unhealthy or dangerous to work in a place where atomic energy was being used?

    YES 16a. How is that?

17. Suppose they were going to begin working with atomic materials close to where you live, how would you feel about it?

    17a. Why would you feel that way?

    IF NOT MENTIONED
    17b. What would you think about the safety of it?

18. Have you ever heard that radioactivity or atomic rays or something like that could be around places where they're working with atomic materials?

    YES 18a. What have you heard?

    ASK QUESTION 19

    NO 18b. Have you ever heard of radioactivity or atomic rays or something like that?

    YES -- ASK QUESTION 21

    NO -- ASK QUESTION 23

IF YES TO QUESTION 18

19. Do you think these rays would be dangerous to people living close to a place where they use atomic energy?

    19a. Why do you say that?

    19b. About how far from the place where it's being used might the rays harm people, do you imagine?

20. How do you suppose these rays could get outside?

IF HAS HEARD OF RAYS -- YES TO 18 OR 18b

21. Is there any way at all of finding out whether these rays are around?

YES 21a. How?

NO 21b. Why not?

22. Is there any way the average person can tell when the rays are around?

YES 22a. How?

NO 22b. Why not?

EVERYONE

23. Have you heard about any of these problems in connection with the places where they work with atomic energy?

1. fumes in the air

2. waste materials in the water

3. an explosion

4. seepage into the ground

5. something happening to the ground itself

ANY YES 23a. Do you know what ways they use to handle these problems?

NO 23b. Do you think there are ways of keeping people safe from any possible dangers?

24. Do you know of any places in this part of the country where they're working with atomic energy or atomic materials?

YES 24a. About how far away is this place (these places)?

24b. (For each place) What kind of work have you heard they're doing there?

24c. Have you ever visited the place (places)?

24d. Has this place made any difference to the people in this town?

YES 24d1. In what ways?

24e. How would you feel about working in one of these places?

24f. Is anyone you know working there?

YES 24f1. Is that person living here?

24f2. Is he(she) a relative?

25. We've been talking a lot about working with atomic energy and living near it -- how it might be used and so forth. What would you say atomic energy is like?

IF MENTIONS SOMETHING BUT NOT ITEM ON LIST, SHOW CARD AND ASK:[1]

25a. Which other of these would you say it's like?

1. electricity
2. X-rays
3. lightning
4. radio waves
5. poison gas
6. fire
7. dynamite
8. smoke, mist or fog

EVERYONE -- SHOW CARD AND ASK:

25b. On this list, which thing is atomic energy <u>most</u> like?

25c. In what way?

26. Would you say you were more interested or less interested in scientific things than people in general?

27. In the last month or two have you read anything about science in any books or magazines?

YES 27a. What did you read this in?

28. Do you think that the average person can understand enough about atomic energy to make it worthwhile for him to read things about it?

28a. Why do you say that?

28b. Would the same thing be true for young people of high school age?

28c. How important do you think it will be for these young people to understand atomic energy?

29. Considering all its uses in peace and war, do you think we will all be better off for having discovered atomic energy or would we be better off if no one had discovered it?

29a. How is that?

- -

TO INTERVIEWER

30. How much has the respondent thought about atomic energy before you knocked on his door? His answers to your questions may be the result of considerable thinking on the subject or he may hardly have given it a second thought before you began asking him questions. On the basis of the entire interview, would you say that the respondent has thought about atomic energy:

1. A lot 2. Some 3. Very little 4. None

---

[1] The interviewer presented the respondent with a card on which the eight items in Question 25a were listed.

31. At what point in the interview did the respondent bring up the subject of the atom bomb?

1. Before any questions
2. In his answer to Question ___
3. Only after all questions were asked
4. Never

PERSONAL DATA SHEET

1. Race: White Negro Other

2. Sex: Male Female

3. Age: 21-29 30-44 45-59 60 and over

4. How many grades of school did you finish? (Circle highest grade completed)

   1 2 3 4 5 6 7 8 9 10 11 12 More

   4a. (If 12 or more) Did you get a high school diploma? yes no

   4b. Have you had any other schooling? yes no

   4c. (If "yes") What other schooling have you had? ____________ (college, business, secretarial, trade, etc.)

   4d. (If attended college) Do you have a college degree? yes no

5. How long have you lived here in (name of town) ?

   5a. Would you say you're pretty satisfied with living here or would you rather live somewhere else?

   5b. (If lived here under 10 years) How did you happen to come here?

   5b1. (If looking for a job) Where did you plan to work?

6. What kind of work do you (respondent) do? ____________ (lathe operator, stock clerk, housewife, etc.)

   6a. What kind of business is that in? ____________ (steel mill, grocery, bank, etc.)

7. (If respondent not Head of household) What does (Head) do?

   7a. What kind of business is that in?

8. Are there any children between 6 and 20 years old living here?

Age	Number of Boys	Number of Girls
6-10		
11-15		
16-20		

9. What will your total income be this year for yourself and your immediate family?

   Under \$2,000 \$2,000 2,999 \$3,000 3,999 \$4,000 4,999 \$5,000 and over

10. Interviewer's name ____________

11. Interview number ________

Appendix B

THE SELECTION OF "INSTALLATION" AND "MATCHED" AREAS FOR THE STUDY OF PUBLIC RESPONSE TO PEACETIME USES OF ATOMIC ENERGY1/

In accordance with the major purposes of the study, it was decided to select for each of seven areas lying near a major atomic energy installation two areas matched to it with respect to a number of socio-economic, geographical, and other characteristics. The attempt was made, as far as possible, to "straddle" the characteristics of the installation area by those of the two matched areas. The planned sample of approximately 1,200 respondents was to be divided equally between the installation and matched areas. Thus, about 86 interviews were taken in each installation area and about 43 interviews in each of the two corresponding matched areas. The selection of matched areas was restricted as far as feasible to counties which were staffed by Survey Research Center interviewers, due to administrative and cost considerations. The procedure followed involved:

(1) the selection of urban and rural congested places near the designated installations;

(2) the selection of two corresponding matched areas for each of the places or sets of places selected in (1); and

(3) a consideration of the possibility of including rural areas around the atomic installations, and the matching of these with rural areas around the matched points.

Each of the topics will be dealt with in turn below.

(1) The rural congested and urban places selected as installation areas for Oak Ridge, Argonne, Brookhaven, Los Alamos, Hanford, Berkeley and Ames are shown in Appendix Table 1. Both Berkeley and Ames surrounded the installations themselves, so their selection presented no problem. Since there were no appropriate large places surrounding the site of Oak Ridge, Los Alamos, and Hanford, nearby centers lying within twenty-five miles of the installations themselves were selected. Places within about an eight mile radius of Argonne Forest were selected. For Brookhaven, a sample, stratified by size and location, of all urban and rural congested places within a ten mile radius was selected.

Some of the characteristics of the installation areas are noted in Appendix Table 1. These characteristics and others which will be mentioned were utilized in the selection of the matched areas.

(2) The two matched areas selected for each of the installation areas listed in Appendix Table 1 are shown in Appendix Table 2. In the matching procedure, average rental values were generally judged of greatest importance, due to the high correlation usually observed between average rent and other socio-economic indices. The other characteristics listed were matched as closely as possible, and in addition the matches were kept roughly within the same geographic region in which the installation areas are located. The presence of comparatively minor-scale work on atomic energy in a matched area was disregarded, since this is usually not at all well known. To make certain of this, however, data are available (from Question 24) concerning knowledge of local projects.

1/ The following material is essentially a duplication of the memorandum prepared in June, 1950, to guide selection of communities for this study. In the main, only verb tenses have been changed.

2/ See Table 28, page 48.

Pasadena seemed an excellent match for Berkeley, both with regard to the characteristics listed in Appendix Table 2 and in view of the fact that Pasadena contains Pasadena City College and the California Institute of Technology, these two colleges being roughly equivalent for our purposes to the University of California at Berkeley. On the other hand, it seemed difficult in many ways to conceive of a better match for Berkeley than San Francisco, which is within a twenty-five mile radius of the Radiation Laboratory. After consideration from a number of viewpoints (e.g., geography, metropolitan life, etc.) and obtaining local information, it was decided to include San Francisco as a match for Berkeley.

Ames has a college enrollment about equal to that of its non-student resident population. Two Midwest college towns are listed as matches.

(3) Of the seven atomic installations, four -- Oak Ridge, Los Alamos, Hanford, and Ames -- have an appreciable amount of the surrounding population living in rural areas outside the rural congested and urban centers selected as installation areas, and shown in Appendix Table 1. Only an estimated 156/700 or 22 percent of the total sample of 600 for installation areas would be taken in rural portions of those areas. This would amount to about 125 interviews, which number is rather small to be amenable to any detailed statistical treatment by individual area. Thus, the inclusion of this relatively small percentage of persons in rural areas would probably not add an appreciable contribution to the conclusions of this study.

It should further be emphasized that a proportion of persons living in the rural areas around Los Alamos, Hanford, and possibly Oak Ridge are "overflow" workers connected with the various atomic installations, and hence not a representative United States rural population. This fact would present certain difficulties in attempting matches in terms of population characteristics with rural areas around the matched areas chosen. The necessity for getting about the same rural percentage in installation and matched areas would make matching additionally difficult.

Finally, the expense of selecting and interviewing respondents is considerably greater in rural areas, so increasing the rural fraction of the total would increase total cost over what it would be if the entire sample were selected from the places listed in Appendix Tables 1 and 2. In view of the foregoing points, it was decided not to attempt obtaining a rural sample.

Appendix Table 1. Installation Areas Selected

Place	Installation Areas Selected	1940 Population	Dwelling Units: % Occupied by Non-White	Dwelling Units: % Built 1930-40	Dwelling Units: % Built 1920-30	Dwelling Units: Average Rental	% Population Wage Earners in Manufacturing
Oak Ridge	Knoxville	111,580	14	8	29	21	13
Argonne	Downers Grove	9,526				38	
	La Grange	10,479				60	
	Lemont	2,557				26	
	Hodgkins	331				42	
	Willow Springs	948				35	
	Total	3,707				32*	
Brookhaven	Patchogue	7,181	2	8	25	31	--
	River Head	6,000					
	Yaphank	350					
	Port Jefferson	3,500					
	Center Moriches	1,451					
	Total	18,482				33*	
Los Alamos	Santa Fe	20,325	2	39	19	28	0.6
Hanford	Pasco	3,913	2	16	28	[illegible]	--
	Kennewick	1,918				17	--
Berkeley	Berkeley	85,547	5	10	40	42	3.2
Ames	Ames	12,555	1	16	26	38	0.7

* Estimated.

Appendix Table 2. Matched Areas Selected

Place	Matched Areas Selected: Place	Matched Areas Selected: Location	1940 population	Dwelling Units: % Occupied by Non-White	Dwelling Units: % Built 1930-40	Dwelling Units: % Built 1920-30	Dwelling Units: Average Rental	% Population Wage Earners in Manufacturing
Oak Ridge	1 Chattanooga	Tennessee	128,163	28	6	30	20	13.4
	2 Cincinnati	Ohio	455,610	12	9	16	31	11.6
Argonne	1 Skokie	North of Chicago	7,172				50	
	Northbrook		1,265				40	
	Lake Zurich		421				30*	
	2 Oak Park	Detroit Area	1,169				26	
	Farmington		1,510				36	
	Birmingham		11,196				60	
Brookhaven	1 Bethel	Fairfield County, Connecticut	3,380				31	
	Danbury		6,165				35	
	Newtown		615				35	
	Zoar Bridge		212				31	
	2 Totowa	Passaic County, New Jersey	5,130				32	
	West Paterson		3,306				25	
	Little Falls Township		5,368				33	
Los Alamos	1 Phoenix	Maricopa County, Arizona	65,414	8	24	41	27	1.5
	2 Lubbock	Lubbock County, Texas	31,853	8	45	38	28	1.8
Hanford	1 Hoquiam	Grays Harbor County, Washington	10,835	0	5	32	19	--
	Montesano		2,242				16	--
	2 Grangeville	Idaho County, Idaho	1,929				18	--
Berkeley	1 Pasadena	California	81,864	5	12	39	39	1.3
	2 San Francisco	California	634,536	4	10	27	37	5.0
Ames	1 East Section of Ann Arbor	Michigan	12,000*				48*	
	2 Iowa City	Iowa	17,182				33	

* Estimated.

Appendix Table 3. Number of Interviews and Number of Non-Interviews by Reasons for Non-Interview, for Each Area

	Installation Areas								
	Oak Ridge	Argonne	Brook-haven	Los Alamos	Hanford	Berkeley	Ames	Total for areas	Total
Interviews	94	112	107	96	76	84	88	657	
Non-Interviews									
Refusals	5	3	1	4	6	10	4	33	
No one at home	6	2	3	4	5	6	7	33	
Respondent absent	1	0	3	1	0	0	0	5	
Respondent on vacation	1	1	3	2	0	0	2	9	
Respondent ill	0	0	1	0	0	0	1	2	
Other	0	0	1	0	1	4	0	6	
Total number in sample	107	118	119	107	88	104	102	745	
Percent of designated sample interviewed	88	95	81	90	86	81	86	88	
	First Matched Areas								
Interviews	46	52	44	40	45	39	42	308	
Non-interviews									
Refusals	0	1	3	2	1	4	4	15	
No one at home	2	1	1	2	2	3	3	14	
Respondent absent	0	0	0	0	1	1	1	3	
Respondent on vacation	0	2	1	0	0	0	0	3	
Respondent ill	1	0	0	0	0	1	0	2	
Other	0	0	0	0	0	1	2	3	
Total number in sample	49	56	49	44	49	49	52	348	
Percent of designated sample interviewed	94	93	90	91	92	80	81	88	
	Second Matched Areas								
Interviews	39	46	45	47	44	43	47	311	1276
Non-Interviews									
Refusals	1	1	4	1	0	8	2	17	65
No one at home	6	9	0	4	0	2	4	25	72
Respondent absent	3	8	1	0	0	0	3	15	23
Respondent on vacation	0	0	1	0	0	2	4	7	19
Respondent ill	0	1	1	0	0	0	0	2	6
Other	0	1	3	0	0	0	0	4	13
Total number in sample	49	66	55	52	44	55	60	381	1474
Percent of designated sample interviewed	80	70	82	90	100	78	78	82	86

Appendix C

NUMERICAL BASES OF TEXT TABLES

In focusing on different groups in the population considered in this report, different numbers of respondents are involved. The derivations of these numbers, and the consequent interpretations of the classes presented as the bases of the various tables, are given here.

The base number is 1,276, the total number of interviews taken. The answers to Question 1 indicated that there were 18 respondents who had not even heard of the atomic bomb, and these are obviously excluded from further questioning concerning peacetime uses of atomic energy. This left a total of 1,258 persons who had at least heard of the atomic bomb.

In Question 2 people were asked whether they could name (recall) some use for atomic energy other than the bomb, and 162 could not. In the discussion of uses that were mentioned (Tables 20 and 22), a base of 1,096 respondents is used.

In Question 3, some uses of atomic energy were presented to people, and 74 out of the 162 who had not been able to recall a use were able to recognize one or more of these as possible uses, leaving a remainder of 88 who could neither recall nor recognize having heard of any of these uses. The resulting 1,170 people who could recall and/or recognize some use for atomic energy were then asked further questions.

Question 4a concerns whether people who had seen or heard atomic energy mentioned anywhere lately went on to listen or read about it. Since 169 people said in answer to Question 4 that they had not seen or heard it mentioned lately, the base for consideration of whether respondents went on to listen to or read the item is 1,001.

Again, some detailed questions are asked about radiation as a hazard in connection with peacetime uses, and those who had not heard of such uses (18 plus 88) and those who had not heard of radiation (320) were omitted from this detailed consideration. The base for some tables is, then, all those who had heard of radiation as a hazard in connection with peacetime uses, and they are 850 people.

This derivation and the meaning of the numbers used as bases of the various tables may be summarized as follows.

Appendix Table 4. Derivation and Content of Numbers Used as Bases for Text Tables

Total number of interviews	1276
Had not heard of atomic bomb (Q. 1)	-18
Had heard of atomic bomb	1258
Could name no peacetime uses of atomic energy (Q. 2)	-162
Could name some peacetime use of atomic energy	1096
Recognized a given use of atomic energy (Q. 3)	+74
Could name and/or recognize peacetime use of atomic energy (= 1276 - 18 - 88)	1170
Had not seen or heard of atomic energy lately (Q. 4)	-169
	1001

Could name and/or recognize peacetime use of atomic energy	1170
Had not heard of radiation as a peacetime hazard (Q. 18)	-320
Had heard of radiation as a peacetime hazard	850

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